Interpretive Report on a Ground Investigation

Location:	29 Gernhill Avenue Huddersfield, HD2 2HR
For:	Mr A Iqbal
Report No.	GES 1402-21
Report date:	May 2021

For and on behalf of **GeoEnviro Solutions Ltd**

REDACTED	REDACTED
Dan Speight BSc(Hons) FGS Geotechnical Engineer	**Rob Lewis** BSc(Hons) FGS Geotechnical Engineer/Director

Issue	Date	Description	Prepared	Reviewed	Approved
00	13.5.21	Final Report	RL	DS	RL

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1. Introduction

GeoEnviro Solutions LTD conducted site investigation works at the above-mentioned site. This work was required in order to determine the nature of the underlying soils and to assess their engineering properties. This report describes the work undertaken and presents the data obtained.

2. Limitations

This report has been prepared in accordance with our understanding of current best practice. However, new information or legislation, or changes to best practice may necessitate revision of the report after the date of issue. No liability can be accepted for the incorrect interpretation of any of the factual data supplied, particularly between investigatory locations.

The information contained in this report is intended for the use of the named client (or their approved contractors). Should a third party rely on any part of this report, that party does so wholly at its own risk and GES disclaim any liability to such parties. Should the purposes for which the report is used, or the proposed use of the site change, this report may no longer be valid and further use of reliance upon the report in those circumstances shall be at the client's sole and own risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. GES should in all such altered circumstances be commissioned to review and update this report accordingly.

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3. Proposed Development

We understand from reference to the Local Planning Department and current plans provided by the client that development of the site includes:

- Erection of a low rise residential property over the footprint of the current house;
- Provision of a basement;
- Creation of a driveway, car parking hardstanding and garages; and
- Inclusion of discrete areas of soft landscaping.

Site plans and investigatory locations are presented in Appendix 1.

4. Geology

The relevant British Geological Survey (BGS) online mapping information indicates the site to be devoid of superficial deposits of the. The site is recorded as being underlain by the Greenmoor Rock Sandstone.

5. Fieldworks

The boreholes were sunk using a drive-in windowless sampler. The cores were undertaken in 1m lengths and reduced in diameter from 90mm for subsequent 1m increments. The recovered cores were sealed and forwarded to GES for logging and subsequent testing. The soils were described in general accordance with BS5930: 2015 and full descriptions are given on the windowless sample records which are presented in Appendix 2. Also included on these records are the core diameters and percentages of core recovered.

6. Strata Conditions

The succession has been shown to include the following:

Table 1: Generalised Strata Profile

Depth m below ground level to underside of layer	**Strata Type**	**Positions Layer**	**Groundwater Strikes** m below ground level
1.2	Made Ground (Loose brown sandy GRAVEL. Gravel is of ash, clinker, brick and concrete.)	All	None
2.2	Firm Orange brown mottled grey slightly sandy CLAY.	All	None
2.6+	Extremely weak brown mottled grey MUDSTONE	All	None

'+' denotes that the strata extended below the termination depth of the investigated positions, thus the extent of the deposit is only proven to the depths indicated.

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6.1 Groundwater

Groundwater was not observed during this investigation. However, it should be appreciated that groundwater levels are subject to seasonal variation or changes on local drainage conditions.

7. Insitu Testing

7.1 Standard Penetration Tests

Standard Penetration Test results were variable but generally high indicating high strengths within the naturally occurring deposits but with generally increase in "N" value with depth indicating increasing strength/relative density with depth with refusal encountered in all boreholes at 2.0mbgl.

8. Visual and Olfactory Observations

With the exception of general anthropogenic material identified, no visual and/or olfactory evidence of potential contamination was noted within any soils encountered as part of the investigative works undertaken.

9. Laboratory Testing - Geotechnical

The following programme of laboratory testing has been undertaken on samples obtained during this investigation:

- Moisture content determinations — BS 1377: 1990: Pt2: 3.2
- Index properties (1 point) — BS 1377: 1990: Pt2: 4.4, 5.3 & 5.4
- Sulphate testing

The test results are presented in Appendix 3 and are summarised below:

Table 3: Summary of Geotechnical Test Results

Test type	Number of tests	Range of results		Comments
Moisture content determinations	5	12-25%		Depth – 4.7m
Index Properties (1 Point)	5	LL PL PI	33-49% 14-21% 16-28%	Clay of low to intermediate plasticity. Consistency index 0.6-1.1 NHBC Class – Low-medium.
Concrete in Aggressive Ground- BRE SD1		Min	Max	
Water-soluble sulphate	3	<10mg/l	98mg/l	

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Total (acid) sulphate	3	0.01%	0.23%	
total sulphur	3	0.018%	0.61%	
pH	3	5.9	7.8	
Total Potential Sulphates	3	0.06%	1.83%	

The appropriate geotechnical properties are summarised below:

Table 4: Summary of Geotechnical Properties

Property	Range of values	Comments
Volume change potential (NHBC)	Low- medium	
Sulphate BRE SD1 Sulphate Class	DS-4, AC-3s	

10. Geotechnical Comments

10.1 Foundations

The weak near surface soils are not considered suitable for the construction of shallow foundations due to the risk of unacceptable total and differential settlement occurring under moderately light surface loading.

The proposed development is likely to be capable of being constructed on conventional shallow spread/trench fill foundations within the clays of the weathered Greenmoor Rock known to underlie the site. These could be placed at depths from 1.50m in soils described in a firm in situ condition. However, it should be appreciated that a basement is planned, and foundations are likely at depths of circa 3.00mbgl within the mudstone deposits recorded. It is considered that spread foundations constructed within the underlying clays could be designed assuming an allowable increase in load given below.

Table 5: Allowable Increase in Stress

Foundation type	Strip Foundations (per m run)			Spread Foundations (m^2)		
Foundation Width	0.6	1.0	1.5	1.0	2.0	3.0
Foundation Depth	From 1.5m			From 1.5m		
Allowable increase in stress (kN/m^2)	155	145	135	225	205	195

The allowable increase in stress given above assumes a factor of safety of 3 against general shear failure, with cohesion of $65kN/m^2$ at the foundation depths of 1.50m however it should be appreciated that higher bearing capacities could be achieved in the mudstone. Settlements at the above loading intensities should remain within tolerable limits for the type of structure proposed provided that the underlying soils are carefully inspected immediately final trimming has taken place. Should any soft or weak material be encountered they should be locally removed and replaced with lean-mix concrete or

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compacted granular soil. It should be appreciated that should higher bearing capacities are required then these could be achieved by placing the foundation at greater depths within mudstone.
Any existing structures and foundations if found should be grubbed up and replaced with a suitable engineered granular backfill and should be compacted in layers.

The excavator must be set up with care and operated correctly to ensure trench walls are vertical and base horizontal as any slight inclination will result in eccentric loading on such deep trench fill footings.

10.2 Excavations

Groundwater was not encountered during the investigation. However, it should be appreciated that groundwater levels are subject to seasonal variation or changes on local drainage conditions.

Groundwater is unlikely to represent a particular problem to the construction of the development at this site particularly if encountered with excavations in the sand. However, it should be recognized that slight seepages and minor water entries may combine in any long trench excavations to create a significant volume of water which may cause local problems during the construction phase. Any minor groundwater seepages or significant standing water within excavations made upon this site may be removed by using a simple form of de-watering. Such a system could include the excavation of sumps from which the water could be pumped. Advice on Groundwater Control is given in CIRIA Report No 515 – Groundwater Control Design and Practice.

The stability of the excavation faces cannot be guaranteed thus temporary support to the excavation faces may become necessary unless the foundations are constructed using trench-fill techniques. In this method the foundation trenches should be excavated, inspected and backfilled with concrete as a continuous operation. Under no circumstances should operatives be allowed to enter unsupported excavations.

Subject to space constraints, excavations could be battered back to a suitable angle of repose (typically 1:1 for a 3.00m deep excavation). Alternatively, if there is a requirement to protect nearby structures or services, appropriate supports may be required. Due to the cohesive nature of the soils encountered, it is likely that any support required could be installed following excavation. Advice on excavation support is given in CIRIA Report No 97 – Trenching Practice.

Where trench support/shoring is utilised an appropriately qualified and experienced engineer should design the support system. The shoring/support will require regular inspection in accordance with published guidelines to ensure that the support/shoring is adequate for the ground conditions present.

10.3 Basements

In order to construct the basement excavation of the soils adjacent to existing foundations may be required. It is normal when excavating soils adjacent to foundations that the 45-degree rule is utilised where by soils are not disturbed within this zone created by a line drawn down from the existing foundation at 45 degrees and care should be taken when excavating that neighbouring properties are not affected.

In view of the above some ground movement is inevitable when basements are constructed. The magnitude of the movements in the ground being supported by the new basement walls is dependent primarily on:

- The geology;
- The adequacy of temporary support to excavations prior to installation of full permanent support; and
- The quality of workmanship when constructing the permanent structure.

The following minimum temporary support requirements are recommended for any proposed basements and RC retaining walls:

- Full face support must be installed as the excavations progress for all excavations (in the anticipated mudstone and clay) required for these basements.
- Temporary support will be required and retaining wall panels, and must be maintained until the full permanent support has been completed, including allowing time for the concrete to gain adequate strength.

All temporary support should use high stiffness systems installed in a timely manner with excavation limited in accordance with best practice in order to minimise the ground movements. Full details of the temporary works should be provided in the contractor's method statements. In view of this careful support of existing soils and foundations would be required during the construction phase. A high quality of workmanship and use of best practice methods of temporary support are therefore crucial to the satisfactory control of ground movements alongside basement excavations.

When underpinning or constructing masonry or RC retaining walls in panels of limited width on a similar 'hit and miss' basis, it is inevitable that the ground will be un-supported or only partially supported for a short period during excavation of each pin/panel, even when support is installed sequentially as the excavation progresses. This means that the behaviour of the ground will depend on the quality of workmanship and suitability of the methods used.

Condition surveys should be undertaken of the neighbouring properties, including the boundary walls, before the works commence in order to provide a factual record of any pre-existing damage. Such surveys are usually carried out while negotiating a Party Wall Agreement and are beneficial to all parties concerned.

Precise movement monitoring should be undertaken weekly throughout the period during which the basement walls and slab are constructed with three sets of initial readings taken before excavation of the basement starts in order to obtain a baseline assessment of the current degree of movements in the building. Readings may revert to fortnightly once all the perimeter

The accuracy of this system of monitoring is usually quoted as +/- 2mm. Thus, if recorded movements in either direction reach 5mm, then the frequency of readings should be increased as appropriate to the

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severity of the movement, and consideration should be given to installing additional targets. If the recorded movements in either direction reach 7mm, then work should stop until new method statements have been prepared and approved by the appointed structural engineer.

If any structural cracks appear in the main loadbearing walls then those cracks should be monitored using the Demec system (or similar) on the same frequency as the target monitoring. The method of damage assessment may adopt the limiting tensile strain approach as described by Burland et al (1977), Boscardin and Cording (1989) and Burland (2001); see Table 2.5 and Figure 2.18 in Ciria C580.

10.4 Groundworks Watching Brief

We would recommend that a watching brief be maintained during the course of the development, particularly during the ground works stage.
During construction works visual and olfactory appraisal of the underlying soils should be made. If during construction works any material is noted to show visual and/or olfactory signs of contamination an environmental consultant should be contacted to supervise/guide further works. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.
If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use. Clean, uncontaminated rock, subsoil brick rubble, crushed concrete, ceramics and topsoil only should be permitted as infill material.

10.5 Services

Given that new services will be installed as part of the redevelopment of the site, we would recommend the local water board be contacted to determine their specification for the type of pipework, which should be used on this site.
All services and in particular potable water supply pipework should comprise of material that is resistant to attack and degradation to chemical attack.
Further information can be found within the published guidance for the '*Selection of Water Supply Pipes to be used in Brownfield Sites'*, issued in January 2011 by the UK Water Industry Research (UKWIR), this supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note – '*Laying Pipes in Contaminated Land'* which has been withdrawn.

10.6 Muckaway

If any soils are to be removed off site, it may be prudent to undertake Waste Acceptance Criteria (WAC) analyses on the soils to be removed.
All materials must be transported in compliance with the Duty of Care Regulations by authorising movements with Carrier's individually numbered Duty of Care conveyance notes, complete with the appropriate EWC Codes. All relevant dockets will need to be kept to provide evidence of the removal as these may be required as part of a Validation Report.

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11. References

- British Standards Institution (1990) BS1377: *British standard methods of test for soils for civil engineering purposes,* B.S.I., London.
- British Standards Institution (2015) BS5930: *Code of practice for site investigations*, B.S.I., London.

12. Limitations

GES have prepared this report with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources.

The opinions given in this report have been dictated by the finite data on which are they based and are relevant only to the purpose for which the report was commissioned.
Information reviewed should not be considered exhaustive and has accepted in good faith as providing true and representative data with respect to site conditions. Should additional information become available which may influence the opinion expressed in this report, GES reserves the right to review such information and, if warranted, to alter the opinions accordingly.
It should be noted that any risks identified in this report are perceived risks based on the information reviewed.

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time and as such are not a guarantee that the study site is free of hazardous conditions.
This report has been prepared solely for the use of the named client, and may not be relied upon by other parties without written consent from GES. GES disclaim any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

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Appendix 1

Plans

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Title: **Investigation Location Plan**

BOREHOLE SOLUTIONS LIMITED NORTH	Site Name: **Gernhill Road, HD2 2HR**	Job No: **GES 1402-21**

Appendix 2

Windowless Sample Borehole Records

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Percussion Drilling Log

Project Name: Gernhill Road	Client: Mr Abbas Iqbal	Date: 14/04/2021
Location: Gernhill Road , Fixby , Huddersfield , HD2 2HR	Contractor:	
Project No. : 1402-21	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS01	WLS		RL	1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Made Ground (Loose brown sandy GRAVEL. Gravel is of ash, clinker, brick and concrete)
		1.20	SPT	N=17 (2,2/4,3,4,6)	1.20			
								Firm Orange brown mottled grey slightly sandy CLAY.
					1.80			
		2.00	SPT	50 (17,8/50 for 75mm)	2.00			Extremely weak brown mottled grey MUDSTONE
								End of Borehole at 2.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No groundwater recorded

Percussion Drilling Log

Project Name: Gernhill Road	Client: Mr Abbas Iqbal	Date: 15/04/2021
Location: Gernhill Road , Fixby , Huddersfield , HD2 2HR	Contractor:	
Project No. : 1402-21	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS02	WLS		RL	1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.90			Made Ground (Loose brown sandy GRAVEL. Gravel is of ash, clinker, brick and concrete)
		1.20	SPT	N=4 (1,1/1,1,1,1)				Firm Orange brown mottled grey slightly sandy CLAY.
		2.00	SPT	N=31 (2,3/3,5,11,12)	2.20			Extremely weak brown mottled grey MUDSTONE
		2.60	SPT	51 (10,15/51 for 150mm)	2.60			End of Borehole at 2.600m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No groundwater recorded

Percussion Drilling Log

Project Name: Gernhill Road	Client: Mr Abbas Iqbal	Date: 16/04/2021
Location: Gernhill Road , Fixby , Huddersfield , HD2 2HR	Contractor:	
Project No. : 1402-21	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS03	WLS		RL	1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Made Ground (Loose brown sandy GRAVEL. Gravel is of ash, clinker, brick and concrete)
					0.90			
		1.20	SPT	N=14 (3,2/3,3,4,4)				Firm Orange brown mottled grey slightly sandy CLAY.
					1.60			
		1.80	SPT	100 (20,5/100 for 225mm)	1.80			Extremely weak brown mottled grey MUDSTONE
								End of Borehole at 1.800m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No groundwater recorded

Percussion Drilling Log

Project Name: Gernhill Road	Client: Mr Abbas Iqbal	Date: 17/04/2021
Location: Gernhill Road , Fixby , Huddersfield , HD2 2HR	Contractor:	
Project No. : 1402-21	Crew Name:	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS04	WLS		RL	1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Made Ground (Loose brown sandy GRAVEL. Gravel is of ash, clinker, brick and concrete)
					0.90			
		1.20	SPT	N=14 (4,2/3,3,4,4)				Firm Orange brown mottled grey slightly sandy CLAY.
					1.40			
								Extremely weak brown mottled grey MUDSTONE.
		2.00	SPT	N=51 (9,9/10,14,13,14)	2.00			End of Borehole at 2.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No groundwater recorded

Appendix 3

Laboratory Testing - Geotechnical

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

Final Report

Report No.:	21-14111-1
Initial Date of Issue:	06-May-2021
Client	Borehole Solutions North Ltd
Client Address:	Unit 7 , Springvale Works Brookfoot lane Brighouse HD62RA
Contact(s):	dan@boreholesoultions.com
Project	Gernhill Road

Quotation No.:		**Date Received:**	29-Apr-2021
Order No.:	1402-21	**Date Instructed:**	29-Apr-2021
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	06-May-2021
Date Approved:	06-May-2021		

Approved By:

REDACTED

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: Gernhill Road

Client: Borehole Solutions North Ltd			**Chemtest Job No.:**		21-14111	21-14111	21-14111	21-14111
Quotation No.:			**Chemtest Sample ID.:**		1190347	1190348	1190349	1190350
Order No.: 1402-21			Client Sample Ref.:		WS01-1.3	WS02-1.3	WS03-1.2	WS04-1.3
			Client Sample ID.:		D1	D2	D3	D4
			Sample Location:		WS01	WS02	WS03	WS01
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.3	1.3	1.2	1.3
			Bottom Depth (m):		1.3	1.3	1.2	1.3
			Date Sampled:		27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
			Time Sampled:		12:00	12:00	12:00	12:00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	19	14	13	17
pH	U	2010		4.0	6.6	7.8	6.4	5.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.098	< 0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	98	< 10	< 10
Total Sulphur	U	2175	%	0.010	0.61	0.018	0.13	0.016
Sulphate (Total)	U	2430	mg/kg	100	< 100	2300	< 100	300

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
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
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 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

Borehole Solutions Group
Unit 7 Springvale Works,
Brookfoot Lane,Brighouse
HD6 2RA

Client: Mr A Iqbal

Job No:	Site:	Date:	Sheet:
1402-21	Gernhill Road	27/04/2021	1

Interpretation of Moisture Content, Liquid and Plastic Limits

Location	Depth	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Retained by 425mm	Modified	Modified	Liquidity/ Consistency		Casagrande Class	N.H.B.C Class
		(w)	(w_L)	(w_P)	(I_P)		(w')	(I_P')	(I_L)	(I_C)		
	(m)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)		(%)
WS02	1.50	18	33	17	16	0	18	16	0.1	0.9	C L	LOW
WS02	1.50	22	49	21	28	0	22	28	0.0	1.0	C I	MEDIUM
WS02	2.50	12	38	14	24	0	12	24	-0.1	1.1	C I	MEDIUM
WS03	1.50	20	37	18	19	0	20	19	0.1	0.9	C I	LOW
WS04	1.50	25	36	17	19	0	25	19	0.4	0.6	C I	LOW

