

Our Ref: GH/Rp/P23172 +attachments (*.pdf)

19th December, 2023

M.H.L & Associates Ltd. Consulting Engineers

Unit 1B,
The Atrium,
Blackpool,
Cork.
T23T2VY

Re: Old Mill, Ballinacurra, Preliminary ground investigation report.

Introduction

In September 2023, Priority Geotechnical Ltd. (PGL) were requested by M.H.L., to undertake ground investigation works at Old Mill, Ballinacurra, R629, Midleton, Co. Cork.



Objectives

The aim of the ground investigation, was to determine the ground and groundwater condition on site and the infiltration characteristics of these deposits present to allow for soakaway design.

Scope

The scope of the geotechnical site investigation determined by M.H.L. comprised of:

- Trial pit excavations;
- Foundation inspection pits;
- *In situ* testing: BRE365 soakaways;
- All associated sampling;
- Laboratory testing and
- Reporting.

The site works as completed is outlined, herein. This report presents the fieldworks records with regard to the ground investigation at the brownfield site, Old Mill, Ballinacurra, Midelton, Co. Cork. The report should be read in conjunction with the exploratory records accompanying this report.

Site Works

This ground investigation was carried out on the 27th September, 2023, under the supervision of PGL, Engineering Geologist(s) in accordance with Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the relevant British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9). Details of the plant and equipment used are detailed on the relevant exploratory records, accompanying this report.

Trial excavations

A total of six (6) trial pits were excavated to depths 1.50m bgl to 4.50m bgl using a 17t tracked excavator; the exploratory logs are presented herein.

Location	Final depth, m bgl	Remarks	
		Stability	Groundwater
FP01	1.5	Good	None encountered
FP02	2.0	Good	None encountered
TP01	2.6	Good	None encountered
TP02	3.2	Good	None encountered
TP03	4.5	Good	None encountered
TP04	4.5	Good	None encountered

Sampling

A total of ten (10) bulk disturbed samples (B) and six (6) small disturbed samples (D) were taken during the fieldworks in accordance with Geotechnical Investigation and Sampling – Sampling Methods and Groundwater Measurements (EN ISO 22475-1:2006).

Survey and exploratory locations

Upon completion of the fieldworks, the 'as built' exploration locations were surveyed using Trimble 5700/5800 GPS equipment to the Ordinance Survey Irish Transverse Mercator system of co-ordinates (ITM) and elevations to Malin Head datum.

Location	Easting	Northing	Ground Level, mOD Malin	Final Depth, m bgl	Date Start, dd/mm/yyyy
FP01	588780.600	571591.800	16.300	1.5	27/09/2023
FP02	588926.200	571646.900	16.730	2.0	27/09/2023
TP01	588689.690	571713.370	9.310	2.6	27/09/2023
TP02	588863.830	571662.700	8.470	3.2	27/09/2023
TP03	588883.050	571736.680	6.640	4.5	27/09/2023
TP04	588918.800	571701.460	8.250	4.5	27/09/2023
SA01	588728.859	571675.861	8.289	2.0	27/09/2023
SA01	588888.642	571668.141	8.648	2.0	27/09/2023

Soakaway tests

Two (2) infiltration/ soakaway tests were undertaken in general accordance with BRE Digest 365, Soakaway Design (2003/ 2007); noting a single (1) cycle was completed. The data from the testing accompanies the relevant exploratory records accompanying this report.

Location	Depth, m bgl	Infiltration coefficient, ms ⁻¹
SA01	2.0	1.64 E-05
SA02	2.0	1.36 E-04

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 and carried out by PGL, in accordance with BS1377 (1990), Methods of test for soils for civil engineering purposes. Specialist chemical testing was undertaken by Eurofins (UK) on behalf of PGL. The laboratory test results were presented herein; a summary of tests undertaken were detailed below:

SUMMARY OF LABORATORY TESTING

Type	Quantity, Nr.	Remarks
Natural moisture content	1	7%
Particle size distribution	5	No hydrometer analysis on fines
pH	3	8.6 to 9.0
Sulphate content SO ₄	3	<0.010g/l and 0.013g/l
Sulphate SO ₄ , (acid soluble)	3	<0.010%

Please note that all samples/ core 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 cases the use of the full sample mass. Samples already tested may not be suitable or available for further testing.

Ground and Groundwater Conditions

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

Topsoil was 100mm to 400mm thick, overlay mixed glacial deposits; slightly sandy slightly gravelly SILT, very gravelly SAND and (slightly) silty very sandy GRAVEL with low Cobble contents were encountered up to 1.5m below existing ground level (bgl) to 4.5m bgl. Limestone Boulders were encountered below a depth 1.8m at TP01.

Groundwater levels may be subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc. The duration trial excavations remain open may not allow for equilibrium groundwater level to be established in cohesive deposits. The groundwater regime should be assessed from standpipe well installations where available.

Location	Depth to groundwater strike, m bgl	Remarks
FP01	-	None encountered.
FP02	-	None encountered.
TP01	-	None encountered.
TP02	-	None encountered.
TP03	-	None encountered.
TP04	-	None encountered.

Should you have any queries in relation to the data collected and presented herein, please do not hesitate to contact our office.

Yours sincerely,
For **Priority Geotechnical**,



Greg Hayes BE MEngSc CEng MIEI
Geotechnical Specialist

This report has been prepared for M.H.L. as outline, herein. The information provided should not be used by Third Parties without their prior written permission and notification to PGL or possible Third Party liabilities.

Decisions made relating to the design process shall be the responsibility of the Designer. PGL shall be notified of any deviations from the proposed or intended construction relating to the tendered and agreed scope of works, herein. PGL accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

The contents of this report have been presented based on the scope of works. Where additional information becomes available the contents of this report may be subject to change.

The design recommendations presented within this report shall rely on the proper execution of works at construction stage. Any deviations to the design, specification and construction drawings shall be notified to PGL where they may potentially impact the recommendation herein.

Any conflicts arising during the design process shall be communicated to PGL so their impact on the report recommendations shall be considered. Fee structures relating to such reviews shall be agreed in advance.

No responsibly 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.

A geotechnical risk register of unresolved risk maybe presented herein to inform the Designer of risk. Supplementary ground investigations shall be considered to further reduce such risk where identified.

Decisions made during the Design, Tendering and Construction phases shall be communicated to PGL where these may potentially impact the recommendations herein or necessitate further review of the data collected.

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.

Further, specific reporting limitations relating to the ground investigation contract and geotechnical review, within the tendered and agreed scope of works and extent of the site are addressed within the report.

The extent of the geotechnical professional services is limited to the scope of works and understanding of the proposed development or works outlined herein, unless otherwise agreed and documented herein. Recommendations may be made regarding additional geotechnical services that may be required to fully address the ground conditions encountered. Fee structures relating to such additional professional services shall be agreed in advance.

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

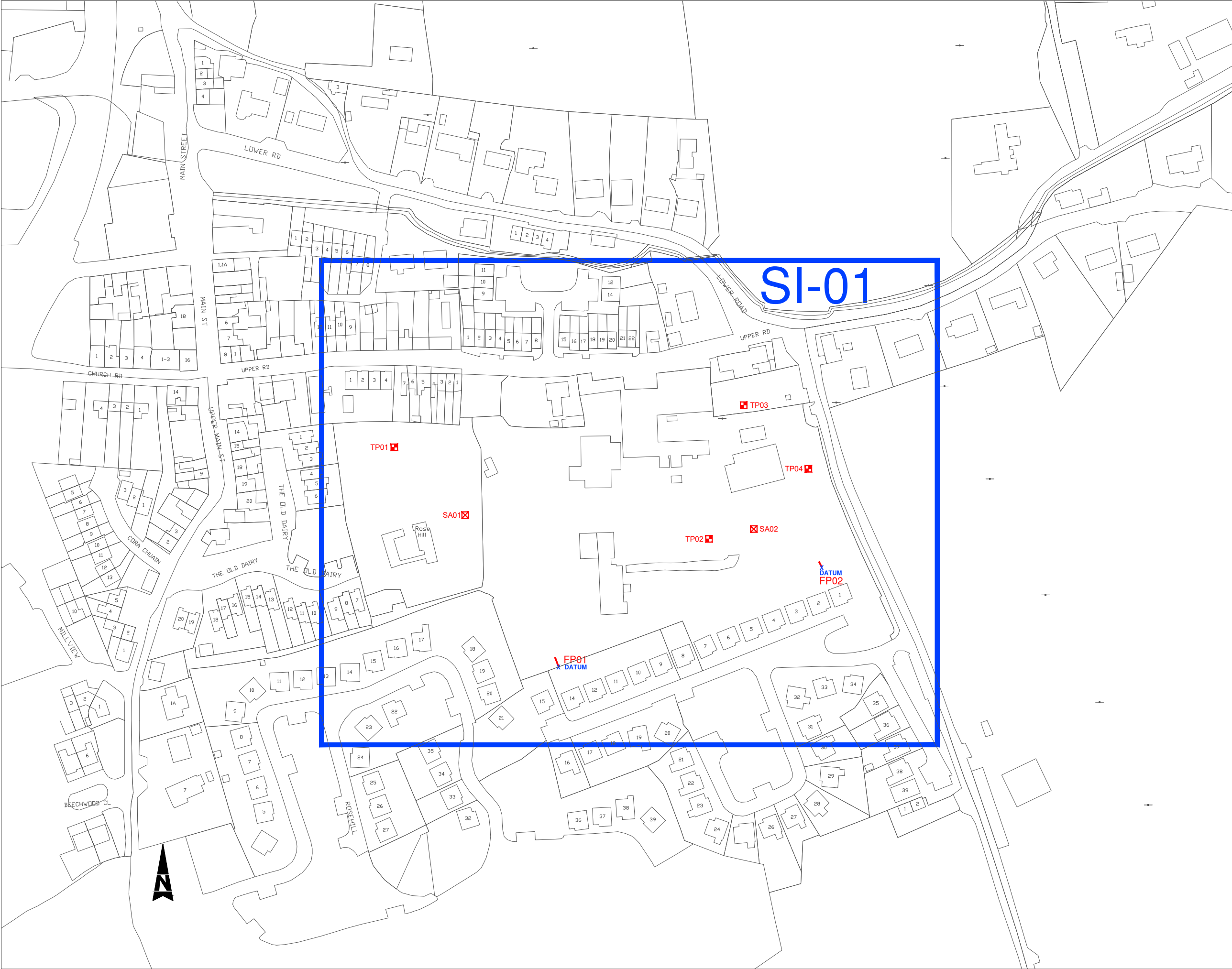
S Standard Penetration Test - split barrel sampler
C Standard Penetration Test - solid 60° cone
SW Self Weight Penetration
Ivp, HVp (R) In Situ Vane Test, Hand Vane Test (R) demonstrates remoulded strength
K(F), (C), (R), (P) Permeability Test
HP Hand Penetrometer Test

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/m²)
CBR California Bearing Ratio

ROTARY DRILLING SIZES

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



Priority Geotechnical Site

JOB NAME:

Old Mill, Ballinacurra, Co. Ballinacurra, Co. Cork.

Sheet Title:

Exploratory Location Layout

JOB NUMBER:

P23172

DRAWING NUMBER:

P23172-SI-A

DRAWN BY:

G.C.

DATE:

29/09/2023

SCALE:

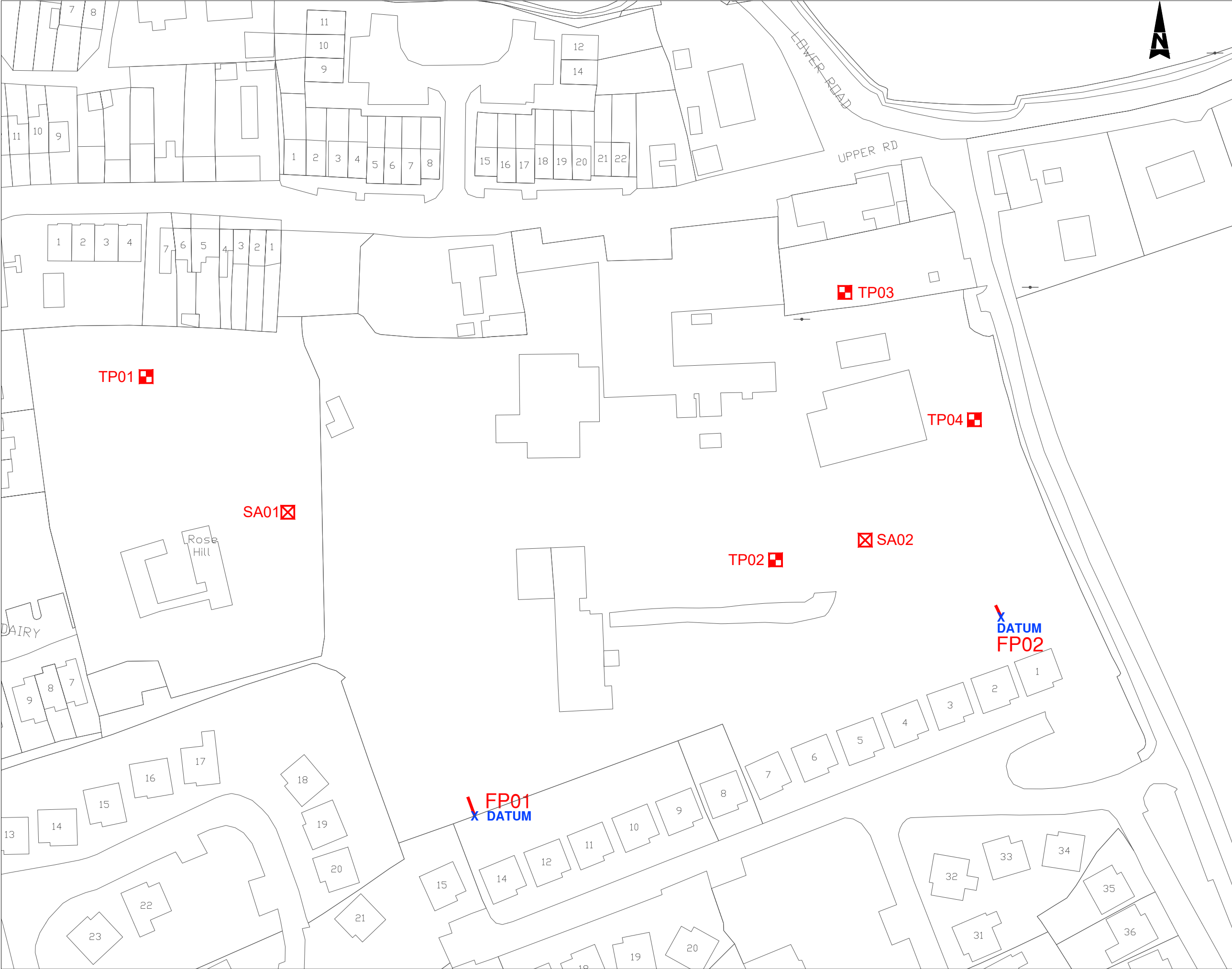
1:2000 ON A3

APPROVED:

GH

REVISION:

D01



KEY:

TP00 Denotes Trial Pit location

SA00 Denotes Soakaway location

FP00 DATUM X Denotes Foundation Pit and Datum location

JOB NAME:

Old Mill,
Ballinacurra,
Co. Cork.

Sheet Title:

LOCATION PLAN

JOB NUMBER:

P23172

DRAWING NUMBER:

P23172-SI-01

DRAWN BY:

G.C.

DATE:

29/09/2023

SCALE:

1:2,000 ON A3

APPROVED:

GH

REVISION:

D01



		Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie			Trial Pit No TP01 Sheet 1 of 1	
Project Name: Old Mill Ballinacurra		Project No. P23172		Co-ords: 588690E - 571713N Level: 9.31m OD		Date 27/09/2023
Location: Ballinacurra, Co. Cork				Dimensions (m): 4.90		Scale 1:25
Client: M.H.L.				Depth: 2.60m BGL		Logged DOC

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.30	9.01		(TOPSOIL) brown/black gravelly SILT.	1
	0.50 0.50	B D					Brown, very silty very sandy GRAVEL with low cobble content.	
	1.50 1.50	B D						2
	1.80 1.80	B D		1.80	7.51		Brown, very gravelly SAND with Limestone cobbles and boulders.	
			2.60	6.71			End of Pit at 2.600m	3
								4
								5

Stability: Good Plant: 17.2T Track machine Backfill: Arisings	Groundwater: None encountered.
Remarks: Trial pit terminated at 2.6mbgl on suspected Limestone bedrock.	



Number: TP01	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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Number:

TP01

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd

		Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie				Trial Pit No TP02 Sheet 1 of 1	
Project Name: Old Mill Ballinacurra		Project No. P23172		Co-ords: 588864E - 571663N Level: 8.47m OD		Date 27/09/2023	
Location: Ballinacurra, Co. Cork				Dimensions (m): 4.90 1.50		Scale 1:25	
Client: M.H.L.				Depth: 3.20m BGL		Logged DOC	

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.30	8.17		Red gravelly SAND.	
	0.50	B					Orange/brown, silty very sandy GRAVEL.	1
	2.50	B						2
				3.20	5.27		End of Pit at 3.200m	3
								4
								5

Stability: Good Plant: 17.2T Track machine Backfill: Arisings.		Groundwater: None encountered.	
Remarks: Trial pit terminated at 3.2mbgl on suspected rock.			



Number:

TP02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



Number:

TP02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd

		Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie			Trial Pit No TP03 Sheet 1 of 1	
Project Name: Old Mill Ballinacurra		Project No. P23172		Co-ords: 588883E - 571737N Level: 6.64m OD		Date 27/09/2023
Location: Ballinacurra, Co. Cork				Dimensions (m): 5.00		Scale 1:25
Client: M.H.L.				Depth: 4.50m BGL		Logged DOC

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.40	6.24		(TOPSOIL) black, gravelly SILT. 0.0-0.4mbgl: Possible FILL.	
							Red, gravelly SAND.	1
	1.50	B		1.50	5.14		Slightly silty very sandy GRAVEL with low cobble content.	2
								3
				4.50	2.14		End of Pit at 4.500m	4
								5

Stability: Good Plant: 17.2T Track machine Backfill: Arisings.		Groundwater: None encountered.
Remarks: Trial pit terminated at 4.5mbgl due to required depth achieved.		



Number: TP03	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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Number: TP03	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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		Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie				Trial Pit No TP04 Sheet 1 of 1	
Project Name: Old Mill Ballinacurra		Project No. P23172		Co-ords: 588919E - 571701N Level: 8.25m OD		Date 27/09/2023	
Location: Ballinacurra, Co. Cork				Dimensions (m): 1.00 5.00		Scale 1:25	
Client: M.H.L.				Depth: 4.50m BGL		Logged DOC	

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.10	8.15		(TOPSOIL) brown/black, gravelly SILT. Red/brown, gravelly SAND.	1
	0.50 0.50	B D						
	1.50 1.50	B D		1.80	6.45		Orange/brown, slightly silty very sandy GRAVEL with low cobble content.	2
	3.50	B						
				4.50	3.75		End of Pit at 4.500m	5

Stability: Good Plant: 17.2T Track machine Backfill: Arisings.		Groundwater: None encountered.
Remarks: Trial pit terminated at 4.5mbgl due to required depth achieved.		



Number:

TP04

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



Number:

TP04

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



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

Trial Pit No
FP01
Sheet 1 of 1

Project Name: Old Mill Ballinacurra

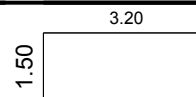
Project No.
P23172

Co-ords: 588781E - 571592N
Level: 16.30m OD

Date
27/09/2023

Location: Ballinacurra, Co. Cork

Dimensions (m):



Scale
1:25

Client: M.H.L

Depth:
1.50m BGL

Logged
DOC

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	1.50	B D		1.20	15.10		Black, earthy SILT with organic content.	1
	1.50			1.50	14.80		Red/brown, slightly gravelly, slightly sandy SILT.	
							End of Pit at 1.500m	2
								3
								4
								5

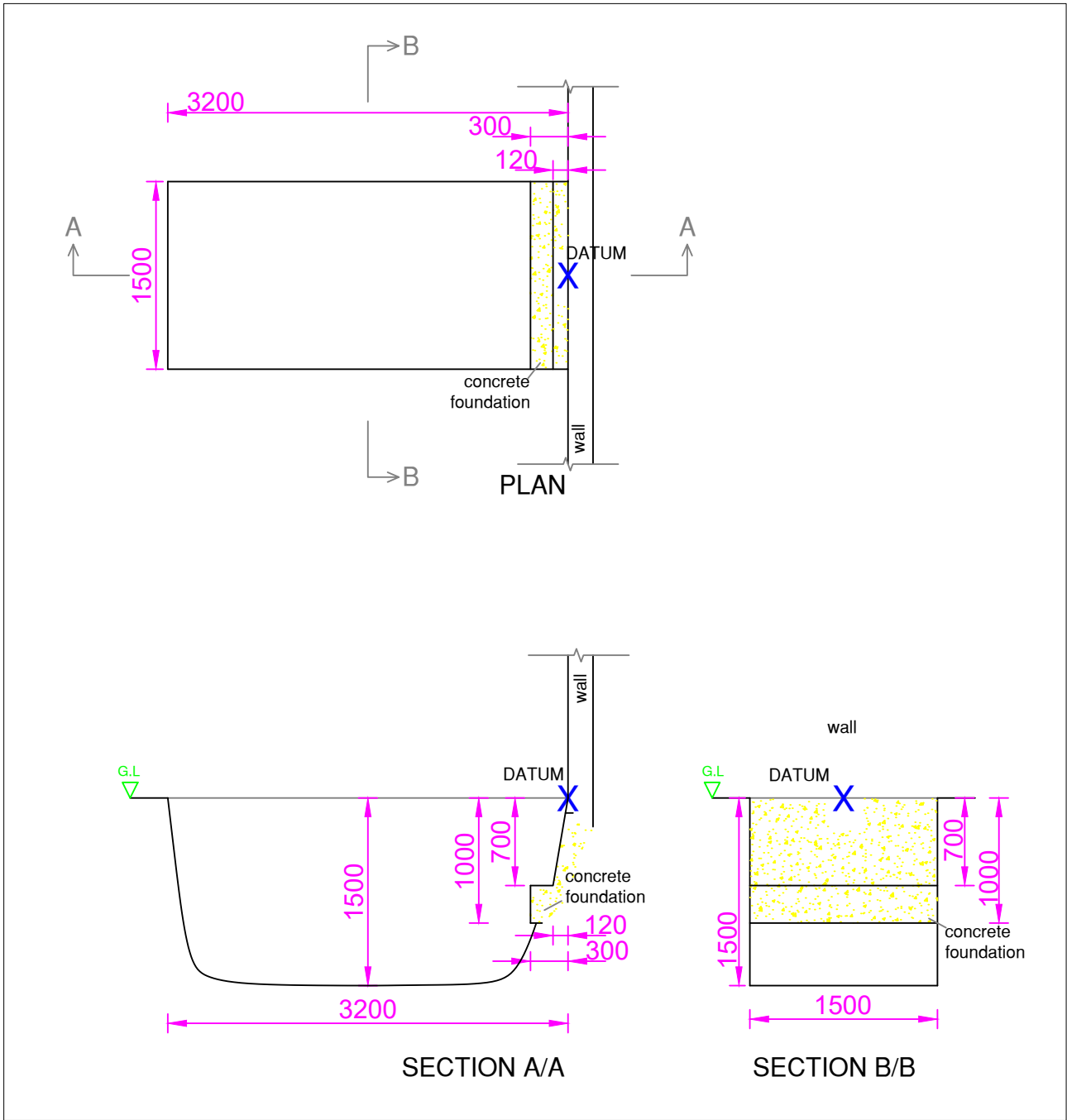
Stability: Good

Plant: 17.2T Track machine

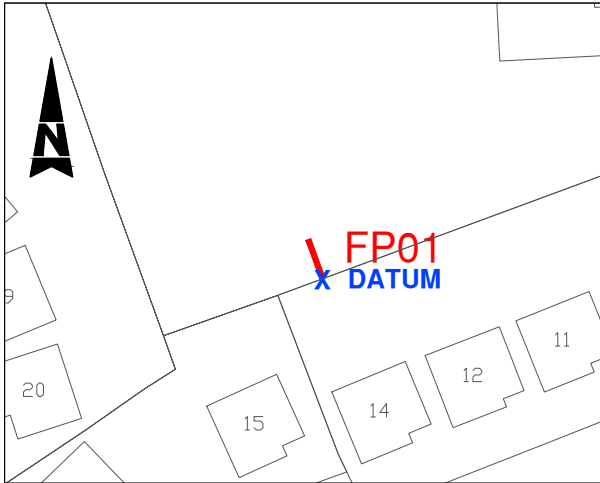
Backfill: Arisings

Groundwater: None encountered.

Remarks: Foundation pit terminated at 1.5mbgl.



FOUNDATION PIT 1:50 ON A4



DATUM COORDINATES: EASTING: 588780.6 NORTHING: 571591.8 LEVEL: 16.297mAOD		FOUNDATION PIT NUMBER: FP01
KEY: DATUM: X		JOB NAME: Old Mill, Ballinacurra, Co. Cork.
FOUNDATION PIT DIMENSIONS: LENGTH: 3.20m WIDTH: 1.50m DEPTH: 1.50m		JOB NUMBER: P23172
STRATA SHOWN ON DETAILED LOG		DRAWING NUMBER: P23172-FP01
DRAWN BY: G.C.	DATE: 04/10/2023	
LOGGED BY: D.O'C.	DATE: 27/09/2023	
SCALE: AS STATED	APPROVED: GH	
REVISION: D01		



Number:

FIP01

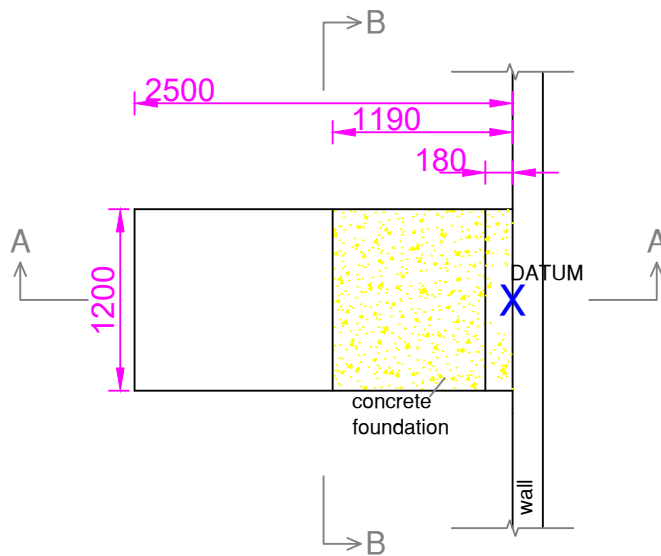
Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd

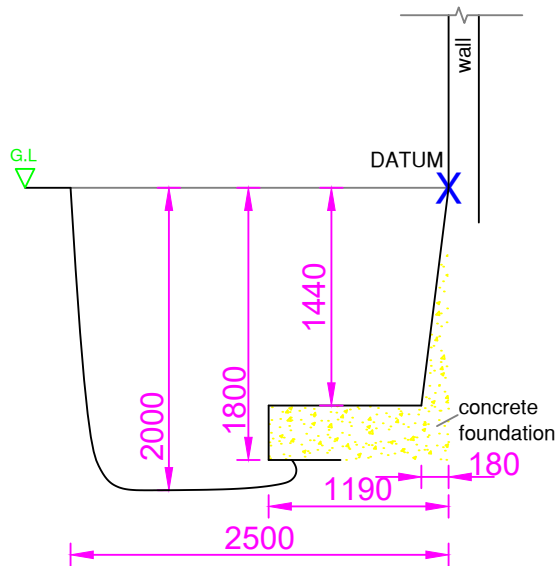


Number: FIP01	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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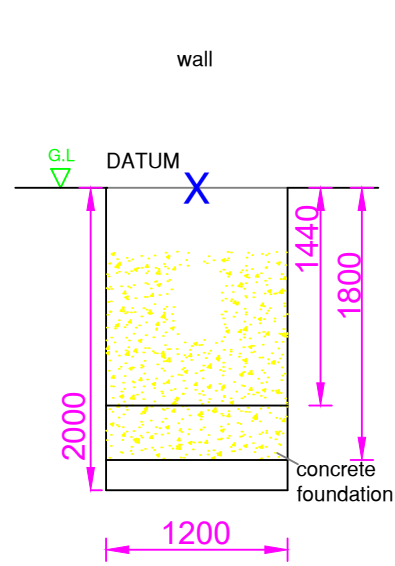
		Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie			Trial Pit No FP02 Sheet 1 of 1			
Project Name: Old Mill Ballinacurra		Project No. P23172		Co-ords: 588926E - 571647N Level: 16.73m OD		Date 27/09/2023		
Location: Ballinacurra, Co. Cork				Dimensions (m): 2.50 1.20		Scale 1:25		
Client: M.H.L.				Depth: 2.00m BGL		Logged DOC		
Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.50	16.23		Black, earthy SILT with organic content.	1
							Red, slightly gravelly, slightly sandy SILT.	
				2.00	14.73		End of Pit at 2.000m	2
								3
								4
								5
Stability: Good Plant: 17.2T Track machine Backfill: Arisings.					Groundwater: None encountered.			
Remarks: Foundation pit terminated at 2.0mbgl.								



PLAN

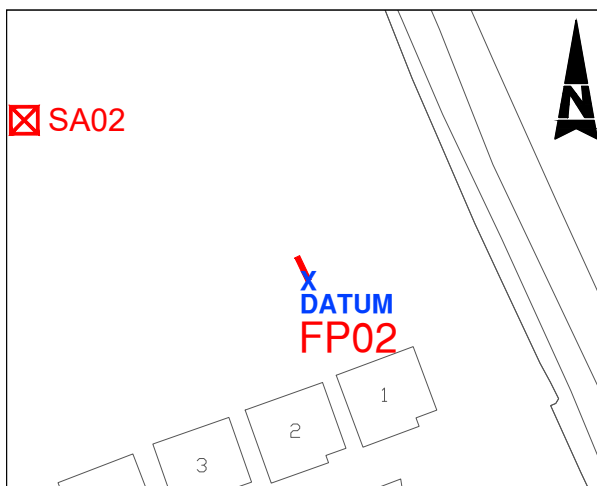


SECTION A/A



SECTION B/B

FOUNDATION PIT 1:50 ON A4



FOUNDATION PIT LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:		FOUNDATION PIT NUMBER:	
EASTING: 588926.2		FP02	
NORTHING: 571646.9			
LEVEL: 16.728mAOD			
KEY:		JOB NAME:	
DATUM: X		Old Mill, Ballinacurra, Co. Cork.	
FOUNDATION PIT DIMENSIONS:		JOB NUMBER:	
LENGTH: 2.50m		P23172	
WIDTH: 1.20m		DRAWING NUMBER: P23172-FP02	
DEPTH: 2.00m			
STRATA SHOWN ON DETAILED LOG			
DRAWN BY:		DATE:	
G.C.		04/10/2023	
LOGGED BY:		DATE:	
D.O'C.		27/09/2023	
SCALE:		REVISION:	
AS STATED		D01	
APPROVED:			
GH			



Number:

FIP02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



Number:

FIP02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



Number:

FIP02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd

P23154**Old Mill Ballinacurra****27/09/2023****Test 1****SA01**

E588728.859 N571675.861 8.289mOD

l, m **2.200** b, m **1.300** d, m **2.000**
 l_base, m **2.200** d_eff, m **0.790**
 l_eff, m **2.200**

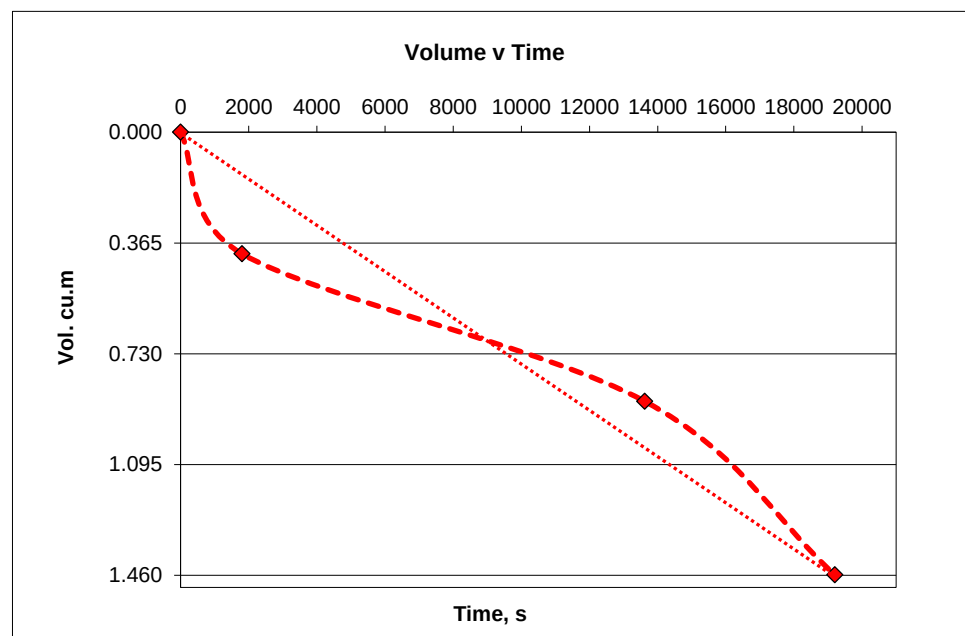
Start: 12:00:00

End: 17:20:00

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	1.210	0	0.79	0.00	0.000
30	1.350	1800	0.65	0.14	0.400
227	1.520	13620	0.48	0.31	0.887
320	1.720	19200	0.28	0.51	1.459

Area 2.860 m² V_{p75-25 theory} volume 1.1297 m³
 50% Area_eff, a_{p50} 5.625 m² V_{p 75 - 25 actual} volume 0.7293 m³
 50% Area_act, a_{p50} 4.645 m² t_{p 75- 25 actual} time 9600 s

Infiltration Coefficient *f* 1.64E-05 ms⁻¹

**NOTES:**

Pit assumed unsaturated. Moderate stability
 Infiltration calculated over actual fall recorded.



Number: SA01	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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Number: SA01	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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Number: SA01	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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P23154**Old Mill Ballinacurra****27/09/2023****Test 1****SA02**

E588888.642 N571668.141 8.648mOD

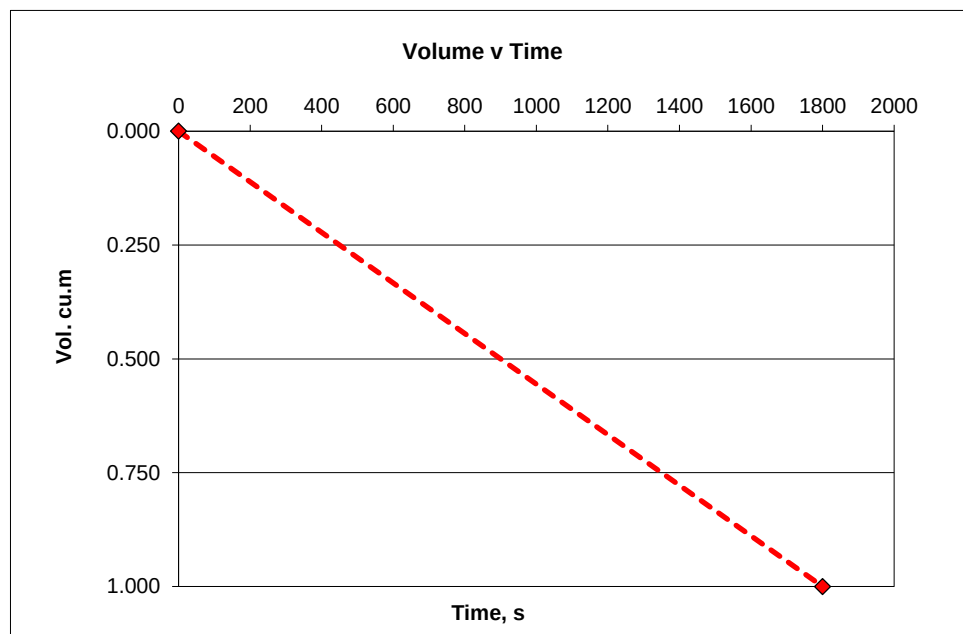
l, m **2.200** b, m **1.300** d, m **2.000**
 l_base, m **2.200** d_eff, m **0.350**
 l_eff, m **2.200**

Start: 11:15:00
End: 11:45:00

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	1.650	0	0.35	0.00	0.000
30	2.000	1800	0.00	0.35	1.000

Area 2.860 m² V_{p75-25 theory} volume 0.5005 m³
 50% Area_eff, a_{p50} 4.085 m² V_{p 75 - 25 actual} volume 0.5005 m³
 50% Area_act, a_{p50} 4.085 m² t_{p 75- 25 actual} time 900 s

Infiltration Coefficient *f* 1.36E-04 ms⁻¹

**NOTES:**

Pit assumed unsaturated. Moderate stability
 Infiltration calculated over actual fall recorded.
 Water bowser drained in full 1000 lt (1.0cu.m) in 30 minutes.



Number:

SA02

Project
Project No
Engineer

Old Mill Ballinacurra
P23172
MHL & Associates Ltd



Number: SA02	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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Number: SA02	Project Old Mill Ballinacurra Project No P23172 Engineer MHL & Associates Ltd	
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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	
Y _b	Bulk Density	
Y _d	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	
ε _f	Strain at Failure	
*	Failed under 1 st Load	
**	Failed under 2 nd 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	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

P23172

Borehole / Pit
No

SA01

Location

Old Mill Ballinacurra

Sample No

B

Depth

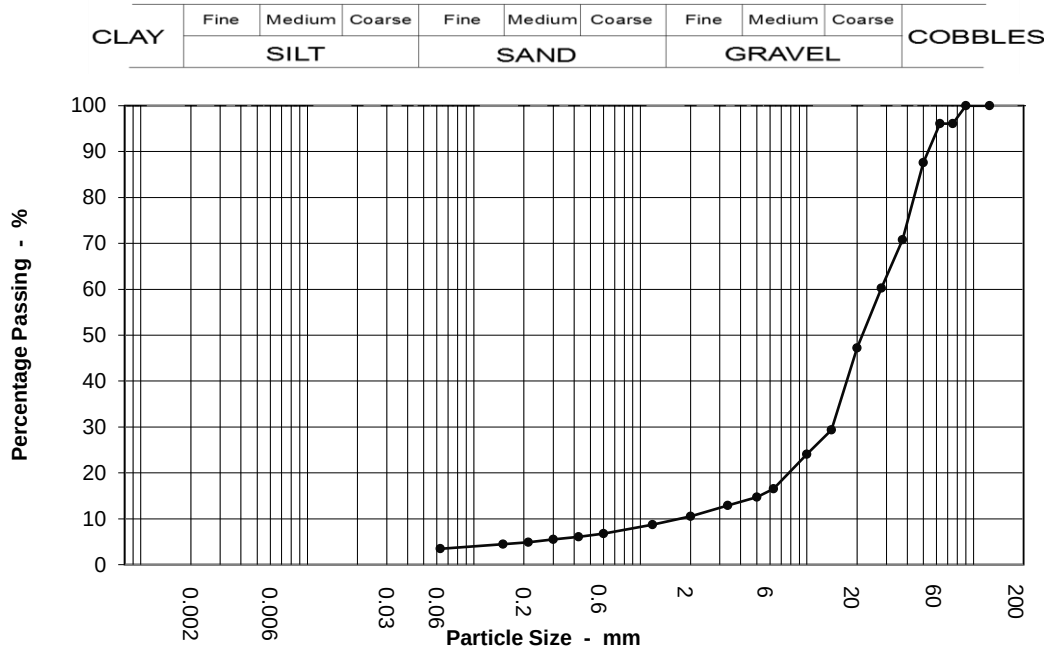
2.00 m

Soil Description

Slightly silty sandy GRAVEL with low cobble content

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	96		
63	96		
50	88		
37.5	71		
28	60		
20	47		
14	29		
10	24		
6.3	17		
5	15		
3.35	13		
2	11		
1.18	9		
0.6	7		
0.425	6		
0.3	5		
0.212	5		
0.15	4		
0.063	3		

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

Sample Proportions	
Cobbles	4.0
Gravel	86.0
Sand	7.0
Silt & Clay	3.0

Grading Analysis	
D100	90.00
D60	27.80
D10	1.72
Uniformity Coefficient	16.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

P23172

Borehole / Pit
No

TP02

Location

Old Mill Ballinacurra

Sample No

B

Depth

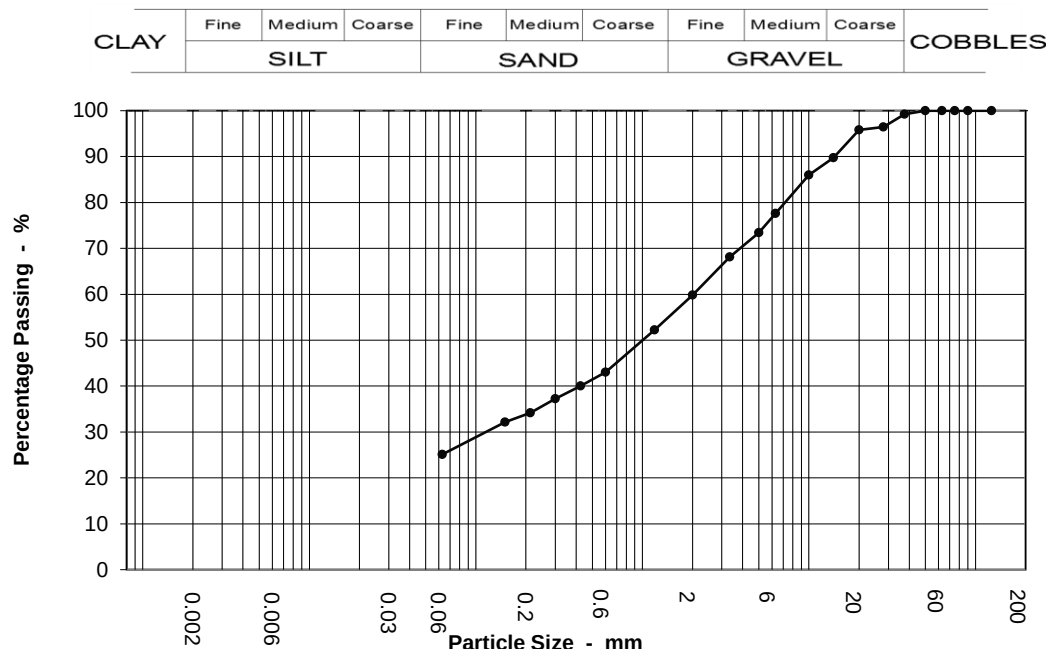
0.50 m

Soil Description

Very silty very sandy GRAVEL

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	96		
20	96		
14	90		
10	86		
6.3	78		
5	73		
3.35	68		
2	60		
1.18	52		
0.6	43		
0.425	40		
0.3	37		
0.212	34		
0.15	32		
0.063	25		

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

Sample Proportions	
Cobbles	0.0
Gravel	40.0
Sand	35.0
Silt & Clay	25.0

Grading Analysis	
D100	50.00
D60	2.02
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

P23172

Borehole / Pit
No

TP02

Location

Old Mill Ballinacurra

Sample No

B

Depth

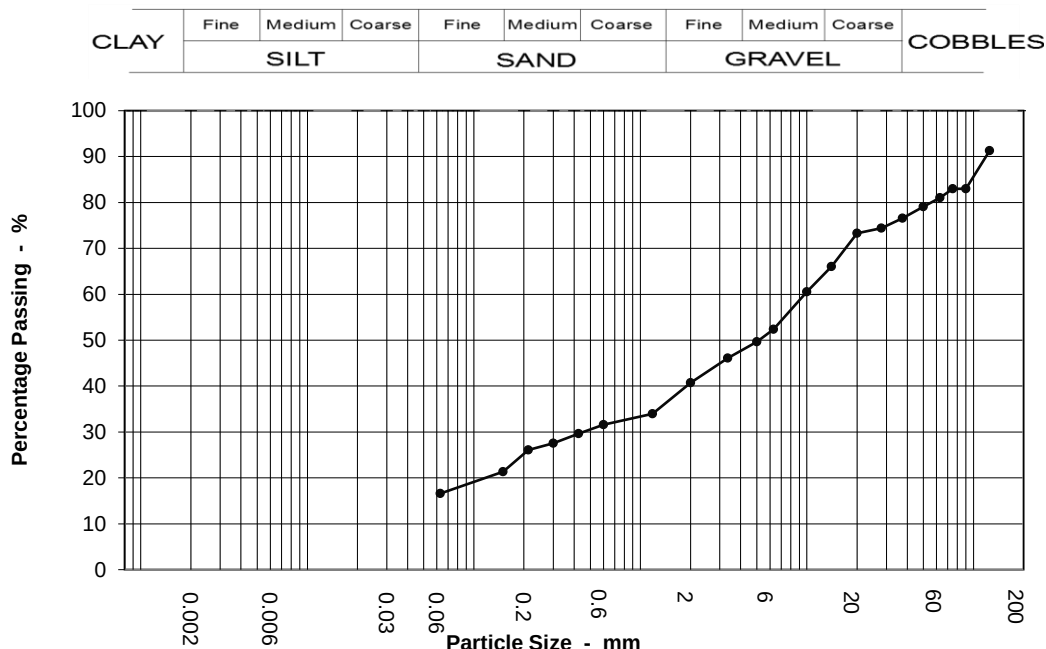
2.50 m

Soil Description

Silty very sandy GRAVEL with medium cobble content

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	91		
90	83		
75	83		
63	81		
50	79		
37.5	77		
28	74		
20	73		
14	66		
10	61		
6.3	52		
5	50		
3.35	46		
2	41		
1.18	34		
0.6	32		
0.425	30		
0.3	28		
0.212	26		
0.15	21		
0.063	17		

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

Sample Proportions	
Cobbles	19.0
Gravel	40.0
Sand	24.0
Silt & Clay	17.0

Grading Analysis	
D100	9.71
D60	
D10	
Uniformity Coefficient	



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

P23172

Borehole / Pit
No

TP03

Location

Old Mill Ballinacurra

Sample No

B

Depth

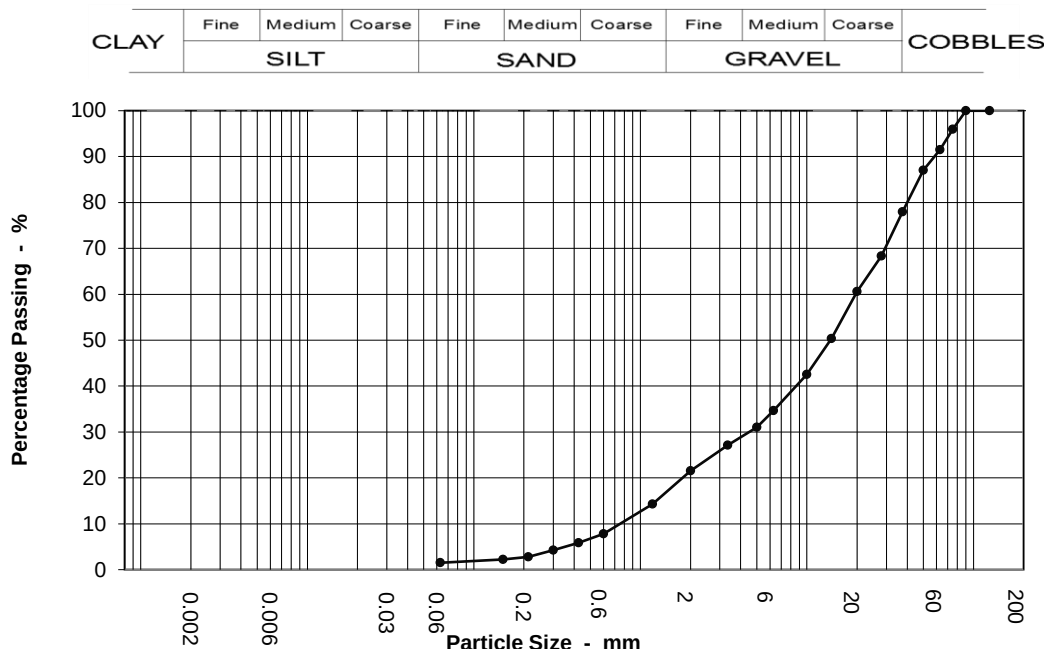
1.50 m

Soil Description

Slightly silty very sandy GRAVEL with low cobble content

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	96		
63	92		
50	87		
37.5	78		
28	68		
20	61		
14	50		
10	43		
6.3	35		
5	31		
3.35	27		
2	22		
1.18	14		
0.6	8		
0.425	6		
0.3	4		
0.212	3		
0.15	2		
0.063	2		

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

Sample Proportions	
Cobbles	8.0
Gravel	70.0
Sand	20.0
Silt & Clay	2.0

Grading Analysis	
D100	90.00
D60	19.60
D10	0.76
Uniformity Coefficient	26.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

P23172

Borehole / Pit
No

TP04

Location

Old Mill Ballinacurra

Sample No

B

Depth

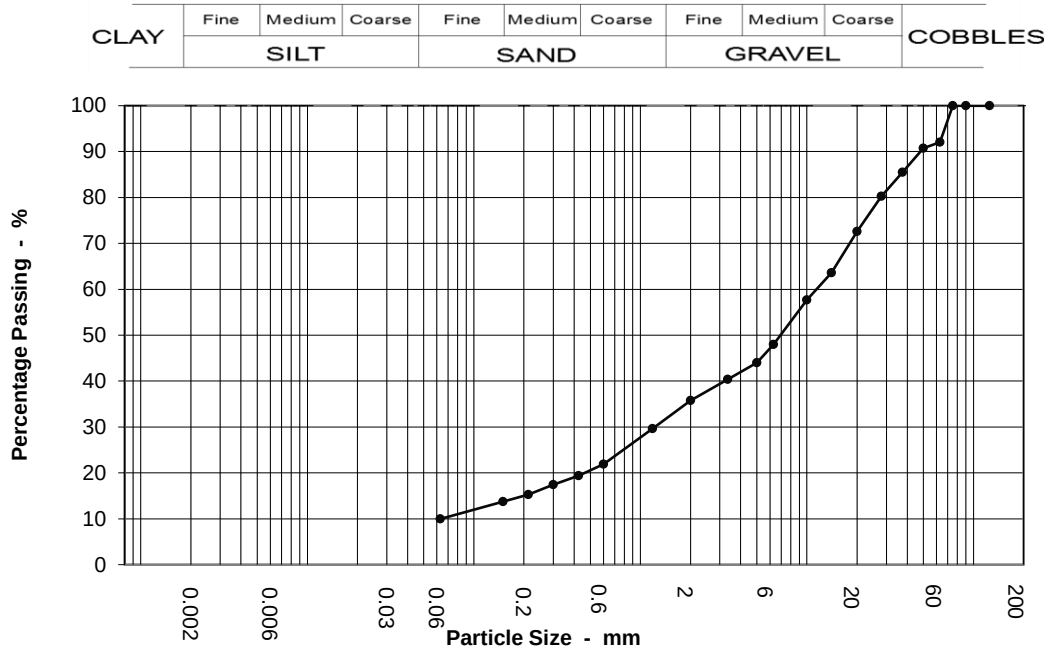
3.50 m

Soil Description

Silty very sandy GRAVEL with low cobble content

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	92		
50	91		
37.5	86		
28	80		
20	73		
14	64		
10	58		
6.3	48		
5	44		
3.35	40		
2	36		
1.18	30		
0.6	22		
0.425	19		
0.3	17		
0.212	15		
0.15	14		
0.063	10		

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

Sample Proportions	
Cobbles	8.0
Gravel	56.0
Sand	26.0
Silt & Clay	10.0

Grading Analysis	
D100	75.00
D60	11.40
D10	0.06
Uniformity Coefficient	180.00



Final Report

Report No.: 23-40944-1

Initial Date of Issue: 14-Dec-2023

Re-Issue Details:

Client Priority Geotechnical Ltd

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

Contact(s): Colette Kelly

Project P23172 - OLD MILL

Quotation No.: **Date Received:** 11-Dec-2023

Order No.: 15838 **Date Instructed:** 11-Dec-2023

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 15-Dec-2023

Date Approved: 14-Dec-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: P23172 - OLD MILL

Client: Priority Geotechnical Ltd	Chemtest Job No.:				23-40944	23-40944	23-40944
Quotation No.:	Chemtest Sample ID.:				1743815	1743816	1743817
	Sample Location:				TP02	TP03	SA01
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.5	1.5	2.0
	Date Sampled:				06-Dec-2023	06-Dec-2023	06-Dec-2023
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	22	6.5	5.7
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH at 20C	M	2010		4.0	8.6	8.7	9.0
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	0.013
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	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.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com