

Arboricultural Consultancy for Lloyds Bank

Note: This report is intended for use between the client, Environmental Services and any parties detailed within the report. It is based on the understanding at the time of visiting the property that Engineers are satisfied that damage is attributable to clay shrinkage subsidence exacerbated by vegetation.

1. Case Details

Insured	Mr Andrew Hunnibal	Address	Longacre, Emsworth, PO10 7UR		
Client	Subsidence Management Services	Contact	John Morrison	Claim No.	IFS-LBG-SUB-20-0089388
ES Ref	SA-247622	Consultant	Giles Mercer	Contact No.	0330 380 1036
Report Date	09/02/2021				

Scope of Report: To survey the property and determine significant vegetation contributing to subsidence damage, make recommendation for remedial action and assess initial mitigation and recovery prospects. The survey does not make an assessment for decay or hazard evaluation.

2. Property and Damage Description

The insured structure is a 2 storey detached house. It has been extended with a conservatory addition to the left-flank and a porch addition to the front. The property occupies a level site with no adverse topographical features.

Damage relates to the front porch where cracking indicates downward movement and the conservatory where cracking indicates downward movement. Please refer to the engineers report for a full description of the claim history and damage.

3. Technical Reports

In preparing our report we have had the benefit of the following technical investigations:

Soil Analysis ☒ Foundation Detail ☒ Root Analysis ☒
Borehole Log ☒

4. Action Plan

Mitigation	
Insured involved?	Yes
Local Authority involved?	No
Other third party Mitigation involved?	Yes
Recovery	
Is there a potential recovery action?	No

Treeworks	
Local Authority	Havant Borough Council
TPO / Conservation Area / Planning Protection Searches	Insured: TPO Adjacent & Adjoining properties: TPO
Additional Comments	
Awaiting Further Instructions.	

5. Technical Synopsis

This report is based upon our understanding at the time of visiting the property that engineers are satisfied that damage is due to clay shrinkage subsidence exacerbated by vegetation.

We have been instructed to advise on the causal vegetation and to deliver management proposals which will provide on-going and long term stability, thereby allowing repairs to be undertaken.

In assessing the potential drying influence of the vegetation on site, we have considered species profile, normally accepted influencing distance and the position of vegetation relative to the observed damage.

From our observations on site, the footings of the subject property fall within the anticipated rooting range of a quantity of vegetation located on/near the site, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

Site Investigations revealed the presence of roots below foundation level in TP/BH1. These roots were identified (using anatomical analysis) as having emanated from the genus *Quercus* spp. (Oak). Roots were also found in TP/BH2 and they were identified as *Populus* spp (Poplar)

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Our survey of the site identified T4 (Poplar) & T7 (Oak), given their position relative to the damage it is our opinion that the roots identified emanate from this vegetation.

Sample trial pits are generally small in size and the recovery of roots from such a small excavation leads us to conclude that these will not be isolated examples; there is significant potential for further root proliferation below the insured structure.

Whilst not directly implicated by positive root analysis, based on our site investigations, and taking account of vegetation location, relative to the focal area of movement / damage, it is our opinion that T3 (Prunus) also retain the capacity to be extending roots below the focal areas of movement. The influence of this vegetation is determined by their size and proximity relative to the area of damage; it is our opinion on balance of probability that roots from this vegetation will be in proximity to footings of the insured property.

The small window of sampling / location of TP/BH2 is likely to account for the failure to recover roots from the above vegetation.

Based on our site investigations, and taking account of vegetation location, relative to the focal area of movement/ damage, it is our opinion that, T3 (Prunus), T4 (Poplar) & T7 (Oak) are considered the dominant feature(s) and accordingly we have identified them as the principal cause of the subsidence damage.

Considering engineers conclusions, results of site investigations and our observations on site, vegetation management is considered appropriate with a view to restoring stability.

Please refer to Section 6 for management prescriptions.

Vegetation management in the form of removal and appropriate stump treatment will help to promote the restoration of long-term stability to the insured property; pruning should not be considered as representing an effective or reliable long-term alternative solution given the size and proximity of the vegetation in this instance.

Whilst we have given consideration to pruning as a means of mitigating the vegetative influence of the above, this has been discounted. Pruning is generally ineffective and in the context of the current claim we consider the above vegetation is simply too large and/or close for pruning to be effective.

Removal of T3, T4 & T7 will offer the most certain and reliable Arboricultural solution likely to restore long-term stability.

Replacement planting is considered appropriate however due consideration must be given to the ultimate size of the replacement and future management requirements. Species selection should be appropriate for the chosen site and ultimate tree height should not exceed 75% of the available distance to built structures.

Please note that the footing of the subject property fall within the likely rooting zone of a number of further trees. These trees are noted to present a theoretical future risk. In order to minimise the risk of future damage occurring we have made recommendations in respect of the future management of this vegetation.

Is vegetation likely to be a contributory factor in the current damage?	Yes
Is vegetation management likely to contribute to the future stability of the property?	Yes
Is replacement planting considered appropriate?	Yes
Would DNA profiling be of assistance in this case?	No

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6.0 Recommendations

6.1 Current Claim Requirements

These recommendations may be subject to review following additional site investigations.

Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
T3	Prunus	2	7.9	1.9	C - Insured	Remove	Remove close to ground level and treat stumps to inhibit regrowth.
T4	Poplar	2	10.7	5.1	C - Insured	Remove	Remove close to ground level and treat stumps to inhibit regrowth.
T7	Oak	3	17	16.4	C - Insured	Remove	Remove close to ground level and treat stumps to inhibit regrowth.
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

* Estimated

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6.2 Future Risk Recommendations

These recommendations may be subject to review following additional site investigations.

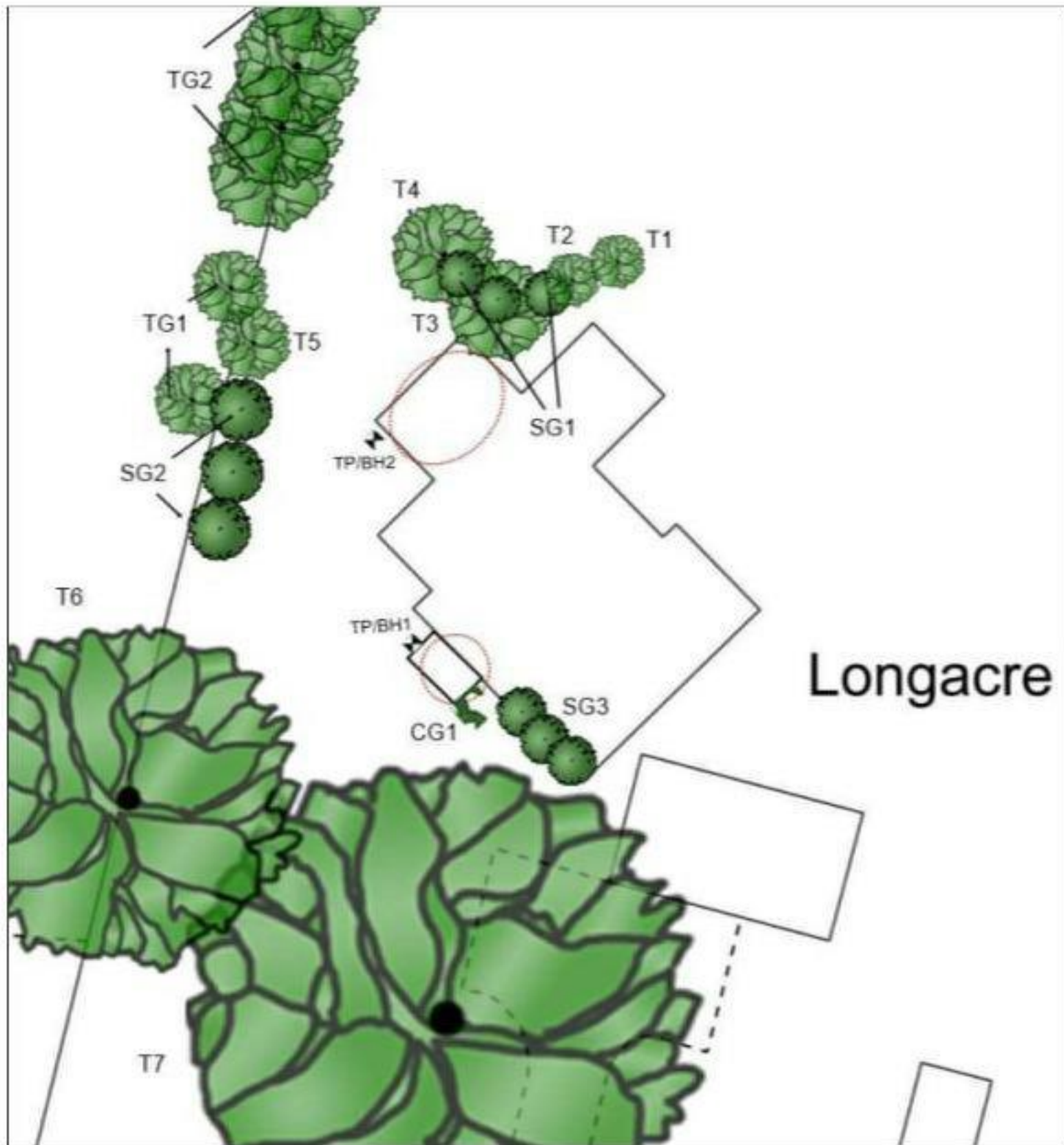
Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
CG1	Mixed species climbers: Passiflora Clematis	1	2.6	0.3	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
SG1	Mixed species shrubs: Berberis Rose Juniper Skimmia Laurel	1	2.4	2.8	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
SG2	Mixed species shrubs: Laurel Rhododendron Photinia Cotoneaster.	2	3	6.3	C - Insured	No action	No works.
SG3	Mixed species shrubs: Hebe Mahonia	1	1.7	0.75	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T1	Cypress	1	3.5	5.1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T2	Cypress	1	3	4.85	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T5	Oak	1	4.5	7.7	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T6	Eucalyptus	3	16	14.6	C - Insured	Action to avoid future risk	Remove close to ground level and treat stumps to inhibit regrowth.
TG1	Ash	1	4.5	8.5	A - Third Party	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
TG2	Hawthorn	3	6.9	11	E - Boundary Veg (ownership to be confirmed)	No action	No works.

Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property

* Estimated

Third party property addresses should be treated as indicative only, should precise detail be required then Environmental Services can undertake Land Registry Searches

7. Site Plan



Please note that this plan is not to scale. OS Licence No. 100043218

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8. Photographs



SG1 - Mixed species shrubs



TG1 - Ash



SG2 - Mixed species shrubs



T6 - Eucalyptus



T7 - Oak



SG3 - Mixed species shrubs

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CG1 - Mixed species climbers



Front



T4 - Poplar



T3 - Prunus

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T1 - Cypress



T2 - Cypress



SG1 - Mixed species shrubs



Rear



TG2 - Hawthorn



T5 - Oak

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Date: 09/02/2021

Property: Longacre, Emsworth, PO10 7UR

9. Tree Works Reserve - Does not include recommendations for future risk.

Insured Property Tree Works	£4800.00
Third Party Tree Works	£0.00
Provisional Sum	£0.00

- The above prices are based on works being performed as separate operations.
- The above is a reserve estimate only.
- Ownerships are assumed to be correct and as per Section 6.
- A fixed charge is made for Tree Preservation Order/Conservation Area searches unless charged by the Local Authority in which case it is cost plus 25%.
- Should tree works be prevented due to statutory protection then we will automatically proceed to seek consent for the works and Appeal to the Secretary of State if appropriate.
- All prices will be subject to V.A.T., which will be charged at the rate applying when the invoice is raised.
- Trees are removed as near as possible to ground level, stump and associated roots are not removed or included in the price.
- Where chemical application is made to stumps it cannot always be guaranteed that this will prevent future regrowth. Should this occur we would be pleased to provide advice to the insured on the best course of action available to them at that time. Where there is a risk to other trees of the same species due to root fusion, chemical control may not be appropriate.

10. Limitations

This report is an appraisal of vegetation influence on the property and is made on the understanding that that engineers suspect or have confirmed that vegetation is contributing to clay shrinkage subsidence, which is impacting upon the building. Recommendations for remedial tree works and future management are made to meet the primary objective of assisting in the restoration of stability to the property. In achieving this, it should be appreciated that recommendations may in some cases be contrary to best Arboricultural practice for tree pruning/management and is a necessary compromise between competing objectives.

Following tree surgery we recommended that the building be monitored to establish the effectiveness of the works in restoring stability.

The influence of trees on soils and building is dynamic and vegetation in close proximity to vulnerable structure should be inspected annually.

The statutory tree protection status as notified by the Local Authority was correct at the time of reporting. It should be noted however that this may be subject to change and we therefore advise that further checks with the Local Authority MUST be carried out prior to implementation of any tree works. Failure to do so can result in fines in excess of £20,000.

Our flagging of a possible recovery action is based on a broad approach that assume all third parties with vegetation contributing to the current claim have the potential for a recovery action (including domestic third parties). This way opportunities do not "fall through the net"; it is understood that domestic third parties with no prior knowledge may be difficult to recover against but that decision will be fully determined by the client.

A legal Duty of Care requires that all works specified in this report should be performed by qualified, arboricultural contractors who have been competency tested to determine their suitability for such works in line with Health & Safety Executive Guidelines. Additionally all works should be carried out according to British Standard 3998:2010 "Tree Work. Recommendations".

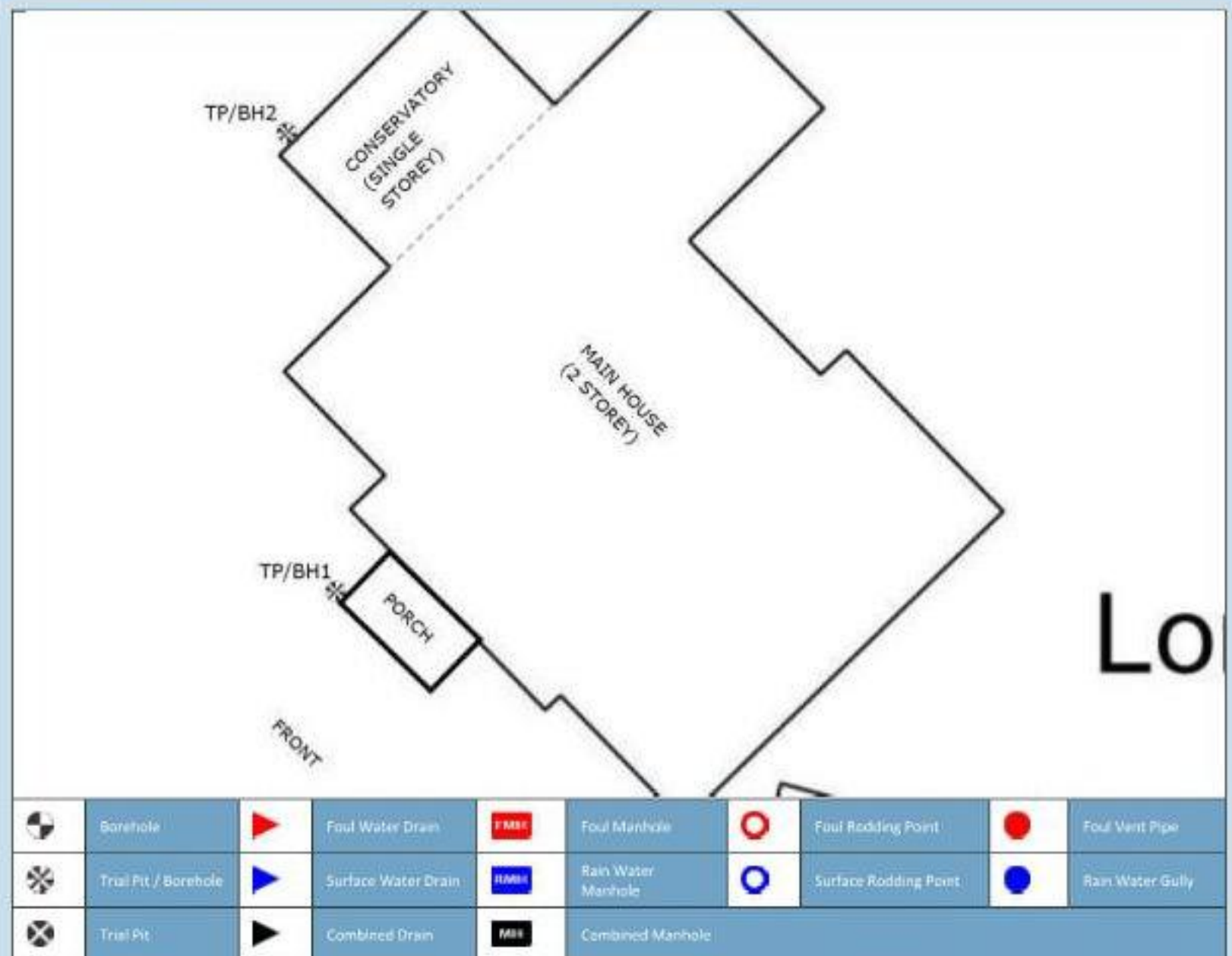
GEOTECHNICAL

for Subsidence Management Services

Longacre, , Emsworth, PO10 7UR

Client: Subsidence Management Services
Client Contact: John Morrison
Client Ref: IFS-LBG-SUB-20-0089388
Policy Holder: Mr Andrew Hunnibal
Report Date: 11 January 2021
Our Ref: C58519G26267

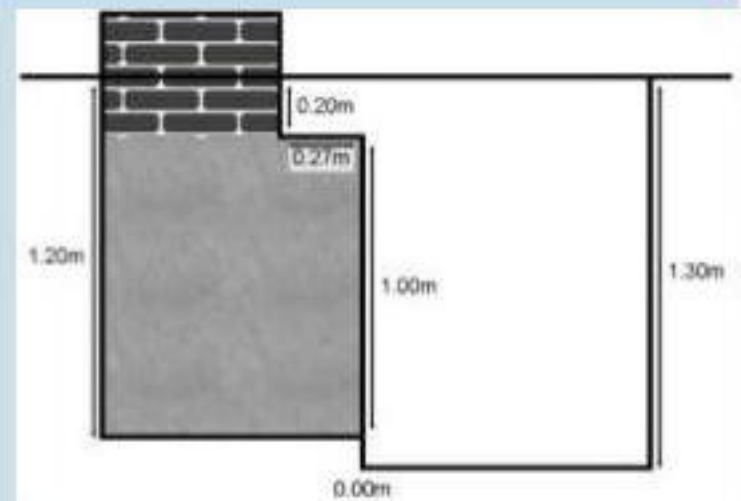
Site Plan



TP/BH1 Foundation Detail and Borehole Log

Foundation Detail

Porch foundation comprised of brick wall to 200mm bgl, bearing on concrete to an estimated depth of 1200mm bgl, with a total projection of 270mm from the elevation. Underside of foundation (USF) was estimated by pushing a probe, approximately 160mm back from the face of the foundation, at an angle with no apparent contact with the face of the foundation beyond the estimated depth.



The diagram shows a stepped wall cross-section. The wall has a total height of 1.50m. The left side is a vertical face with a height of 1.40m. The wall is composed of three distinct layers: a top layer of dark bricks (0.25m high), a middle layer of light bricks (0.25m high), and a bottom layer of grey concrete (0.30m high). The wall steps out to the right at the top of the concrete layer. The horizontal distance from the left face to the start of the step is 0.00m. The horizontal distance from the start of the step to the right face is 0.90m. The right face is a vertical face with a height of 1.50m.

SubsNetuk

Site Observations

HEALTH AND SAFETY:

Negative signal obtained in Power, Radio and Genny mode on the Cable Avoidance Tool (CAT) (TP/BH1).

Negative signal obtained in Power, Radio and Genny mode on the Cable Avoidance Tool (CAT) (TP/BH2).

BOREHOLE:

At 4m bgl target depth achieved in TP/BH1. At 4m bgl target depth achieved in TP/BH2.

WATER STRIKE:

A water strike (WS) was encountered in the clay at 1.4m bgl (TP/BH1). Standing water level within the exploratory hole at 3.6m bgl on completion.

SOIL ANALYSIS

for Subsidence Management Services

Longacre, Emsworth, PO10 7UR

Client: Subsidence Management Services
Claim Number: 102318106
Policy Holder: Mr Andrew Hunnibal
Report Date: 29/01/2021
Our Ref: L20410

Compiled By:

Name	Position
Saira Dougan	Laboratory Technician

Name	Position
Bob Walker	Laboratory Manager

Checked By:

Date samples received: 07-Jan-21
Water Content Test Date: 23-Jan-21
Atterberg Limits Test Date: 28-Jan-21

Oedometer Test Date: 26-Jan-21



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.

Unless otherwise specified herein, the four-point cone penetrometer method has been used with increasing water content

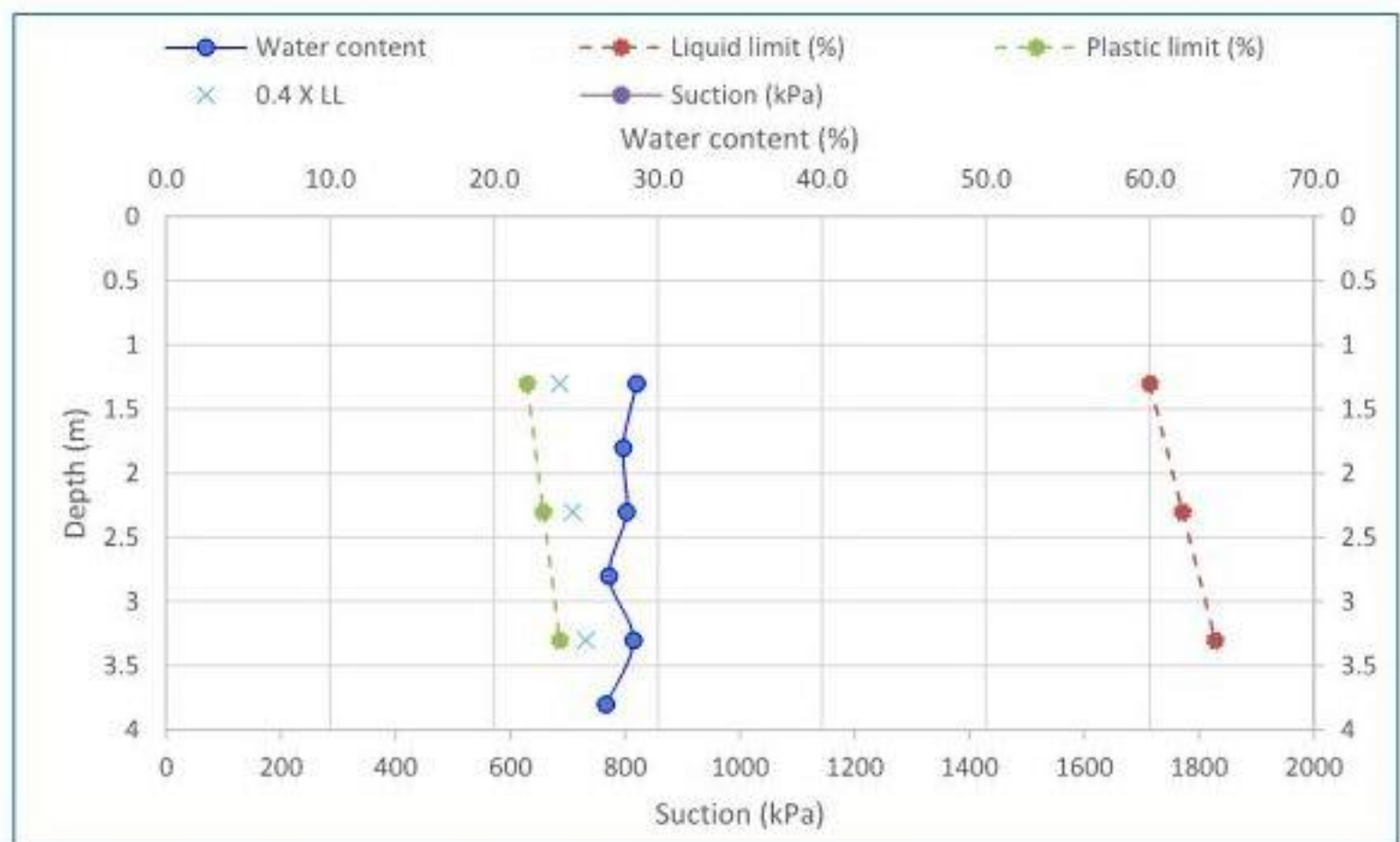
The Plastic Limit test and the determination of the Plasticity Index is undertaken in accordance with BS1377:Part 2:1990. Where a plastic limit has been denoted with an asterisk (*) then it has been derived from the liquid limit and has not been tested.

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.

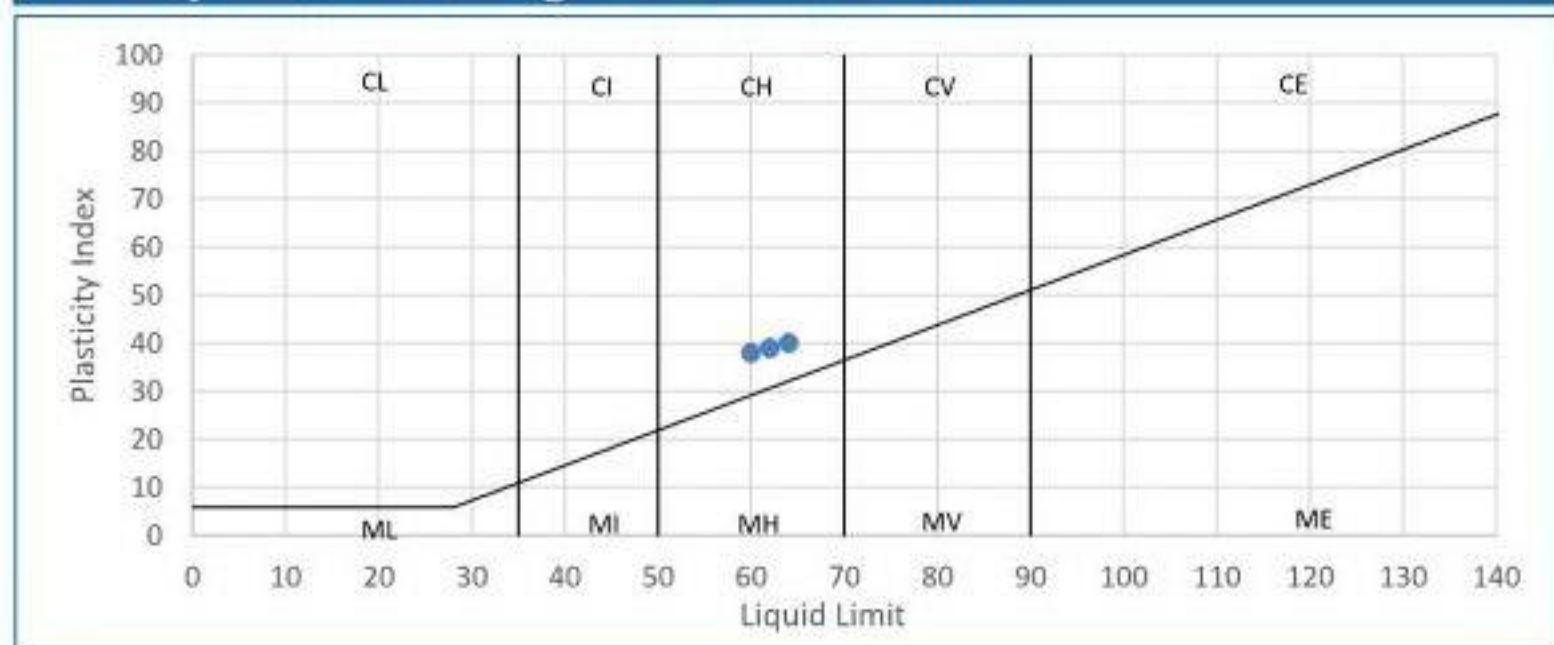
The Oedometer Swell/Strain Test is undertaken in a controlled environment within a temperature range of 16°C and 24°C

Samples from BH1

Lab Ref	Depth (m)	MC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
1	1.3	28.7	60	22	38	99	38		Soft to firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
2	1.8	27.9							Soft brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
3	2.3	28.1	62	23	39	99	39		Soft to firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
4	2.8	27.0							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
5	3.3	28.5	64	24	40	100	40		Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine and medium.
6	3.8	26.8							Soft to firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine and medium.

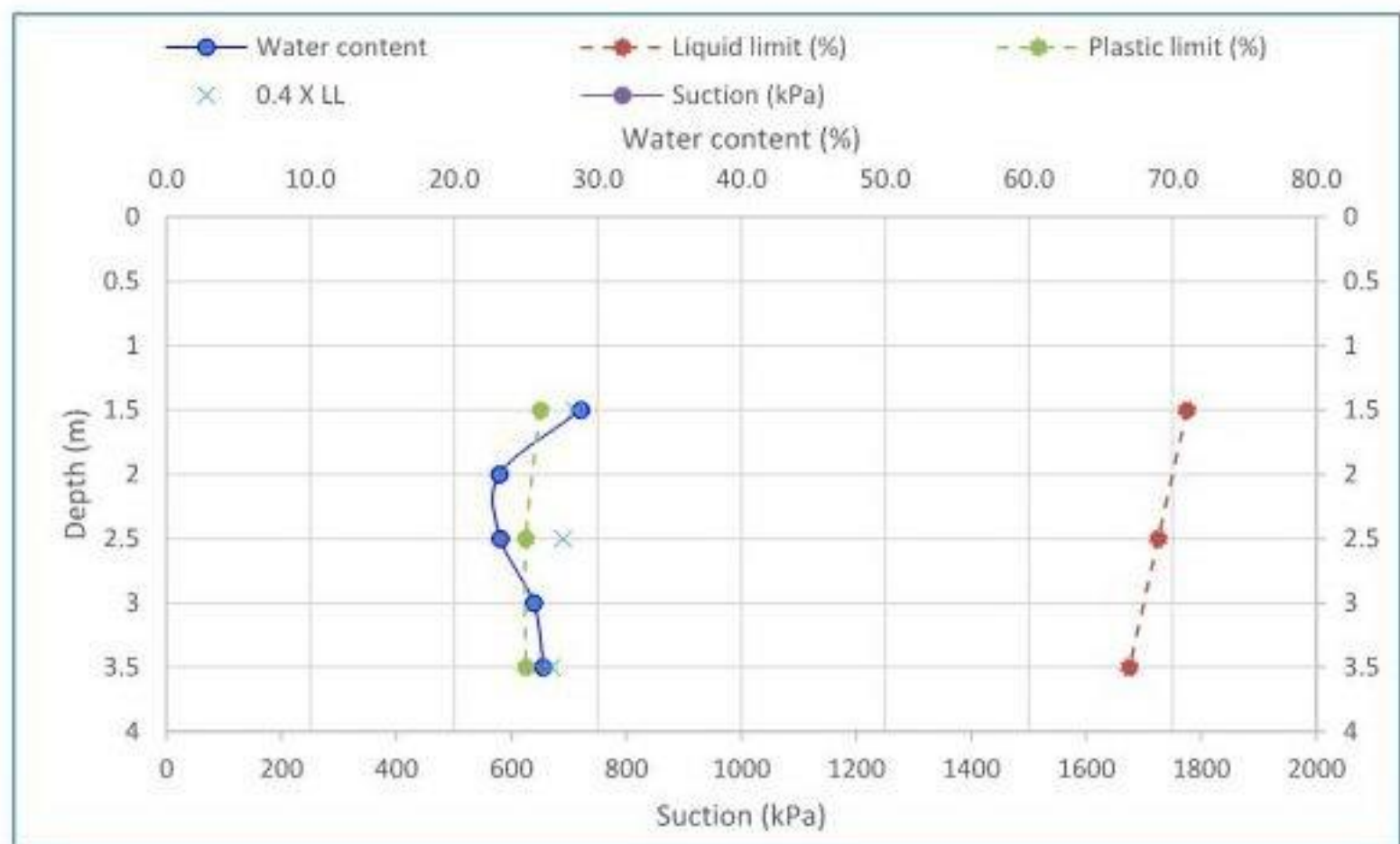


Plasticity Chart for Casagrande Classification

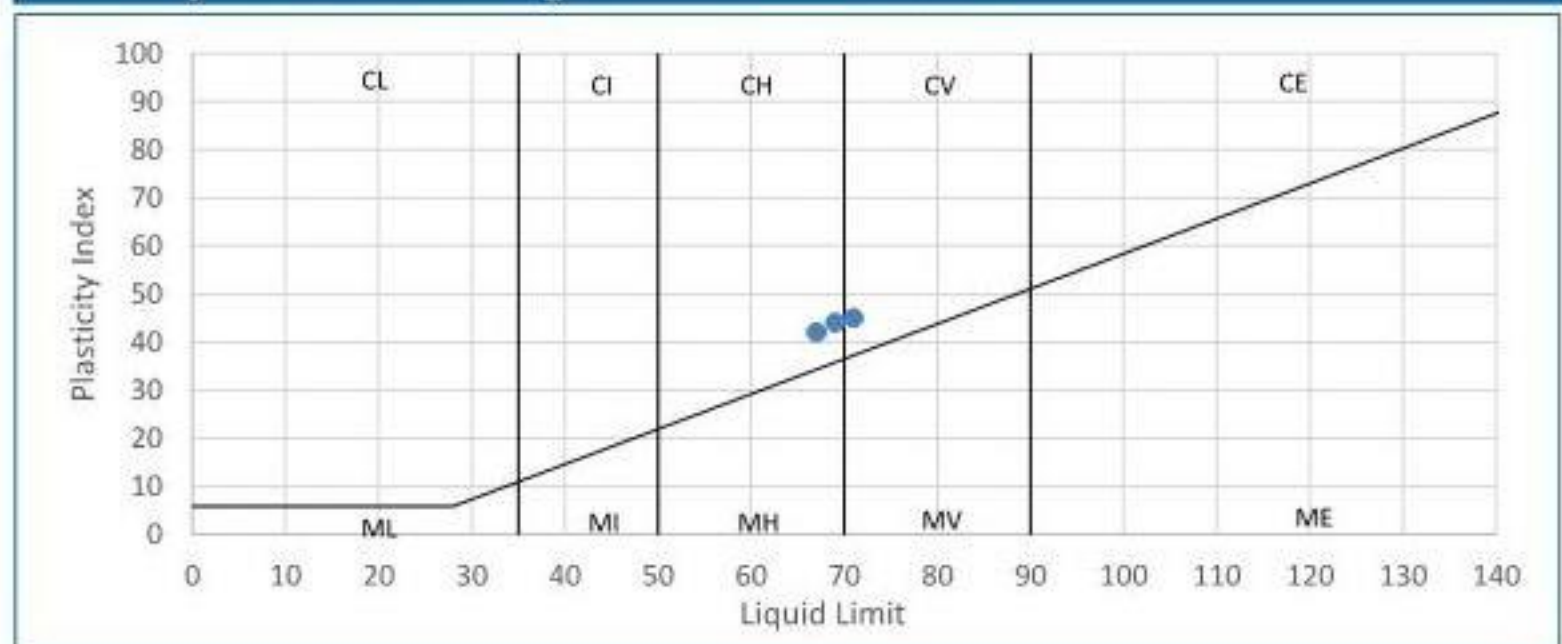


Samples from BH2

Lab Ref	Depth (m)	MC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
7	1.5	28.8	71	26	45	100	45		Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
8	2	23.2							Firm to stiff brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
9	2.5	23.2	69	25	44	100	44		Firm to stiff brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
10	3	25.5							Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine
11	3.5	26.2	67	25	42	100	42		Firm brown/orange-brown/light grey veined CLAY with rare gravel and sand. Gravel is fine

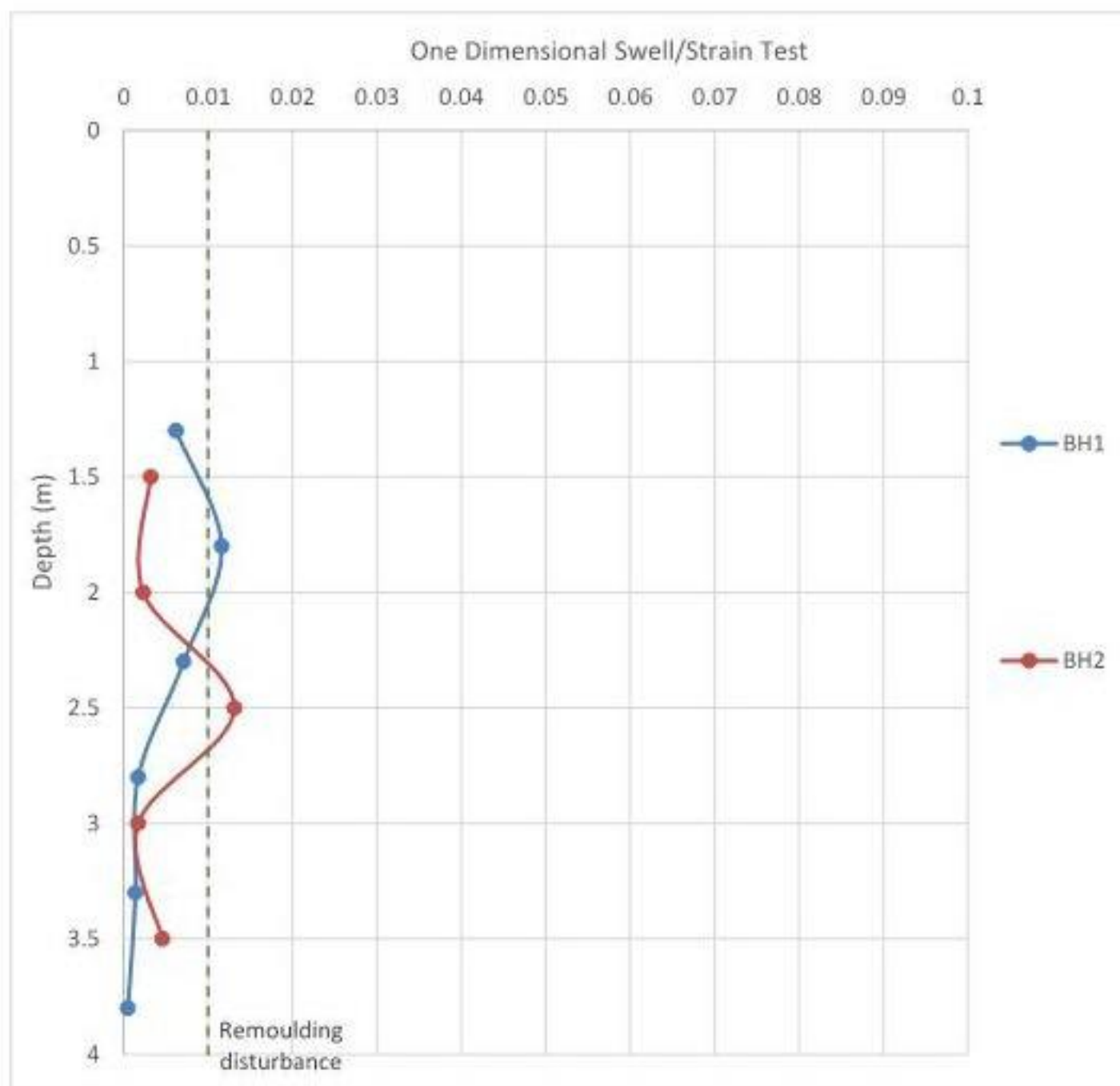


Plasticity Chart for Casagrande Classification



Summary of Oedometer Testing

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
1	1.3	0.0062	0	
2	1.8	0.0116	0.4	
3	2.3	0.0071	0	
4	2.8	0.0017	0	
5	3.3	0.0014	0	
6	3.8	0.0005	0	
7	1.5	0.0032	0	
8	2	0.0023	0	
9	2.5	0.0131	0.8	
10	3	0.0017	0	
11	3.5	0.0046	0	



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					

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

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

Longacre, Emsworth, PO10 7UR

Client: Subsidence Management Services
Client Contact: John Morrison
Claim Number: 102318106
Client Reference: IFS-LBG-SUB-20-0089388
Policy Holder: Mr Andrew Hunnibal
Report Date: 21 January 2021
Our Ref: R39608



Intec
Parc Menai, Bangor,
Gwynedd, North Wales
LL57 4FG
Tel: 01248 672652

Sub Sample	Species Identified		Root Diameter	Starch
TP/BH1:				
1.2-2.2m	either <i>Quercus</i> spp. or <i>Castanea</i> spp.	1	1 mm	Moderate
2.2-3.1m	either <i>Quercus</i> spp. or <i>Castanea</i> spp.	2	1 mm	Moderate
TP/BH2:				
1.4-2.4m	<i>Populus</i> spp. *	3	3 mm	Abundant
2.4-3.1m	<i>Populus</i> spp. *	4	1 mm	Moderate

Comments:

- 1 - Plus 2 others the same. All rather juvenile.
- 2 - Plus 2 others the same.
- 3 - Plus 2 others also identified as *Populus* spp.
- 4 - Plus one juvenile root, probably the same.

Quercus spp. are oaks. *Castanea* spp. include sweet chestnut.
Populus spp. are poplars and aspens.

* EPSL research has developed a unique ability to differentiate Willows from Poplars. No other laboratory in the UK can currently provide this service. We now offer this benefit at no extra cost.

Signed: R J Shaw

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