

## 29 Gondar Gardens, London NW6 1EP

### Geotechnical Factual Report

July 2021

**MAUND GEO-CONSULTING**

*Produced for:* J. & N. Dynowski

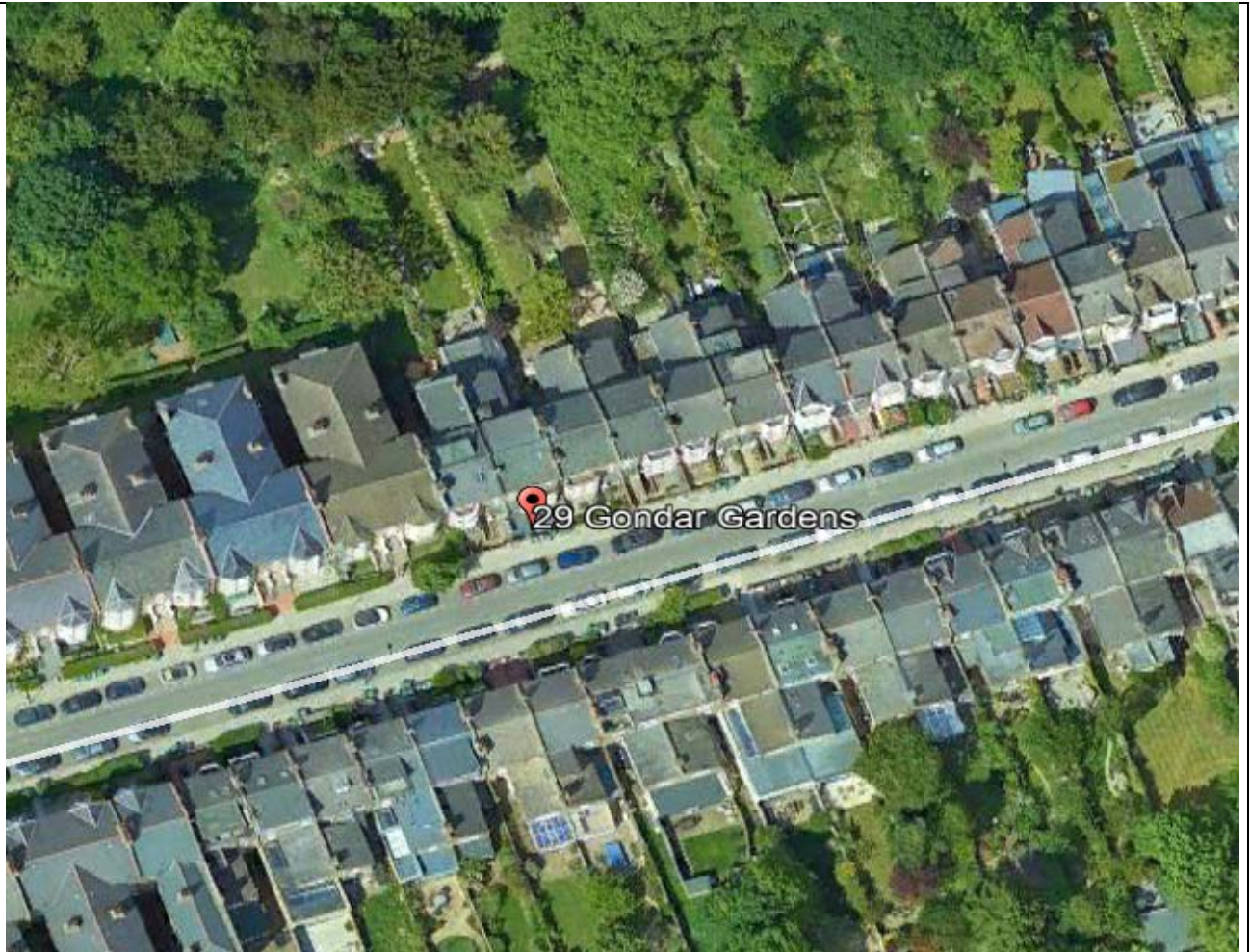
*Prepared by:*

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UK and Ireland Registered Ground Engineering Adviser

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MGC-FR-21-20-V1



Report Title	Geotechnical Report	Factual	Site Address	29 Gondar Gardens,  London NW6 1EP
Work Stage	Investigation		Report Date	July 2021
Brief Description of the Report Contents	Report on a ground investigation comprising one borehole to a depth of 8.45m and two trial pits, which was undertaken at the site on 16/06/21, to provide factual information on the ground conditions and foundation depths at the site.			

## Document Control Sheet

Project Title            29 Gondar Gardens, London NW6 1EP


Report Title            Geotechnical Factual report

Reference                MGC-FR-21-20-V1

Revision                1

Status                    Final

## Record of Issue

Issue	Status	Date	Author	
V1	Final	07/07/21	Julian Maund BSc PhD CEng MIMMM CGeol FGS Registered Ground Engineering Adviser	

## Distribution

Organisation	Contact	Date
J & N Dynowski	J & N Dynowski	07/07/21
Croft Structural Engineers	Concetta Cosenza	07/07/21

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# 1 Introduction

## 1.1 Terms of Reference

Maund Geo-Consulting Ltd (MGC) was instructed on 03<sup>rd</sup> June by Croft Structural Engineers (Croft) on behalf of Jacqui and Luke Dynowski, to undertake a ground investigation for the site at 29 Gondar Gardens. The objective of the ground investigation was to determine the ground conditions at the site for support of a Basement Impact Assessment (BIA) for the London Borough of Camden.

## 1.2 Terms and Conditions

This report has been prepared for Jacqui and Luke Dynowski in consideration of the proposed further development of the site. The geotechnical information relates to the site only and should not be used in a different context without reference to MGC.

The report has been prepared for the exclusive benefit of Jacqui and Luke Dynowski. The report contents should only be used in that context. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

MGC has used reasonable skill, care and diligence in the design of the investigation of the site. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths at the time of the investigation. At intermediate locations, conditions can only be inferred.



## 2 Information on the Site

### 2.1 Location

29 Gondar Gardens is located within the West Hampstead, within the London Borough of Camden. The ground level is approximately 77.00 m AOD at the front of the property.

### 2.2 Description

The current building is a residential dwelling and forms a mid terrace comprising three storeys above ground level and a cellar occupying part of the building footprint. The front elevation is indicated in Figure 2.1.



**Figure 2.1 29 Gondar Gardens (Streetview December 2020)**

### **2.3 Present use**

A residential dwelling.

### **2.4 Proposed development**

The proposed development is understood to provide a full basement to the property.

### **2.5 Geology**

Geological information obtained from <http://mapapps.bgs.ac.uk/geologyofbritain3d/> British Geological Survey (BGS) mapping at 1 50 000 scale shows the site to be directly underlain by the London Clay Formation (LCF), which comprises a predominantly silty clay formed during the Tertiary period.

### **2.6 Hydrogeology/groundwater**

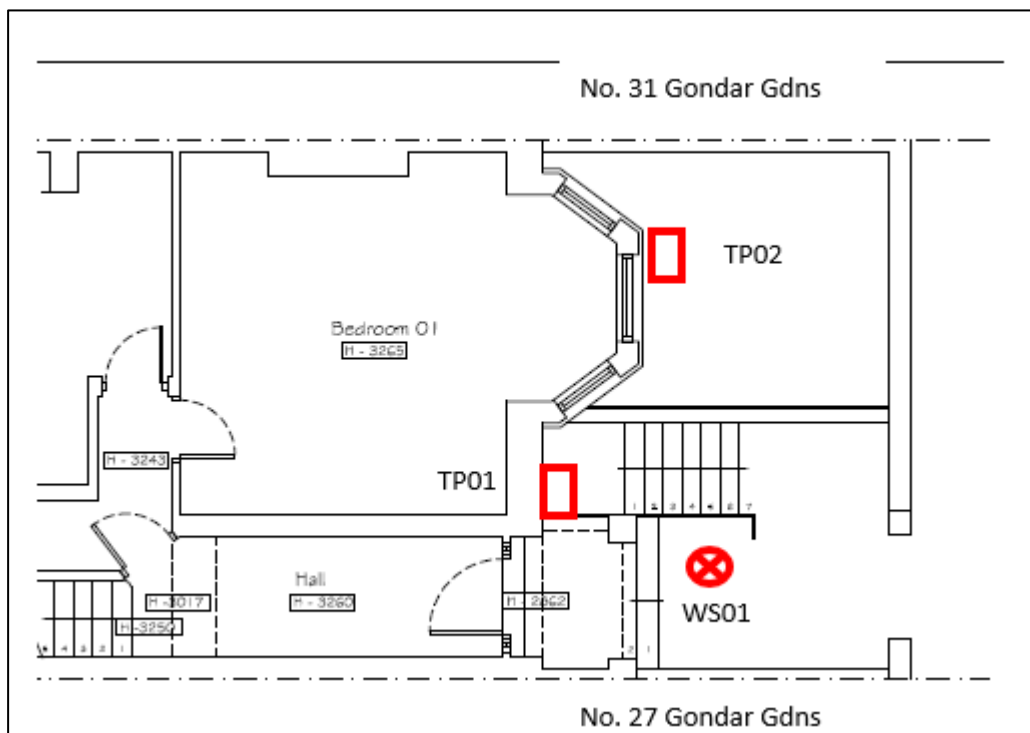
The property is located on the bedrock geology of the LCF which is classified as an 'unproductive stratum' which is effectively impermeable. The site does not lie within a ground water protection zone.

### 3 Ground Investigation

A ground investigation was undertaken by PM Sampling Ltd on behalf of MGC on 16/06/21. The exploratory holes are indicated in Figure 3.1. The factual information of the exploratory holes records is included in Appendix A and laboratory testing results are included in Appendix B.

The site investigation comprised:

- 1 No. Inspection Pit to 1.20m
- 1 No. Window sampler borehole to 8.45 m bgl.
- The in-situ strengths determined by standard penetration testing
- Disturbed soil samples were obtained from the exploratory holes for laboratory geotechnical testing and further examination.
- A 20 mm diameter groundwater monitoring well was installed to 5.0 m
- 2 No. foundation pits



**Figure 3.1 Exploratory Hole Locations**



## 4 Laboratory Testing

Laboratory tests to determine the geotechnical properties of the soil were scheduled by MGC and carried out by i2 Laboratories Ltd generally in accordance with BS1377:1990 and UKAS. The tests included:

Test type	No. of tests	Test Method
Moisture Content	5	BS1377:1990
Plasticity Index - 1 point Liquid Limit	5	BS1377:1990
Particle Size Distribution	5	BS1377:1990
pH, and water-soluble sulphate,	2	BRE SD1

The laboratory test reports are included in Appendix B.

## 5 Groundwater Monitoring

The groundwater level was monitored in the borehole installation on completion of drilling. On completion of drilling the borehole was dry to 8.45m. A groundwater monitoring installation was installed to 5.00m. The installation comprised a gravel pack from 5.00 to 1.00m depth with a slotted pipe from 5.00 to 1.00m and solid pipe in bentonite to ground level -0.1m. The pipe had a rubber bung sealing the top and was protected by a stock cock cover. The results of the monitoring shown in Table 5.1 indicate the borehole is dry to a depth of at least 4.50m below ground level.

**Table 5.1 Groundwater Monitoring**

Date of Monitoring	Groundwater (depth metres below ground level)
16/06/21	Borehole dry to base of borehole at 8.9 5m
25/06/21	Borehole dry to base of installation at 4.50 m
07/07/21	Borehole dry to base of installation at 4.50 m

## 6 References

BS 1377:1990. British Standard Methods of test for soils for Civil engineering purposes. British Standards Institution.


BS 5930: 2015. *Code of practice for Ground Investigation*. British Standards Institution.

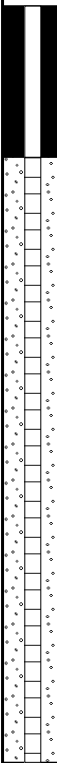
BS EN 1997-2 Eurocode 7 Geotechnical Design Part 2 Ground Investigation and Testing – inc. corrigendum 2010

BGS Geology of Britain Viewer ( <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> )

BRE SD1: 2005. Concrete in Aggressive Ground


## Appendix A Exploratory Hole Records

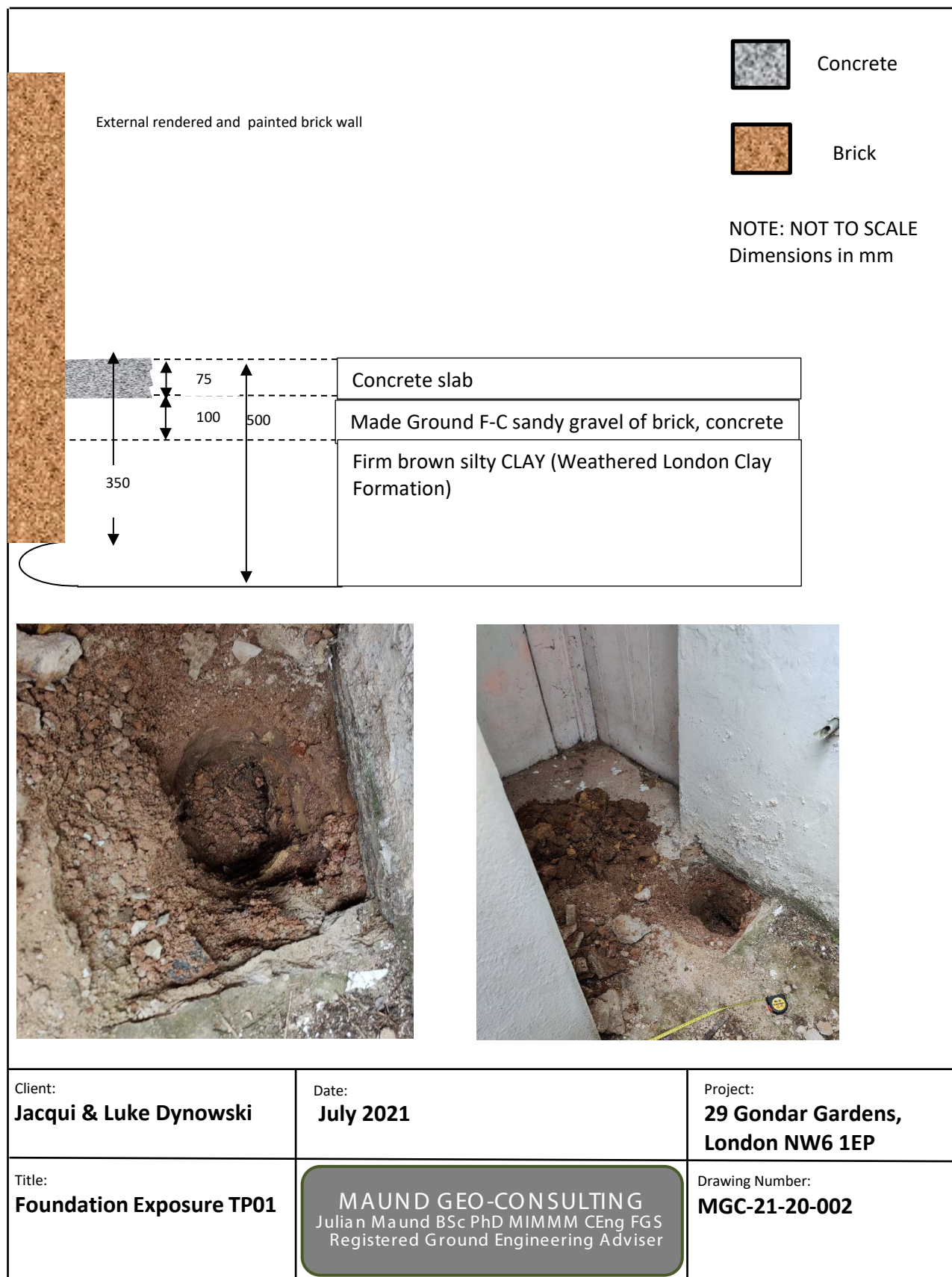
		G&J Geoenvironmental 35-37 High Street, Barrow upon Soar, Loughborough, LE12 8PY		<h1>Borehole Log</h1>			Borehole No. <b>WS01</b> Sheet 1 of 1	
Project Name: 29 Gondar Gardens		Project No. MGC-21-20		Co-ords: 524787E - 185402N		Hole Type WLS		
Location: Gondar Gardens, London NW6 1EP				Level:		Scale 1:50		
Client: Jacqui Dynowski				Dates: 16/06/2021		Logged By AW		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50 - 0.60 0.50 - 0.60	D ES		0.15		Tile over concrete. <b>MADE GROUND</b> Firm dark reddish brown sandy slightly gravelly to gravelly CLAY. Sand is fine to medium. Gravel is fine to medium angular to subangular of brick, chert and occasional rounded quartzite.	1	
					1.00		<b>MADE GROUND</b> Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular selenite crystals. LONDON CLAY FORMATION		
		1.20 1.20	D S	N=7 (1,1/2,1,2,2)	1.50		Firm light brown slightly sandy CLAY. Sand is fine. LONDON CLAY FORMATION	2	
		2.00 2.00	D S	N=10 (1,1/2,3,2,3)	2.50		Stiff light brown mottled grey thinly laminated locally slightly sandy, slightly gravelly, CLAY. Sand is fine. Gravel is fine angular selenite crystals. LONDON CLAY FORMATION		
		3.00 3.00	D S	N=15 (2,2/3,4,3,5)	3.80		... <i>Selenite crystals encountered between 2.8m and 3.0m begl.</i>	3	
		4.00 4.00	D S	N=17 (3,3/3,4,4,6)	4.00		Stiff to very stiff brown, mottled light brown with depth, thinly locally slightly gravelly slightly sandy CLAY Sand is fine selenite crystals. Gravel is fine to medium angular selenite crystals. LONDON CLAY FORMATION		
		5.00 5.00	D S	N=17 (3,4/3,4,4,6)	6.80		... <i>Band of selenite crystals encountered at 4.5m begl.</i>	4	
		6.00 6.00	D S	N=22 (0,5/5,5,6,6)	7.80		Very stiff dark brown locally slightly gravelly CLAY. Gravel is fine to medium angular of selenite crystals and carbonaceous fragments. LONDON CLAY FORMATION		
		7.00 7.00	D S	N=23 (0,5/5,5,6,7)	8.00		Very stiff dark grey locally slightly sandy thinly laminated CLAY. Sand is fine selenite crystals. LONDON CLAY FORMATION	5	
		8.00 8.00	D S	N=21 (0,4/5,5,5,6)	8.00		End of Borehole at 8.00m		

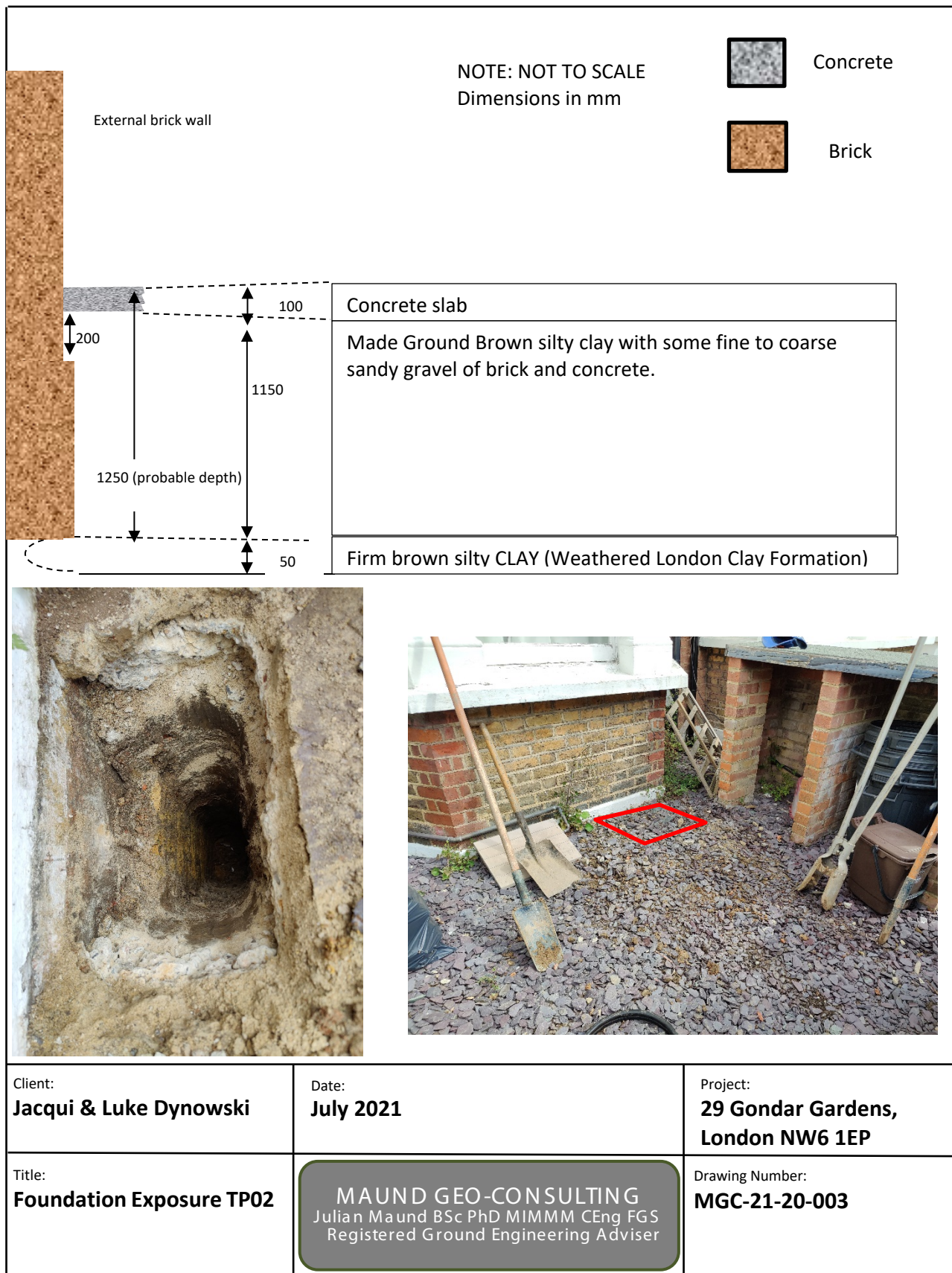
Remarks

1. Borehole advanced using a Dart Windowless Sampling Rig. 2. Strata slightly damp below 7.0m begl. 3. Borehole installed to 5.0m begl.









## Appendix B Laboratory Test Reports



# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

Client Reference: MGC-21-20

Job Number: 21-82191

Date Sampled: 16/06/2021

Date Received: 18/06/2021

Date Tested: 23/06/2021

Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

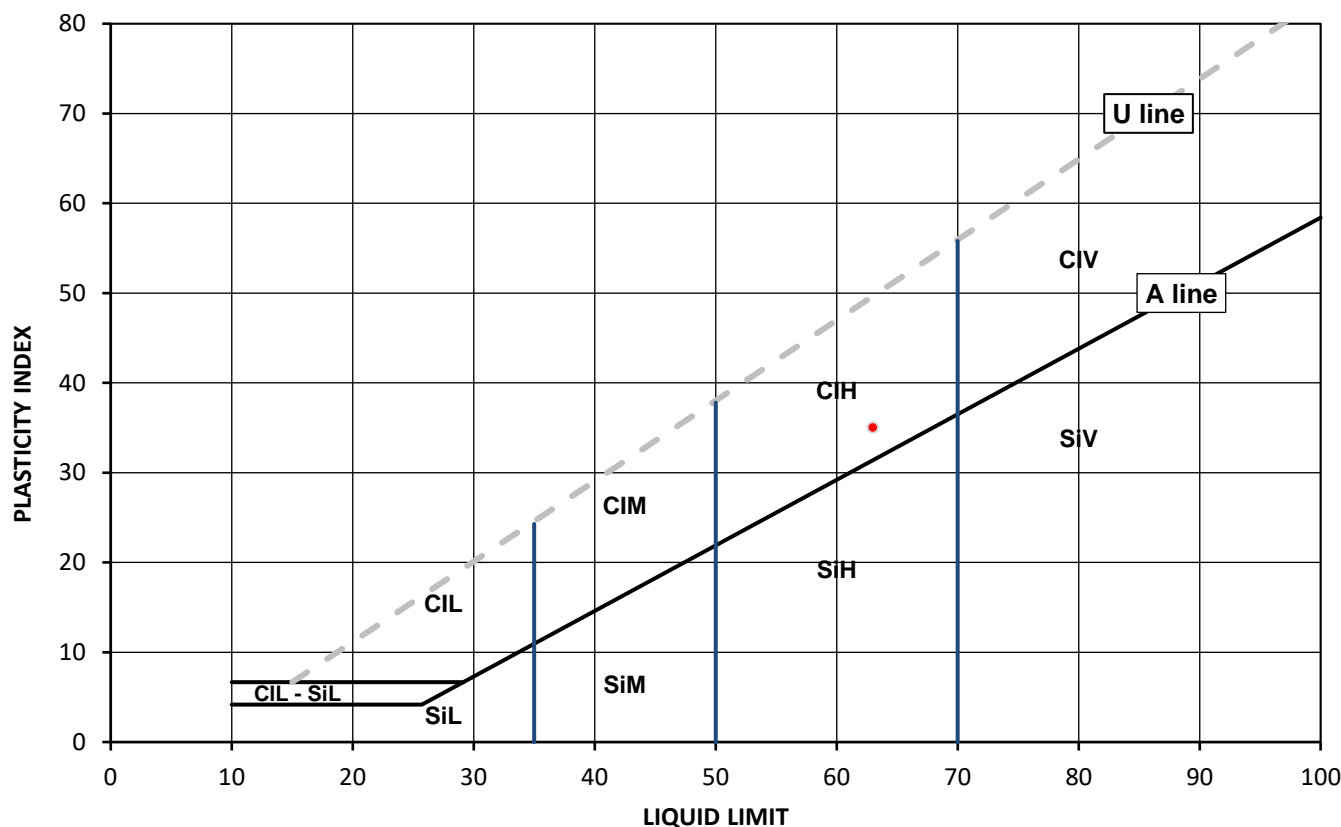
### Test Results:

Laboratory Reference: 1910521  
Hole No.: BH01  
Sample Reference: Not Given  
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 1.20  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
27	63	28	35	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material ( eg CIHO )

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Page 1 of 1

Date Reported: 07/07/2021

GF 232.10



# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

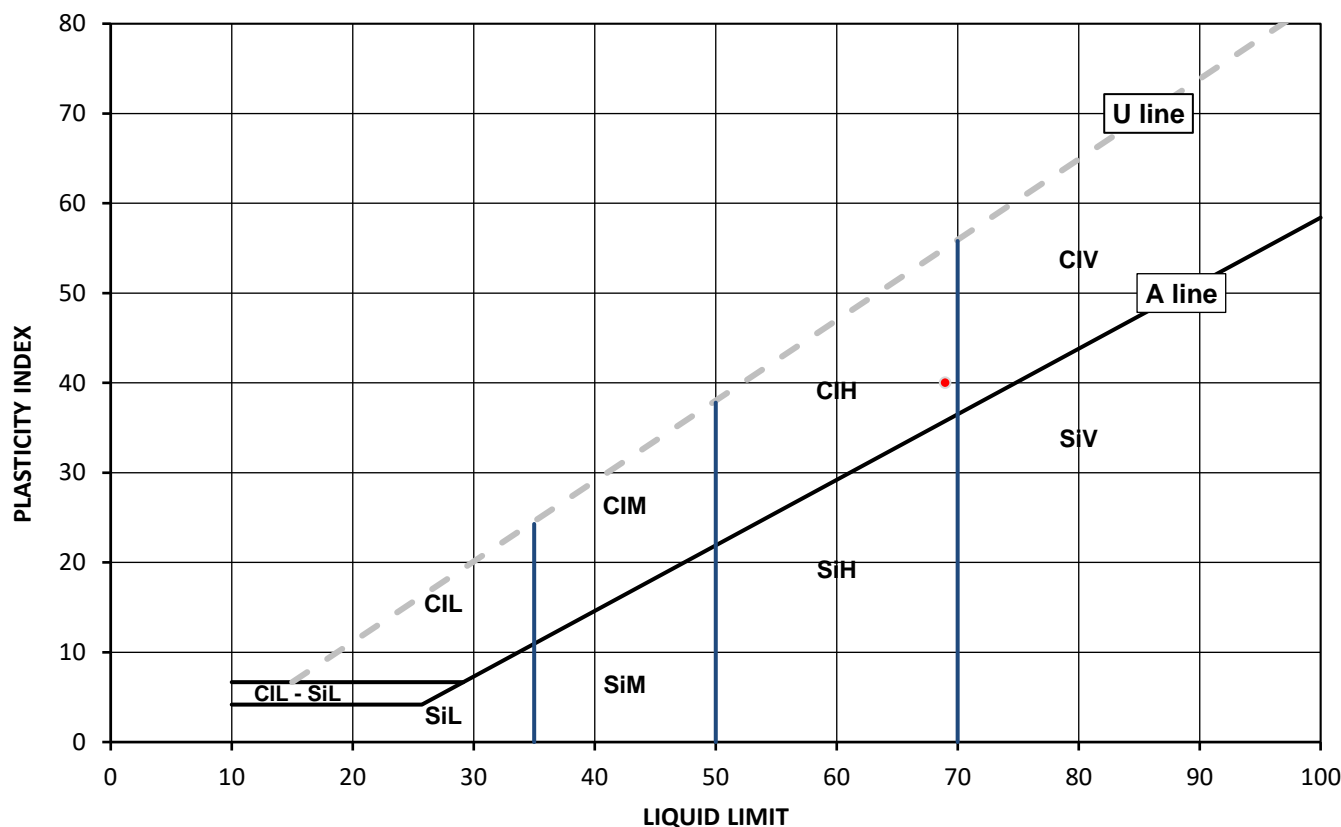
### Test Results:

Laboratory Reference: 1910522  
Hole No.: BH01  
Sample Reference: Not Given  
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 2.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
22	69	29	40	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material ( eg CIHO )
	V Very high	
	O Organic	

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

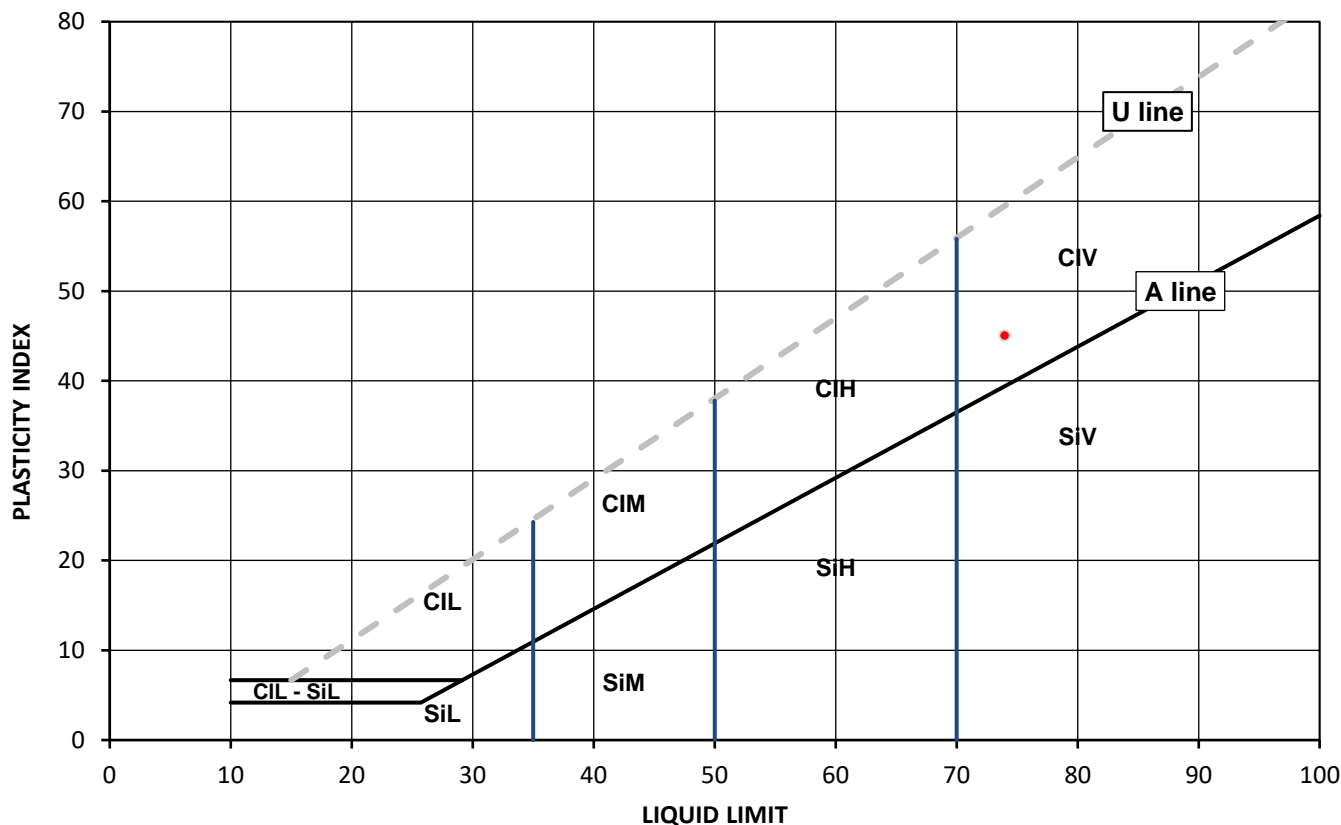
### Test Results:

Laboratory Reference: 1910523  
Hole No.: BH01  
Sample Reference: Not Given  
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 3.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
24	74	29	45	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material ( eg CIHO )

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Environmental Science

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Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

Client Reference: MGC-21-20

Job Number: 21-82191

Date Sampled: 16/06/2021

Date Received: 18/06/2021

Date Tested: 23/06/2021

Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

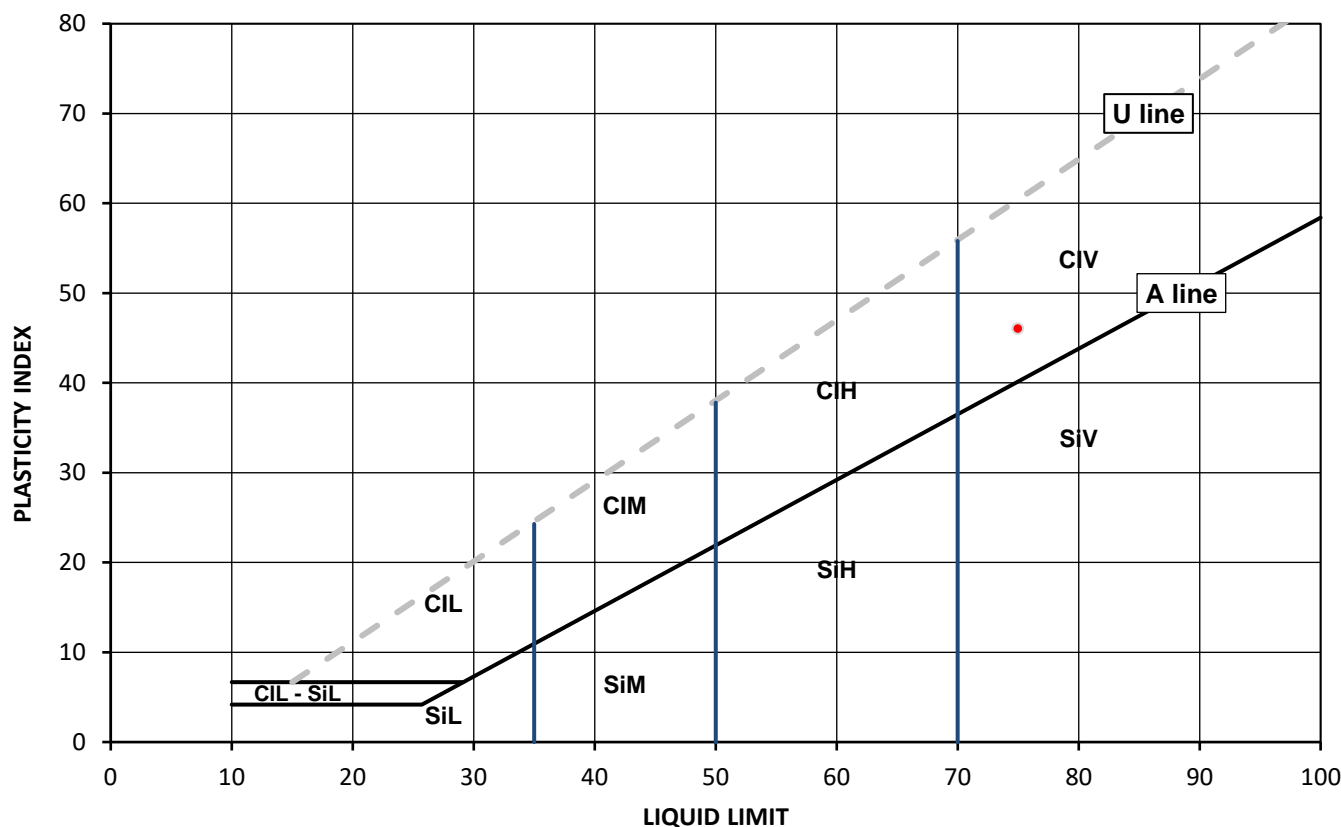
### Test Results:

Laboratory Reference: 1910524  
Hole No.: BH01  
Sample Reference: Not Given  
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 5.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
23	75	29	46	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material ( eg CIHO )

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

Client Reference: MGC-21-20

Job Number: 21-82191

Date Sampled: 16/06/2021

Date Received: 18/06/2021

Date Tested: 23/06/2021

Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1910525

Hole No.: BH01

Sample Reference: Not Given

Soil Description: Brown sandy CLAY

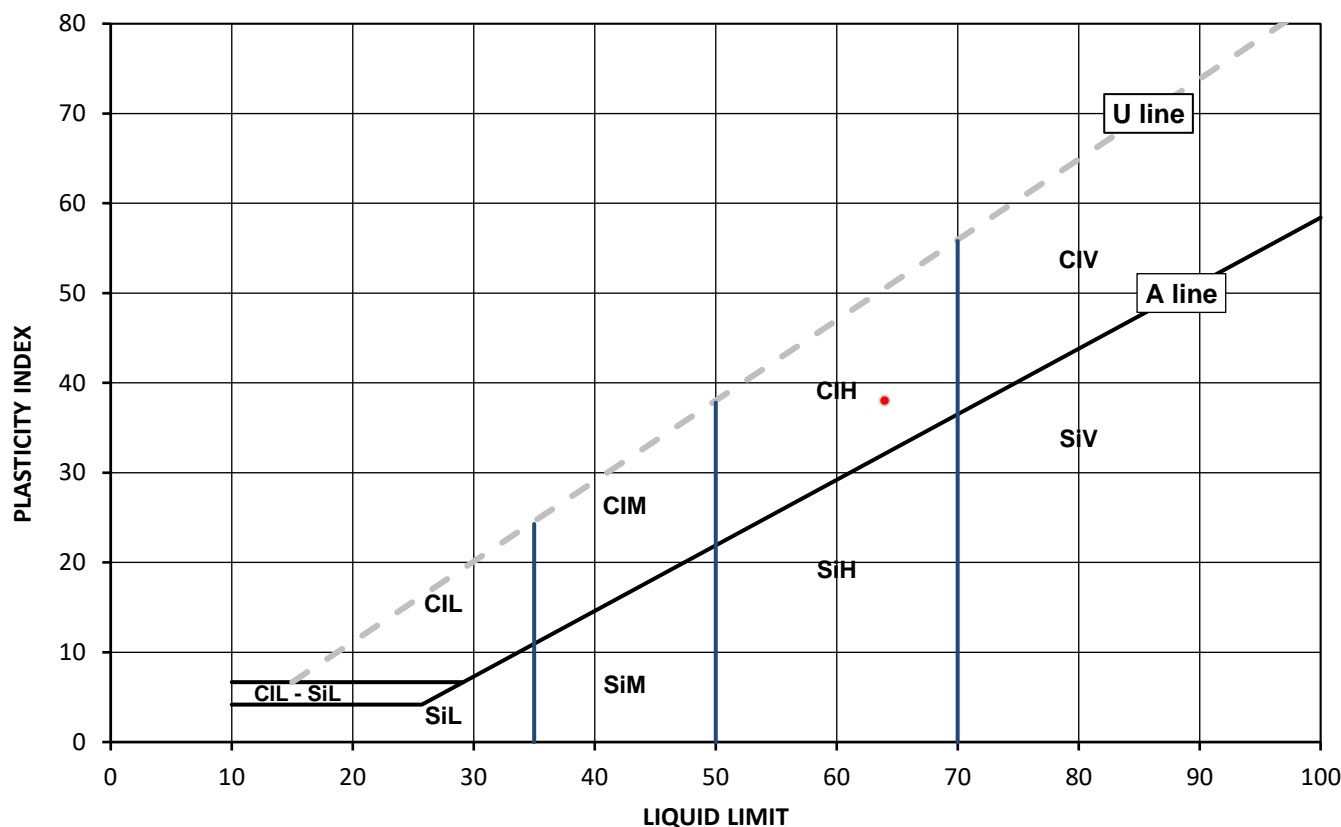
Depth Top [m]: 7.00

Depth Base [m]: Not Given

Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
18	64	26	38	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material ( eg CIHO )

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund

Site Address: 29 Gondar Gardens

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

## SUMMARY REPORT

### Summary of Classification Test Results

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN  
17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test),  
Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB

Environmental Science

Client Reference: MGC-21-20

Job Number: 21-82191

Date Sampled: 16/06/2021

Date Received: 18/06/2021

Date Tested: 23/06/2021

Sampled By: Client

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [ W ]	Water Content [ W ]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m															
1910521	BH01	Not Given	1.20	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	27		100	63	28	35						
1910522	BH01	Not Given	2.00	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	22		100	69	29	40						
1910523	BH01	Not Given	3.00	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	24		100	74	29	45						
1910524	BH01	Not Given	5.00	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	23		100	75	29	46						
1910525	BH01	Not Given	7.00	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	18		100	64	26	38						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

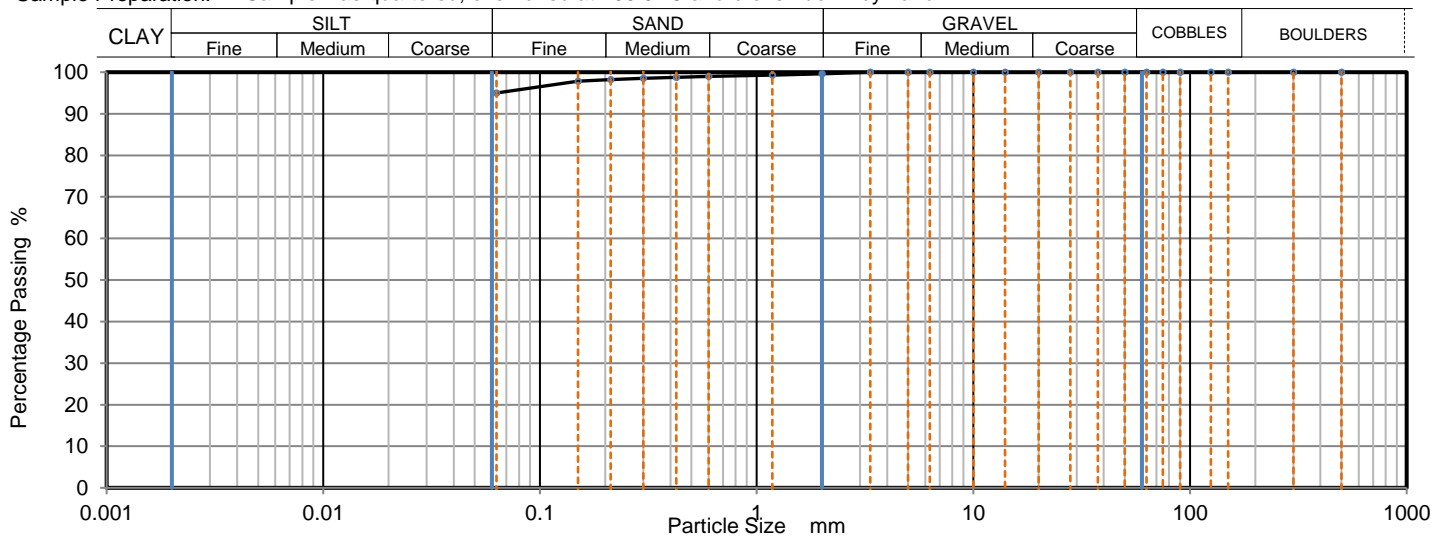
Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1910521  
Hole No.: BH01  
Sample Reference: Not Given  
Sample Description: Brown slightly sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 1.20  
Depth Base [m]: Not Given  
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	95		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	4
Fines <0.063mm	95

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: N/A - not applicable

Signed:

*Monika Janoszek*

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

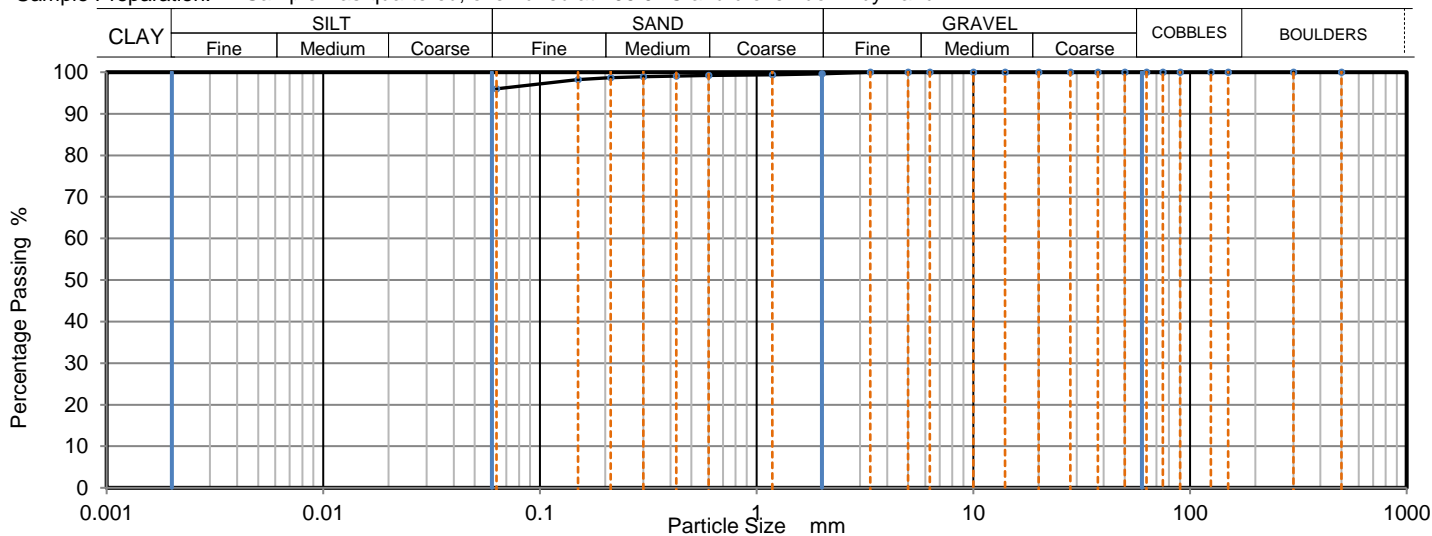
Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1910522  
Hole No.: BH01  
Sample Reference: Not Given  
Sample Description: Brown slightly sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 2.00  
Depth Base [m]: Not Given  
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	97		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	3
Fines <0.063mm	97

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: N/A - not applicable

Signed:

*Monika Janoszek*

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
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Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

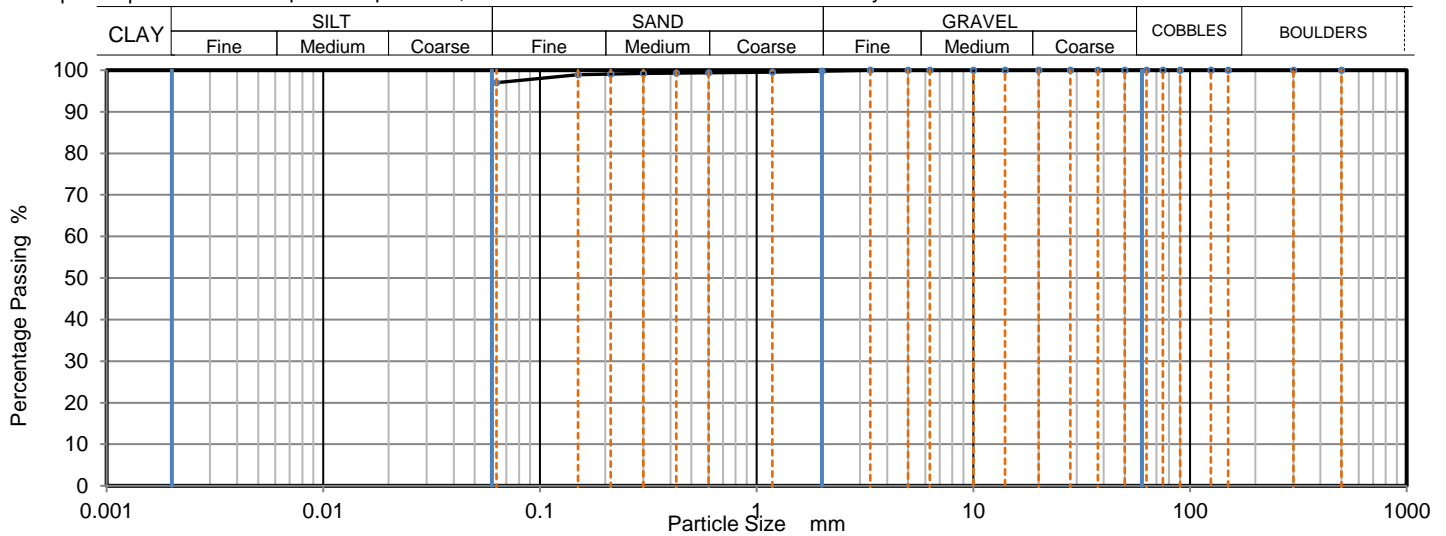
Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1910523  
Hole No.: BH01  
Sample Reference: Not Given  
Sample Description: Brown slightly sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 3.00  
Depth Base [m]: Not Given  
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	98		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	2
Fines <0.063mm	98

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: N/A - not applicable

Signed:

*Monika Janoszek*

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

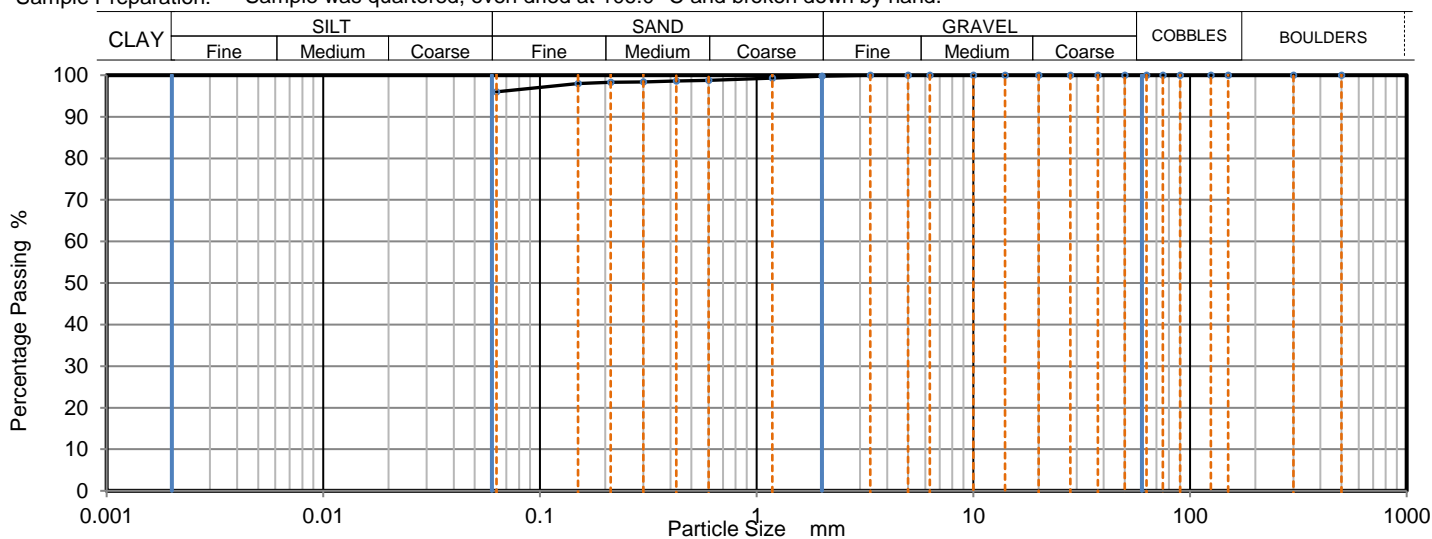
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

### Test Results:

Laboratory Reference: 1910524  
Hole No.: BH01  
Sample Reference: Not Given  
Sample Description: Brown slightly sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 5.00  
Depth Base [m]: Not Given  
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	98		
0.063	97		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	3
Fines <0.063mm	97

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: N/A - not applicable

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Maund GeoConsulting Ltd  
Client Address: 20 Mortlake Avenue, Worcester,  
WR5 1QT

Contact: Julian Maund  
Site Address: 29 Gondar Gardens

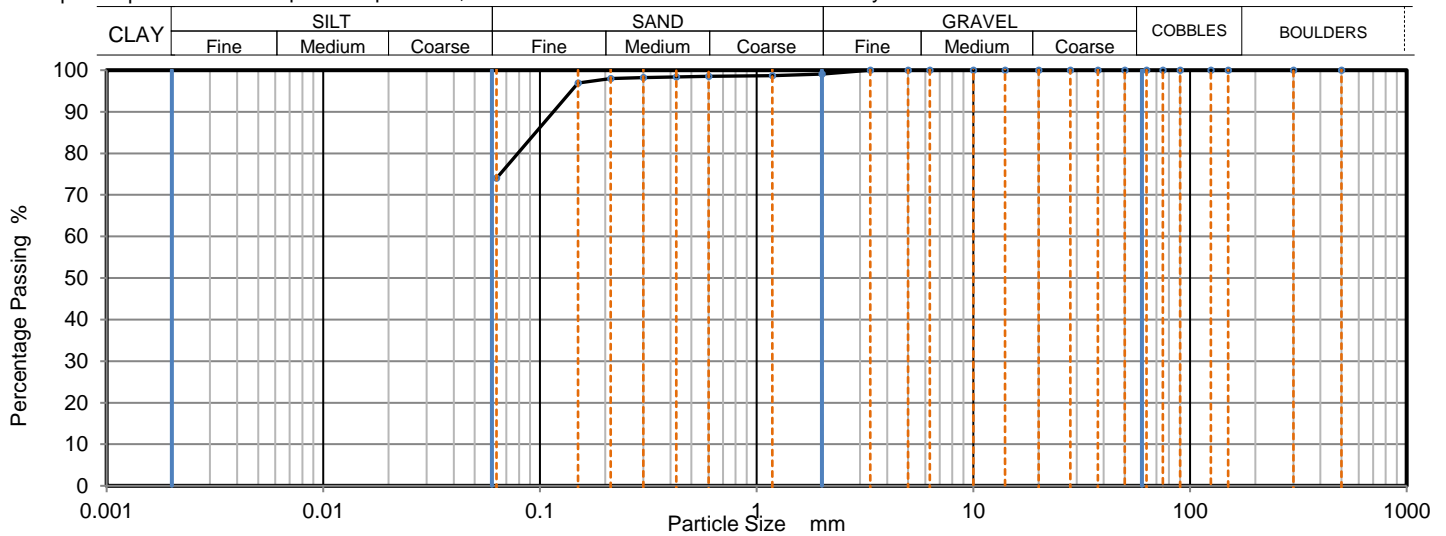
Client Reference: MGC-21-20  
Job Number: 21-82191  
Date Sampled: 16/06/2021  
Date Received: 18/06/2021  
Date Tested: 23/06/2021  
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1910525  
Hole No.: BH01  
Sample Reference: Not Given  
Sample Description: Brown sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 7.00  
Depth Base [m]: Not Given  
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	98		
0.212	98		
0.15	97		
0.063	74		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	25
Fines <0.063mm	74

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: N/A - not applicable

Signed:

*Monika Janoszek*

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

**Julian Maund**  
Maund GeoConsulting Ltd  
20 Mortlake Avenue  
Worcester  
WR5 1QT

i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

**e:** julian.maund@gmail.com

## **Analytical Report Number : 21-82204**

<b>Project / Site name:</b>	29 Gondar Gardens	<b>Samples received on:</b>	18/06/2021
<b>Your job number:</b>	MGC-21-20	<b>Samples instructed on/ Analysis started on:</b>	18/06/2021
<b>Your order number:</b>		<b>Analysis completed by:</b>	06/07/2021
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	06/07/2021
<b>Samples Analysed:</b>	2 soil samples		

**Signed:** *A. Czerwińska*

Agnieszka Czerwińska  
Technical Reviewer (Reporting Team)  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-82204  
Project / Site name: 29 Gondar Gardens

Lab Sample Number				1910590	1910591
Sample Reference				BH01	BH01
Sample Number				None Supplied	None Supplied
Depth (m)				1.20	2.00
Date Sampled				16/06/2021	16/06/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	22	16
Total mass of sample received	kg	0.001	NONE	0.20	0.20

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	7.6
Total Sulphate as SO <sub>4</sub>	%	0.005	MCERTS	0.038	0.188
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.052	0.58
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	4.3	2.6
Total Sulphur	%	0.005	MCERTS	0.014	0.067
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	3.3	< 2.0

#### Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	21	99
Magnesium (leachate equivalent)	mg/l	2.5	NONE	10	49

U/S = Unsuitable Sample I/S = Insufficient Sample



**Analytical Report Number : 21-82204**  
**Project / Site name: 29 Gondar Gardens**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1910590	BH01	None Supplied	1.2	Light brown clay and sand.
1910591	BH01	None Supplied	2	Brown clay.

**Analytical Report Number : 21-82204**  
**Project / Site name: 29 Gondar Gardens**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

**Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.**