GEOTECHNICAL

for Subsidence Management Services

33 Belsize Park, London, NW3 4DX

Client:

Client Contact:

Client Ref:

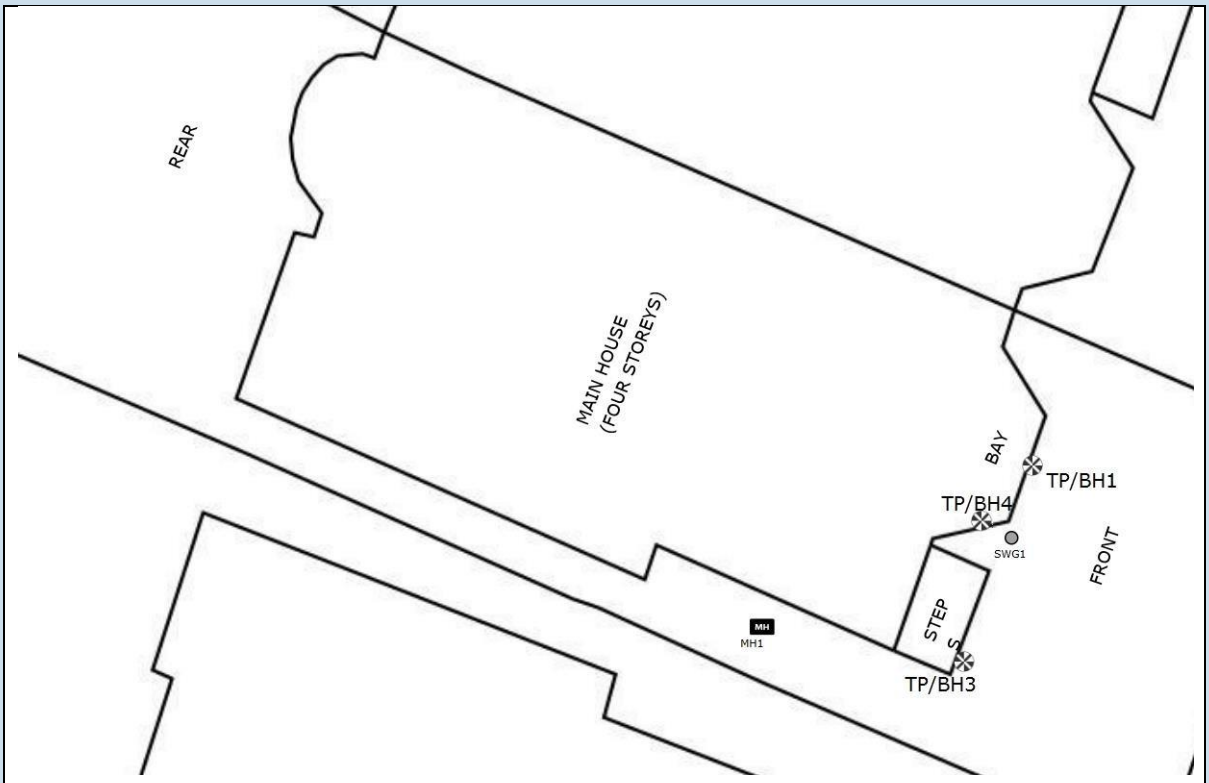
Policy Holder:

Report Date: 7 September 2023

Our Ref:

SubsNetUK

Site Plan

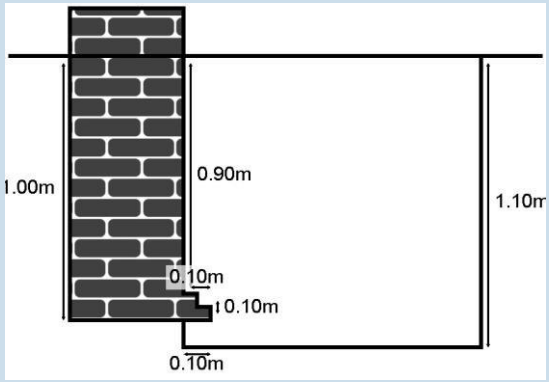


	Borehole		Foul Water Drain	FMH	Foul Manhole		Foul Rodding Point		Foul Vent Pipe
	Trial Pit / Borehole		Surface Water Drain	RMH	Rain Water Manhole		Surface Rodding Point		Rain Water Gully
	Trial Pit		Combined Drain	MH	Combined Manhole				

TP/BH3 Foundation Detail and Borehole Log

Foundation Detail

Steps foundation comprised of brick wall to 900mm bgl, bearing on stepped brickwork to 1000mm bgl with a total projection of 100mm from the elevation. Underside of foundation (USF) was exposed to 100mm back from the face of the foundation and probed 400mm back from the face of the foundation.



WS	Samples Type	Samples Depth (m)	Tests Type	Tests Depth (m)	Tests Results	Legend	Stratum Description and Observations
						0	PAVING SLAB.
							CONCRETE.
							MADE GROUND: brown mottled grey gravelly CLAY with occasional fine to medium brick. Gravel is fine to medium.
						0.5	...at 0.10m to 1.00m bgl occasional roots of live appearance encountered.
							Stiff brown mottled grey CLAY.
	R D	1.00 - 2.00 1.00 - 1.50	PEN	1.00	HP=3.2 (3.5,3.5,3.0,3.0,3.0)	1.0	...at 1.00m bgl UNDERSIDE OF STEPS FOUNDATION. ...at 1.00m to 2.00m bgl occasional roots of live appearance encountered and sampled. ...at 1.10m bgl base of hand excavated trial pit.
	D	1.50 - 2.00	PEN	1.50	HP=3.2 (3.5,3.5,3.0,3.0,3.0)	1.5	
	R D	2.00 - 2.80 2.00 - 2.50	PEN	2.00	HP=3.2 (3.0,3.0,3.5,3.5,3.0)	2.0	...at 2.00m to 2.80m bgl rare roots of live appearance encountered and sampled.
	D	2.50 - 3.00	PEN	2.50	HP=3.7 (3.5,3.5,4.0,4.0,3.5)	2.5	
							...at 2.80m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots.
	D	3.00 - 3.50	PEN	3.00	HP=3.6 (3.5,3.5,3.5,4.0,3.5)	3.0	
	D	3.50 - 4.00	PEN	3.50	HP=3.7 (3.5,4.0,4.0,3.5,3.5)	3.5	
						4.0	...at 4.00m bgl target depth achieved.

-- End of borehole at 4.00m --
PEN = Hand Penetrometer (kg/sq cm). Groundwater strikes not encountered. Roots encountered to 2.80m bgl. Trial pit excavated to 1.10m bgl. Borehole completed by hand held percussive window sampler. Borehole completed by hand held percussive window sampler.

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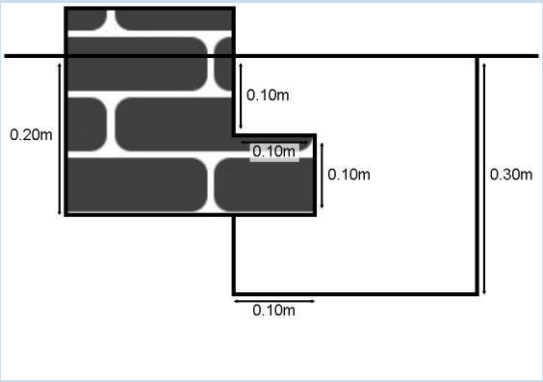
TP/BH4 Foundation Detail and Borehole Log

Foundation Detail

Bay foundation comprised of brick wall to 100mm bgl, bearing on brickwork to 200mm bgl with a total projection of 100mm from the elevation. Underside of foundation (USF) was exposed to 100mm back from the face of the foundation and probed 400mm back from the face of the foundation.



WS	Samples Type	Samples Depth (m)	Tests Type	Tests Depth (m)	Tests Results
	R D	0.20 - 1.20 0.20 - 0.70	PEN	0.20	HP=3.1 (3.0,3.0,3.0,3.0,3.5)
	D	0.70 - 1.20	PEN	0.70	HP=3.3 (3.5,3.0,3.0,3.5,3.5)
	R D	1.20 - 1.90 1.20 - 1.70	PEN	1.20	HP=3.0 (3.0,3.0,3.0,3.0,3.0)
	D	1.70 - 2.20	PEN	1.70	HP=3.2 (3.0,3.5,3.5,3.0,3.0)
	D	2.20 - 2.70	PEN	2.20	HP=3.1 (3.0,3.0,3.5,3.0,3.0)
	D	2.70 - 3.20	PEN	2.70	HP=3.3 (3.5,3.5,3.5,3.0,3.0)
	D	3.20 - 3.70	PEN	3.20	HP=3.3 (3.5,3.5,3.0,3.0,3.5)
	D	3.70 - 4.00	PEN	3.70	HP=3.2 (3.5,3.5,3.0,3.0,3.0)

Legend

Stratum Description and Observations

0 CONCRETE.

MADE GROUND: brown mottled grey gravelly CLAY with occasional fine to medium brick. Gravel is fine to medium.

Stiff brown mottled grey CLAY.

0.5 ...at 0.20m bgl UNDERSIDE OF BAY FOUNDATION.

...at 0.20m to 1.20m bgl rare roots of live appearance encountered and sampled.

...at 0.30m bgl base of hand excavated trial pit.

1.0

...at 1.20m to 1.90m bgl rare roots of live appearance encountered and sampled.

1.5

...at 1.90m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots.

2.0

2.5

3.0

3.5

4.0 ...at 4.00m bgl target depth achieved.

-- End of borehole at 4.00m --

PEN = Hand Penetrometer (kg/sq cm). Groundwater strikes not encountered. Roots encountered to 1.90m bgl. Trial pit excavated to 0.30m bgl. Borehole completed by hand held percussive window sampler. Borehole completed by hand held percussive window sampler.

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Site Observations

GENERAL:
Site Investigation works undertaken on 4 September 2023 during dry weather (i.e. no rain).

HEALTH AND SAFETY:
Negative signal obtained in Power and Genny mode on the Cable Avoidance Tool (CAT) (TP/BH3).
Negative signal obtained in Power, Radio and Genny mode on the Cable Avoidance Tool (CAT) (TP/BH4).

FOUNDATIONS:
At 1.00m bgl UNDERSIDE OF STEPS FOUNDATION in TP/BH3.
At 0.20m bgl UNDERSIDE OF BAY FOUNDATION in TP/BH4.

BOREHOLE:
At 1.10m bgl base of hand excavated trial pit in TP/BH3. At 4.00m bgl target depth achieved in TP/BH3.
At 0.30m bgl base of hand excavated trial pit in TP/BH4. At 4.00m bgl target depth achieved in TP/BH4.

ROOTS:
At 0.10m to 1.00m bgl occasional roots of live appearance encountered in TP/BH3.
At 1.00m to 2.00m bgl occasional roots of live appearance encountered and sampled in TP/BH3.
At 2.00m to 2.80m bgl rare roots of live appearance encountered and sampled in TP/BH3.
At 2.80m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots in TP/BH3.
At 0.20m to 1.20m bgl rare roots of live appearance encountered and sampled in TP/BH4.
At 1.20m to 1.90m bgl rare roots of live appearance encountered and sampled in TP/BH4.
At 1.90m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots in TP/BH4.

IN SITU TESTING:
Hand Penetrometer (PEN) undertaken at 1.00m bgl (TP/BH 3) within the window sampler at maximum 0.50m intervals.
Hand Penetrometer (PEN)undertaken at 0.20m bgl (TP/BH 4) within the window sampler at maximum 0.50m intervals.

WATER STRIKES:
No water strikes (NWS) encountered.
The groundwater observations do not necessarily indicate equilibrium conditions. It should be appreciated that groundwater levels are subject to both seasonal and weather induced variations. Other effects such as construction activities may also change groundwater levels.

Environmental Services

SOIL ANALYSIS

for Subsidence Management Services

33 Belsize Park, London, NW3 4DX

Client:

Claim Number:

Policy Holder:

Report Date: 26/09/2023

Our Ref:

	Name	Position
Compiled By:	Saira Dougan	Laboratory Supervisor

	Name	Position
Checked By:	Bob Walker	Laboratory Manager

Date samples received: 06-Sep-23
Water Content Test Date: 06-Sep-23
Atterberg Limits Test Date: 19-Sep-23

Oedometer Test Date: 18-Sep-23

UKAS TESTING

9265

Environmental Services

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.

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 2:2022 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. 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 2:2022. 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

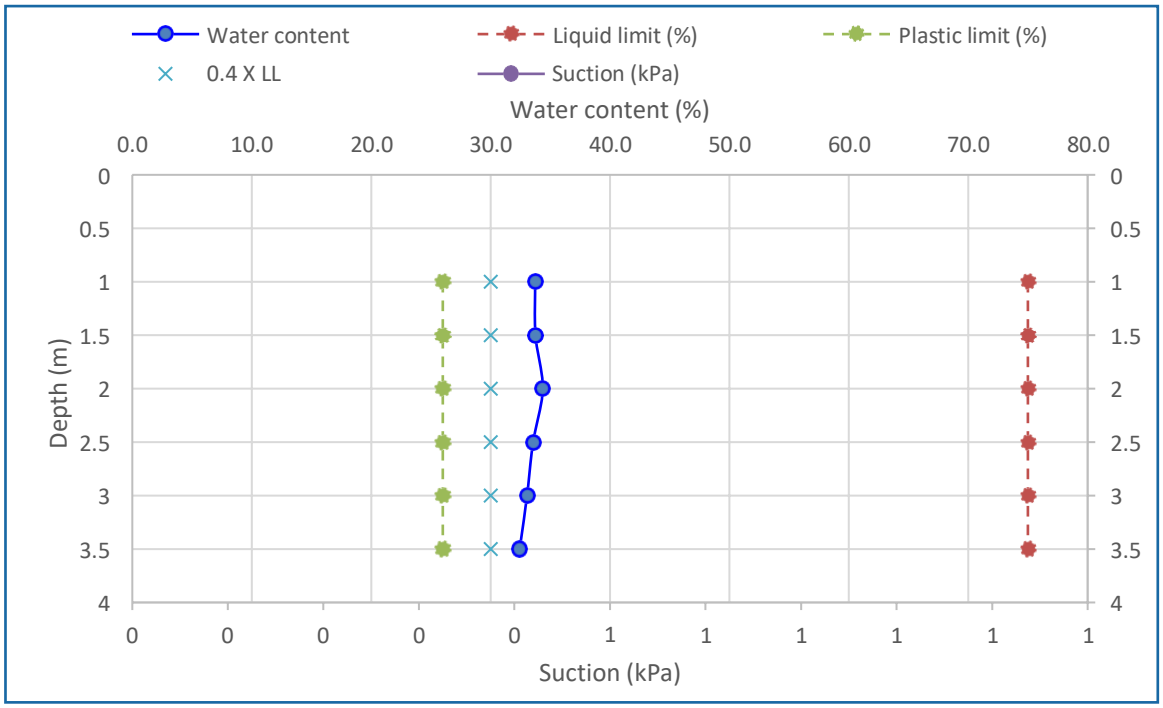
If you would like to provide feedback on this report or any laboratory services or performance, please complete the form below. All appropriate feedback will be used in the continual improvement of laboratory services.

Laboratory feedback form

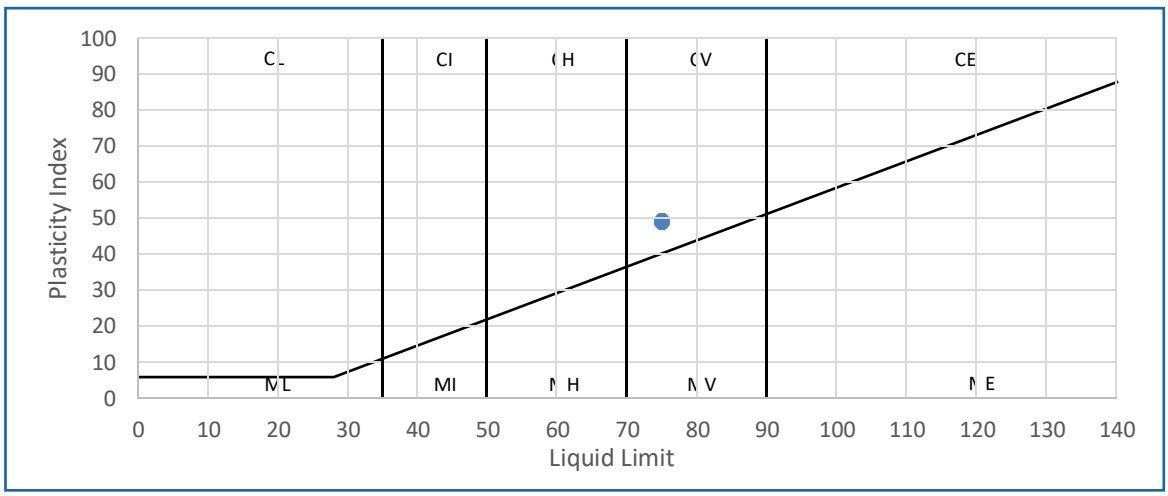
Environmental Services

Samples from BH3

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
1	1	33.7	75	26	49	98	48		Firm brown CLAY with rare gravel and sand. Gravel is fine
2	1.5	33.8	75	26	49	98	48		Firm brown CLAY with rare gravel and sand. Gravel is fine
3	2	34.4	75	26	49	98	48		Firm brown/grey veined CLAY with rare gravel and sand. Gravel is fine
4	2.5	33.6	75	26	49	98	48		Firm brown/grey veined CLAY with rare gravel and sand. Gravel is fine
5	3	33.1	75	26	49	98	48		Firm to stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
6	3.5	32.4	75	26	49	98	48		Firm to stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine



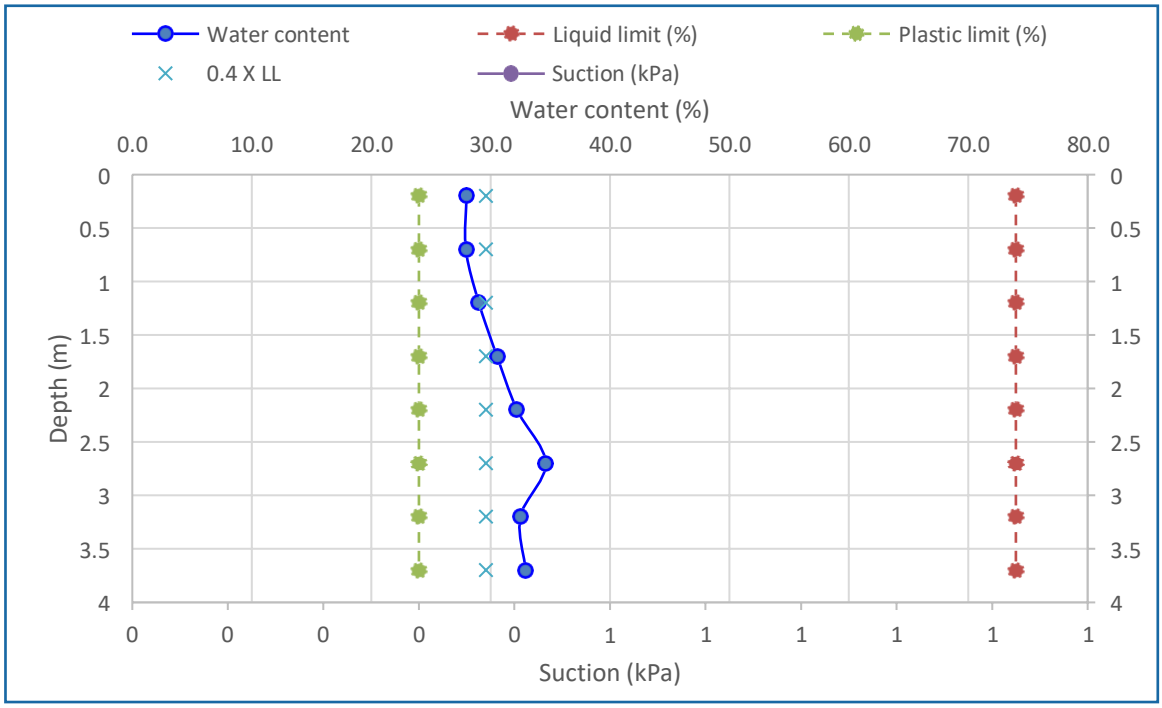
Plasticity Chart for Casagrande Classification



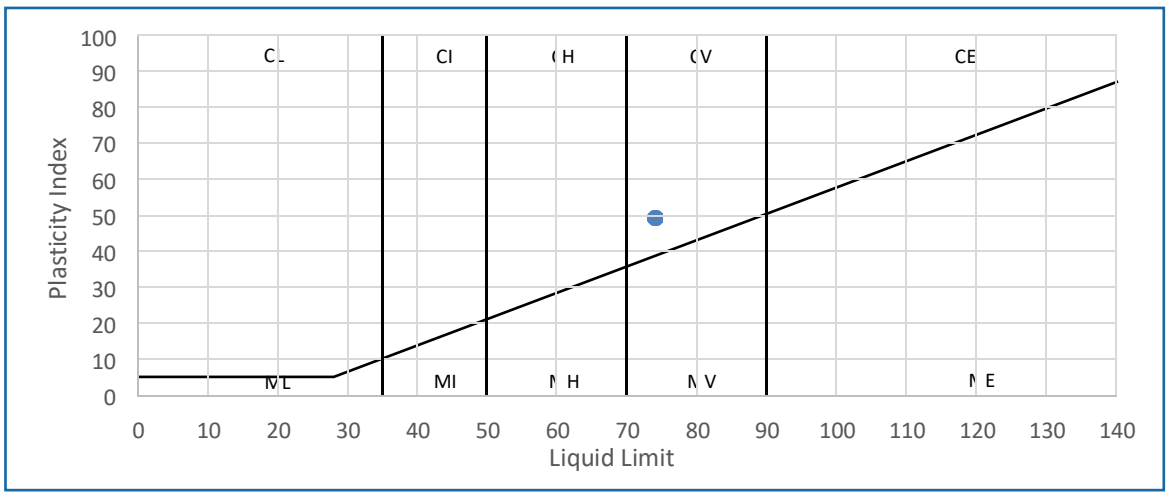
Environmental Services

Samples from BH4

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
7	0.2	28.0	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
8	0.7	27.9	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
9	1.2	29.0	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
10	1.7	30.5	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
11	2.2	32.2	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
12	2.7	34.6	74	24	50	99	50		Firm to stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
13	3.2	32.5	74	24	50	99	50		Stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine
14	3.7	32.9	74	24	50	99	50		Firm to stiff brown/grey veined CLAY with rare gravel and sand. Gravel is fine



Plasticity Chart for Casagrande Classification

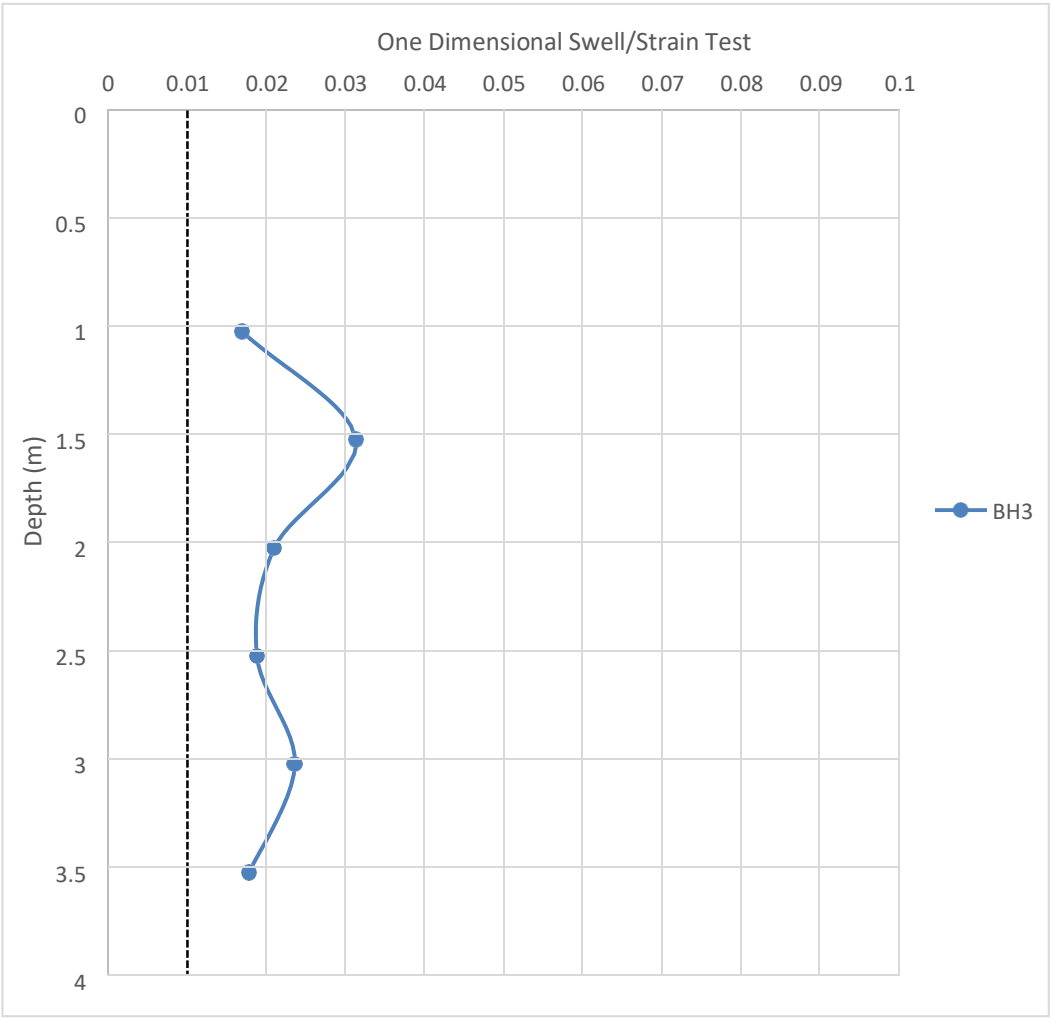


Environmental Services

Summary of Oedometer Testing for BH3

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
1	1	0.0169	8.4	
2	1.5	0.0313	7.8	
3	2	0.021	5.2	
4	2.5	0.0188	4.7	
5	3	0.0236	5.9	
6	3.5	0.0178	4.5	

BH 3 estimate of heave	37mm

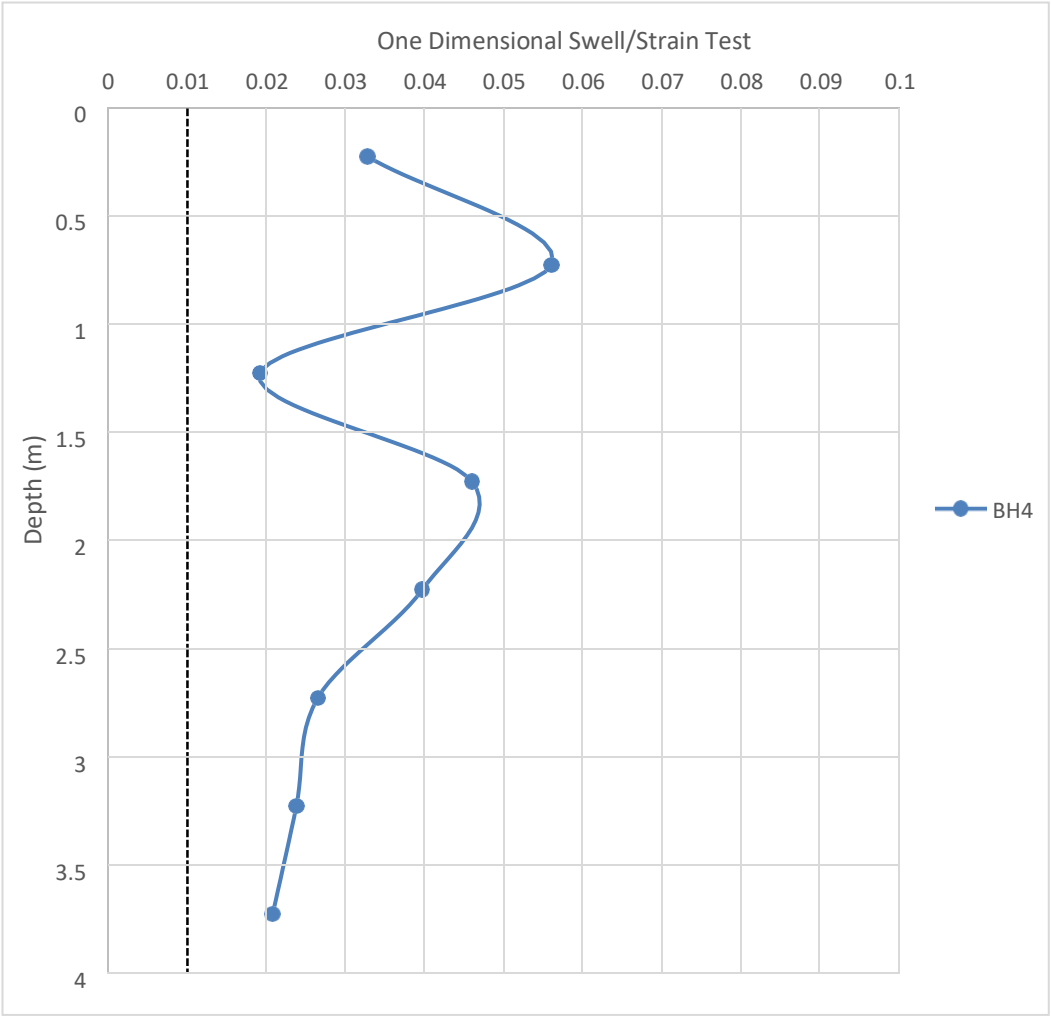


Environmental Services

Summary of Oedometer Testing for BH4

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
7	0.2	0.0328	3.3	
8	0.7	0.056	14	
9	1.2	0.0192	4.8	
10	1.7	0.046	11.5	
11	2.2	0.0397	9.9	
12	2.7	0.0265	6.6	
13	3.2	0.0238	6	
14	3.7	0.0208	5.2	

BH 4 estimate of heave	61mm



Environmental Services

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					

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.

ROOT IDENTIFICATION

for Subsidence Management Services

33 Belsize Park, London, NW3 4DX

Client:
Client Contact:
Claim Number:
Client Reference:
Policy Holder:
Report Date: 6 September 2023
Our Ref:

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Sub Sample	Species Identified		Root Diameter	Starch
TP/BH3:				
1-2.8m	*Ligustrum* spp.		1 mm	Absent
1-2.8m	broadleaved species, too decayed for positive identification	1	<1 mm	Absent
TP/BH4:				
0.2-1.2m	*Acer* spp.		1 mm	Low
0.2-1.2m	broadleaved species, too decayed for positive identification		<1 mm	Absent
0.2-1.2m	too small and decayed for identification		<1 mm	Absent
1.2-2.9m	too decayed for identification	2	1 mm	Absent

Comments:

1 - Plus 1 other the same. Both very small.
2 - Plus 1 other the same.

Ligustrum spp. are privets.
Acer spp. are maples, including sycamore, Norway maple, and Japanese maples.

Signed:

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

SubsNetUK