Unit 12, Owenacurra Business Park, Midleton, Co. Cork
T +353 21 4631600 **F** +353 21 4638690 **E** geotechnical@priority.ie

EAST MIDLANDS LIHAF SITE INVESTIGATIONS

KILCOCK, CO. KILDARE

FACTUAL REPORT

NR. P20078 (01)

15/02/2021

REPORT CONTROL SHEET

Employer	Ervia					
Employer's Representative	Mott MacDonald Consulting Engineers					
Project Name	East Midlands LIHAF Site Investigations					
Report Name	East Midlands LIHAF Site Investigations – Factual Report					
Project Number	P20078_01					
This Report Comprises of	RCS	TOC	Text	No. of Appendices	Drawings	Electronic data
	1	1	13	2	2	*.ags, *.dwg, *.pdf

Revision	Status	Author(s)	Approved By	Issue Date
D01	Draft	KMcS	GH	20.01.2021
F01	Final			15.02.2021

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 SCOPE OF WORKS 1

1.2 REPORTING 3

1.3 SITE LOCATION & DESCRIPTION 4

2 FIELDWORK 5

2.1 GENERAL 5

2.2 EXPLORATORY HOLES 6

2.3 SAMPLING 7

2.4 GROUNDWATER MONITORING 7

2.5 IN SITU TESTING 8

3 LABORATORY TESTING 9

4 GROUND CONDITIONS 11

5 GROUNDWATER CONDITIONS 12

6 SUMMARY 14

APPENDICES

APPENDIX A **EXPLORATORY HOLE, PHOTOGRAPHIC RECORDS AND EXPLORATION LOCATION PLANS**

APPENDIX B **LABORATORY RESULTS**

1 INTRODUCTION

1.1 SCOPE OF WORKS

In June 2020, Mott MacDonald, Consulting Engineers acting as the Employer's Representative on behalf of Ervia, commissioned Priority Geotechnical Ltd. (PGL), to carry out a site investigation as part of the Local Infrastructure Housing Activation Fund (LIHAF) and Major Urban Housing Development Sites (MUHDS) projects. These encompass six sites throughout Leinster, all of which are in the Greater Dublin Area.

The sites will be located within each district (i.e. City or County Council Area). It is anticipated that the sites will be in public areas, land under the control of the Local Authority, Ervia, Irish Water or Gas Networks Ireland and on private lands.

The ground investigation works are necessary to determine the condition and engineering properties of the ground at proposed sites and along proposed routes. The objective of the ground investigation works will be to establish the following:-

- The nature and geological strata, both solid and overburden.
- Sufficient site data on which predictions of the rate and amount of future settlement and the impact of the proposed works on adjacent buildings can be made.
- The presence of any irregularities in the geological structure that may affect construction works.
- Evaluate the strength at formation level of the proposed pipelines and associated structures, and determine suitable construction techniques for the various elements.
- Chemical testing of soil and groundwater samples for concrete design.
- Waste Classification of soil to be excavated.
- Groundwater levels and permeability of the surrounding soils.
- Determine the rock quality, excavatability and profile to assess the bearing capacity and strength of the rock.
- Determine the Engineering properties of the superficial deposits.
- Locate the position of underground services.
- Determine the depth of existing road construction along proposed routes.
- Analysis and documentation of the results including photographs.
- Production of factual and interpretative reports.

The scope of works defined by Mott MacDonald as tendered, comprised of:

- Cable percussion boreholes;
- Rotary core holes;
- Dynamic probing;
- Window sampling (also referred to as Dynamic Sampling);
- Trial pits;
- Slit trenches;
- On-site sampling and testing works;
- Laboratory works;
- Factual and interpretative reporting.

The final works as completed at the Kilcock site are detailed in Section 3.2 of this report. The direct investigation fieldworks were carried out under the supervision of PGL Geologist(s) between the 20th August and 25th November, 2020, in accordance with the contract specification: Specification and Related Documents for Ground Investigation in Ireland (Engineers Ireland, 2nd ed. 2016), Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the relevant British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9).

1.2 REPORTING

This geotechnical data report (ref: P20078_KK_RP_F01) presents the factual records of the fieldwork with respect to the Kilcock, Co. Kildare element of the LIHAF Site Investigation contract. This report was compiled in accordance with the contract specification: Eurocode 7-Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007 Section 6).

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

No account has been taken of potential subsidence or ground movement due to mineral extraction, mining works or karstification below or in proximity to the site, unless specifically addressed.

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

1.3 SITE LOCATION & DESCRIPTION

The works area is located within an open-field area to the north of Kilcock service reservoir and the R148 regional road, approximately 1km northwest of Kilcock town centre, within County Kildare.

2 FIELDWORK

2.1 GENERAL

The fieldwork was carried out in general accordance with British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9). Details of the equipment and plant used are presented below.

Operation	**Equipment**	**Nominal diameter, mm**	**Flush**	**Comments**
Cable percussion borehole	Dando 2000	200mm	N/A	Standard Penetration Test, N values obtained in overburden. Visual observations of ground and groundwater conditions.
Rotary Coring and Open Hole Drilling	Soilmech PSM	Symmetrix 131mm diameter open hole 76mm diameter core	Compressed Air mist	Standard Penetration Test, N values obtained in overburden. Visual observations of ground and groundwater conditions.
Slit trench excavations	2.7t tracked excavator	N/A	N/A	Visual observations of services, ground and groundwater conditions. Bulk disturbed sampling.
Trial pit excavations	2.7t tracked excavator, 5.5t tracked excavator	N/A	N/A	Visual observations ground and groundwater conditions. Bulk disturbed sampling.
Percolation test	5.5t tracked excavator	N/A	N/A	Visual observations ground and groundwater conditions. Bulk disturbed sampling. Soakaway tests to determine soil permeability.

The exploratory locations were selected by Mott MacDonald and set out subject to work space restrictions and available access. The ‘as constructed’ exploratory locations were subsequently surveyed using Trimble V8 GPS equipment to the Ordinance Survey, Irish National Grid (ING) system of co-ordinates and elevations to Malin Head datum.

These locations are shown on the exploration location layout and plans (dwg. No. P20078-SI-1A and P20078-SI-101, P20078-SI-102) presented in **APPENDIX A** of this report.

2.2 EXPLORATORY HOLES

The exploratory holes as completed during the ground investigation are listed in the following table(s) and presented in **APPENDIX A** of this report;

SUMMARY OF EXPLORATORY HOLES

Type	Quantity, Nr.	Depth Range, m bgl	Comments
Cable percussion Boreholes	06	2.00 – 4.20	BH1303, BH1304, BH1305, BH1306, BH1307 & BH1308.
Rotary Boreholes	05	9.00 – 15.00	RC1303, RC1304, RC1306, RC1307 & RC1308.
Slit trench	07	1.00 – 2.00	ST1306, ST1307, ST1311, ST1312, ST1313, ST1314, ST1315
Trial pit	08	2.00 – 2.70	TP1306, TP1307, TP1308, TP1309, TP1310 & TP1311.
Percolation test	02	2.45 – 2.50	TPPT1301 & TPPT1302.

Chiselling Details				
Location	**Depth Top (m bgl)**	**Depth Base (m bgl)**	**Duration**	**Tool**
BH1303	3.6	3.6	01:00	Chisel
BH1304	1.8	1.97	00:30	Chisel
	3.5	3.5	01:00	Chisel
BH1305	1.6	1.74	00:30	Chisel.
	4.2	4.2	01:00	Chisel.
BH1306	2.4	2.5	01:00	Chisel.
BH1307	2.4	2.5	01:00	Chisel.
BH1308	1.9	2.0	01:00	Chisel.

2.3 SAMPLING

Forty six (46) bulk disturbed samples (B), thirty two (32) small disturbed samples (D), two (2) window samples (WS) from rotary holes, four (4) undisturbed samples (U) and 23.3linm of rotary were recovered from the exploratory holes in accordance with Geotechnical Investigation and Sampling– Sampling Methods and Groundwater Measurements (EN ISO 22475-1:2006).

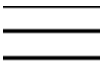
2.4 GROUNDWATER MONITORING

Groundwater was recorded when encountered/ observed during boring and excavations 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. Groundwater conditions observed in the borings or pits 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. The groundwater regime should be assessed from standpipe well installations, where available. Exploratory locations were all backfilled with their arisings. Groundwater is further detailed in Section 5 of this factual report.


GRAVEL Backfill to installation/ borehole


ARISINGS Backfill


uPVC slotted pipe


BENTONITE Backfill to installation/ borehole

2.5 IN SITU TESTING

A total of forty one (41) standard penetration tests, were carried out in the cable percussion (20) and rotary (21) boreholes using the 60° solid cone (CPT) in place of the standard split barrel sampler. The data was presented on the relevant logs in **APPENDIX A** of this report.

Two (2) number percolation/ soakaway tests were carried out in general accordance with BRE Digest 365, Soakaway Design (2003/ 2007). Infiltration was not determined at location PT1302 where water level failed to drop significantly during the duration of testing. Low permeability soils are assumed. The data from the testing is accompanying the relevant exploratory records attached, herein.

3 LABORATORY TESTING

All samples were transported to Priority Geotechnical's laboratory in Midleton, Co. Cork examined, logged and prepared for scheduled testing. Laboratory testing was scheduled by Mott McDonald and 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. Specialist chemical testing was undertaken by Chemtest Ltd. (UK) on behalf of PGL.

The laboratory test results were presented in **APPENDIX B** of this factual report and discussed herein. A summary of tests undertaken were detailed below.

SUMMARY OF LABORATORY TESTING UNDERTAKEN

Type	Nr.	Remarks
Natural Moisture Content	11	10% to 29%
Atterberg Limit	23	Liquid limit, LL 23% to 52% Plastic limit, PL 15% to 35% Plasticity index, PI 8 to 17
Particle size distribution (grading)	24	See attached APPENDIX B of the factual report
Hydrometer analysis on fines	22	
pH Sulphate SO_4 water soluble Sulphate (acid soluble)	12 12 07	8.4 to 9.6 <0.010g/l 0.014% to 0.032%
Organic matter	12	0.66% to 2.1%
Loss on ignition, LOI	12	1.6% to 4.0%
Total Sulphate	05	260mg/kg to 410mg/kg
California bearing ratio, CBR moisture content Relationship	03	BH1303 1.5m, BH1303 2.5m & BH1304 2.5m. See attached APPENDIX B of the factual report
Dry density/ Moisture content relationship	10	ST1312 1.0m, TP1301 2.0m, TP1307 1.0m, TP1308 2.5m, TP1309 0.5m, TP1310 0.6m and 1.5m, TP1311 0.5m, PT1302 0.5and 1.5m. See attached APPENDIX B of the factual report **Maximum dry density**: 1.6Mg/m^3 to 2.0Mg/m^3 **Optimum Moisture content**: 7.2% to 18.6%
Moisture condition value, MCV moisture content Relationship	06	ST1312 1.0m, TP1301 2.0m, TP1307 1.0m, TP1308 2.50m. TP1310 1.5m; and PT1302 1.5m; See attached APPENDIX B of the factual report
Moisture condition value, MCV	06	MCV0 – MCV4.8
Measurement of electrical Resistivity	03	ST1306 1.0m, ST1313 1.0m & ST1314 0.5m. 410Ω.m – 960Ω.m

Type	Nr.	Remarks
Determination of shear strength using small direct shearbox	06	BH1303 1.5m, BH1303 2.5m, BH1304 2.5m, TP1306 1.5m, TP1307 2.0m & TP1308. See APPENDIX B of the factual report
Environmental testing, Suite I	05	TP1306 1.7m, TP1308 2.5m, TP1311, 05m, 1.5m and 2.5m; See APPENDIX B of the factual report
Waste acceptance criteria	07	TP1306 1.5m and 1.7m, TP1307 2.0m, TP1308 1.5m and 2.5m, TP1311, 05m, 1.5m and 2.5m; See APPENDIX B of the factual report
Point load index (I_{P50})	02	2.2MPa and 2.6MPa
Unconfined compressive strength (UCS)	02	84.67MPa and 87.47MPa.

Please note that all samples shall be retained for a period no longer than 28 days from the date of this report. Thereafter all remaining samples shall be appropriately disposed of unless a written instruction to the contrary is received by PGL prior to the date of this reporting and within the 28 day period outlined above. Laboratory testing will result in a reduction of sample quantity and in some cased the use of the full sample mass. Samples already tested may not be suitable or available for further testing.

4 GROUND CONDITIONS

The full details of the ground conditions encountered are provided for on the exploratory records accompanying this report. The records provide descriptions, in accordance with BS 5930 (2015) and Eurocode 7, Geotechnical Investigation and Testing, Identification and classification of soils, Part 1, Identification and description (EN ISO 14688-1: 2002),– Identification and Classification of Soil, Part 2: Classification Principles (EN ISO 14688-2:2004) and Identification and Classification of Rock, Part 1: Identification & Description (EN ISO 14689-1:2004) of the materials encountered, in situ testing and details of the samples taken, together with any observations made during the ground investigation.

Published Geology

A search of the Geological Survey data base and 1:100,000 mapping (Sheet 16) showed the study area to be underlain by the Lucan Formation (LU) described as dark Limestone and Shale. Teagasc subsoil mapping indicated the area is underlain by several overburden types including glacial tills and gravels derived from Limestones, alluvium and urban soil types. The groundwater vulnerability mapping shows a low to high vulnerability.

5 GROUNDWATER CONDITIONS

Groundwater was encountered during the period of fieldworks at depths 1.2m below ground level (bgl) to 9.0m bgl. Details of the ground water are presented graphically on the relevant exploratory logs within **APPENDIX A** of this factual report and are summarised below. See also section 2.4 for general details.

Four (04) 50mm diameter standpipe well installations were constructed to allow for groundwater monitoring. A summary of standpipe construction is outlined hereafter.

SUMMARY OF GROUNDWATER DURING FIELDWORKS

Location	Depth Strike (m bgl)	Remarks	Standpipe (Y/N)
BH1303	-	None encountered.	N
BH1304	-	None encountered.	N
BH1305	4.20	See shift data.	N
BH1306	-	None encountered.	N
BH1307	-	None encountered.	N
BH1308	-	None encountered.	N
RC1303	5.50	See shift data.	N
RC1304	6.00	See shift data.	Y
RC1306	1.80	See shift data.	Y
	9.00		
RC1307	6.00	See shift data.	Y
RC1308	7.00	See shift data.	Y
ST1306	1.50	Slow rate of flow.	N
ST1307	-	None encountered.	N
ST1311	1.60	GW encountered at 1.60m bgl.	N
ST1312	1.35	GW encountered at 1.35m bgl.	N
ST1313	-	None encountered.	N
ST1314	-	None encountered.	N
ST1315	-	None encountered.	N
TP1306	1.20	Trickle flow rate.	N
TP1307	2.00	Slow flow rate.	N
TP1308	2.10	Trickle rate of flow.	N
	1.20		N
TP1310	1.70	Trickling flow rate.	N
TP1311	1.80	Trickling flow rate.	N
TPPT1301	-	None encountered.	N
TPPT1302	1.30	Trickle flow rate.	N

SUMMARY OF STANDPIPE CONSTRUCTION

Location	Depth Top (m bgl)	Depth Base (m bgl)	Diameter (mm)	Pipe Type
RC1304	0.00	5.00	50	PLAIN
	5.00	15.00	50	SLOTTED
RC1306	0.00	6.00	50	PLAIN
	6.00	10.10	50	SLOTTED
RC1307	0.00	5.50	50	PLAIN
	5.50	10.60	50	SLOTTED
RC1308	0.00	5.00	50	PLAIN
	5.00	9.00	50	SLOTTED

6 SUMMARY

1. A total of six (06) cable percussion boreholes, five (02) rotary boreholes, seven (07) slit trench excavations, eight (08) trial pit excavations and two (02) percolation tests were undertaken during the period of investigation. The exploratory logs are presented in **APPENDIX A** of this factual report.

2. Detailed records of the ground and groundwater conditions can be found on the exploratory hole logs and photographic records presented within **APPENDIX A** of this factual report.

3. Groundwater was encountered during the period of fieldworks between 1.2m bgl and 9.0m bgl. Details are summarised herein and presented on the relevant logs in **APPENDIX A** of this factual report.

4. Four (04) groundwater monitoring standpipes were installed, see Section 5.

5. Laboratory testing was undertaken to determine the classification, engineering properties and geo-chemistry of the soil and rock encountered during the ground investigation. The data is presented in **APPENDIX B** of this factual report.

6. The exploratory hole locations are presented on the location plans presented within **APPENDIX A** of this report.

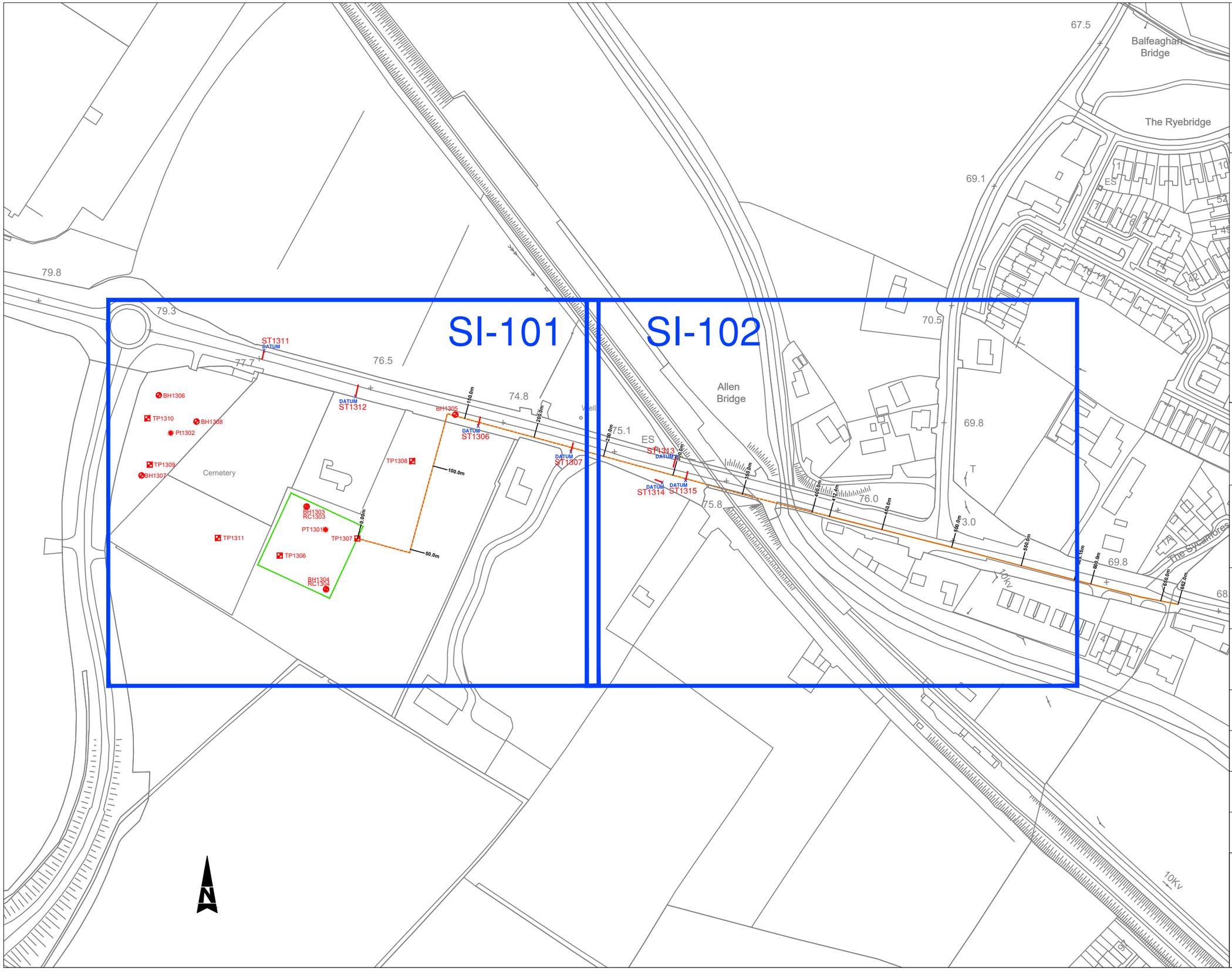
APPENDIX A

EXPLORATORY HOLE, PHOTOGRAPHIC RECORDS AND

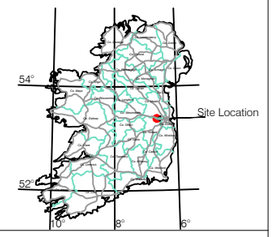
EXPLORATION LOCATION PLAN & SURVEY DATA

Exploration Location Layout and Plans P20078-SI-1A and P20078-SI-101

Location	Easting	Northing	Ground Level (mOD)	Final Depth (m bgl)	Date Start (dd/mm/yyyy)
BH1303	287509.51	240261.96	79.62	3.60	20/08/2020
BH1304	287523.05	240204.64	80.63	3.50	21/08/2020
BH1305	287612.81	240325.80	75.09	4.20	28/08/2020
BH1306	287406.75	240339.25	80.71	2.50	09/11/2020
BH1307	287394.80	240283.59	82.40	2.50	09/11/2020
BH1308	287433.05	240320.99	80.90	2.00	09/11/2020
RC1303	287509.51	240261.96	79.62	10.30	11/09/2020
RC1304	287523.05	240204.64	80.63	15.00	14/09/2020
RC1306	287406.75	240339.25	80.71	10.10	20/11/2020
RC1307	287394.80	240283.59	82.40	10.60	25/11/2020
RC1308	287433.05	240320.99	80.90	9.00	24/11/2020
ST1306	287628.69	240317.92	74.80	2.00	28/08/2020
ST1307	287693.13	240300.09	74.99	1.00	28/08/2020
ST1311	287479.93	240370.09	77.84	2.00	31/08/2020
ST1312	287543.53	240338.26	76.43	2.00	31/08/2020
ST1313	287766.15	240296.75	75.90	2.00	27/08/2020
ST1314	287756.61	240278.78	75.83	1.20	27/08/2020
ST1315	287772.79	240280.20	75.94	1.25	27/08/2020
TP1306	287490.84	240227.96	81.34	2.00	24/09/2020
TP1307	287547.02	240248.96	78.21	2.60	24/09/2020
TP1308	287580.64	240284.42	76.47	2.70	24/09/2020
TP1309	287400.49	240291.10	82.17	2.30	10/11/2020
TP1310	287398.92	240323.34	81.32	2.40	10/11/2020
TP1311	287447.88	240340.24	79.91	2.50	10/11/2020
TPPT1301	287522.57	240245.97	79.41	2.45	24/09/2020
TPPT1302	287415.14	240313.13	81.40	2.50	10/11/2020



Priority Geotechnical Site



JOB NAME:

East Midlands LIHAF.
Kilcock

Sheet Title:

EXPLORATORY LOCATION LAYOUT

JOB NUMBER:

P20078

DRAWING NUMBER:

P20078-SI-1A

DRAWN BY:

Gary Curtin

DATE:

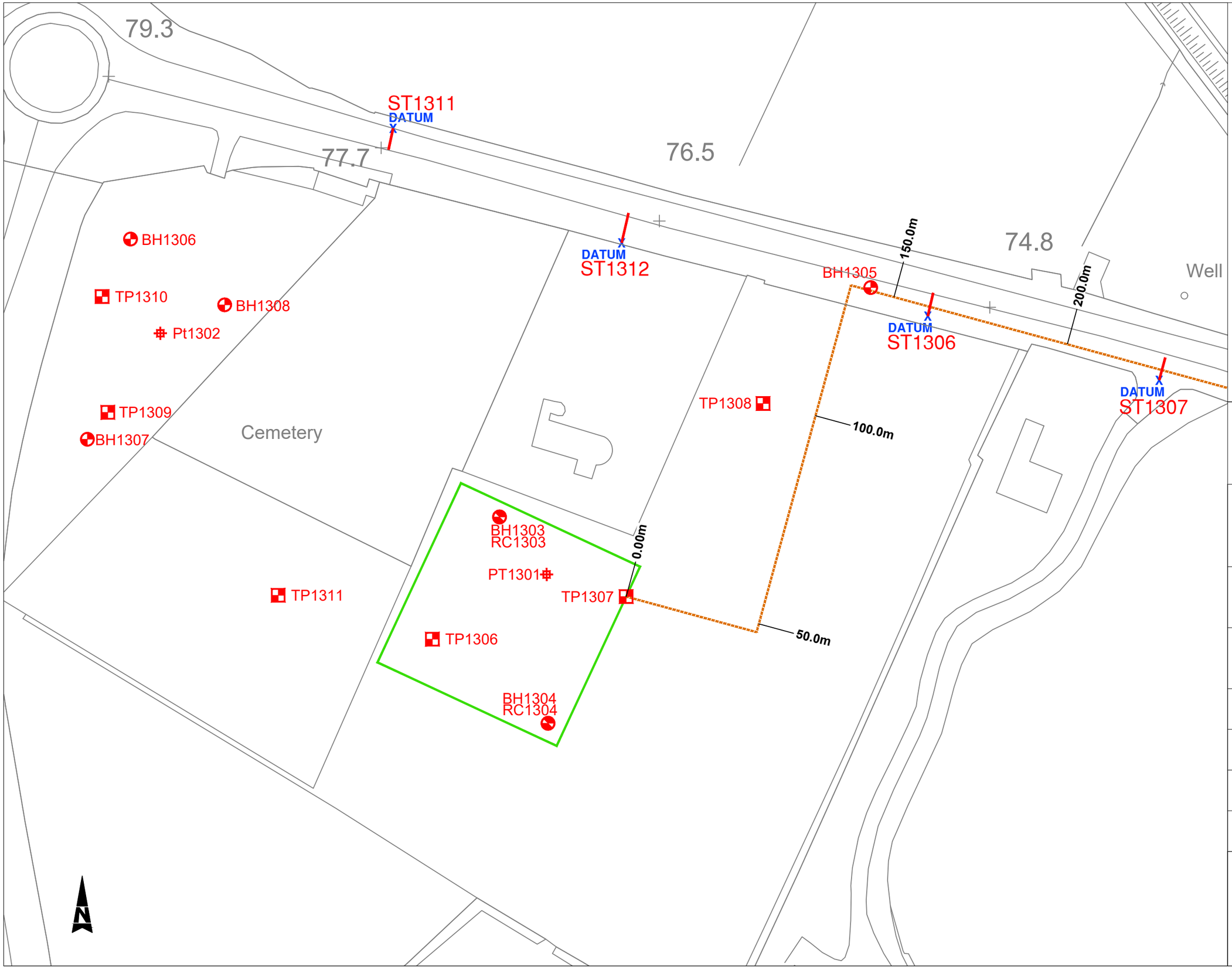
10/11/2020

SCALE:	APPROVED:
1:2500 ON A3	GH

REVISION:

D01

pgl priority geotechnical



KEY:

- ST00 DATUM — Denotes Slit Trench and Datum location
- TP00 — Denotes Trial Pit location
- BH00 — Denotes Borehole location
- RC00 — Denotes Rotary Core location
- PT00 — Denotes Percolation Test location

JOB NAME:

East Midlands LIHAF.
Kilcock

Sheet Title:

LOCATION PLAN

JOB NUMBER:

P20078

DRAWING NUMBER:

P20078-SI-101

DRAWN BY:

Gary Curtin

DATE:

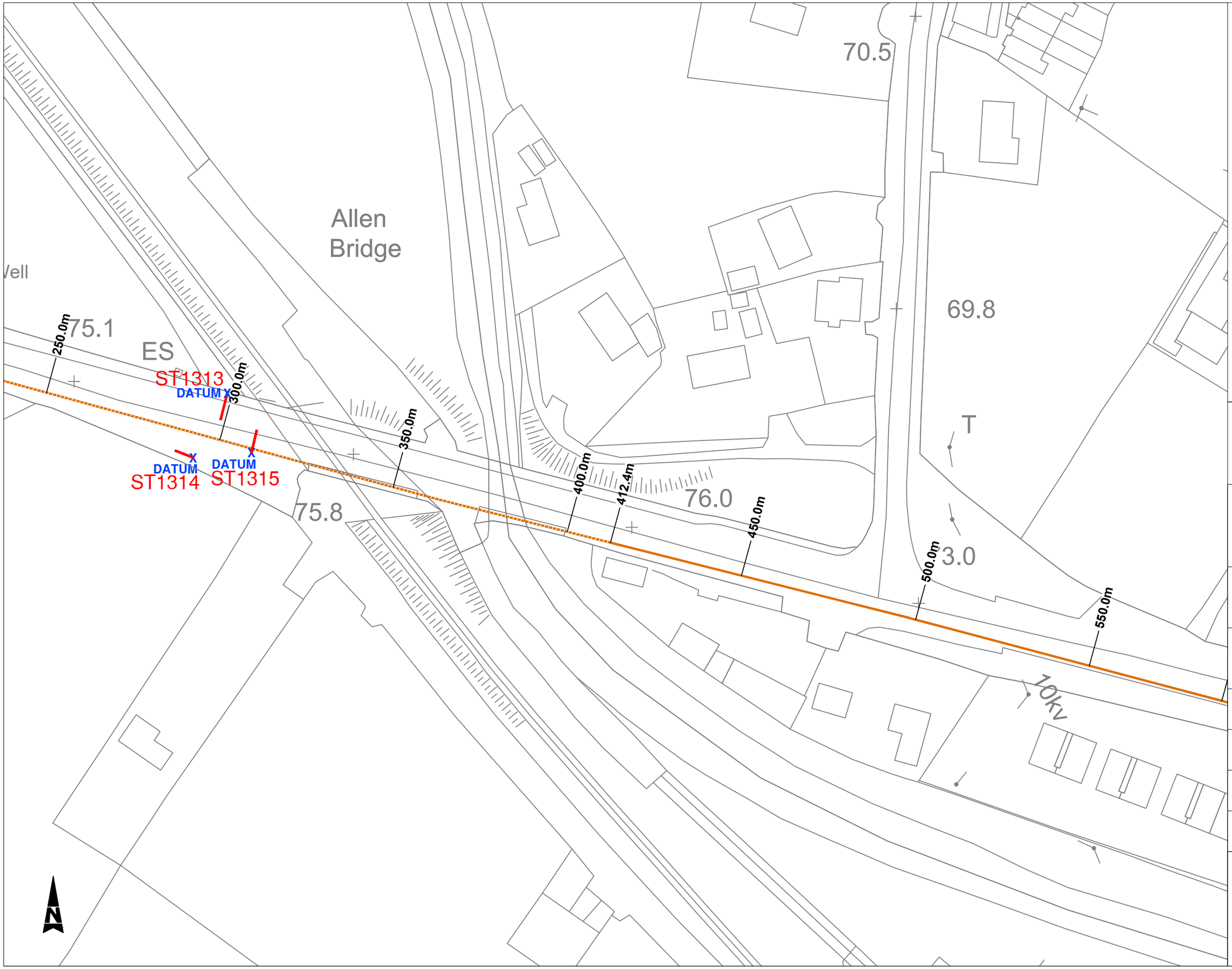
10/11/2020

SCALE:	APPROVED:
1:1000 ON A3	GH

REVISION:

D01

pgl priority geotechnical



KEY:

- ST00 DATUM — Denotes Slit Trench and Datum location
- TP00 — Denotes Trial Pit location
- BH00 — Denotes Borehole location
- RC00 — Denotes Rotary Core location
- PT00 — Denotes Percolation Test location

JOB NAME:
East Midlands LIHAF.
Kilcock

Sheet Title:
LOCATION PLAN

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-SI-102

DRAWN BY:
Gary Curtin

DATE:
10/11/2020

SCALE:
1:1000 ON A3

APPROVED:
GH

REVISION:
D01

pgl priority geotechnical

Type	Quantity, Nr.	Depth Range, m bgl	Comments
Cable percussion Boreholes	06	2.00 – 4.20	BH1303, BH1304, BH1305, BH1306, BH1307 & BH1308.
Rotary Boreholes	05	9.00 – 15.00	RC1303, RC1304, RC1306, RC1307 & RC1308.
Slit trench	07	1.00 – 2.00	ST1306, ST1307, ST1311, ST1312, ST1313, ST1314, ST1315
Trial pit	08	2.00 – 2.70	TP1306, TP1307, TP1308, TP1309, TP1310 & TP1311.
Percolation test	02	2.45 – 2.50	TPPT1301 & TPPT1302.

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

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** JC **Logged By** RD.	Borehole No. **BH1303** Sheet 1 of 1

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287510E - 240262N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	79.62 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	20/08/2020 - 20/08/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.30	79.32		(TOPSOIL)
		0.50 - 1.00	B					Firm, brown with orange mottling, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
		1.00 1.00	D SPT (C)	N=13 (3,3/4,3,3,3)				
		1.50 - 2.00	B					
		2.00 2.00	D SPT (C)	N=15 (3,3/4,3,4,4)				
		2.50 - 3.00	B		2.50	77.12		Stiff, 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 63-110mm.
		3.00 3.00	D SPT (C)	N=22 (3,4/4,4,5,9)				
		3.60	SPT (C)	75 (25 for 0mm/75 for 0mm)	3.60	76.02		End of Borehole at 3.600m

1 2 3 4 5 6 7 8 9

Groundwater:

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

Hole Information:

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

Equipment: Dando 2000

Chiselling Details:

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

Remarks:

Borehole terminated at 3.60m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	20/08/2020 08:00	0.00	Start of shift.
Dry	20/08/2020 18:00	3.60	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: GW Logged By: RD.	Borehole No. **RC1303** Sheet 1 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287510E - 240262N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 79.62 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 11/09/2020	11/09/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Cable tool borehole depth. Refer to BH1303 for overburden description.
							4.20	75.42		Open hole boring. Driller described: Stiff, gravelly CLAY with cobble content.
		4.50 - 5.10 N=23 (4,5/5,6,6,6) (C)	WS				4.50	75.12		Open hole boring. Slightly sandy gravelly SILT.
		5.10 - 5.60	WS							
	▼	5.60 - 5.70	D				5.60	74.02		Open hole boring. Driller described: Rock. Assumed Limestone lithology.
		~~50 (25 for 10mm/50 for 10mm)~~ (C)					6.00	73.62		Lithology: Strong, black, LIMESTONE.
		6.00 - 7.50	30mm 210mm 60mm	100	55	7	13/m			Weathering: Core is weathered throughout. Clay smearing on all fracture surfaces and clay replacement in sections.
		7.50 - 8.40	20mm 180mm 80mm	100	79	28	9/m			Fractures: 1st set dips with an alpha angle of 90 degrees with wide spacing and undulate rough fracture surface texture. 2nd set dips with an alpha angle of 45 degrees, with very close to medium spacing and planar smooth fracture surface texture. Features: Heavy amounts of calcite veining and vein dissolution. Rare specks of pyrite. *6.20m - 6.50m: Clay replacement.*

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
5.50				See shift data.

Hole Information:

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

Equipment: Soilmec PSM.

Method: Compressed air mist.

Remarks:

Borehole terminated at 10.30m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	11/09/2020 08:00	0.00	Start of shift.
5.50	11/09/2020 18:00	10.30	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: GW Logged By: RD.	Borehole No. **RC1303** Sheet 2 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287510E - 240262N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 79.62 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 11/09/2020	11/09/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
		8.40 - 10.30	10mm 390mm 90mm	100	89	34	17/m			Lithology: Strong, black, LIMESTONE. Weathering: Core is weathered throughout. Clay smearing on all fracture surfaces and clay replacement in sections. Fractures: 1st set dips with an alpha angle of 90 degrees with wide spacing and undulate rough fracture surface texture. 2nd set dips with an alpha angle of 45 degrees, with very close to medium spacing and planar smooth fracture surface texture. Features: Heavy amounts of calcite veining and vein dissolution. Rare specks of pyrite. *10.20m: Specks of pyrite.*
							10.30	69.32		End of Borehole at 10.300m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
5.50				See shift data.

Hole Information:

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

Equipment: Soilmec PSM.

Method: Compressed air mist.

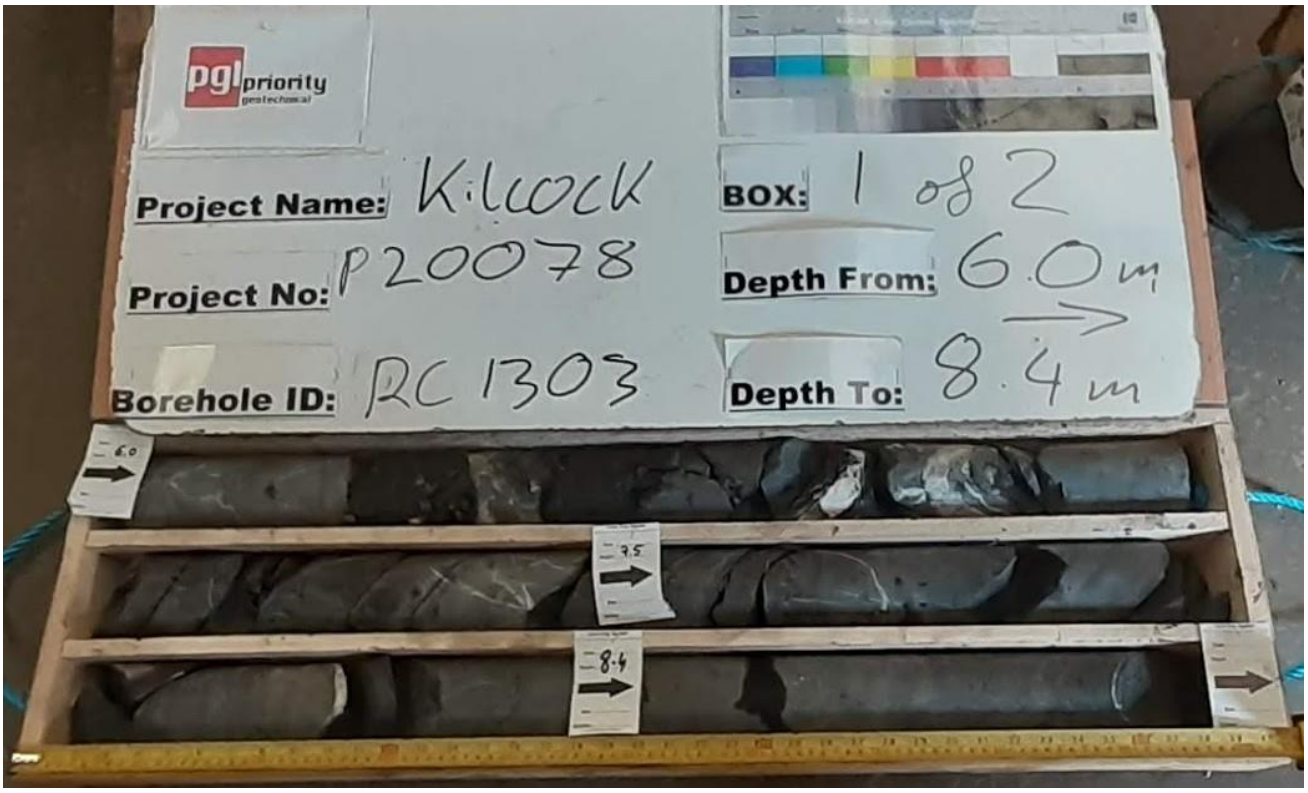
Remarks:

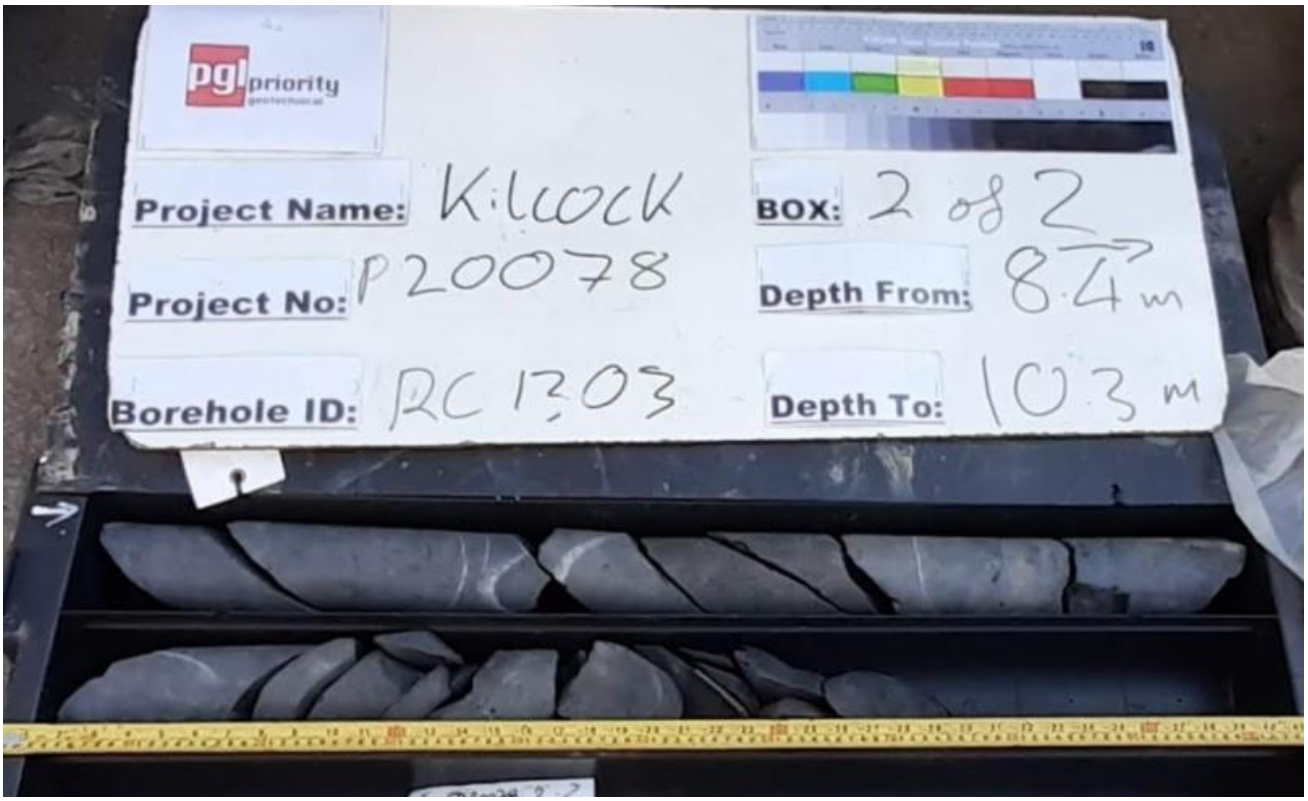
Borehole terminated at 10.30m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	11/09/2020 08:00	0.00	Start of shift.
5.50	11/09/2020 18:00	10.30	End of borehole.

Photographic Record





Number:	**RC1303**	**Project** LIHAF - Kilcock **Project No** P20078	

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: JC Logged By: RD.	Borehole No. **BH1304** Sheet 1 of 1

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287523E - 240205N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	80.63 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	21/08/2020 - 21/08/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.30	80.32		(TOPSOIL)
		0.50 - 1.00	B					Brown, slightly sandy slightly gravelly CLAY with some organic material. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
		1.00 1.00	D SPT (C)	N=14 (2,2/3,3,4,4)				
		1.50 - 2.00	B		1.50	79.12		Medium dense, brown, sandy very clayey GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63-140mm dia.
		2.00 2.00	D SPT (C)	N=14 (10,10/4,3,3,4)				*1.50m - 3.50m: Increasing Sand content and reducing cobble content with depth.*
		2.50 - 3.00	B					
		3.00 3.00	D SPT (C)	N=17 (4,4/5,4,4,4)				
		3.50	SPT (C)	50 (25 for 0mm/50 for 0mm)	3.50	77.12		End of Borehole at 3.500m

Groundwater:

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

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
3.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.80	1.97	00:30	Chisel
3.50	3.50	01:00	Chisel

Remarks:

Borehole terminated at 3.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	21/08/2020 08:00	0.00	Start of shift.
Dry	21/08/2020 18:00	3.50	End of borehole.

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

Drilled By:	Borehole No.
GW	**RC1304**
Logged By:	Sheet 1 of 2
RD.	

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287523E - 240205N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 80.63 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 14/09/2020	14/09/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Cable tool borehole depth. Refer to BH1304 for overburden description.
		4.50 - 5.70		0	0	0	4.50	76.12		Core run attempted. Recovered as: Slightly sandy gravelly CLAY.
	▼	N=44 (7,8/10,11,11,12) (C)					5.70	74.92		Open hole boring. Driller described: Slightly sandy gravelly CLAY.
		~~50 (25 for 10mm/50 for 10mm)~~ (C) 7.50 - 9.00		0	0	0	7.50	73.12		Core run attempted. Poor recovery. Recovered as: Brown, slightly sandy gravelly CLAY.
							9.00	71.62		

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
6.00				See shift data.

Hole Information:

Hole Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
15.00	76	131

Equipment: Soilmec PSM.

Method: Compressed air mist.

Remarks:

Borehole terminated at 15.00m bgl. Standpipe (50mm dia) installed from GL to 15.00m bgl. Response zone from 5.00m to 15.00m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
0.48	14/09/2020 08:00	0.00	Start of shift.
	14/09/2020 18:00	15.00	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: GW Logged By: RD.	Borehole No. **RC1304** Sheet 2 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287523E - 240205N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 80.63 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 14/09/2020	14/09/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
		N=41 (7,9/13,9,9,10) (C)								Open hole boring. Driller described: Slightly sandy gravelly CLAY.
							10.20	70.42		
		~~50 (25 for 0mm/50 for 0mm)~~ (C)					10.50	70.12		Open hole boring. Driller described: Rock. Assumed Limestone.
		10.50 - 12.00	10mm 420mm 80mm	100	60	28	15/m			Lithology: Medium weak to strong, black to grey, LIMESTONE. Alternates throughout between black, very muddy Limestone and grey, more calcareous Limestone. Weathering: Heavily weathered in upper portions, less so in lower portions. Clay smearing on all fracture surfaces and clay replacement in places. Orange oxidisation discoloration in places. Fractures: 1st set dips with an alpha angle of 80 degrees, with very close to medium spacing and planar rough fracture surface texture. 2nd set dips with an alpha angle of 60 degrees, with close to medium spacing and undulate rough fracture surface texture. 3rd set dips with an alpha angle of 10 degrees, with wide spacing and undulate rough fracture surface texture. Features: Prominent calcite veining throughout, vein dissolution in places. Rare pyrite. *10.82m: Calcite vein dissolution* *11.44m: Bed of pyrite.* *14.45m: Pyrite within vein* *14.66m: Pyrite within vein.*
		12.00 - 13.50	5mm 190mm 70mm	100	86	23	22/m			
		13.50 - 15.00	20mm 720mm 90mm	100	89	70	9/m			
							15.00	65.62		End of Borehole at 15.000m

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
6.00				See shift data.

Hole Information:

Hole Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
15.00	76	131

Equipment: Soilmec PSM.

Method: Compressed air mist.

Remarks:

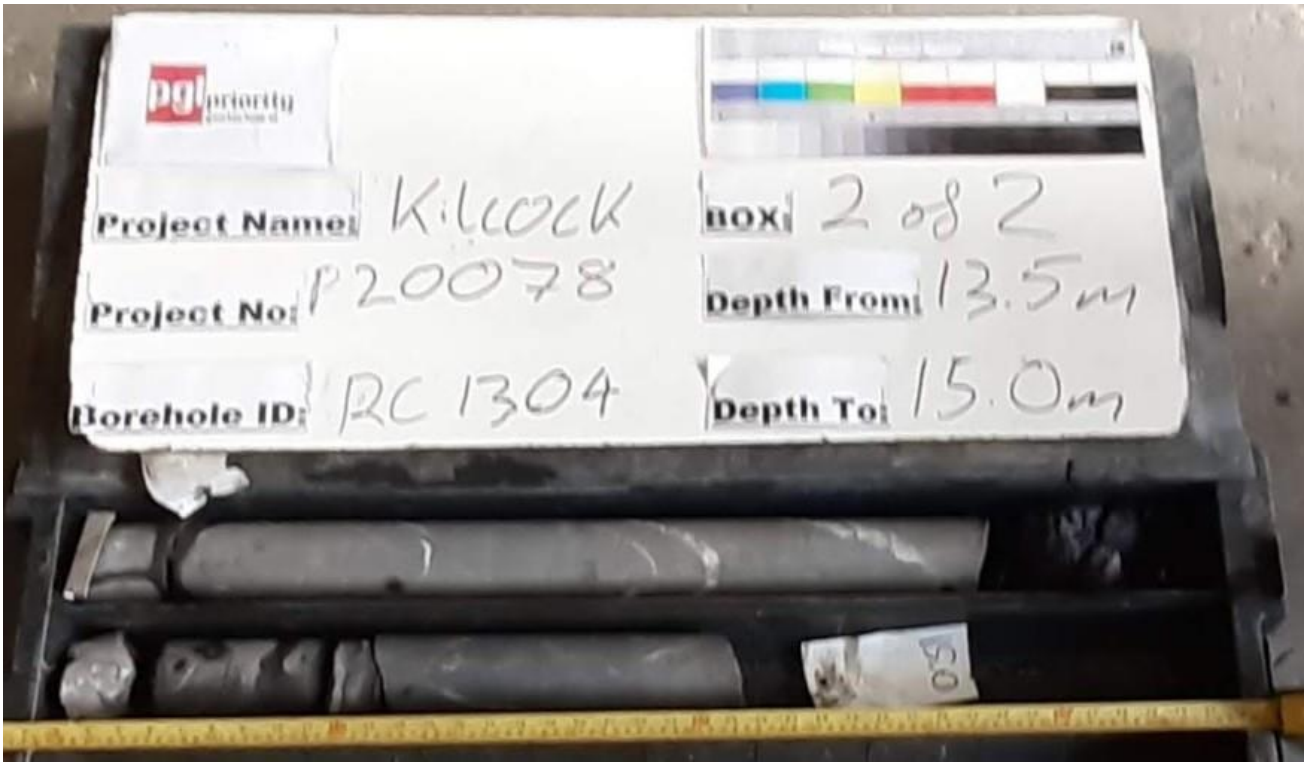
Borehole terminated at 15.00m bgl. Standpipe (50mm dia) installed from GL to 15.00m bgl. Response zone from 5.00m to 15.00m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	14/09/2020 08:00	0.00	Start of shift.
0.48	14/09/2020 18:00	15.00	End of borehole.

Photographic Record





Number:	**RC1304**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Drilled By	Borehole No.
JC	**BH1305**
Logged By	Sheet 1 of 1
HG.	

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287613E - 240326N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	75.09 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	28/08/2020 - 28/08/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.50 - 1.00	B		0.50	74.59		(MADE GROUND) Bituminous material and sub-base.
		1.00	D					Stiff, brown, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse and sub-angular to sub-rounded. Cobbles are 63mm to 90mm dia and sub-angular to sub-rounded.
		1.20	SPT (C)	N=27 (4,5/4,4,7,12)				
		1.50 - 2.00	B		1.50	73.59		Stiff, brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and sub-angular to sub-rounded.
		2.00	D					
		2.00	SPT (C)	N=17 (4,4/3,4,5,5)				
		2.50 - 3.00	B					
		3.00	D					
		3.00	SPT (C)	N=17 (4,4/5,4,4,4)				
		3.50 - 4.00	B					
		4.00	D					
		4.00	SPT (C)	50 (5,9/50 for 0mm)	4.20	70.89		End of Borehole at 4.200m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.20	2.80	20		See shift data.

Hole Information:

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

Equipment: Dando 2000.

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.60	1.74	00:30	Chisel.
4.20	4.20	01:00	Chisel.

Remarks:

Borehole terminated at 4.20m bgl due to refusal. Inspection pit dug prior to drilling.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	28/08/2020 08:00	0.00	Start of shift.
2.80	28/08/2020 18:00	4.20	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** KC **Logged By** HG.	Borehole No. **BH1306** Sheet 1 of 1

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287407E - 240339N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	80.71 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	09/11/2020 - 09/11/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and sub-angular to sub-rounded.
		1.00 - 2.00 1.00	B SPT (C)	N=9 (2,2/2,2,3,2)	1.00	79.71		Firm to stiff, brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and sub-angular to sub-rounded. *1.00m - 2.50m: Driller noted Boulder content.*
		2.00	SPT (C)	N=78 (6,6/78 for 225mm)				
		2.50	SPT (C)	50 (25 for 0mm/50 for 0mm)	2.50	78.21		End of Borehole at 2.500m

Groundwater:

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

Hole Information:

Depth (m bgl)	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, possible boulders.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	09/11/2020 08:00	0.00	Start of shift.
Dry	09/11/2020 18:00	2.50	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: BS.	Borehole No. **RC1306** Sheet 1 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287407E - 240339N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 80.71 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 20/11/2020	23/11/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Open hole boring. Driller described: Gravelly CLAY.
	▼	1.80 - 2.05 N=21 (4,5/5,6,5,5) (C)	U				1.80	78.91		
		2.30 - 2.70 N=27 (3,6/6,7,6,8) (C)	U							Open hole boring. Stiff, brown, gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded.
							2.70	78.01		Open hole boring. Driller described: Clay.
		4.00 - 4.50 N=13 (2,3/3,4,3,3) (C)	U				4.00	76.71		Open hole boring. Stiff, grey, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		5.00 - 7.40 N=77 (9,13/18,19,20,20) (C)	B							
		~~0 (50 for 0mm/0 for 0mm)~~ (C)					7.40	73.31		Lithology: Medium weak to medium strong, dark grey, LIMESTONE.
		7.40 - 8.40	30mm 80mm 50mm	90	25	0	15/m			Weathering: Core is highly weathered. Highly fractured from 8.0m to 8.75m and 9.00m to 10.10m bgl. Clay replacement in fractured sections.
	▼	8.40 - 9.00	40mm 100mm 60mm	100	33	0	8/m			Fractures: Set 1 dipping 70 degrees,

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
1.80 9.00				See shift data.

Hole Information:

Hole Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
10.10	76	131

Equipment: Soilmec PSM.

Method: Compressed air mist.

Remarks:

Borehole terminated at 10.10m bgl, required depth. 50mm standpipe installed. Depth response zone from 6.00m to 10.10m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	20/11/2020 08:00	0.00	Start of shift.
	20/11/2020 18:00	8.40	End of shift.
9.00	23/11/2020 08:00	8.40	Start of shift.
9.00	23/11/2020 18:00	10.10	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: BS.	Borehole No. **RC1306** Sheet 2 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287407E - 240339N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 80.71 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 20/11/2020 23/11/2020	

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
		9.00 - 9.50		90	16	0	5/m			Lithology: Medium weak to medium strong, dark grey, LIMESTONE.
		9.50 - 10.10		17	0	0				Weathering: Core is highly weathered. Highly fractured from 8.0m to 8.75m and 9.00m to 10.10m bgl. Clay replacement in fractured sections.
							10.10	70.61		Fractures: Set 1 dipping 70 degrees, undulated rough, close spacing. Set 2 dipping 50 degrees, undulated rough, medium spacing.
										Detail: Calcite veining throughout.
										End of Borehole at 10.100m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
1.80 9.00				See shift data.

Hole Information:

Hole Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
10.10	76	131

Equipment: Soilmec PSM.

Method: Compressed air mist.

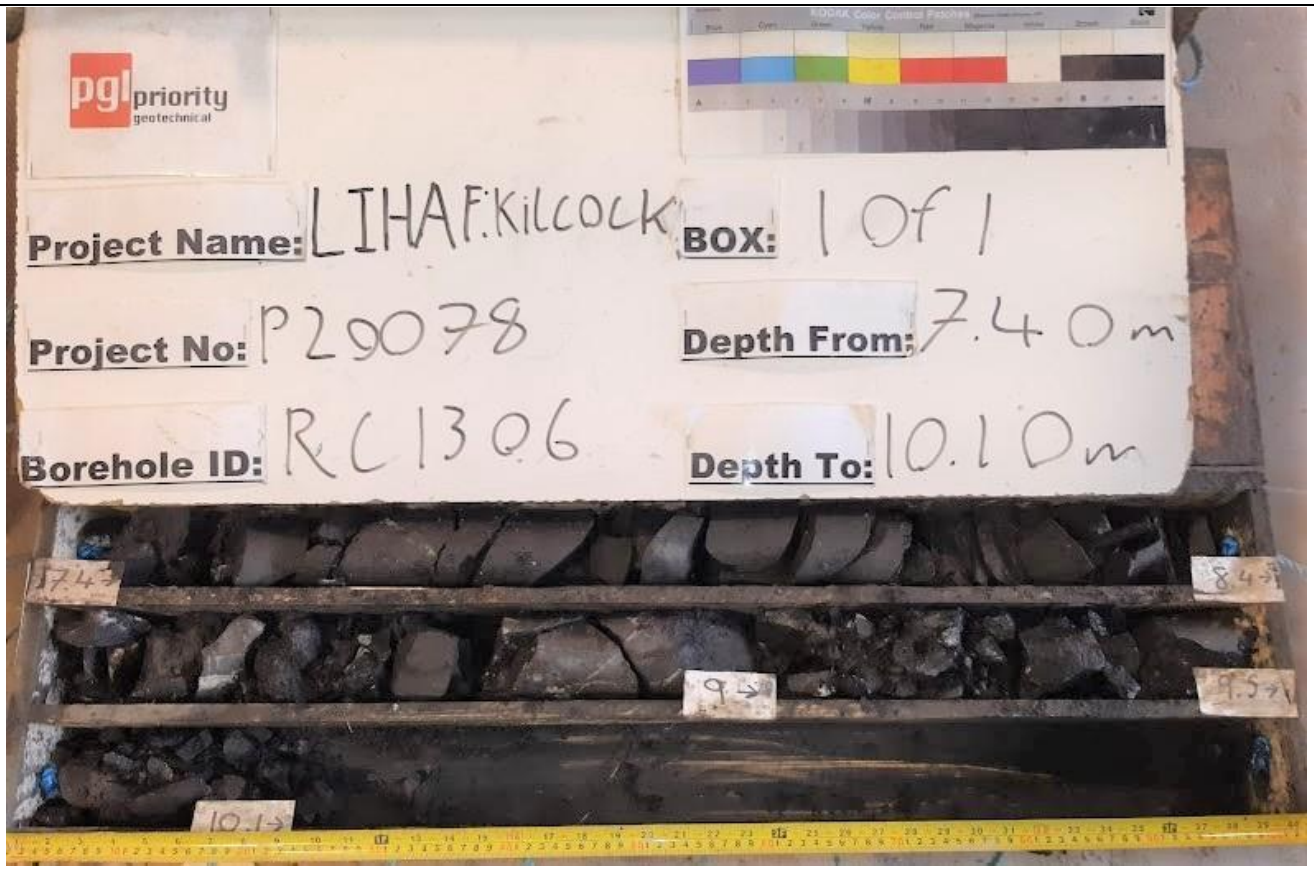
Remarks:

Borehole terminated at 10.10m bgl, required depth. 50mm standpipe installed. Depth response zone from 6.00m to 10.10m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	20/11/2020 08:00	0.00	Start of shift.
	20/11/2020 18:00	8.40	End of shift.
9.00	23/11/2020 08:00	8.40	Start of shift.
9.00	23/11/2020 18:00	10.10	End of borehole.

Photographic Record



Number:	**RC1306**	**Project** **Project No**	LIHAF - Kilcock P20078	

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** KC **Logged By** HG.	Borehole No. **BH1307** Sheet 1 of 1

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287395E - 240284N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	82.40 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	09/11/2020 - 09/11/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Brown, slightly sandy gravelly CLAY. Gravel is fine to coarse and angular.
		1.00 - 2.00 1.00	B SPT (C)	N=12 (2,2/3,4,3,2)	1.00	81.40		Firm becoming stiff, brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and angular. *1.00m - 2.50m: Driller noted Boulder content.*
		2.00	SPT (C)	N=44 (3,3/4,4,12,24)				
		2.50	SPT (C)	0 (25 for 50mm/0 for 0mm)	2.50	79.90		End of Borehole at 2.500m

Groundwater:

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

Hole Information:

Depth (m bgl)	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.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	09/11/2020 08:00	0.00	Start of shift.
Dry	09/11/2020 18:00	2.50	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: HG.	Borehole No. **RC1307** Sheet 1 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287395E - 240284N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 82.40 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 25/11/2020	25/11/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Cable tool depth. Refer to BH1307 for detailed overburden description.
		2.20 - 2.40 2.20 - 3.80 0 (50 for 0mm/0 for 0mm) (C)	B U				2.20 2.40	80.20 80.00		Open hole boring. Grey, slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular.
										Open hole boring. Grey, slightly sandy, gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		~~N=62~~ (8,10/12,12,18,20) (C) 3.80 - 5.00		25	0	0	3.80	78.60		Core runs attempted. Recovered as grey, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
	▼	~~5.00 - 6.70~~ N=48 (7,8/10,10,13,15) (C) 5.00 - 6.70	B	4	0	0				
		~~0 (50 for 0mm/0 for 0mm)~~ (C) 6.70 - 7.70	30mm 360mm 160mm	97	44	36	6.40 20/m	76.00		Lithology: Strong to very strong, dark grey, LIMESTONE. Weathering: Slightly weathered to fresh, fragmented from 3.60m to 6.70m, 8.10m to 8.30m and 8.90m to 9.10m. Features: Set 1 dipping 80 degrees, close to very close spacing, planar smooth fracture surfaces. Set 2 dipping 20 degrees, wide spacing, planar smooth fracture surfaces.
		7.70 - 9.10	35mm 120mm 40mm	100	74	24	20/m			

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
6.00				See shift data.

Hole Information:

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

Equipment:	Soilmec PSM.
Method:	Compressed air mist.

Remarks:

Borehole terminated at 10.60m bgl, required depth. 50mm standpipe installed. Depth response zone from 5.50m to 10.60m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	25/11/2020 08:00	0.00	Start of shift.
0.0	25/11/2020 18:00	10.60	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: HG.	Borehole No. **RC1307** Sheet 2 of 2

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287395E - 240284N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 82.40 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 25/11/2020	25/11/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
		9.10 - 10.50	10mm 100mm 90mm	100	89	14	30/m			Lithology: Strong to very strong, dark grey, LIMESTONE. Weathering: Slightly weathered to fresh, fragmented from 3.60m to 6.70m, 8.10m to 8.30m and 8.90m to 9.10m. Features: Set 1 dipping 80 degrees, close to very close spacing, planar smooth fracture surfaces. Set 2 dipping 20 degrees, wide spacing, planar smooth fracture surfaces.
							10.60	71.80		End of Borehole at 10.600m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
6.00				See shift data.

Hole Information:

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

Equipment:	Soilmec PSM.
Method:	Compressed air mist.

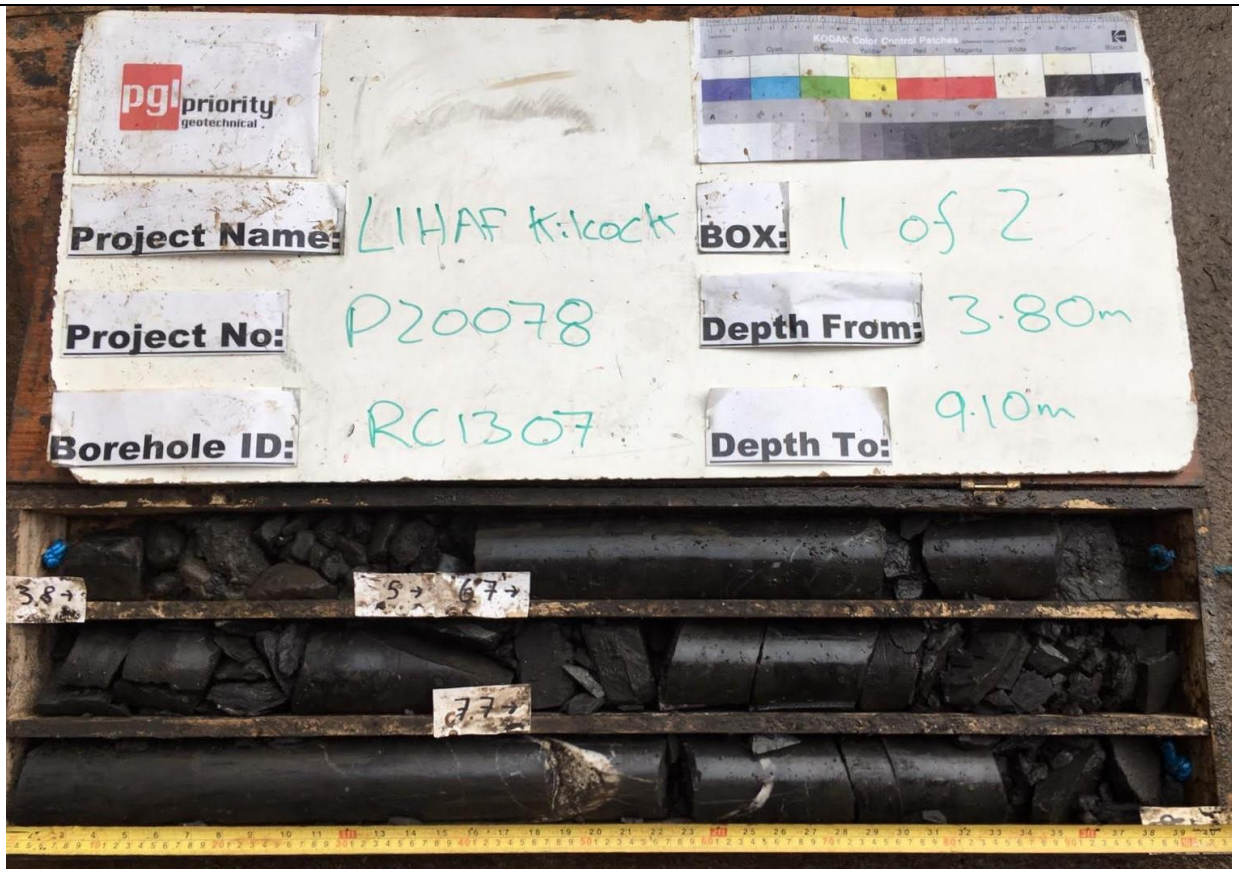
Remarks:

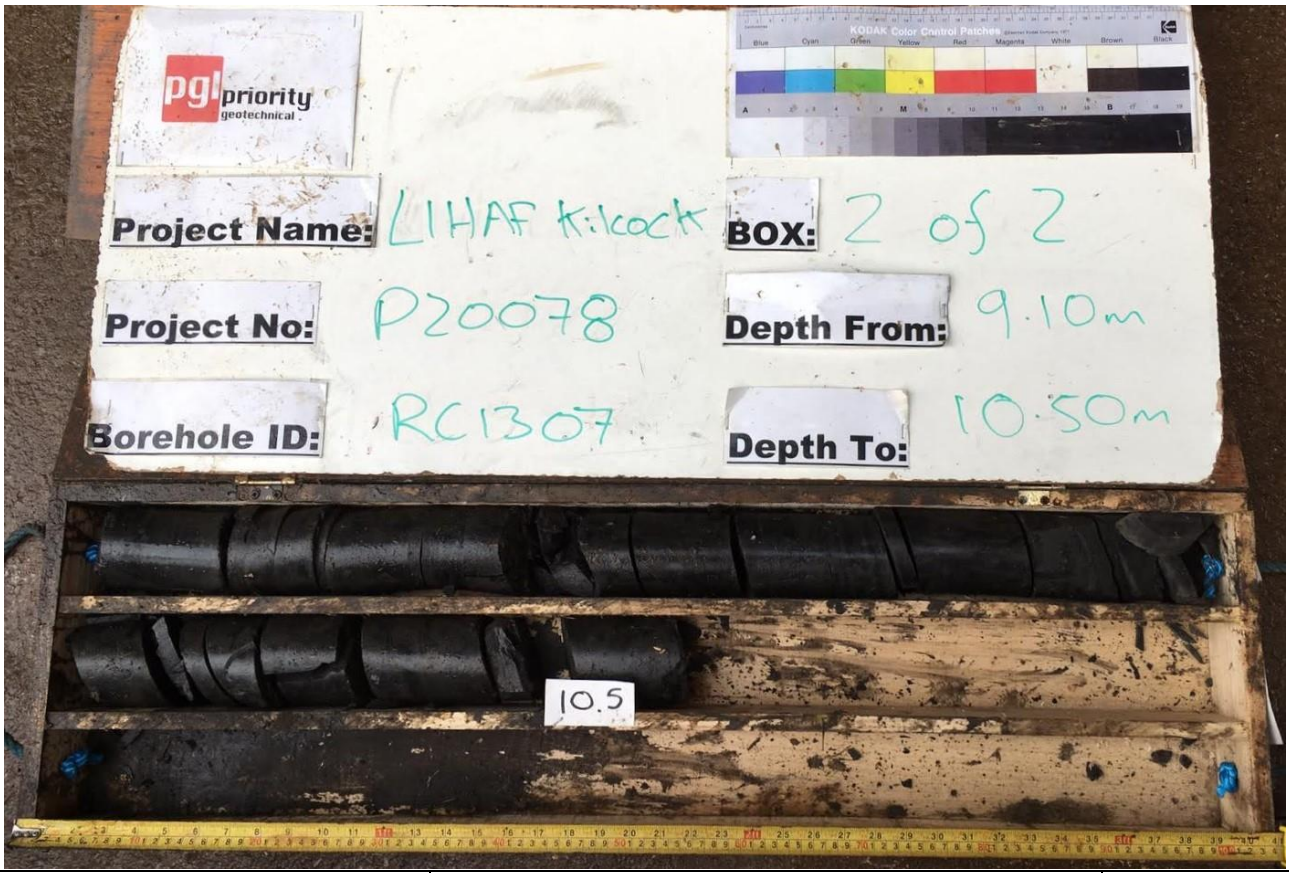
Borehole terminated at 10.60m bgl, required depth. 50mm standpipe installed. Depth response zone from 5.50m to 10.60m bgl.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	25/11/2020 08:00	0.00	Start of shift.
0.0	25/11/2020 18:00	10.60	End of borehole.

Photographic Record





Number:	**RC1307**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Drilled By	Borehole No.
KC	**BH1308**
Logged By	Sheet 1 of 1
HG.	

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:**	287433E - 240321N	**Hole Type** CP
Location:	Kilcock, Co. Kildare		**Level:**	80.90 m OD	**Scale** 1:50
Client:	Irish Water		**Date:**	09/11/2020 - 09/11/2020	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing			Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		Depth (m bgl)	Type	Results				
		0.00 - 1.00	B					Soft, dark brown, slightly sandy gravelly CLAY with medium cobble content. Gravel is fine to coarse and angular. Cobbles are 63mm to 90mm dia and angular to sub-angular.
		1.00 - 2.00 1.00	B SPT (C)	N=6 (2,2/2,1,1,1,2)				
		2.00	SPT (C)	50 (25 for 5mm/50 for 0mm)	2.00	78.90		End of Borehole at 2.000m

Groundwater:

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

Hole Information:

Depth (m bgl)	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 2.00m bgl due to refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	09/11/2020 08:00	0.00	Start of shift.
Dry	09/11/2020 18:00	2.00	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: HG.	Borehole No. **RC1308** Sheet 1 of 1

Project Name:	LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287433E - 240321N	**Hole Type** RC
Location:	Kilcock, Co. Kildare		**Level:** 80.90 m OD	**Scale** 1:50
Client:	Irish Water		**Dates:** 24/11/2020	24/11/2020

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
							0.10	80.80		(TOPSOIL) Stiff, brown, slightly sandy gravelly CLAY. Gravel is fine to medium, angular.
		N=29 (4,7/7,6,8,8) (C)								
		N=23 (3,5/5,6,6,6) (C)								
		N=27 (4,5/7,7,6,7) (C)								
		4.00 - 5.50 N=49 (5,7/8,11,15,15) (C)	B							
		5.50 - 6.60 N=53 (7,9/13,13,12,15) (C)	B							
		~~64 (12,19/64 for 225mm)~~ (C)					6.60	74.30		
▼		6.60 - 7.30	0mm 0mm 0mm	90	0	0				Lithology: Strong to very strong, dark grey, LIMESTONE. Weathering: Core is heavily weathered and highly fragmented from 6.60m to 8.10m.
		7.30 - 8.30	190mm 260mm 150mm	95	43	43	20/m			Fractures: Set 1 dipping 90 degrees, medium to wide spacing, undulated rough fracture surfaces. Set 2 dipping 30 degrees, wide spacing, undulated rough fracture surfaces.
		8.30 - 9.00	30mm 300mm 150mm	100	93	41	20/m			
							9.00	71.90		End of Borehole at 9.000m

Groundwater:

Struck (m bgl)	Rose (m bgl)	After (min)	Sealed	Comment
7.00				See shift data.

Hole Information:

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

Equipment: Soilmec PSM.

Method: Compressed air mist.

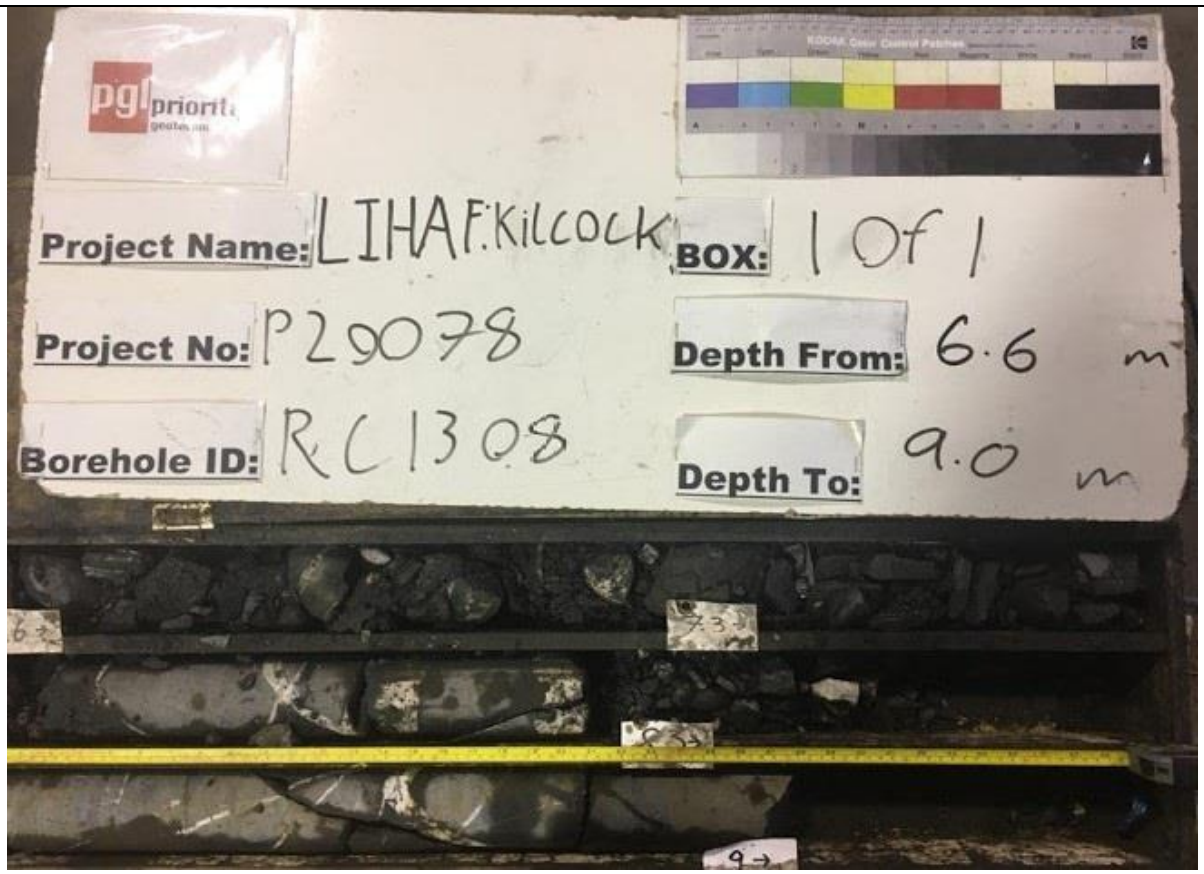
Remarks:

Borehole terminated at 9.00m, required depth. 50mm standpipe installed. Depth response zone from 5.00m to 9.00m.

Shift Data:

Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
	24/11/2020 08:00	0.00	Start of shift
7.00	24/11/2020 18:00	9.00	End of borehole.

Photographic Record



Number:	**RC1308**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
TP1306
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287491E - 240228N **Level:** 81.34m OD	**Date** 24/09/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 2.60 x 0.60 **Depth:** 2.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** BS.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	81.14		(TOPSOIL)
	0.50 - 1.00 0.50 - 1.00	B D					Soft, brown, slightly sandy gravely CLAY with medium cobble content. Cobbles are 63mm-150mm, angular to sub angular.
▼	1.00	ENV					
				1.40	79.94		
	1.50 - 2.00 1.50 - 2.00	B D					Stiff, brown, slightly sandy slightly gravely CLAY with high cobble and low boulder content. Cobbles are 63-200mm, angular to sub rounded. Boulders are 200-250mm, angular to sub rounded.
	1.70	ENV					
				2.00	79.34		End of Pit at 2.000m

1 2 3 4 5

Stability: Moderate.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 1.20m: Trickle flow rate.

Remarks: Borehole terminated at 2.0m bgl, refusal on large boulders.

Photographic Record





Number:	**TP1306**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

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

Trial Pit No
TP1307
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287547E - 240249N **Level:** 78.21m OD	**Date** 24/09/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 3.00 x 0.60 **Depth:** 2.60m BGL	**Scale** 1:25
Client: Irish Water			**Logged** BS.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	78.01		(TOPSOIL)
	0.50 0.50 - 0.80 0.50 - 0.80	ENV B D					Light brown, slightly sandy gravely SILT. Sand is fine to coarse. Gravel is fine too coarse, angular to sub rounded.
				0.80	77.41		Stiff, slightly sandy gravely CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub angular. Cobbles are 65-200mm, angular to sub rounded.
	1.00 1.00 - 1.50 1.00 - 1.50	ENV B D					
				1.50	76.71		Stiff, brown, slightly sandy gravely CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub rounded. Cobbles are 63-200mm, angular to sub rounded. Boulders are 200-300mm, sub angular sub rounded.
▼	2.00 2.00 - 2.50 2.00 - 2.50	ENV B D					
				2.60	75.61		End of Pit at 2.600m

1
2
3
4
5

Stability: Very poor.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 2.00m: Slow flow rate.

Remarks: Trial pit terminated at 2.6m bgl due to instability.

Photographic Record





Number:	**TP1307**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

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

Trial Pit No
TP1308
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287581E - 240284N **Level:** 76.47m OD	**Date** 24/09/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 3.00 x 0.70 **Depth:** 2.70m BGL	**Scale** 1:25
Client: Irish Water			**Logged** BS.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.20 - 0.90 0.20 - 0.90	B D		0.20	76.27		Light brown, slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse.
	0.50	ENV					
				0.90	75.57		Stiff, brown, slightly sandy gravely CLAY with high cobble and low boulder content. Cobbles are 65-200mm, angular to sub rounded. Boulders up to 220mm sub angular to sub rounded.
	1.50 1.50 - 2.00 1.50 - 2.00	ENV B D					
				2.30	74.17		Stiff, black, very sandy very clayey GRAVEL with low cobble content. Cobbles are 63-80 mm, sub angular to sub rounded.
	2.50 2.50 - 2.70 2.50 - 2.70	ENV B D		2.70	73.77		End of Pit at 2.700m

Stability: Poor.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 2.10m: Trickle rate of flow.

Remarks: Borehole terminated at 2.7m bgl, refusal on large boulders.

Photographic Record





Number:	**TP1308**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

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

Trial Pit No
TP1309
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287400E - 240291N **Level:** 82.17m OD	**Date** 10/11/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 2.80 x 0.60 **Depth:** 2.30m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00 0.50 - 1.00	B D		0.50	81.67		Firm to stiff, beige, grey, slightly silty slightly sandy gravelly CLAY with medium cobble content with low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are up to 200mm dia, angular to rounded. Boulders are up to 500mm dia, angular to rounded. *0.50m: 2.30m: Boulder content increasing with depth.*
	1.50 - 2.30 1.50 - 2.30	B D					
				2.30	79.87		End of Pit at 2.300m

Stability: Good.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: Trickling flow rate.

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

Photographic Record





Number:	**TP1309**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record



Number:	**TP1309**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

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

Trial Pit No
TP1310
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287399E - 240323N **Level:** 81.32m OD	**Date** 10/11/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 3.10 x 0.60 **Depth:** 2.40m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.60 - 1.00 0.60 - 1.00	B D		0.60	80.72		Firm to stiff, beige, brown, slightly sandy gravelly CLAY with high cobble content with medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are up to 200mm dia, angular to rounded. Boulders are up to 500mm dia, angular to rounded. *0.60m - 2.40m: Boulder content and stiffness increasing with depth.*
▼	1.50 - 2.40 1.50 - 2.40	B D					
				2.40	78.92		End of Pit at 2.400m

Stability: Good.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 1.70m: Trickling flow rate.

Remarks: Trial pit terminated at 2.40m bgl due to refusal.

Photographic Record





Number:	**TP1310**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
TP1311
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287448E - 240340N **Level:** 79.91m OD	**Date** 10/11/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 3.00 x 0.60 **Depth:** 2.50m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 0.50 - 0.90 0.50 - 0.90	ENV B D		0.40	79.51		Firm, brown, slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are up to 200mm dia, angular to sub-rounded.
	1.50 1.50 - 2.50 1.50 - 2.50	ENV B D		0.90	79.01		Firm to stiff, beige brown, slightly sandy gravelly CLAY with medium high content with medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are up to 200mm dia, angular to sub-rounded. Boulders are up to 450mm dia, angular to sub-rounded. *0.90m - 2.50m: Boulder content increasing with depth.*
	2.50	ENV		2.50	77.41		End of Pit at 2.500m

Stability: Good.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 1.80m: Trickling flow rate.

Remarks: Trial pit terminated at 2.50m bgl due to refusal.

Photographic Record





Number:	**TP1311**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record



Number:	**TP1311**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
TPPT1301
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287523E - 240246N **Level:** 79.41m OD	**Date** 24/09/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 2.10 × 0.60 **Depth:** 2.45m BGL	**Scale** 1:25
Client: Irish Water			**Logged** BS.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
				0.20	79.21		Brown grey, slightly sandy gravely CLAY with medium cobble content. Cobbles are 63-150mm, angular to sub rounded.
	0.50 - 1.00 0.50 - 1.00	B D					
				1.40	78.01		Stiff, brown grey, slightly sandy gravely CLAY with medium cobble and low boulder content. Cobbles are 63-200mm, angular to sub rounded. Boulders are 200-240mm, sub rounded.
	2.00 - 2.40 2.00 - 2.40	B D					
				2.45	76.96		End of Pit at 2.450m

1
2
3
4
5

Stability: Poor.
Plant: 5.5t tracked excavator.
Backfill: Arisings

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.45m bgl as required depth reached.

P20078 **LIHAF - Kilcock**

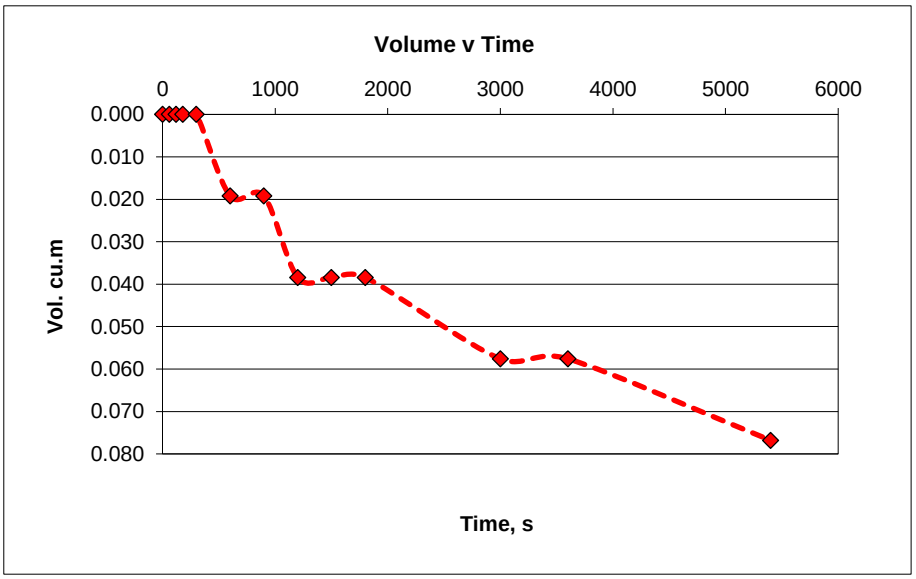
Test 1 **PT1301** **24/09/2020**

l, m	**3.20**	b, m	**0.60**	d, m	**2.45**
l_base, m	**3.20**			d_eff, m	**1.05**
l_eff, m	**3.20**				

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	1.40	0	1.05	0.00	0.000
1	1.40	60	1.05	0.00	0.000
2	1.40	120	1.05	0.00	0.000
3	1.40	180	1.05	0.00	0.000
5	1.40	300	1.05	0.00	0.000
10	1.41	600	1.04	0.01	0.019
15	1.41	900	1.04	0.01	0.019
20	1.42	1200	1.03	0.02	0.038
25	1.42	1500	1.03	0.02	0.038
30	1.42	1800	1.03	0.02	0.038
50	1.43	3000	1.02	0.03	0.058
60	1.43	3600	1.02	0.03	0.058
90	1.44	5400	1.01	0.04	0.077

Area	1.92 m^2	$V_{p75\text{-}25\ theory}$	volume	1.008	m^3
50% Area_eff, a_{p50}	5.91 m^2	$V_{p\ 75\ -\ 25\ actual}$	volume	0.0384	m^3
50% Area_act, a_{p50}	2.072 m^2	$t_{p\ 75\text{-}\ 25\ actual}$	time	2400.00	s

Infiltration Coefficient	*f*	7.722E-06	ms^-1



NOTES:

See PT1301 for detailed soil description.

Photographic Record





Number:	**TPPT1301**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
TPPT1302
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287415E - 240313N **Level:** 81.40m OD	**Date** 10/11/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 2.90 x 0.60 **Depth:** 2.50m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00 0.50 - 1.00	B D		0.50	80.90		Firm to stiff, beige grey, slightly sandy gravelly CLAY with medium cobble content with low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are up to 200mm dia, angular to rounded. Boulders are up to 450mm dia, angular to rounded. *0.50m - 2.50m: Boulder content increasing with depth.*
▼	1.50 - 2.50 1.50 - 2.50	B D					
				2.50	78.90		End of Pit at 2.500m

Stability: Moderate to Good.
Plant: 5.5t tracked excavator.
Backfill: Arisings.

Groundwater: 1.30m: Trickle flow rate.

Remarks: Trial pit terminated at 2.50m bgl due to hard ground, refusal. Soakaway test carried out at 0.56m bgl.

P20078 **LIHAF - Kilcock**

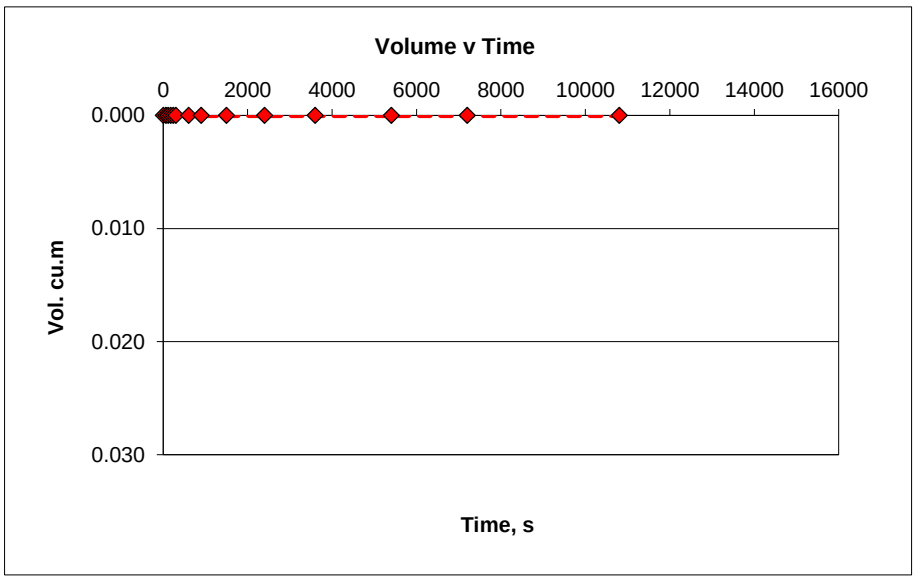
Test 1 **PT1302** **10/11/2020**

l, m	**2.40**	b, m	**0.60**	d, m	**2.50**
l_base, m	**2.40**			d_eff, m	**1.94**
l_eff, m	**2.40**				

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	0.56	0	1.94	0.00	0.000
1	0.56	60	1.94	0.00	0.000
2	0.56	120	1.94	0.00	0.000
3	0.56	180	1.94	0.00	0.000
4	0.56	240	1.94	0.00	0.000
5	0.56	300	1.94	0.00	0.000
10	0.56	600	1.94	0.00	0.000
15	0.56	900	1.94	0.00	0.000
25	0.56	1500	1.94	0.00	0.000
40	0.56	2400	1.94	0.00	0.000
60	0.56	3600	1.94	0.00	0.000
90	0.56	5400	1.94	0.00	0.000
120	0.56	7200	1.94	0.00	0.000
180	0.56	10800	1.94	0.00	0.000

Area	1.44 m^2	$V_{p75\text{-}25\ theory}$	volume	1.3968	m^3
50% Area_eff, a_{p50}	7.26 m^2	$V_{p\ 75\ -\ 25\ actual}$	volume	0	m^3
50% Area_act, a_{p50}	1.44 m^2	$t_{p\ 75\text{-}\ 25\ actual}$	time	11100.00	s

Infiltration Coefficient *f* - ms^-1



NOTES:
See PT1302 for detailed soil description.
No fall in water level. Assumed low permeability.

Photographic Record





Number:	**TPPT1302**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record



Number:	**TPPT1302**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1306
Sheet 1 of 1

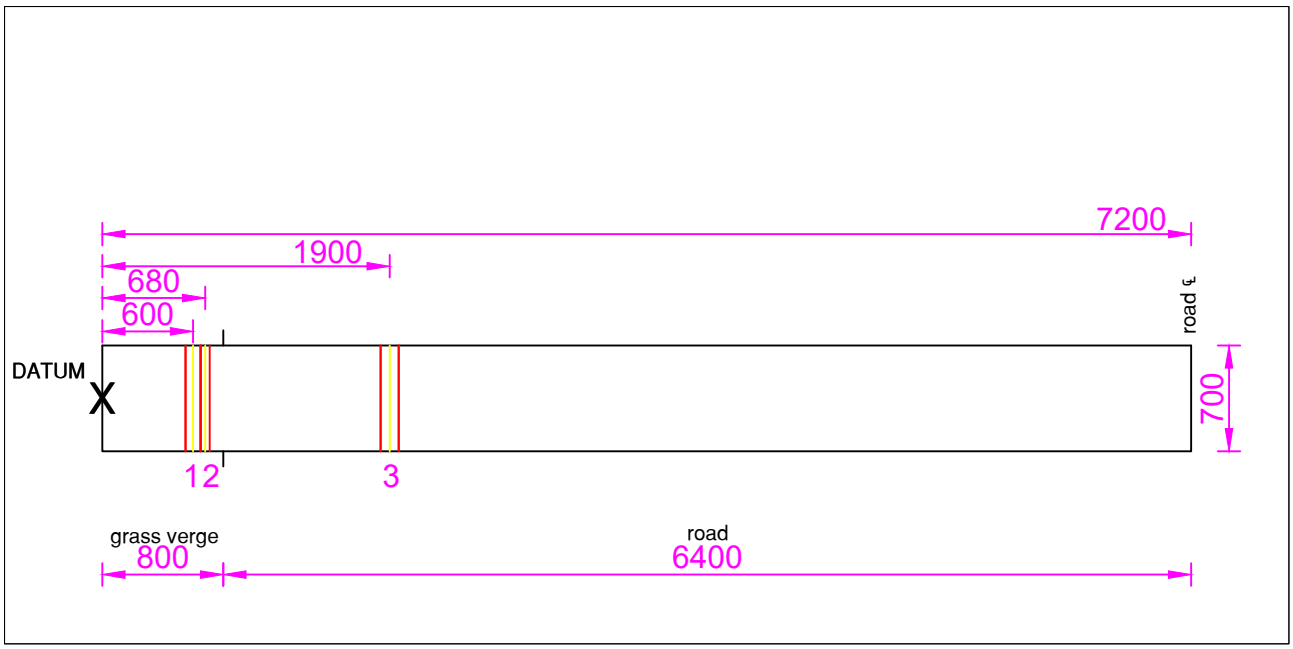
Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287629E - 240318N **Level:** 74.80m OD	**Date** 28/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 7.20 × 0.70 **Depth:** 2.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							Bituminous surfacing.
				0.25	74.55		(MADE GROUND) Gravel and cobbles
				0.62	74.18		Soft to firm, brown, slightly sandy gravelly CLAY with a high cobble content and a low boulder content. Sand is fine to coarse. Gravel is fine to coarse and are sub-angular to rounded. Cobbles range in dia from 63mm-200mm and are angular to rounded. Boulders range in dia from 200mm-350mm and are angular to rounded. Strata could possibly be fill.
▼	1.00 - 1.50 1.00 - 1.50	B D					
				2.00	72.80		End of Pit at 2.000m

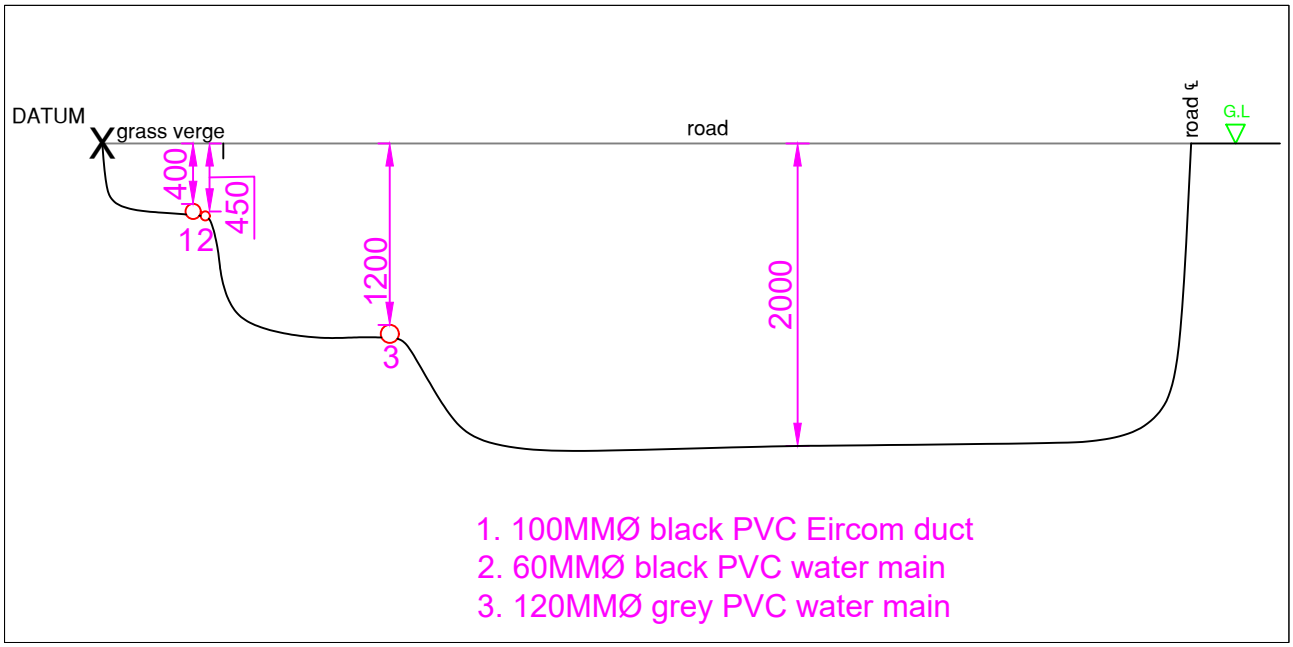
Stability: Good.
Plant: 2.7t tracked excavator.
Backfill: Lean mix.

Groundwater: 1.50m: Slow rate of flow.

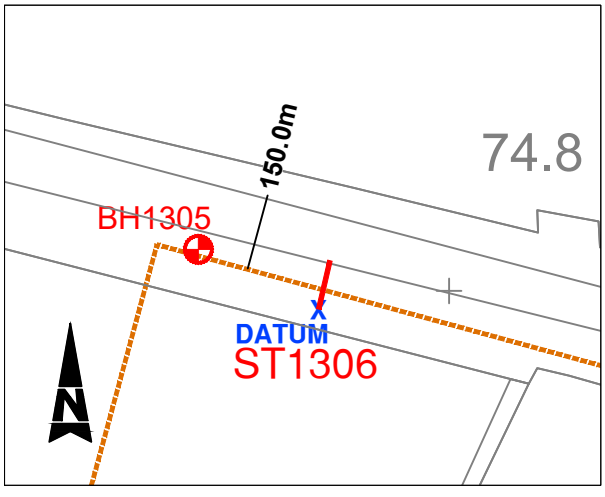
Remarks: Slit trench terminated at 2m bgl. Refer to DWG P20078 ST1306 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287628.7
NORTHING: 240317.9
LEVEL: 74.804mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 7.20m
WIDTH: 0.70m
DEPTH: 2.00m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	02/09/2020
LOGGED BY:	DATE:
K.H.	28/08/2020

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1306

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1306

pgl priority geotechnical

Photographic Record





Number:	**ST1306**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record





Number:	**ST1306**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1307
Sheet 1 of 1

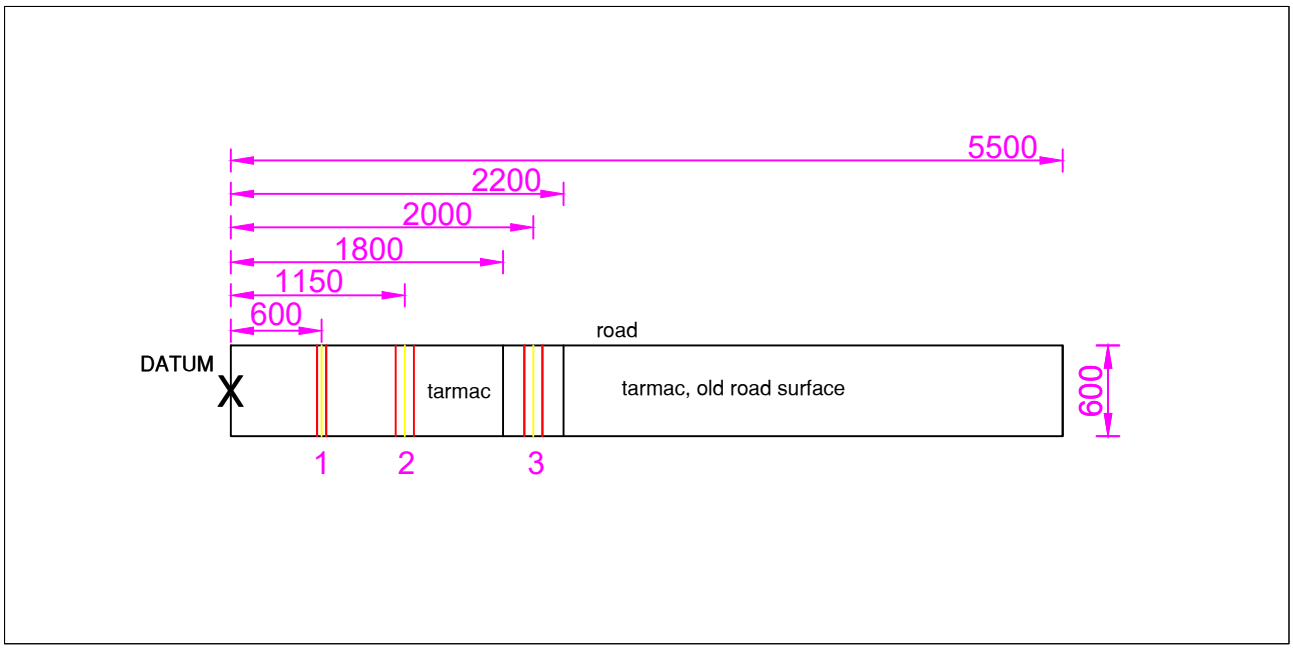
Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287693E - 240300N **Level:** 74.99m OD	**Date** 28/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 5.50 x 0.65 **Depth:** 1.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.10 - 0.60	B		0.10	74.89		Bituminous surfacing.
							(MADE GROUND) Loose, brown, silty very sandy GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse and are angular to sub-rounded. Cobbles range in dia from 63mm-200mm and are sub-angular to rounded. Boulders range in dia from 200mm-250mm and are sub-angular to rounded.
				0.60	74.39		Bituminous material. (old road surface)
				1.00	73.99		End of Pit at 1.000m

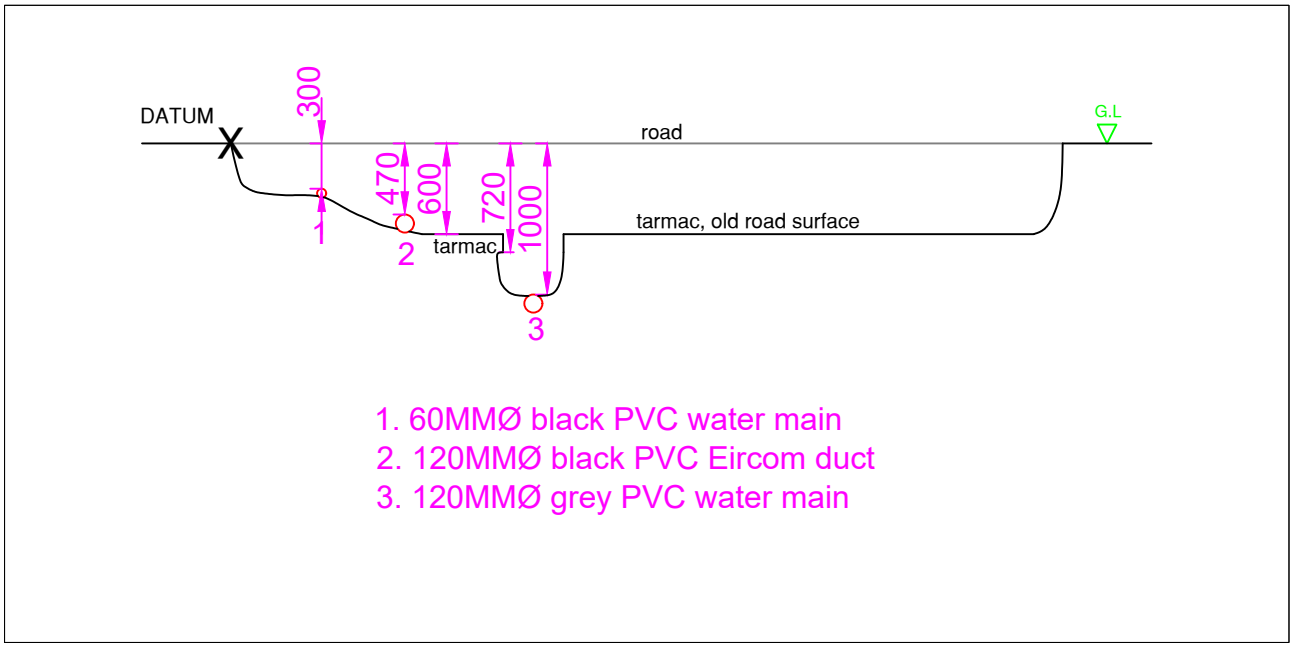
Stability: Good.
Plant: 2.7t tracked excavator.
Backfill: Lean mix.

Groundwater: None encountered.

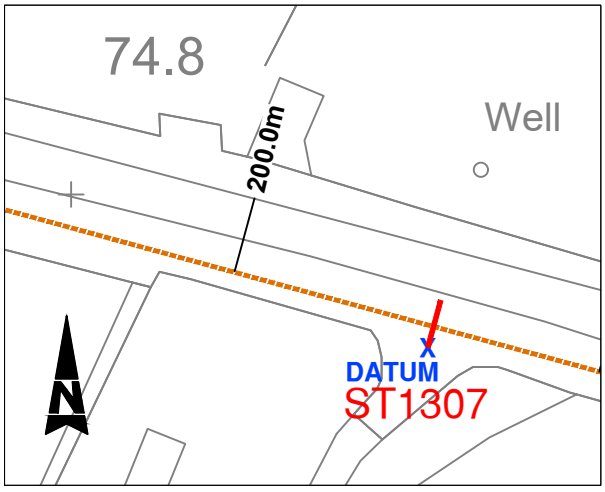
Remarks: Slit trench terminated at 1m bgl. Refer to DWG P20078 ST1307 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287693.1
NORTHING: 240300.1
LEVEL: 74.987mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 5.50m
WIDTH: 0.60m
DEPTH: 1.00m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		02/09/2020
LOGGED BY:		DATE:
K.H.		28/08/2020
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1307

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1307

pgl priority geotechnical

Photographic Record





Number:	**ST1307**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record





Number:	**ST1307**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1311
Sheet 1 of 1

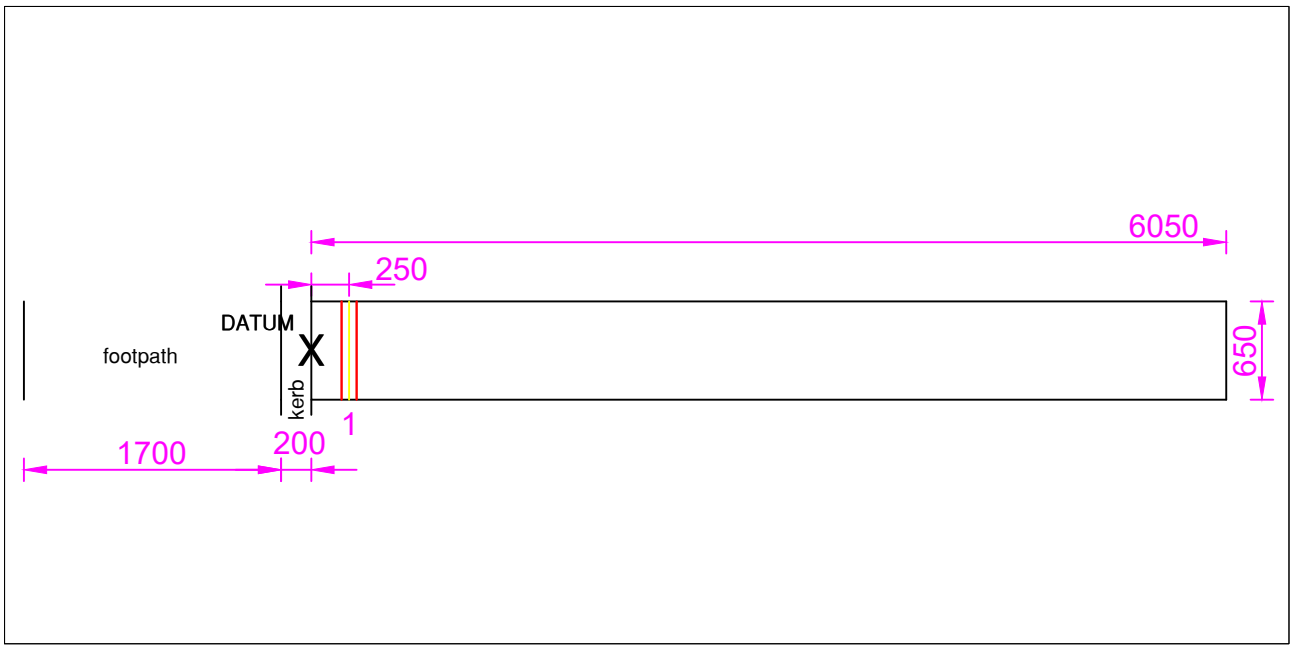
Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287480E - 240370N **Level:** 77.84m OD	**Date** 31/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 6.05 × 0.65 **Depth:** 2.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.14	77.70		Bituminous surfacing.
	1.00 - 1.50	B					(MADE GROUND) Loose, brown, slightly silty very gravelly SAND with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse and angular to rounded. Cobbles are 63mm to 200mm dia and sub-angular to rounded.
▼	1.60 - 2.00 1.60 - 2.00	B D		1.60	76.24		Firm, brown, slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse and angular to sub-rounded. Cobbles are 63mm to 200mm dia and sub-angular to rounded.
				2.00	75.84		End of Pit at 2.000m

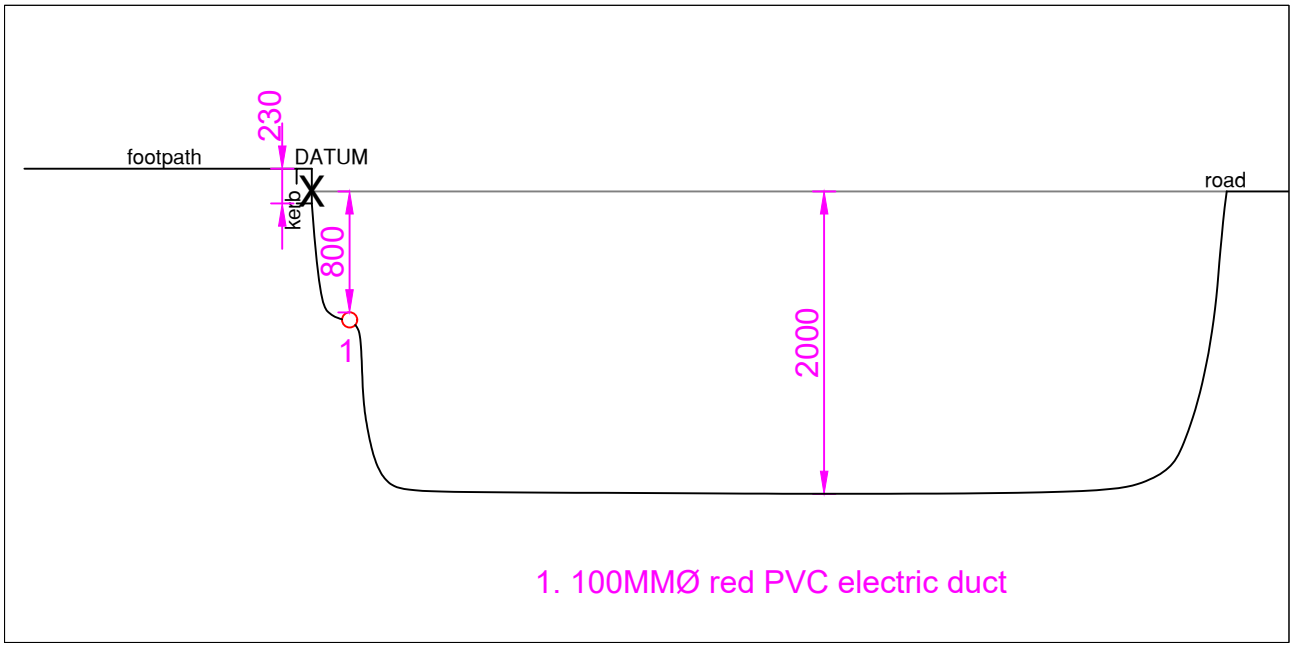
Stability: Moderate.
Plant: 2.7t tracked excavator.
Backfill: Lean mix concrete and BM.

Groundwater: GW encountered at 1.60m bgl.

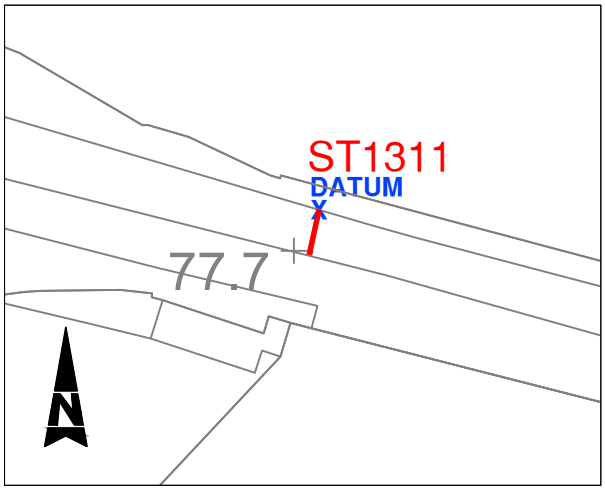
Remarks: Slit trench terminated at 2.00m bgl. Refer to DWG P20078 ST1311 for cross section detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287479.9
NORTHING: 240370.1
LEVEL: 77.841mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 6.05m
WIDTH: 0.65m
DEPTH: 2.00m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	09/09/2020
LOGGED BY:	DATE:
K.H.	31/08/2020

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1311

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1311

pgl priority geotechnical

Photographic Record





Number:	**ST1311**	**Project** **Project No**	LIHAF - Kilcock P20078	

Photographic Record



Number:	**ST1311**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1312
Sheet 1 of 1

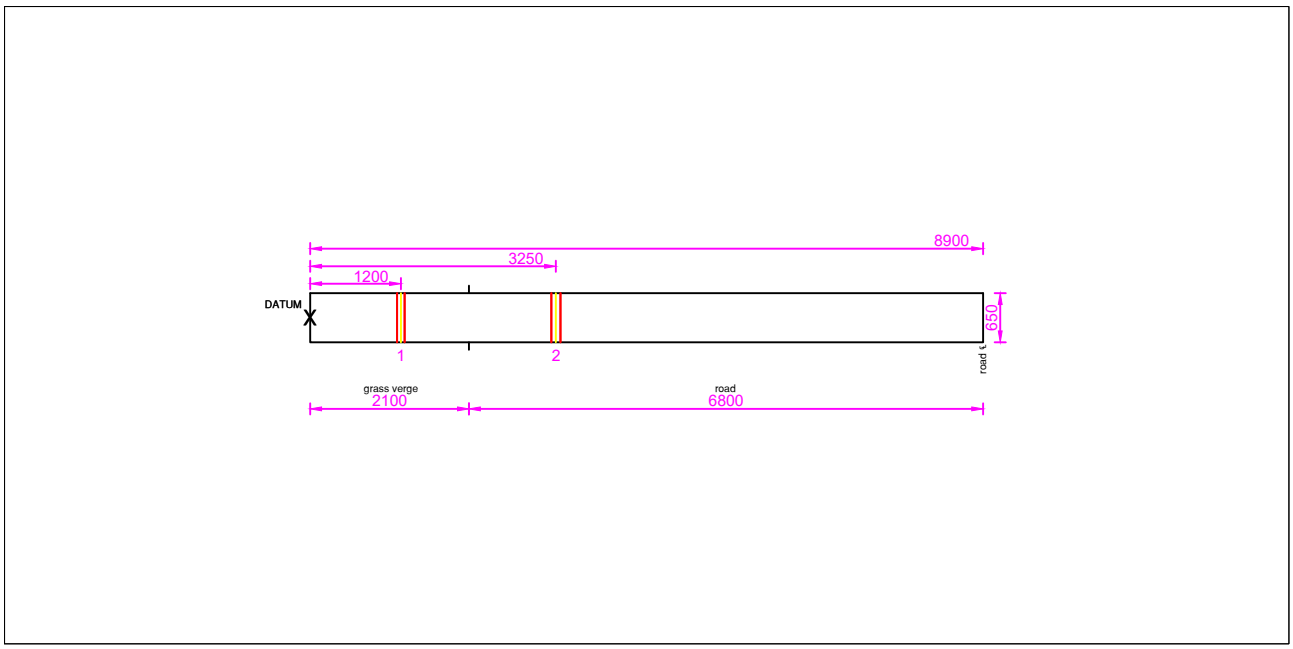
Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287544E - 240338N **Level:** 76.43m OD	**Date** 31/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 8.90 × 0.65 **Depth:** 2.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.15	76.28		Bituminous surfacing.
							(MADE GROUND) GRAVEL with cobble content.
				0.35	76.08		Firm to stiff, brown, slightly gravelly silty sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse and angular to rounded. Cobbles are 63mm to 200mm dia and angular to rounded.
▼	1.00 - 1.50 1.00 - 1.50	B D					
				2.00	74.43		End of Pit at 2.000m

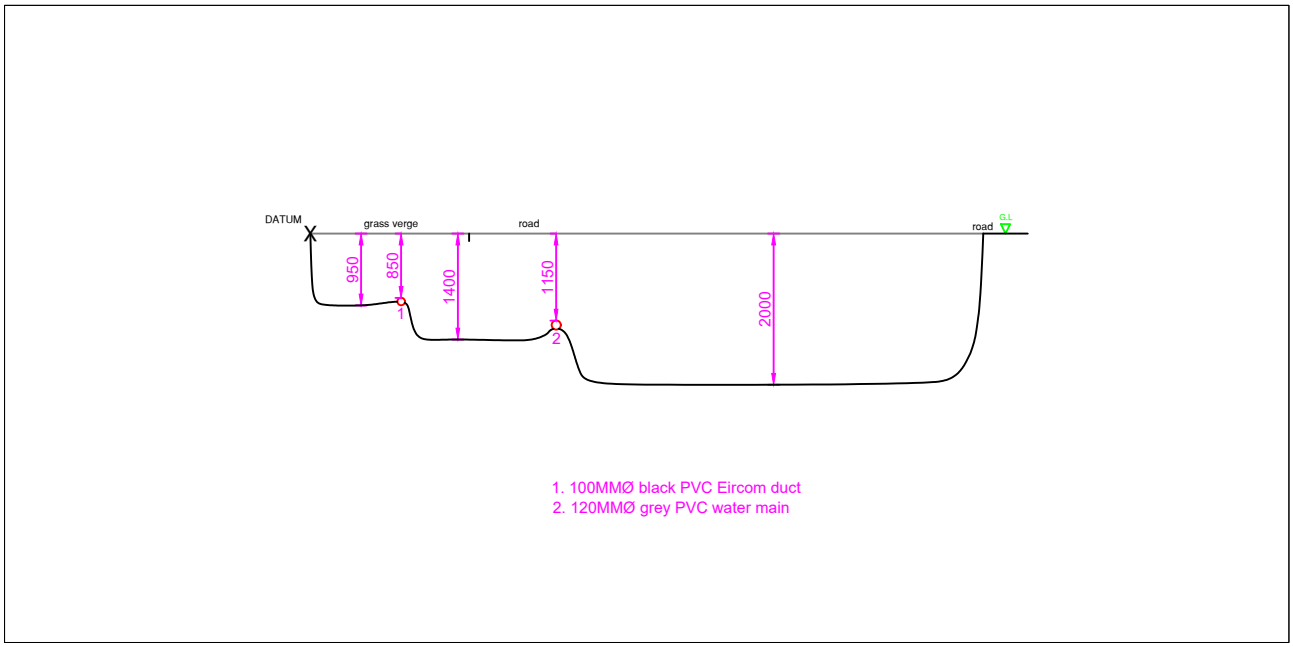
Stability: Good.
Plant: 2.7t tracked excavator.
Backfill: Lean mix concrete and BM.

Groundwater: GW encountered at 1.35m bgl.

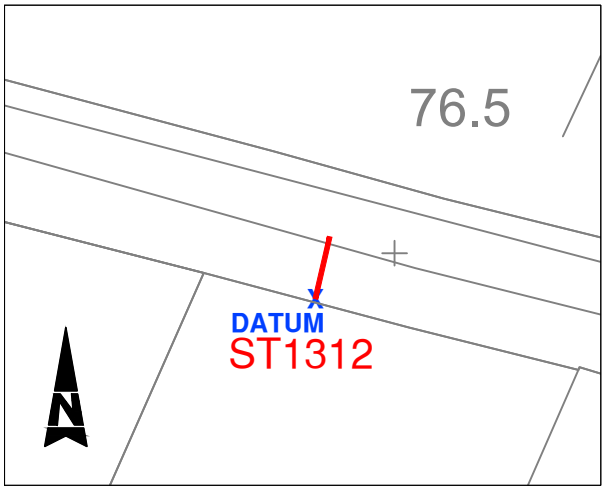
Remarks: Slit trench terminated at 2.00m bgl. Refer to DWG P20078 ST1312 for cross section detail.



SLIT TRENCH PLAN, 1:100 ON A4



SLIT TRENCH SECTION, 1:100 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287543.5
NORTHING: 240338.3
LEVEL: 76.43mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 8.90m
WIDTH: 0.65m
DEPTH: 2.00m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		09/09/2020
LOGGED BY:		DATE:
K.H.		31/08/2020
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1312

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1312

pgl priority geotechnical

Photographic Record





Number:	**ST1312**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

Photographic Record





Number:	**ST1312**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

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

Trial Pit No
ST1313
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287766E - 240297N **Level:** 75.90m OD	**Date** 27/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 7.74 × 0.65 **Depth:** 2.00m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

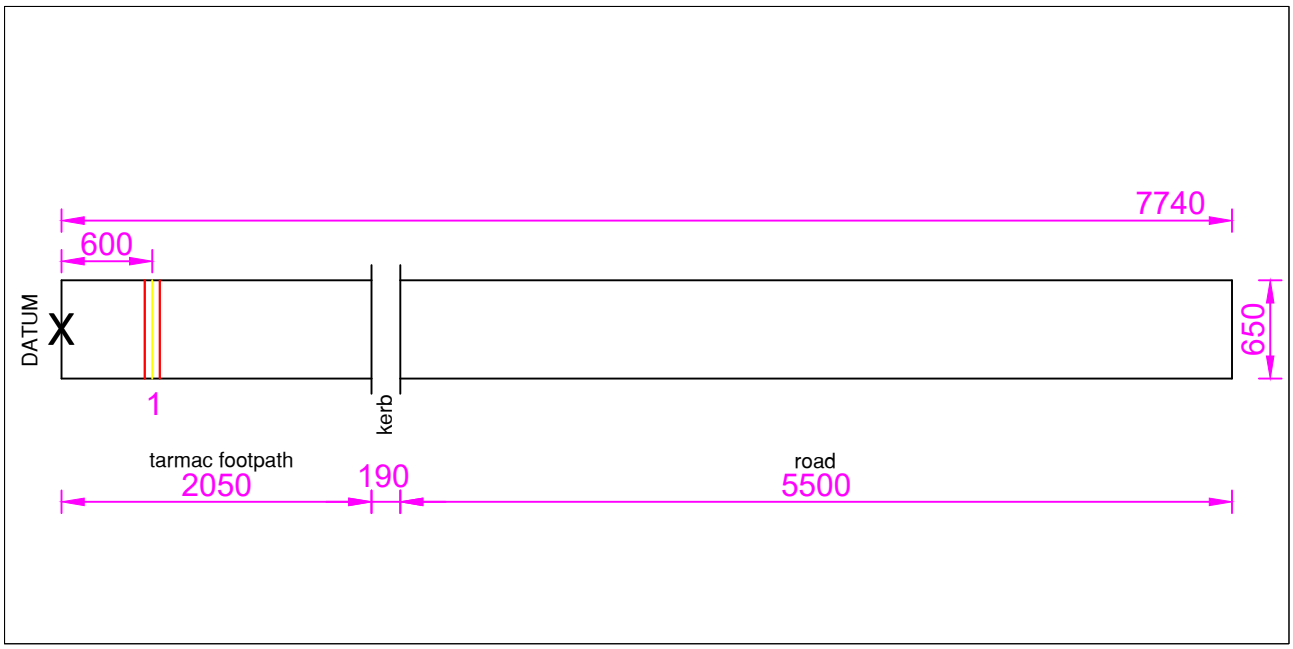
Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.15	75.75		Bituminous surfacing.
	1.00 - 1.50	B					Brown, brown, loose, slightly clayey very sandy GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse and angular to rounded. Cobbles range in dia from 63mm-200mm and are angular to rounded. Boulders range in dia from 200mm-300mm and are angular to rounded. (Possible fill)
				2.00	73.90		End of Pit at 2.000m

1 2 3 4 5

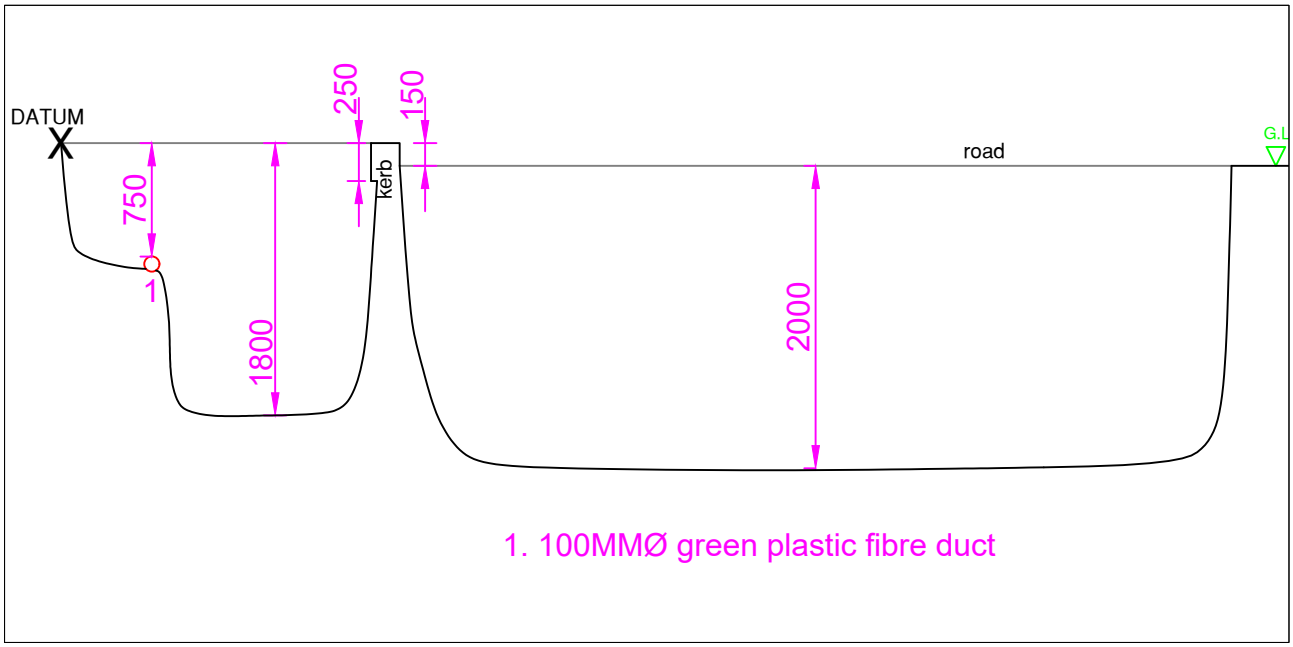
Stability: Moderate.
Plant: 2.7t tracked excavator.
Backfill: Lean mix.

Groundwater: None encountered.

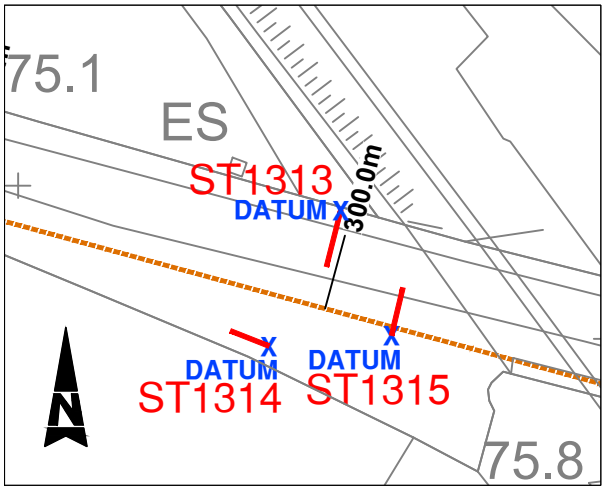
Remarks: Slit trench terminated at 2m bgl. Refer to DWG P20078 ST1313 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287766.1
NORTHING: 240296.8
LEVEL: 75.904mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 7.74m
WIDTH: 0.65m
DEPTH: 2.00m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	02/09/2020
LOGGED BY:	DATE:
K.H.	27/08/2020

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1313

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1313

pgl priority geotechnical

Photographic Record





Number:	**ST1313**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1314
Sheet 1 of 1

Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287757E - 240279N **Level:** 75.83m OD	**Date** 27/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 4.50 × 0.70 **Depth:** 1.20m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH.

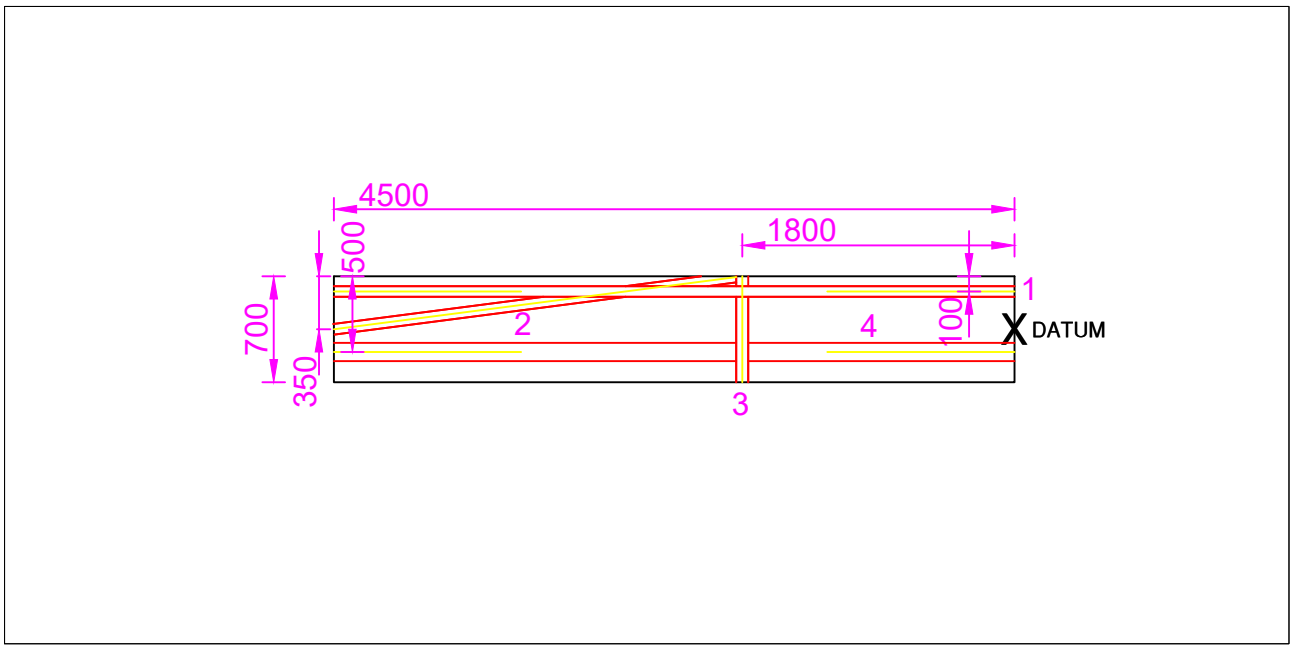
Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(MADE GROUND) Brown, slightly sandy gravelly SILT with a low cobble content and a low boulder content. Sand is fine to coarse. Gravel is fine to coarse and are angular to rounded. Cobbles range in dia from 63mm-200mm and are sub-angular to sub-rounded. Boulders range in dia from 200mm-400mm and are sub-angular to sub-rounded.
				0.70	75.13		Bituminous material.
	0.90 - 1.20	B		0.90	74.93		Brown, slightly sandy gravelly SILT with a high cobble content and a low boulder content. Sand is fine to coarse. Gravel is fine to coarse and are angular to rounded. Cobbles range in dia from 63mm-200mm and are sub-angular to sub-rounded. Boulders range in dia from 200mm-350mm and are sub-angular to sub-rounded.
				1.20	74.63		End of Pit at 1.200m

1
2
3
4
5

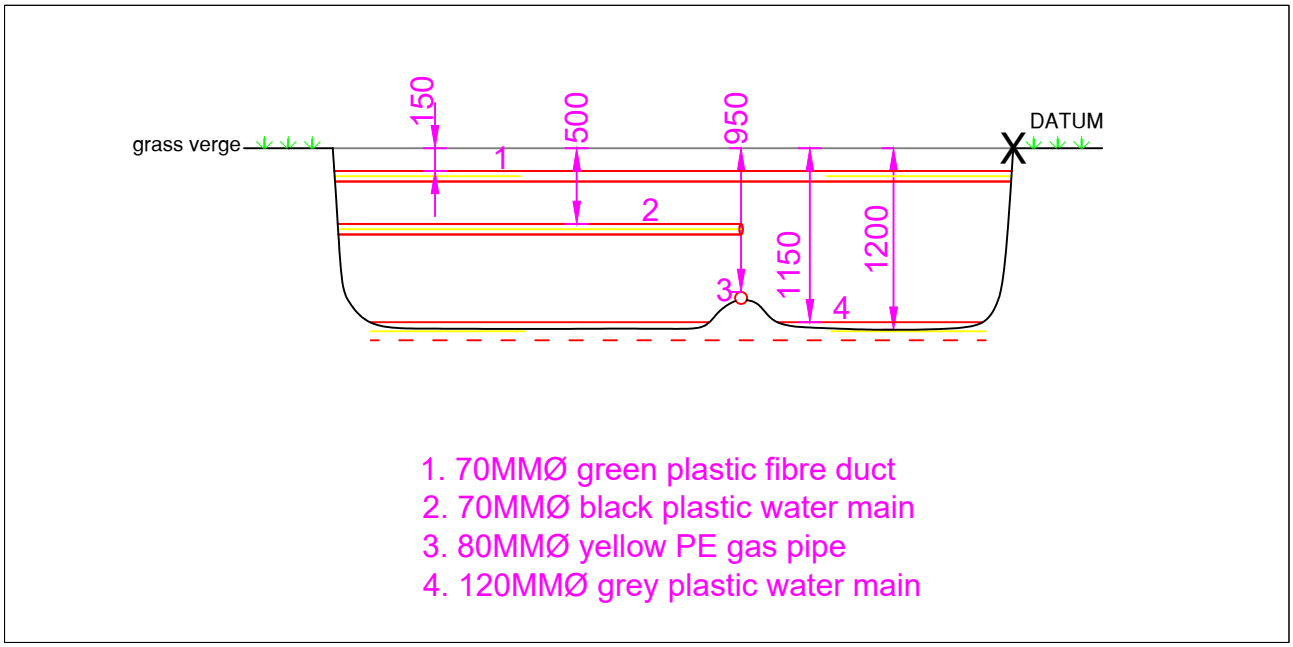
Stability: Good.
Plant: 2.7t tracked excavator.
Backfill: Arisings.

Groundwater: None encountered.

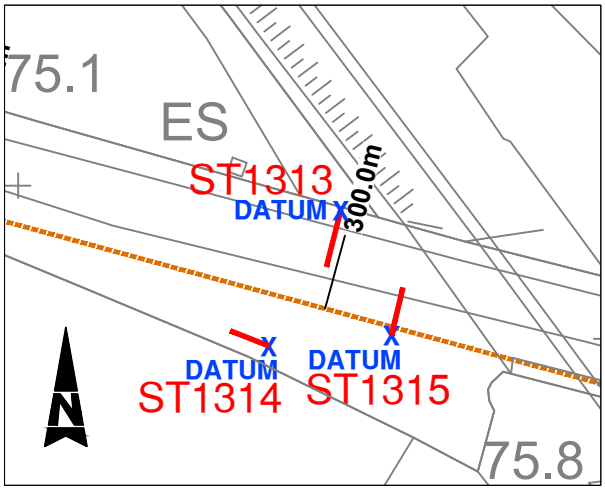
Remarks: Slit trench terminated at 1.2m bgl. Refer to DWG P20078 ST1314 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287756.6
NORTHING: 240278.8
LEVEL: 75.83mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 4.50m
WIDTH: 0.70m
DEPTH: 1.20m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	03/09/2020
LOGGED BY:	DATE:
K.H.	07/08/2020

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1314

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1314

pgl priority geotechnical

Photographic Record



Number:	**ST1314**	**Project** **Project No**	LIHAF - Kilcock P20078	

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

Trial Pit No
ST1315
Sheet 1 of 1

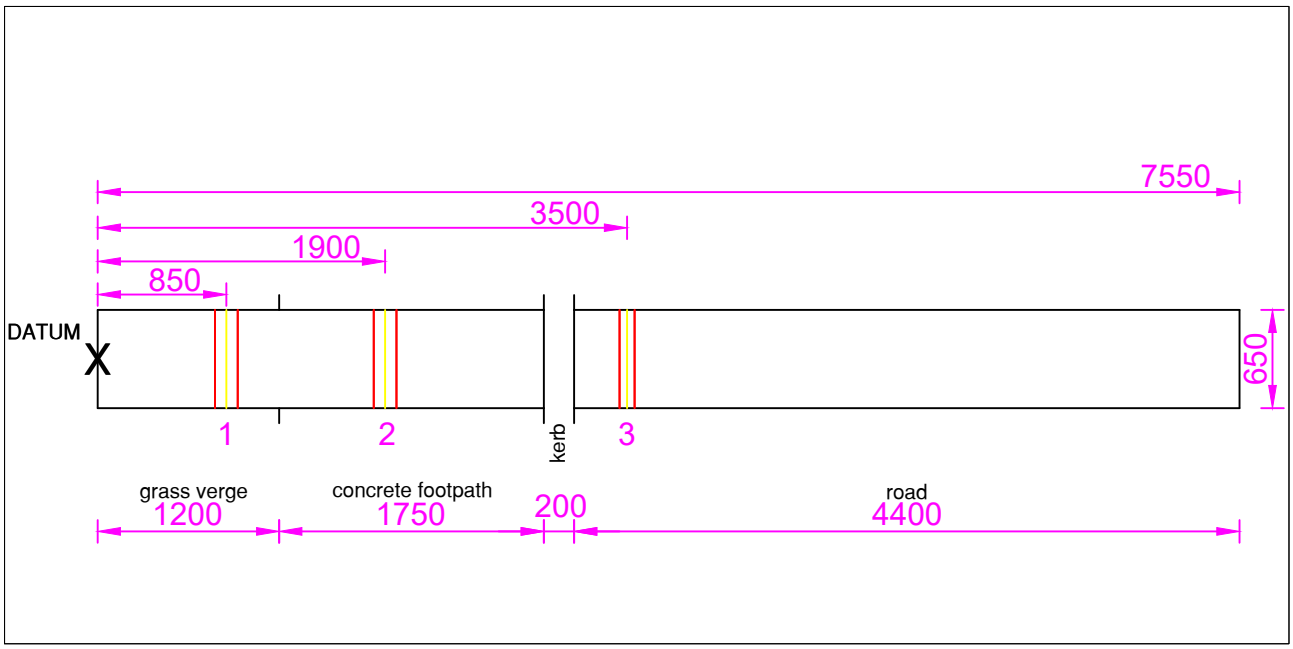
Project Name: LIHAF - Kilcock	**Project No.** P20078_1	**Co-ords:** 287773E - 240280N **Level:** 75.94m OD	**Date** 27/08/2020
Location: Kilcock, Co. Kildare		**Dimensions (m):** 2.95 × 0.65 **Depth:** 1.25m BGL	**Scale** 1:25
Client: Irish Water			**Logged** KH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	75.84		Concrete
							(MADE GROUND) GRAVEL.
				1.10	74.84		
				1.25	74.69		(MADE GROUND) Brown, slightly sandy gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse. Cobbles range in dia from 63mm-200mm and are angular to sub-rounded. Boulders range in dia from 200mm-300mm and are angular to sub-rounded.
							End of Pit at 1.250m

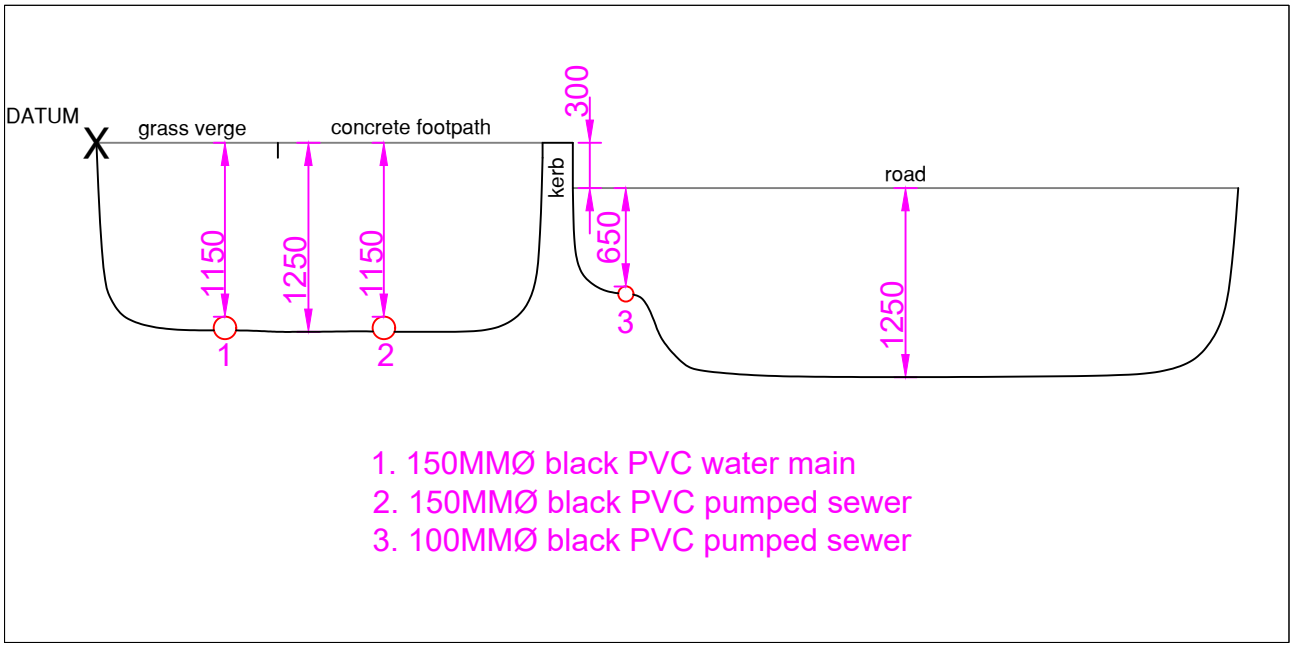
Stability: Good.
Plant: 2.7t tracked excavator.
Backfill: Lean mix.

Groundwater: None encountered.

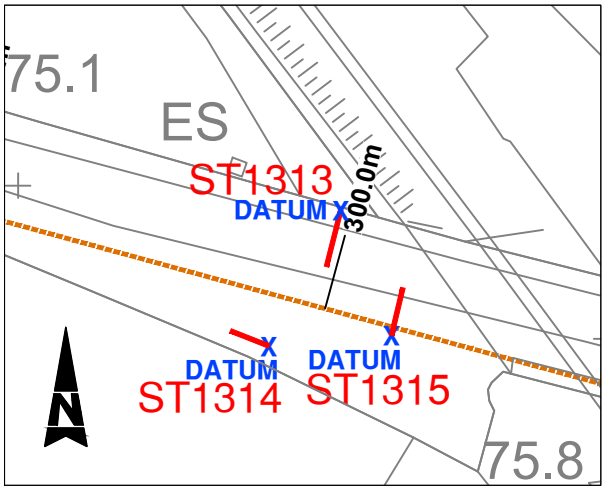
Remarks: Slit trench terminated at 1.25m bgl. Refer to DWG P20078 ST1315 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 287772.8
NORTHING: 240280.2
LEVEL: 75.938mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 7.55m
WIDTH: 0.65m
DEPTH: 2.950m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	02/09/2020
LOGGED BY:	DATE:
K.H.	27/08/2020

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST1315

JOB NAME:
East Midlands LIHAF.
Kilcock

JOB NUMBER:
P20078

DRAWING NUMBER:
P20078-ST1315

pgl priority geotechnical

Photographic Record





Number:	**ST1315**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

Photographic Record





Number:	**ST1315**	**Project**	LIHAF - Kilcock	
		Project No	P20078	

APPENDIX B

LABORATORY RESULTS

Type
Natural Moisture Content
Atterberg Limit
Particle size distribution (grading)
Hydrometer analysis on fines
pH Sulphate SO_4 water soluble Sulphate SO_4 acid soluble
Organic content
Total sulphur
California bearing ratio (CBR)
Dry density/ Moisture content relationship
Moisture Condition Value (MCV)
MCV Relationship
Measurement of electrical Resistivity
Determination of shear strength using small direct shearbox
Waste acceptance criteria (WAC)

Point load index (I_{P50})
Unconfined compressive strength (UCS)

KEY TO SYMBOLS - LABORATORY TEST RESULT

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

pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**LIHAF - Kilcock**	**P20078_1**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH1303	3	1.5	B	Slightly sandy gravelly CLAY	16	30	18	12	68.6
BH1303	5	2.5	B	Slightly sandy gravelly CLAY with low cobble content		28	17	11	61.4
BH1304	1	0.5	B	Slightly sandy slightly gravelly CLAY		41	25	16	81.7
BH1304	3	1.5	B	Sandy very clayey GRAVEL with medium cobble content	17	32	20	12	56.3
BH1304	5	2.5	B	Very sandy very clayey GRAVEL		26	17	9	58.4
BH1305	1	0.5	B	Slightly sandy gravelly SILT with medium cobble content		42	28	14	62.1
BH1305	3	1.5	B	Slightly sandy gravelly CLAY	14	29	18	11	64.5
BH1305	5	2.5	B	Slightly sandy gravelly CLAY	17	28	17	11	67.4
ST1306	1	1	B	Slightly sandy slightly gravelly SILT	29	42	28	14	84.6
ST1311	2	1.6	B	Slightly sandy slightly gravelly CLAY with low cobble content	23	34	21	13	71.5
ST1312	1	1	B	Slightly gravelly slightly sandy CLAY		34	21	13	78.5
ST1313	1	1	B	Slightly clayey very sandy GRAVEL	10	23	15	8	30.4
ST1314	1	0.9	B	Very silty vey sandy GRAVEL		52	35	17	42.2
TP1301	3	2	B	Slightly sandy gravelly CLAY		25	17	8	57.2
TP1306	1	0.5	B	Slightly sandy slightly gravelly CLAY		41	25	16	76.4
TP1306	3	1.5	B	Sandy very clayey GRAVEL with low cobble content		30	20	10	50.3
TP1307	3	1	B	Clayey vey sandy GRAVEL with low cobble content		30	21	9	49.1
TP1307	5	2	B	Slightly sandy gravelly CLAY with medium cobble content	18				
TP1308	1	0.2	B	Slightly gravelly slightly sandy CLAY		41	24	17	81.8
TP1308	3	1.5	B	Slightly sandy gravelly CLAY with high cobble content	14				

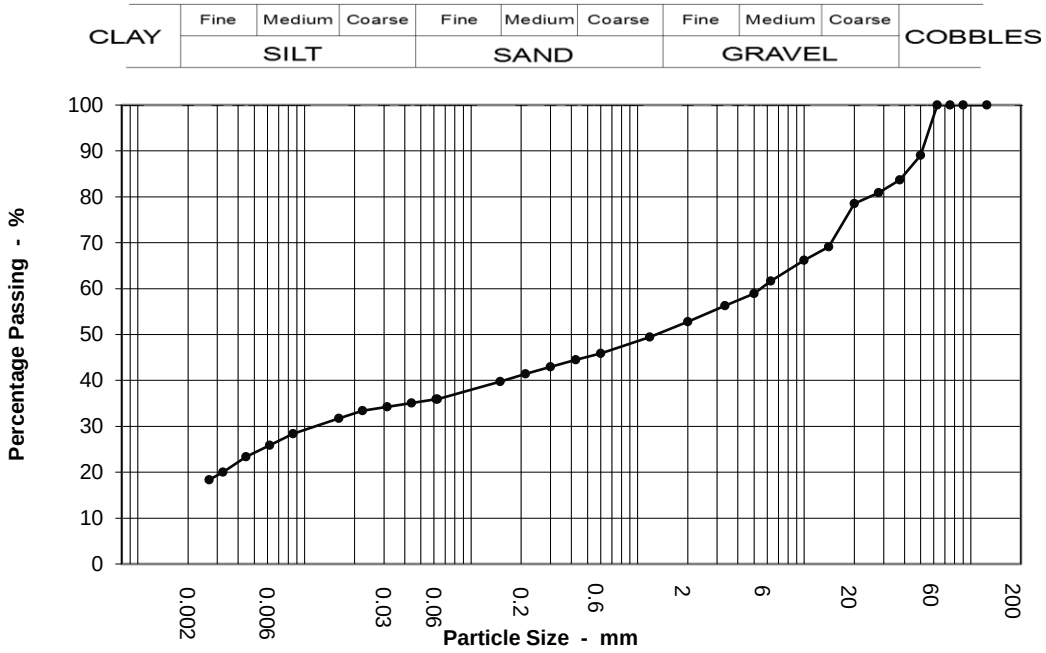
pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**LIHAF - Kilcock**	**P20078_1**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
TP1308	5	2.5	B	Very sandy very clayey GRAVEL		30	18	12	56.9
TP1309	3	1.5	B	Slightly sandy slightly gravelly CLAY with low cobble content		32	19	13	72.1
TP1309	4	1.5	D	Slightly sandy slightly gravelly CLAY with low cobble content	16				
TP1310	3	1.5	B	Slightly sandy gravelly CLAY		30	18	12	63.1
TP1311	3	1.5	B	Slightly sandy gravelly CLAY with high cobble content		32	20	12	71.5
TP1311	4	1.5	D	Slightly sandy gravelly CLAY	21				
TPPT1302	3	1.5	B	Slightly sandy gravelly CLAY with low cobble content		31	18	13	68.3

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	36
90	100	0.044	35
75	100	0.031	34
63	100	0.022	33
50	89	0.016	32
37.5	84	0.009	28
28	81	0.006	26
20	79	0.004	23
14	69	0.003	20
10	66	0.003	18
6.3	62	0.001	14
5	59		
3.35	56		
2	53		
1.18	49		
0.6	46		
0.425	44		
0.3	43		
0.212	41		
0.15	40		
0.063	36		

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

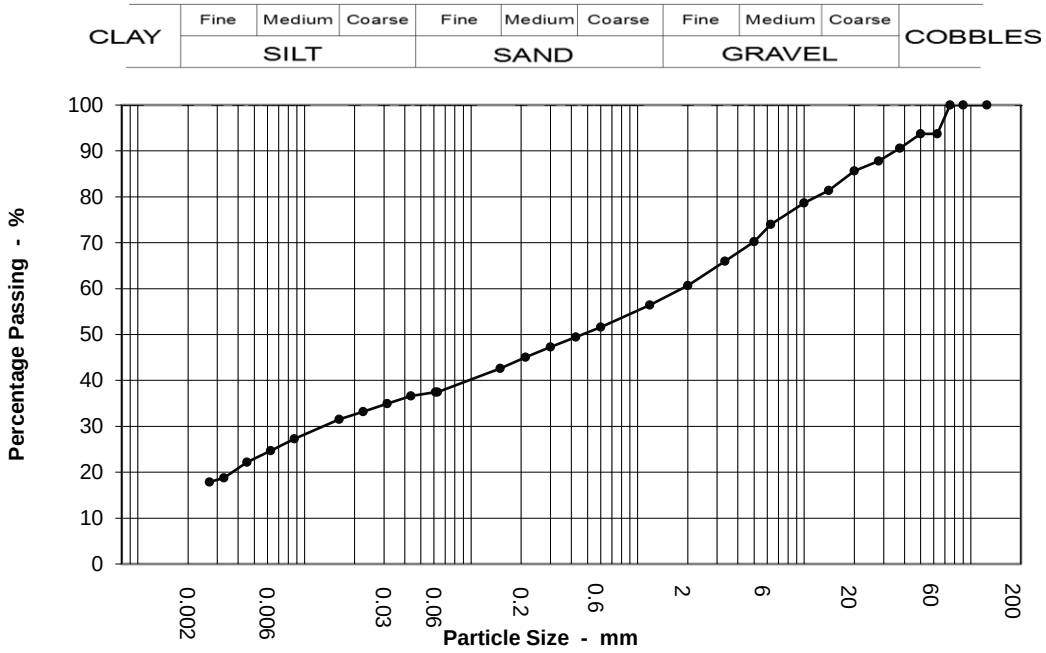
Sample Proportions	
Cobbles	0.0
Gravel	47.0
Sand	17.0
Silt	20.0
Clay	16.0

Grading Analysis	
D100	63.00
D60	5.48
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Location	**LIHAF - Kilcock**	Sample No	5
		Depth	2.50 m
Soil Description	Slightly sandy gravelly CLAY with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	37
90	100	0.044	37
75	100	0.031	35
63	94	0.023	33
50	94	0.016	32
37.5	91	0.009	27
28	88	0.006	25
20	86	0.005	22
14	81	0.003	19
10	79	0.003	18
6.3	74	0.001	14
5	70		
3.35	66		
2	61		
1.18	56		
0.6	52		
0.425	49		
0.3	47		
0.212	45		
0.15	43		
0.063	37		

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

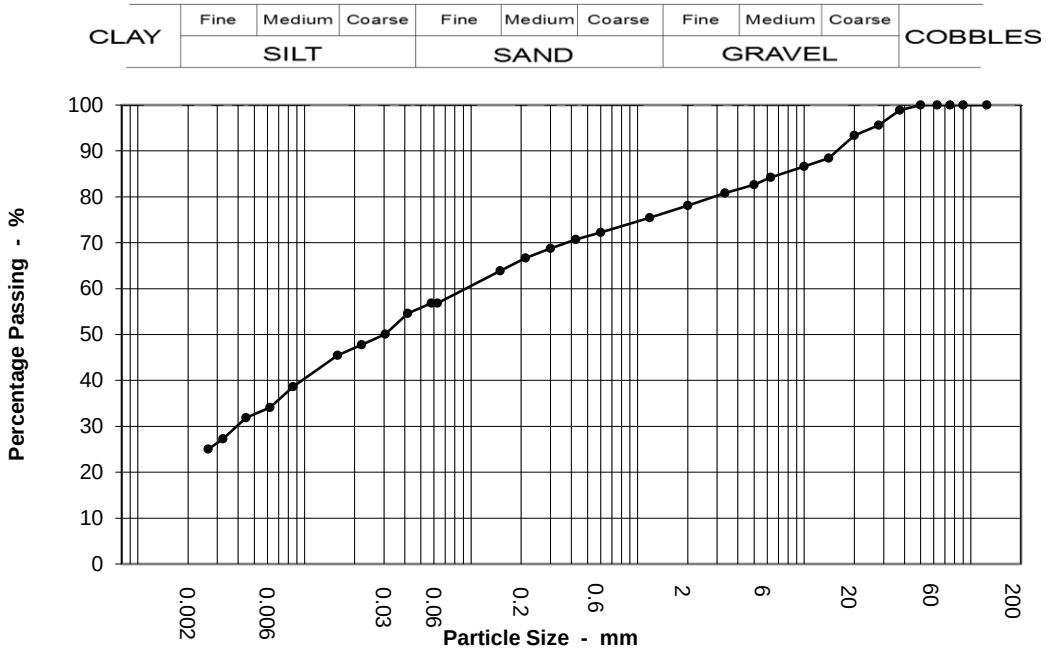
Sample Proportions	
Cobbles	6.0
Gravel	33.0
Sand	23.0
Silt	22.0
Clay	16.0

Grading Analysis	
D100	75.00
D60	1.84
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.50 m
Soil Description	Slightly sandy slightly gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	57
90	100	0.042	55
75	100	0.031	50
63	100	0.022	48
50	100	0.016	45
37.5	99	0.009	39
28	96	0.006	34
20	93	0.004	32
14	88	0.003	27
10	87	0.003	25
6.3	84	0.001	20
5	83		
3.35	81		
2	78		
1.18	75		
0.6	72		
0.425	71		
0.3	69		
0.212	67		
0.15	64		
0.063	57		

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

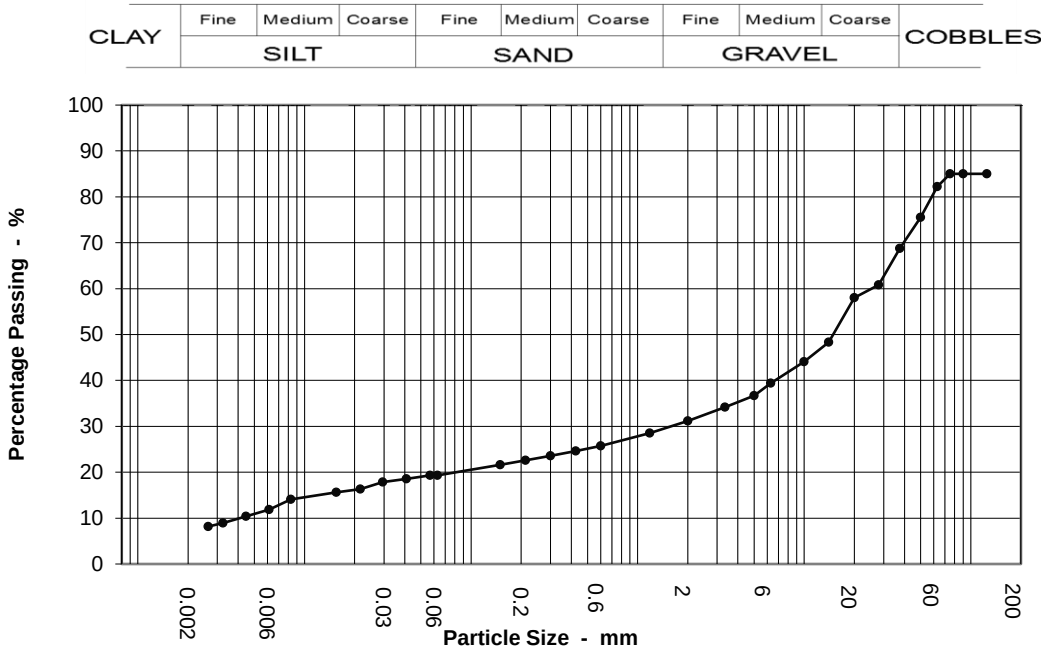
Sample Proportions	
Cobbles	0.0
Gravel	22.0
Sand	21.0
Silt	34.0
Clay	23.0

Grading Analysis	
D100	50.00
D60	0.09
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Sandy very clayey GRAVEL with medium cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	85	0.057	19
90	85	0.041	19
75	85	0.029	18
63	82	0.022	16
50	76	0.016	16
37.5	69	0.008	14
28	61	0.006	12
20	58	0.004	10
14	48	0.003	9
10	44	0.003	8
6.3	39	0.001	7
5	37		
3.35	34		
2	31		
1.18	28		
0.6	26		
0.425	25		
0.3	24		
0.212	23		
0.15	22		
0.063	19		

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

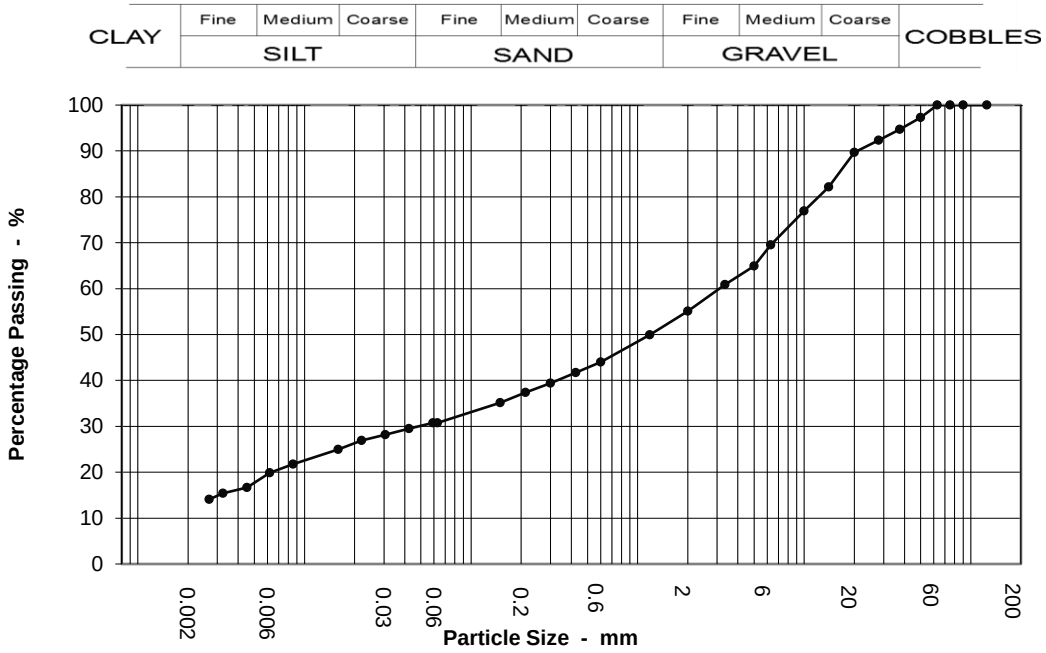
Sample Proportions	
Cobbles	18.0
Gravel	51.0
Sand	12.0
Silt	12.0
Clay	7.0

Grading Analysis	
D100	
D60	25.40
D10	0.00
Uniformity Coefficient	6200.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Location	**LIHAF - Kilcock**	Sample No	5
		Depth	2.50 m
Soil Description	Very sandy very clayey GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	31
90	100	0.042	29
75	100	0.031	28
63	100	0.022	27
50	97	0.016	25
37.5	95	0.009	22
28	92	0.006	20
20	90	0.005	17
14	82	0.003	15
10	77	0.003	14
6.3	69	0.001	11
5	65		
3.35	61		
2	55		
1.18	50		
0.6	44		
0.425	42		
0.3	39		
0.212	37		
0.15	35		
0.063	31		

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

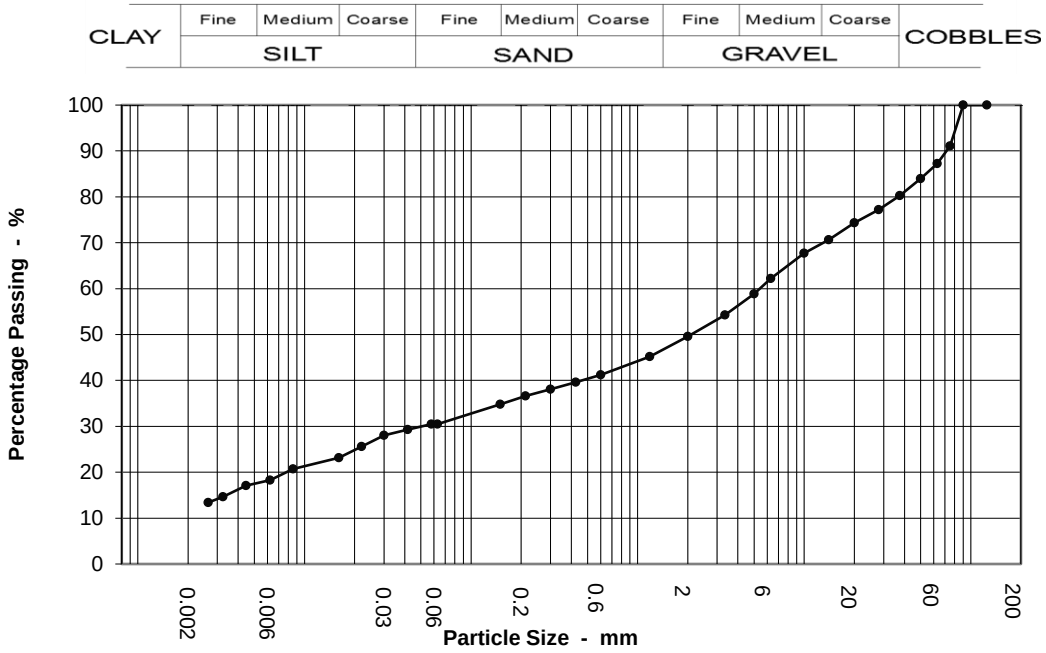
Sample Proportions	
Cobbles	0.0
Gravel	45.0
Sand	24.0
Silt	18.0
Clay	13.0

Grading Analysis	
D100	63.00
D60	3.10
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1305
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.50 m
Soil Description	Slightly sandy gravelly SILT with medium cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	30
90	100	0.042	29
75	91	0.030	28
63	87	0.022	26
50	84	0.016	23
37.5	80	0.009	21
28	77	0.006	18
20	74	0.004	17
14	71	0.003	15
10	68	0.003	13
6.3	62	0.001	11
5	59		
3.35	54		
2	50		
1.18	45		
0.6	41		
0.425	40		
0.3	38		
0.212	37		
0.15	35		
0.063	30		

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

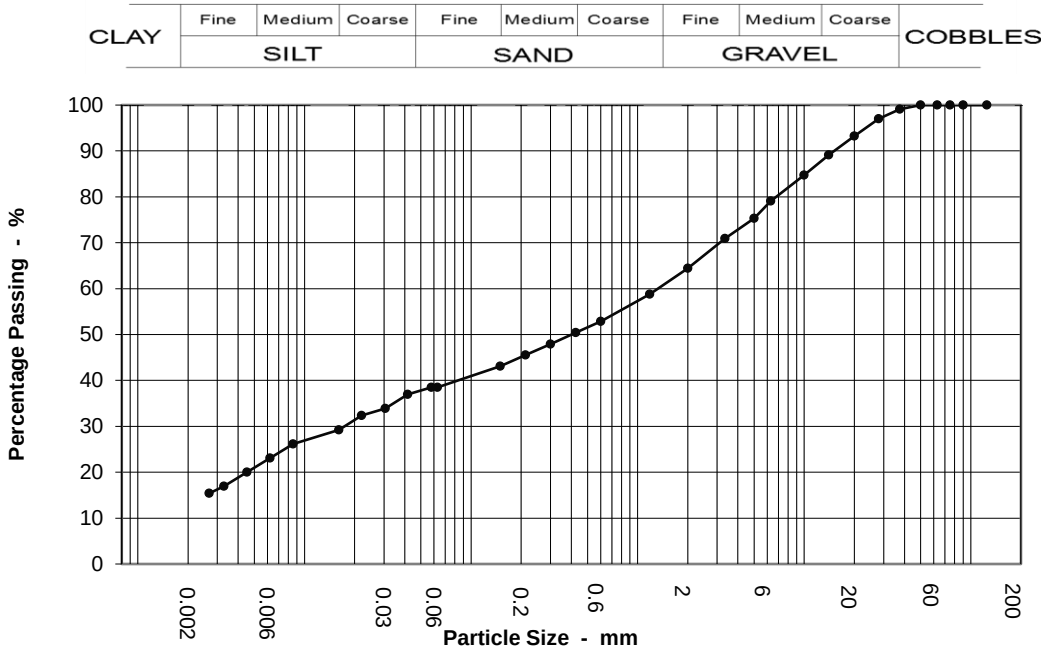
Sample Proportions	
Cobbles	13.0
Gravel	38.0
Sand	19.0
Silt	18.0
Clay	12.0

Grading Analysis	
D100	90.00
D60	5.40
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1305
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	38
90	100	0.042	37
75	100	0.031	34
63	100	0.022	32
50	100	0.016	29
37.5	99	0.009	26
28	97	0.006	23
20	93	0.005	20
14	89	0.003	17
10	85	0.003	15
6.3	79	0.001	14
5	75		
3.35	71		
2	64		
1.18	59		
0.6	53		
0.425	50		
0.3	48		
0.212	46		
0.15	43		
0.063	38		

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

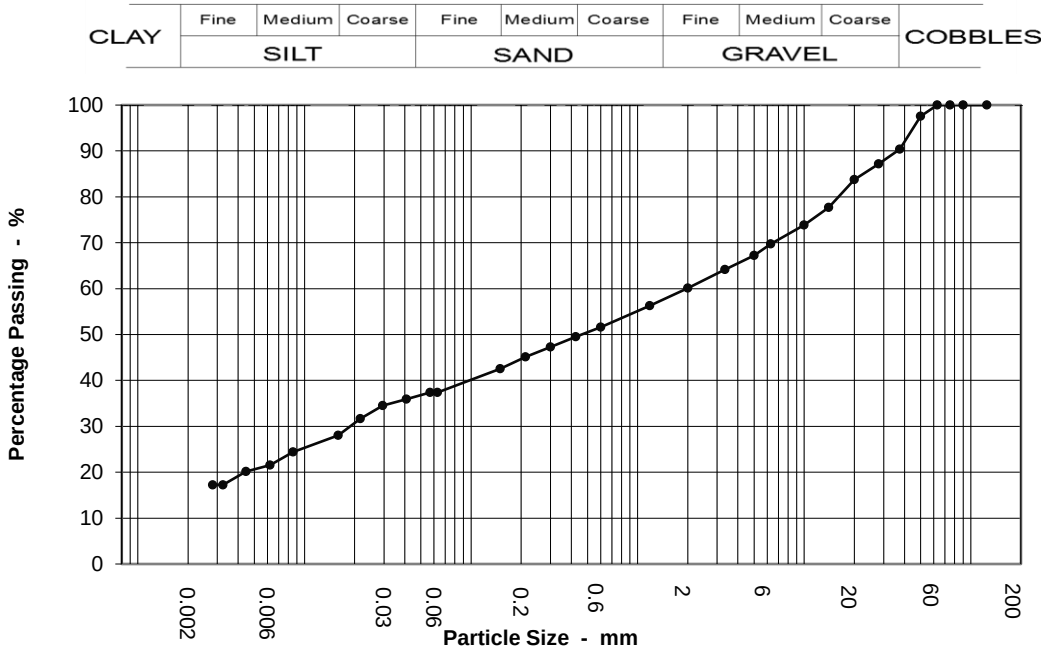
Sample Proportions	
Cobbles	0.0
Gravel	36.0
Sand	26.0
Silt	24.0
Clay	15.0

Grading Analysis	
D100	50.00
D60	1.32
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1305
Location	**LIHAF - Kilcock**	Sample No	5
		Depth	2.50 m
Soil Description	Slightly sandy gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.057	37
90	100	0.041	36
75	100	0.029	35
63	100	0.022	32
50	98	0.016	28
37.5	90	0.009	24
28	87	0.006	22
20	84	0.004	20
14	78	0.003	17
10	74	0.003	17
6.3	70	0.001	10
5	67		
3.35	64		
2	60		
1.18	56		
0.6	52		
0.425	50		
0.3	47		
0.212	45		
0.15	43		
0.063	37		

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

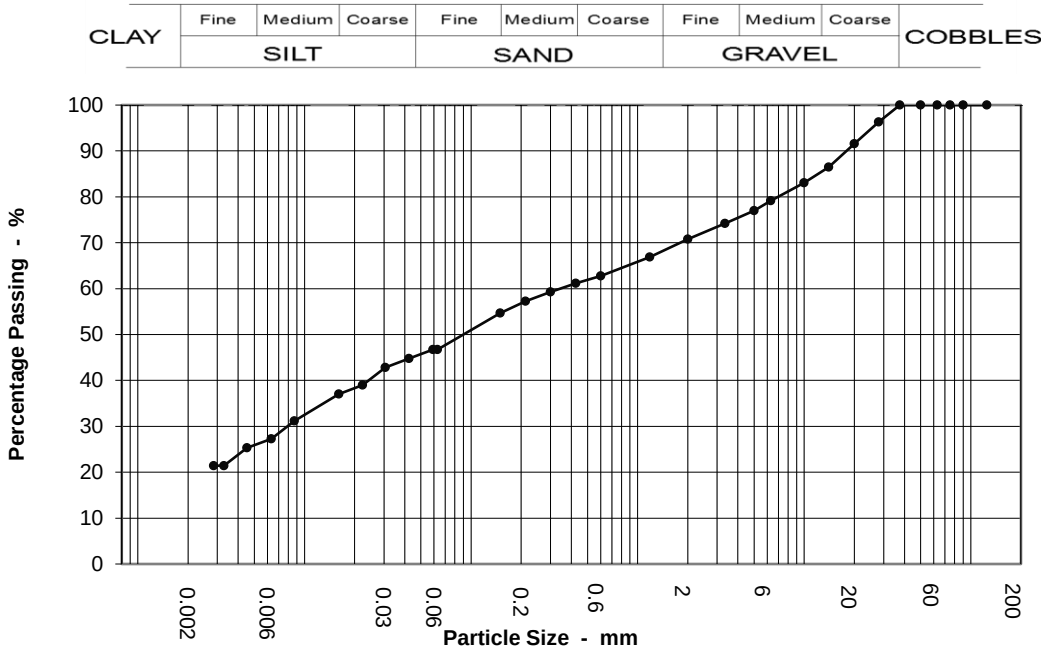
Sample Proportions	
Cobbles	0.0
Gravel	40.0
Sand	23.0
Silt	22.0
Clay	15.0

Grading Analysis	
D100	63.00
D60	1.96
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1306
Location	**LIHAF - Kilcock**	Sample No	1
		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	0.059	47
90	100	0.042	45
75	100	0.031	43
63	100	0.022	39
50	100	0.016	37
37.5	100	0.009	31
28	96	0.006	27
20	92	0.005	25
14	86	0.003	21
10	83	0.003	21
6.3	79	0.001	12
5	77		
3.35	74		
2	71		
1.18	67		
0.6	63		
0.425	61		
0.3	59		
0.212	57		
0.15	55		
0.063	47		

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

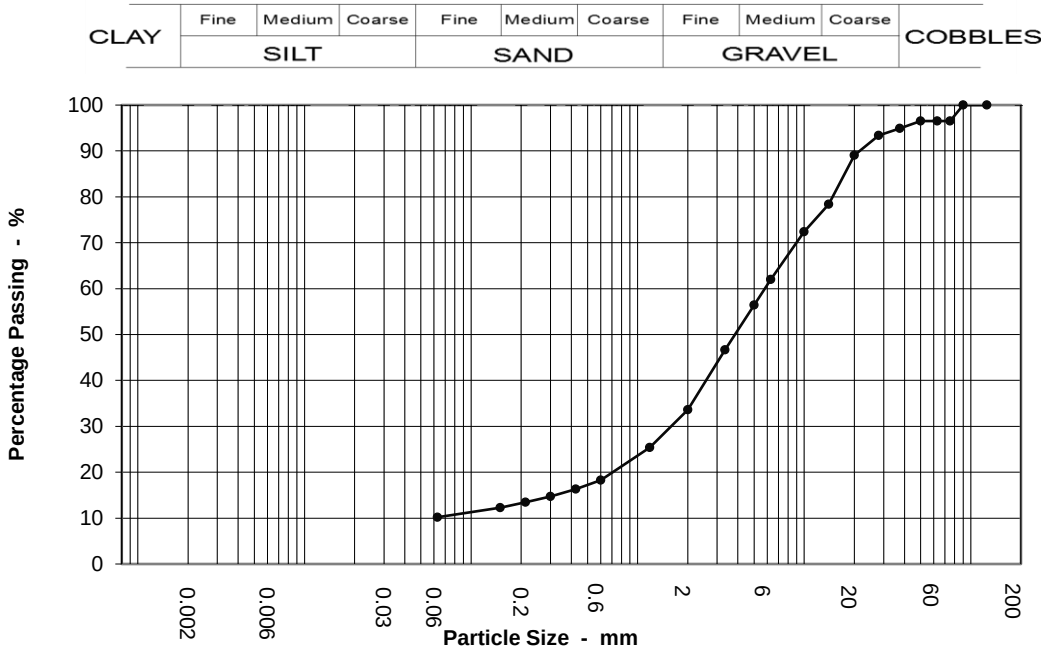
Sample Proportions	
Cobbles	0.0
Gravel	29.0
Sand	24.0
Silt	28.0
Clay	19.0

Grading Analysis	
D100	37.50
D60	0.34
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1307
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.10 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	97		
63	97		
50	97		
37.5	95		
28	93		
20	89		
14	78		
10	72		
6.3	62		
5	56		
3.35	47		
2	34		
1.18	25		
0.6	18		
0.425	16		
0.3	15		
0.212	13		
0.15	12		
0.063	10		

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

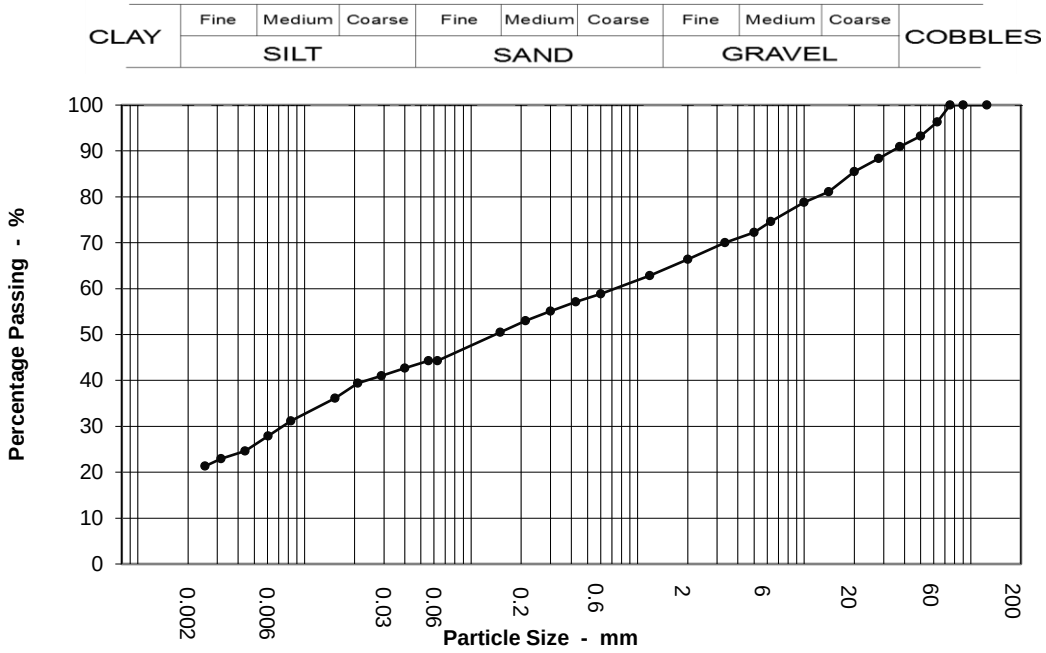
Sample Proportions	
Cobbles	3.0
Gravel	63.0
Sand	23.0
Silt & Clay	10.0

Grading Analysis	
D100	90.00
D60	5.81
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1311
Location	**LIHAF - Kilcock**	Sample No	2
		Depth	1.60 m
Soil Description	Slightly sandy slightly gravelly CLAY with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.056	44
90	100	0.040	43
75	100	0.029	41
63	96	0.021	39
50	93	0.015	36
37.5	91	0.008	31
28	88	0.006	28
20	85	0.004	25
14	81	0.003	23
10	79	0.003	21
6.3	75	0.001	16
5	72		
3.35	70		
2	66		
1.18	63		
0.6	59		
0.425	57		
0.3	55		
0.212	53		
0.15	50		
0.063	44		

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

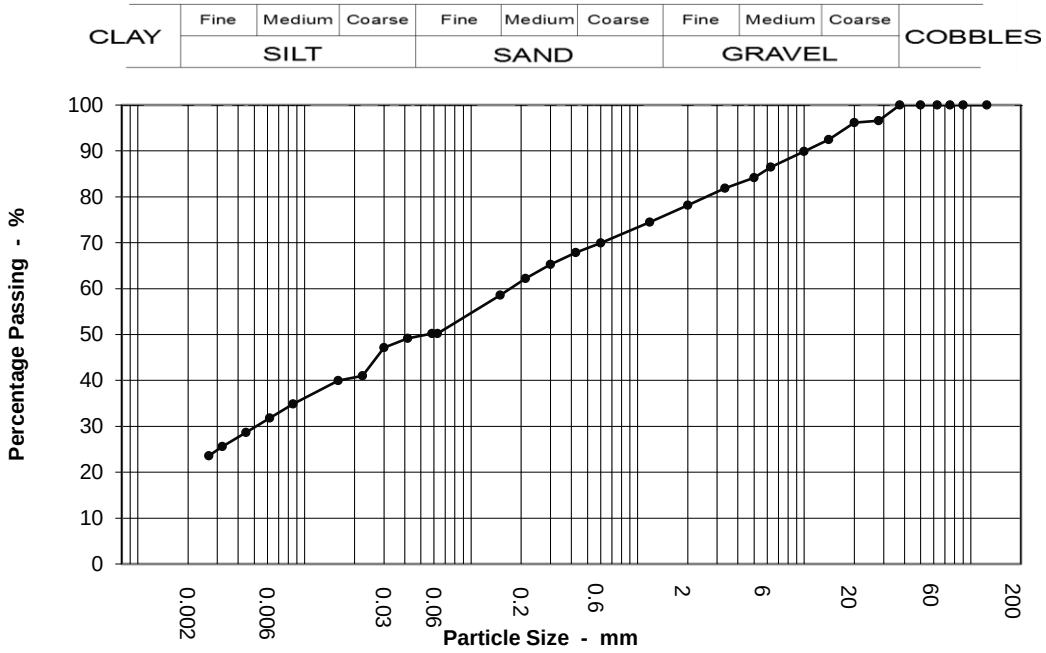
Sample Proportions	
Cobbles	4.0
Gravel	30.0
Sand	22.0
Silt	25.0
Clay	19.0

Grading Analysis	
D100	75.00
D60	0.73
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1312
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	1.00 m
Soil Description	Slightly gravelly slightly sandy CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	50
90	100	0.042	49
75	100	0.030	47
63	100	0.022	41
50	100	0.016	40
37.5	100	0.009	35
28	97	0.006	32
20	96	0.004	29
14	92	0.003	26
10	90	0.003	24
6.3	86	0.001	14
5	84		
3.35	82		
2	78		
1.18	74		
0.6	70		
0.425	68		
0.3	65		
0.212	62		
0.15	59		
0.063	50		

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

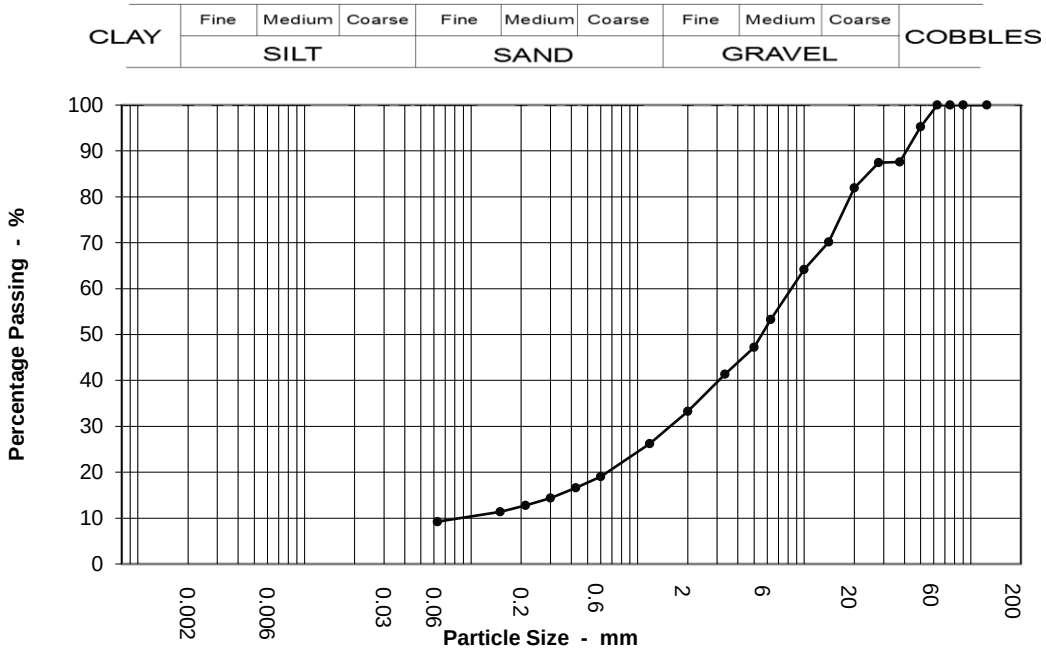
Sample Proportions	
Cobbles	0.0
Gravel	22.0
Sand	28.0
Silt	29.0
Clay	21.0

Grading Analysis	
D100	37.50
D60	0.17
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1313
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	1.00 m
Soil Description	Slightly 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	95		
37.5	88		
28	87		
20	82		
14	70		
10	64		
6.3	53		
5	47		
3.35	41		
2	33		
1.18	26		
0.6	19		
0.425	17		
0.3	14		
0.212	13		
0.15	11		
0.063	9		

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

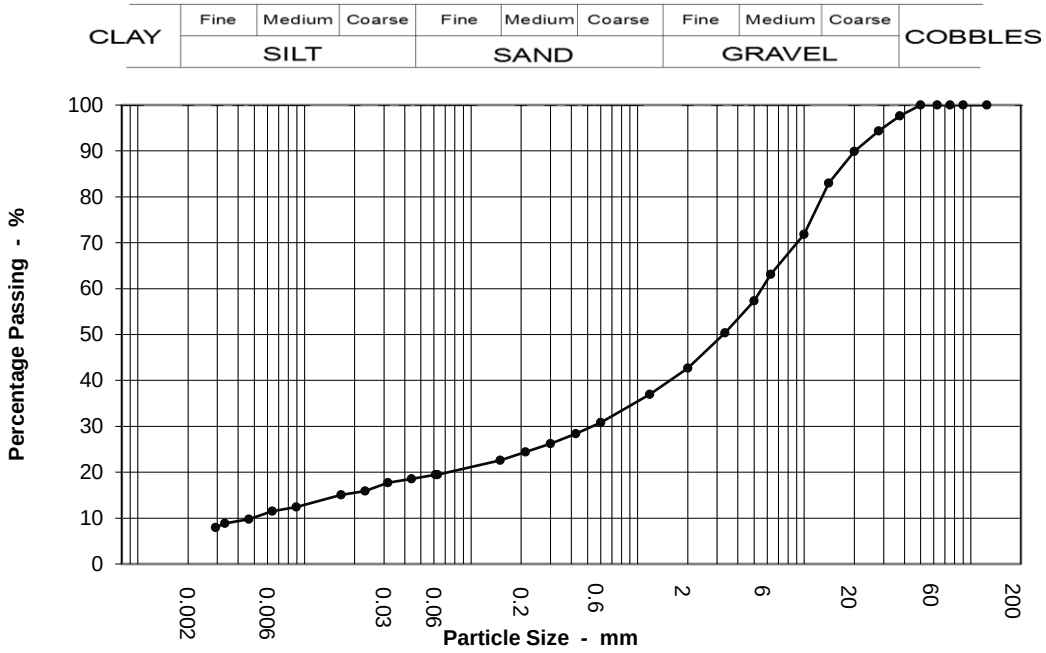
Sample Proportions	
Cobbles	0.0
Gravel	67.0
Sand	24.0
Silt & Clay	9.0

Grading Analysis	
D100	63.00
D60	8.39
D10	0.09
Uniformity Coefficient	97.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	ST1314
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.90 m
Soil Description	Very silty vey sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	19
90	100	0.044	19
75	100	0.032	18
63	100	0.023	16
50	100	0.017	15
37.5	98	0.009	12
28	94	0.006	12
20	90	0.005	10
14	83	0.003	9
10	72	0.003	8
6.3	63	0.001	4
5	57		
3.35	50		
2	43		
1.18	37		
0.6	31		
0.425	28		
0.3	26		
0.212	24		
0.15	23		
0.063	19		

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

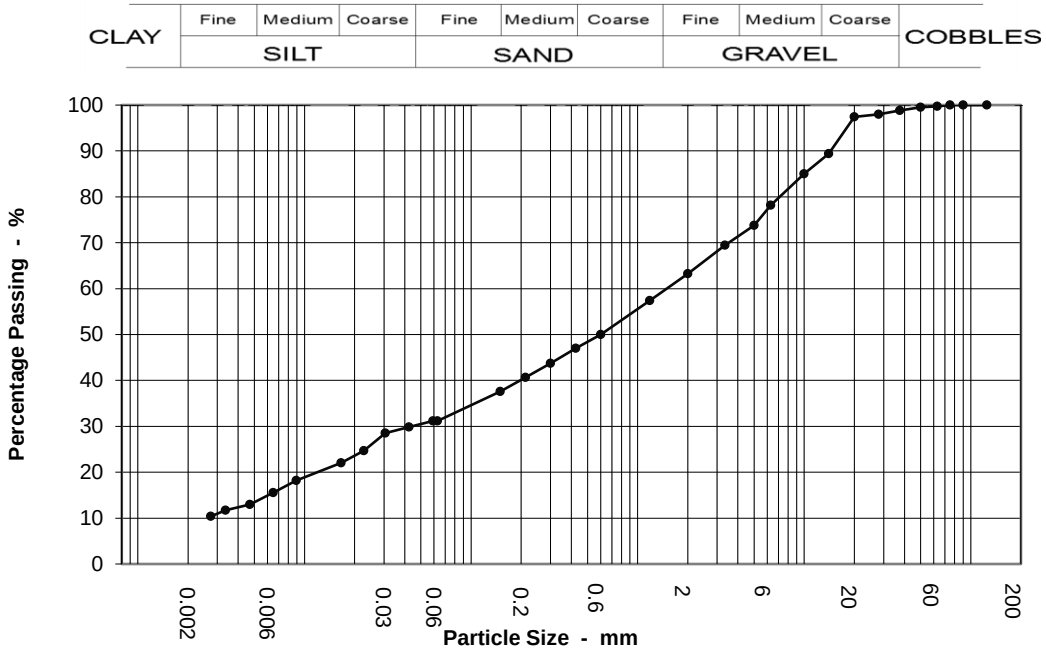
Sample Proportions	
Cobbles	0.0
Gravel	57.0
Sand	23.0
Silt	13.0
Clay	7.0

Grading Analysis	
D100	50.00
D60	5.57
D10	0.00
Uniformity Coefficient	1100.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1301
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	2.00 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	29
63	100	0.023	25
50	99	0.017	22
37.5	99	0.009	18
28	98	0.006	16
20	97	0.005	13
14	89	0.003	12
10	85	0.003	10
6.3	78	0.001	5
5	74		
3.35	69		
2	63		
1.18	57		
0.6	50		
0.425	47		
0.3	44		
0.212	41		
0.15	38		
0.063	31		

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

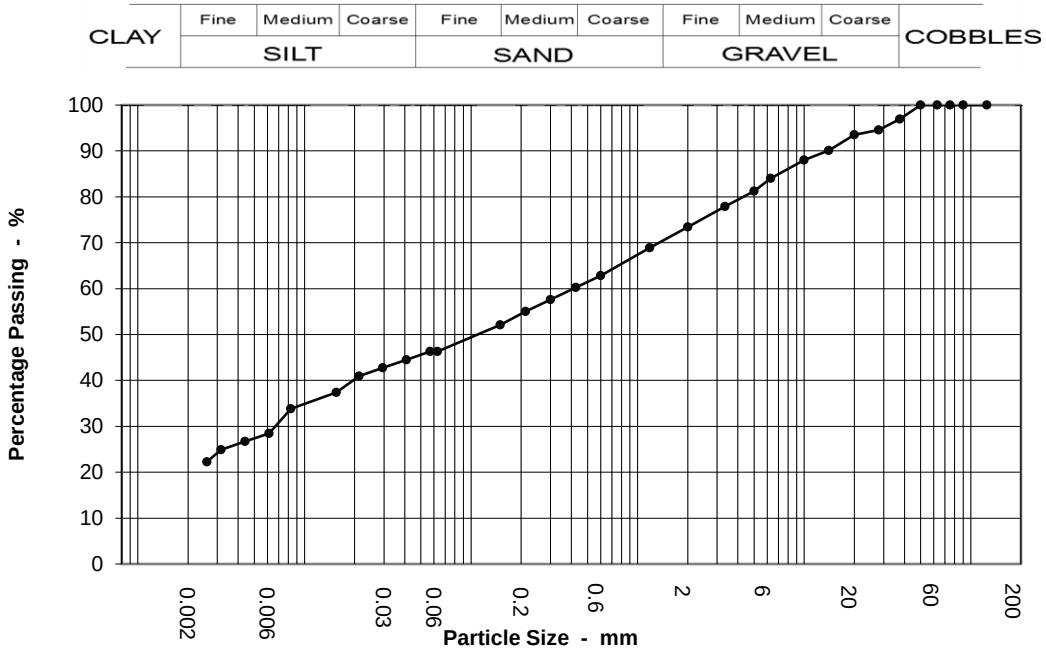
Sample Proportions	
Cobbles	0.0
Gravel	36.0
Sand	32.0
Silt	22.0
Clay	9.0

Grading Analysis	
D100	75.00
D60	1.49
D10	0.00
Uniformity Coefficient	590.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1306
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.50 m
Soil Description	Slightly sandy slightly gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.057	46
90	100	0.041	45
75	100	0.029	43
63	100	0.021	41
50	100	0.016	37
37.5	97	0.008	34
28	95	0.006	28
20	93	0.004	27
14	90	0.003	25
10	88	0.003	22
6.3	84	0.001	12
5	81		
3.35	78		
2	73		
1.18	69		
0.6	63		
0.425	60		
0.3	58		
0.212	55		
0.15	52		
0.063	46		

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

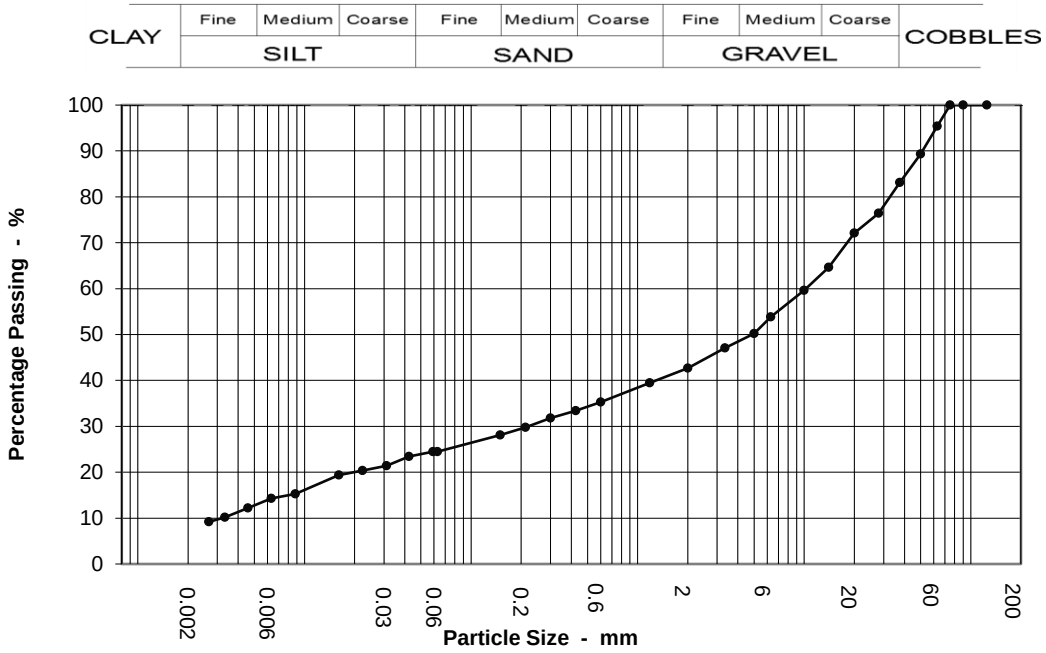
Sample Proportions	
Cobbles	0.0
Gravel	27.0
Sand	27.0
Silt	26.0
Clay	20.0

Grading Analysis	
D100	50.00
D60	0.41
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1306
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Sandy very clayey GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	24
90	100	0.042	23
75	100	0.031	21
63	95	0.022	20
50	89	0.016	19
37.5	83	0.009	15
28	76	0.006	14
20	72	0.005	12
14	65	0.003	10
10	60	0.003	9
6.3	54	0.001	7
5	50		
3.35	47		
2	43		
1.18	39		
0.6	35		
0.425	33		
0.3	32		
0.212	30		
0.15	28		
0.063	24		

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

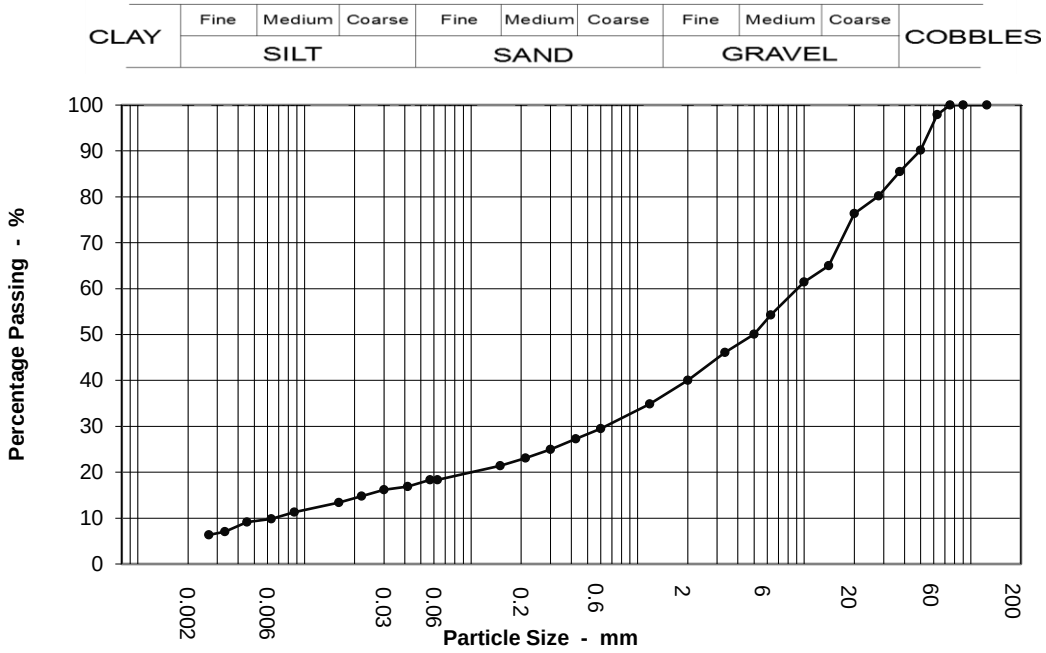
Sample Proportions	
Cobbles	5.0
Gravel	53.0
Sand	18.0
Silt	16.0
Clay	8.0

Grading Analysis	
D100	75.00
D60	10.30
D10	0.00
Uniformity Coefficient	3200.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1307
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.00 m
Soil Description	Clayey vey sandy GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.057	18
90	100	0.042	17
75	100	0.030	16
63	98	0.022	15
50	90	0.016	13
37.5	85	0.009	11
28	80	0.006	10
20	76	0.005	9
14	65	0.003	7
10	61	0.003	6
6.3	54	0.001	6
5	50		
3.35	46		
2	40		
1.18	35		
0.6	30		
0.425	27		
0.3	25		
0.212	23		
0.15	21		
0.063	18		

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

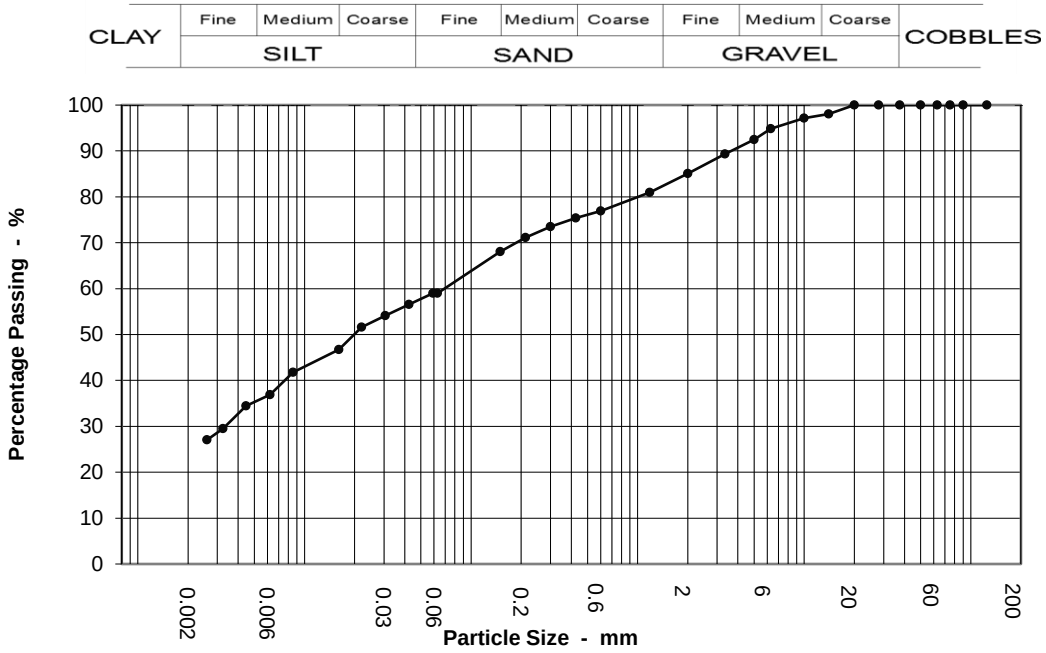
Sample Proportions	
Cobbles	2.0
Gravel	58.0
Sand	22.0
Silt	12.0
Clay	6.0

Grading Analysis	
D100	75.00
D60	9.12
D10	0.01
Uniformity Coefficient	1400.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1308
Location	**LIHAF - Kilcock**	Sample No	1
		Depth	0.20 m
Soil Description	Slightly gravelly slightly sandy CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	59
90	100	0.042	57
75	100	0.031	54
63	100	0.022	52
50	100	0.016	47
37.5	100	0.009	42
28	100	0.006	37
20	100	0.004	34
14	98	0.003	30
10	97	0.003	27
6.3	95	0.001	22
5	92		
3.35	89		
2	85		
1.18	81		
0.6	77		
0.425	75		
0.3	73		
0.212	71		
0.15	68		
0.063	59		

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

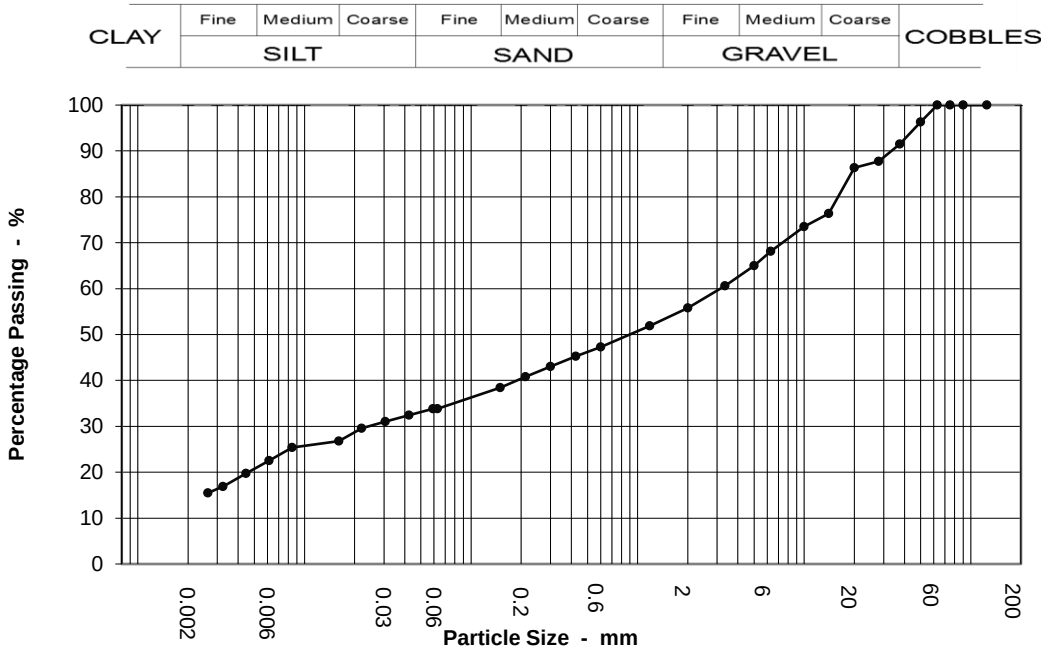
Sample Proportions	
Cobbles	0.0
Gravel	15.0
Sand	26.0
Silt	34.0
Clay	25.0

Grading Analysis	
D100	20.00
D60	0.07
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1308
Location	**LIHAF - Kilcock**	Sample No	5
		Depth	2.50 m
Soil Description	Very sandy very clayey GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	34
90	100	0.042	32
75	100	0.031	31
63	100	0.022	30
50	96	0.016	27
37.5	91	0.008	25
28	88	0.006	23
20	86	0.004	20
14	76	0.003	17
10	74	0.003	15
6.3	68	0.001	13
5	65		
3.35	61		
2	56		
1.18	52		
0.6	47		
0.425	45		
0.3	43		
0.212	41		
0.15	38		
0.063	34		

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

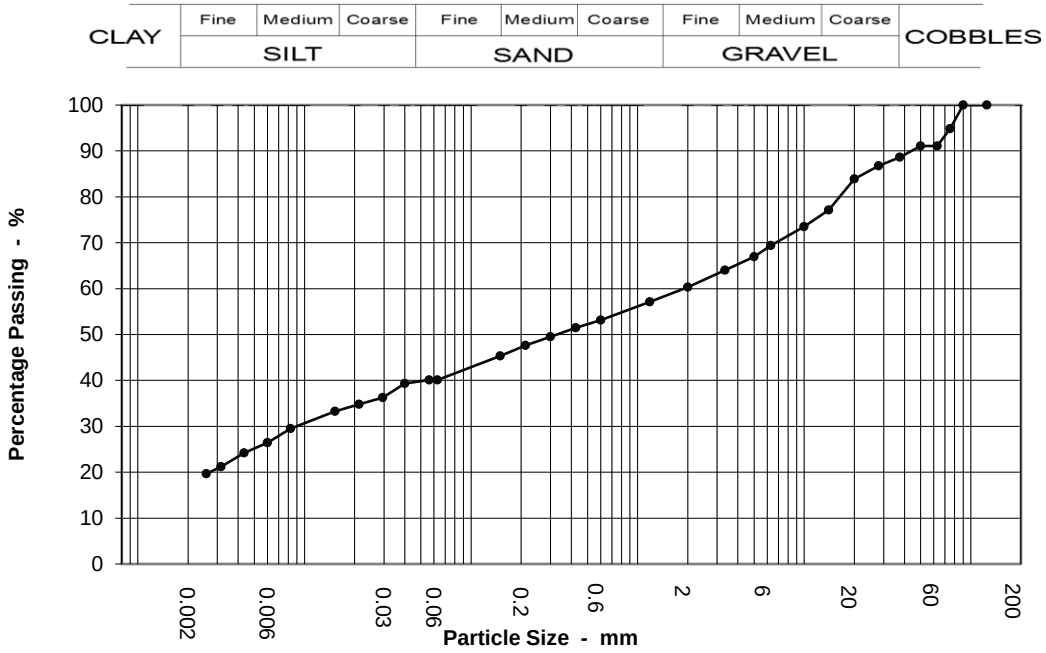
Sample Proportions	
Cobbles	0.0
Gravel	44.0
Sand	22.0
Silt	20.0
Clay	14.0

Grading Analysis	
D100	63.00
D60	3.14
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1309
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy slightly gravelly CLAY with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.056	40
90	100	0.040	39
75	95	0.029	36
63	91	0.021	35
50	91	0.015	33
37.5	89	0.008	29
28	87	0.006	26
20	84	0.004	24
14	77	0.003	21
10	73	0.003	20
6.3	69	0.001	15
5	67		
3.35	64		
2	60		
1.18	57		
0.6	53		
0.425	51		
0.3	50		
0.212	48		
0.15	45		
0.063	40		

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

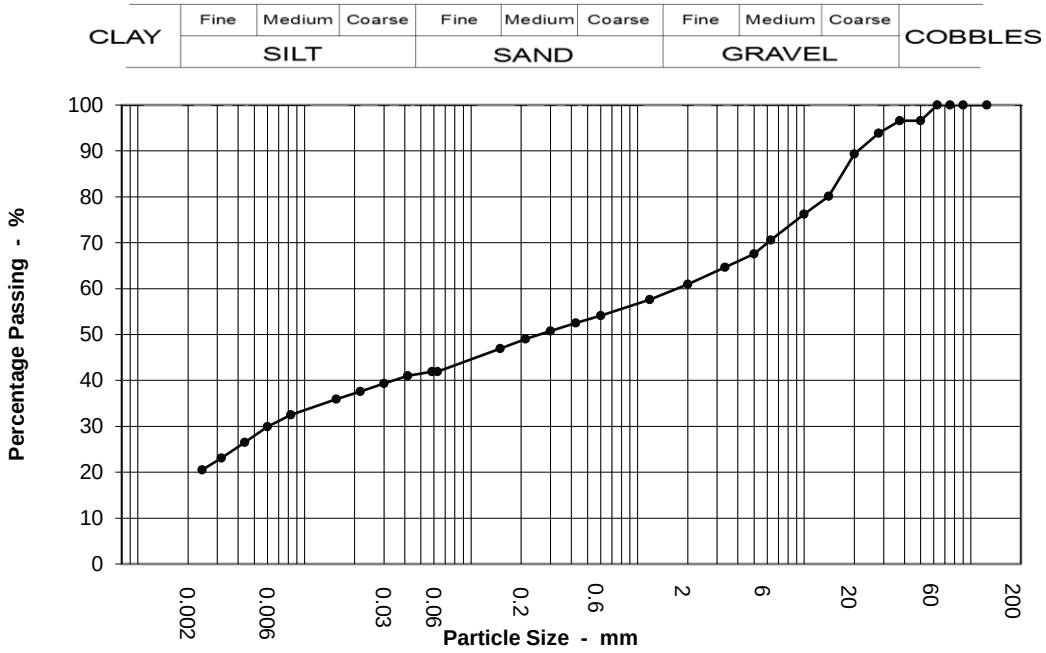
Sample Proportions	
Cobbles	9.0
Gravel	31.0
Sand	20.0
Silt	22.0
Clay	18.0

Grading Analysis	
D100	90.00
D60	1.89
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1310
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy gravelly CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	42
90	100	0.042	41
75	100	0.030	39
63	100	0.022	38
50	97	0.016	36
37.5	97	0.008	32
28	94	0.006	30
20	89	0.004	27
14	80	0.003	23
10	76	0.002	21
6.3	71	0.001	16
5	68		
3.35	65		
2	61		
1.18	58		
0.6	54		
0.425	52		
0.3	51		
0.212	49		
0.15	47		
0.063	42		

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

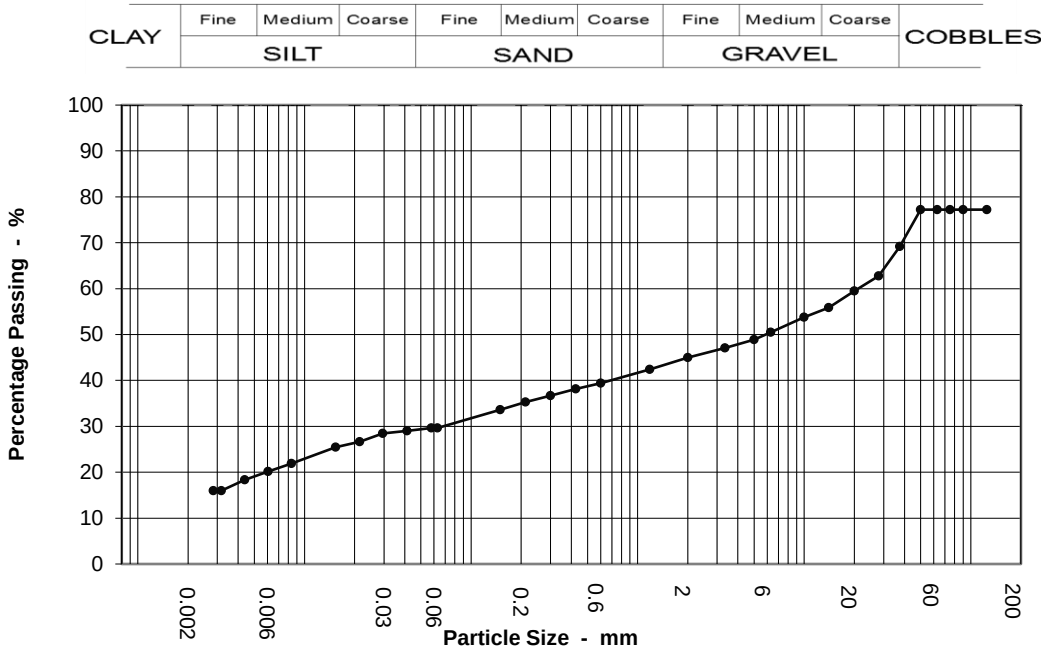
Sample Proportions	
Cobbles	0.0
Gravel	39.0
Sand	19.0
Silt	23.0
Clay	19.0

Grading Analysis	
D100	63.00
D60	1.72
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TP1311
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy gravelly CLAY with high cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	77	0.058	30
90	77	0.041	29
75	77	0.029	28
63	77	0.021	27
50	77	0.015	25
37.5	69	0.008	22
28	63	0.006	20
20	59	0.004	18
14	56	0.003	16
10	54	0.003	16
6.3	51	0.001	9
5	49		
3.35	47		
2	45		
1.18	42		
0.6	39		
0.425	38		
0.3	37		
0.212	35		
0.15	34		
0.063	30		

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

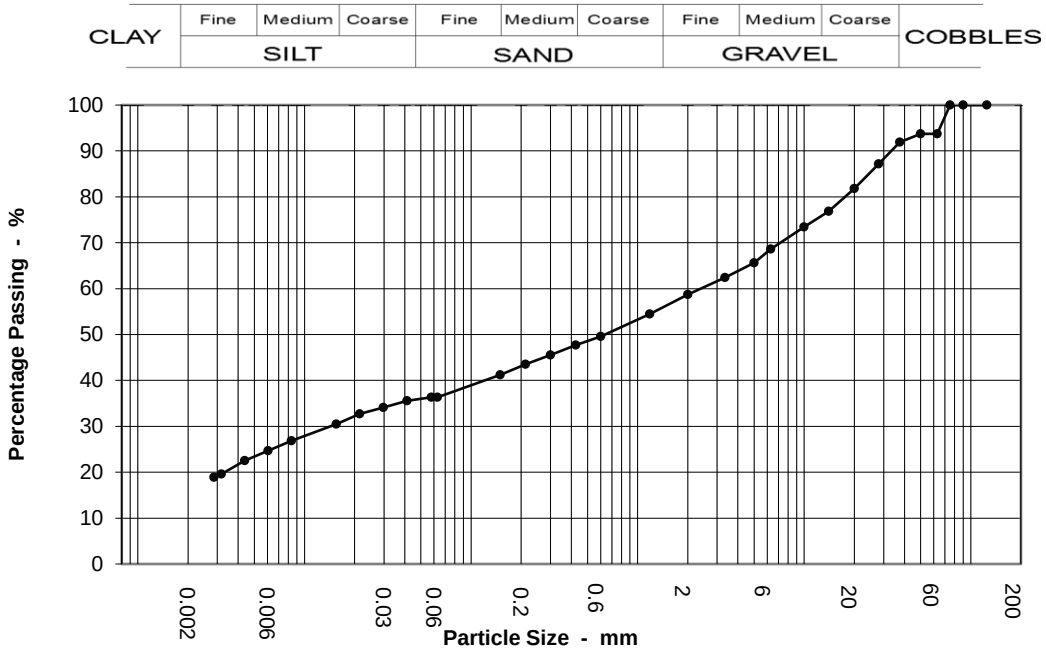
Sample Proportions	
Cobbles	23.0
Gravel	32.0
Sand	15.0
Silt	16.0
Clay	14.0

Grading Analysis	
D100	
D60	21.10
D10	0.00
Uniformity Coefficient	22000.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P20078_1**
		Borehole / Pit No	TPPT1302
Location	**LIHAF - Kilcock**	Sample No	3
		Depth	1.50 m
Soil Description	Slightly sandy gravelly CLAY with low cobble content	Sample type	B



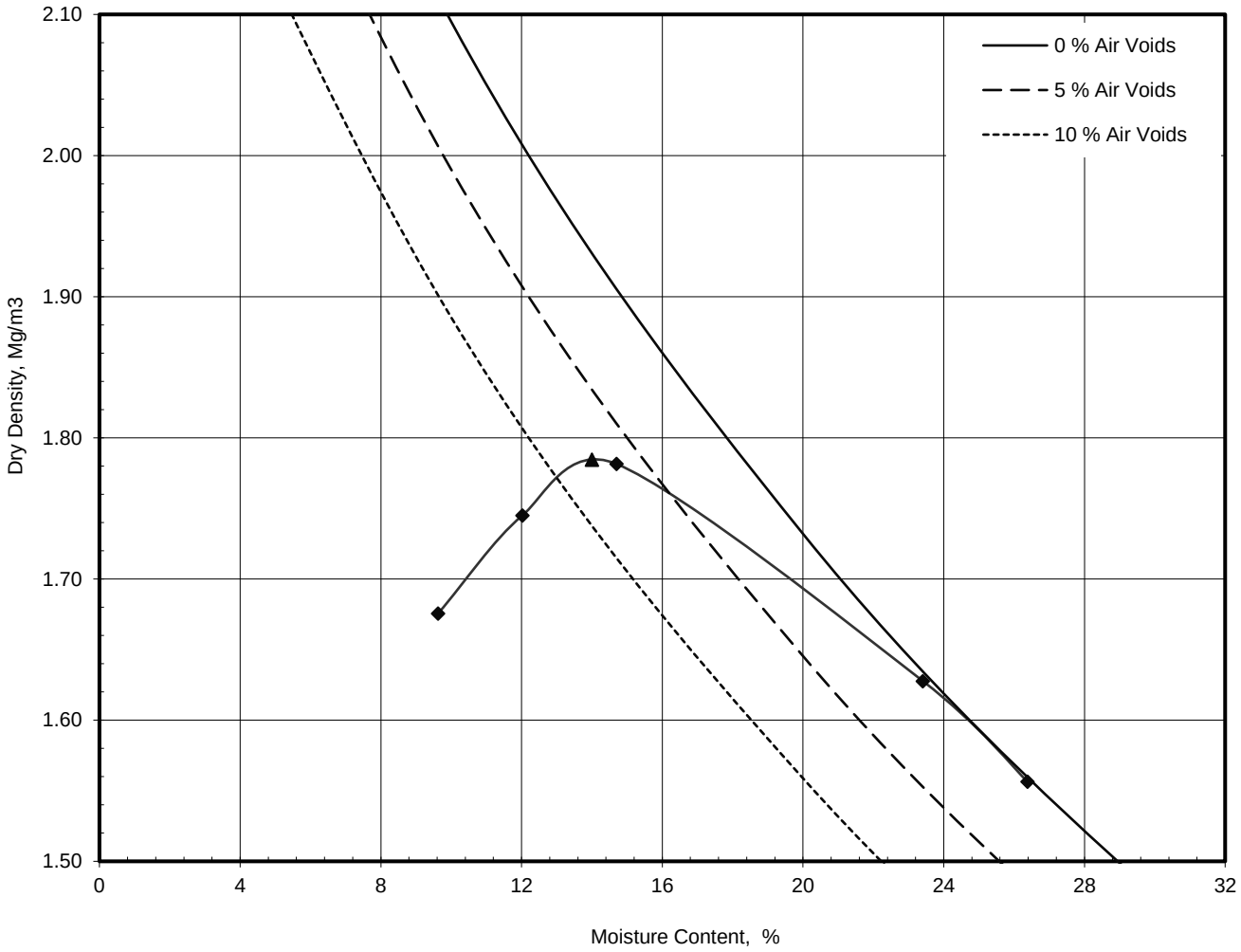
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	36
90	100	0.041	36
75	100	0.030	34
63	94	0.021	33
50	94	0.016	30
37.5	92	0.008	27
28	87	0.006	25
20	82	0.004	23
14	77	0.003	20
10	73	0.003	19
6.3	69	0.001	12
5	66		
3.35	62		
2	59		
1.18	54		
0.6	50		
0.425	48		
0.3	46		
0.212	43		
0.15	41		
0.063	36		

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

Sample Proportions	
Cobbles	6.0
Gravel	35.0
Sand	22.0
Silt	20.0
Clay	17.0

Grading Analysis	
D100	75.00
D60	2.38
D10	
Uniformity Coefficient	

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P20078_1
				Borehole / Pit No	ST1312
Location	LIHAF - Kilcock			Sample No	1
Soil Description	Slightly gravelly slightly sandy CLAY			Depth	1.00 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020102064
				Compaction Test Reference/No.	



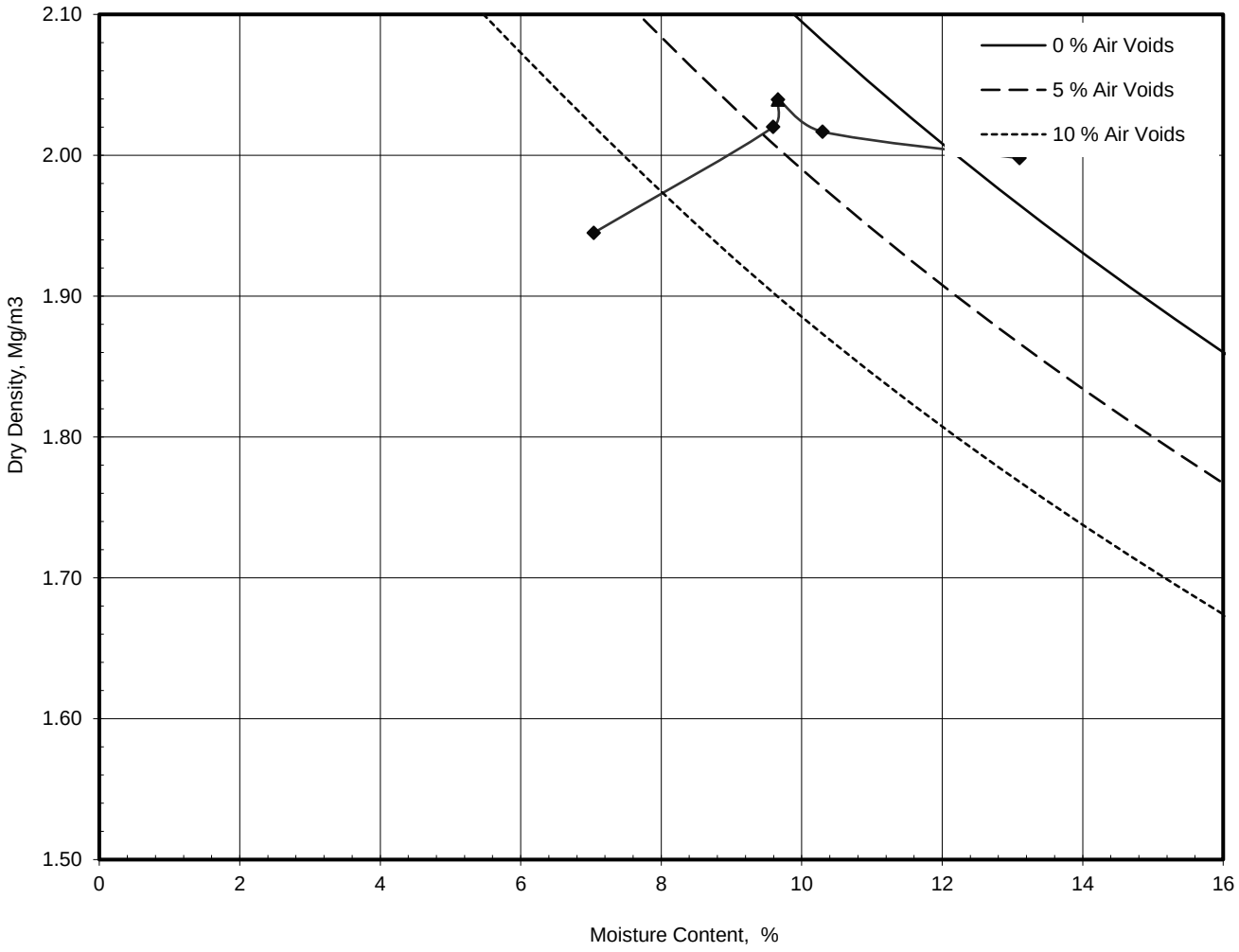
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	2
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.80**

Optimum Moisture Content	%	**14**
Natural Mositure Content	**%**	**26.38**

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

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P20078_1
				Borehole / Pit No	TP1301
Location	LIHAF - Kilcock			Sample No	3
Soil Description	Slightly sandy gravelly CLAY			Depth	2.00 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020102069
				Compaction Test Reference/No.	



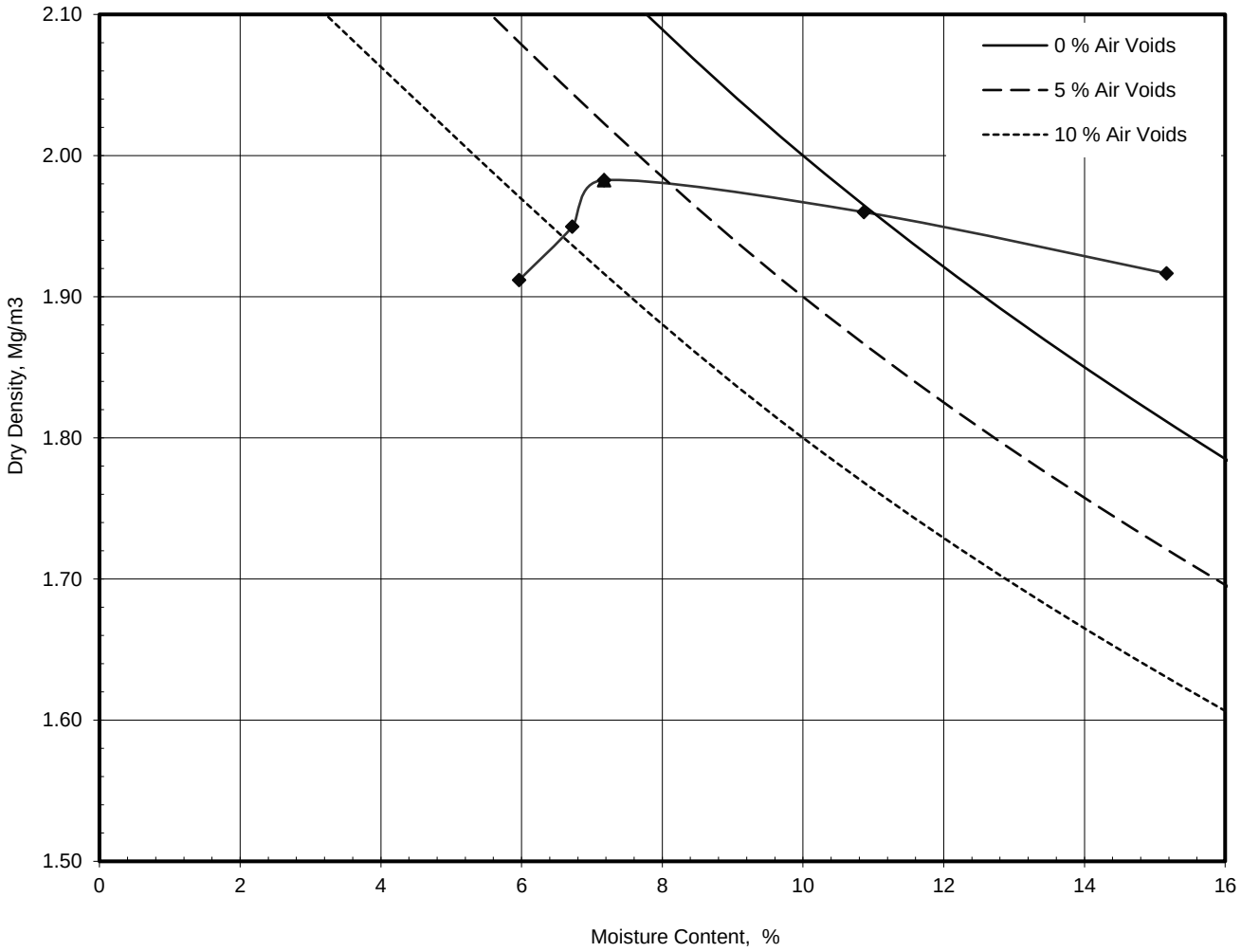
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	5
Material Retained on 20.0 mm Sieve	%	13
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**9.7**
Natural Mositure Content	**%**	**13.1**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P20078_1
				Borehole / Pit No	TP1307
Location	LIHAF - Kilcock			Sample No	3
Soil Description	Clayey vey sandy GRAVEL with low cobble content			Depth	1.00 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020102079
				Compaction Test Reference/No.	



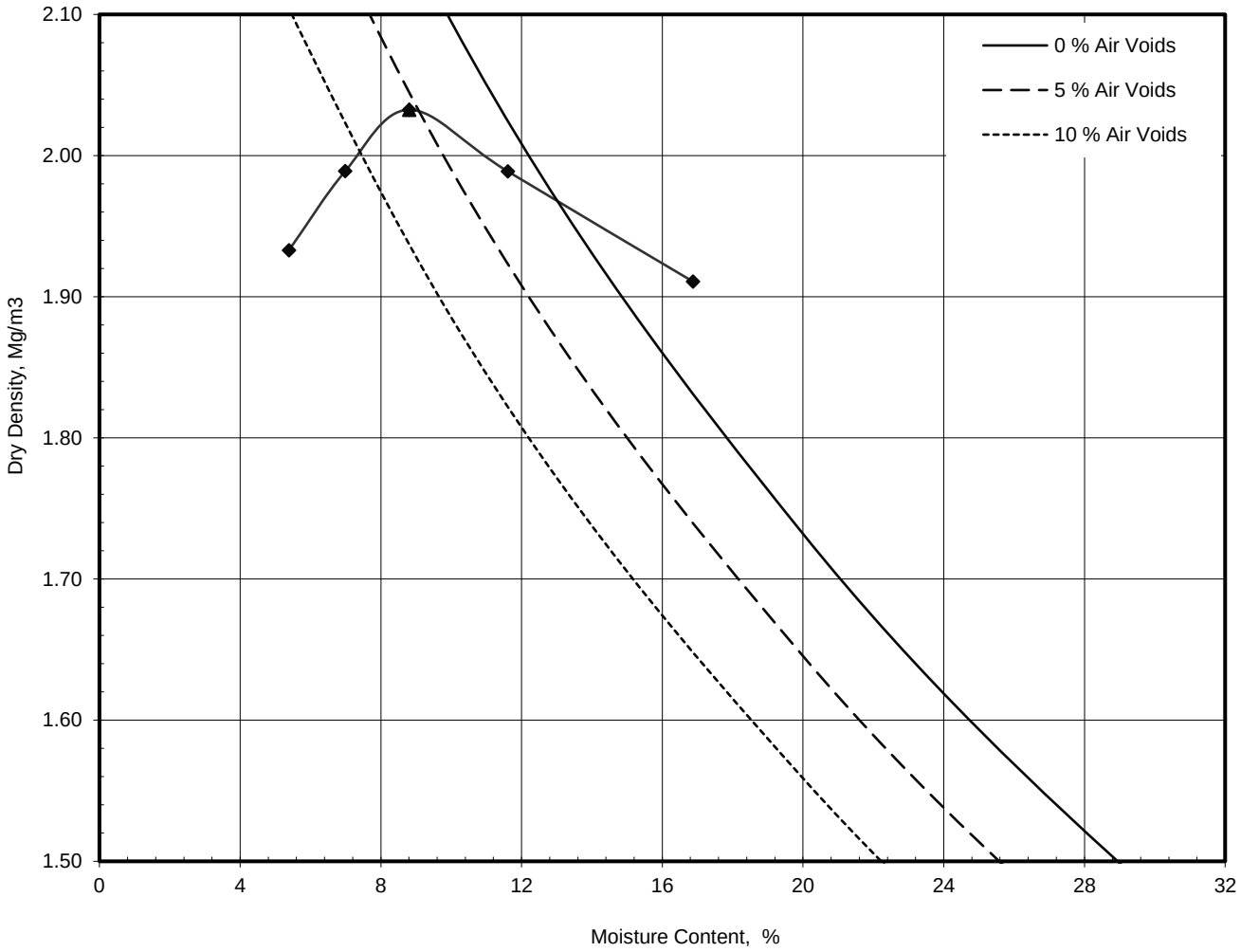
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	10
Material Retained on 20.0 mm Sieve	%	22
Particle Density - Assumed	Mg/m³	2.50

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**7.2**
Natural Mositure Content	**%**	**15.17**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction	Job Ref	P20078_1
		Borehole / Pit No	TP1308
Location	LIHAF - Kilcock	Sample No	5
Soil Description	Very sandy very clayey GRAVEL	Depth	2.50 m
		Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer	Keylab ID	PGL12020102089
		Compaction Test Reference/No.	



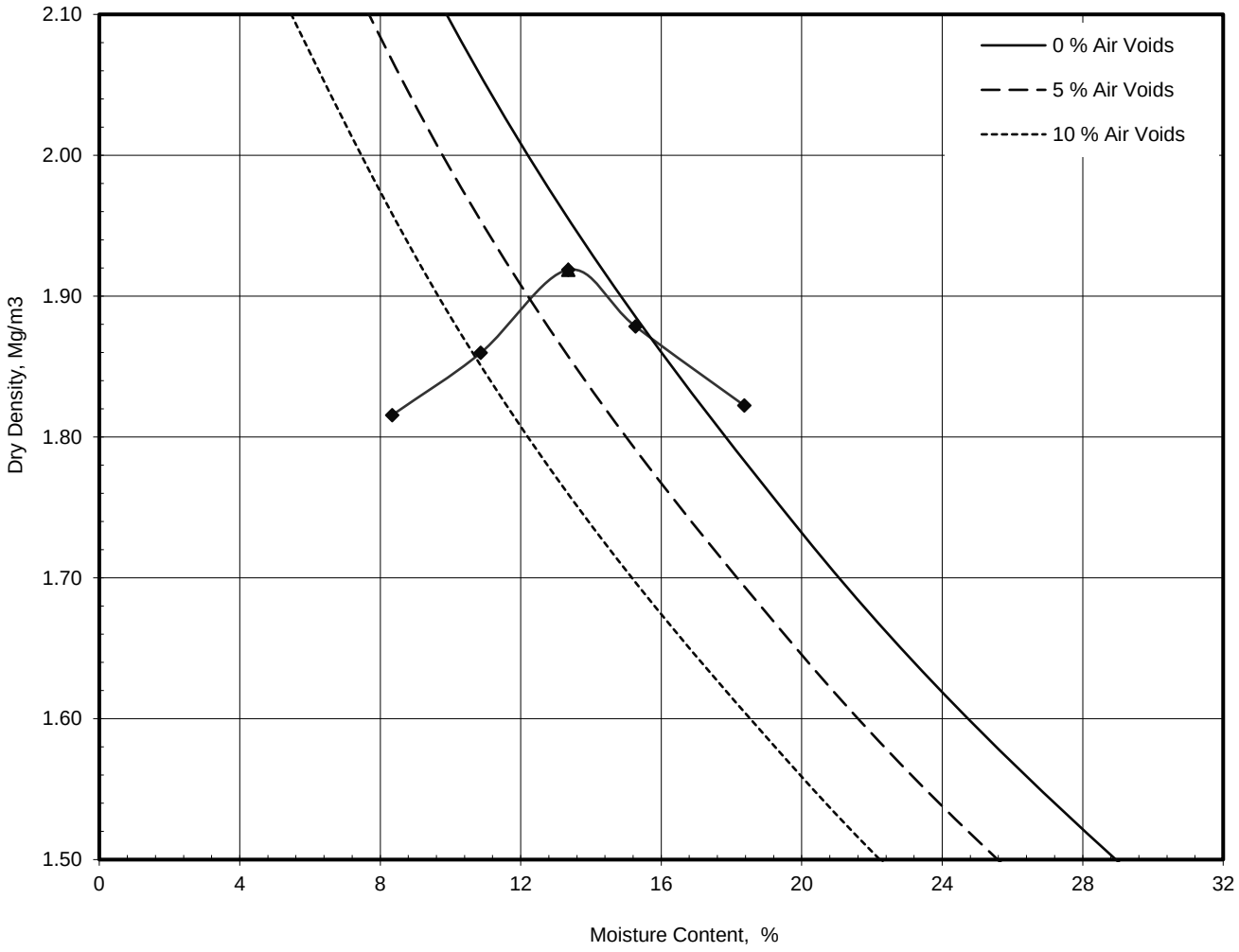
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	6
Material Retained on 20.0 mm Sieve	%	13
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**8.8**
Natural Mositure Content	**%**	**16.88**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	**P20078_1**
				Borehole / Pit No	TP1309
Location	**LIHAF - Kilcock**			Sample No	1
Soil Description	Slightly sandy slightly gravelly CLAY			Depth	0.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL1202012028
				Compaction Test Reference/No.	



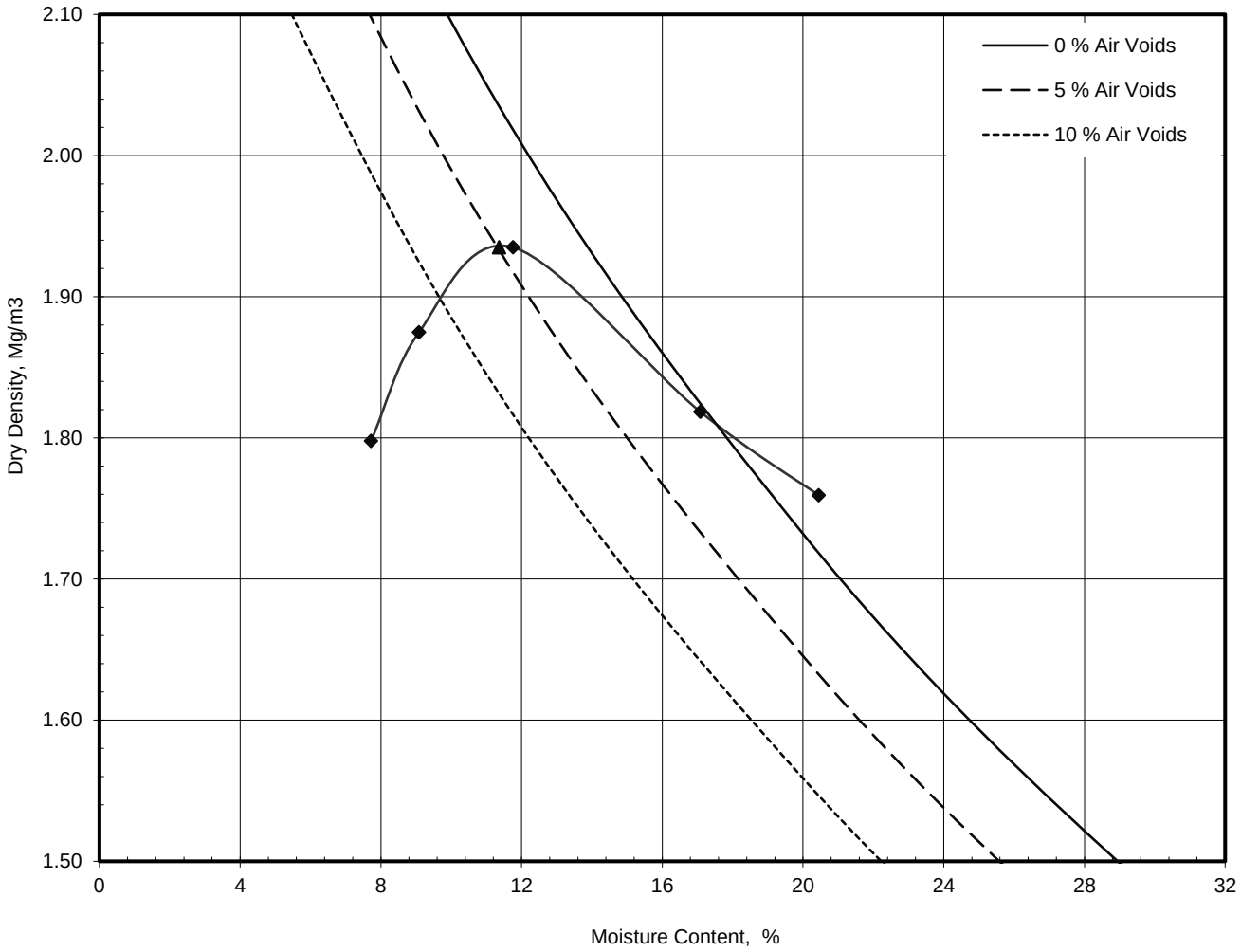
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	14
Material Retained on 20.0 mm Sieve	%	20
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**13.4**
Natural Mositure Content	**%**	**18.37**

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

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	**P20078_1**
				Borehole / Pit No	TP1310
Location	**LIHAF - Kilcock**			Sample No	1
Soil Description	Slightly sandy slightly gravelly CLAY			Depth	0.60 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020120212
				Compaction Test Reference/No.	



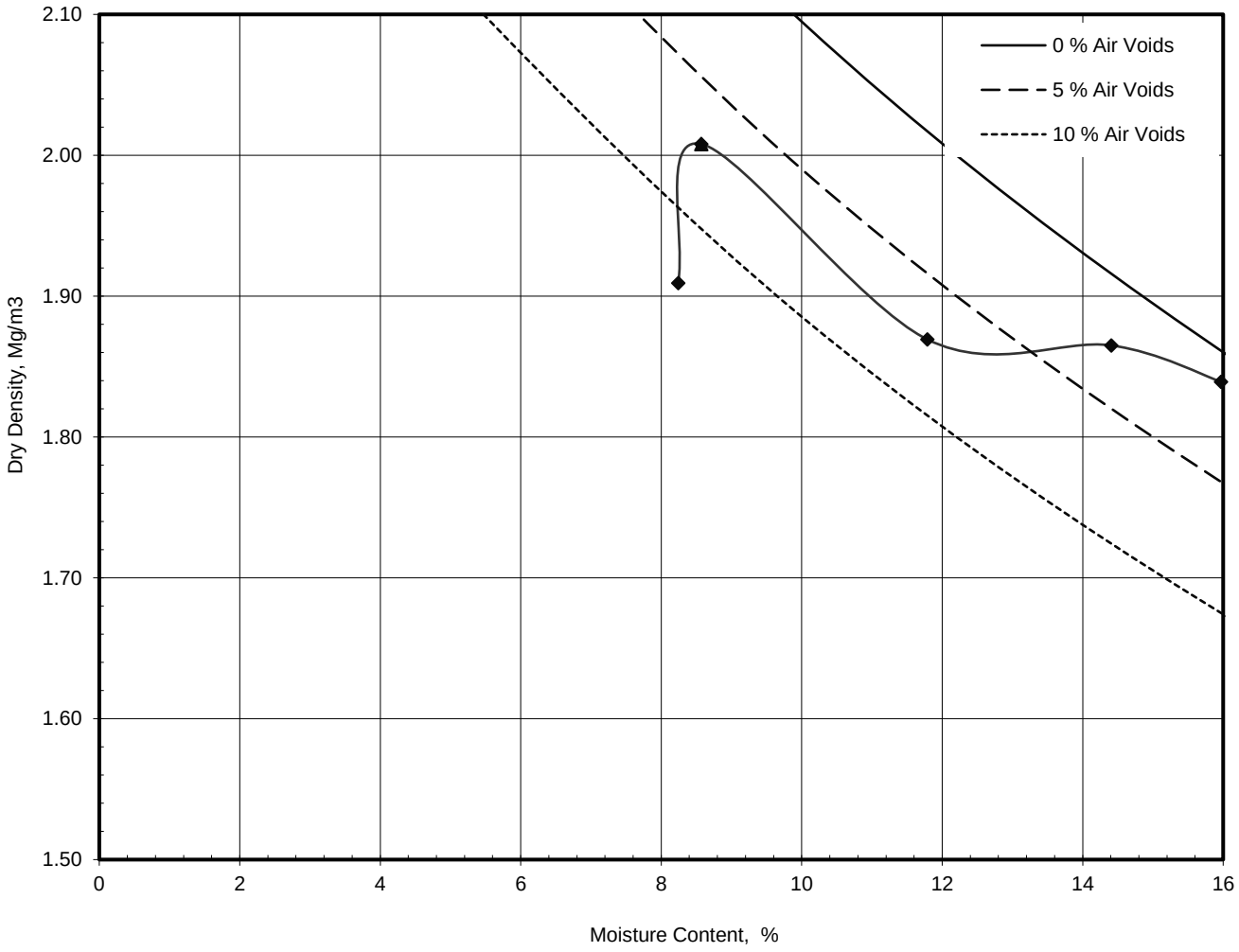
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	30
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**11.4**
Natural Mositure Content	**%**	**20.45**

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

	Dry Density / Moisture Content Relationship Light Compaction	Job Ref	P20078_1
		Borehole / Pit No	TP1310
Location	**LIHAF - Kilcock**	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Depth	1.50 m
		Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer	Keylab ID	PGL12020120213
		Compaction Test Reference/No.	



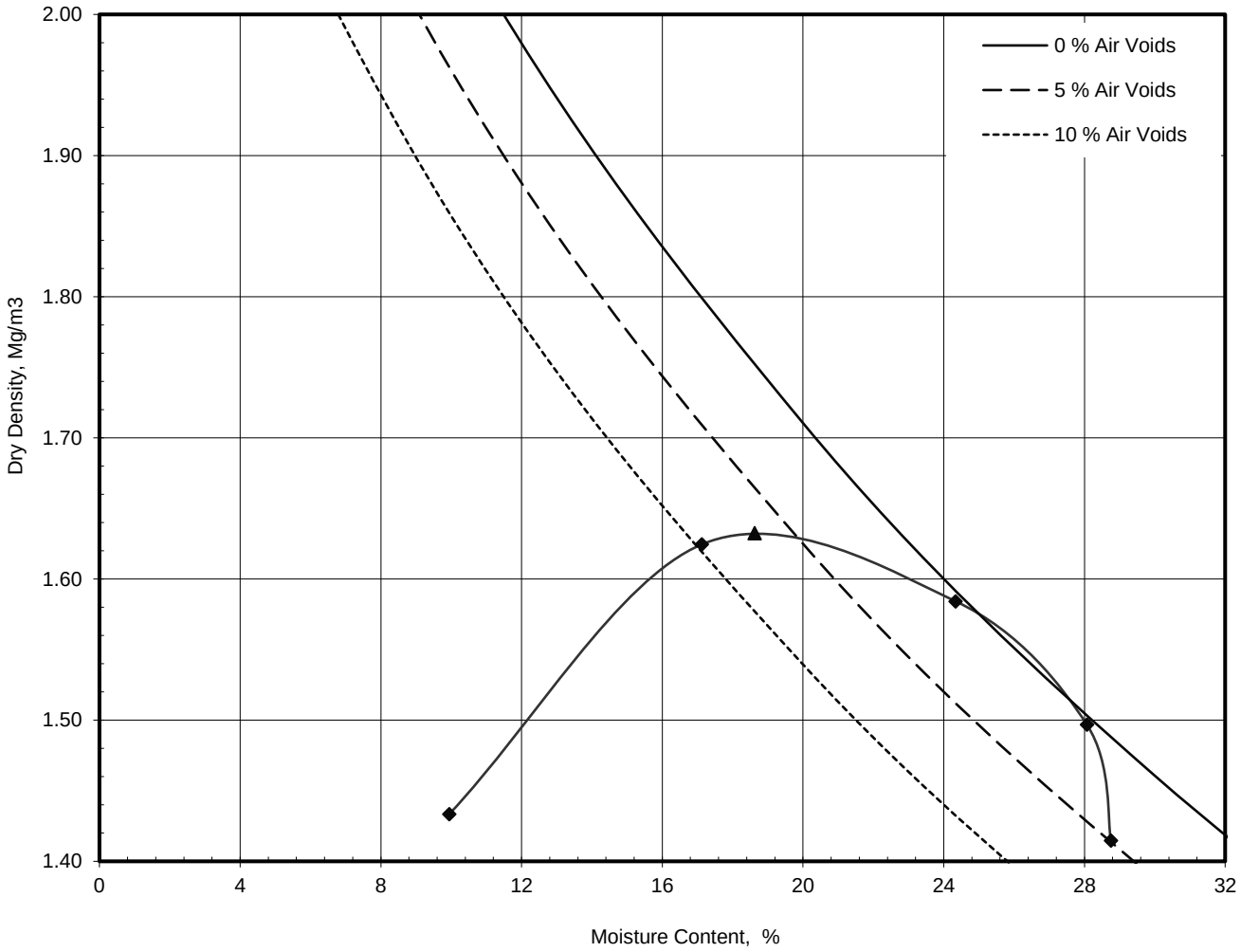
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Separate specimens tested
Material Retained on 37.5 mm Sieve	%	28
Material Retained on 20.0 mm Sieve	%	851
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**8.6**
Natural Mositure Content	**%**	**15.97**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	**P20078_1**
				Borehole / Pit No	TP1311
Location	**LIHAF - Kilcock**			Sample No	1
Soil Description	Slightly sandy slightly gravelly CLAY			Depth	0.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020120216
				Compaction Test Reference/No.	



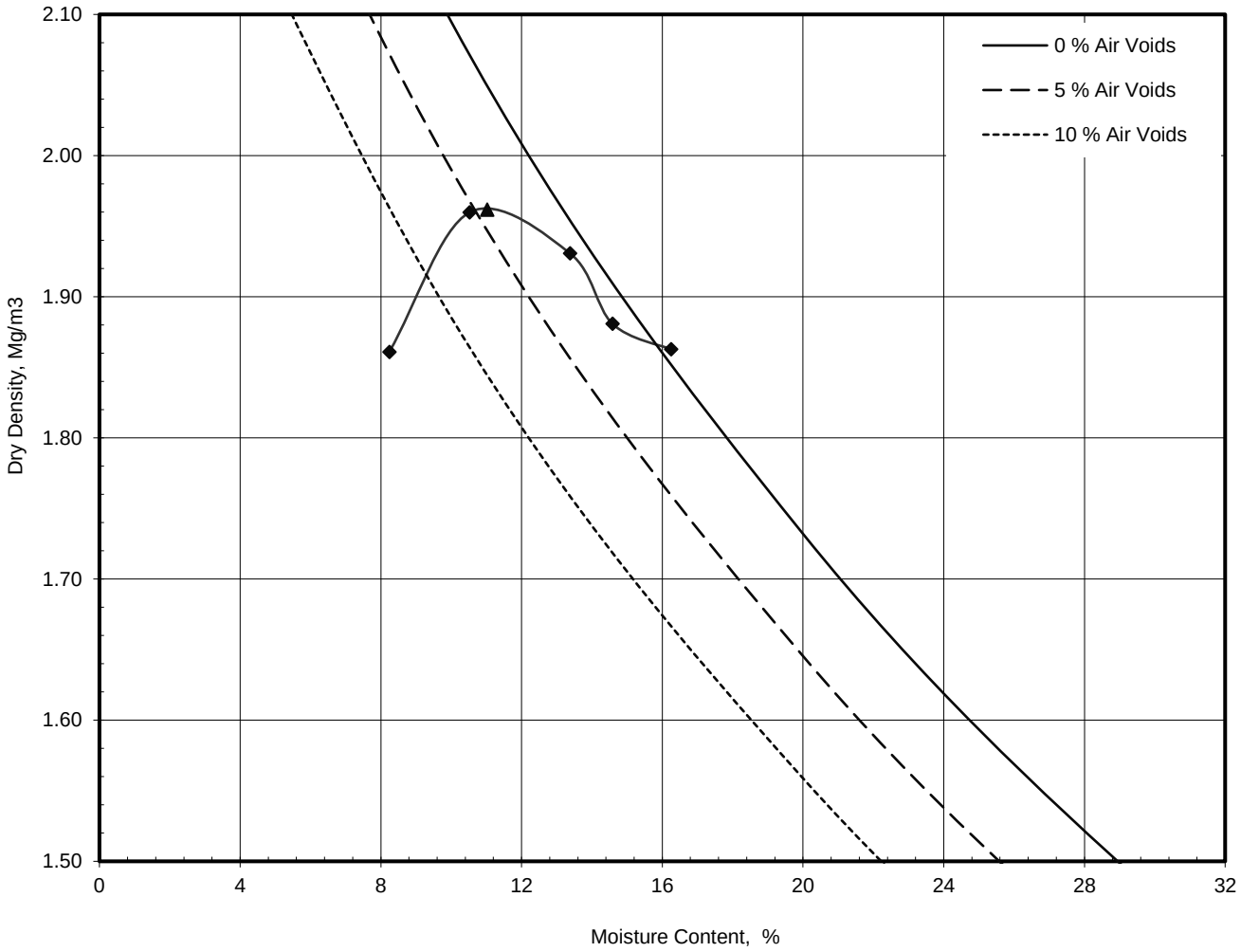
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	1
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.60

Maximum Dry Density	Mg/m³	**1.60**

Optimum Moisture Content	%	**18.6**
Natural Mositure Content	**%**	**28.75**

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

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P20078_1
				Borehole / Pit No	TPPT1302
Location	LIHAF - Kilcock			Sample No	1
Soil Description	Slightly sandy slightly gravelly CLAY			Depth	0.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020120227
				Compaction Test Reference/No.	



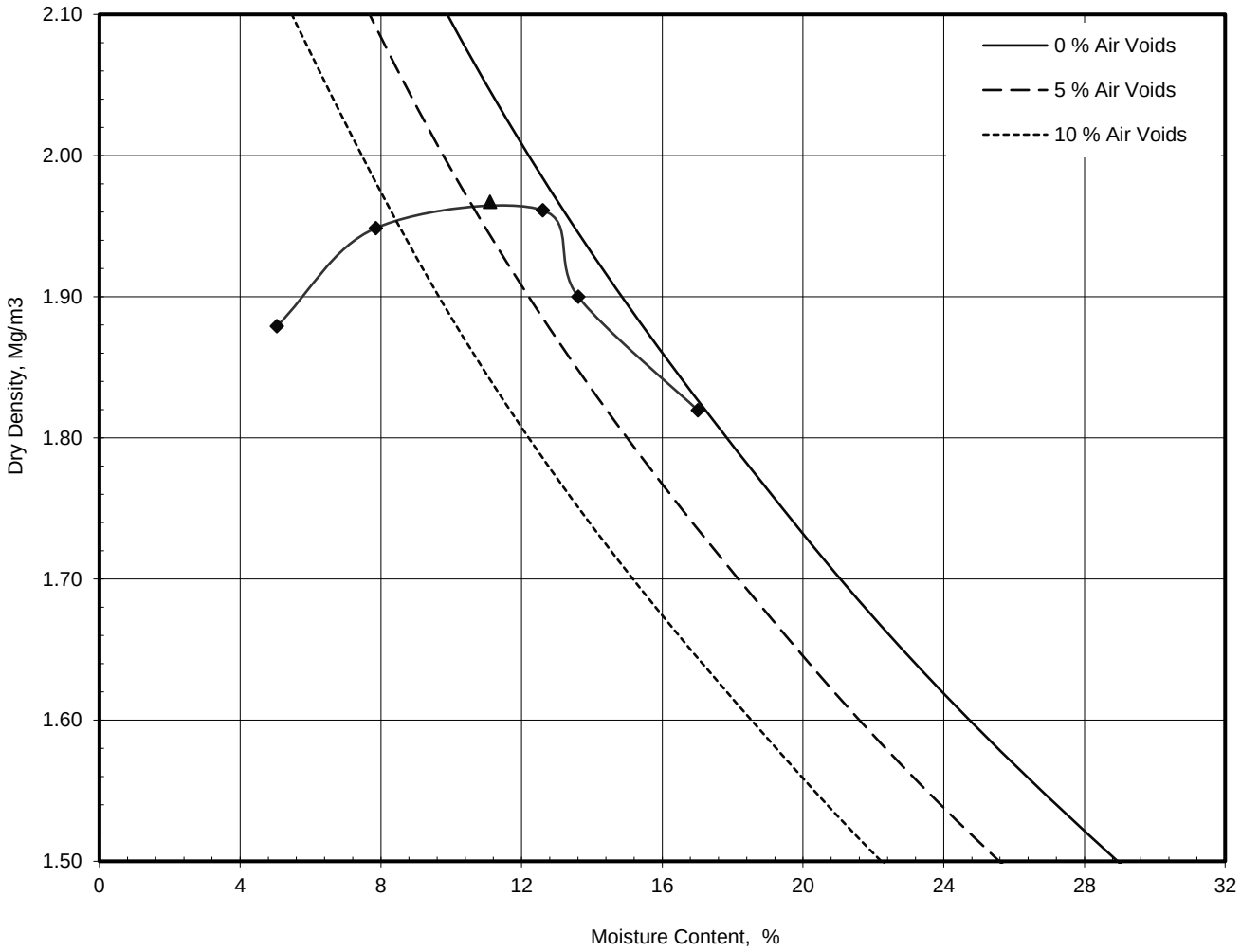
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	7
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**11**
Natural Mositure Content	**%**	**14.59**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P20078_1
				Borehole / Pit No	TPPT1302
Location	LIHAF - Kilcock			Sample No	3
Soil Description	Slightly sandy gravelly CLAY with low cobble content			Depth	1.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12020120228
				Compaction Test Reference/No.	



Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	7
Material Retained on 20.0 mm Sieve	%	16
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**

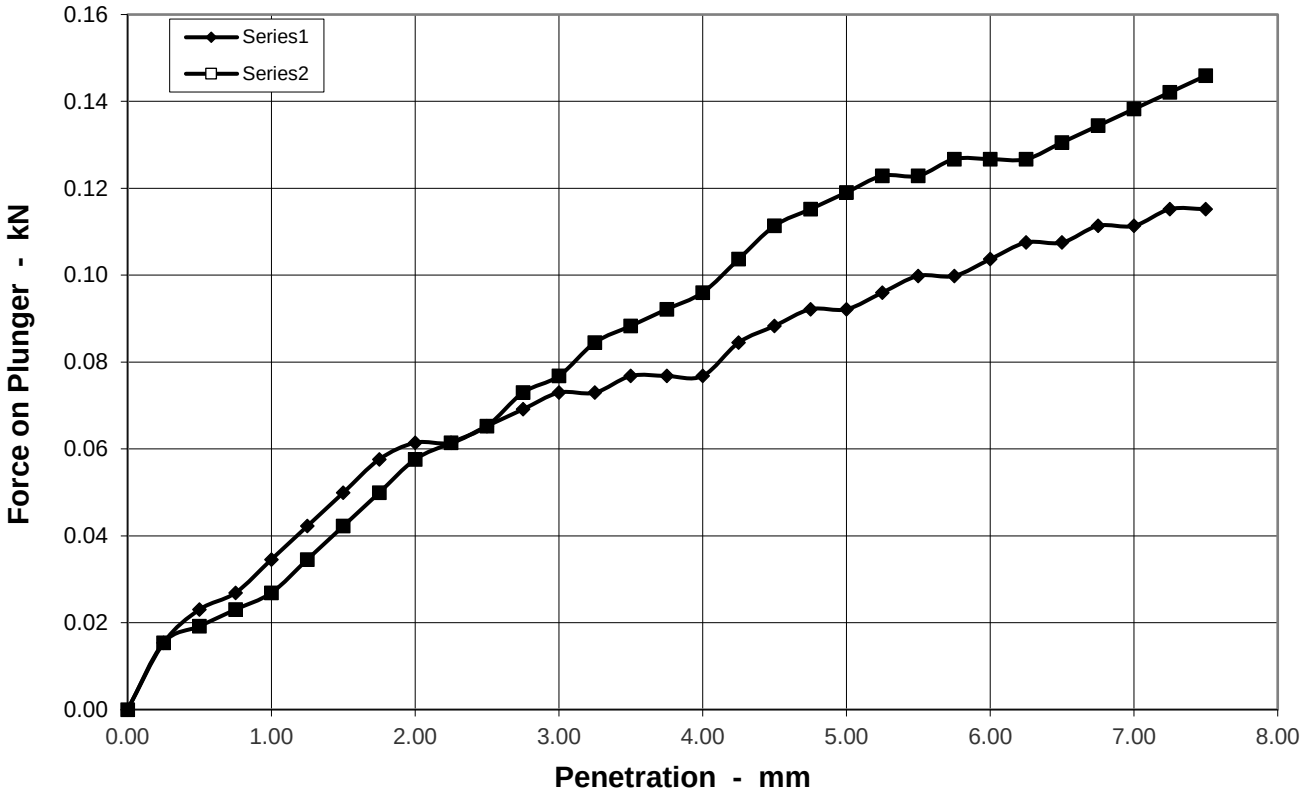
Optimum Moisture Content	%	**11.1**
Natural Mositure Content	**%**	**17.01**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	3
		Depth	1.5 m
Soil Description	Slightly sandy gravelly CLAY		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	15.5
Moisture Content - BASE	%	21.0
Bulk Density	Mg/m³	2.15
Dry Density	Mg/m³	1.86

Test Conditions		
Sample Retained on 20 mm sieve	%	19.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

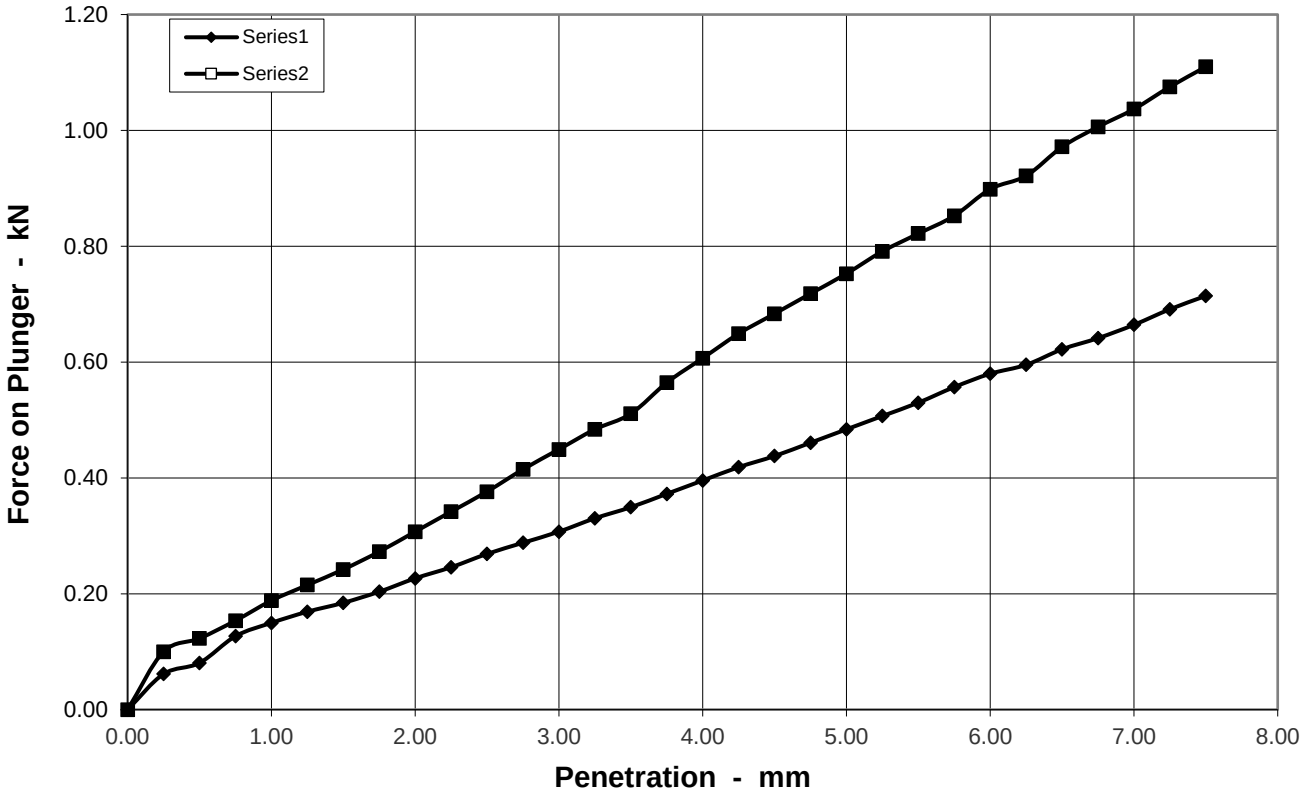
Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.5	0.5
5	0.5	0.6
Accepted CBR	**0.5**	**0.6**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	3
		Depth	1.5 m
Soil Description	Slightly sandy gravelly CLAY		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	14.9
Moisture Content - BASE	%	13.6
Bulk Density	Mg/m³	2.21
Dry Density	Mg/m³	1.91

Test Conditions		
Sample Retained on 20 mm sieve	%	19.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

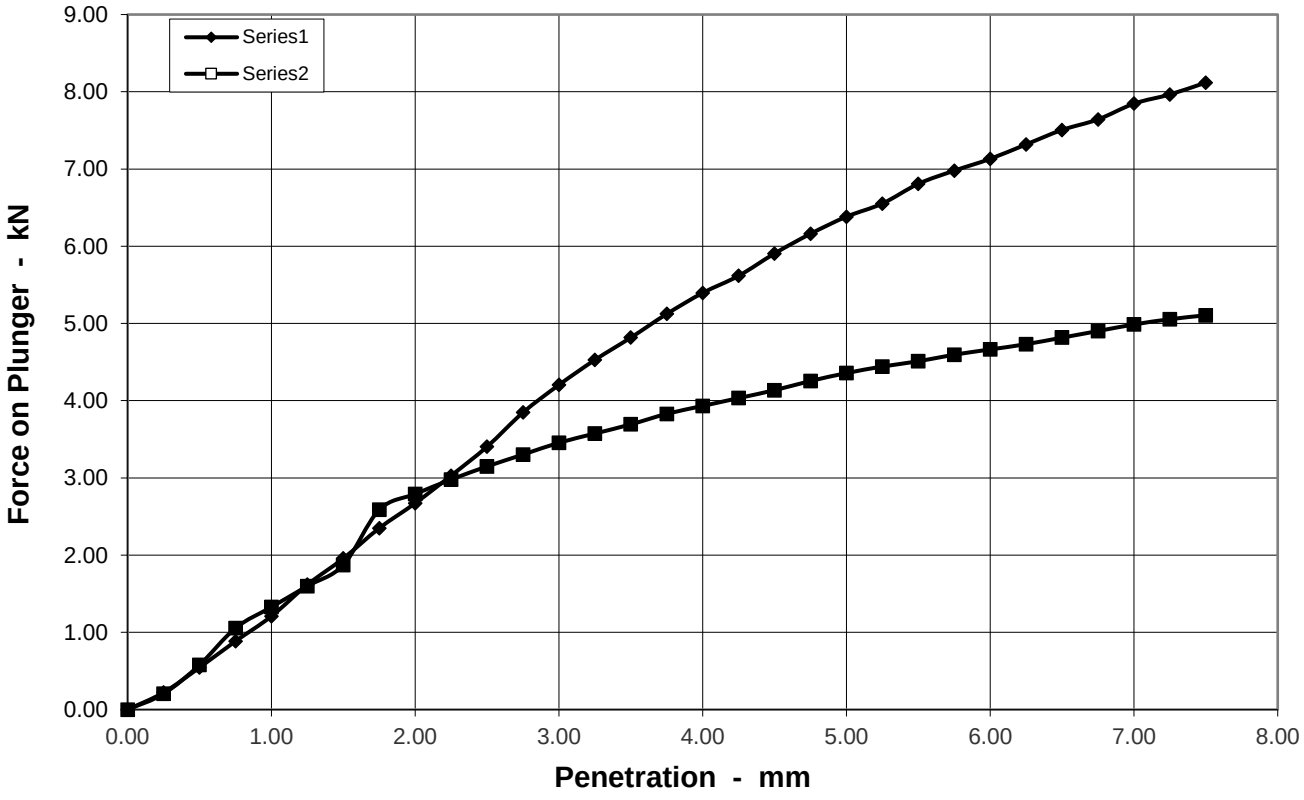
Penetration mm	CBR Values %	
	TOP	BASE
2.5	2.0	2.9
5	2.4	3.8
Accepted CBR	**2.4**	**3.8**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	3
		Depth	1.5 m
Soil Description	Slightly sandy gravelly CLAY		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	8.6
Moisture Content - BASE	%	9.5
Bulk Density	Mg/m³	2.01
Dry Density	Mg/m³	1.74

Test Conditions		
Sample Retained on 20 mm sieve	%	19.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

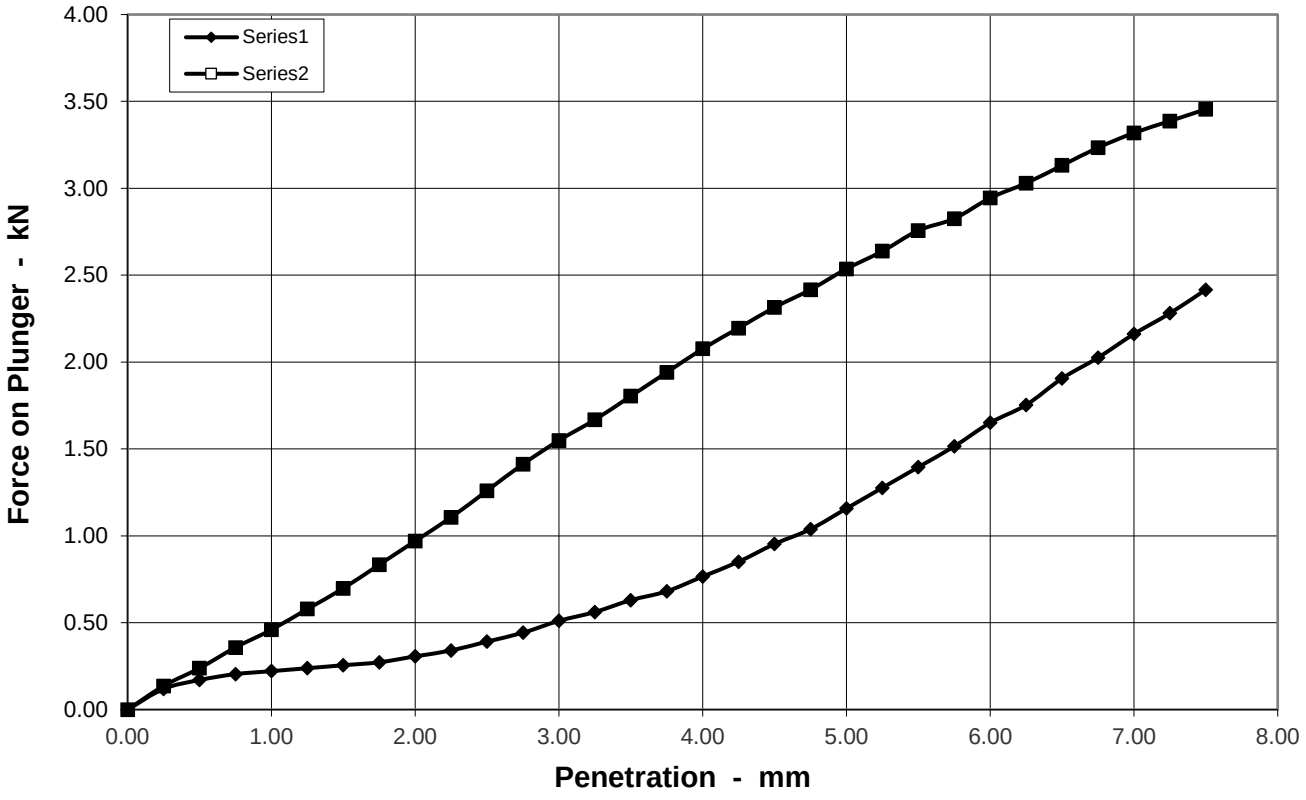
Penetration mm	CBR Values %	
	TOP	BASE
2.5	25.8	23.9
5	31.9	21.8
Accepted CBR	**31.9**	**23.9**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	3
		Depth	1.5 m
Soil Description	Slightly sandy gravelly CLAY		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	11.8
Moisture Content - BASE	%	11.4
Bulk Density	Mg/m³	2.20
Dry Density	Mg/m³	1.90

Test Conditions		
Sample Retained on 20 mm sieve	%	19.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

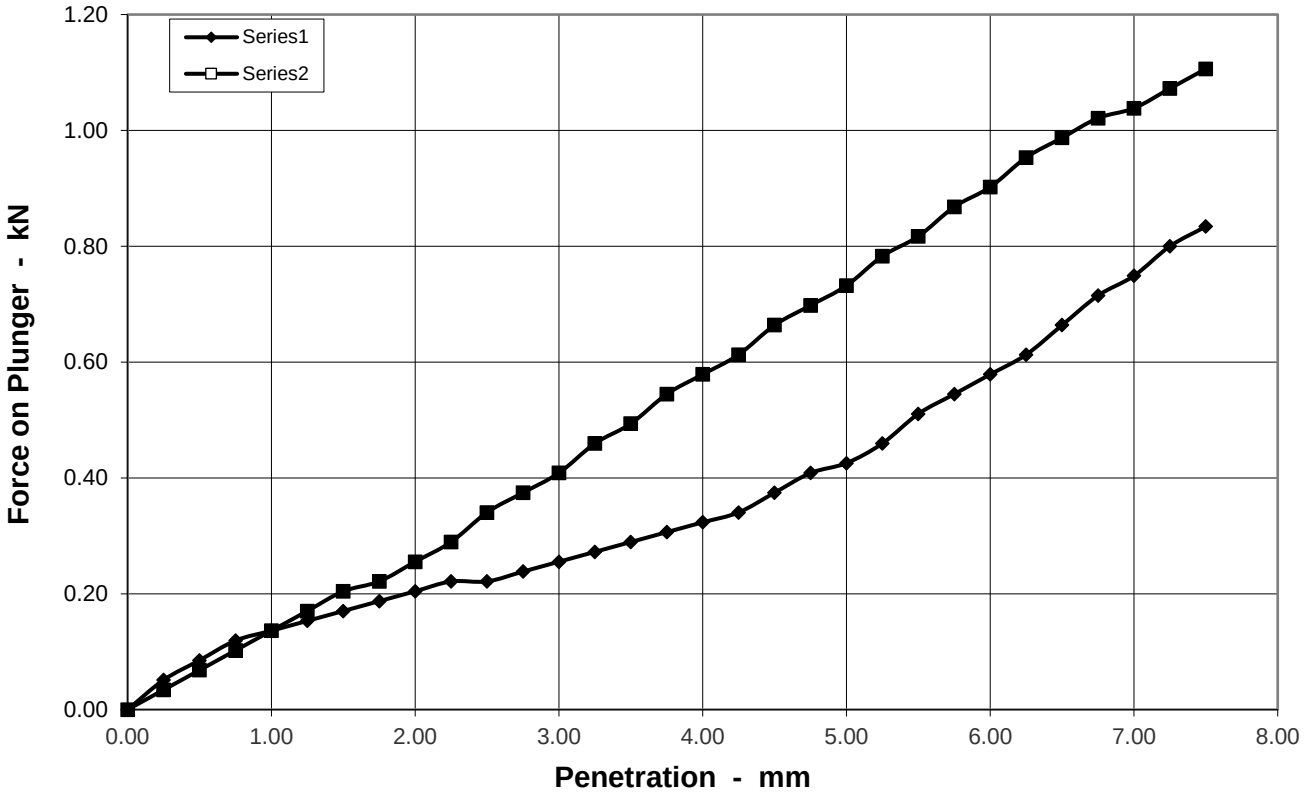
Penetration mm	CBR Values %	
	TOP	BASE
2.5	3.0	9.5
5	5.8	12.7
Accepted CBR	**5.8**	**12.7**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	3
		Depth	1.5 m
Soil Description	Slightly sandy gravelly CLAY		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	11.6
Moisture Content - BASE	%	11.8
Bulk Density	Mg/m³	2.22
Dry Density	Mg/m³	1.92

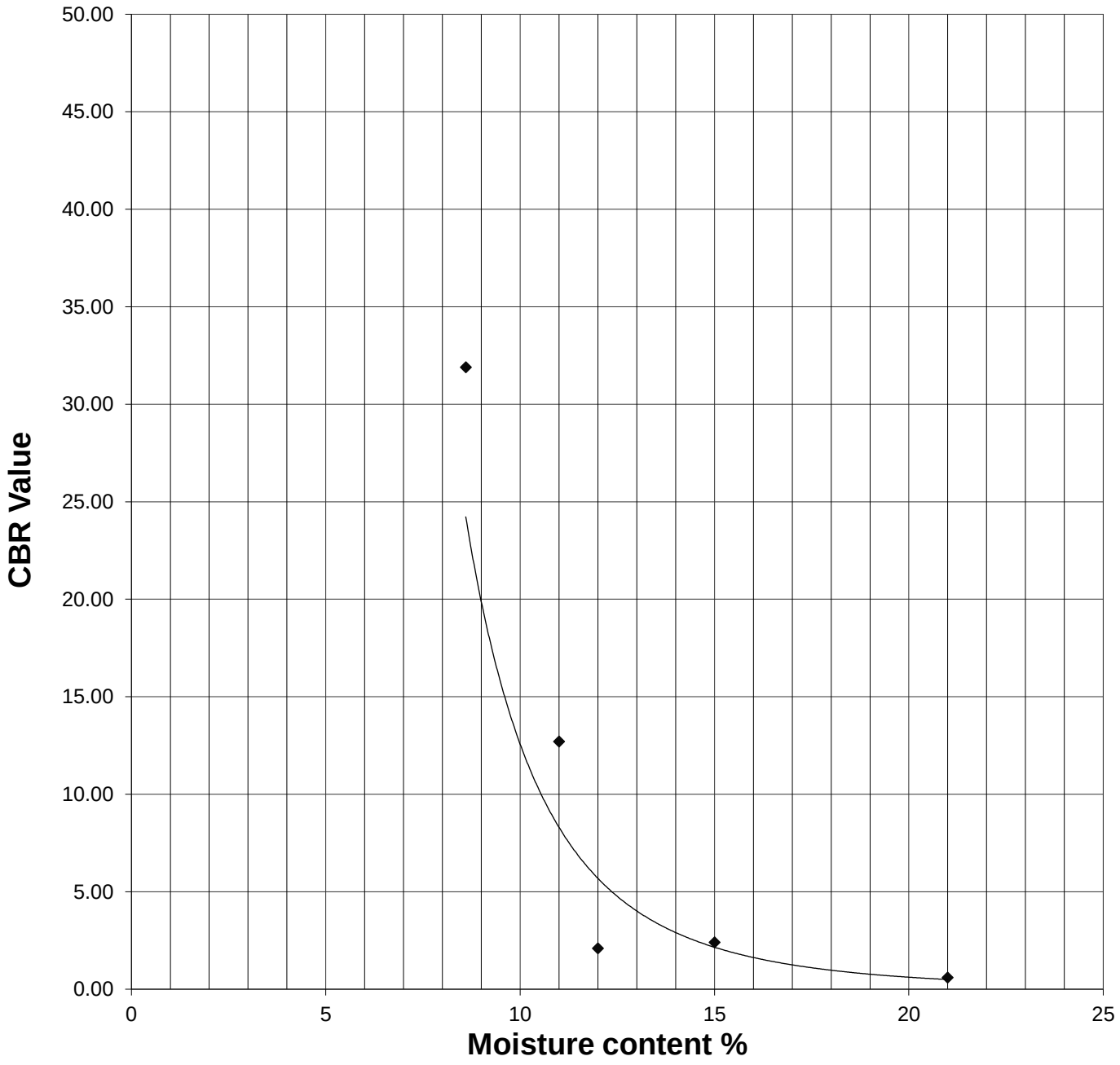
Test Conditions		
Sample Retained on 20 mm sieve	%	19.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.7	2.6
5	2.1	3.7
Accepted CBR	**2.1**	**3.7**

			Remarks	

pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078**
		Borehole / Pit No	BH1303
Location	LIHAF- Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Sample Type	BH
		Depth	1.50 m

CBR/ Moisture Content Relationship

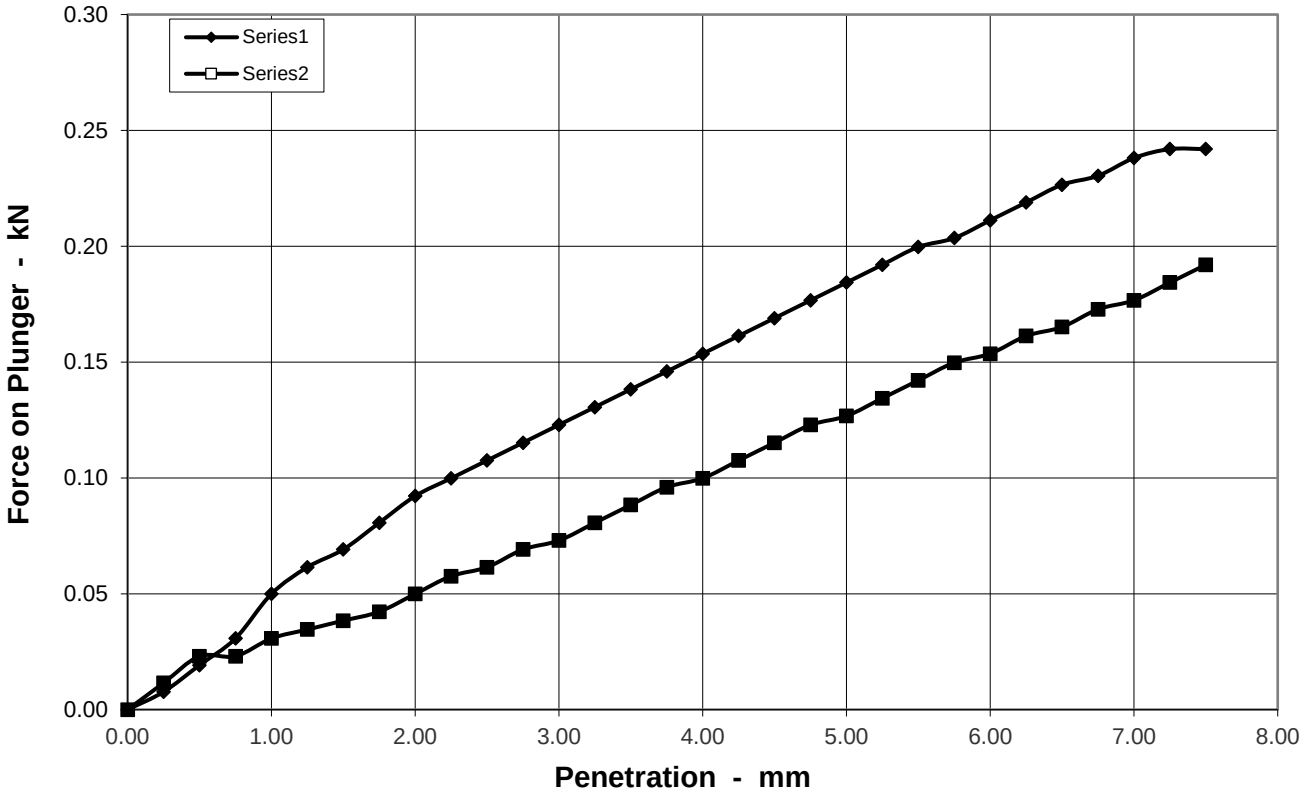


Operator	Checked	Approved

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 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	%	13.0
Moisture Content - TOP	%	13.3
Moisture Content - BASE	%	16.1
Bulk Density	Mg/m³	2.22
Dry Density	Mg/m³	1.96

Test Conditions		
Sample Retained on 20 mm sieve	%	13.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

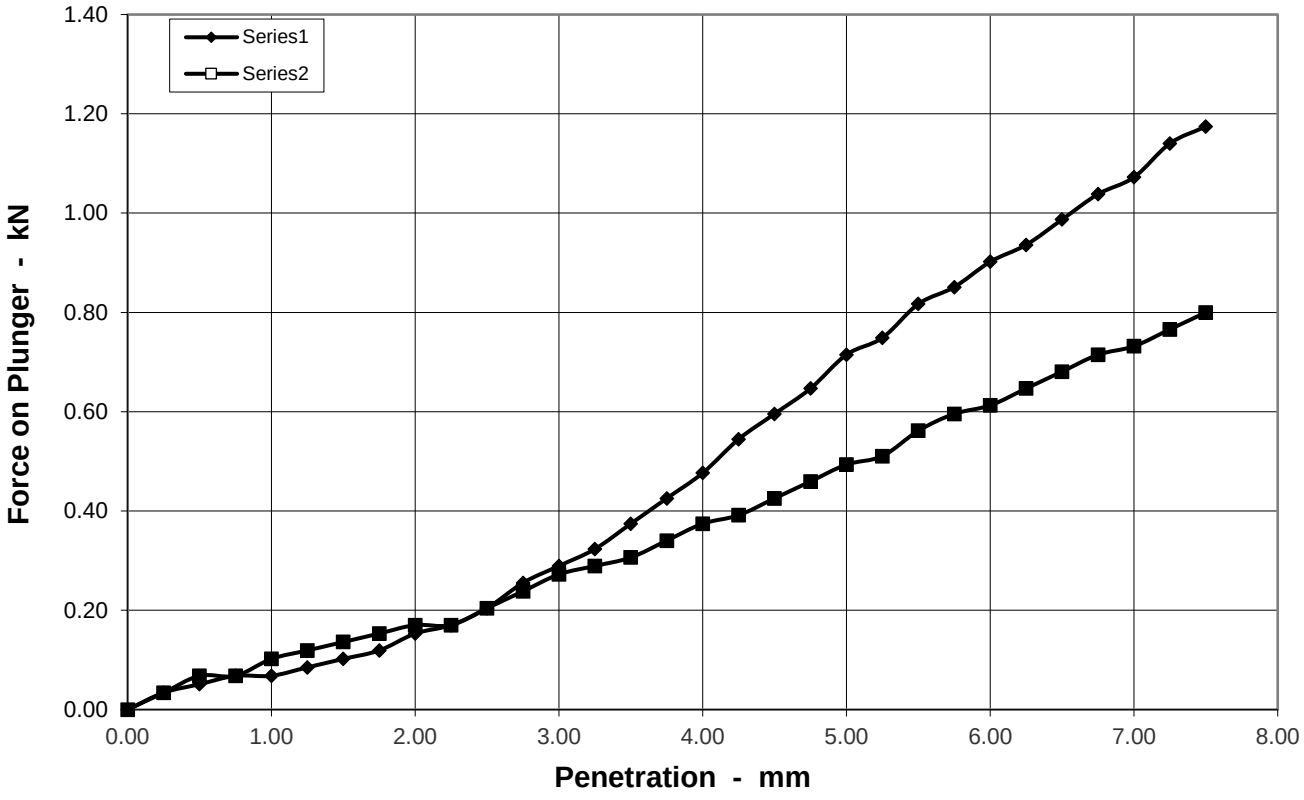
Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.8	0.5
5	0.9	0.6
Accepted CBR	**0.9**	**0.6**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 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	%	13.0
Moisture Content - TOP	%	12.0
Moisture Content - BASE	%	13.0
Bulk Density	Mg/m³	2.19
Dry Density	Mg/m³	1.93

Test Conditions		
Sample Retained on 20 mm sieve	%	13.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

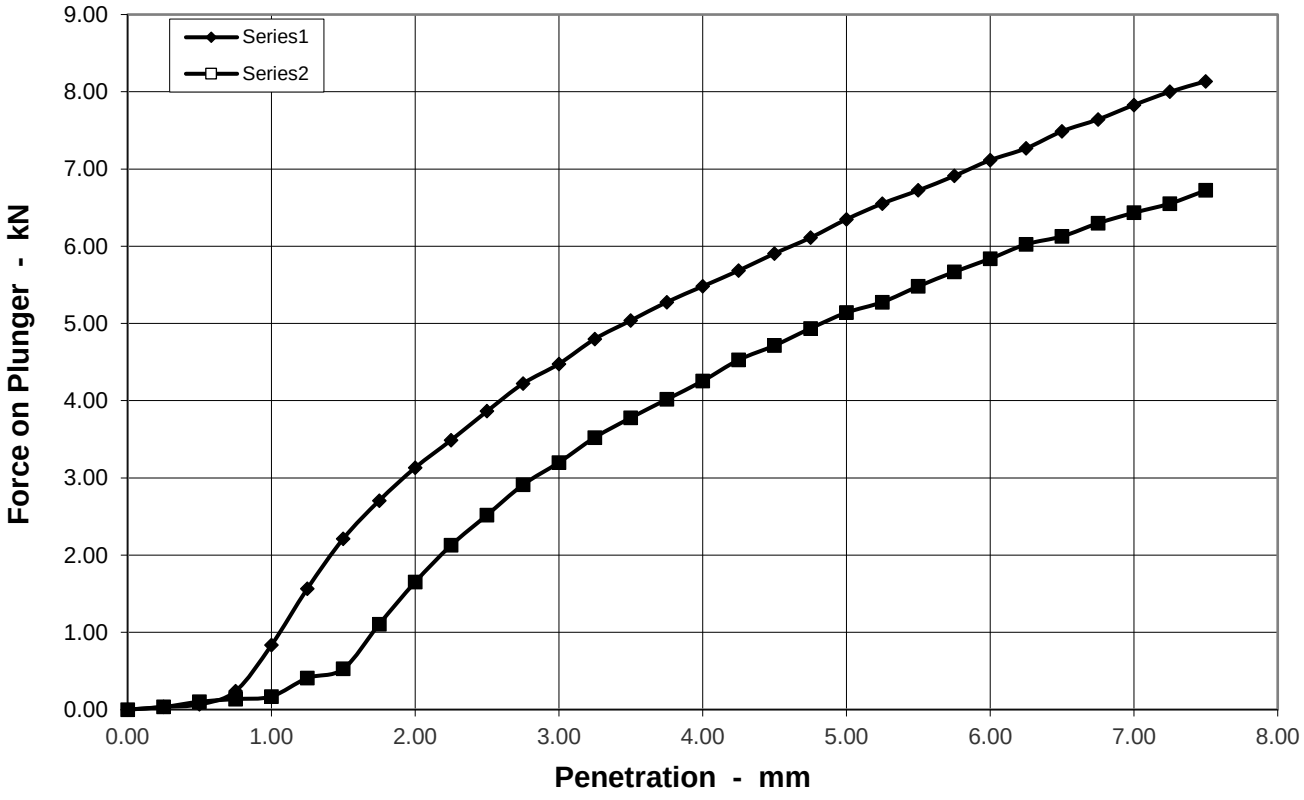
Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.5	1.5
5	3.6	2.5
Accepted CBR	**3.6**	**2.5**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 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	%	13.0
Moisture Content - TOP	%	9.8
Moisture Content - BASE	%	8.4
Bulk Density	Mg/m³	2.08
Dry Density	Mg/m³	1.84

Test Conditions		
Sample Retained on 20 mm sieve	%	13.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

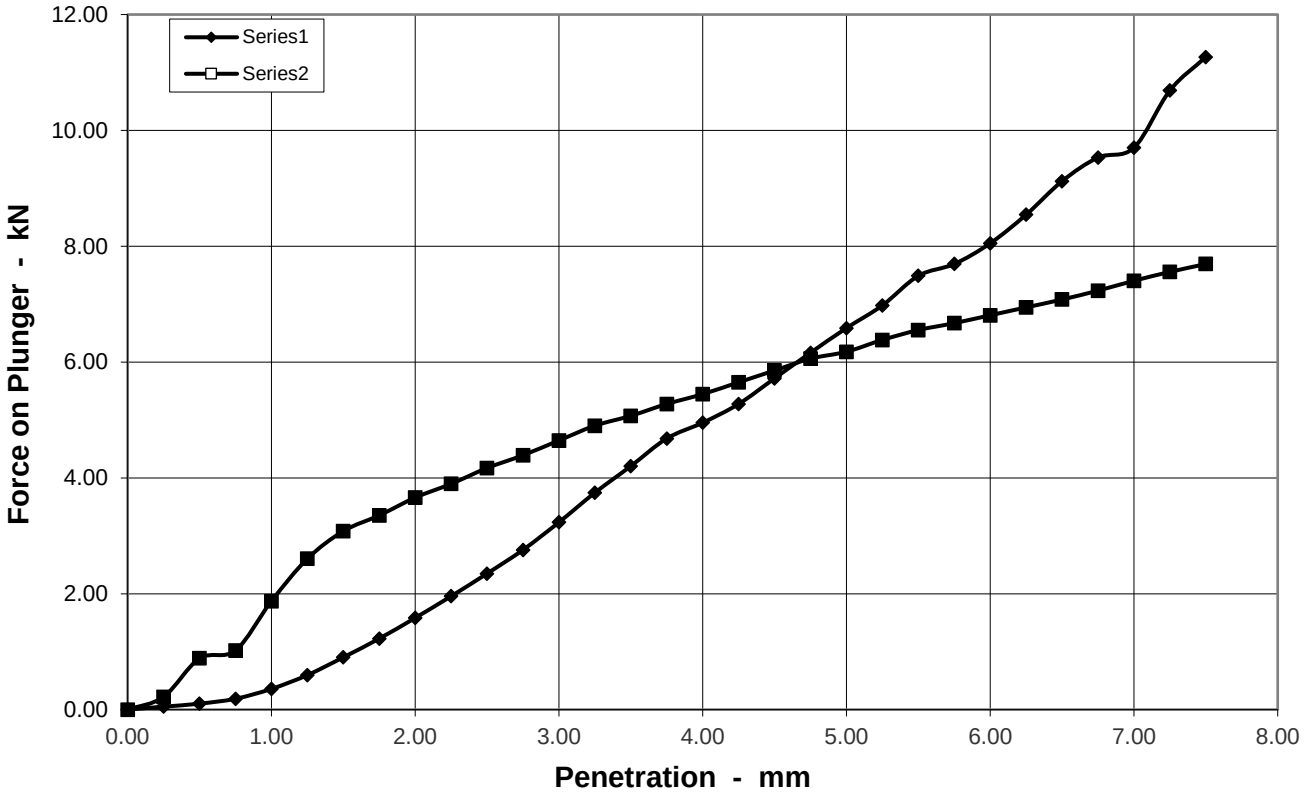
Penetration mm	CBR Values %	
	TOP	BASE
2.5	29.3	19.1
5	31.7	25.7
Accepted CBR	**31.7**	**25.7**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 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	%	13.0
Moisture Content - TOP	%	4.3
Moisture Content - BASE	%	4.7
Bulk Density	Mg/m³	1.99
Dry Density	Mg/m³	1.76

Test Conditions		
Sample Retained on 20 mm sieve	%	13.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

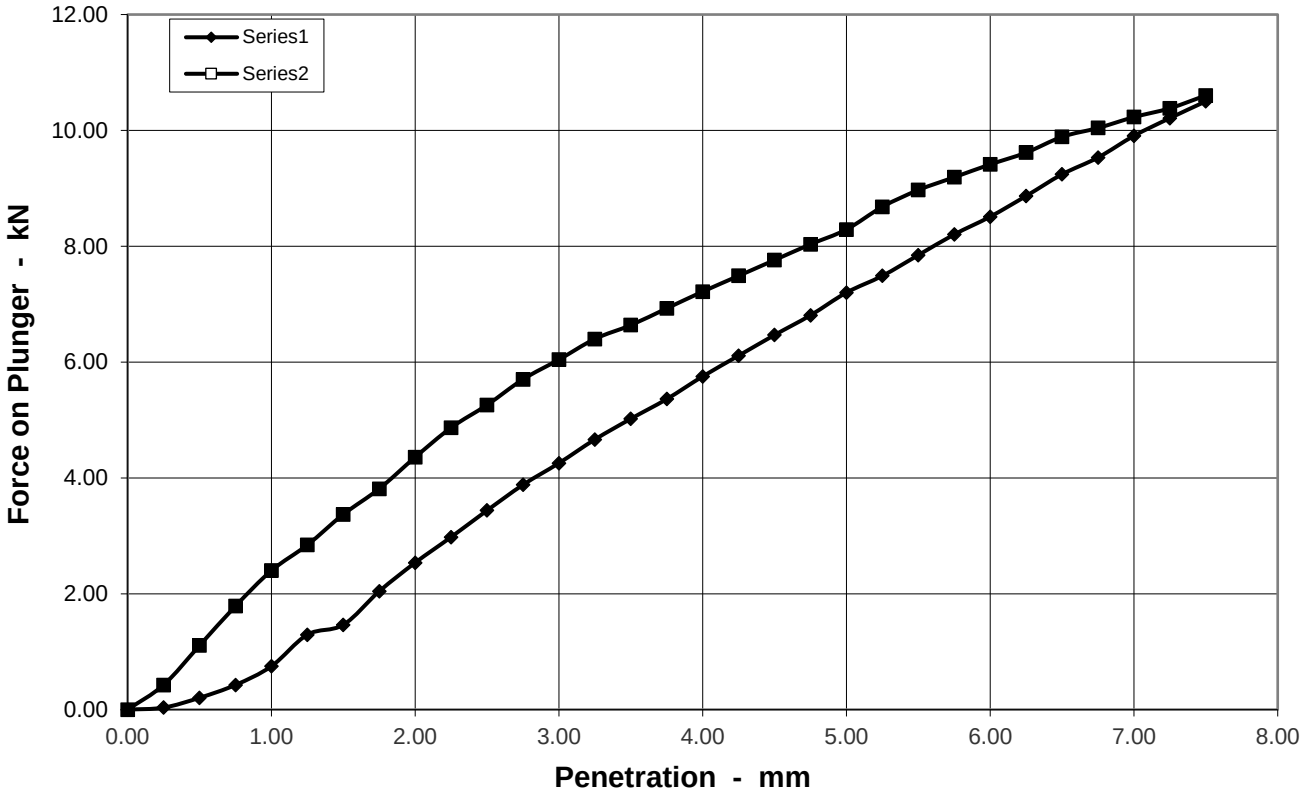
Penetration mm	CBR Values %	
	TOP	BASE
2.5	17.8	31.6
5	32.9	30.9
Accepted CBR	**32.9**	**31.6**

			Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1303
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 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	%	13.0
Moisture Content - TOP	%	7.0
Moisture Content - BASE	%	7.3
Bulk Density	Mg/m³	2.07
Dry Density	Mg/m³	1.82

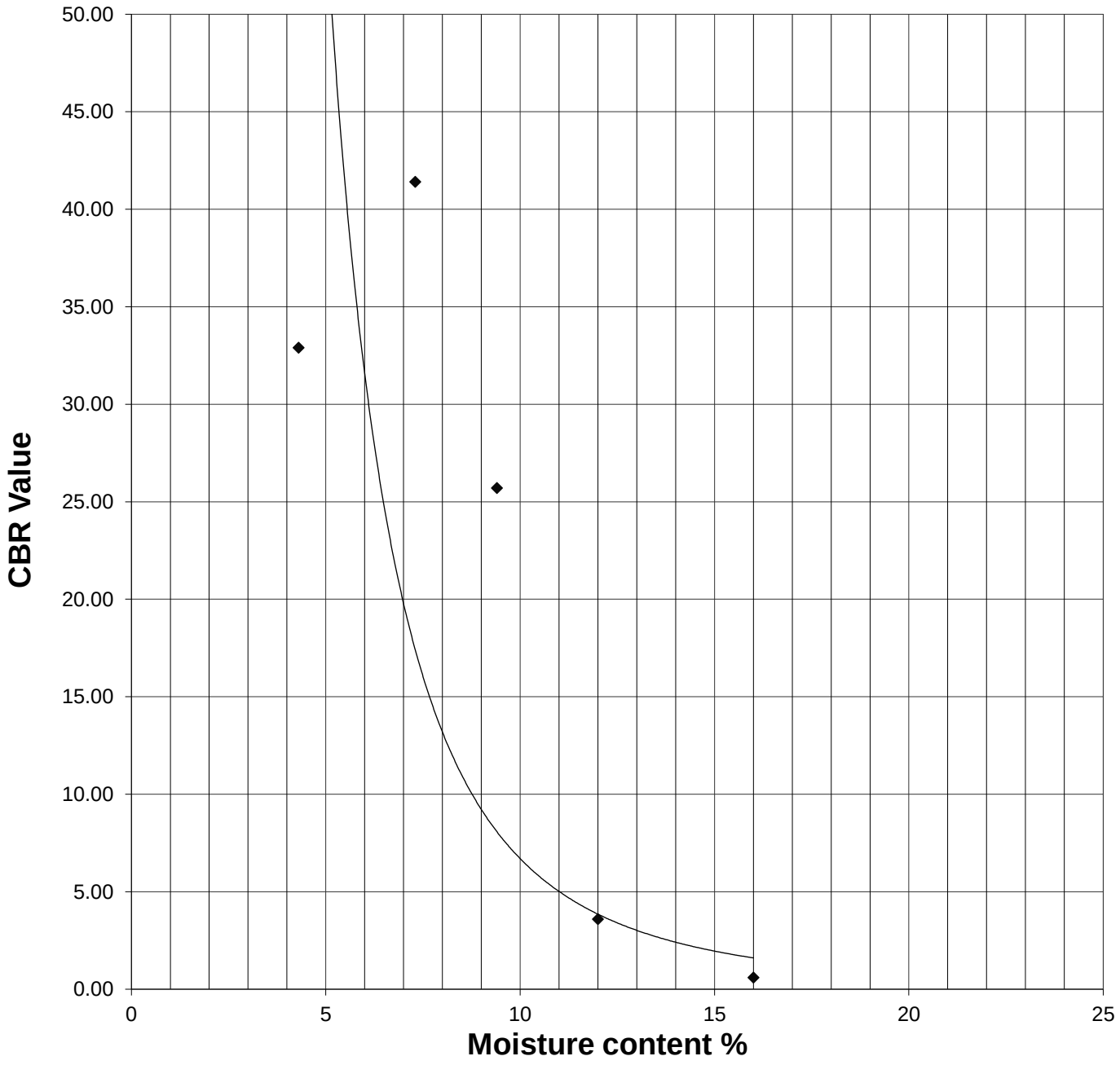
Test Conditions		
Sample Retained on 20 mm sieve	%	13.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	26.0	39.8
5	36.0	41.4
Accepted CBR	**36.0**	**41.4**

Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078**
		Borehole / Pit No	BH1303
Location	LIHAF- Kilcock	Sample No	5
Soil Description	Sligtly sandy gravelly CLAY with low cobble content	Sample Type	BH
		Depth	2.50 m

CBR/ Moisture Content Relationship

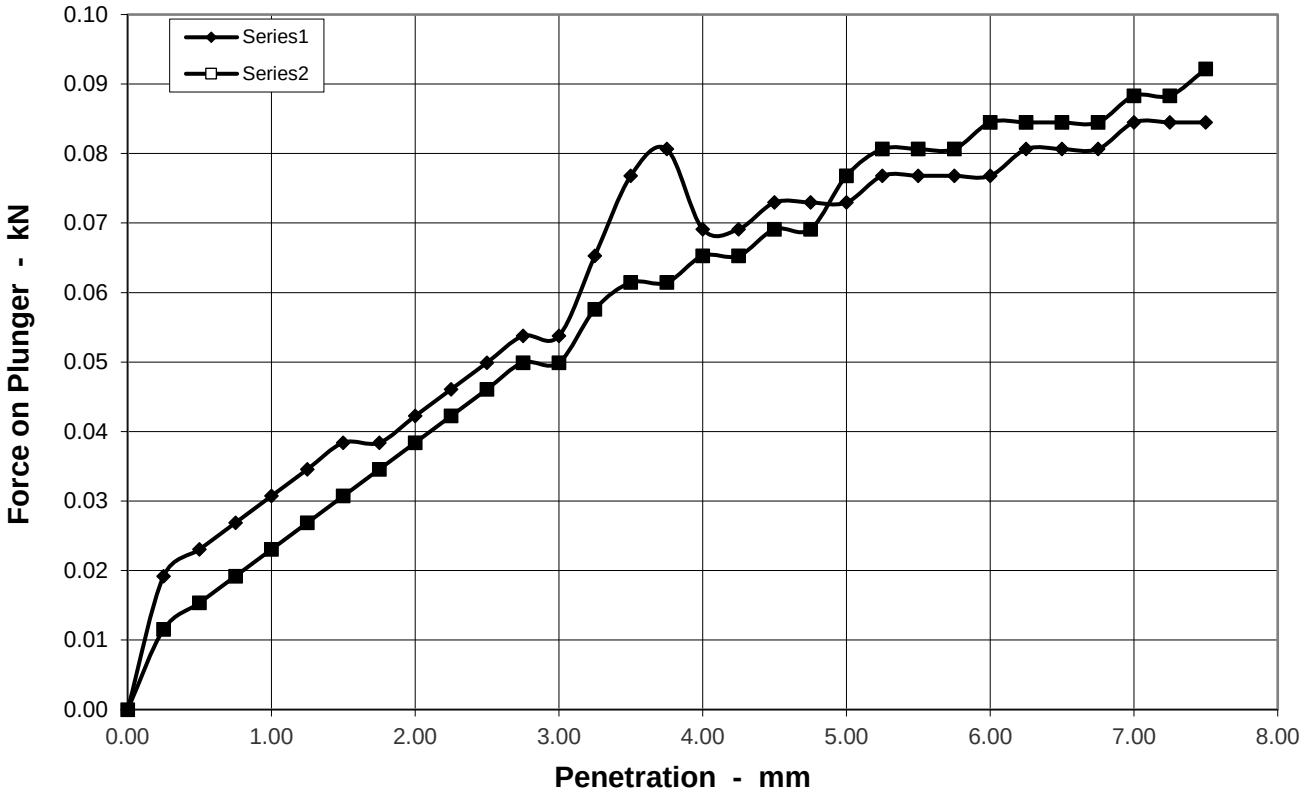


Operator	Checked	Approved

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 m
Soil Description	Very sandy very clayey GRAVEL		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	14.6
Moisture Content - BASE	%	17.4
Bulk Density	Mg/m³	2.20
Dry Density	Mg/m³	1.92

Test Conditions		
Sample Retained on 20 mm sieve	%	9.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

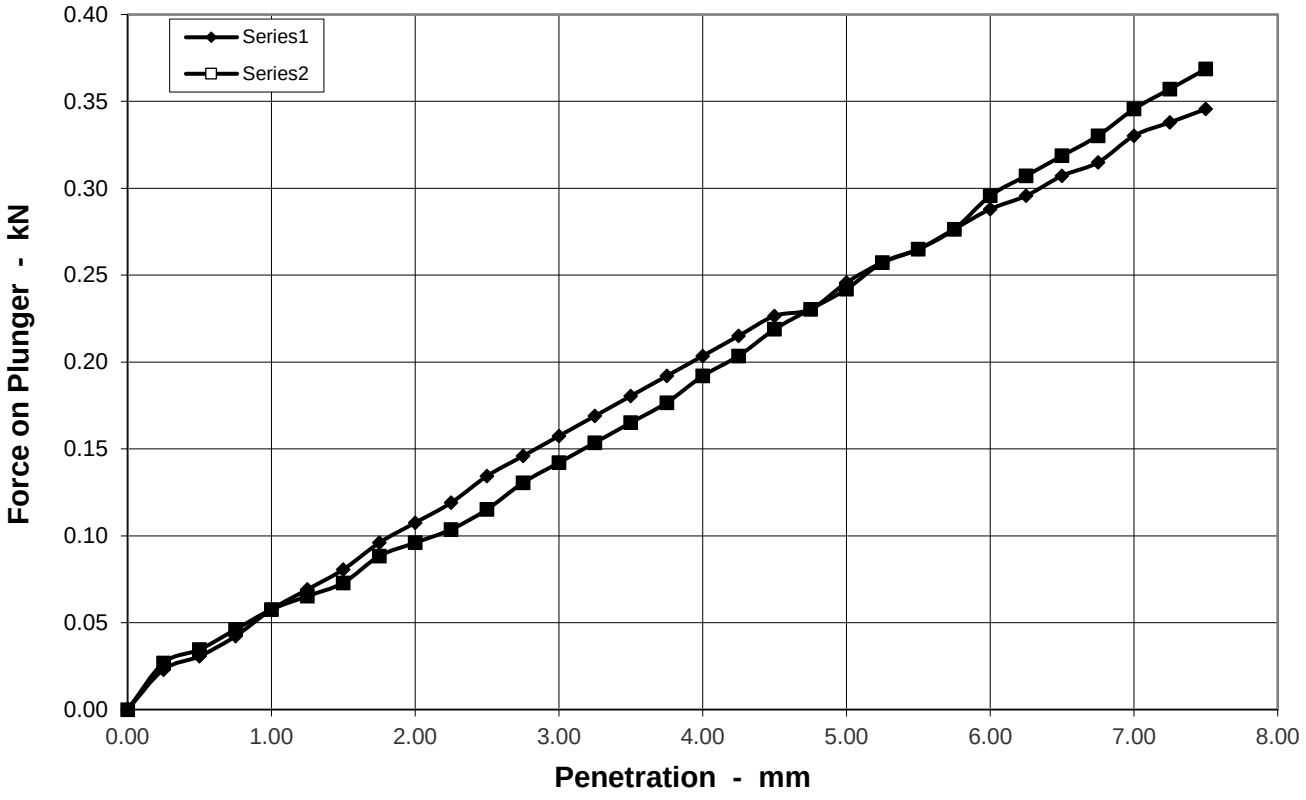
Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.4	0.3
5	0.4	0.4
Accepted CBR	**0.4**	**0.4**

Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 m
Soil Description	Very sandy very clayey GRAVEL		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	13.7
Moisture Content - BASE	%	11.3
Bulk Density	Mg/m³	2.25
Dry Density	Mg/m³	1.96

Test Conditions		
Sample Retained on 20 mm sieve	%	9.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

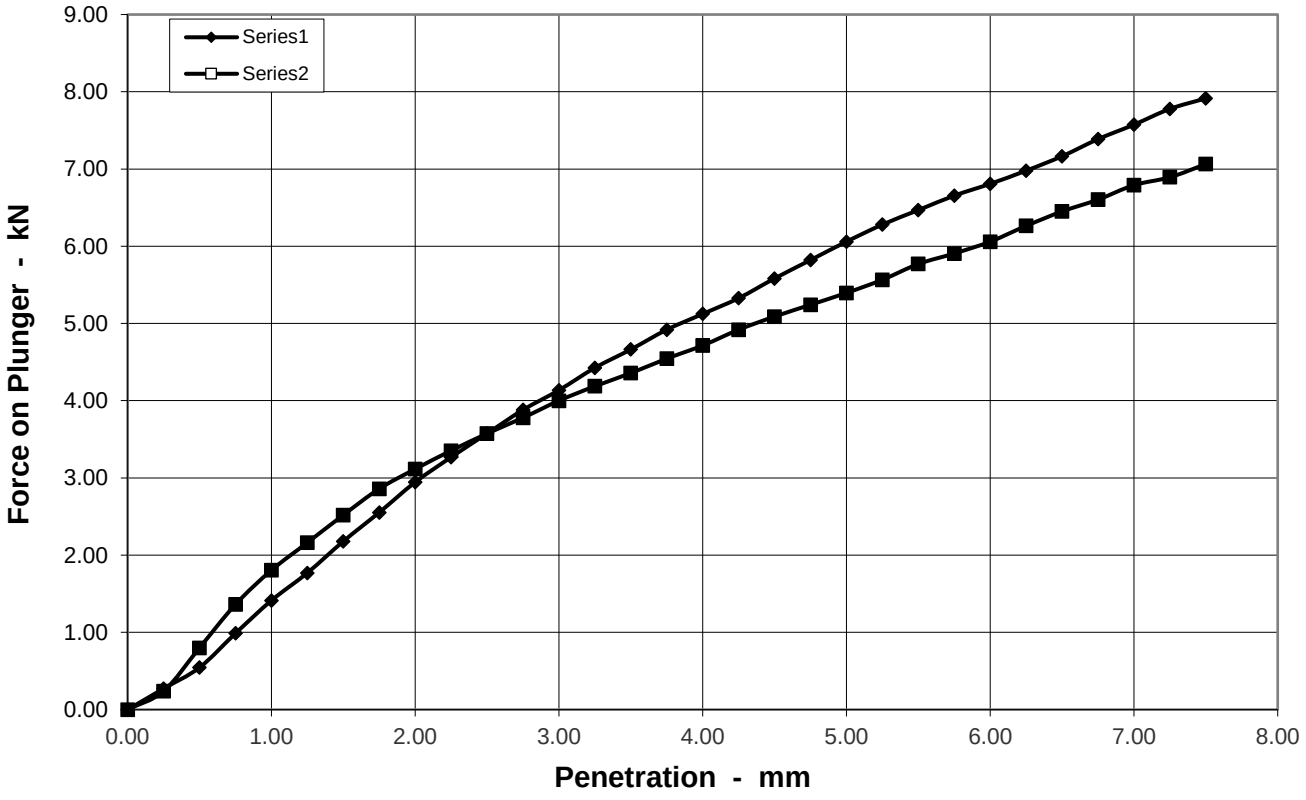
Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.0	0.9
5	1.2	1.2
Accepted CBR	**1.2**	**1.2**

			Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 m
Soil Description	Very sandy very clayey GRAVEL		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	10.6
Moisture Content - BASE	%	9.8
Bulk Density	Mg/m³	2.17
Dry Density	Mg/m³	1.90

Test Conditions		
Sample Retained on 20 mm sieve	%	9.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

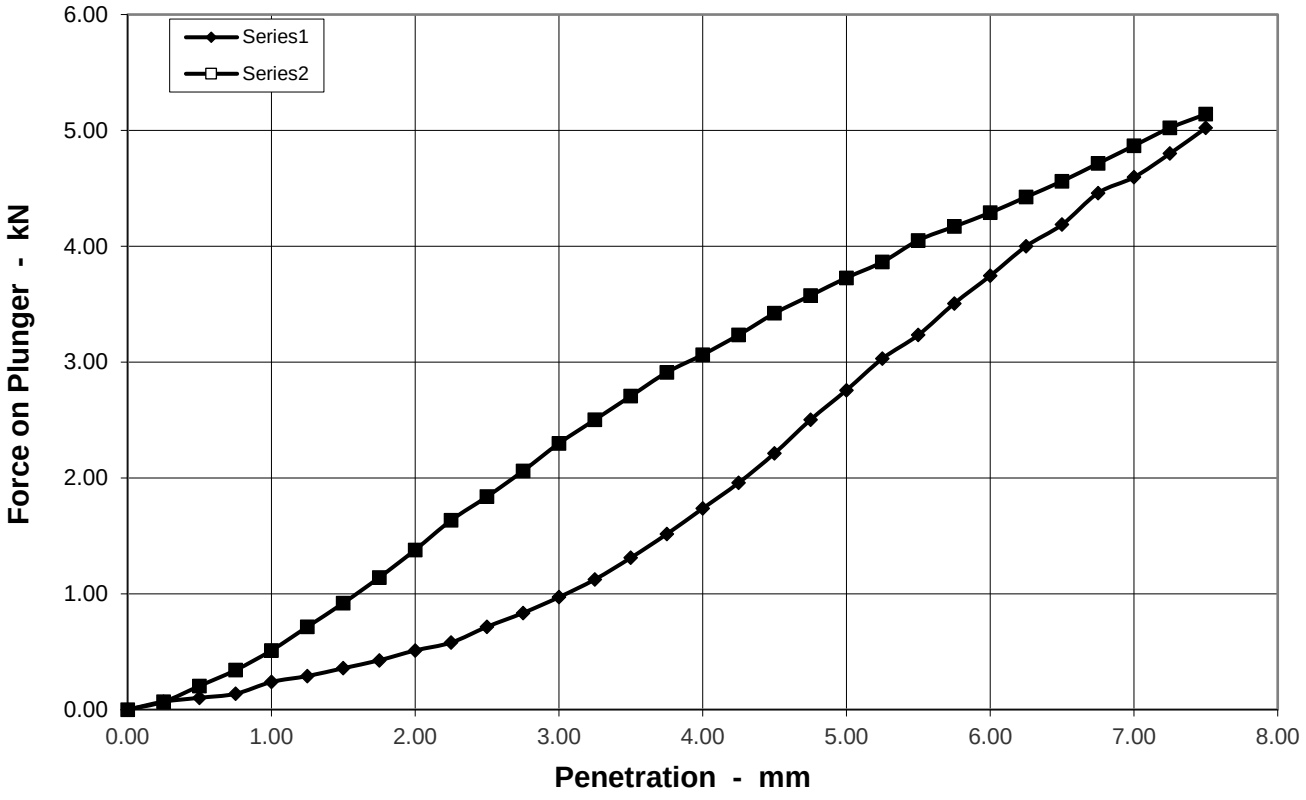
Penetration mm	CBR Values %	
	TOP	BASE
2.5	27.1	27.1
5	30.3	27.0
Accepted CBR	**30.3**	**27.1**

Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 m
Soil Description	Very sandy very clayey GRAVEL		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	11.1
Moisture Content - BASE	%	10.8
Bulk Density	Mg/m³	2.24
Dry Density	Mg/m³	1.95

Test Conditions		
Sample Retained on 20 mm sieve	%	9.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

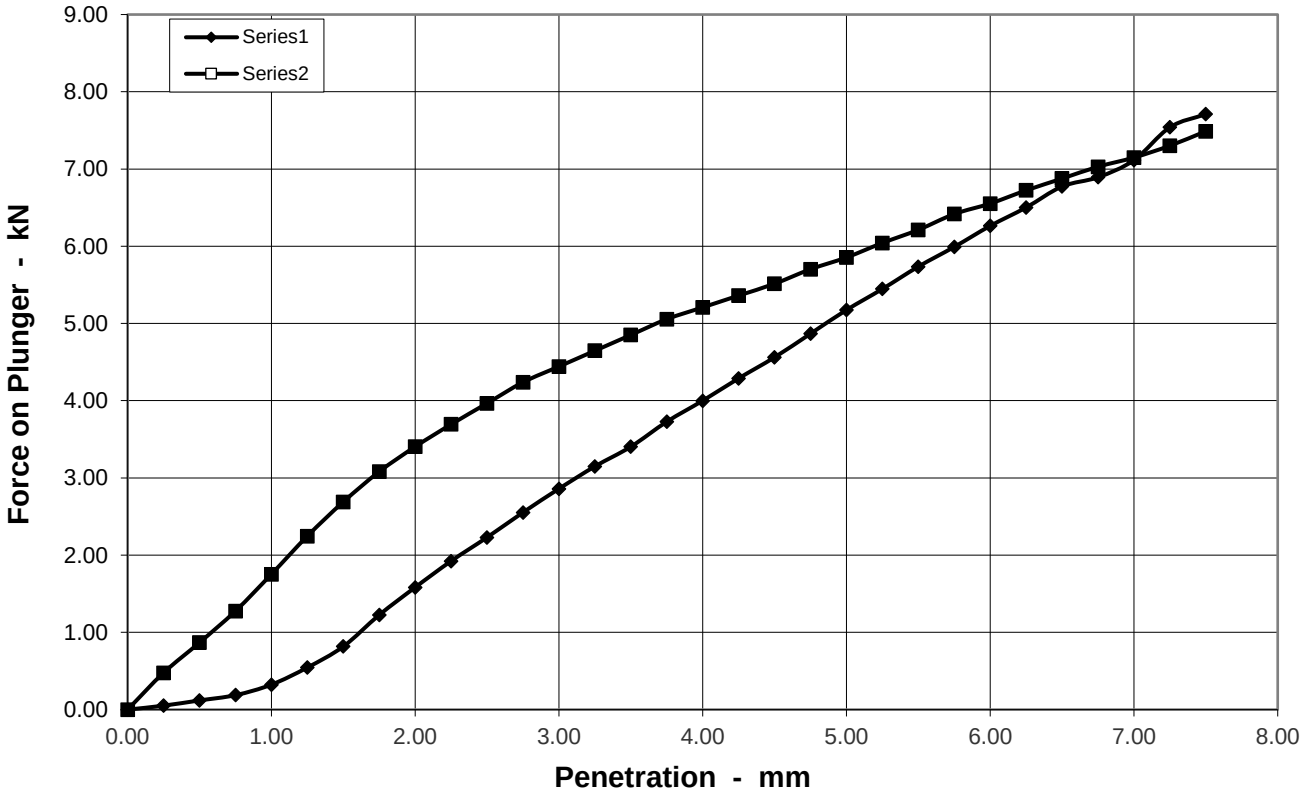
Penetration mm	CBR Values %	
	TOP	BASE
2.5	5.4	13.9
5	13.8	18.6
Accepted CBR	**13.8**	**18.6**

			Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P20078_1**
		Borehole / Pit No	BH1304
Site Name	**LIHAF - Kilcock**	Sample No	5
		Depth	2.5 m
Soil Description	Very sandy very clayey GRAVEL		



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

Sample Conditions		
Natural Moisture Content	%	15.0
Moisture Content - TOP	%	7.2
Moisture Content - BASE	%	6.5
Bulk Density	Mg/m³	2.05
Dry Density	Mg/m³	1.79

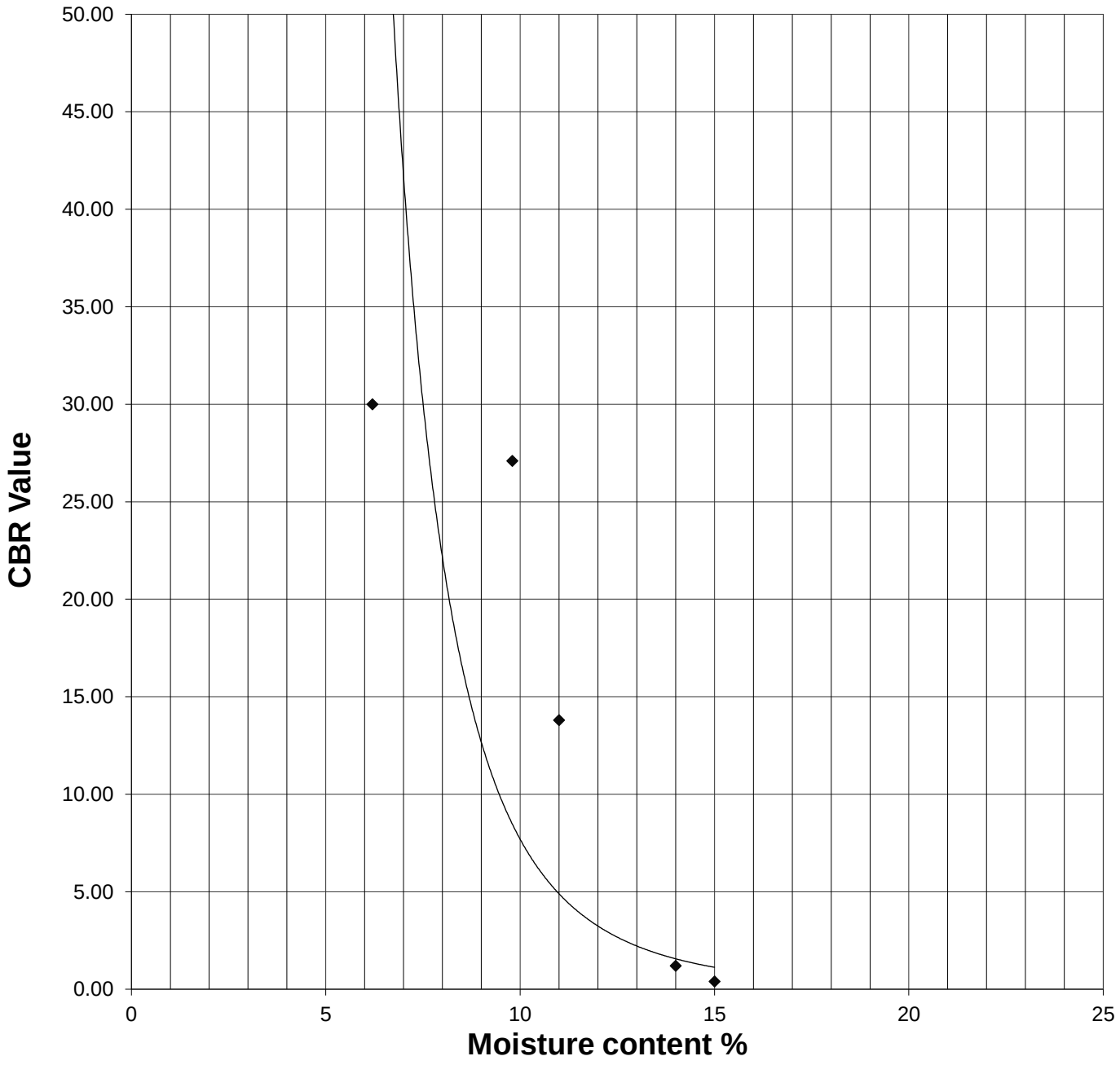
Test Conditions		
Sample Retained on 20 mm sieve	%	9.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	16.9	30.0
5	25.9	29.3
Accepted CBR	**25.9**	**30.0**

			Remarks

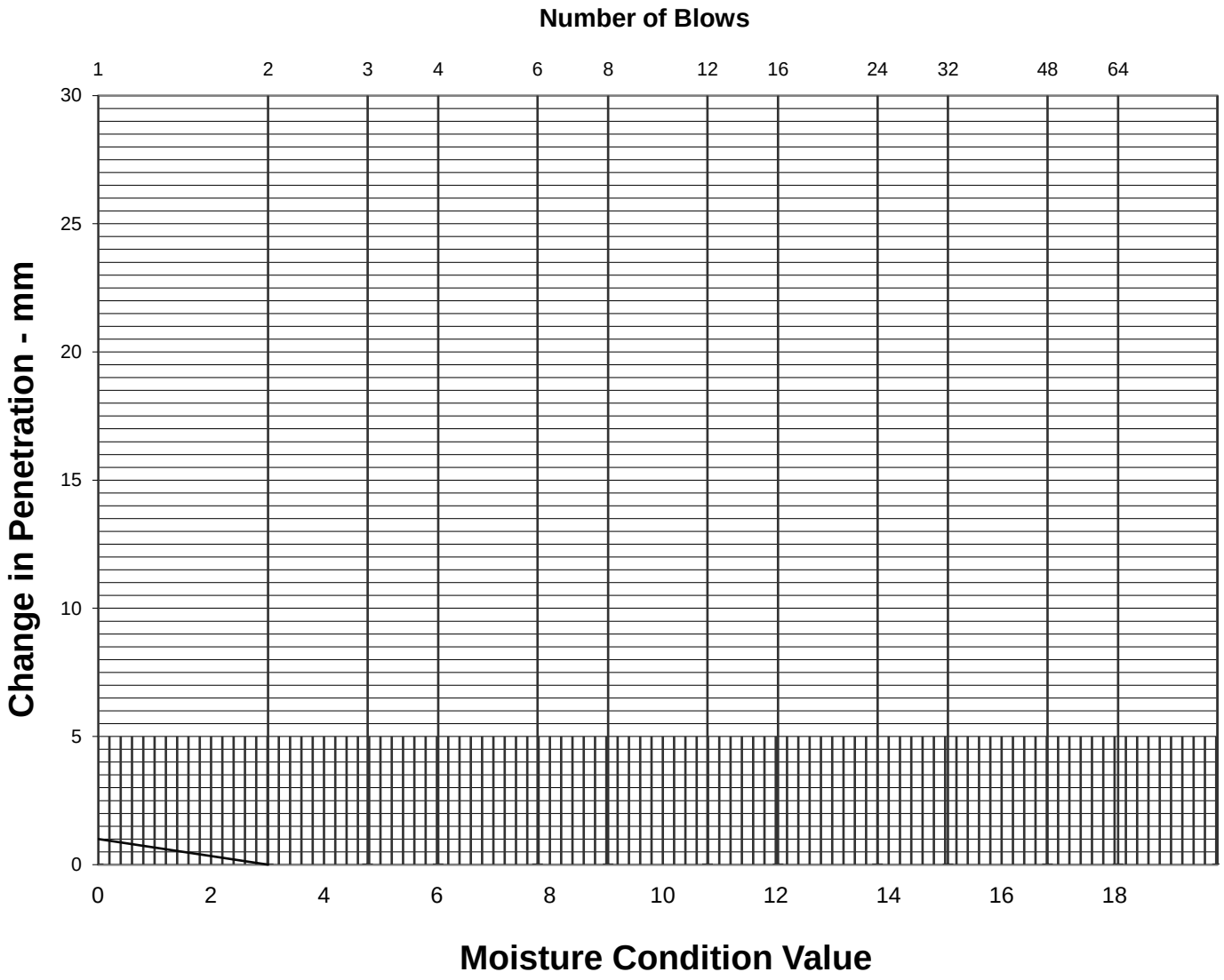
pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078**
		Borehole / Pit No	BH1304
Location	LIHAF- Kilcock	Sample No	5
Soil Description	Very sandy very clayey GRAVEL	Sample Type	BH
		Depth	2.50 m

CBR/ Moisture Content Relationship



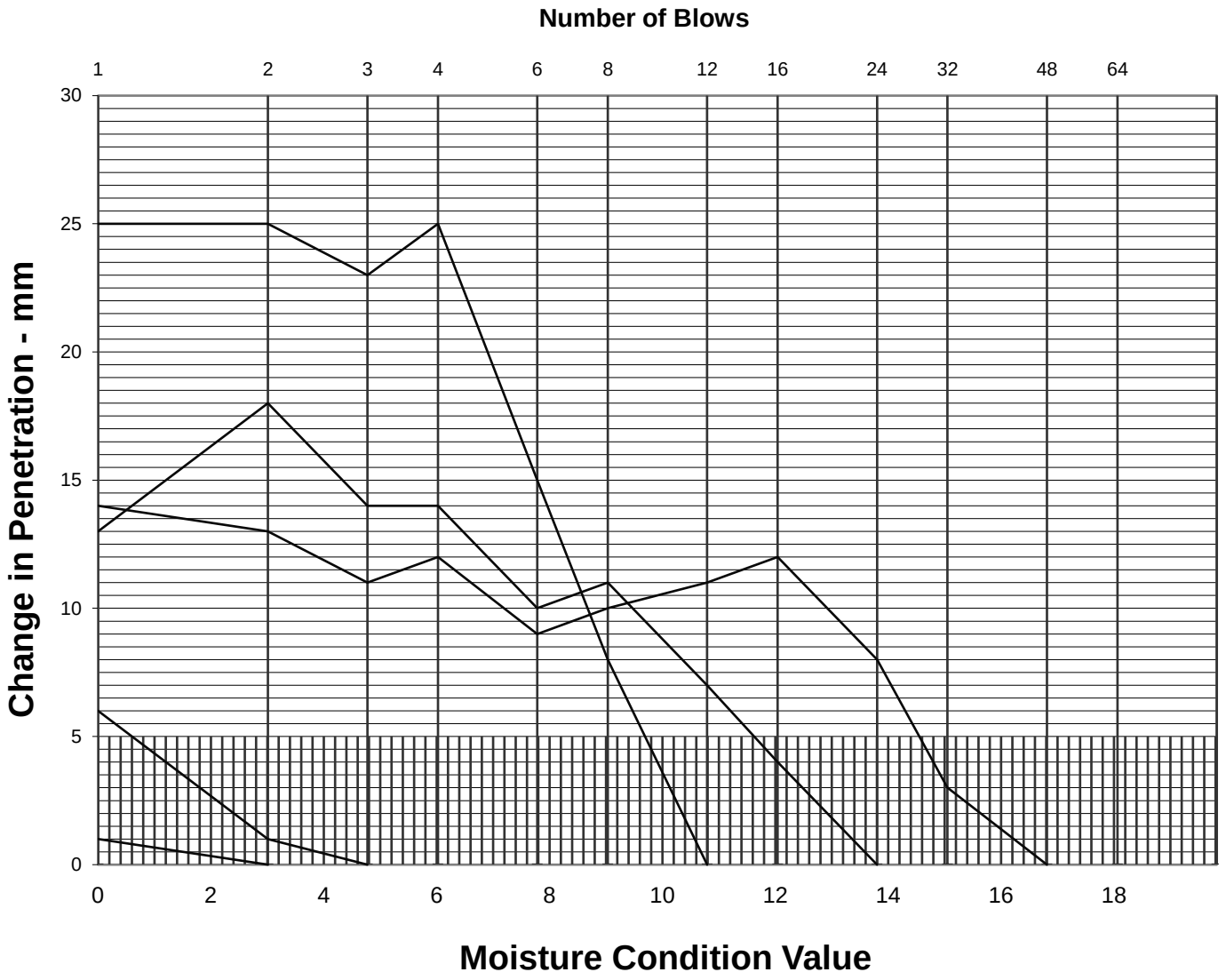
Operator	Checked	Approved

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	ST1312
Location	LIHAF - Kilcock	Sample No	1
Soil Description	Slightly gravelly slightly sandy CLAY	Sample Type	B
		Depth	1.00 m



Specimen No		1	2	3	4	5	6
Moisture Condition Value		0.0					
Moisture Content	%	26.38					
Bulk density after compaction	Mg/m³	2.03					
Dry density after compaction	Mg/m³	1.61					
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	%	3.6					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	ST1312
Location	LIHAF - Kilcock	Sample No	1
Soil Description		Sample Type	B
		Depth	1.00 m

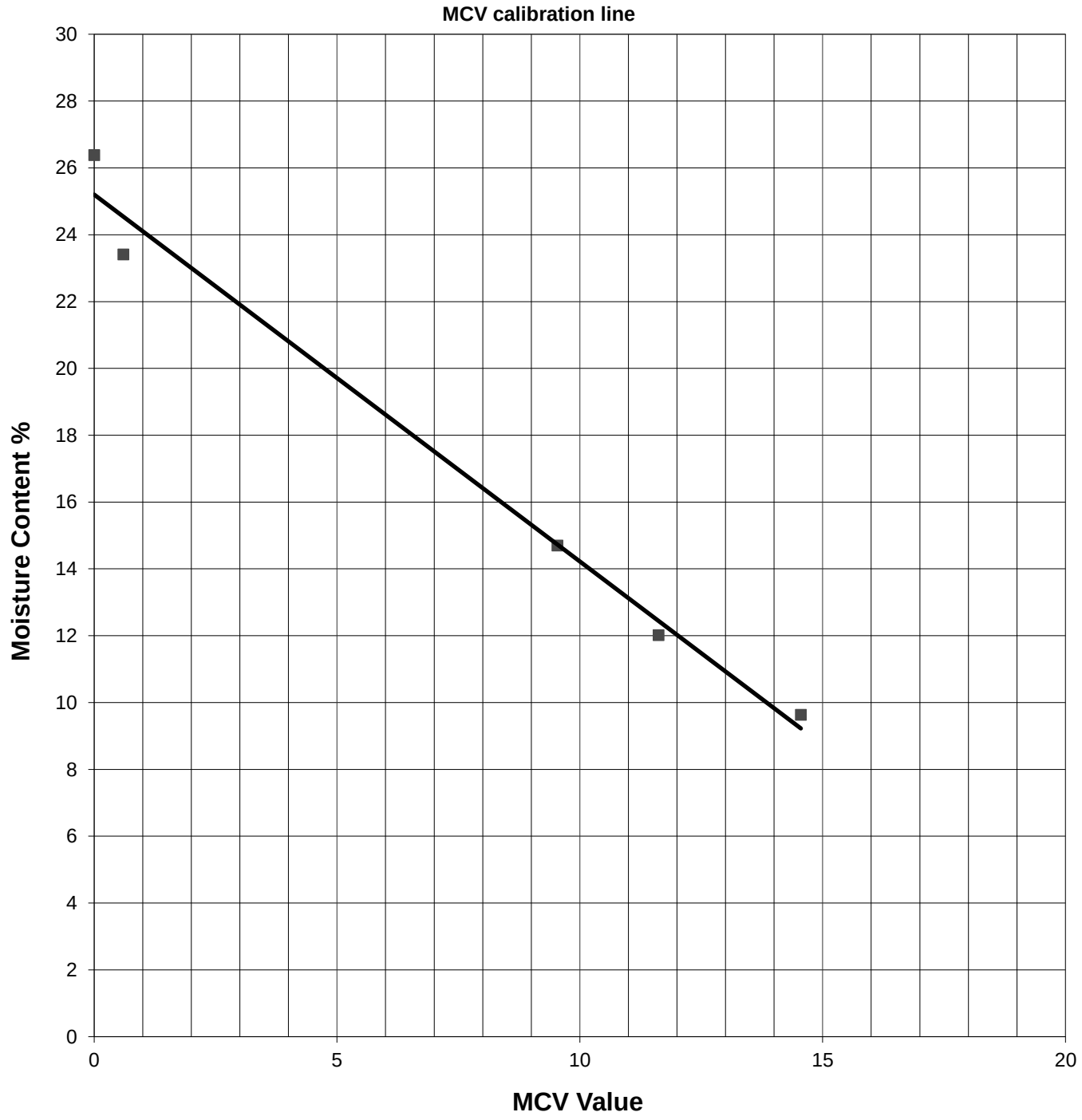


Specimen No		1	2	3	4	5	6
Moisture Condition Value		0.0	0.6	9.5	14.6	11.6	
Moisture Content	%	26.38	23.41	14.70	9.63	12.02	
Bulk density after compaction	Mg/m³	2.03	2.01	1.82	2.01	1.95	
Dry density after compaction	Mg/m³	1.61	1.63	1.59	1.83	1.74	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	3.6					

MCV Relationship Graph

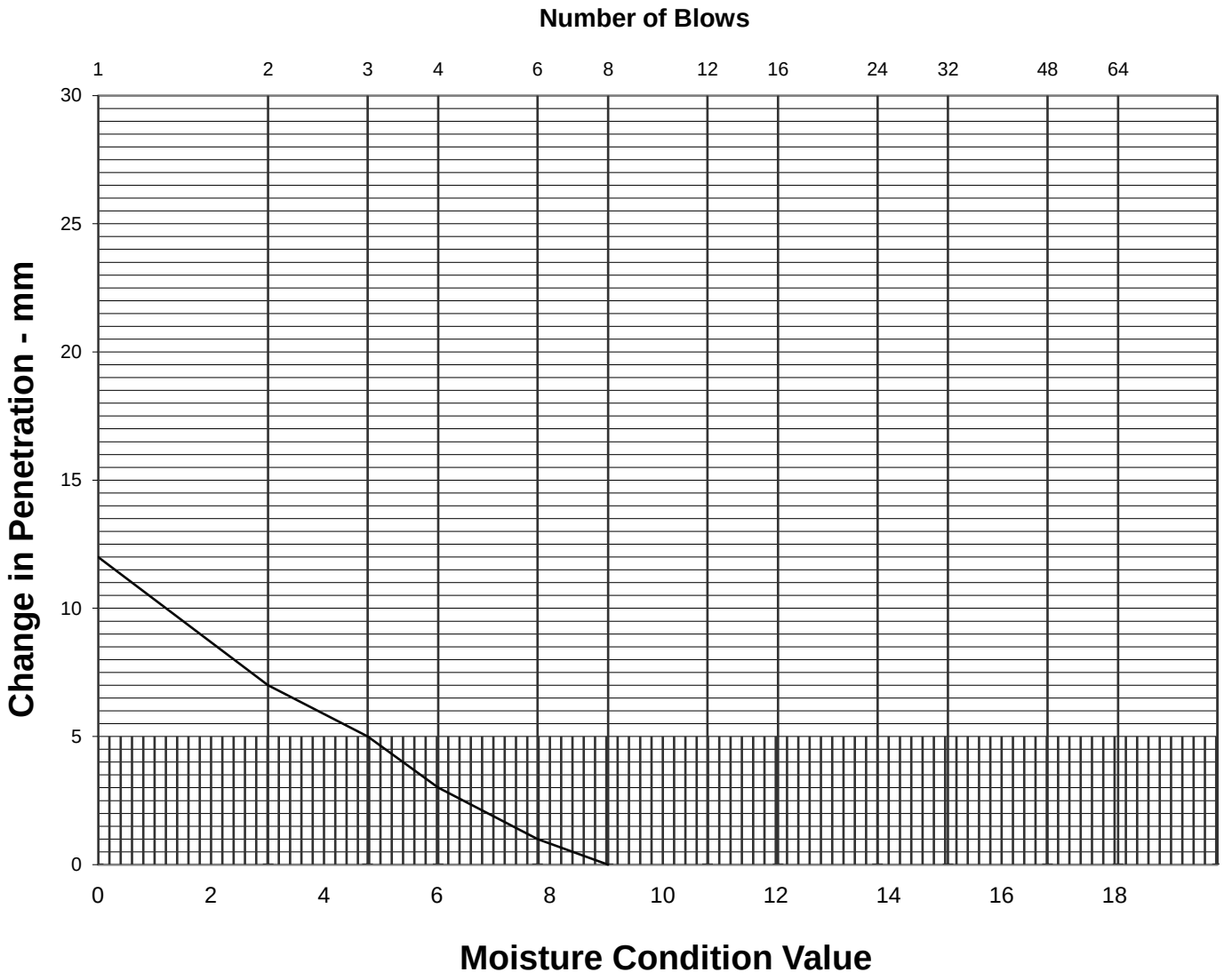
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P20078**
		Borehole / Pit No	ST1312
Location	LIAHF-East Maynooth	Sample No	1
Soil Description	Slightly gravelly slightly sandy CLAY	Sample Type	B
		Depth	1.00 m



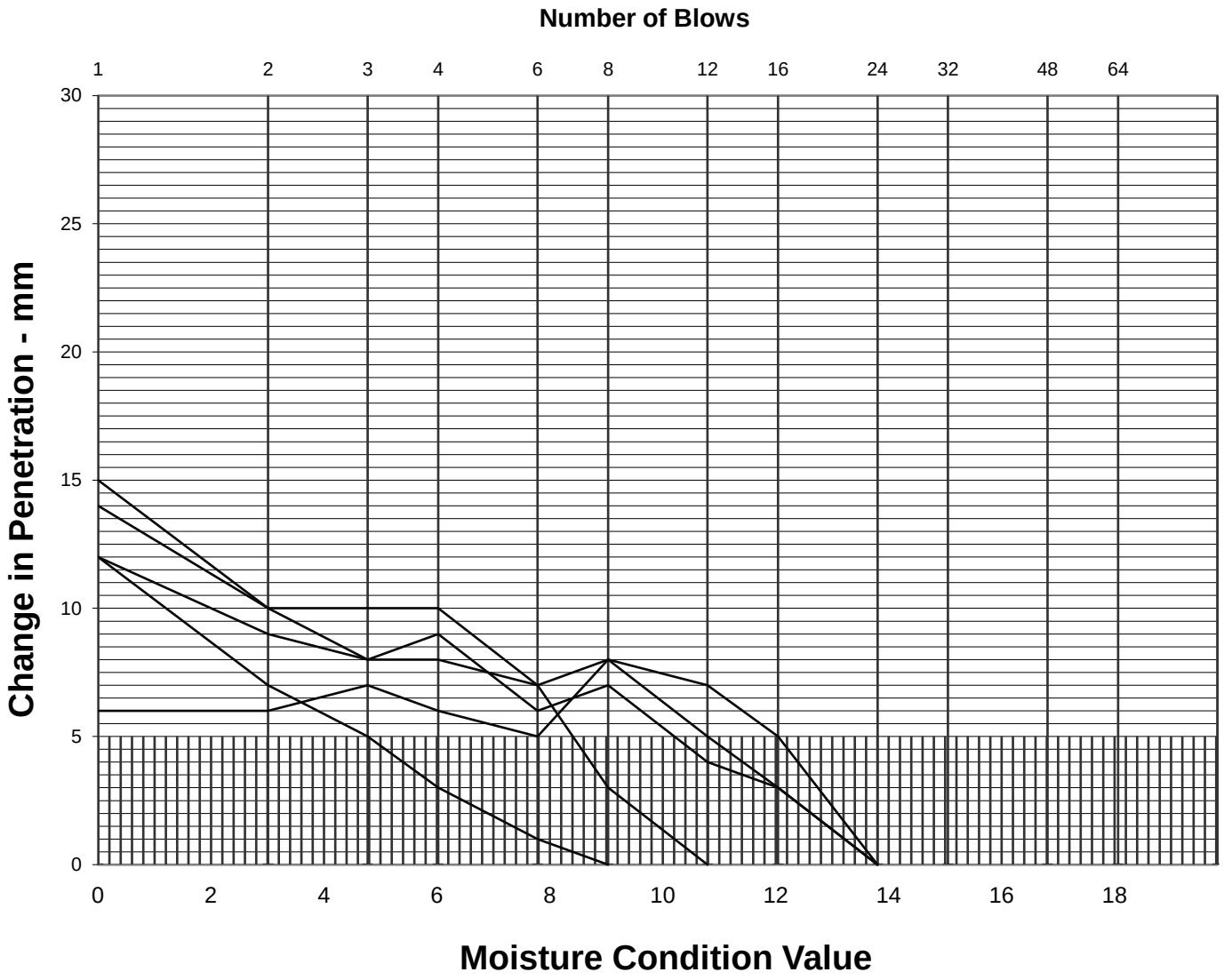
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1301
Location	LIHAF - Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Sample Type	B
		Depth	2.00 m



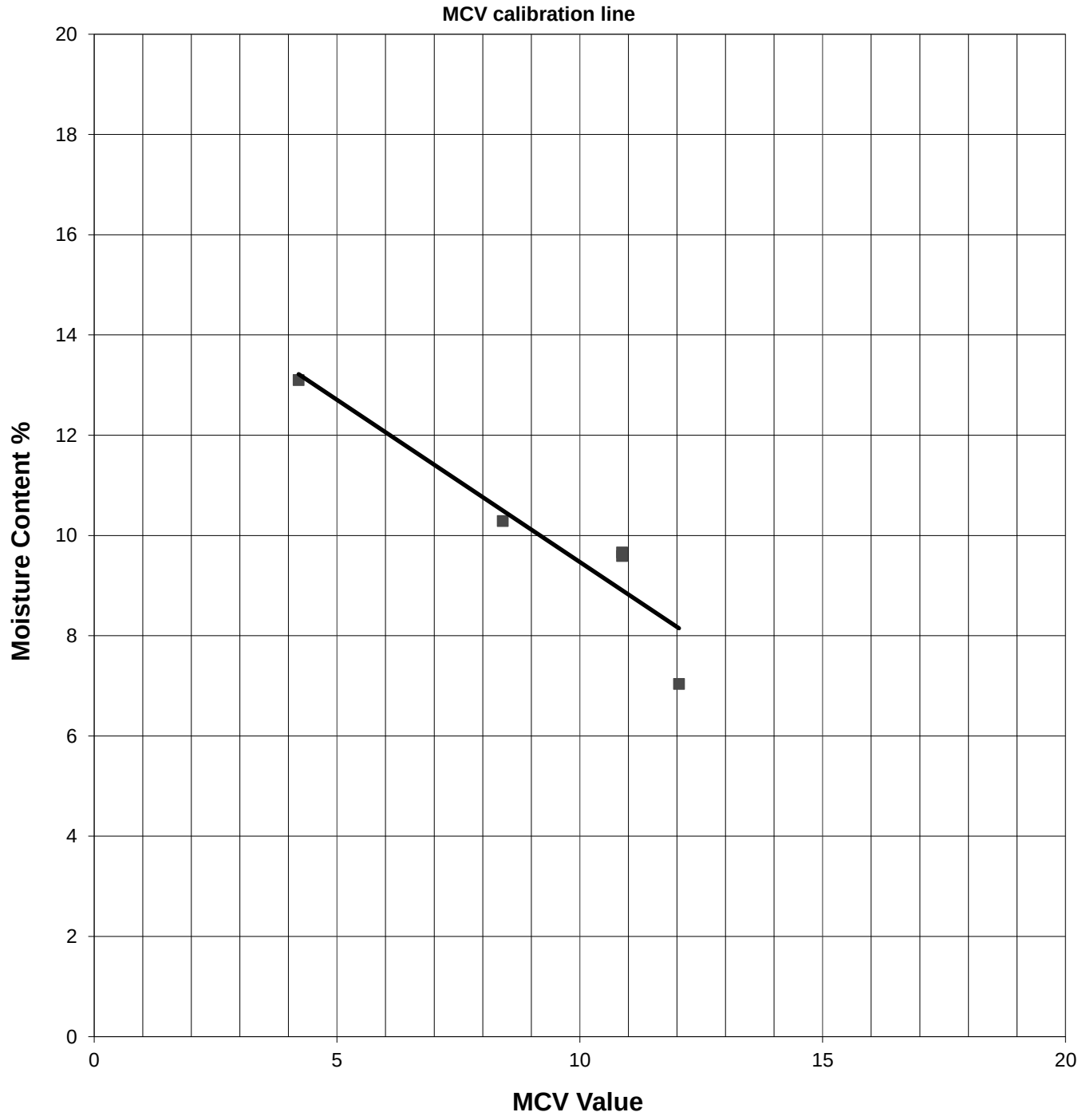
Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.2					
Moisture Content	%	13.10					
Bulk density after compaction	Mg/m³	2.19					
Dry density after compaction	Mg/m³	1.94					
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	13.0					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1301
Location	LIHAF - Kilcock	Sample No	3
Soil Description		Sample Type	B
		Depth	2.00 m



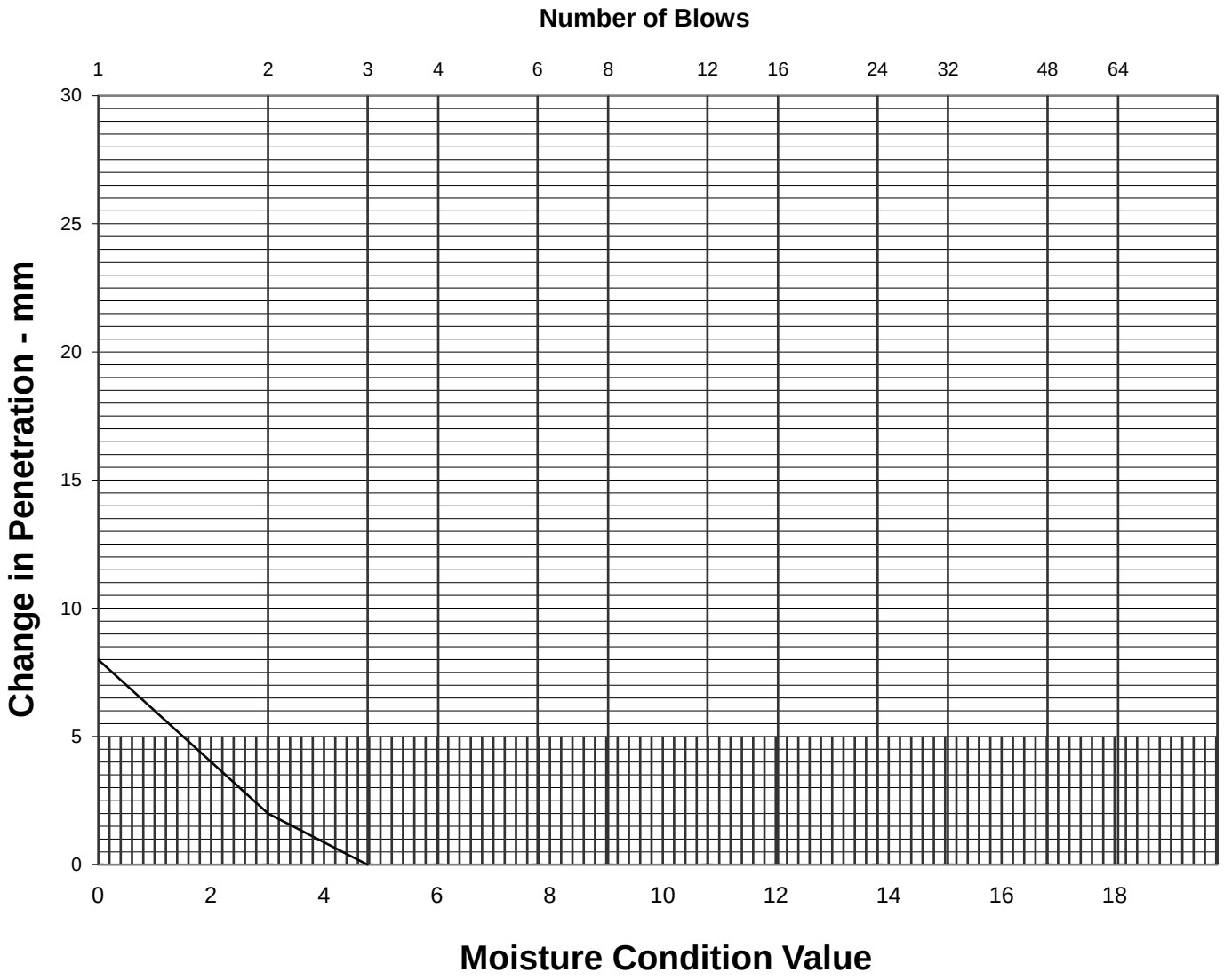
Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.2	8.4	12.0	10.9	10.9	
Moisture Content	%	13.10	10.29	7.04	9.59	9.66	
Bulk density after compaction	Mg/m³	2.19	2.12	2.12	2.19	2.27	
Dry density after compaction	Mg/m³	1.94	1.92	1.98	2.00	2.07	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	13.0					

pgl priority geotechnical	**MCV Relationship Graph** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078**
		Borehole / Pit No	TP1301
Location	LIHAF-Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Sample Type	B
		Depth	2.00 m



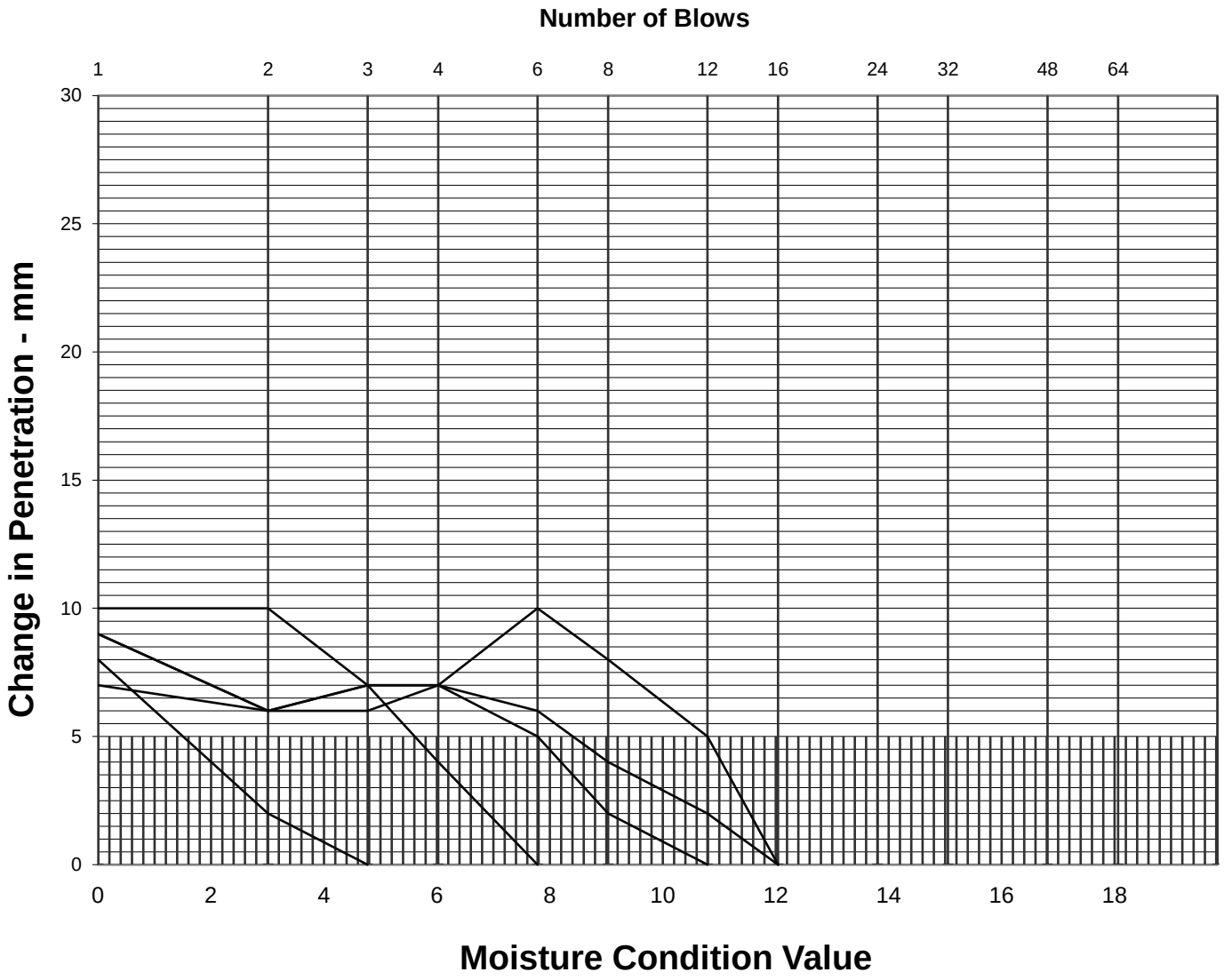
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1307
Location	LIHAF - Kilcock	Sample No	3
Soil Description	Clayey vey sandy GRAVEL with low cobble content	Sample Type	B
		Depth	1.00 m



Specimen No		1	2	3	4	5	6
Moisture Condition Value		1.5					
Moisture Content	%	15.17					
Bulk density after compaction	Mg/m³	2.14					
Dry density after compaction	Mg/m³	1.86					
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	22.2					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1307
Location	LIHAF - Kilcock	Sample No	3
Soil Description		Sample Type	B
		Depth	1.00 m

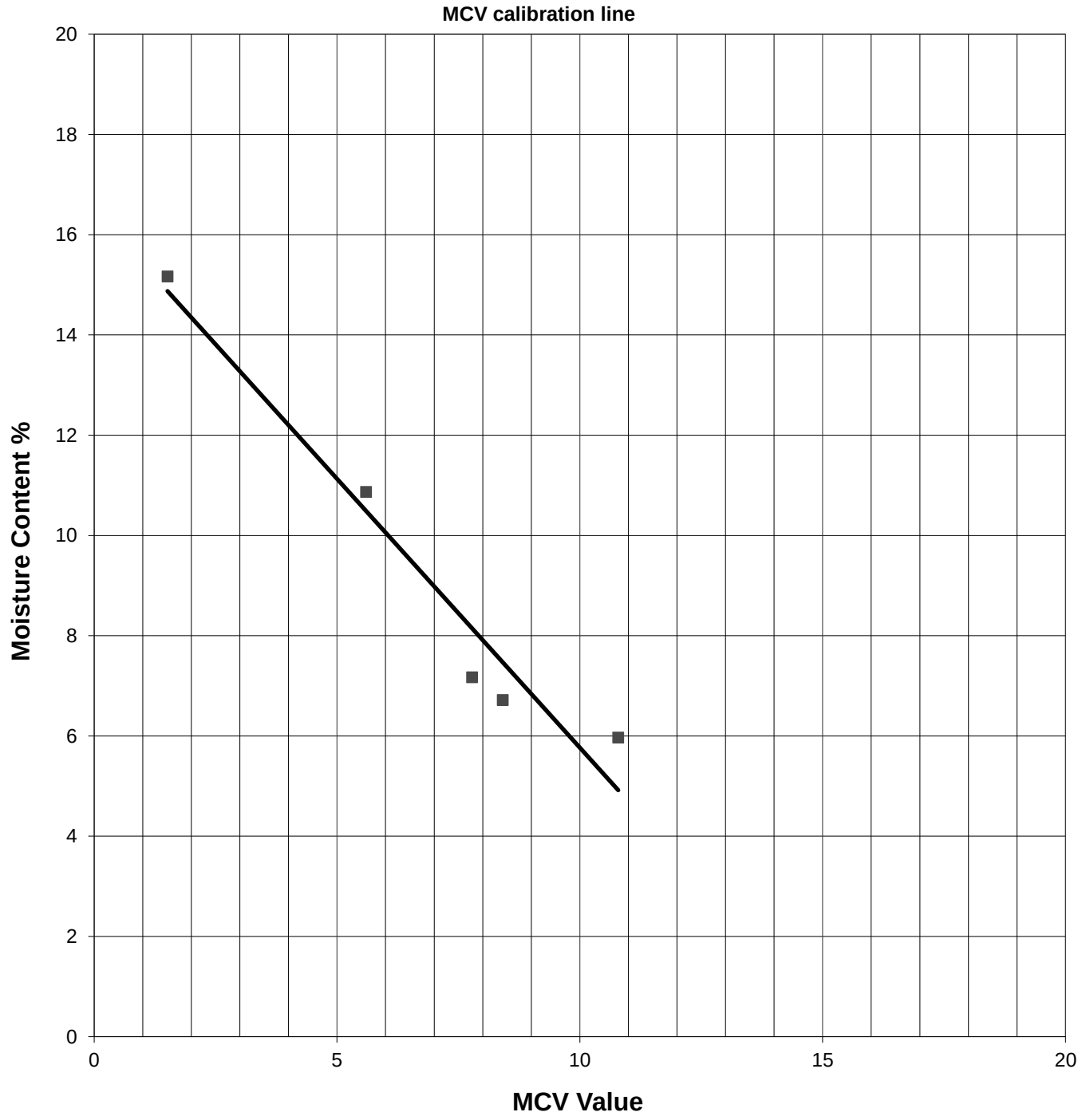


Specimen No		1	2	3	4	5	6
Moisture Condition Value		1.5	5.6	7.8	10.8	8.4	
Moisture Content	%	15.17	10.87	7.17	5.97	6.72	
Bulk density after compaction	Mg/m³	2.14	2.05	1.91	1.93	1.97	
Dry density after compaction	Mg/m³	1.86	1.85	1.78	1.82	1.85	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	22.2					

MCV Relationship Graph

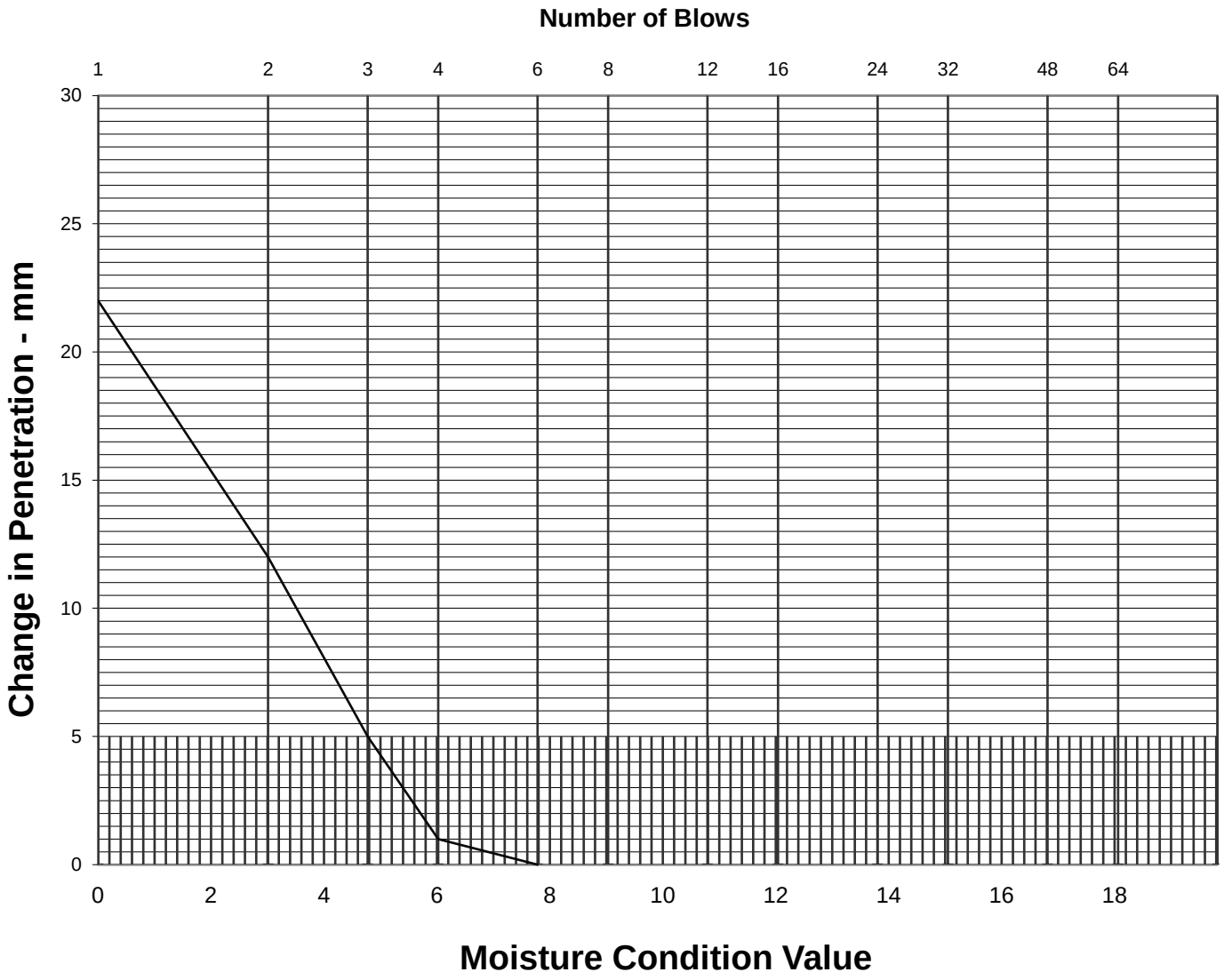
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P20078**
		Borehole / Pit No	TP1307
Location	LIHAF-Kilcock	Sample No	1
Soil Description	Clayey very sandy GRAVEL with low cobble content	Sample Type	B
		Depth	1.00 m



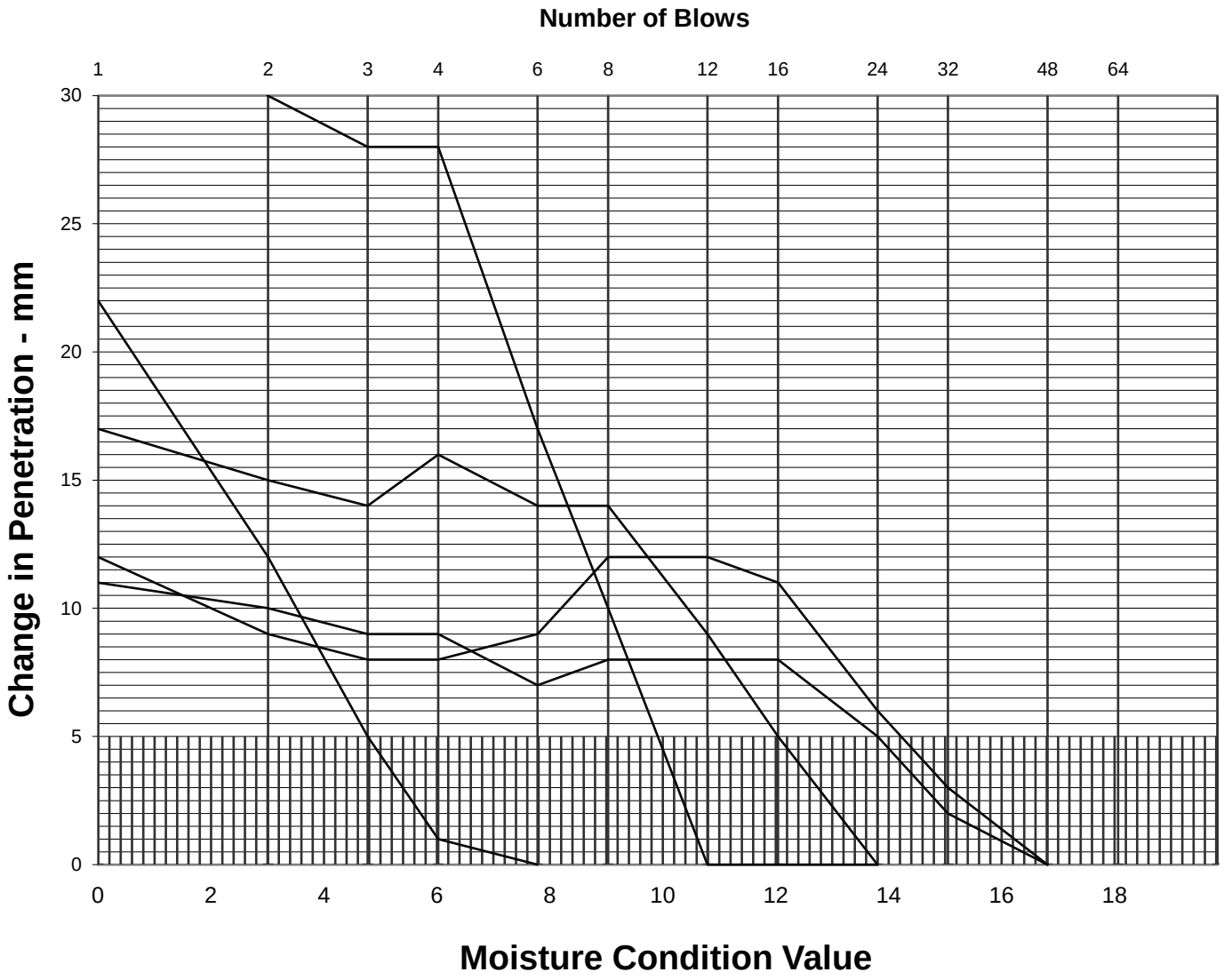
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1308
Location	LIHAF - Kilcock	Sample No	5
Soil Description	Very sandy very clayey GRAVEL	Sample Type	B
		Depth	2.50 m



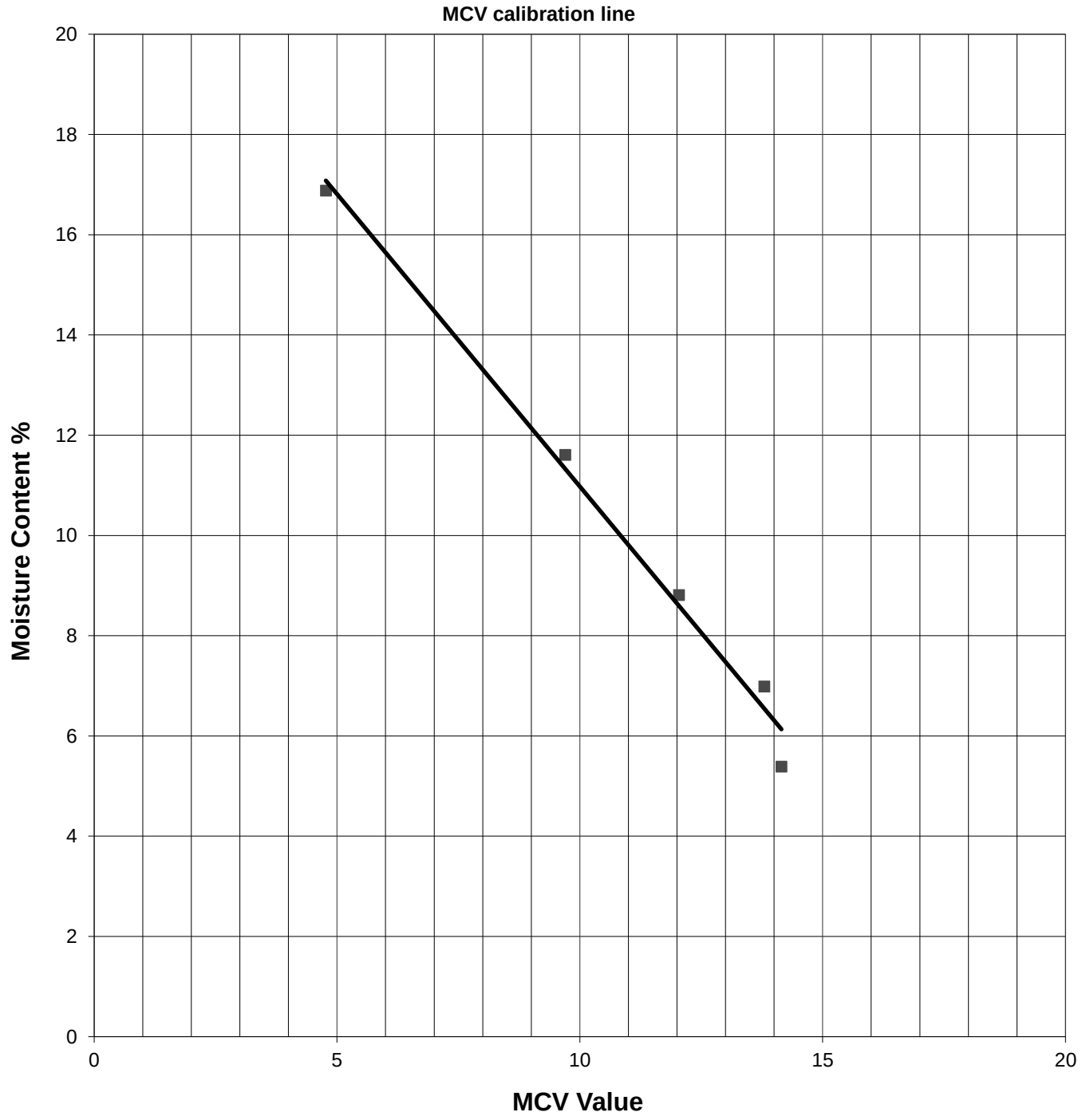
Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.8					
Moisture Content	%	16.88					
Bulk density after compaction	Mg/m³	2.12					
Dry density after compaction	Mg/m³	1.81					
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	13.4					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1308
Location	LIHAF - Kilcock	Sample No	5
Soil Description		Sample Type	B
		Depth	2.50 m



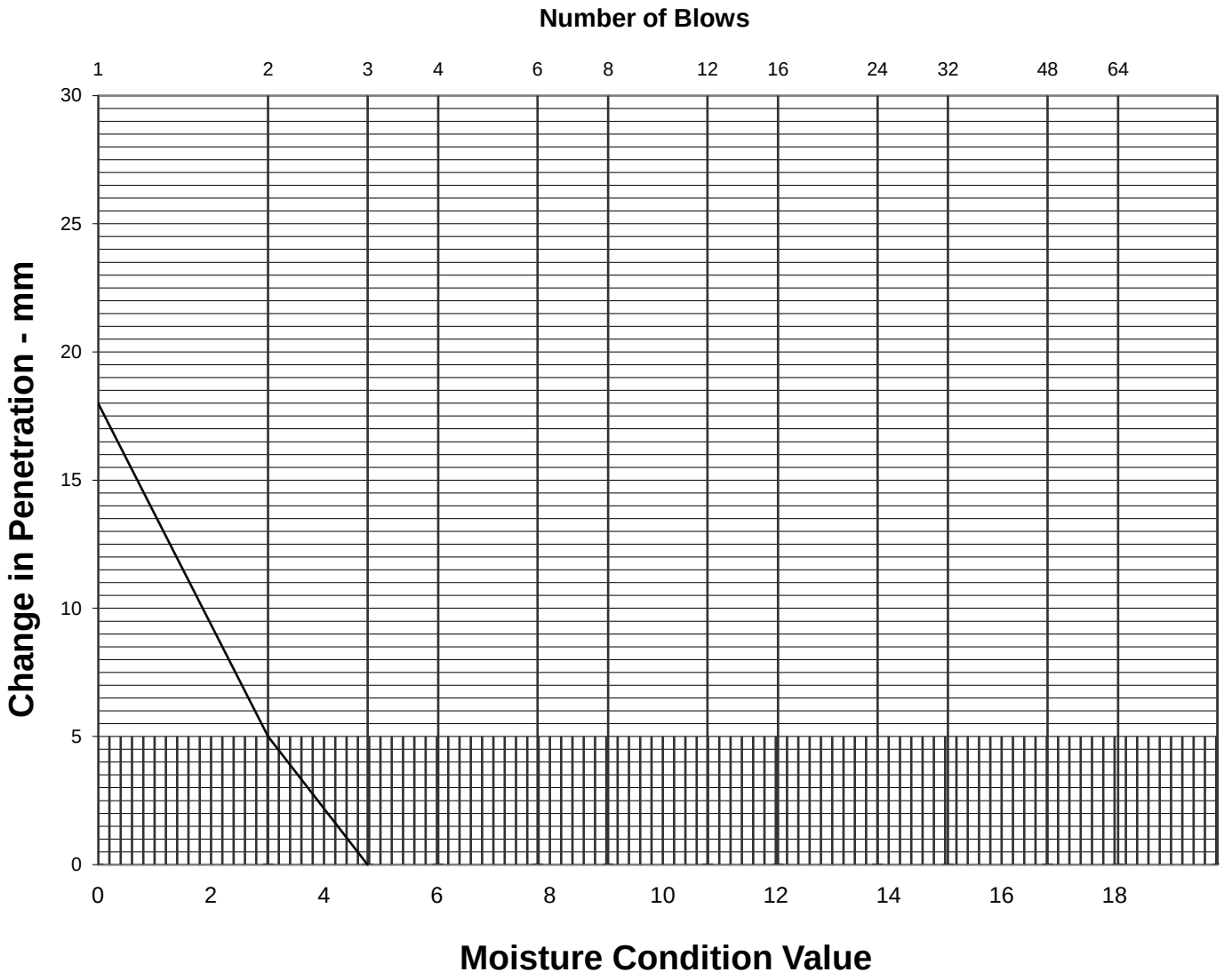
Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.8	9.7	12.0	14.2	13.8	
Moisture Content	%	16.88	11.61	8.81	5.39	6.99	
Bulk density after compaction	Mg/m³	2.12	2.01	2.05	2.19	2.12	
Dry density after compaction	Mg/m³	1.81	1.80	1.88	2.08	1.98	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	13.4					

pgl priority geotechnical	**MCV Relationship Graph** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078**
		Borehole / Pit No	TP1308
Location	LIHAF-Kilcock	Sample No	3
Soil Description	Very sandy very clayey GRAVEL	Sample Type	B
		Depth	2.50 m



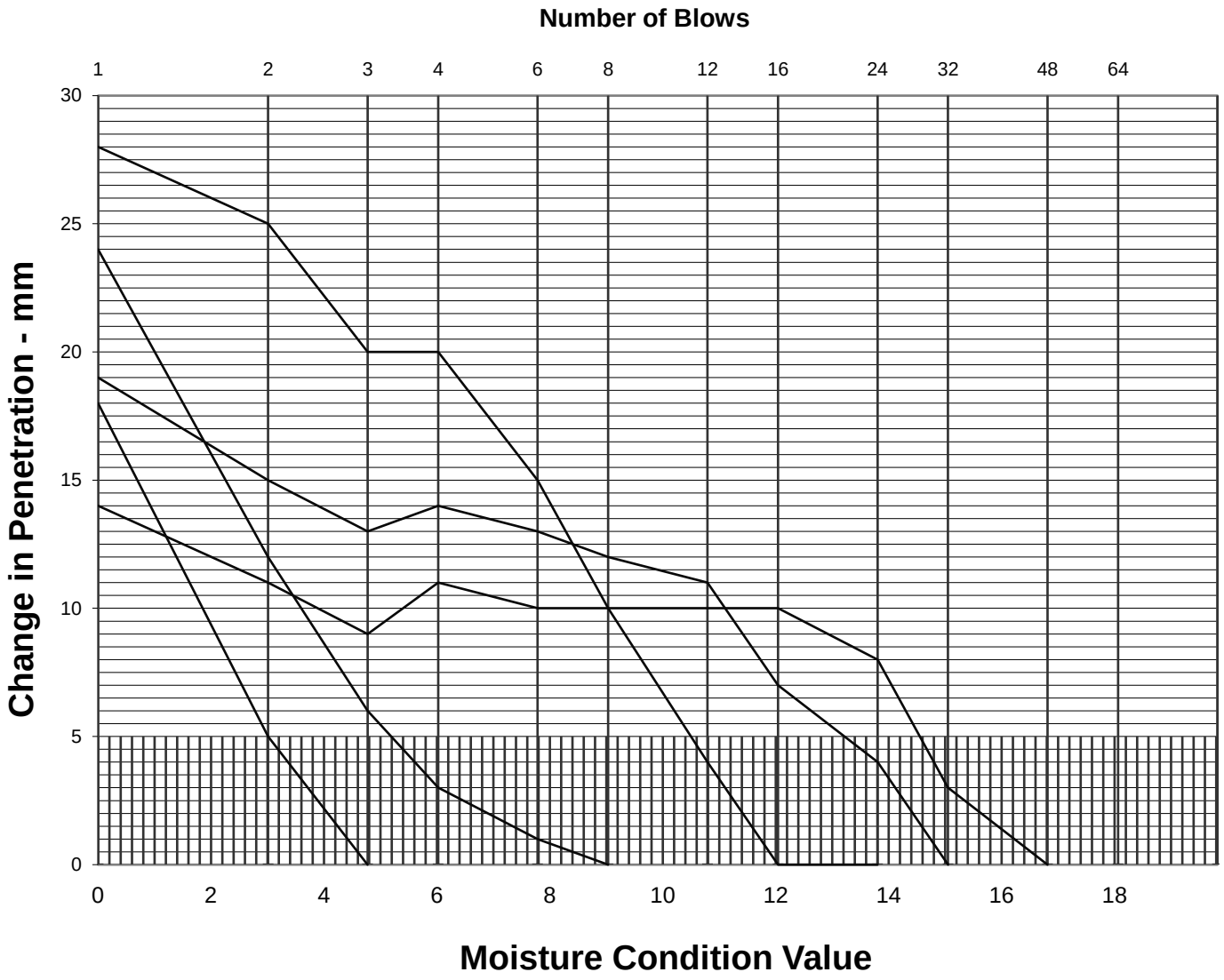
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1310
Location	LIHAF - Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Sample Type	B
		Depth	1.50 m



Specimen No		1	2	3	4	5	6
Moisture Condition Value		3.0					
Moisture Content	%	15.97					
Bulk density after compaction	Mg/m³	2.07					
Dry density after compaction	Mg/m³	1.78					
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	%	9.4					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TP1310
Location	LIHAF - Kilcock	Sample No	3
Soil Description		Sample Type	B
		Depth	1.50 m

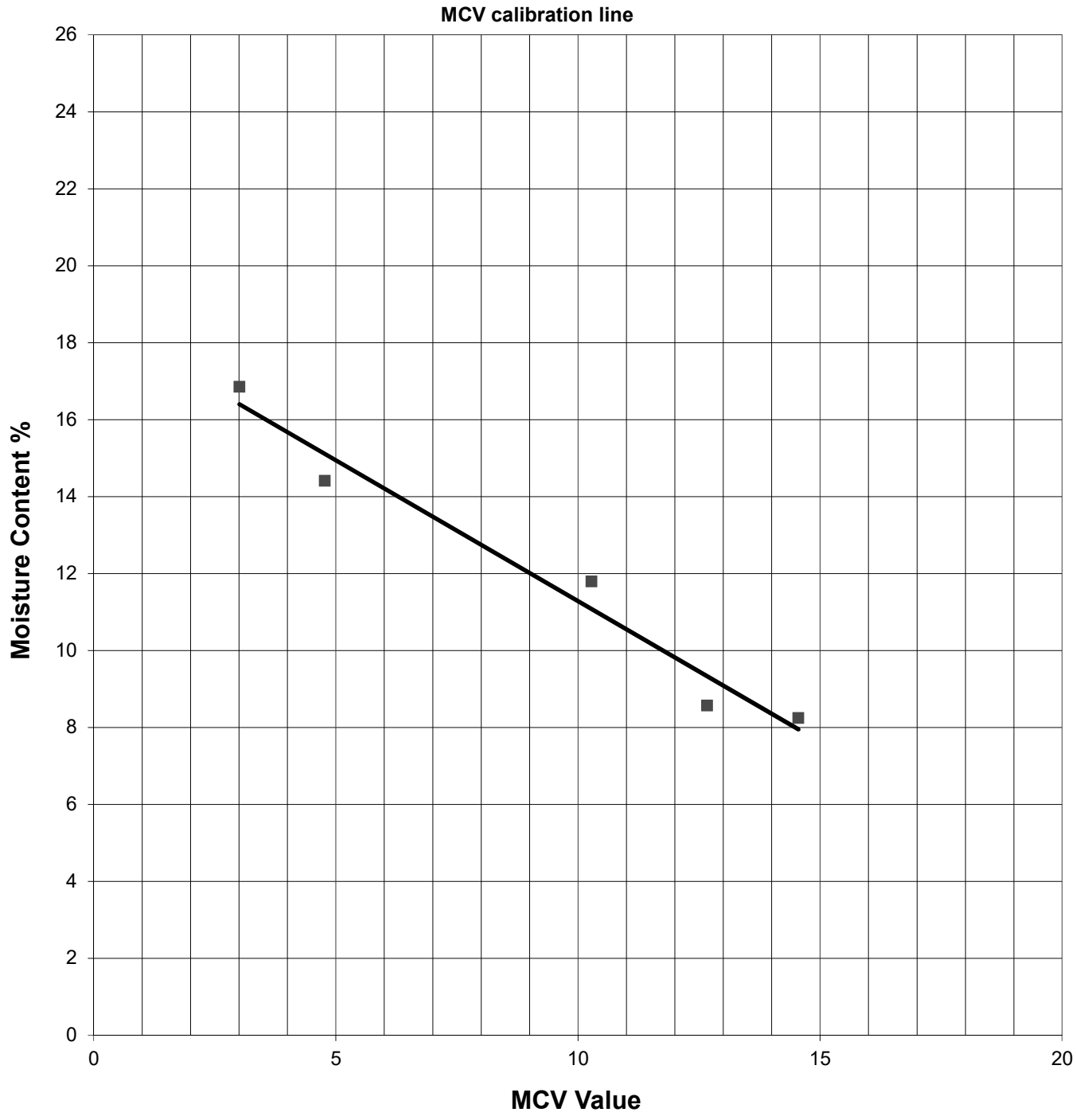


Specimen No		1	2	3	4	5	6
Moisture Condition Value		3.0	12.7	14.6	4.8	10.3	
Moisture Content	%	15.85	8.57	8.24	14.41	11.79	
Bulk density after compaction	Mg/m³	2.07	2.05	2.19	2.14	2.01	
Dry density after compaction	Mg/m³	1.79	1.89	2.02	1.87	1.80	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	89.3					

MCV Relationship Graph

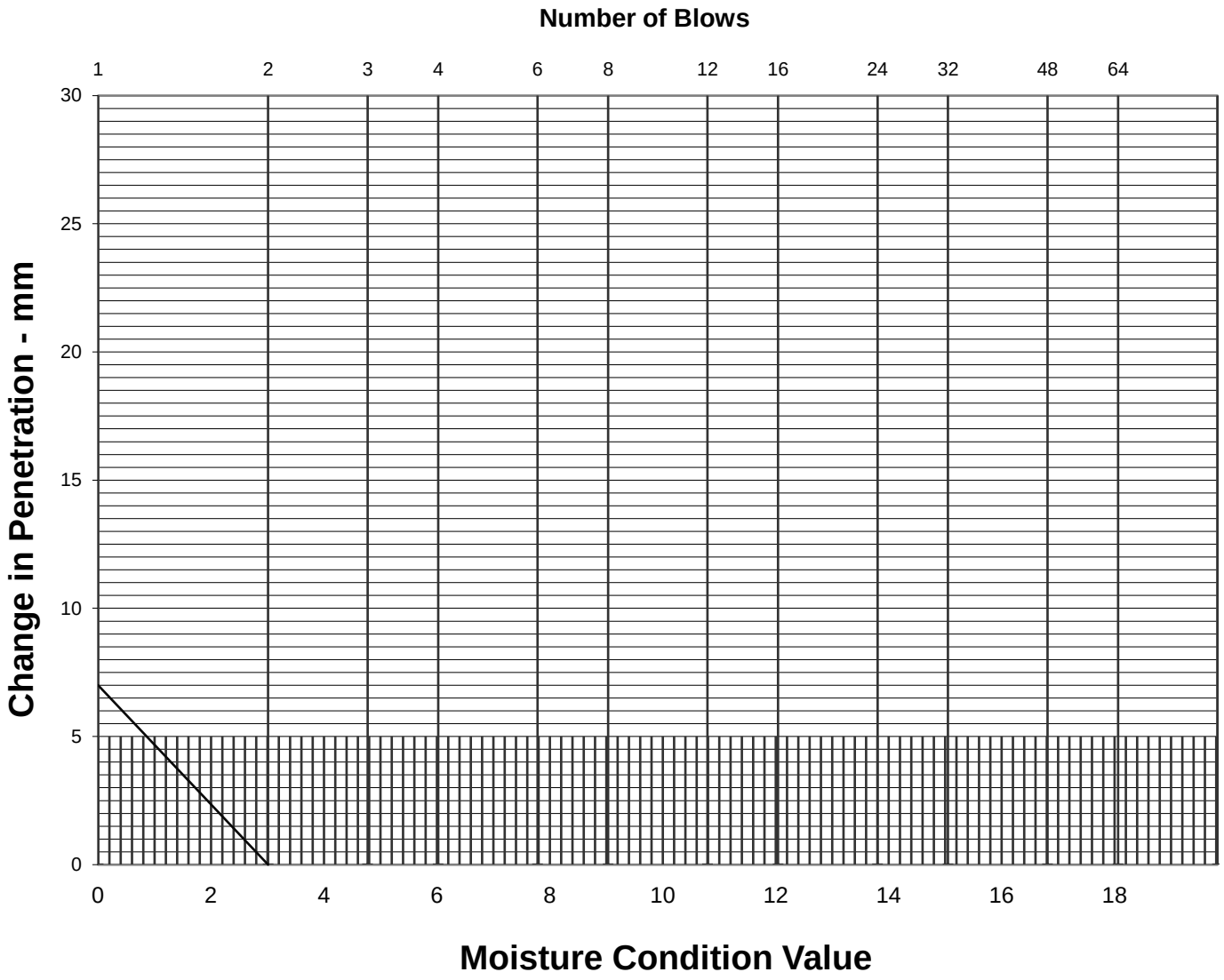
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P20078**
		Borehole / Pit No	TP1310
Location	LIAHF-Kilcock	Sample No	3
Soil Description		Sample Type	B
		Depth	1.50 m



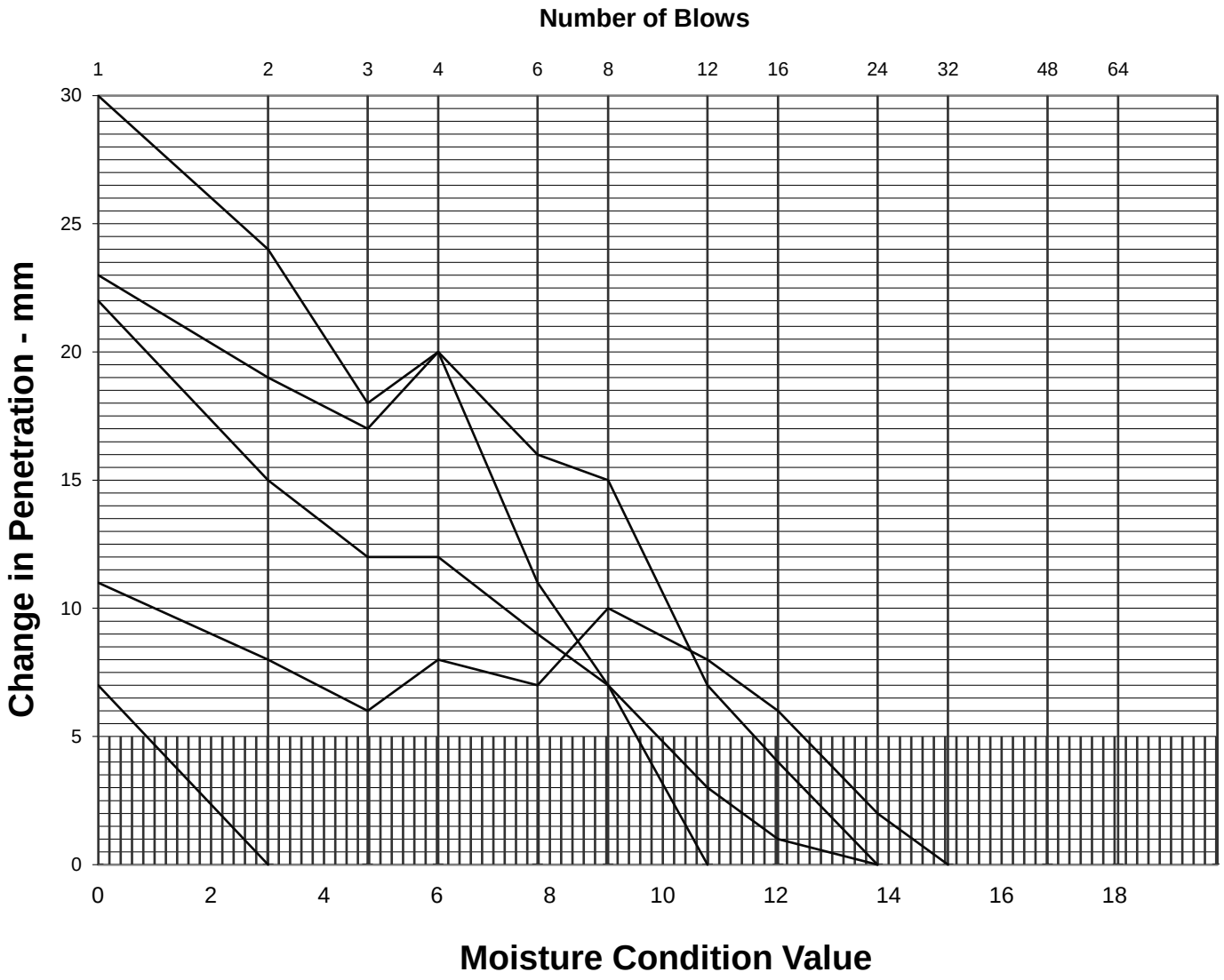
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TPPT1302
Location	LIHAF - Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY with low cobble content	Sample Type	B
		Depth	1.50 m



Specimen No		1	2	3	4	5	6
Moisture Condition Value		0.9					
Moisture Content	%	17.01					
Bulk density after compaction	Mg/m³	2.12					
Dry density after compaction	Mg/m³	1.81					
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	%	16.3					

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P20078_1**
		Borehole / Pit No	TPPT1302
Location	LIHAF - Kilcock	Sample No	3
Soil Description		Sample Type	B
		Depth	1.50 m

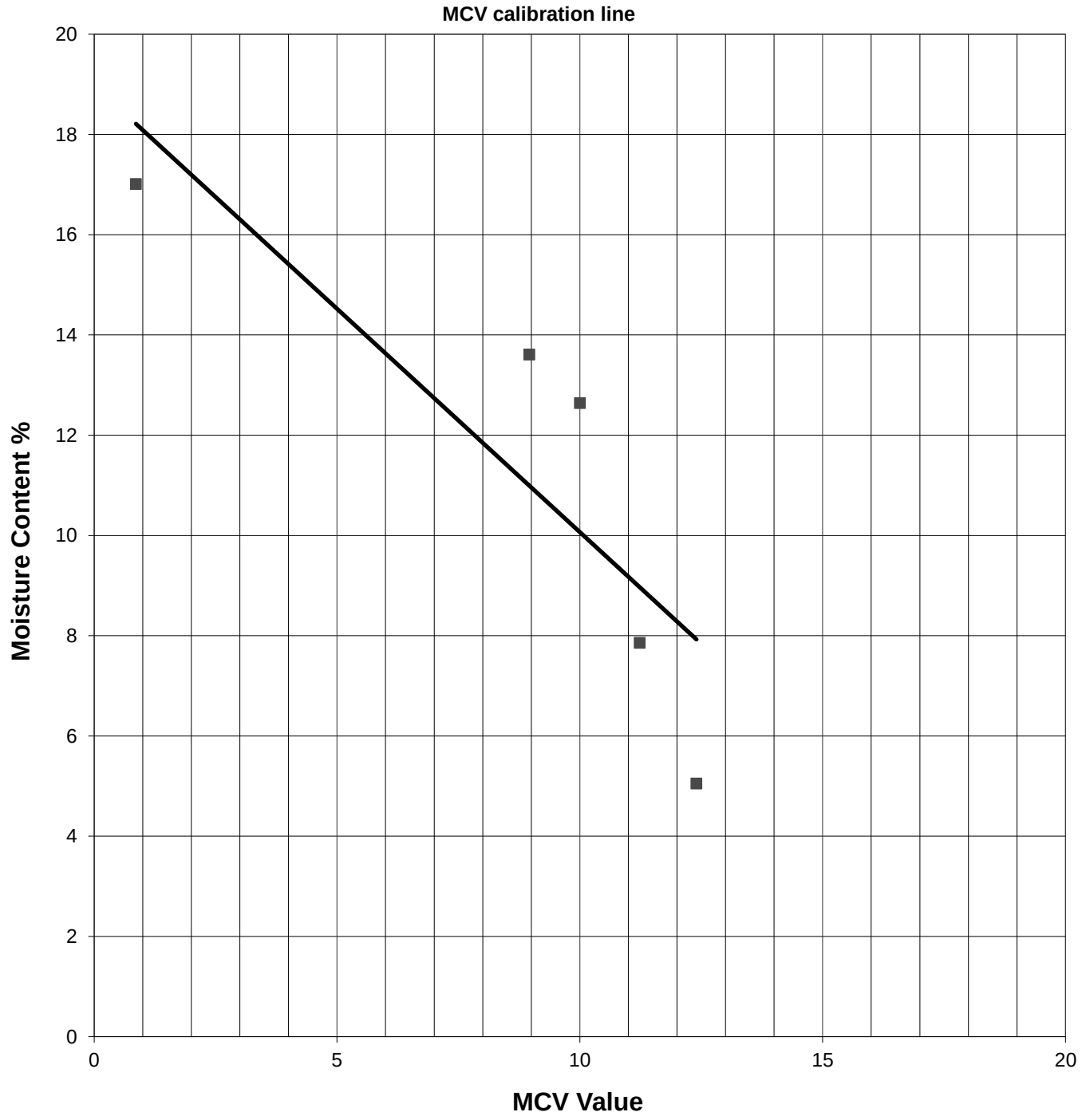


Specimen No		1	2	3	4	5	6
Moisture Condition Value		0.9	9.0	11.2	12.4	10.0	
Moisture Content	%	17.01	13.61	7.86	5.05	12.64	
Bulk density after compaction	Mg/m³	2.12	2.22	2.01	1.97	2.25	
Dry density after compaction	Mg/m³	1.81	1.95	1.86	1.88	2.00	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	16.5					

MCV Relationship Graph

BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P20078**
		Borehole / Pit No	PTTP1302
Location	LIHAF-Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY with low cobble content	Sample Type	B
		Depth	1.50 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

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

Final Report

Report No.:	20-29278-1
Initial Date of Issue:	04-Nov-2020
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P20078 Kilcock

Quotation No.:		**Date Received:**	29-Oct-2020
Order No.:	13107	**Date Instructed:**	29-Oct-2020
No. of Samples:	5		
Turnaround (Wkdays):	7	**Results Due:**	06-Nov-2020
Date Approved:	04-Nov-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-29278	20-29278	20-29278	20-29278	20-29278
Quotation No.:			**Chemtest Sample ID.:**		1088385	1088386	1088387	1088388	1088389
			Sample Location:		TP1306	ST1311	TP1307	TP1308	TP1301
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.60	0.50	1.50	0.50
			Date Sampled:		27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Moisture	N	2030	%	0.020	17	14	17	11	13
pH	U	2010		4.0	8.5	8.7	8.4	8.8	8.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (Total)	U	2430	mg/kg	100	410	260	320	360	390
LOI	U	2610	%	0.10	3.0	2.5	2.8	2.2	2.1
Organic Matter	U	2625	%	0.40	1.4	1.0	1.9	1.3	0.98

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
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.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

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

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

Final Report

Report No.:	20-27849-1
Initial Date of Issue:	20-Oct-2020
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P20078 Kilcock

Quotation No.:		**Date Received:**	15-Oct-2020
Order No.:	13107	**Date Instructed:**	15-Oct-2020
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	21-Oct-2020
Date Approved:	20-Oct-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-27849	20-27849	20-27849	20-27849	20-27849
Quotation No.:			**Chemtest Sample ID.:**		1081128	1081129	1081130	1081131	1081132
			Sample Location:		BH1304	BH1303	BH1303	BH1305	ST1313
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.00	0.50	2.00	2.00	1.00
			Date Sampled:		14-Oct-2020	14-Oct-2020	14-Oct-2020	14-Oct-2020	14-Oct-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Moisture	N	2030	%	0.020	15	15	11	13	7.8
pH	U	2010		4.0	8.7	8.6	8.8	8.8	9.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	0.024	0.028	0.020	0.022	0.014
LOI	U	2610	%	0.10	2.7	3.2	2.4	2.7	1.6
Organic Matter	U	2625	%	0.40	1.7	2.1	1.4	1.2	1.2

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
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.

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

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

Final Report

Report No.:	21-00467-1
Initial Date of Issue:	14-Jan-2021
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P20078 Kilcock

Quotation No.:		**Date Received:**	11-Jan-2021
Order No.:	13107	**Date Instructed:**	11-Jan-2021
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	15-Jan-2021
Date Approved:	14-Jan-2021		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd		**Chemtest Job No.:**			21-00467	21-00467
Quotation No.:		**Chemtest Sample ID.:**			1122579	1122580
			Sample Location:		TP1309	TP1311
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.5	1.5
			Date Sampled:		05-Jan-2021	05-Jan-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	8.7	12
pH	U	2010		4.0	9.6	9.0
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	0.032	0.030
LOI	U	2610	%	0.10	4.0	3.3
Organic Matter	U	2625	%	0.40	0.86	0.66

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
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.

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

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

Final Report

Report No.:	20-31517-1
Initial Date of Issue:	27-Nov-2020
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P20078 Kilcock

Quotation No.:		**Date Received:**	19-Nov-2020
Order No.:	13107	**Date Instructed:**	19-Nov-2020
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	27-Nov-2020
Date Approved:	27-Nov-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**		20-31517	20-31517	20-31517
Quotation No.:				**Chemtest Sample ID.:**		1099465	1099466	1099467
				Sample Location:		TP1311	TP1311	TP1311
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.50	1.50	2.50
				Date Sampled:		10-Nov-2020	10-Nov-2020	10-Nov-2020
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
Ammonium	U	1220	10:1	mg/l	0.050	0.57	< 0.050	0.061
Ammonium	N	1220	10:1	mg/kg	0.10	6.9	0.52	0.73

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-31517	20-31517	20-31517
Quotation No.:			**Chemtest Sample ID.:**		1099465	1099466	1099467
			Sample Location:		TP1311	TP1311	TP1311
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	2.50
			Date Sampled:		10-Nov-2020	10-Nov-2020	10-Nov-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	17	16	17
pH	M	2010		4.0	8.6	8.4	8.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0	1.4	1.1
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.2	3.2	2.4
Sulphate (Total)	M	2430	%	0.010	0.030	0.041	0.034
Arsenic	M	2450	mg/kg	1.0	19	17	18
Barium	M	2450	mg/kg	10	82	52	54
Cadmium	M	2450	mg/kg	0.10	5.1	2.3	2.3
Chromium	M	2450	mg/kg	1.0	27	18	18
Molybdenum	M	2450	mg/kg	2.0	7.1	3.9	3.8
Antimony	N	2450	mg/kg	2.0	2.9	< 2.0	2.0
Copper	M	2450	mg/kg	0.50	54	34	35
Mercury	M	2450	mg/kg	0.10	0.16	0.11	0.10
Nickel	M	2450	mg/kg	0.50	95	63	69
Lead	M	2450	mg/kg	0.50	29	21	22
Selenium	M	2450	mg/kg	0.20	1.6	0.44	0.45
Zinc	M	2450	mg/kg	0.50	190	100	110
Chromium (Trivalent)	N	2490	mg/kg	1.0	27	18	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	1.0	0.83	1.0
Total Organic Carbon	M	2625	%	0.20	0.58	0.48	0.58
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd		**Chemtest Job No.:**			20-31517	20-31517	20-31517
Quotation No.:		**Chemtest Sample ID.:**			1099465	1099466	1099467
		Sample Location:			TP1311	TP1311	TP1311
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.50	1.50	2.50
		Date Sampled:			10-Nov-2020	10-Nov-2020	10-Nov-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-31517	20-31517	20-31517
Quotation No.:			**Chemtest Sample ID.:**		1099465	1099466	1099467
			Sample Location:		TP1311	TP1311	TP1311
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	2.50
			Date Sampled:		10-Nov-2020	10-Nov-2020	10-Nov-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Results - Single Stage WAC

Project: P20078 Kilcock

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-31517						
Chemtest Sample ID:	1099465						
Sample Ref:							
Sample ID:							
Sample Location:	TP1311						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:	10-Nov-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	0.58	3	5	6
Loss On Ignition	2610	M	%	2.9	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	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	0.0015	< 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	0.0011	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0061	0.061	0.5	10	30
Nickel	1450	U	0.0013	< 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	3.0	30	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.2	82	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

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: P20078 Kilcock

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-31517						
Chemtest Sample ID:	1099466						
Sample Ref:							
Sample ID:							
Sample Location:	TP1311						
Top Depth(m):	1.50						
Bottom Depth(m):							
Sampling Date:	10-Nov-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	0.48	3	5	6
Loss On Ignition	2610	M	%	2.7	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.074	--	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	0.0022	< 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	0.0051	0.051	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	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

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: P20078 Kilcock

Chemtest Job No:	20-31517				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1099467						
Sample Ref:							
Sample ID:							
Sample Location:	TP1311						
Top Depth(m):	2.50				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Bottom Depth(m):							
Sampling Date:	10-Nov-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.58	3	5	6
Loss On Ignition	2610	M	%	4.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.022	--	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	0.0022	< 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	0.0047	< 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	0.24	2.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

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
1010	pH Value of Waters	pH	pH Meter
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.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
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

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 C10)	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

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

Final Report

Report No.:	20-26732-1
Initial Date of Issue:	12-Oct-2020
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P20078 Kilcock
Quotation No.:	Q17-09116
Date Received:	05-Oct-2020
Order No.:	13107
Date Instructed:	05-Oct-2020
No. of Samples:	5
Turnaround (Wkdays):	7
Results Due:	13-Oct-2020
Date Approved:	12-Oct-2020
Approved By:	
Details:	Glynn Harvey, Technical Manager

Results - Leachate

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**		20-26732	20-26732
Quotation No.: Q17-09116				**Chemtest Sample ID.:**		1074864	1074867
				Sample Location:		TP1306	TP1308
				Sample Type:		SOIL	SOIL
				Top Depth (m):		1.7	2.5
				Date Sampled:		24-Sep-2020	24-Sep-2020
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.41	0.37

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-26732	20-26732	20-26732	20-26732	20-26732
Quotation No.: Q17-09116			**Chemtest Sample ID.:**		1074863	1074864	1074865	1074866	1074867
			Sample Location:		TP1306	TP1306	TP1307	TP1308	TP1308
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.5	1.7	2.0	1.5	2.5
			Date Sampled:		24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020
			Asbestos Lab:			DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A		-			-
Asbestos Identification	U	2192		N/A		No Asbestos Detected			No Asbestos Detected
ACM Detection Stage	U	2192		N/A		-			-
Moisture	N	2030	%	0.020	12	13	8.0	11	7.4
pH	M	2010		4.0		8.6			8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		< 0.40			< 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0		1.0			2.3
Cyanide (Total)	M	2300	mg/kg	0.50		< 0.50			< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		5.7			15
Sulphate (Total)	M	2430	%	0.010		0.034			0.96
Arsenic	M	2450	mg/kg	1.0		16			19
Barium	M	2450	mg/kg	10		47			31
Cadmium	M	2450	mg/kg	0.10		1.9			1.7
Chromium	M	2450	mg/kg	1.0		13			11
Molybdenum	M	2450	mg/kg	2.0		2.7			3.5
Antimony	N	2450	mg/kg	2.0		< 2.0			< 2.0
Copper	M	2450	mg/kg	0.50		27			23
Mercury	M	2450	mg/kg	0.10		< 0.10			< 0.10
Nickel	M	2450	mg/kg	0.50		51			35
Lead	M	2450	mg/kg	0.50		18			10
Selenium	M	2450	mg/kg	0.20		0.25			5.5
Zinc	M	2450	mg/kg	0.50		83			59
Chromium (Trivalent)	N	2490	mg/kg	1.0		13			11
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50			< 0.50
Total Organic Carbon	M	2625	%	0.20		0.36			0.72
Mineral Oil	N	2670	mg/kg	10		< 10			< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0			< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0			< 1.0

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-26732	20-26732	20-26732	20-26732	20-26732
Quotation No.: Q17-09116			**Chemtest Sample ID.:**		1074863	1074864	1074865	1074866	1074867
			Sample Location:		TP1306	TP1306	TP1307	TP1308	TP1308
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.5	1.7	2.0	1.5	2.5
			Date Sampled:		24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020
			Asbestos Lab:			DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0			< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0			< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10			< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Acenaphthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Fluorene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Phenanthrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Chrysene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Coronene	N	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	
Total Of 17 PAH's	N	2700	mg/kg	2.0	< 2.0		< 2.0	< 2.0	
Benzene	M	2760	µg/kg	1.0		< 1.0			< 1.0
Toluene	M	2760	µg/kg	1.0		< 1.0			< 1.0
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0			< 1.0
o-Xylene	M	2760	µg/kg	1.0		< 1.0			< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0			< 1.0
Naphthalene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10			< 0.10
Acenaphthene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Fluorene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Phenanthrene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Anthracene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10

Results - Soil

Project: P20078 Kilcock

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		20-26732	20-26732	20-26732	20-26732	20-26732
Quotation No.: Q17-09116			**Chemtest Sample ID.:**		1074863	1074864	1074865	1074866	1074867
			Sample Location:		TP1306	TP1306	TP1307	TP1308	TP1308
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.5	1.7	2.0	1.5	2.5
			Date Sampled:		24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020
			Asbestos Lab:			DURHAM			DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Benzo[a]anthracene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Chrysene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10			< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		< 0.10			< 0.10
Coronene	N	2800	mg/kg	0.10		< 0.10			< 0.10
PCB 28	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 180	U	2815	mg/kg	0.010		< 0.010			< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10		< 0.10			< 0.10
Total Phenols	M	2920	mg/kg	0.30		< 0.30			< 0.30

Results - Single Stage WAC

Project: P20078 Kilcock

Chemtest Job No:	20-26732				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1074863						
Sample Ref:							
Sample ID:							
Sample Location:	TP1306				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	24-Sep-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.59	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs					100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	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	0.0055	< 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	0.0011	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0041	< 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	0.16	1.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	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 (%)	12

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: P20078 Kilcock

Chemtest Job No:	20-26732				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1074864						
Sample Ref:							
Sample ID:							
Sample Location:	TP1306				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	1.7						
Bottom Depth(m):							
Sampling Date:	24-Sep-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.36	3	5	6
Loss On Ignition	2610	M	%	1.9	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.065	--	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	0.0059	< 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	0.0040	< 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	0.0016	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

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: P20078 Kilcock

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-26732						
Chemtest Sample ID:	1074865						
Sample Ref:							
Sample ID:							
Sample Location:	TP1307						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:	24-Sep-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	0.96	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs					100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	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	0.0063	< 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	0.0033	< 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	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.0

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.

Results - Single Stage WAC

Project: P20078 Kilcock

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-26732						
Chemtest Sample ID:	1074866						
Sample Ref:							
Sample ID:							
Sample Location:	TP1308						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	24-Sep-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	0.50	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs					100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	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	0.0050	< 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	0.0034	< 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	0.20	2.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	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 (%)	11

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: P20078 Kilcock

Chemtest Job No:	20-26732				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1074867						
Sample Ref:							
Sample ID:							
Sample Location:	TP1308				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	2.5						
Bottom Depth(m):							
Sampling Date:	24-Sep-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.72	3	5	6
Loss On Ignition	2610	M	%	1.7	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	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	0.0055	< 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	0.0043	< 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	0.0017	0.017	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	0.16	1.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.4

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
1010	pH Value of Waters	pH	pH Meter
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.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
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

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
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 C10)	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

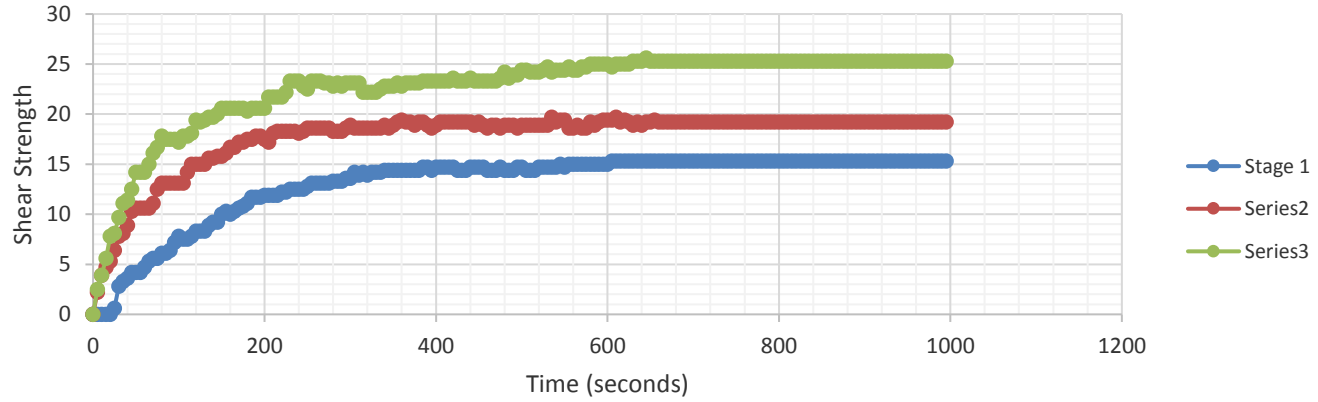
All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

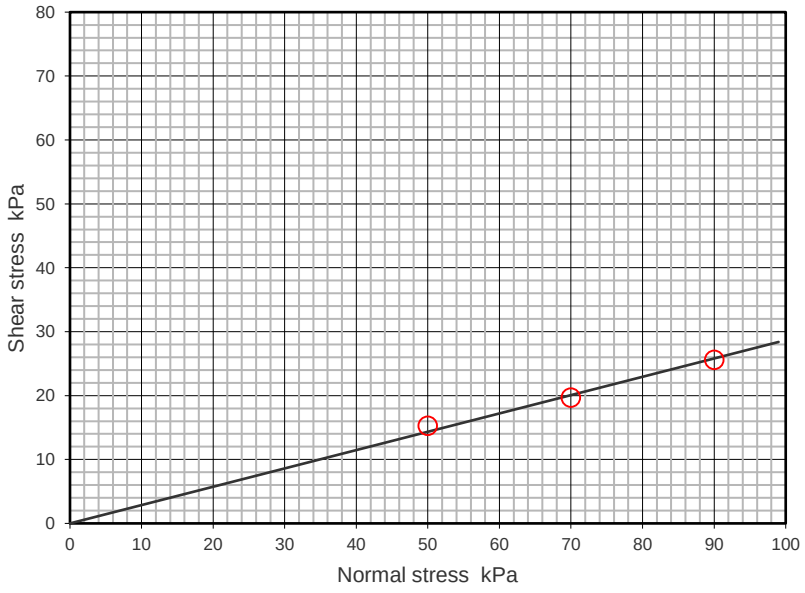
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	BH1303
Site Name	LIHAF - Kilcock	Sample No	3
Soil Description	Slightly sandy gravelly CLAY	Depth m	1.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102036

Preparation Details

Specimen Details		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.15	94.16	2.14				Mg/m³
	Moisture Content		22.6	22.6	22.6				%
	Dry density		1.75	76.80	1.75				Mg/m³
	Voids ratio		0.514	-0.965	0.514				
	Degree of Saturation		117	-62	117				%
Consolidation	Consolidation / Normal Stress applied		**50**	**70**	**90**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		20.0	20.0	20.0				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[2.2]	0
Ø '	degrees	[14.5]	16

Residual strength, (x)

c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

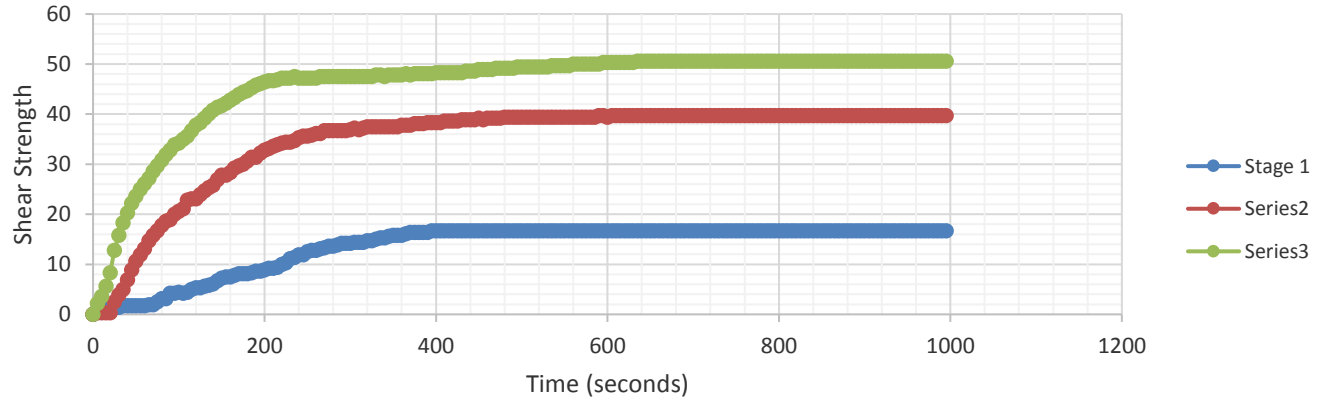
Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1

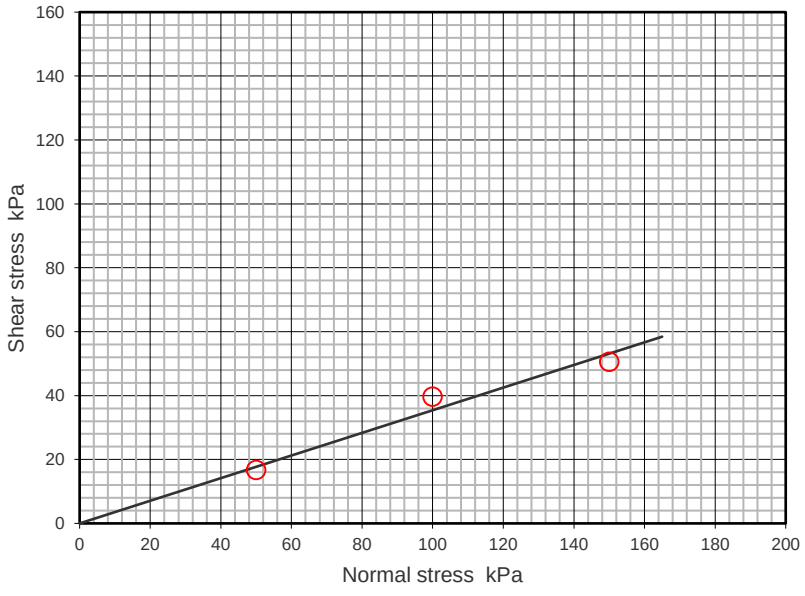
	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	BH1303
Site Name	LIHAF - Kilcock	Sample No	5
Soil Description	Slightly sandy gravelly CLAY with low cobble content	Depth m	2.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102037

Preparation Details

Specimen Details

		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.15	2.17	2.17				Mg/m³
	Moisture Content		19.8	19.8	19.8				%
	Dry density		1.79	1.81	1.81				Mg/m³
	Voids ratio		0.480	0.464	0.464				
	Degree of Saturation		109	113	113				%
Consolidation	Consolidation / Normal Stress applied		**50**	**100**	**150**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		18.2	16.8	16.0				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[1.8]	0
Ø '	degrees	[18.5]	19.5

Residual strength, (x)			
c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

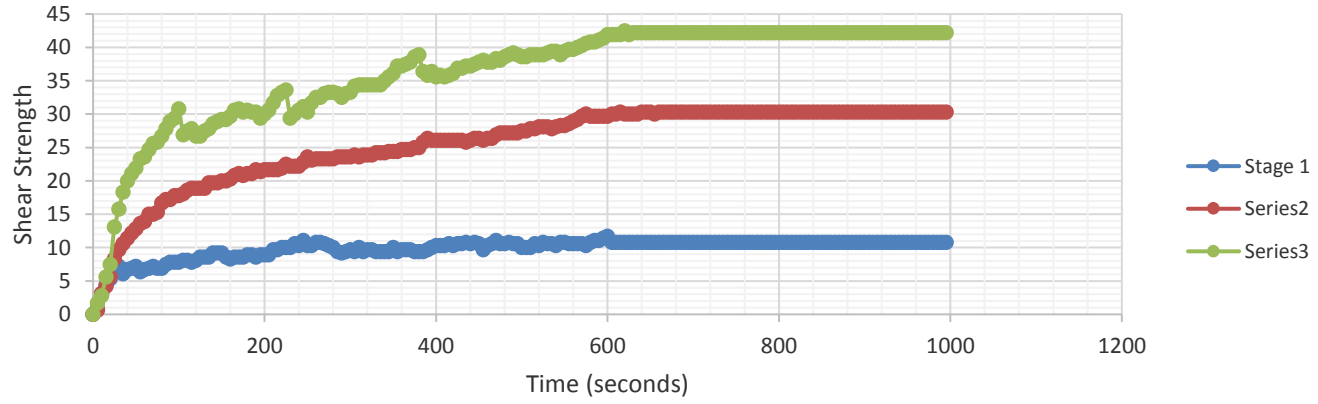
Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1
			sheet 1 of 2

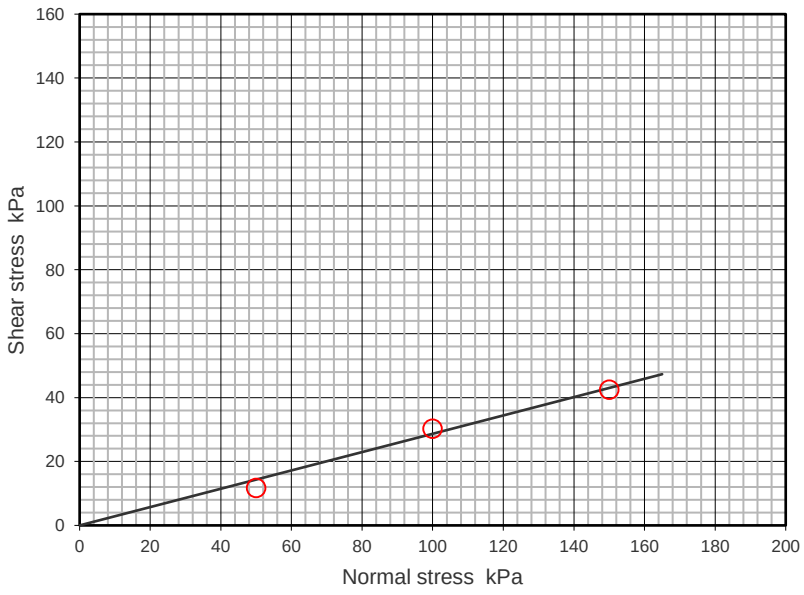
	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	BH1304
Site Name	LIHAF - Kilcock	Sample No	5
Soil Description	Very sandy very clayey GRAVEL	Depth m	2.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102043

Preparation Details

Specimen Details

		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.12	2.11	2.17				Mg/m³
	Moisture Content		25.4	25.4	25.4				%
	Dry density		1.69	1.68	1.73				Mg/m³
	Voids ratio		0.568	0.577	0.532				
	Degree of Saturation		119	117	127				%
Consolidation	Consolidation / Normal Stress applied		**50**	**100**	**150**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		18.3	18.3	12.0				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[-2.6]	0
Ø '	degrees	[17.0]	16

Residual strength, (x)

c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

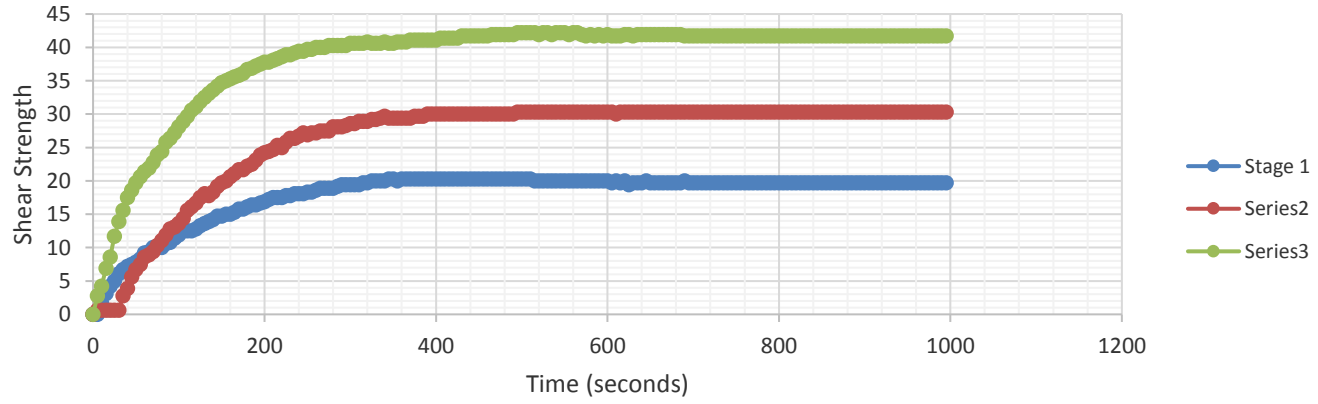
Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1

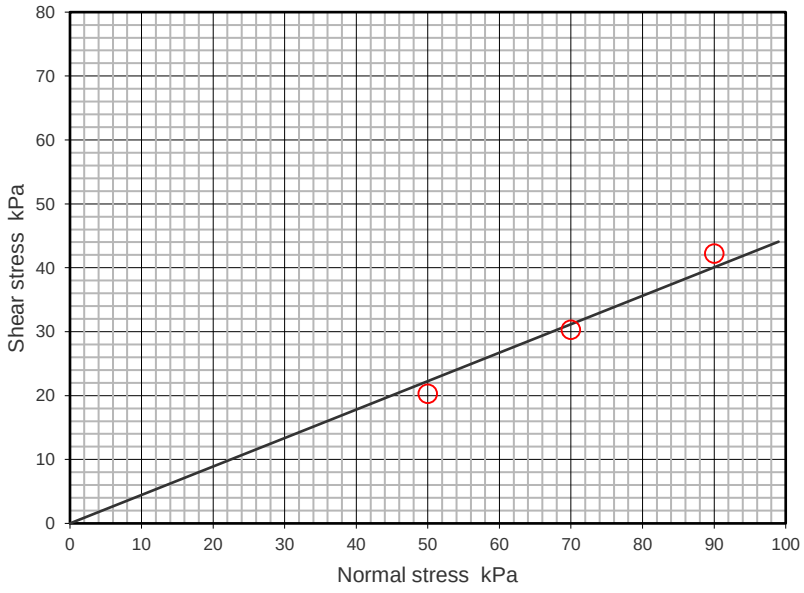
	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	TP1306
Site Name	LIHAF - Kilcock	Sample No	3
Soil Description	Sandy very clayey GRAVEL with low cobble content	Depth m	1.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102073

Preparation Details

Specimen Details

		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.09	2.11	2.09				Mg/m³
	Moisture Content		20.4	20.4	20.4				%
	Dry density		1.74	1.75	1.74				Mg/m³
	Voids ratio		0.523	0.514	0.523				
	Degree of Saturation		103	105	103				%
Consolidation	Consolidation / Normal Stress applied		**50**	**70**	**90**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		19.2	18.3	18.3				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[-7.4]	0
Ø '	degrees	[28.5]	24

Residual strength, (x)

c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

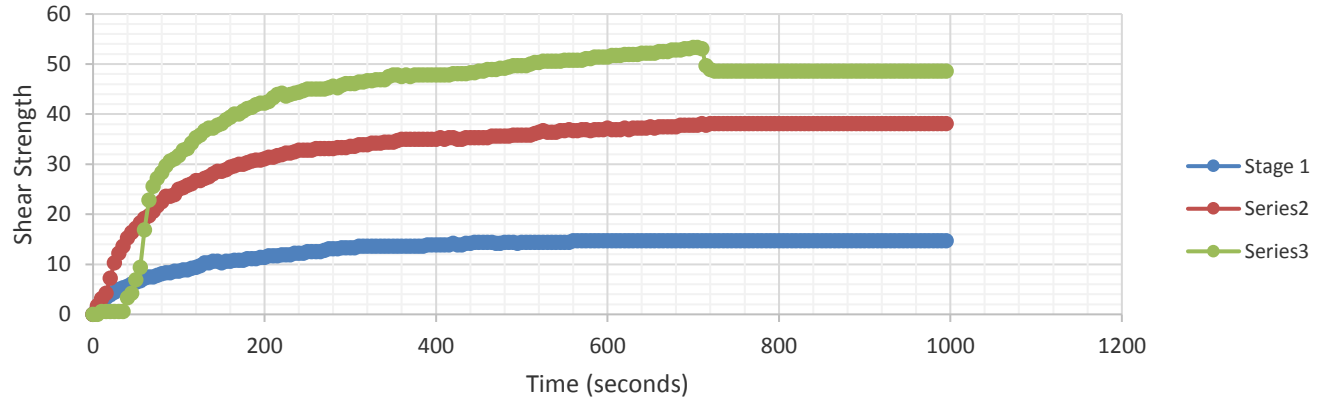
Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1
			sheet 1 of 2

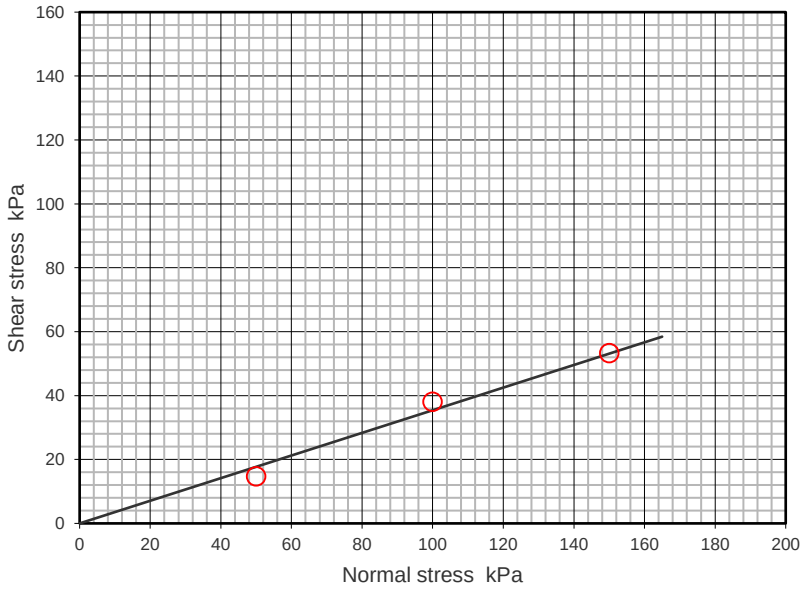
	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	TP1307
Site Name	LIHAF - Kilcock	Sample No	5
Soil Description	Slightly sandy gravelly CLAY with medium cobble content	Depth m	2
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102080

Preparation Details

Specimen Details

		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.17	2.13	2.70				Mg/m³
	Moisture Content		21.4	21.4	21.4				%
	Dry density		1.79	1.75	2.22				Mg/m³
	Voids ratio		0.480	0.514	0.194				
	Degree of Saturation		118	110	292				%
Consolidation	Consolidation / Normal Stress applied		**50**	**100**	**150**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		19.9	18.5	19.9				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[-3.2]	0
Ø '	degrees	[21.0]	19.5

Residual strength, (x)			
c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

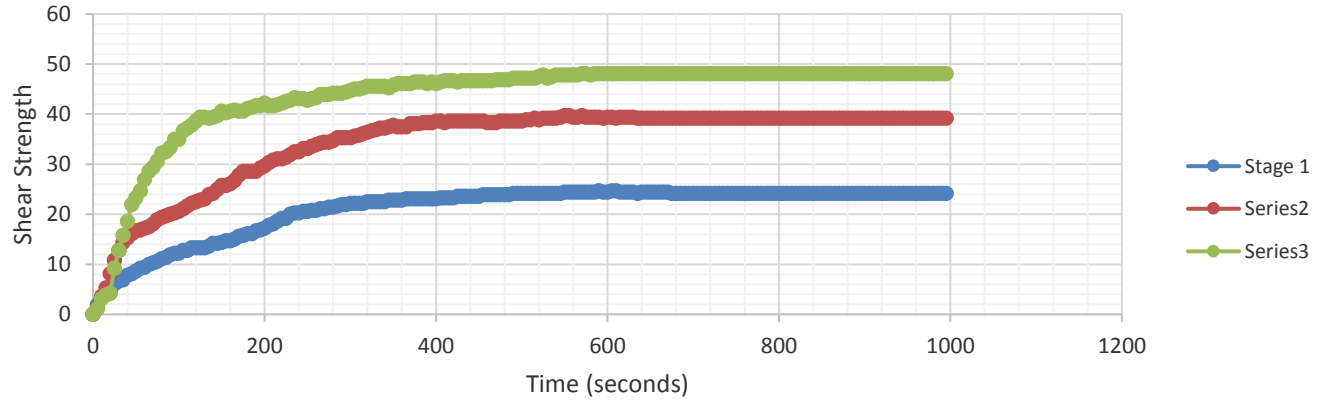
Remarks :

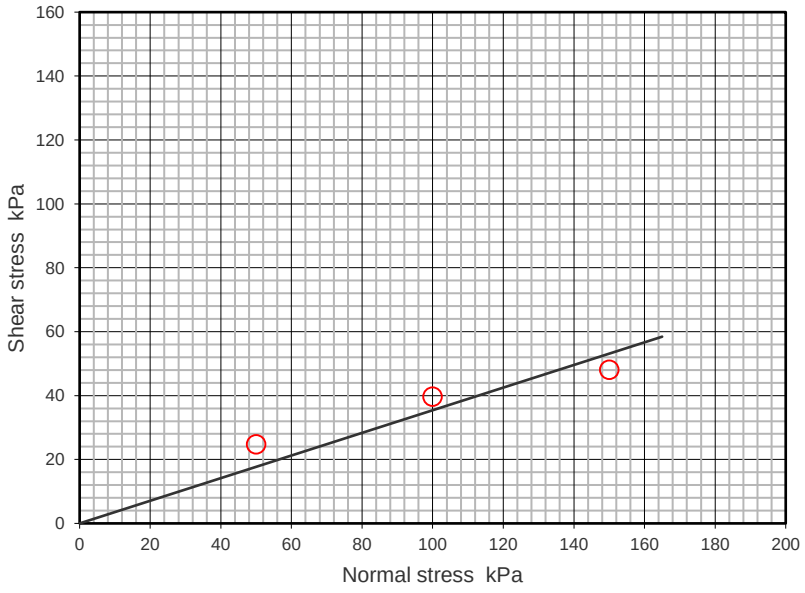
Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1

	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P20078_1
		Borehole/Pit No.	TP1308
Site Name	LIHAF - Kilcock	Sample No	5
Soil Description	Very sandy very clayey GRAVEL	Depth m	2.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12020102089

Preparation Details

Specimen Details		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.21	2.27	2.13				Mg/m³
	Moisture Content		18.9	18.9	18.9				%
	Dry density		1.86	1.91	1.79				Mg/m³
	Voids ratio		0.425	0.387	0.480				
	Degree of Saturation		118	129	104				%
Consolidation	Consolidation / Normal Stress applied		**50**	**100**	**150**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		18.5	18.5	16.9				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[14]	0
Ø '	degrees	[13.0]	19.5

Residual strength, (x)			
c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

Lab Sheet Reference :		Date printed	Fig No.
		02/02/2021 12:53	1
			sheet 1 of 2

Keynetix	Measurement of Electrical Resistivity Wenner probe method			Job Ref	P20078_1
				Borehole/Pit No.	ST1306
Site Name	LIHAF - Kilcock			Sample No.	1
Soil Description	Slightly sandy slightly gravelly SILT			Depth m	1
				Sample Type	B
				KeyLAB ID	PGL12020102058
Test Method	BS 1377 : Part 3 : 1990, clause 10.3 Wenner probe			Date of test	

Sample preparation

Type of sample : Recompacted

Size of material removed : 20 mm Percentage removed : 7 %

Method of preparation :

Equipment details

Meter	Probes			Test Container		
	Material			Shape		
	Length		mm	Material		
	Diameter		mm	Length	450.0	mm
				Diameter	150.0	mm
				Width	140.0	mm
				Depth	140.0	mm

Specimen details

Length	450.0	mm
Bulk density	0.53	Mg/m3
Dry density	0.41	Mg/m3
Moisture Content	28.7	%

TEST RESULTS

	Test 1	Test 2	
Insertion depth	65	65	mm
Spacing between probes	100	100	mm
Test Location			
Resistance measured	706	706	ohm
Electrical resistivity	443.6	443.6	ohm.m

Temperature of soil during test 17 oC

Average Electrical resistivity 443.6 ohm.m

Electrical Resistivity (corrected to 20oC) **410** ohm.m

Remarks

Printed	02/02/2021 12:53	Approved	Cilla	Figure 1
				sheet 1 of 1

Lab Sheet Reference :

Keynetix	Measurement of Electrical Resistivity Wenner probe method			Job Ref	P20078_1
				Borehole/Pit No.	ST1313
Site Name	LIHAF - Kilcock			Sample No.	1
Soil Description	Slightly clayey very sandy GRAVEL			Depth m	1
				Sample Type	B
				KeyLAB ID	PGL12020102066
Test Method	BS 1377 : Part 3 : 1990, clause 10.3 Wenner probe			Date of test	

Sample preparation

Type of sample : Recompacted

Size of material removed : 20 mm Percentage removed : 22 %

Method of preparation :

Equipment details

Meter	Probes			Test Container		
	Material			Shape		
	Length		mm	Material		
	Diameter		mm	Length	450.0	mm
				Diameter	150.0	mm
				Width	140.0	mm
				Depth	140.0	mm

Specimen details

Length	450.0	mm
Bulk density	0.61	Mg/m3
Dry density	0.55	Mg/m3
Moisture Content	10.4	%

TEST RESULTS

	Test 1	Test 2	
Insertion depth	55	55	mm
Spacing between probes	95	95	mm
Test Location			
Resistance measured	>Limit	>Limit	ohm
Electrical resistivity			ohm.m

Temperature of soil during test 17 oC

Average Electrical resistivity ohm.m

Electrical Resistivity (corrected to 20oC) ohm.m

Remarks

Printed	02/02/2021 12:53	Approved	Cilla	Figure 1
				sheet 1 of 1

Lab Sheet Reference :

Keynetix	Measurement of Electrical Resistivity Wenner probe method			Job Ref	P20078_1
				Borehole/Pit No.	ST1314
Site Name	LIHAF - Kilcock			Sample No.	1
Soil Description	Very silty vey sandy GRAVEL			Depth m	0.9
				Sample Type	B
				KeyLAB ID	PGL12020102067
Test Method	BS 1377 : Part 3 : 1990, clause 10.3 Wenner probe			Date of test	

Sample preparation

Type of sample : Recompacted

Size of material removed : 20 mm Percentage removed : 9 %

Method of preparation :

Equipment details

Meter	Probes			Test Container		
	Material			Shape		
	Length		mm	Material		
	Diameter		mm	Length	450.0	mm
				Diameter	150.0	mm
				Width	140.0	mm
				Depth	140.0	mm

Specimen details

Length	450.0	mm
Bulk density	0.56	Mg/m3
Dry density	0.46	Mg/m3
Moisture Content	22.5	%

TEST RESULTS

	Test 1	Test 2	
Insertion depth	50	50	mm
Spacing between probes	100	100	mm
Test Location			
Resistance measured	1653	1649	ohm
Electrical resistivity	1038.6	1036.1	ohm.m

Temperature of soil during test 17 oC

Average Electrical resistivity 1037.4 ohm.m

Electrical Resistivity (corrected to 20oC) **960** ohm.m

Remarks

Printed	02/02/2021 12:53	Approved	Cilla	Figure 1
				sheet 1 of 1

Lab Sheet Reference :

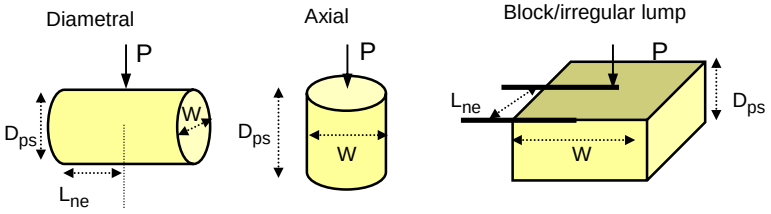
Point Load Strength Index Tests
Summary of Results

Project No.: P20078_1

Project Name: LIHAF - Kilcock

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Depth	Ref.	Type	Ref.	Depth		Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			I_s	$I_{s(50)}$	
	m				m					mm	mm	mm	mm	kN	mm	MPa	MPa	
RC1303	6.10	RC	C			LIMESTONE	D	U	YES	90.0	76.0	76.0	68.0	9.7	71.9	1.9	2.2	Undulated Rough
RC1304	11.40	RC	C			LIMESTONE	D	L	YES	15.0	76.0	76.0	70.0	11.6	72.9	2.2	2.6	Undulated Rough

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



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = $(De/50)^{0.45}$ for all tests.

Date Printed: 02/02/2021

Approved By: Cilla

Table: 1

sheet: 1

Unconfined Compressive Strength, UCS

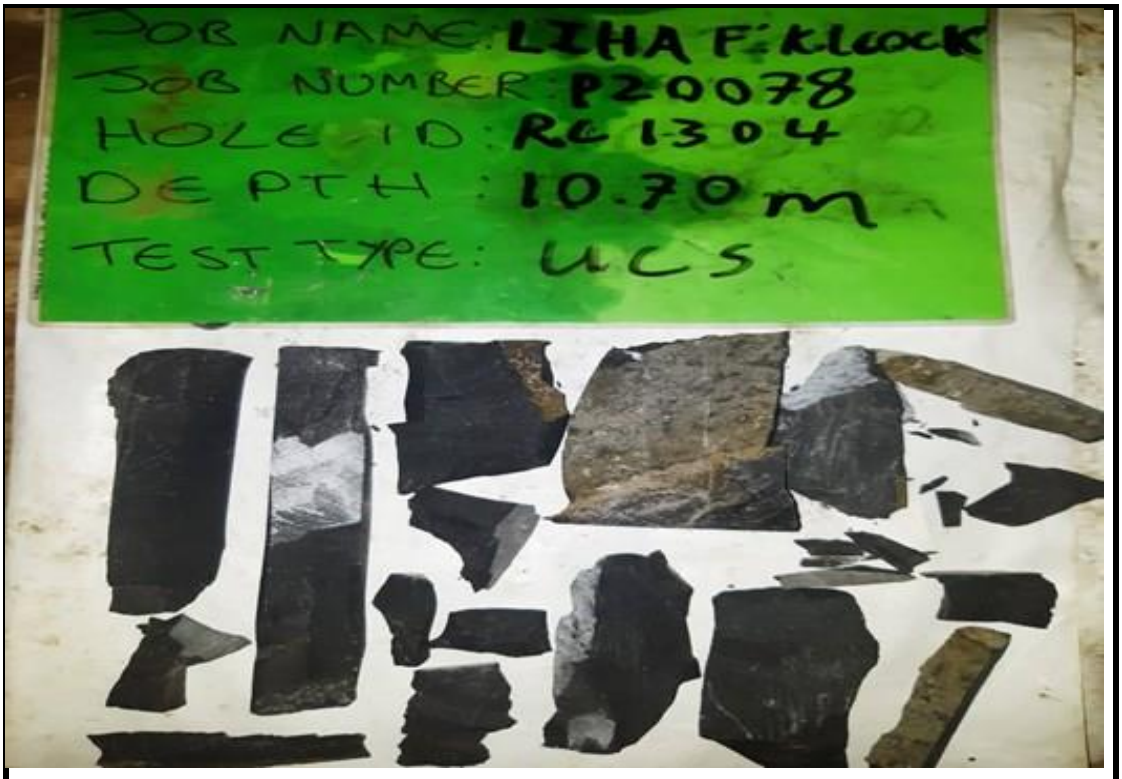
Job Name	**LIHAF - Kilcock**	
Job Number	**P20078_1**	
Borehole:	**RC1303**	
Depth:	**6.65**	**m**
Rock Type	**LIMESTONE**	
Bulk Density	**2.68**	**Mg/m3**
Load at Failure, P	**386.1**	**kN**
Stress at Failure	**87.47**	**MPa**



Failure mode

Unconfined Compressive Strength, UCS

Job Name	**LIHAF - Kilcock**	
Job Number	**P20078_1**	
Borehole:	**RC1304**	
Depth:	**10.7**	**m**
Rock Type	**LIMESTONE**	
Bulk Density	**2.72**	**Mg/m3**
Load at Failure, P	**373.7**	**kN**
Stress at Failure	**84.67**	**MPa**



Failure mode