

Ground Investigation

Investigation to determine the existing foundations and ground conditions. The investigation included two hand excavated trial pits, two 6m boreholes, a deep datum installation and soils and root testing.

Site Details

Date	19th February 2022
Client	Sedgwick
Policy Holder & Address	[REDACTED] Redlands, St Marys Road, Worcester Park KT4 7JL
Reference number	[REDACTED]
Shire Reference	[REDACTED]

General Conditions

The site work and report has been carried out in accordance with BS 5930: 2015 “Code of practice for ground investigations.”

Any soil samples taken are either retained or dispatched to a UKAS accredited laboratory for testing. The tests are carried out in accordance with the methods outlined in BS 1377: 1990 “Methods of test for soils for civil engineering purposes.”

If required, any root samples taken are sent to the European Plant Science Laboratory for identification.



Report prepared by : Rob Ray BSc(Hons) Env Eng

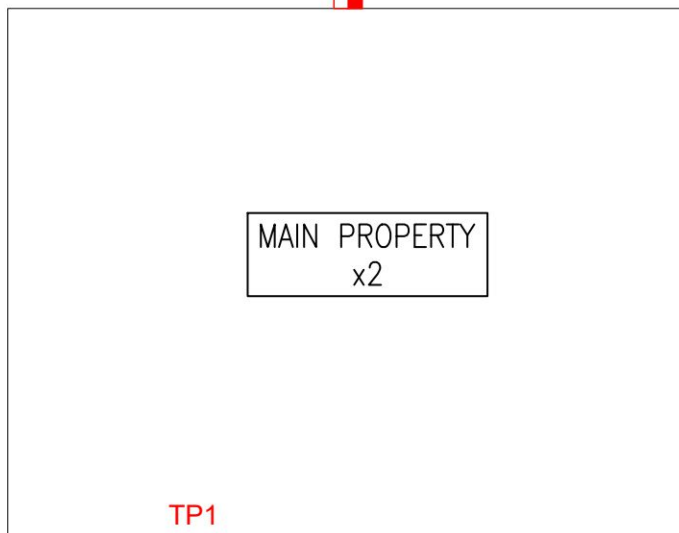
ENGINEERING INNOVATION

INSPECT : INVESTIGATE : REPAIR

Consulting Civil & Structural Engineers | Geotechnical Investigations | Structural Inspections
Expert Reporting | Structural Repair Specialists | Foundation Systems

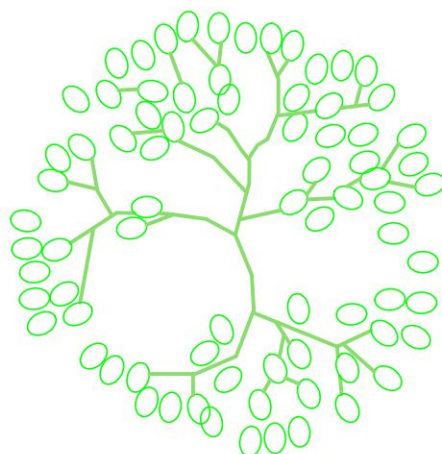
BH2

TP2



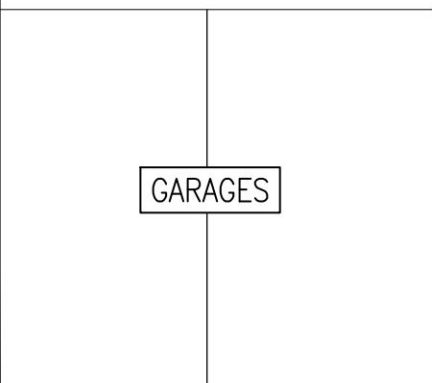
BH1/DATUM

TP1



30-40m REDWOOD

GARAGES



ORIGINAL DRAWING SIZE A4

Claim Number
9236859:LBHPA-SUB-HUB

Customer Name
FOSTER

Date
10/03/22

Scale
NTS

Job No
SS-21-11011

Drawn
DL

Checked
RR

Drawing No
LP1

Issue
A

Address
**REDLANDS, ST MARYS ROAD
WORCESTER PARK
SURREY
KT4 7JL**

Drawing Title
LOCATION PLAN No.1



Shirestructures

The Chapel, Barnsley Hall Road
Bromsgrove, Worcestershire, B61 0SZ
Tel: (01527) 579933
Fax: (01527) 559700
Web: www.shire-uk.com

MACKINTOSH PROBE RESULTS - FREEFALL							SHEAR VANE kN/m ²	SOIL		DESCRIPTION						
DEPTH (m)	READING BLOWS/ 100mm	M VALUE BLOWS/ 300mm	VERY LOOSE	LOOSE	MEDIUM DENSE			DEPTH (m)	SOIL REF							
			25	50	75	100	125	150	175	200	225					
													1.0	A	MADE GROUND: Brown CLAY with brick fragments	
							70						1.3	B	Firm to stiff brown CLAY with roots up to 2mmØ	
													2.0		Concrete Fdn: Top 0.9m Depth 1.1m, Pjn 0.17m	
													3.0		NOTE: Porch is built of a concrete slab supported on brick wall shown in trial pit	



ORIGINAL DRAWING SIZE A4

Claim Number 9236859: LBHPA-SUB-HUB			Address REDLANDS, ST MARYS ROAD WORCESTER PARK SURREY KT4 7JL			 Shirestructures The Chapel Barnsley Hall Road BROMSGROVE Worcestershire B61 0SZ t : 01527 579933 f : 01527 579537 e : info@shire-uk.com w : www.shire-uk.com
Customer Name FOSTER						
Date 10/03/22	Scale NTS	Job No SS-21-11011				
Drawn DL	Checked RR	Drawing No TP1	Issue A	Drawing Title TRIAL PIT No.1		

MACKINTOSH PROBE RESULTS - FREEFALL								SOIL		DESCRIPTION
DEPTH (m)	READING BLOWS/ 100mm	M VALUE BLOWS/ 300mm	VERY LOOSE	LOOSE			SHEAR VANE kN/m ²	DEPTH (m)	SOIL REF	
				25	50	75				
								1.0	A	MADE GROUND: Brown CLAY with brick fragments
							70	1.3	B	Firm to stiff brown CLAY with roots up to 2mmØ
								2.0		Concrete Fdn: Top 0.9m Depth 1.1m, Pjn 0.17m
								3.0		



ORIGINAL DRAWING SIZE A4

Claim Number
9236859: LBHPA-SUB-HUB

Customer Name
FOSTER

Date
10/03/22

Scale
NTS

Job No
SS-21-11011

Drawn
DL

Checked
RR

Drawing No
TP2

Issue
A

Address
**REDLANDS, ST MARYS ROAD
WORCESTER PARK
SURREY
KT4 7JL**

Drawing Title
TRIAL PIT No.2



Shirestructures

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SPT RESULTS					SHEAR VANE kN/m ²	DEPTH (m)	SOIL REF	SOIL	DESCRIPTION
SOIL SAMPLES/TEST		SPT VALUE	FIELD RECORDS	DATUM					
DEPTH(m)	TYPE								
							A		Flower bed with shrubs over TOPSOIL
					64	1.0	B		Soft to firm becoming firm mottled brown sandy silty CLAY becomes sandy below 2.00m Roots noted to a depth of 3.0m Water seepage at 4.0m rising to 2.9m after 1hr
					70				
					100	2.0			
					112				
					125	3.0			
					130+				
					130+	4.0			
					130+				
					130+	5.0			
					140+	6.0			

Remarks: 1. Borehole carried out by Competitor 130 Window Sample Rig
2. Hand shear vanes were taken in the end of the sample tubes
3. Datum installed in borehole to 6.0m
4.
5.

Key: - Water Strike
 - Disturbed Sample
 - Bulk Sample
 - Cone (SPT Test)
 - Split Spoon (SPT Test)

9236859:LBHPA-SUB-HU

FOSTER

Date	Site Engineer	Job No	
10/03/22	RR	SS-21-11011	
Drawn	Checked	Drawing No	Issue
DL	RR	BH1	A

Address

**REDLANDS
ST MARYS ROAD, WORCESTER PARK
SURREY
KT4 7JL**

Drawing Title
BOREHOLE No.1



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SPT RESULTS					SHEAR VANE kN/m ²	DEPTH (m)	SOIL REF	SOIL	DESCRIPTION
SOIL SAMPLES/TEST		SPT VALUE	FIELD RECORDS	WELL					
DEPTH(m)	TYPE								
						0.18	A		Concrete paving slab over concrete
						0.5	B		Organic CLAY with numerous roots up to 10mmØ
						90 1.0	C		Soft to firm becoming very stiff mottled brown sandy silty CLAY Roots noted to a depth of 4.0m Water seepage noted at 4.0m rising to 2.4m after 1hr
					96				
					114 2.0				
					130+ 3.0				
					130+ 4.0				
					130+ 5.0				
					130+ 6.0				

Remarks: 1. Borehole carried out by Competitor 130 Window Sample Rig
2. Hand shear vanes were taken in the end of the sample tubes
3.
4.
5.

Key: - Water Strike
 - Disturbed Sample
 - Bulk Sample
 - Cone (SPT Test)
 - Split Spoon (SPT Test)

9236859:LBHPA-SUB-HU

FOSTER

Date	Site Engineer	Job No	
10/03/22	RR	SS-22-11011	
Drawn	Checked	Drawing No	Issue
DL	RR	BH2	A

Address

**REDLANDS
ST MARYS ROAD, WORCESTER PARK
SURREY
KT4 7JL**

Drawing Title
BOREHOLE No.2



Shiregeotechnical

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Shire Consulting Limited
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Intec
Parc Menai, Bangor,
Gwynedd, North Wales
LL57 4FG
Tel: 01248 672652
Fax: 01248 672601

ROOT IDENTIFICATION

Redlands,

Client Reference: SS-22-11011
Report Date: 13 April 2022
Our Ref: R44968

Sub Sample	Species Identified	Root Diameter	Starch
TP1:			
USF	Taxodiaceae spp.	1.5 mm	Moderate
TP2:			
USF	<i>Fraxinus</i> spp.	1 3 mm	Low

Comments:

1 - Plus 1 other also identified as *Fraxinus* spp.

Taxodiaceae spp. include coast redwood, dawn redwood, Wellingtonia and Japanese red cedar.
Fraxinus spp. include common ash.

Signed: M D Mitchell

Unless we are otherwise instructed in writing, the above sample material will normally be disposed of 6 years after the date of this report.




SOIL ANALYSIS Revision 1


Redlands, St Mary's Road, Worcester Park, KT4 7JL

Client: Shires
Report Date: 25/04/2022
Our Ref: L22736

Compiled By:

Name	Position	Signature
Bob Walker	Laboratory Manager	

Checked By:

Name	Position	Signature
Bob Walker	Laboratory Manager	

Date samples received: 24-Mar-22
Water Content Test Date: 28-Mar-22
Atterberg Limits Test Date: 30-Mar-22

Oedometer Test Date: 30-Mar-22



9265

Notes relating to soils testing

Unless otherwise stated, all soil testing was undertaken by Environmental Services at unit 10H Maybrook Business Park, B76 1AL for SubsNetUK of Unit 4 Linnet Court, Cawledge Business Park, Alnwick, NE66 2GD

Soil samples have been prepared in accordance with BS1377:Part 1: 2016 Section 7

Descriptions of soil samples within the laboratory have been undertaken generally in accordance with BS5930:2015. Descriptions of soil samples fall outside of the scope of UKAS accreditation and may have been shortened to remove tertiary components for ease of reference.

The graphical representation of 40% of the LL and the numerical representation of the modified plasticity index (mod. PI) fall outside of the scope of UKAS accreditation.

Following the issue of this soil analysis report, samples will be retained for at least 28 days should additional testing, or referencing, be required. It should be noted that any tests undertaken on soils retained subsequent to the issue of this report may not give an accurate indication of the in-situ conditions of the sample.

This Soil Analysis Report may not be reproduced, in part or in full, without written approval of the laboratory.

The results contained herein relate only to items tested and no others. Additionally as the laboratory is not responsible for the sampling process it takes no responsibility for the condition of the samples and all samples are tested "as received".

Where samples of the same test type are not tested on the same day, or the testing spans multiple days, the test date states the day of the final test or the test date of the final sample.

All information above the laboratory reference on the cover page of this report are as provided by the customer and the laboratory is not responsible for any errors or omissions therein.

Water Content Tests are undertaken in accordance with ISO 17892:Part 1:2014

The Liquid Limit test is undertaken in accordance with BS1377:Part 2:1990 Section 4.4 using an 80g cone with a 30° tip. Sieve percentages reported in blue denote that the sample has been sieved otherwise it has been prepared from its natural state. Sieve percentage reported in BOLD denote that the sample has been oven-dried prior to testing.

Unless otherwise specified herein, the one-point cone penetrometer method has been used with increasing water content. Atterberg results depicted in green have not been tested and are duplicates of the preceding sample, included for reference only.

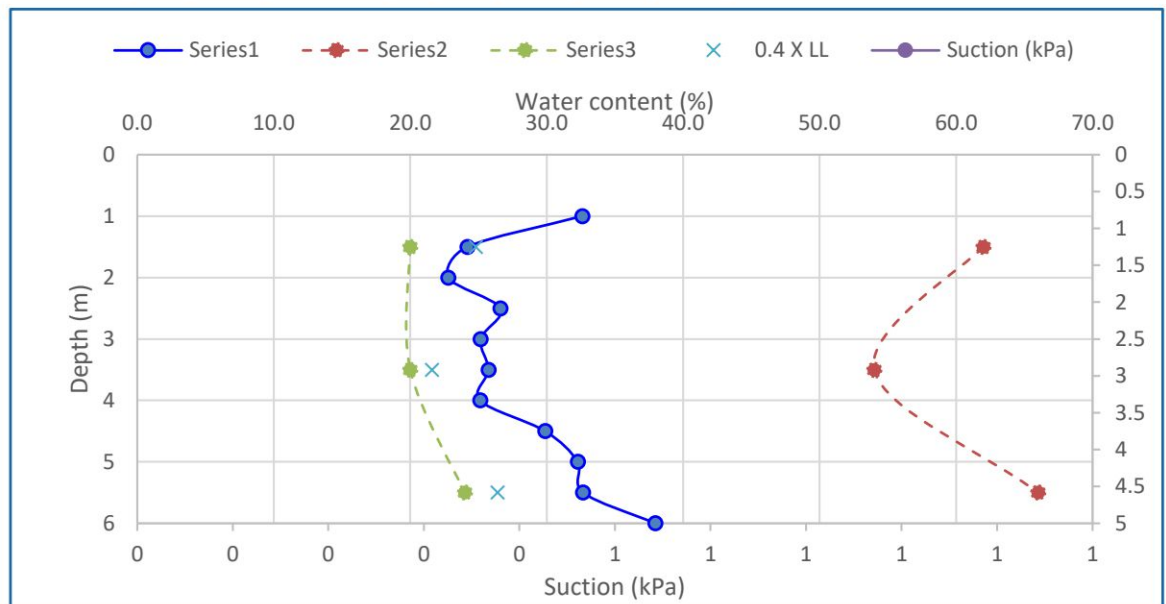
The Plastic Limit test and the determination of the Plasticity Index is undertaken in accordance with BS1377:Part 2:1990. Where a plastic limit has been denoted with an asterisk (*) then it has been derived from the liquid limit and has not been tested.

The Oedometer swell/strain test method is based upon BS1377:Part 5:1990 Section 4.4 'Determination of swelling and collapse characteristics' and unless otherwise stated is undertaken on a remoulded, disturbed, sample.

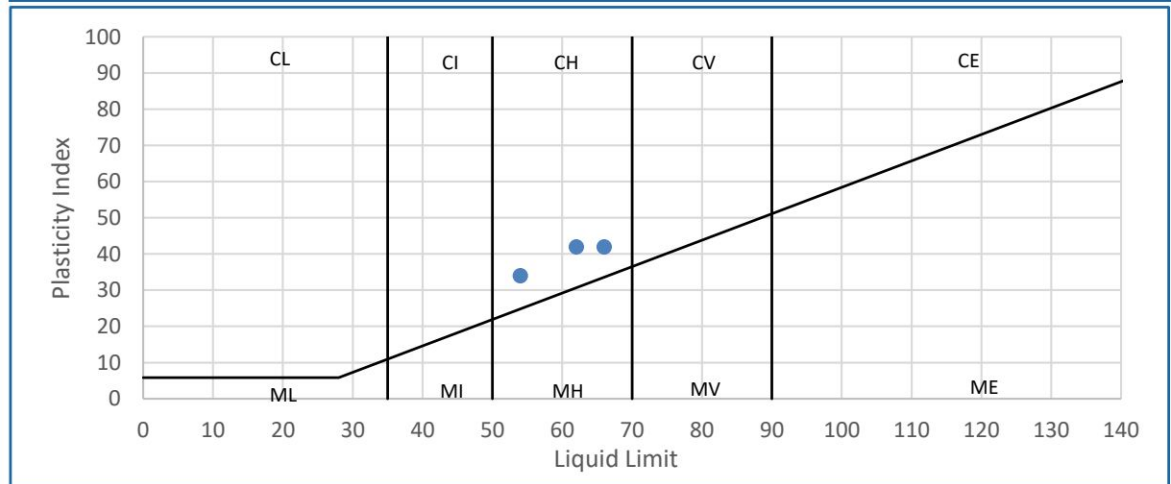
The Oedometer Swell/Strain Test is undertaken in a controlled environment within a temperature range of 16°C and 24°C

Samples from BH1

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
1	1	32.6							Soft to firm brown/dark brown banded CLAY with rare gravel and sand/topsoil. Gravel is fine
2	1.5	24.2	62	20	42	100	42		Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
3	2	22.8							Firm brown/orange-brown banded CLAY with rare gravel and sand. Gravel is fine
4	2.5	26.6							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
5	3	25.2							Soft brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
6	3.5	25.7	54	20	34	100	34		Soft to firm brown CLAY with rare gravel and sand. Gravel is fine
7	4	25.1							Soft brown CLAY with rare gravel and sand. Gravel is fine
8	4.5	29.9							Soft brown CLAY with rare gravel and sand. Gravel is fine
9	5	32.3							Firm brown CLAY with rare gravel and sand. Gravel is fine
10	5.5	32.7	66	24	42	100	42		Firm brown CLAY with rare gravel and sand. Gravel is fine
11	6	38.0							Soft brown CLAY with rare gravel and sand. Gravel is fine

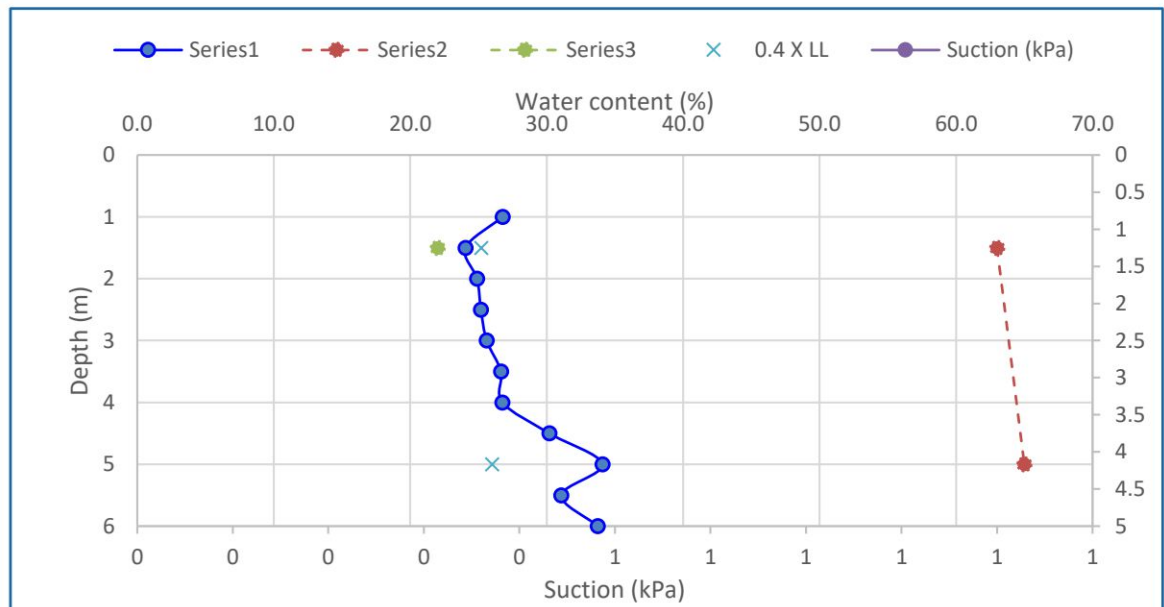


Plasticity Chart for Casagrande Classification

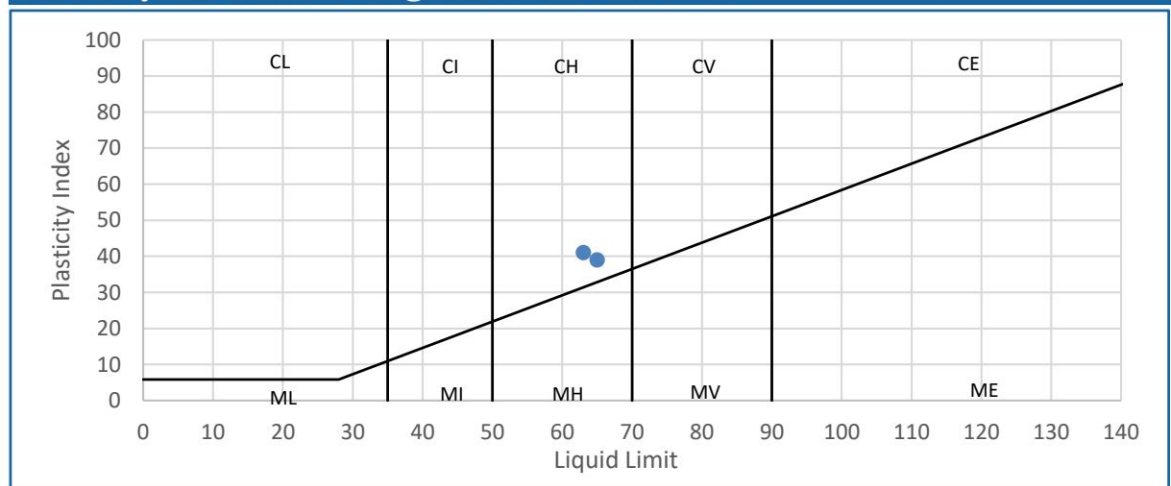


Samples from BH2

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
12	1	26.8							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
13	1.5	24.1	63	22	41	100	41		Firm to stiff brown CLAY with rare gravel and sand. Gravel is fine
14	2	24.9							Firm brown CLAY with rare gravel and sand. Gravel is fine
15	2.5	25.2							Firm brown CLAY with rare gravel and sand. Gravel is fine
16	3	25.6							Soft to firm brown CLAY with rare gravel and sand. Gravel is fine
17	3.5	26.7							Soft to firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
18	4	26.8							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
19	4.5	30.2							Firm to stiff brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
20	5	34.1	65	26	39	100	39		Soft to firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
21	5.5	31.1							Firm to stiff brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
22	6	33.7							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine



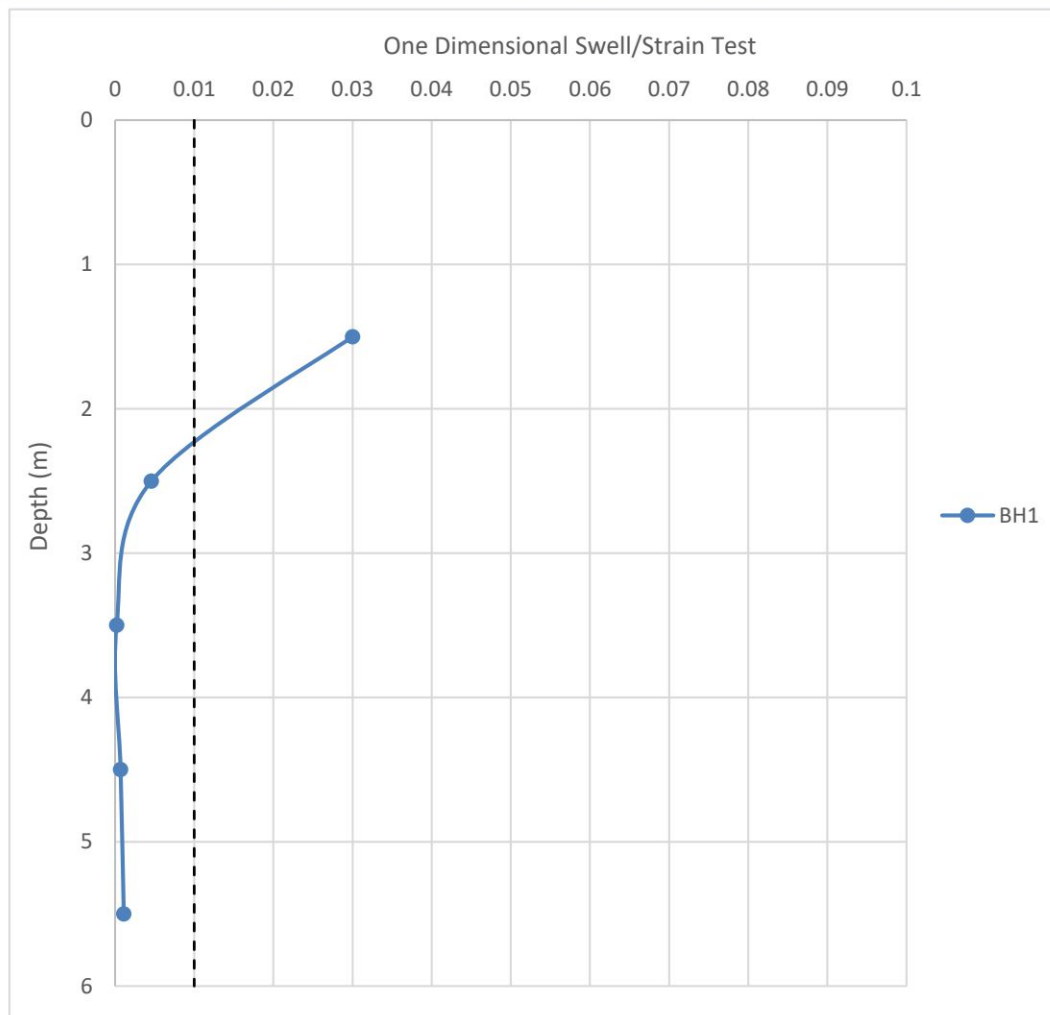
Plasticity Chart for Casagrande Classification



Summary of Oedometer Testing for BH1

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
1	1			
2	1.5	0.03	0	
3	2			
4	2.5	0.0046	0	
5	3			
6	3.5	0.0002	0	
7	4			
8	4.5	0.0007	0	
9	5			
10	5.5	0.0011	0	
11	6			

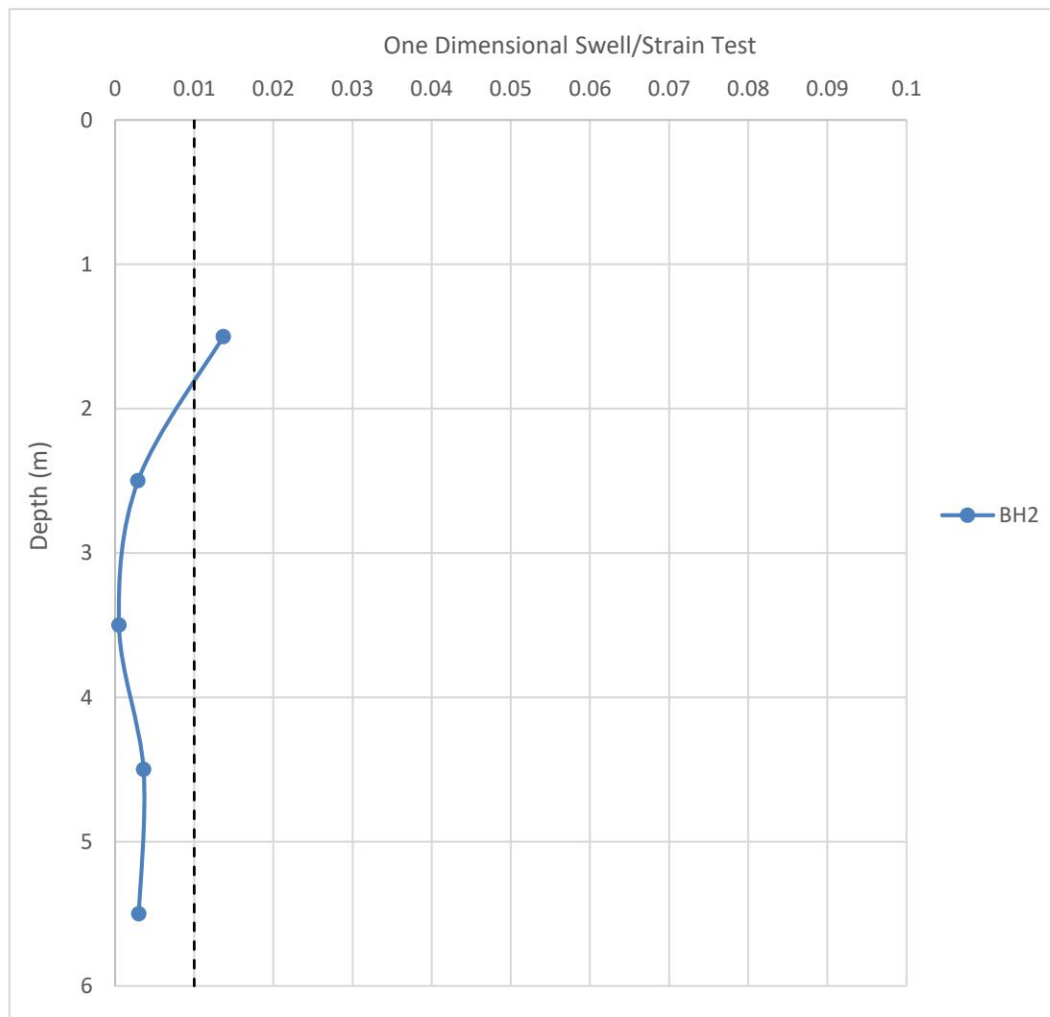
BH 1 estimate of heave 0mm



Summary of Oedometer Testing for BH2

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
12	1			
13	1.5	0.0137	10.3	
14	2			
15	2.5	0.0029	0	
16	3			
17	3.5	0.0005	0	
18	4			
19	4.5	0.0036	0	
20	5			
21	5.5	0.003	0	
22	6			

BH 2 estimate of heave 10mm



Deviating Samples

The table below details any samples deviating from laboratory procedure or deviating in condition to an extent whereby the validity of results may be affected. A test denoted "I" is likely to have had testing abandoned but where a test result has been provided a non-standard procedure may have been used, details of which will be provided upon request.

LAB REF	CONDITION	WC	ATT	SUC	OED
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Key

- D Delay in sample receipt
- C Contaminated sample
- B Sample not bagged correctly
- S Sample too sandy (unsuitable for testing)
- G Sample too gravelly (unsuitable for testing)
- V Sample too soft (unsuitable for preparation)
- L Sample too silty
- I Insufficient sample
- O Too much organic content (unsuitable for testing)
- N Non-standard procedure used
- H Sample depth too shallow
- X Testing result too similar to above sample

References

The following provides a brief interpretation of the test results by comparison of the results to published classifications. The Atterberg Limit test may be used to classify the plasticity of soils; the plasticity classes defined in BS5930:2015 "Code of Practice for Site Investigations" are as follows.

CL (ML)	CLAY and CLAY/SILT of Low plasticity
CI (MI)	CLAY and CLAY/SILT of Intermediate plasticity
CH (MH)	CLAY and CLAY/SILT of High plasticity
CV (MV)	CLAY and CLAY/SILT of Very High plasticity
CE (ME)	CLAY and CLAY/SILT of Extremely High plasticity
O	The letter O is added to prefixes to symbolise a significant proportion of organic matter.
NP	Non-plastic

The Plasticity Index (PI) Result obtained from the Atterberg Limit tests may also be used to classify the potential for volume change of fine soils, in accordance with the National House Building Council's standards - Chapter 4.2 (2003) "Building Near Trees", as summarised below.

Modified PI < 10	Non Classified.
Modified PI = 10 to <20	Low volume change potential.
Modified PI = 20 to <40	Medium volume change potential.
Modified PI = 40 or greater	High volume change potential.

The 2003 edition of Chapter 4.2 also permits use of the Plasticity Index without modification. The classifications for this are grouped by soil type (soils with similar visual soils description and using unmodified Plasticity Indices).

Revision History

Revision Number	Revision date	Revision	Revised by
1			