

Arboricultural Consultancy for Aviva / Barclays / Woolwich

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 Amit Karia	Address	16 Deerings Drive, Pinner, HA5 2NZ		
Client	Subsidence Management Services	Contact	Ian Domigan	Claim No.	IFS-AVI-SUB-22-0101567
ES Ref	SA-250316	Consultant	Giles Mercer	Contact No.	0330 380 1036
Report Date	26/09/2022				

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. The property occupies a level site with no adverse topographical features. Damage relates to the right-hand flank of the insured dwelling.

3. Technical Reports

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

Engineers Report ☒

4. Action Plan

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

Treeworks	
Local Authority	Hillingdon London Borough
TPO / Conservation Area / Planning Protection Searches	Awaiting Searches from LA
Additional Comments	
Awaiting Further Instructions.	
A potential recovery action has been identified.	
Engineers should consider focusing investigations to strengthen factual evidence for disclosure to third party tree owners.	

5. Technical Synopsis

This report is based upon our understanding at the time of visiting the property that Subsidence Management Services have concluded, on a preliminary basis, that the current damage is due to differential foundation movement exacerbated by moisture abstraction from vegetation growing adjacent to the property's foundations.

We have therefore been instructed to assess the potential for vegetation to be influencing soil moisture levels beneath the foundations of the property and, if deemed appropriate provide management proposals which will return long-term stability and allow effective repairs to be undertaken.

The potential drying influence of the vegetation on site, has been considered based on an assessment of overall size, species profile and the proximity of vegetation relative to the advised area of damage.

Based on our observations on site, it is our opinion that the footings of the subject property are within the normally accepted influencing distance of vegetation on site, thereby indicating the potential for the advised damage to be the result of clay shrinkage subsidence exacerbated by the moisture abstracting influence of vegetation.

With due regards to species profile, size and proximity, the Red Oak (T3 & T4), the Horse Chestnut (T1) and the mixed species hedge (H1) are considered the dominant features proximate to the focal area(s) of movement and accordingly, where vegetation is confirmed as being causal, we have identified them as the primary cause of the current subsidence damage.

The size and proximity of the above vegetation is consistent with the advised location(s) of damage and it is our opinion, on balance of probability, that roots from the above vegetation will be in proximity to the footings of the insured property.

Note: additional minor vegetation has been noted on site and, depending on trial-pit location may be identified within future site investigations; however, unless specifically identified within this report, these plants are not deemed material to the current claim nor pose a significant future risk.

Given the above and considering the suspected mechanism of movement, in order to mitigate the current damage thereby allowing soils beneath the property to recover to a position such that an effective engineering repair solution can be implemented, we recommend a program of vegetation management as detailed by this report.

Please refer to Section 6 for management prescriptions.

Preliminary recommendations contained within this report are prescribed on the basis that site investigations confirm vegetation to be causal; management advice is designed to offer the most reliable arboricultural solution likely to restore long-term stability and also facilitate liaison with third-party owners and/or Local Authorities where necessary.

Consequently, we have advocated the complete removal of , the Red Oak (T3 & T4) and the Horse Chestnut (T1) in conjunction with management, to include partial removal of a section of the mixed species hedge H1 (as detailed) as it will offer the most certain arboricultural solution likely to restore long-term stability.

Replacement planting is considered appropriate with regards mitigating the impact of the works suggested; however, species selection should be appropriate for the chosen site and consideration must be given to the ultimate size of the replacement species and any future management requirements.

We recommend the role of vegetation and the efficacy of management recommendations be qualified by means of monitoring.

Please note that the footing of the insured property fall within the anticipated rooting distance of additional vegetation which we believe presents a foreseeable risk of future damage and accordingly we have made recommendations in respect of this.

The extent / impact of vegetation management required to restore and maintain long-term stability at this property is acknowledged. However, we consider the impact on the wider public amenity from the proposed tree works is mitigated by the presence of further trees and the scope for replacement planting.

Arboricultural Consultancy for Aviva / Barclays / Woolwich

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

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
H1	Mixed species hedge	1	3	0.6	C - Insured	Maintain as detailed	Remove section of hedge/group to achieve a minimum clearance of 2m to the insured property; do not treat stumps due to translocation risk. Where such a risk exists, we advise that any emergent regrowth is removed annually. Maintain retained section thereafter at broadly current dimensions by way of regular pruning.
T1	Horse Chestnut	1	13.1	6.25	C - Insured	Remove	Remove close to ground level and treat stump to inhibit regrowth.
T3	Oak (Red)	3	24.5	6	C - Insured	Remove	Remove close to ground level and treat stump to inhibit regrowth.
T4	Oak (Red)	3	20	13.75	A - Third Party	Remove	Do not allow to exceed current dimensions by way of regular pruning.

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

* Estimated

6.2 Future Risk Recommendations

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

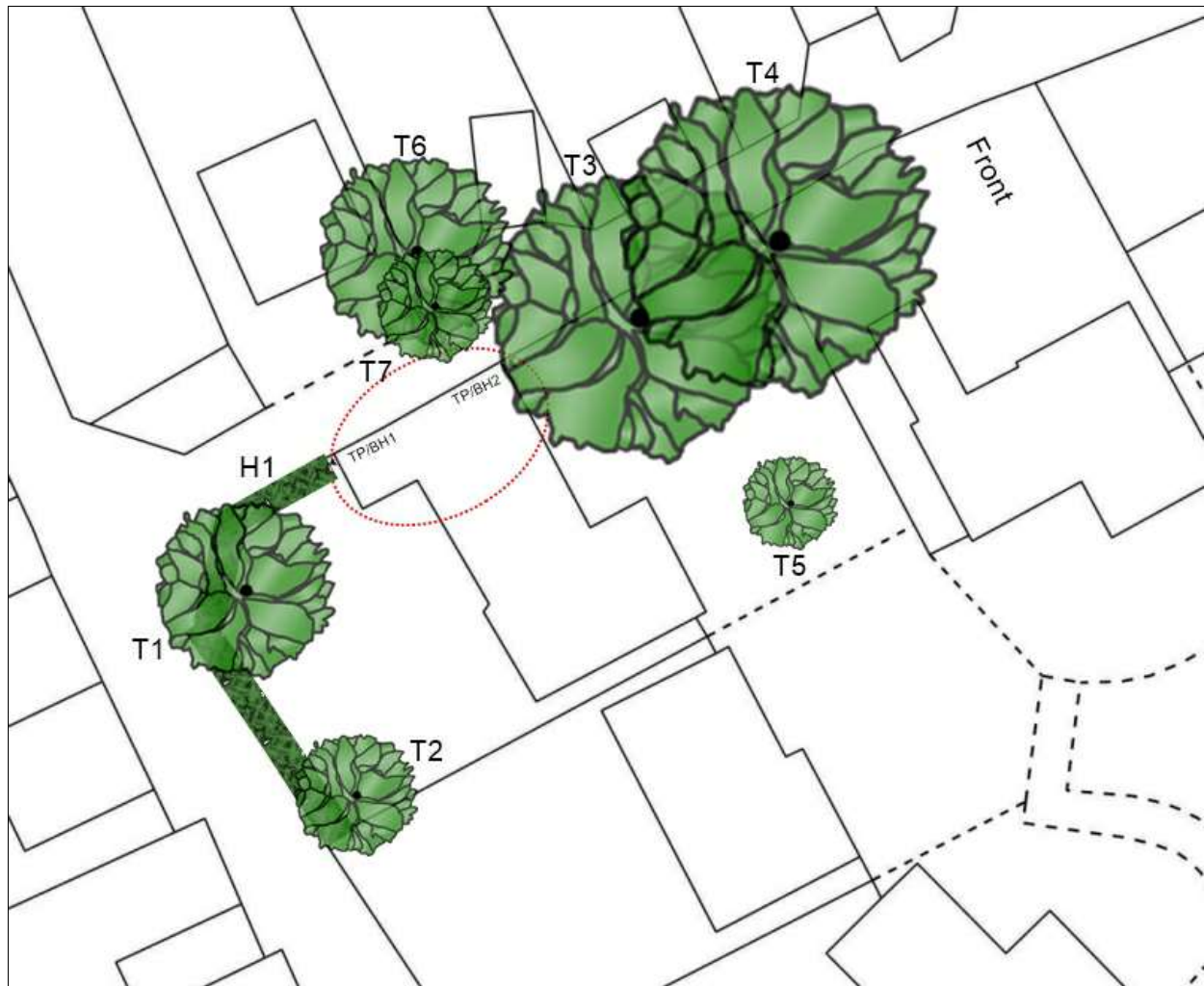
Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
T2	Maple (Norway)	1	8.5	9.4	C - Insured	Action to avoid future risk	Maintain at broadly current dimensions by way of regular pruning.
T5	Birch	3	3.6	4.8	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T6	Cypress	2	15	7	A - Third Party	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T7	Holly	1	7	4.6	A - Third Party	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.

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

8. Photographs



H1 - Mixed species hedge



T3 - Oak (Red)



General Site



Front

Arboricultural Consultancy for Aviva / Barclays / Woolwich



T1 - Horse Chestnut



T2 - Maple (Norway)



T7 - Holly



T6 - Cypress

Arboricultural Consultancy for Aviva / Barclays / Woolwich



T3 - Oak (Red)



T5 - Birch



T3 - Oak (Red)



T4 - Oak (Red)

Arboricultural Consultancy for Aviva / Barclays / Woolwich

Date: 26/09/2022

Property: 16 Deerings Drive, Pinner, HA5 2NZ

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

Insured Property Tree Works	£6200.00
Third Party Tree Works	£4500.00
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

16 Deerings Drive, Pinner, HA5 2NZ

Client: Subsidence Management Services
Client Contact: Ian Domigan
Client Ref: IFS-AVI-SUB-22-0101567
Policy Holder: Mr Amit Karia
Report Date: 18 October 2022
Our Ref: C65362G29518

Site Plan

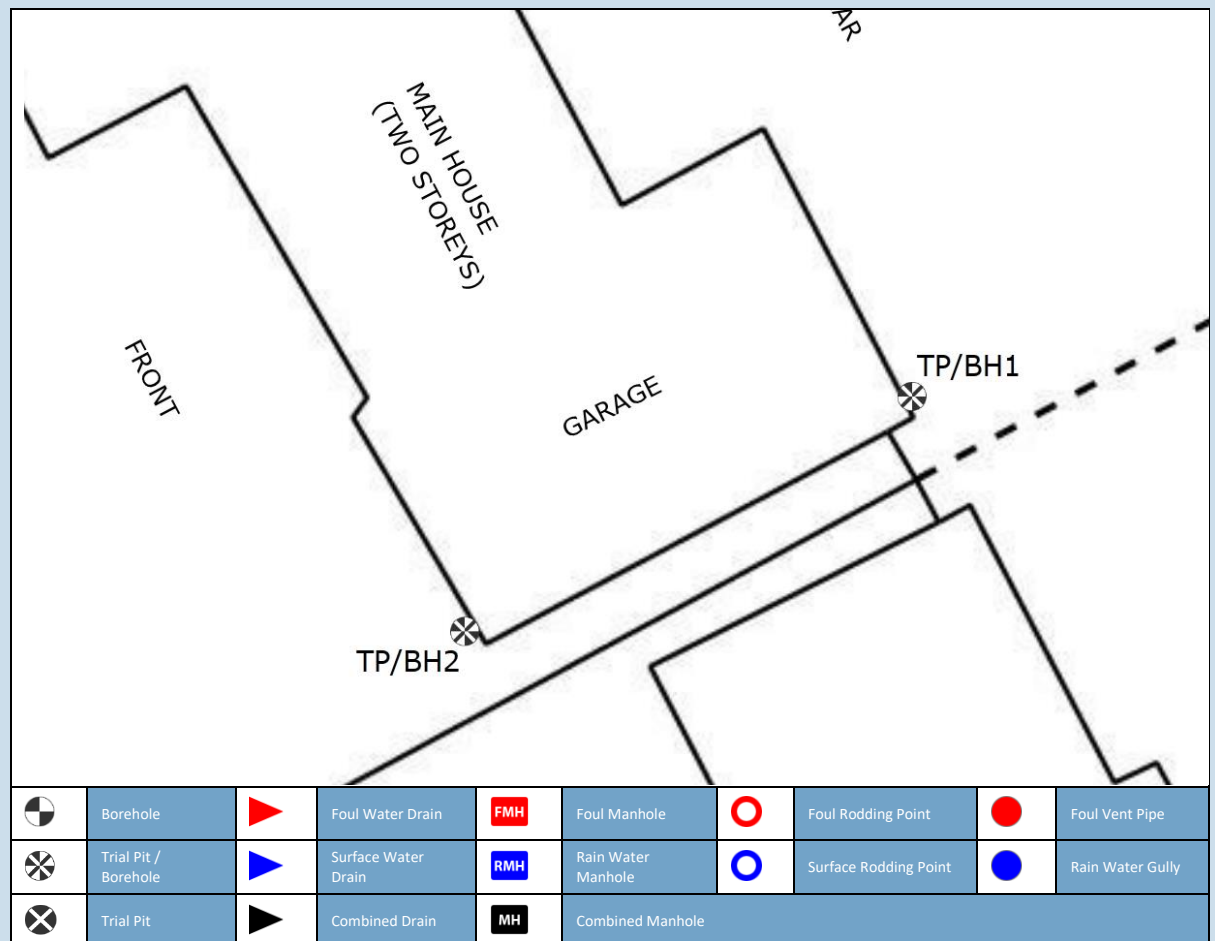


Diagram illustrating the dimensions of a structure, likely a wall or foundation, showing a brick section and a concrete section.

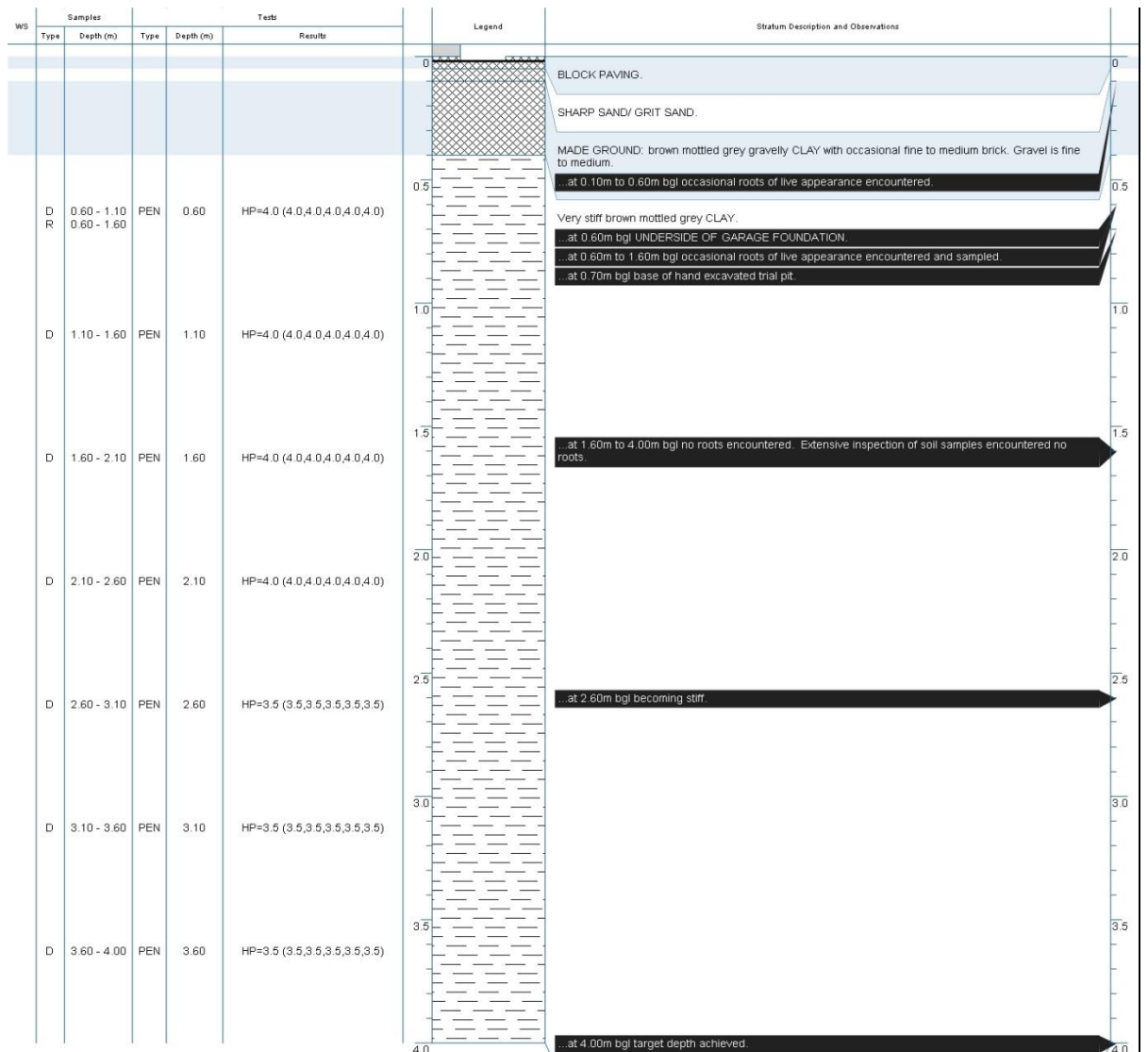
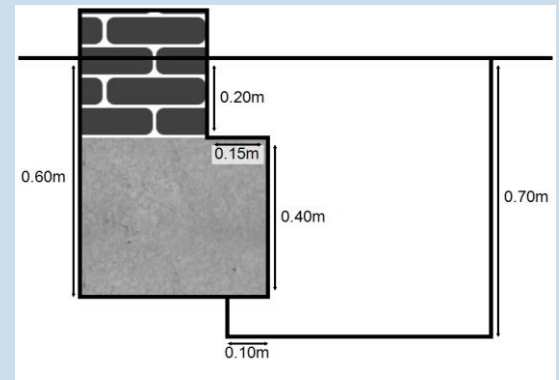
- Brick section height: 0.15m
- Concrete section height: 0.80m
- Concrete section width: 0.65m
- Brick section width: 0.10m
- Total height: 0.90m
- Total width: 0.10m

SubsNetuk

TP/BH2 Foundation Detail and Borehole Log

Foundation Detail

Garage foundation comprised of brick wall to 200mm bgl, bearing on concrete to 600mm bgl with a total projection of 150mm 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.



— End of borehole at 4.00m —
PEN = Hand Penetrometer (kg/sq cm). Groundwater strikes not encountered. Trial pit excavated to 0.70m bgl. Borehole completed by hand held percussive window sampler. Borehole completed by hand held percussive window sampler. Roots encountered to 1.60m bgl.

Site Observations

GENERAL:

Site Investigation works undertaken on 3 October 2022 during dry weather (i.e. no rain).

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).

FOUNDATIONS:

At 0.80m bgl UNDERSIDE OF GARAGE FOUNDATION in TP/BH1.

At 0.60m bgl UNDERSIDE OF GARAGE FOUNDATION in TP/BH2.

BOREHOLE:

At 0.90m bgl base of hand excavated trial pit in TP/BH1.

At 4.00m bgl target depth achieved in TP/BH1.

At 0.70m bgl base of hand excavated trial pit in TP/BH2.

At 4.00m bgl target depth achieved in TP/BH2.

ROOTS:

At 0.10m to 0.80m bgl numerous roots of live appearance encountered in TP/BH1.

At 0.80m to 1.70m bgl occasional roots of live appearance encountered and sampled in TP/BH1.

At 1.70m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots in TP/BH1.

At 0.10m to 0.60m bgl occasional roots of live appearance encountered in TP/BH2.

At 0.60m to 1.60m bgl occasional roots of live appearance encountered and sampled in TP/BH2.

At 1.60m to 4.00m bgl no roots encountered. Extensive inspection of soil samples encountered no roots in TP/BH2.

IN SITU TESTING:

Hand Penetrometer (PEN) undertaken at 0.80m bgl (TP/BH 1) within the window sampler at maximum 0.50m intervals.

Hand Penetrometer (PEN) undertaken at 0.60m bgl (TP/BH 2) 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.


SOIL ANALYSIS

for Subsidence Management Services


16 Deerings Drive, Pinner, HA5 2NZ

Client: Subsidence Management Services
Claim Number: 4502058589
Policy Holder: Mr Amit Karia
Report Date: 31/10/2022
Our Ref: L23598

Compiled By:

Name	Position	Signature
Saira Dougan	Laboratory Technician	

Checked By:

Name	Position	Signature
Bob Walker	Laboratory Manager	

Date samples received: 05-Oct-22
Water Content Test Date: 18-Oct-22
Atterberg Limits Test Date: 24-Oct-22

Oedometer Test Date: 21-Oct-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.

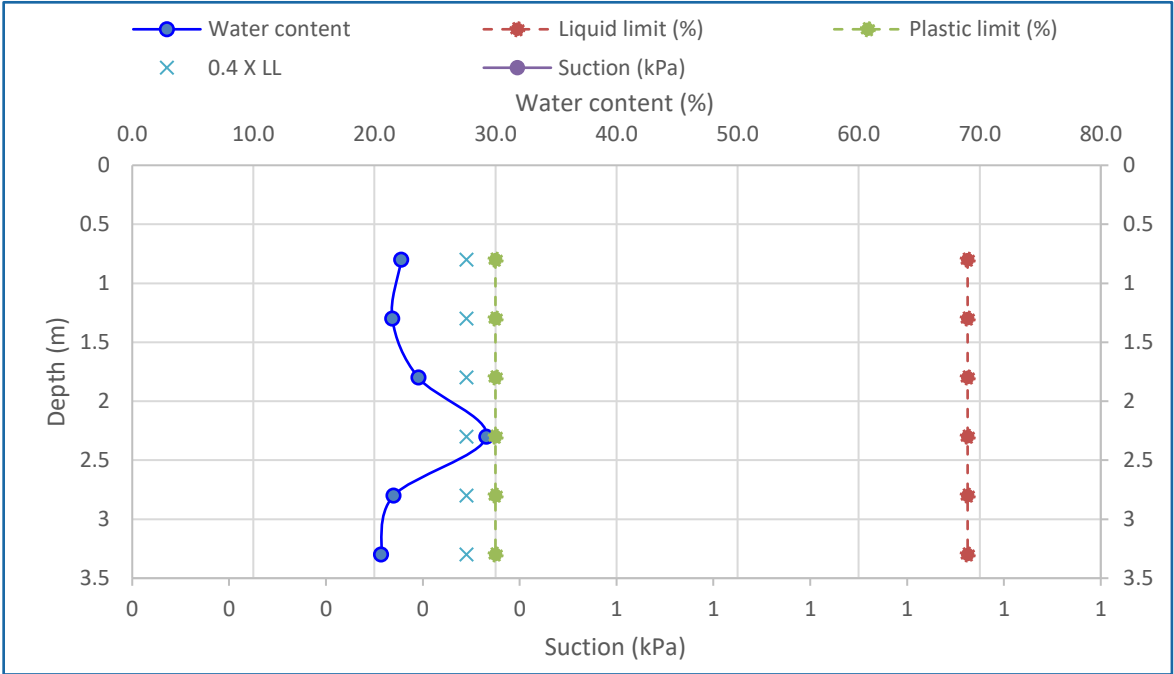
The Oedometer Swell/Strain Test is undertaken in a controlled environment within a temperature range of 16°C and 24°C

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.

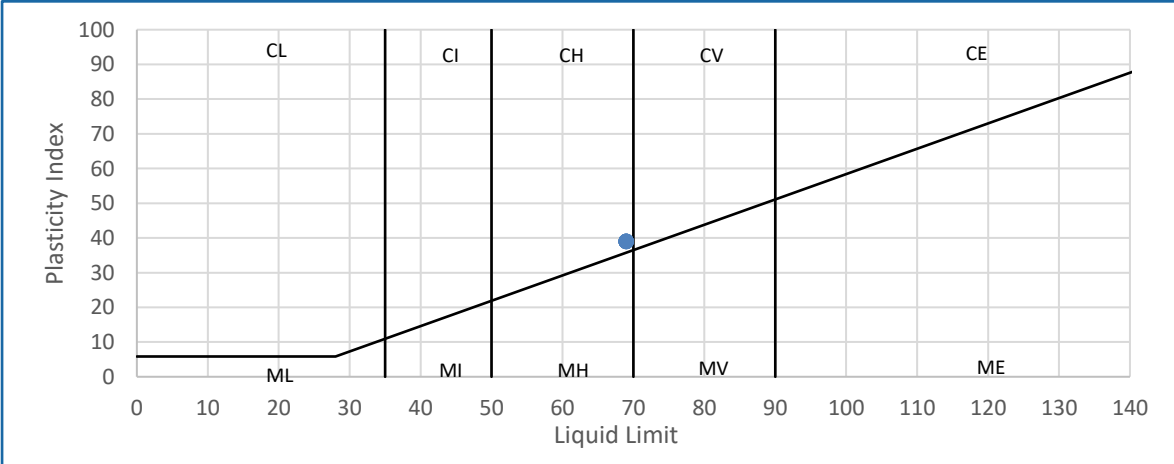
[Laboratory feedback form](#)

Samples from BH1

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
1	0.8	22.2	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine
2	1.3	21.5	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine
3	1.8	23.6	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine
4	2.3	29.3	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine
5	2.8	21.6	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine
6	3.3	20.6	69	30	39	100	39		Very stiff orange-brown/light grey silty CLAY with rare gravel. Gravel is fine

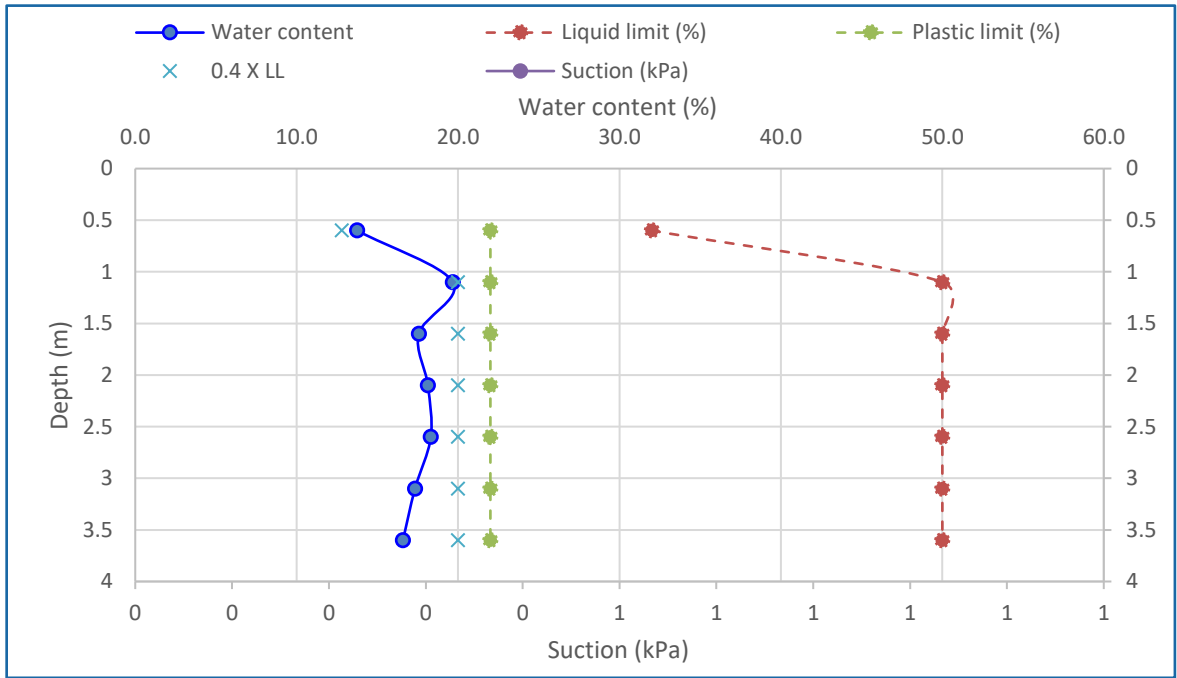


Plasticity Chart for Casagrande Classification

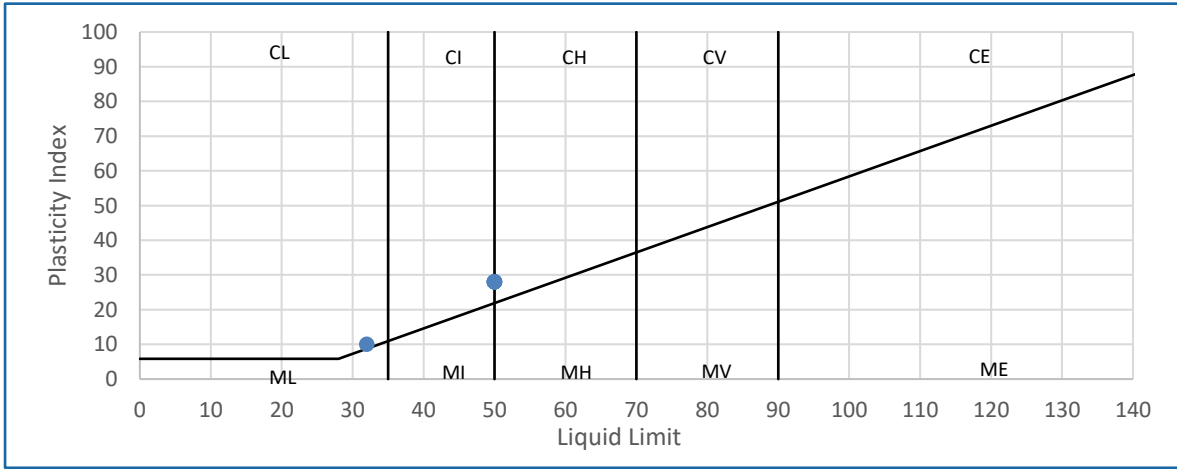


Samples from BH2

Lab Ref	Depth (m)	WC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
7	0.6	13.7	32	22	10	94	9		Dry reddish-brown/orange-brown SILT with rare gravel and pockets of clay. Gravel is fine
8	1.1	19.7	50	22	28	100	28		Firm to stiff reddish-brown/orange-brown silty CLAY with rare gravel and pockets of clay. Gravel is fine
9	1.6	17.6	50	22	28	100	28		Very stiff reddish-brown/orange-brown silty CLAY with rare gravel. Gravel is fine
10	2.1	18.1	50	22	28	100	28		Very stiff reddish-brown/orange-brown silty CLAY with rare gravel. Gravel is fine
11	2.6	18.3	50	22	28	100	28		Very stiff reddish-brown/orange-brown silty CLAY with rare gravel. Gravel is fine
12	3.1	17.3	50	22	28	100	28		Very stiff reddish-brown/orange-brown silty CLAY with rare gravel. Gravel is fine
13	3.6	16.6	50	22	28	100	28		Very stiff reddish-brown/orange-brown silty CLAY with rare gravel. Gravel is fine



Plasticity Chart for Casagrande Classification

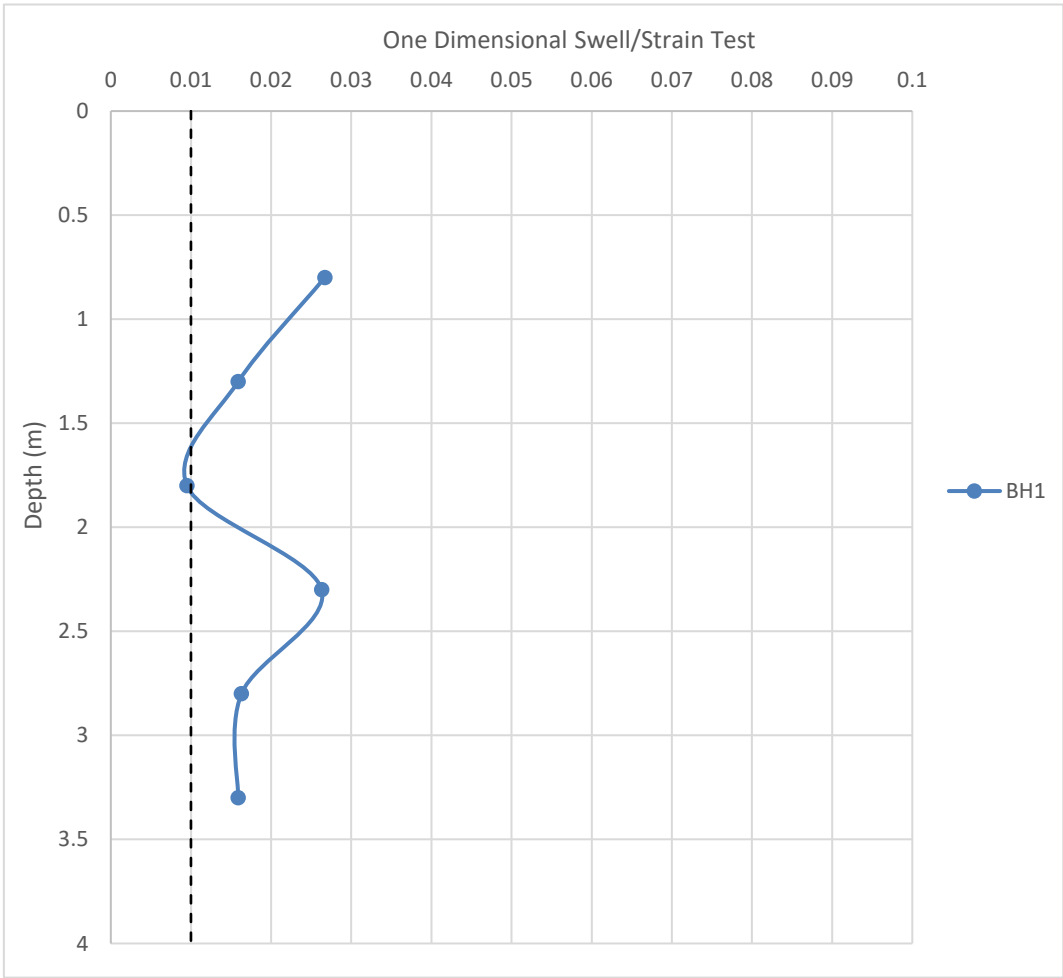


Summary of Oedometer Testing for BH1

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
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1	0.8	0.0267	10.7	
2	1.3	0.0159	4	
3	1.8	0.0095	0	
4	2.3	0.0263	6.6	
5	2.8	0.0163	4.1	
6	3.3	0.0159	4	

BH 1 estimate of heave	29mm
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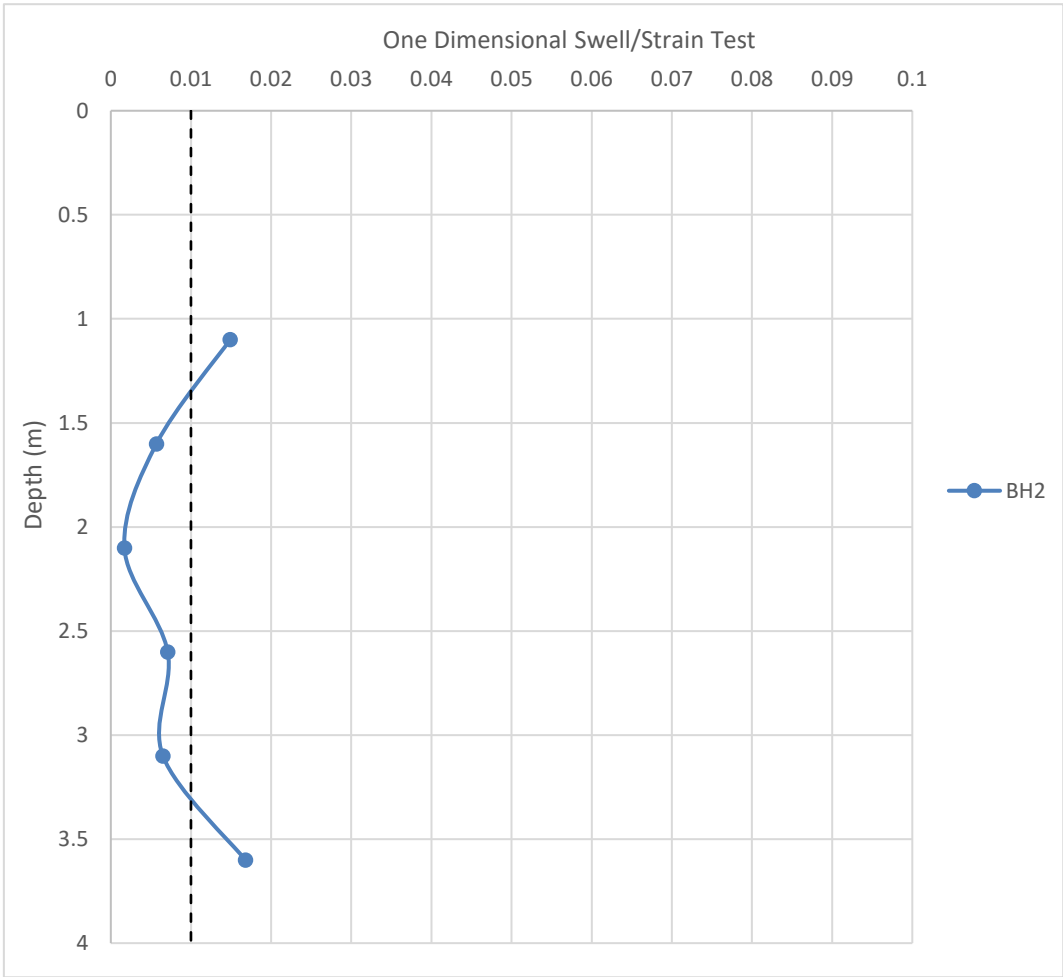


Summary of Oedometer Testing for BH2

Lab Ref	Depth (m)	Strain	Heave (mm)	Remarks
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7	0.6			
8	1.1	0.0149	8.2	
9	1.6	0.0057	0	
10	2.1	0.0017	0	
11	2.6	0.0071	0	
12	3.1	0.0065	0	
13	3.6	0.0168	4.2	

BH 2 estimate of heave	12mm
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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					

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

16 Deerings Drive, Pinner, HA5 2NZ

Client: Subsidence Management Services
Client Contact: Ian Domigan
Claim Number: 4502058589
Client Reference: IFS-AVI-SUB-22-0101567
Policy Holder: Mr Amit Karia
Report Date: 11 October 2022
Our Ref: R45917



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

Sub Sample	Species Identified		Root Diameter	Starch
TP/BH1:				
0.7-1.7m	Cupressaceae spp.	1	1 mm	Absent
0.7-1.7m	broadleaved species, too decayed for positive identification		3 mm	Absent

Comments:

1 - Plus 2 others also identified as Cupressaceae spp.

Cupressaceae spp. include Lawson cypress, western red cedar, Monterey cypress, Leyland cypress and junipers.

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.

Drainage Investigation Report

For Subsidence Management Services

Client Mr Amit Karia

Risk Address: 16 Deerings Drive, Pinner, HA5 2NZ

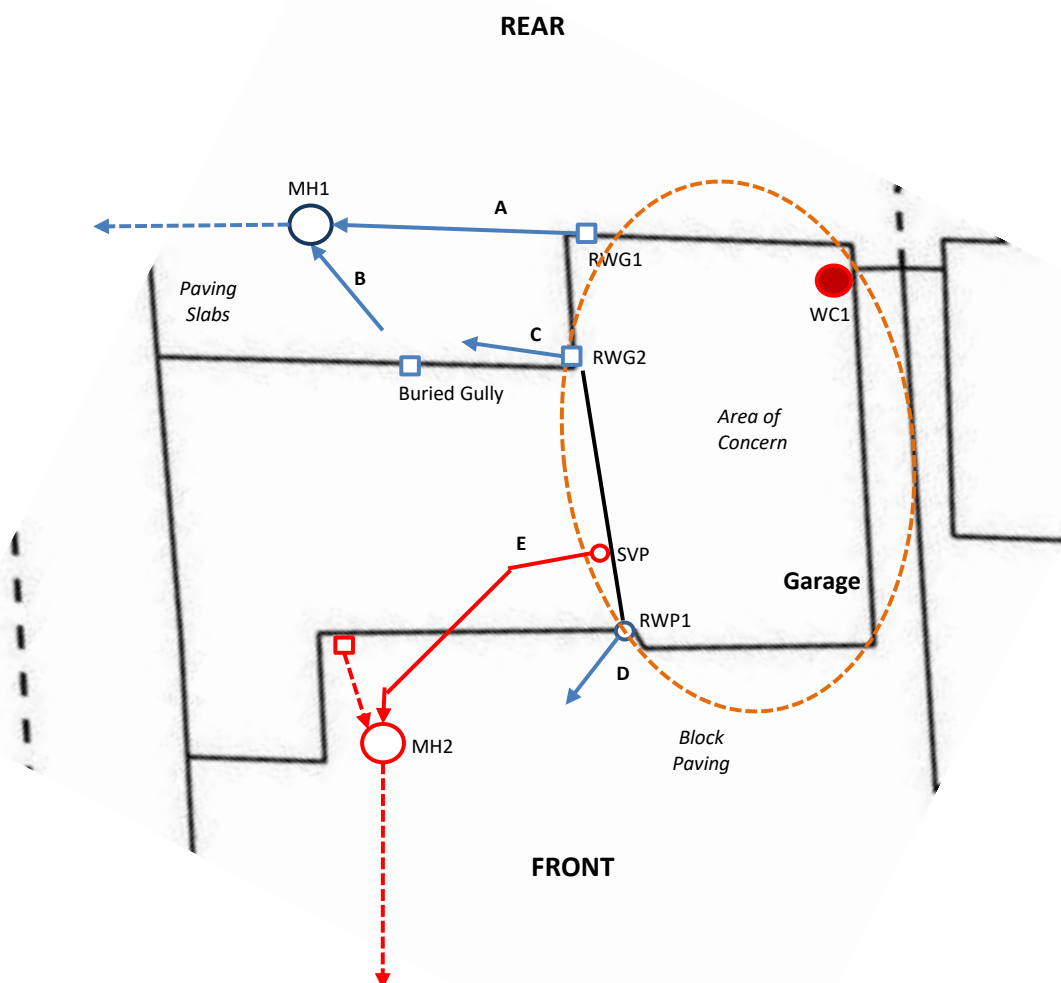
Visit Date: 8th September 2022

Client Reference: IFS-AVI-SUB-22-0101567



















Our Reference: C65362 D22947

Report Date: 28th September 2022

Report Content: Front Page
Site Plan
CCTV Coding
Drain Overview
Photographs
Quote



Key

	Tree		Building		Combined Drains		Unsurveyed Drains
	Shrubs		Water Supply		Foul Drains		Excavation
	Bushes		Launch Pit		Storm Drains		Area of Concern
	Boundary		Stop Valve		WC		
			Soak-Away		Exploratory Hole		
					Bore Hole		

Notes:

Address:

16 Deerings Drive, Pinner, HA5 2NZ

RUN	Start From :	MH1	Finish at :	RWG1	Pipe Ø:	100mm
A	Invert Level (m):	N/a	Invert Level (m):	N/a	Material:	Plastic
COMBINED	Condition grade:	B	Direction:	Upstream	Responsibility:	Home Owner
<i>Distance</i>	<i>Code</i>	<i>Hydraulic Test - Fail</i>				
0.00	SN	Start Node from MH1				
0.00	WL	Water Level 0%				
5.08	JN	Junction at 9 o'clock to WC				
5.37	JDM	Joint Displaced (Medium)				
5.47	FN	Finish Node at RWG1				
RUN	Start From :	MH1	Finish at :	BURIED GY	Pipe Ø:	100mm
B	Invert Level (m):	N/a	Invert Level (m):	N/a	Material:	Clay
STORM	Condition grade:	B	Direction:	Upstream	Responsibility:	Home Owner
<i>Distance</i>	<i>Code</i>	<i>Hydraulic Test - Not Tested</i>				
0.00	SN	Start Node from MH1				
0.00	WL	Water Level 0%				
0.38	R	Roots				
1.53	JDM	Joint Displaced (Medium)				
2.11	JDM	Joint Displaced (Medium)				
2.30	FN	Finish Node at Buried Gully - Found to be redundant				
RUN	Start From :	UNKNOWN	Finish at :	RWG2	Pipe Ø:	100mm
C	Invert Level (m):	N/a	Invert Level (m):	0.5	Material:	Clay
STORM	Condition grade:	B	Direction:	Upstream	Responsibility:	Home Owner
<i>Distance</i>	<i>Code</i>	<i>Hydraulic Test - Not Tested</i>				
0.00	SN	Start Node from Unknown (reverse survey - Unable to push further)				
0.00	WL	Water Level 0%				
0.00	CC	Crack Circumferential				
1.60	FN	Finish Node at RWG2				
RUN	Start From :	RWP1	Finish at :	OBSTRUCTION	Pipe Ø:	100mm
D	Invert Level (m):	N/a	Invert Level (m):	N/a	Material:	Clay
STORM	Condition grade:	C	Direction:	Downstream	Responsibility:	Home Owner
<i>Distance</i>	<i>Code</i>	<i>Hydraulic Test - Not Tested</i>				
0.00	SN	Start Node from RWP1				
0.00	WL	Water Level 0%				
0.00	R	Roots				
0.49	LU	Line of drain deviates up 90° rest bend				
2.78	JDL	Joint Displaced (Large)				
3.47	DEE	Attached Deposits (encrustation)				
3.57	SA	Survey Abandoned - Unable to push past blockages				

Address:

16 Deerings Drive, Pinner, HA5 2NZ

Following the receipt of your instruction, we attended site to carry out a CCTV survey.

The CCTV survey was undertaken in general accordance with the Manual of Sewer Classification and the WRc Drain Repair Book.

All runs were cleaned by high pressure water jetting prior to the CCTV survey.

The following presents a summary of the findings with recommendations to repair and/ or return the drains to a serviceable state, where necessary.

Drain Run A: MH1 U/S TO RWG1

Pipe Diameter: 100mm

Responsibility: Home Owner

Hydraulic Pressure Test: Fail

CCTV Survey Result: No structural damage

Recommended Repair:

To excavate and replace existing gully including 1m of adjacent pipework

Bed new pipe, compact, back fill and reinstate flag paving

Drain Run B: MH1 U/S TO BURIED GULLY

Pipe Diameter: 100mm

Responsibility: Home Owner

Hydraulic Pressure Test: Not Tested

CCTV Survey Result: Structural damage. Drain is redundant and no longer in service

Recommended Repair:

No repairs have been recommended as the drain line was found to be free from defects.

Drain Run C: UNKNOWN U/S TO RWG2

Pipe Diameter: 100mm

Responsibility: Home Owner

Hydraulic Pressure Test: Not Tested

CCTV Survey Result: Structural damage. Survey abandoned due to defect.

Recommended Repair:

To excavate and replace existing gully including 2 of adjacent pipework

To carry out a further CCTV survey and report findings

Bed new pipe, compact, back fill and reinstate flag paving

Drain Run D:

Pipe Diameter: 100mm

Responsibility: Home Owner

Hydraulic Pressure Test: Not Tested

CCTV Survey Result: Structural damage. Survey abandoned due to defect.

Recommended Repair:

To carry out an isolated excavation on the pipe at 2.78m and replace 1m

To carry out a further CCTV survey and report findings

Bed new pipe, compact, back fill and reinstate block paving

Address:

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Drain Run E: MH2 U/S TO SVP**Pipe Diameter:** 100mm**Responsibility:** Home Owner**Hydraulic Pressure Test:** Not Tested**CCTV Survey Result:** Structural damage and water levels. Drain runs internal.**Recommended Repair:**

To prepare the drain line using mechanical root cutting and insert 4x resin patch liner to cover defects.

WC1: Engineer was unable to survey the WC as there was no access and the WC could not be removed. He was advised that the drain connects on to Run A which is most likely a storm drain but needs to be confirmed. It is recommended that enablers remove the WC to allow a survey to be undertaken to confirm the condition and outfall of the WC.

Water Main Test	Result	Acoustic Test
	PASS	No noise could be heard which indicates that there is no leak

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Address:

RUN / LOCATION: RUN A

Repair Item	Description	Unit	Rate (£)	Quantity	Amount (£)
UK0010	Remove existing UPVC pipework in isolated lengths, refit with new 60mm UPVC pipework (incl. brackets)	nr	£14.25	1.00	£14.25
UK0015	Extra over for bends.	nr	£8.31	1.00	£8.31
UK0595	Gully, 225mm x 225mm. Remove existing and replace with new PVCu item. Bed, surround and backfill	nr	£146.43	1.00	£146.43
UK0605	Excavate & remove isolated length. Replace in new 110mm PVCu. Bed, surround & backfill to 1000mm	nr	£131.47	1.00	£131.47
UK0880	Short Radius Bend. Remove existing item and replace with new 110mm PVCu	nr	£14.89	2.00	£29.78
UK1060	Extra over pipework for surrounding drain run in 100mm thick concrete	m	£14.40	1.00	£14.40
UK0025	Protection Temporary works to floors, 1000 gauge polythene	m2	£1.79	2.00	£3.59
UK8120300	Hardcore Filling to excavations over 250 mm average thick	m	£35.35	1.00	£35.35
UK2050005	Disposal by hand excavated contaminated/saturated material off site	m3	£45.30	1.00	£45.30
UK1045	Removal, set aside and reinstatement of concrete slab paving to 100mm thick	m2	£24.61	1.00	£24.61
Total (Excl VAT)					£453.49

RUN / LOCATION: RUN

Repair Item	Description	Unit	Rate (£)	Quantity	Amount (£)
UK0010	Remove existing UPVC pipework in isolated lengths, refit with new 60mm UPVC pipework (incl. brackets)	nr	£14.25	1.00	£14.25
UK0015	Extra over for bends.	nr	£8.31	1.00	£8.31
UK0595	Gully, 225mm x 225mm. Remove existing and replace with new PVCu item. Bed, surround and backfill	nr	£146.43	1.00	£146.43
UK0605	Excavate & remove isolated length. Replace in new 110mm PVCu. Bed, surround & backfill to 1000mm	nr	£131.47	1.00	£131.47
UK0880	Short Radius Bend. Remove existing item and replace with new 110mm PVCu	nr	£14.89	2.00	£29.78
UK0825	Excavate & remove pipework. Replace with new 110mm PVCu. Bed, surround & backfill to 1000mm	m	£81.39	1.00	£81.39
UK0025	Protection Temporary works to floors, 1000 gauge polythene	m2	£1.79	2.00	£3.59
UK8120300	Hardcore Filling to excavations over 250 mm average thick	m	£35.35	2.00	£70.70
UK2050005	Disposal by hand excavated contaminated/saturated material off site	m3	£45.30	1.00	£45.30
UK1045	Removal, set aside and reinstatement of concrete slab paving to 100mm thick	m2	£24.61	2.00	£49.21
*	CCTV survey of underground drainage & report (where undertaken as part of other drainage work)	nr	£165.00	1.00	£165.00
Total (Excl VAT)					£745.44

RUN / LOCATION: RUN D

Repair Item	Description	Unit	Rate (£)	Quantity	Amount (£)
UK0605	Excavate & remove isolated length. Replace in new 110mm PVCu. Bed, surround & backfill to 1000mm	nr	£131.47	1.00	£131.47
UK0880	Short Radius Bend. Remove existing item and replace with new 110mm PVCu	nr	£14.89	2.00	£29.78
UK1060	Extra over pipework for surrounding drain run in 100mm thick concrete	m	£14.40	1.00	£14.40
UK0025	Protection Temporary works to floors, 1000 gauge polythene	m2	£1.79	2.00	£3.59
UK8120300	Hardcore Filling to excavations over 250 mm average thick	m	£35.35	1.00	£35.35
UK2050005	Disposal by hand excavated contaminated/saturated material off site	m3	£45.30	1.00	£45.30
UK10051	Drain Tracing - Electronic, with report plotting location & depth	nr	£90.02	1.00	£90.02
UK1040	Removal, set aside and reinstatement of block paving to 100mm thick	m2	£39.10	1.00	£39.10
Total (Excl VAT)					£389.03

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RUN / LOCATION: Patch Lining

Repair Item	Description	Unit	Rate (£)	Quantity	Amount (£)
UK1180	Patch Lining. Up to 0.6m x 100mm	nr	£290.94	4.00	£1,163.75
UK1133	Van pack HPWJ & CCTV in preparation of lining	nr	£148.44	1.00	£148.44
UK0561	Mechanical Root Cutting	m	£4.35	10.00	£43.46
Total (Excl VAT)					£1,355.65

REPAIR ESTIMATE TOTALS:

Run / Location	Amount (£)
RUN A	£453.49
RUN C	£745.44
RUN D	£389.03
RUN E	£1,355.65
Total (Excl VAT)	£2,943.61

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