

Geotechnical Investigation Factual Report

**Former Texaco Fuel Station
Bury Old Road
Prestwich, M25 0EY**

3rd March 2022



Prepared for:- **Unimore Ltd
77 Windsor Road
Prestwich
Manchester
M25 0DB
Tel: 0161-772-0404**

DOCUMENT CONTROL SHEET

Report Title: **Geotechnical Investigation Factual Report**
Former Texaco Fuel Station, Bury Old Road,
Prestwich, M25 0EY.

Client: **Unbimore Ltd.**

Report Reference: **649.00.02**

Report Status: **Final**

Version: **1.1**

Report Date: **3rd March 2022**

Signed for Redstart Northwest Limited:

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For Redstart Northwest Limited	3 rd March 2022

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Contents

1	INTRODUCTION	4
1.1	Proposed Development	4
1.2	Site Location	4
1.3	Previous Investigations	4
1.4	Scope	5
2	SITE INVESTIGATION WORKS	5
2.1	Fieldwork	5
2.2	Trial Pit Formation	Error! Bookmark not defined.
2.3	Environmental Sampling	Error! Bookmark not defined.
2.4	Chemical Testing	7
2.5	Ground/Perched Water Sampling	Error! Bookmark not defined.
2.6	Ground Gas	Error! Bookmark not defined.
3	GROUND CONDITIONS	ERROR! BOOKMARK NOT DEFINED.
3.1	Summary of Ground Conditions Encountered	Error! Bookmark not defined.
3.2	Groundwater	Error! Bookmark not defined.
3.3	Obstructions	Error! Bookmark not defined.
3.4	Visual / Olfactory Evidence of Contamination	Error! Bookmark not defined.
4	CONCLUSIONS AND RECOMMENDATIONS	ERROR! BOOKMARK NOT DEFINED.
4.1	Conclusion	Error! Bookmark not defined.
4.2	Previously Unidentified Contamination	Error! Bookmark not defined.
4.3	Large sub surface structures/obstructions/Voids	Error! Bookmark not defined.
4.4	Health, Safety & Environment	Error! Bookmark not defined.

APPENDICES

Appendix A: Photographs of the Site 31 January 2022

Appendix B: Borehole Logs

Appendix C: Laboratory Chemical Test Results

Appendix D: Laboratory Geotechnical Test Results

1 INTRODUCTION

Redstart Northwest Limited (Redstart) has been retained by Unimore Ltd (Client) to undertake additional geotechnical site investigation at the site to provide information for the design of the proposed retail building which has a basement level.

1.1 Proposed Development

The proposed development is a two-story steel framed retail building with a basement/semi basement. The basement/semi basement is a full basement in the northeast (adjacent to Bury Old Road) and due to the fall in land surface, the basement floor level will be at ground level in the southwest.

The majority of the site area will be covered with either the building or hard standing, with limited areas of soft landscaping which will be cut slopes down to the basement level where this is not a fully retained basement wall in the southwest.

There were formerly three underground fuel storage tanks relatively central to the site. All of these tanks had been decommissioned and foam filled but were removed in early August 2021. These excavations were backfilled. Later in 2021 the area of the proposed basement was excavated down to formation level with a 0.50 m thick layer of capping (Class 6F5 material) placed over the base of the excavation. Photographs of the site are presented in Appendix A.

1.2 Site Location

The site is on the western side of Bury Old Road in the suburban area of Prestwich, Bury and is accessed directly off Bury Old Road. The Post Code is M25 0EY. The approximate grid reference for the centre of the site is 382875, 402531 and the total area of the site is approximately 1,300 m² (0.13 ha).

1.3 Previous Investigations

Previous available ground related reports for the site are as follows:

-  GeoAssist Ltd: Phase II Contaminated Land Risk Assessment - Texaco Fuel Station Bury Old Road, Prestwich. Date: January 2014. Report Ref: 5594/FSP-CLRA v1.00. Note that this summarises the findings of an earlier Phase 1 Desk Study.
-  GeoAssist Ltd: Ground Investigation - Geotechnical - Texaco Fuel Station, Bury Old Road, Prestwich. Date Jan 2014. Report Ref: 5594/FSP-G
-  Redstart Northwest Ltd: Phase 3 Site Investigation – Bury Old Road. Date August 2021. Report Ref 649.00.01.

The first two reports by GeoAssist principally look at the shallow ground conditions relating to contamination and shallow geotechnical conditions with the investigations going down to a depth of up to 6 m below road level and only about 2 m below the proposed basement floor level.

The previous Redstart report for the site was to document the removal of the three petrol tanks and determine whether any further remediation was required following the removal of the tanks. No remediation of contamination was required.

1.4 Scope

The scope of this report is to present factual information on the ground for geotechnical design of the new building and basement. The works were to comprise three boreholes to a depth of between 15 and 20 m below the road level. All holes to have Standard Penetration Tests (SPTs) and because the natural ground was expected to principally be granular, laboratory testing was to be mainly particle size analysis with testing for strength and compressibility of any cohesive strata. Only a factual report was required.

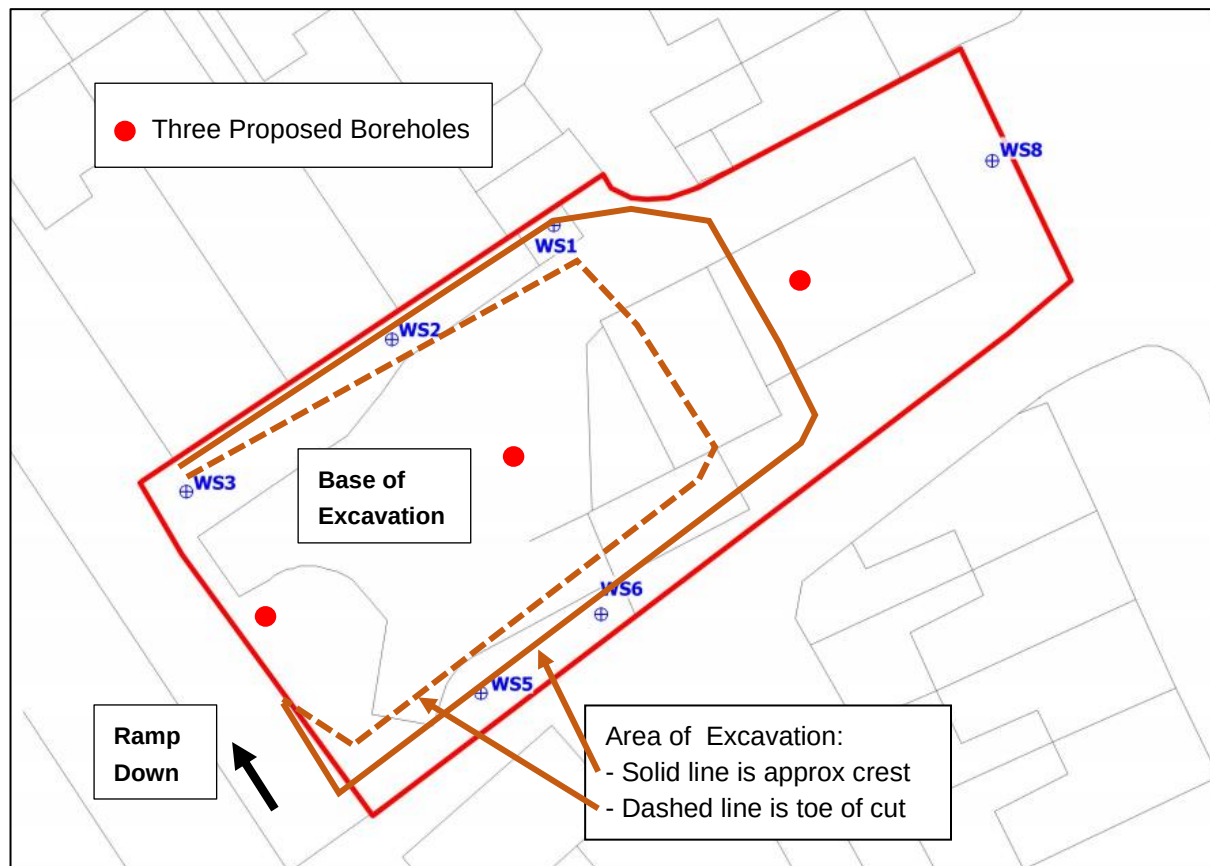


Figure 1: Initial Proposed Locations of Boreholes

2 SITE INVESTIGATION WORKS

2.1 Fieldwork

The fieldwork was carried out between 31st January and 3rd February 2022. A Dando 2000 cable percussive boring rig was used for the works. The access to the basement area was via a ramp in the southwest corner down from a car park on the adjacent land. A tracked dumper was used to tow the rig in and out of the excavation.

The locations of the boreholes are presented in Figure 2. There were four attempts to carry out BH3 which were all terminated on obstructions at shallow depth.

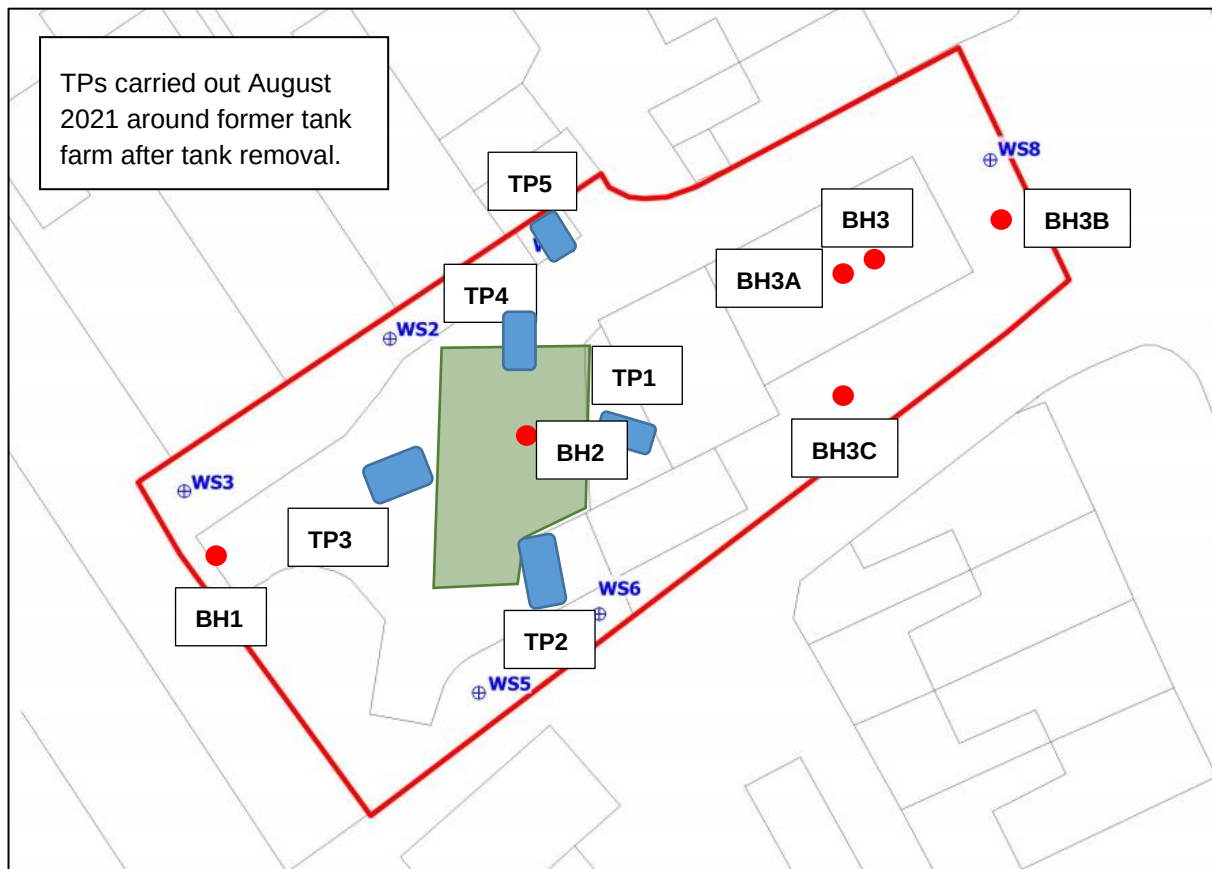


Figure 2: Exploratory Hole Location Plan

The intrusive investigative works were carried out in general accordance with the relevant British Standards, namely BS5930:2015+A1:2020. Supervision was by a Chartered Geologist.

The borehole logs are presented in Appendix B and in summary:

 BH1

- Depth 13.50 m
- Groundwater at 0.50m at base of Made Ground (6F5 capping)
- Loose becoming medium dense below about 3.0 m, sand to 4.0m
- Interlaminated clay and sand from 4.00 to 6.00 m
- Medium dense sand from 6.00 to 7.50 m
- Medium dense fine sandy SILT from 7.50 to 10.50m
- Medium dense sand from 10.50 m to 13.50m

 BH2

- Depth 13.50 m
- Groundwater at 0.50m at base of Made Ground (6F5 capping)
- Loose becoming medium dense below about 4.50 m, sand to 6.0m
- Interlaminated clay and sand from 6.00 to 7.50 m

- Medium dense sand from 7.50 to 14.00 m
 - Stiff Clay 14.00 to 16.70 m
 - Bedrock at 16.70m
- BH3 to BH3C terminated in Made Ground on obstructions at depths of 0.75 to 1.10 m

2.2 Chemical Laboratory Testing

Chemical analysis was carried out by The Environmental Laboratory Ltd (ELAB) to determine suites of testing to assess the risk of concrete in the ground from pH, sulphate and other compounds as per BRE Digest SD1 (2001). The results of the Chemical analysis are presented in Appendix C.

2.3 Geotechnical Laboratory Testing

Geotechnical laboratory testing was carried out by Professional Services Laboratory Ltd (PSL Ltd) for the following tests:

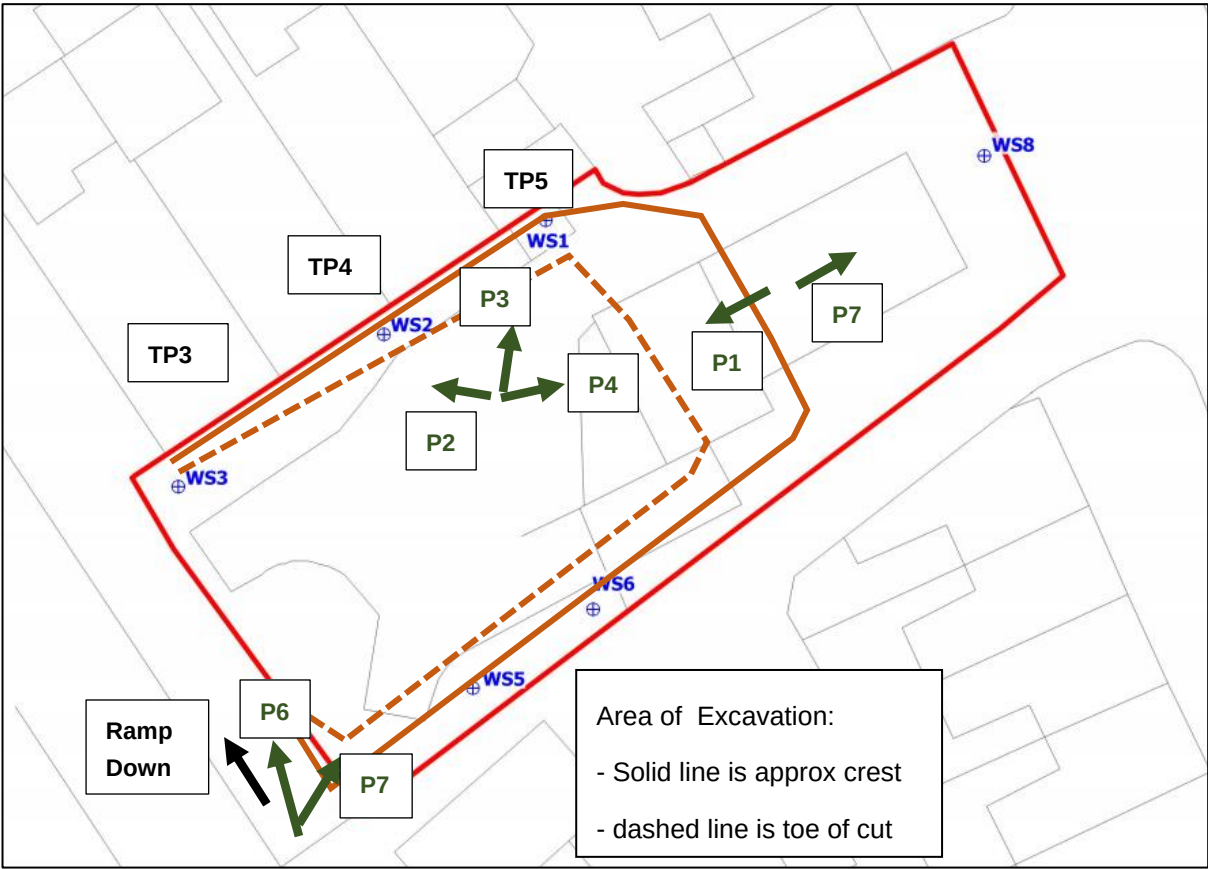
- Particle size analysis (10 tests)
- Liquid and plastic limits (Atterberg Limits (two tests)
- Undrained shear strength - triaxial (1 test)

All testing was in accordance with BS1377:Part 9:1990. The results of the Chemical analysis are presented in Appendix D.

Appendix A

Photographs of the Site 31st January 2022

The investigation location plan is in Figure 2.



Photograph Location Plan



Photograph 1:



Photograph 2:



Photograph 3:



Photograph 4:



Photograph 5:



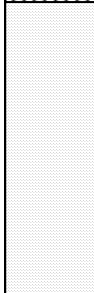
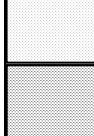
Photograph 6:



Photograph 7:

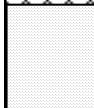
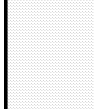
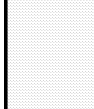
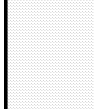
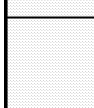
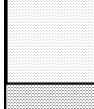
Appendix B

Borehole Logs

Redstart Northwest Limited					Borehole No.
		BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING			BH1
					Sheet 1 of 2
Contract No: 657.00		Drilling Method: Cable Percussive		Co-ordinates:	
Contract Name: Bury Old Road		Rig Type Dando 2000		Ground Level:	
Client: Cityview Estates Ltd		Casing Diameter: 150mm to 13.50m		Date Started: 02.02.2022	
					Date Completed: 02.02.2022
Description of Strata	Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing
Brown silty very sandy angular to subangular fine to coarse GRAVEL of brick and sandstone (MADE GROUND)	0.50	D	0.10		
		D	0.50		
		D	0.80		
Loose to medium dense brown silty fine SAND. Rare (<1%) fine gravel. (GLACIAL SAND AND GRAVEL)	3.20	D	1.50-1.95		SPT 1.5m 1/1/2/2/2/2 N=8
		D	3.00-3.45		SPT 3.00m 1/2/2/2/3/4 N= 11
Medium dense brown slightly gravelly slightly silty fine and medium SAND. (GLACIAL SAND AND GRAVEL)	4.00	B	3.00-3.50		
		D	4.00		SPT 4.50m 1/2/2/2/3/3 N= 12
			4.50-4.95		
Interlamianted/interbedded firm brown silty slightly fine sandy CLAY AND brown silty fine SAND. (GLACIAL DEPOSITS)		D	6.00-6.45		SPT 6.00m 2/2/2/2/5/5 N= 14
		B	6.00-6.50		
Medium dense brown silty fine SAND (GLACIAL SAND AND GRAVEL)					
		D	7.50-7.95		SPT 7.50m 2/2/2/3/3/3 N= 11
Medium dense brown fine sandy clayey SILT (GLACIAL SAND AND GRAVEL)					
		D	9.00-9.45		SPT 9.00m 2/3/3/3/4/4 N= 14

.....BH1 Continued on p2

Description of Strata					Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing		
Medium dense brown fine sandy clayey SILT (GLACIAL SAND AND GRAVEL)					10.50	D	10.50-10.95		SPT 10.50m 1/2/2/2/3 N=9		
Medium dense brown slightly gravelly silty fine and medium SAND. Gravel of subangular fine and medium black mudstone. Gravel absent 12.00-12.50 m. (GLACIAL SAND AND GRAVEL)											
					13.50	D	12.00-12.45		SPT 12.00m 2/3/3/3/4/5 N= 15		
						D	13.00-13.45		SPT 13.00m 2/3/3/4/4/5 N= 16		

Redstart Northwest Limited					Borehole No.
		BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING			BH2
					Sheet 1 of 2
Contract No: 657.00		Drilling Method: Cable Percussive		Co-ordinates:	
Contract Name: Bury Old Road		Rig Type Dando 2000		Ground Level:	
Client: Cityview Estates Ltd		Casing Diameter: 150mm to 9.50m		Date Started: 31.01.2022	
				Date Completed: 01.02.2022	
Description of Strata	Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing
Brown slightly sandy very clayey angular to subangular fine to coarse GRAVEL of brick, concrete and limestone. (MADE GROUND)	0.80	D	0.10		SPT 1.5m 1/1/1/2/2/2 N=7
		D	0.80		
		D B	1.50-1.95 1.50-2.00		
Loose becoming medium dense brown silty fine SAND. Rare fine gravel (<1%) (GLACIAL SAND AND GRAVEL)	4.50	D	3.00-3.45		SPT 3.00m 2/2/2/2/3 N= 9
		D	4.50-4.95		SPT 4.50m 3/3/3/3/3 N= 12
		D	6.00-6.45		SPT 6.00m 1/2/2/2/3/3 N= 10
Medium dense brown silty fine and medium SAND. (GLACIAL SAND AND GRAVEL)	8.50	D B	7.50-7.95 7.50-8.00		SPT 7.50m 3/3/3/3/5/6 N= 17
Interlamianted/interbedded firm brown silty slightly fine sandy CLAY AND brown silty fine SAND. (GLACIAL DEPOSITS)		D	9.00-9.45		SPT 9.00m 3/4/4/4/5/5 N= 18
Medium dense brown fine sandy clayey SILT (GLACIAL SAND AND GRAVEL)					
Medium dense brown silty fine and medium SAND. (GLACIAL SAND AND GRAVEL)	9.30				

.....BH2 Continued on p2

Description of Strata					Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing	
Medium dense brown silty fine and medium SAND. (GLACIAL SAND AND GRAVEL)					11.90	D	10.50-10.95		SPT 10.50m 4/5/5/5/7 N=22	
Medium dense brown slightly gravelly slightly silty fine to coarse SAND. Gravel of subangular fine and medium black mudstone. (GLACIAL SAND AND GRAVEL)						D	12.00-12.45		SPT 12.00m 2/3/3/3/4/6 N= 16	
Medium dense brown slightly gravelly slightly silty fine to coarse SAND. Gravel of subangular fine and medium black mudstone. (GLACIAL SAND AND GRAVEL)					14.00	D	13.50-13.95		SPT 13.50m 2/2/2/3/5/8 N= 18	
						D	14.00			
Stiff brown fine sandy slightly gravelly CLAY. (GLACIAL TILL)					16.70 16.88	U	15.00-15.45		55 Blows (100%)	
						D	15.50		SPT 16.50m 8/9/9/17/19/6 for 5mm N=51 for 230mm	
						B	15.50-16.00			
						D	16.50-16.95			
Very dense brown silty fine and medium SAND. (POSSIBLE WEATHERED BEDROCK/BOULDER)										

Redstart Northwest Limited										Borehole No.
BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING										BH3 Sheet 1 of 1
Contract No: 657.00		Drilling Method: Hand dug pit			Co-ordinates:					
Contract Name: Bury Old Road		Rig Type: Hand tools			Ground Level:					
Client: Cityview Estates Ltd		Casing Diameter: Pit to 1.10m			Date Started: 31.01.2022		Date Completed: 31.01.2022			
Description of Strata		Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing				
MADE GROUND with brick and concrete) – Driller's Description		1.10								
Terminated at 1.10 m on Obstruction (Concrete)										
Borehole terminated at 0.00m bgl										
Key:		B Bulk Sample			D. Disturbed Sample			N. SPT 'N' value		
		W. Water Sample			ES. Environmental Sample			U. U100 Undisturbed		
		SPT. Standard Penetration Test			CPT. Cone Penetration Test			U100. Blows (Recovery mm)		
Water Level Observations During Boring					Seepage Rate	Depth Sealed	Daily Log of water levels			
Depth Observed	after 5 mins	after 10 mins	after 15 mins	after 20 mins			Date / Time	Water Level	Depth of Casing	
Installation Services: Borehole position abandoned due to obstruction. Addition of water: Chiselling:										
N/R - Not Required					N/A - Not Applicable			Logged By		Driller
All depths in metres below ground level; all diameters in millimetres								Drilled By::		K&T

		Redstart Northwest Limited BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING		Borehole No. BH3A Sheet 1 of 1	
Contract No: 657.00 Contract Name: Bury Old Road Client: Cityview Estates Ltd		Drilling Method: Hand dug pit Rig Type: Hand tools Casing Diameter: Pit to 0.90m		Co-ordinates: Ground Level: Date Started: 31.01.2022 Date Completed: 31.01.2022	
Description of Strata		Depth (m)	Sampling Type & Depth (m)		Legend
MADE GROUND with brick and concrete) – Driller's Description Terminated at 0.90 m on Obstruction (Brick)		0.90			
Borehole terminated at 0.00m bgl					
Key: B Bulk Sample W. Water Sample SPT. Standard Penetration Test		D. Disturbed Sample ES. Environmental Sample CPT. Cone Penetration Test		N. SPT 'N' value U. U100 Undisturbed U100. Blows (Recovery mm)	
Water Level Observations During Boring		Seepage Rate	Depth Sealed	Daily Log of water levels	
Depth Observed	after 5 mins	after 10 mins	after 15 mins	after 20 mins	Date / Time
					Water Level
					Depth of Casing
Installation Services: Borehole position abandoned due to obstruction.					
Addition of water: Chiselling:					
N/R - Not Required All depths in metres below ground level; all diameters in millimetres			N/A - Not Applicable Logged By: Driller Drilled By:: K&T		



BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING

BH3B

Sheet 1 of 1

Contract No: 657.00	Drilling Method: Coring to 0.20 m Hand dug pit 0.80 m Cable Percussion	Co-ordinates:
Contract Name: Bury Old Road	Rig Type: Electric coring rig Hand tools to 0.80 m	Ground Level:
Client: Cityview Estates Ltd	Casing Diameter: Dando 2000 250 mm to 0.20 m then 150 mm	Date Started: 03.02.2022 Date Completed: 03.02.2022

Description of Strata	Depth (m)	Sampling Type & Depth (m)		Legend	U100 / N Value Field / Lab. Testing
CONCRETE	0.20				
SUB-BASE	0.45				
Dark brown silty sandy angular fine to coarse GRAVEL of concrete and brick fragments. (MADE GROUND)	1.05				
Terminated at 1.05 m on Obstruction					

Borehole terminated at 0.00m bgl

Key:	B Bulk Sample W. Water Sample SPT. Standard Penetration Test	D. Disturbed Sample ES. Environmental Sample CPT. Cone Penetration Test	N. SPT 'N' value U. U100 Undisturbed U100. Blows (Recovery mm)
------	--	---	--

Water Level Observations During Boring					Seepage Rate	Depth Sealed	Daily Log of water levels		
Depth Observed	after 5 mins	after 10 mins	after 15 mins	after 20 mins			Date / Time	Water Level	Depth of Casing

Installation Services: Borehole position abandoned due to obstruction.

Addition of water:
Chiselling:

N/R - Not Required
All depths in metres below ground level; all diameters in millimetres

Logged By: CSE
Drilled By:: K&T

 Redstart Northwest Limited		Borehole No. BH3C Sheet 1 of 1							
BOREHOLE RECORD – CABLE PERCUSSIVE DRILLING									
Contract No: 657.00 Contract Name: Bury Old Road Client: Cityview Estates Ltd		Drilling Method: Hand dug pit Rig Type: Hand tools Casing Diameter: Pit to 0.75 m							
		Co-ordinates: Ground Level: Date Started: 03.02.2022 Date Completed: 03.02.2022							
Description of Strata	Depth (m)	Sampling Type & Depth (m)	Legend	U100 / N Value Field / Lab. Testing					
MADE GROUND with brick and concrete cobbles, hit concrete boulder – Driller's Description Terminated at 0.75 m on Obstruction (Concrete)	0.75								
Borehole terminated at 0.00m bgl									
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Key:</td> <td style="width: 33%;">B Bulk Sample W. Water Sample SPT. Standard Penetration Test</td> <td style="width: 33%;">D. Disturbed Sample ES. Environmental Sample CPT. Cone Penetration Test</td> <td style="width: 33%;">N. SPT 'N' value U. U100 Undisturbed U100. Blows (Recovery mm)</td> </tr> </table>					Key:	B Bulk Sample W. Water Sample SPT. Standard Penetration Test	D. Disturbed Sample ES. Environmental Sample CPT. Cone Penetration Test	N. SPT 'N' value U. U100 Undisturbed U100. Blows (Recovery mm)	
Key:	B Bulk Sample W. Water Sample SPT. Standard Penetration Test	D. Disturbed Sample ES. Environmental Sample CPT. Cone Penetration Test	N. SPT 'N' value U. U100 Undisturbed U100. Blows (Recovery mm)						
Water Level Observations During Boring				Daily Log of water levels					
Depth Observed	after 5 mins	after 10 mins	after 15 mins	after 20 mins	Seepage Rate	Depth Sealed	Date / Time	Water Level	Depth of Casing
Installation Services: Borehole position abandoned due to obstruction.									
Addition of water: Chiselling:									
N/R - Not Required N/A - Not Applicable All depths in metres below ground level; all diameters in millimetres					Logged By: CSE Drilled By:: K&T				

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR825
Test Date: 07/07/2021
Report Date: 07/07/2021
File Name: AR825.spt
Test Operator: JL

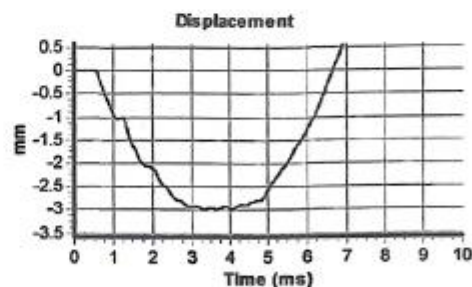
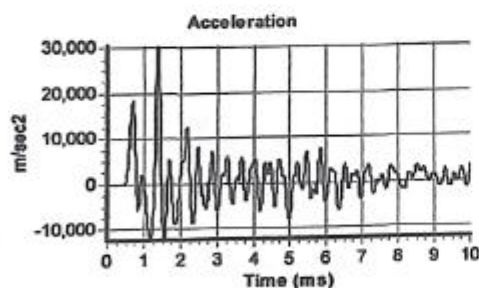
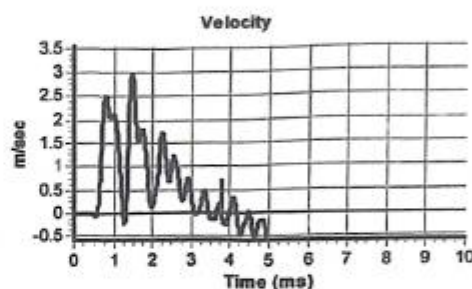
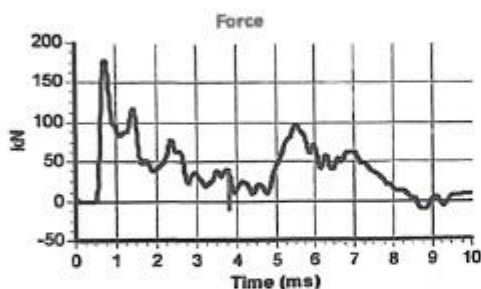
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location



Calculations

Area of Rod A (mm^2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 301

Energy Ratio E_r (%): 64



Signed: C. McCLUSKEY

Title: FITTER

The recommended calibration interval is 12 months

SPTMAN ver.1.93 All rights reserved, Testconsult ©2010

Appendix C

Laboratory Chemical Test Results



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-38556

Issue: 1

Date of Issue: 11/02/2022

Contact: Chris Eccles

Customer Details: Redstart Northwest Limited
Unit 6 Oak Green Business Park
Earl Road
Cheadle Hulme
Cheshire SK8 6OL

Quotation No: Q21-02391

Order No: 649.00

Customer Reference: Not Supplied

Date Received: 07/02/2022

Date Approved: 11/02/2022

Details: Bury Old Road, Prestwich.

Approved by: 

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 22-38556, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
267154	BH1 1.50 - 1.95	02/02/2022	07/02/2022	Sand	
267155	BH1 4.50 - 4.95	02/02/2022	07/02/2022	Sandy loam	
267156	BH1 9.00 - 9.45	02/02/2022	07/02/2022	Loamy sand	
267157	BH2 0.20	31/01/2022	07/02/2022	Loamy sand	
267158	BH2 1.50 - 1.95	31/01/2022	07/02/2022	Sand	
267159	BH2 7.50 - 7.95	02/02/2022	07/02/2022	Sandy silty loam	



Results Summary

2683

Report No.: 22-38556, issue number 1

ELAB Reference				267154	267155	267156	267157	267158
Customer Reference								
Sample ID								
Sample Type				SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location				BH1	BH1	BH1	BH2	BH2
Sample Depth (m)				1.50 - 1.95	4.50 - 4.95	9.00 - 9.45	0.20	1.50 - 1.95
Sampling Date				02/02/2022	02/02/2022	02/02/2022	31/01/2022	31/01/2022
Determinand	Codes	Units	LOD					
Soil sample preparation parameters								
Moisture Content	N	%	0.1	16.8	21.5	18.4	11.9	18.6
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	31.6	8.0
Description of Inert material removed	N		0	None	None	None	Stones/Brick	Stones
Anions								
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02	0.24	< 0.02
Inorganics								
Total Sulphur	N	%	0.01	n/t	0.06	n/t	0.14	n/t
Acid Soluble Sulphate (SO ₄)	U	%	0.02	n/t	0.03	n/t	0.22	n/t
Miscellaneous								
pH	M	pH units	0.1	8.5	8.0	8.0	10.7	9.3



Results Summary

2683

Report No.: 22-38556, issue number 1

ELAB Reference	267159
Customer Reference	
Sample ID	
Sample Type	SOIL
Sample Location	BH2
Sample Depth (m)	7.50 - 7.95
Sampling Date	02/02/2022

Determinand	Codes	Units	LOD	
Soil sample preparation parameters				
Moisture Content	N	%	0.1	18.1
Material removed	N	%	0.1	< 0.1
Description of Inert material removed	N		0	None
Anions				
Water Soluble Sulphate	M	g/l	0.02	< 0.02
Inorganics				
Total Sulphur	N	%	0.01	0.08
Acid Soluble Sulphate (SO ₄)	U	%	0.02	0.03
Miscellaneous				
pH	M	pH units	0.1	8.3

Method Summary

Report No.: 22-38556, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	11/02/2022	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	11/02/2022	115	Ion Chromatography
Water soluble anions	M	Air dried sample	10/02/2022	172	Ion Chromatography
Total organic carbon/Total sulphur	N	Air dried sample	10/02/2022	216	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 22-38556, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
 All water samples will be retained for 7 days following the date of the test report
 Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

Appendix D

Laboratory Geotechnical Test Results



LABORATORY REPORT



4043

Contract Number: PSL22/0869

Report Date: 04 March 2022

Client's Reference: 649.00

Client Name: Redstart NW Ltd
Unit 6, Oak Green Business Park
Earl Road
Cheadle Hulme
Cheshire
SK8 6QL

For the attention of: Chris Eccles

Contract Title Former Garage, Bury Old Road, Prestwich

Date Received: 3/2/2022

Date Commenced: 3/2/2022

Date Completed: 04/03/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

M Fennell
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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH1		Bulk	3.00	3.50	Brown slightly gravelly SAND.
BH1		Bulk	6.00	6.50	Brown slightly gravelly very sandy CLAY.
BH1		Bulk	7.50	7.95	Brown sandy clayey SILT.
BH1		Bulk	10.50	10.95	Brown slightly gravelly silty SAND.
BH1		Bulk	12.00	12.45	Brown slightly silty SAND.
BH2		Bulk	1.50	1.95	Brown slightly silty SAND.
BH2		D	4.50	4.95	Brown slightly silty SAND.
BH2		Bulk	7.50	8.00	Brown very sandy CLAY.
BH2		D	12.00	12.45	Brown slightly gravelly slightly silty SAND.
BH2		U100	15.00	15.45	Brown slightly gravelly very sandy CLAY.
BH2		D	15.50		Brown slightly gravelly very sandy CLAY.
BH2		Bulk	15.50	16.00	Brown slightly gravelly very sandy CLAY.



4043

PSL

Professional Soils Laboratory

Bury Old Road, Prestwich

Contract No:

PSL22/0869

Client Ref:

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



4043

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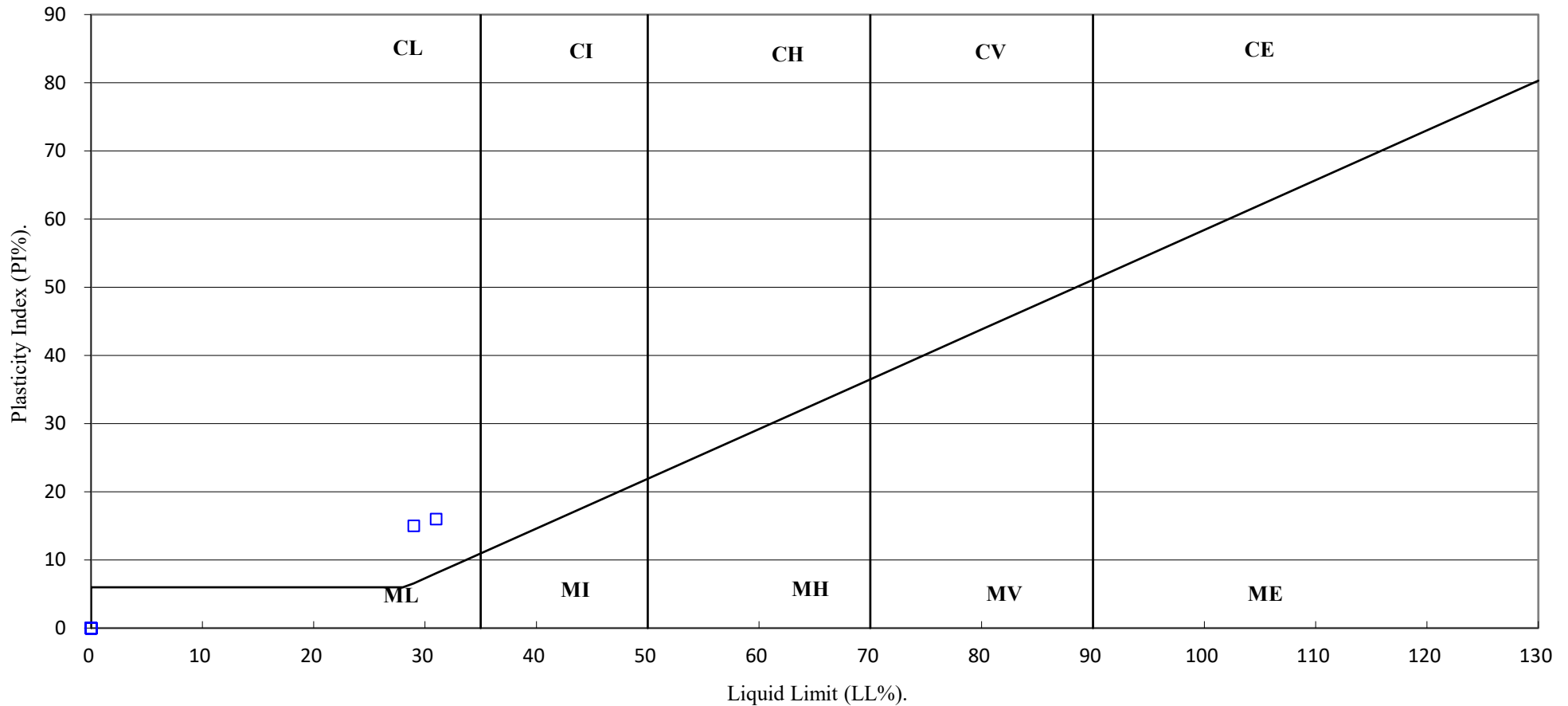
Bury Old Road, Prestwich

Contract No:

PSL22/0869

Client Ref:

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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Bury Old Road, Prestwich

Contract No:

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Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

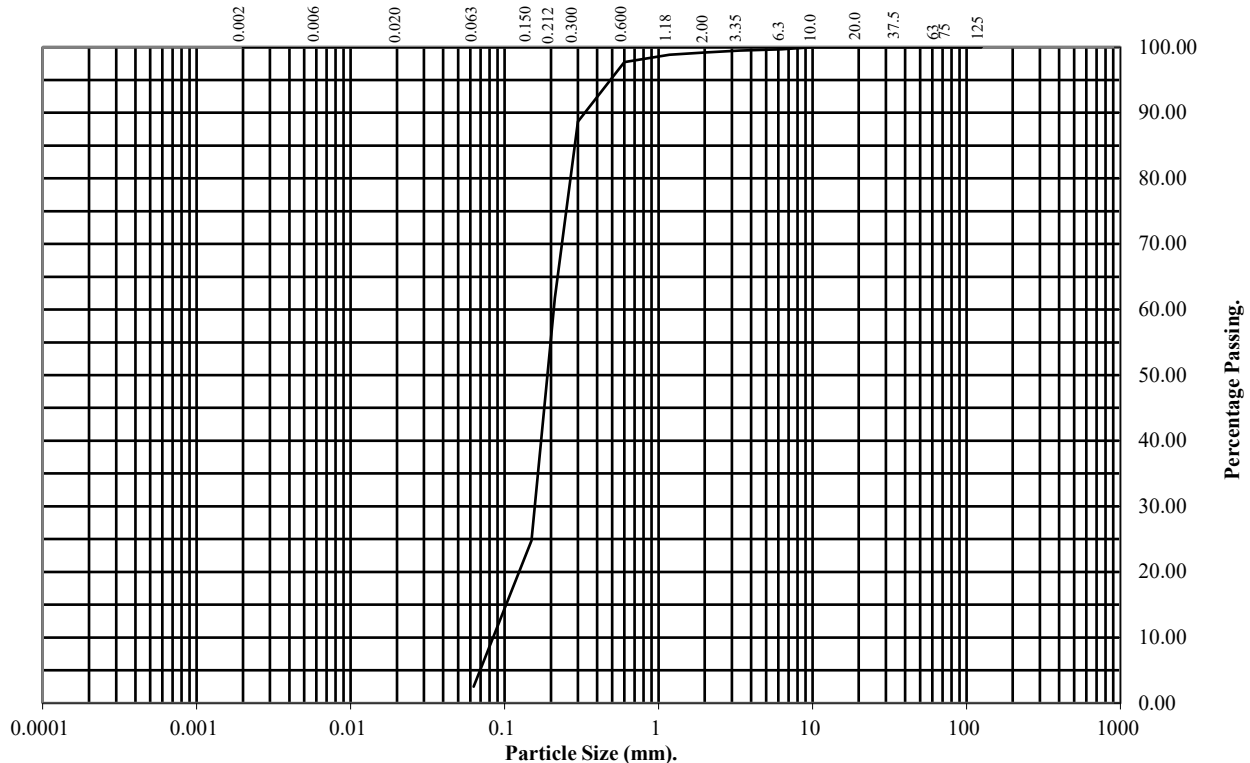
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH2 Top Depth (m): 1.50

Sample Number: Base Depth(m): 1.95

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	99
0.6	98
0.3	89
0.212	62
0.15	25
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	96
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions



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Bury Old Road, Prestwich

Contract No:

PSL22/0869

Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

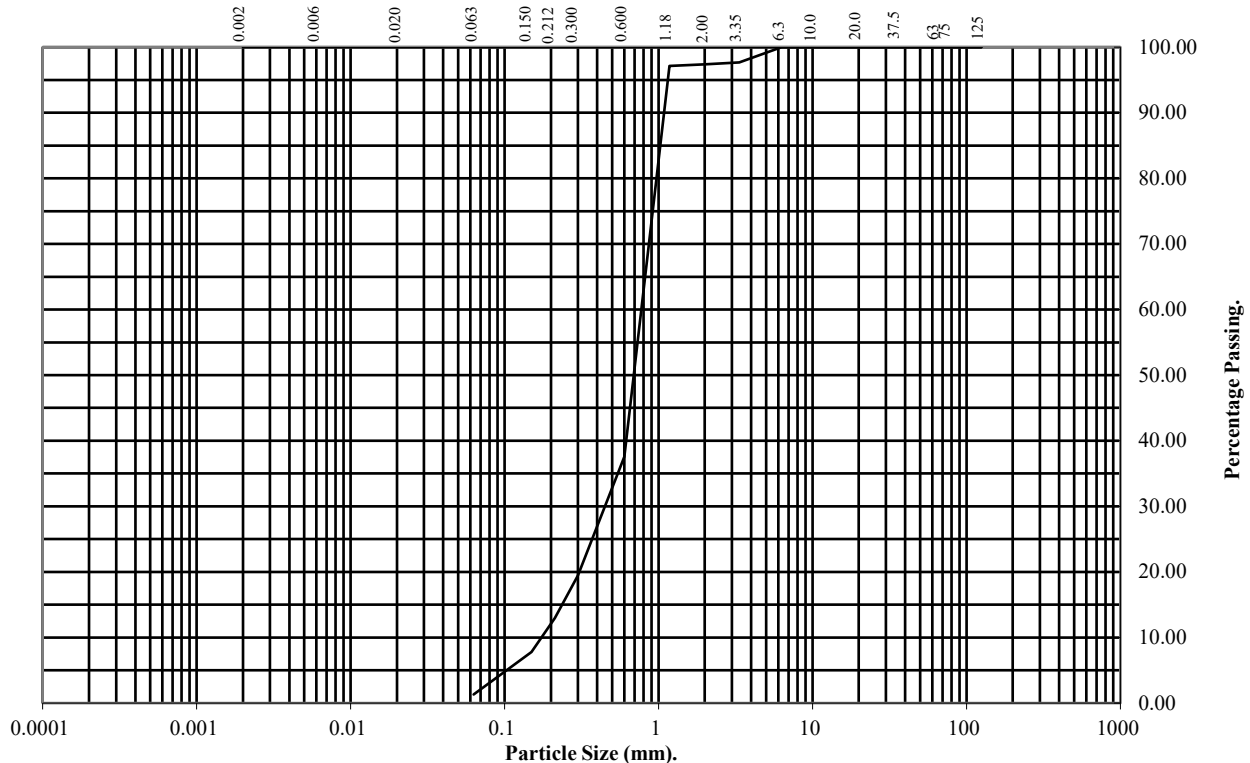
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH1 Top Depth (m): 3.00

Sample Number: Base Depth(m): 3.50

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	97
1.18	97
0.6	38
0.3	19
0.212	13
0.15	8
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	96
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions



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Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

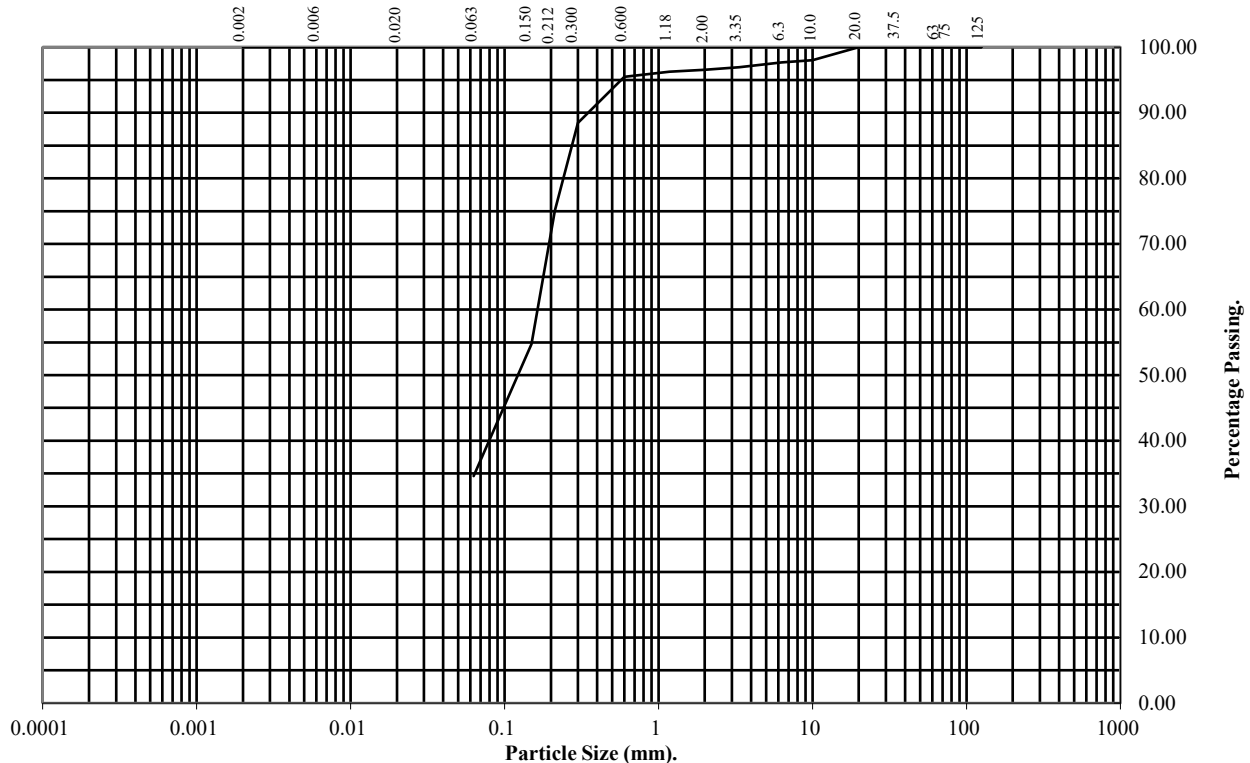
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH1 Top Depth (m): 6.00

Sample Number: Base Depth(m): 6.50

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	97
2	97
1.18	96
0.6	95
0.3	88
0.212	75
0.15	55
0.063	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	62
Silt/Clay	35

Remarks:

See Summary of Soil Descriptions



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Contract No:

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Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

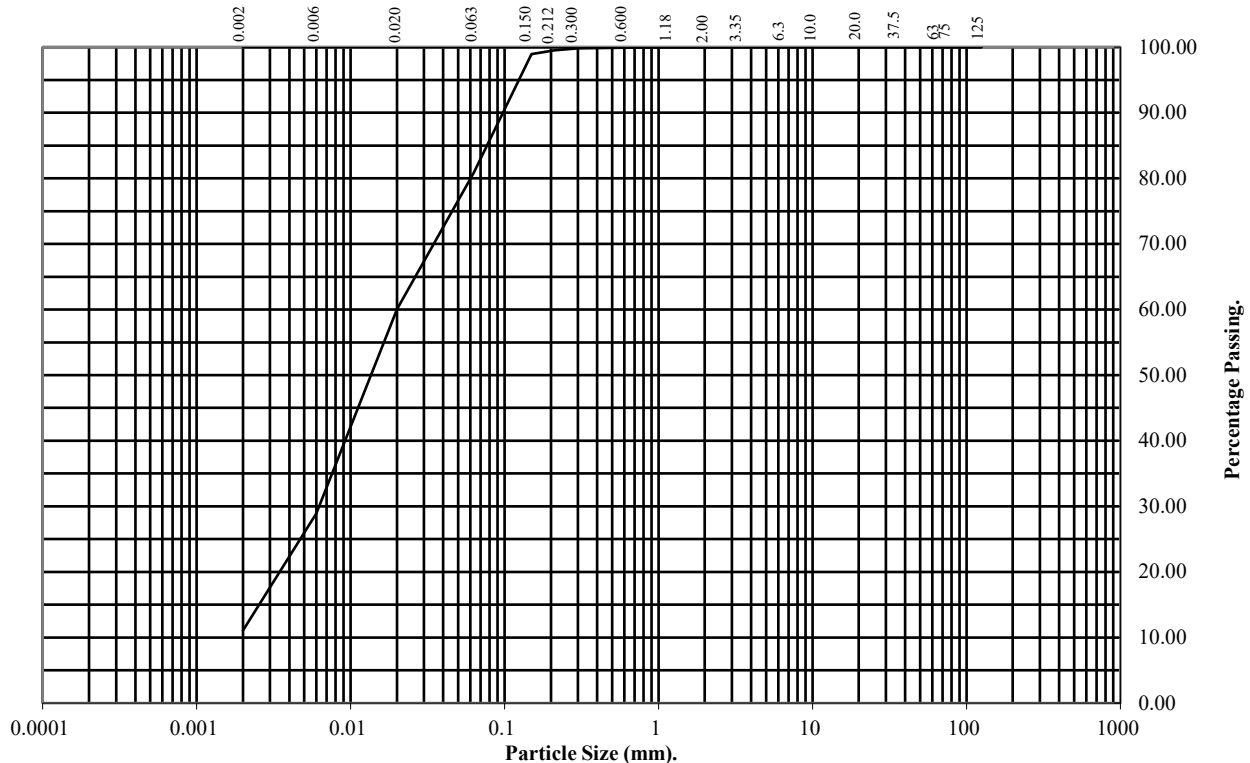
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH1 Top Depth (m): 7.50

Sample Number: Base Depth(m): 7.95

Sample Type: Bulk

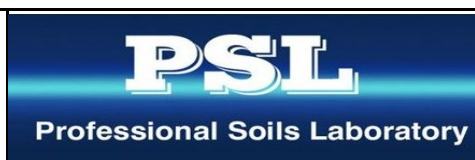


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	100
0.212	100
0.15	99
0.063	81

Particle Diameter	Percentage Passing
0.02	60
0.006	29
0.002	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	19
Silt	70
Clay	11

Remarks:
See Summary of Soil Descriptions



Bury Old Road, Prestwich

Contract No:
PSL22/0869
Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

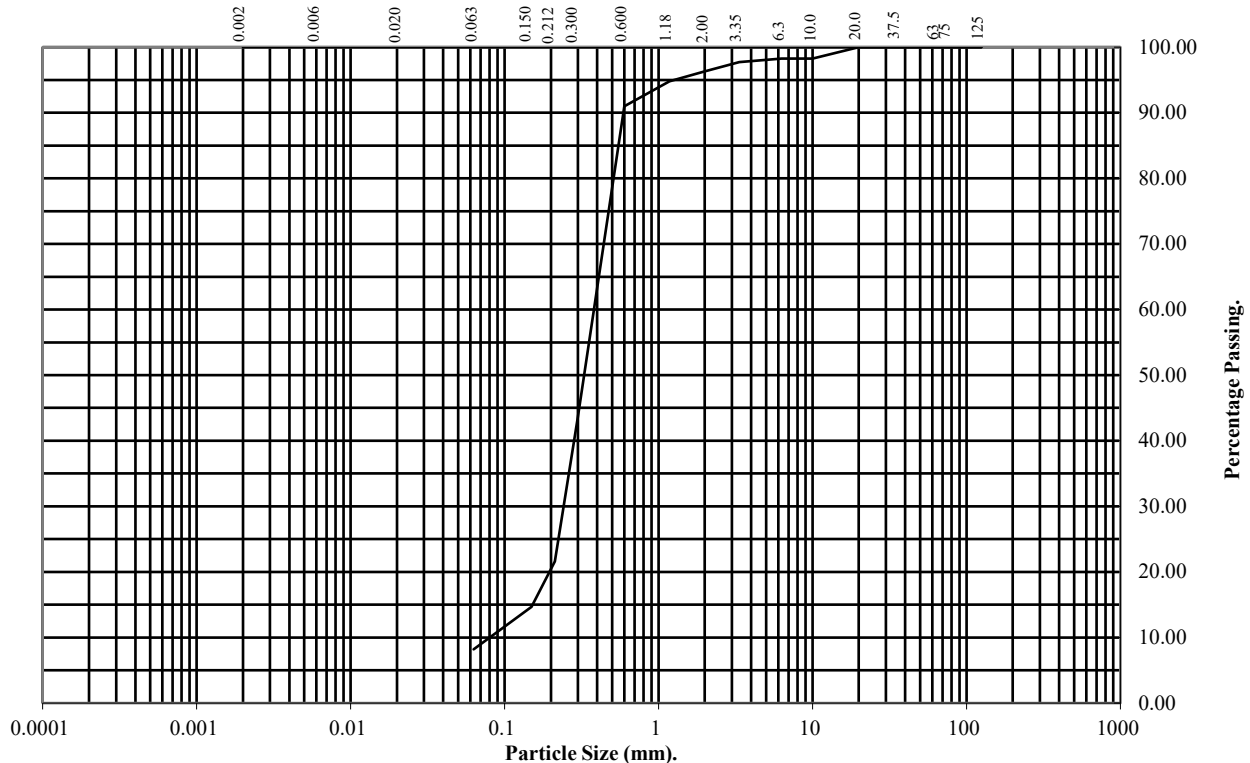
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH1 Top Depth (m): 10.50

Sample Number: Base Depth(m): 10.95

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	98
2	96
1.18	95
0.6	91
0.3	44
0.212	22
0.15	15
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	88
Silt/Clay	8

Remarks:

See Summary of Soil Descriptions



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Contract No:

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Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

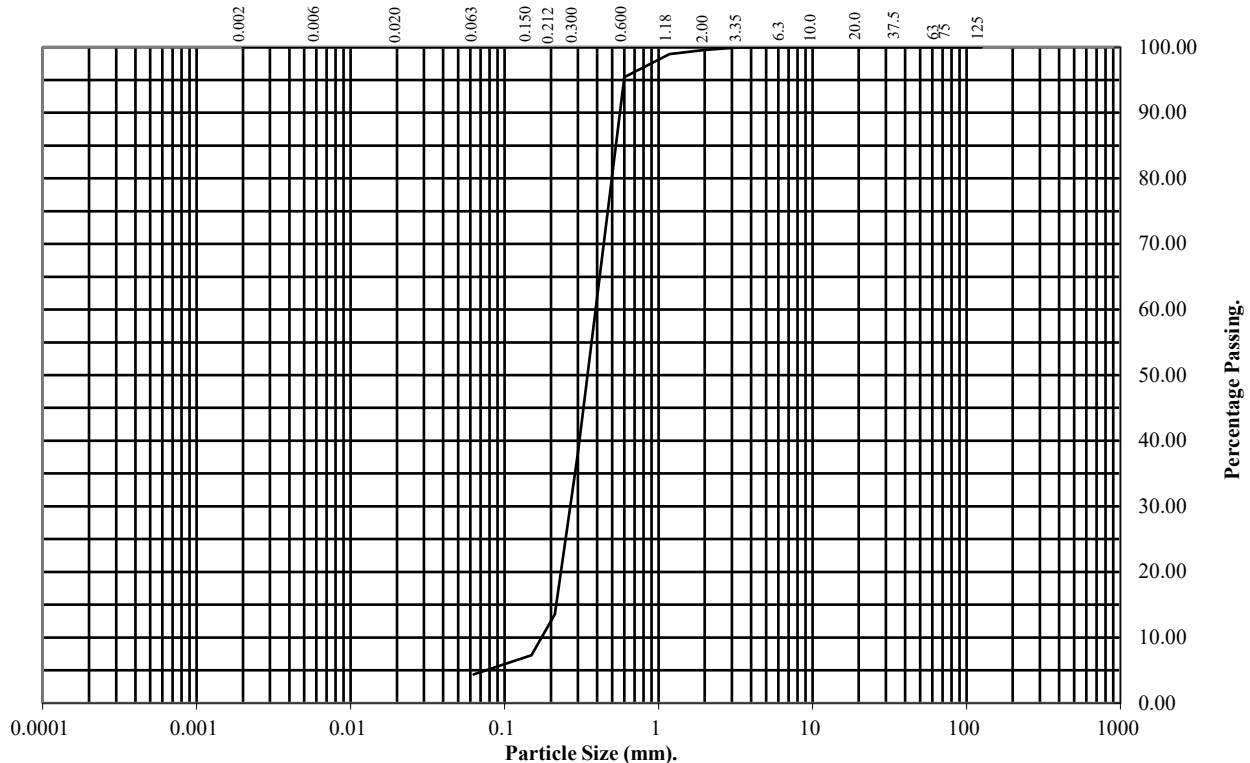
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH1 Top Depth (m): 12.00

Sample Number: Base Depth(m): 12.45

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	95
0.3	38
0.212	14
0.15	7
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	96
Silt/Clay	4

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

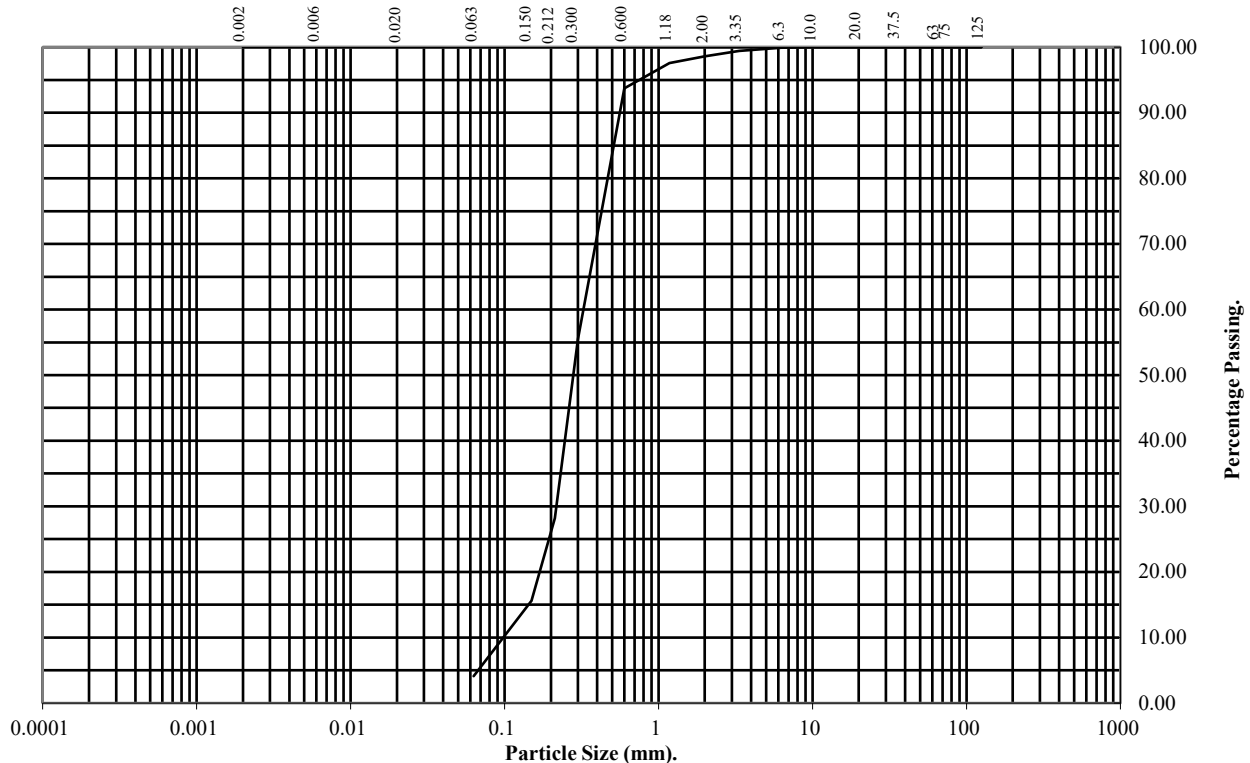
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH2 Top Depth (m): 4.50

Sample Number: Base Depth(m): 4.95

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	94
0.3	55
0.212	28
0.15	16
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	95
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

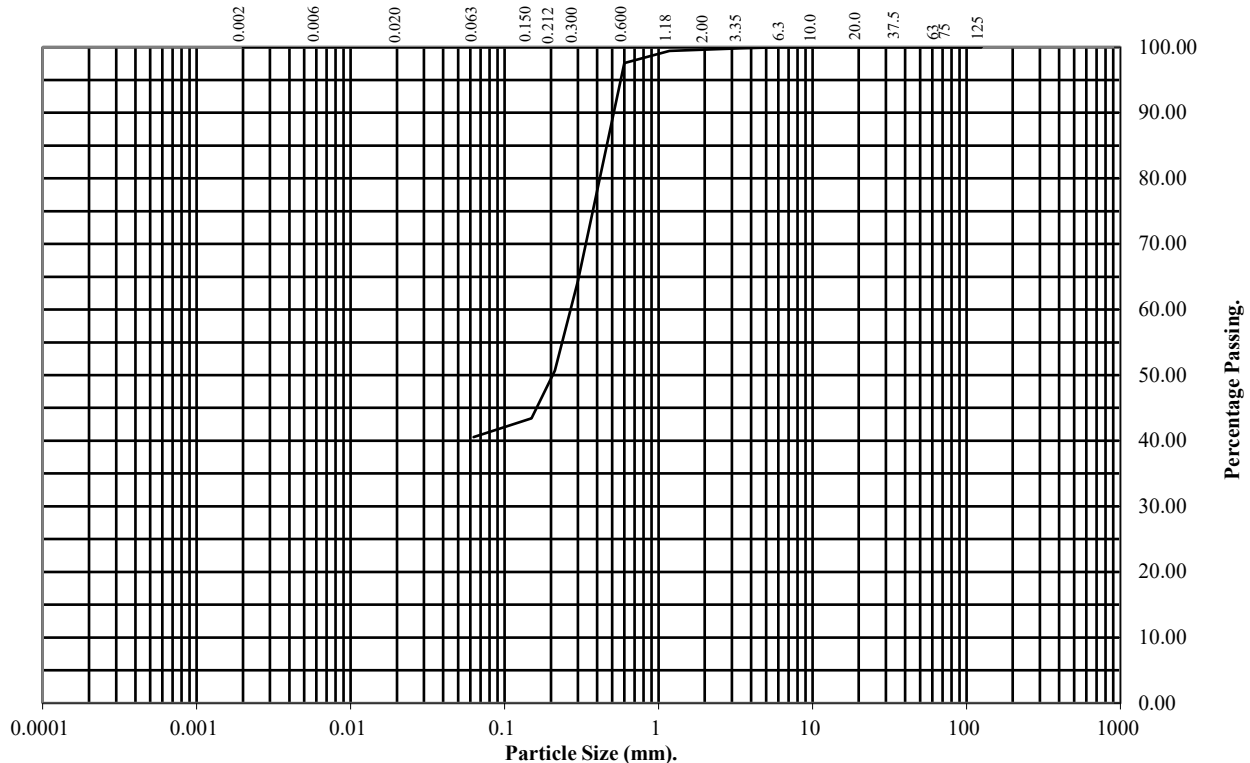
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH2 Top Depth (m): 7.50

Sample Number: Base Depth(m): 8.00

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	98
0.3	64
0.212	51
0.15	43
0.063	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	59
Silt/Clay	41

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

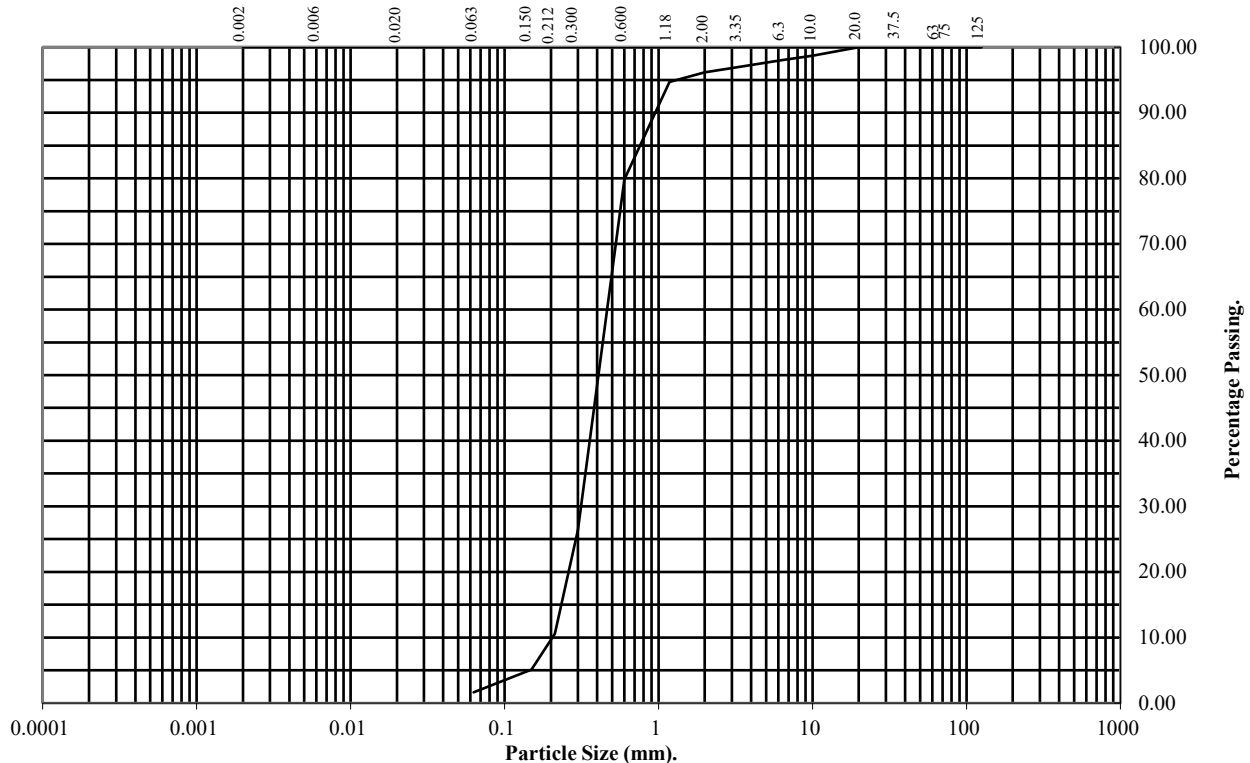
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH2 Top Depth (m): 12.00

Sample Number: Base Depth(m): 12.45

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	97
2	96
1.18	95
0.6	80
0.3	26
0.212	11
0.15	5
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	94
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions



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Contract No:

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Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

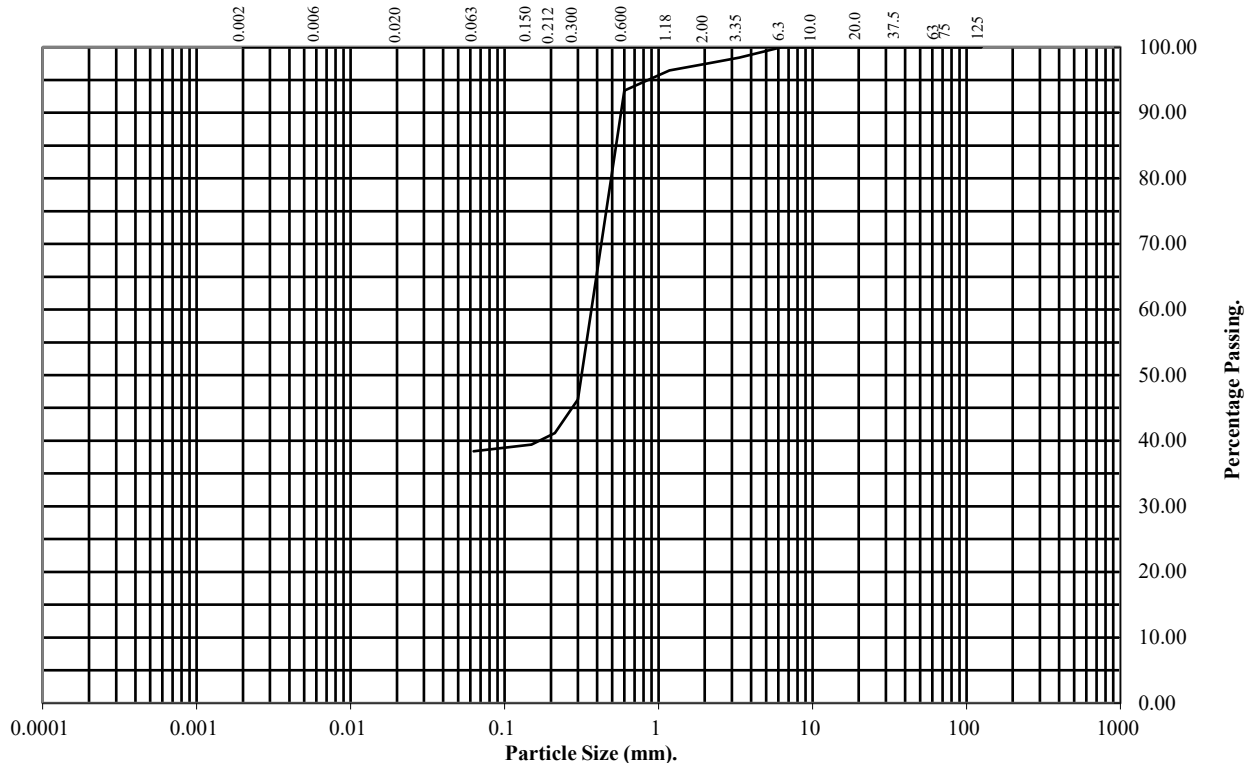
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH2 Top Depth (m): 15.50

Sample Number: Base Depth(m): 16.00

Sample Type: Bulk



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	97
1.18	96
0.6	93
0.3	46
0.212	41
0.15	39
0.063	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	59
Silt/Clay	38

Remarks:

See Summary of Soil Descriptions



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Contract No:

PSL22/0869

Client Ref:

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

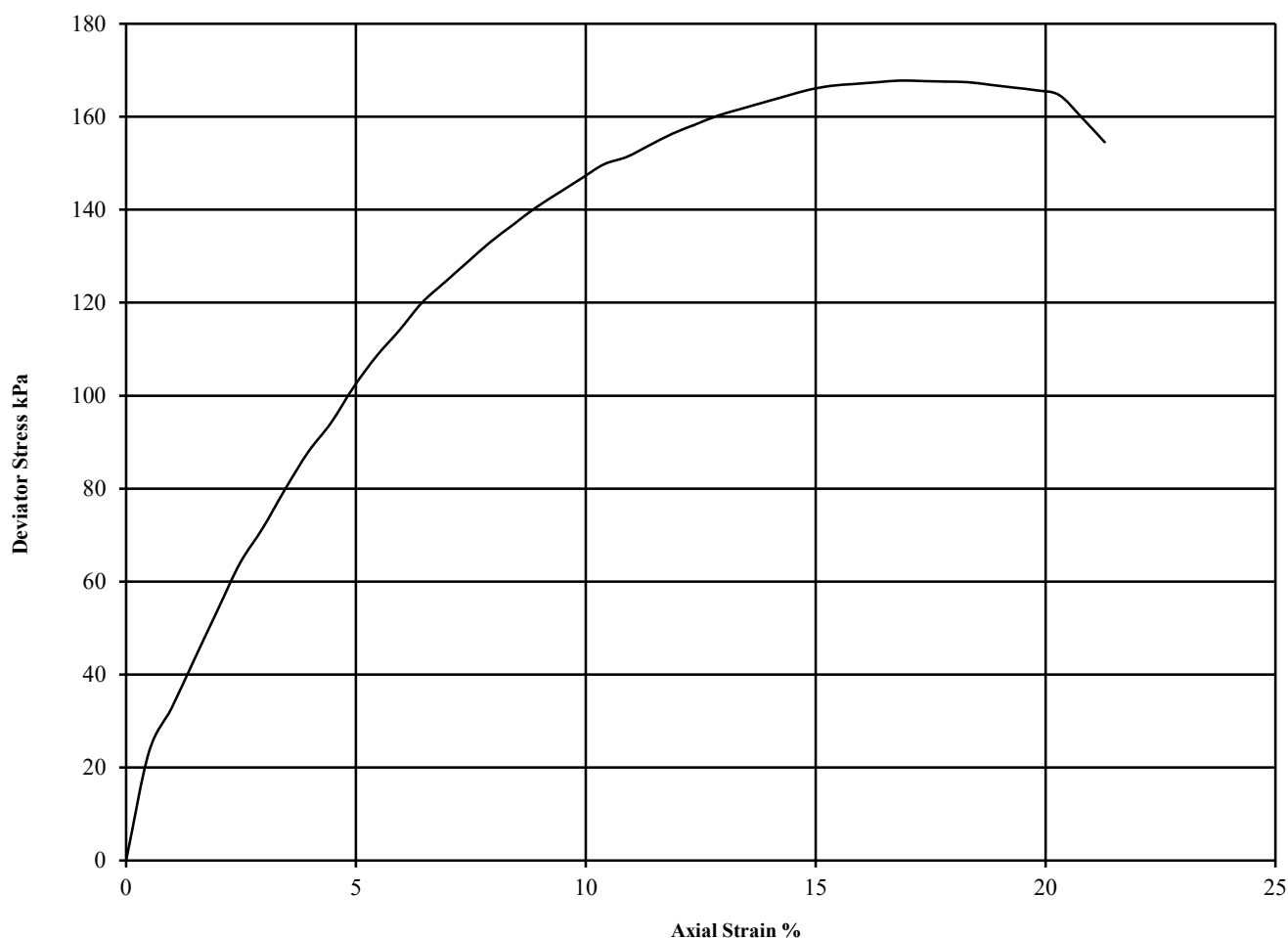
Hole Number: BH2

Top Depth (m): 15.00

Sample Number:

Base Depth (m): 15.45

Sample Type U



Diameter (mm):		100	Height (mm):		202	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	14	2.22	1.95	300	168	84	16.8	Intermediate	

* Single stage test due to early brittle failure



4043

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Bury Old Road, Prestwich

Contract No:

PSL22/0869

Client Ref: