

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	Mrs Catherine McDonald-Bowyer	Address	5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ		
Client	Subsidence Management Services	Contact		Claim No.	IFS-LBG-SUB-20-0087273
ES Ref	SA-246490	Consultant		Contact No.	0330 380 1036
Report Date	11/11/2020				

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 3 storey mid-terrace house, with a single-storey projection to the rear. The property occupies a level site with no adverse topographical features.

Damage relates to the front elevation / front bay window of the insured dwelling. Damage toward the middle of the property is not currently considered subsidence related. 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	☒	Drain Report	☒	Foundation Detail	☒
Root Analysis	☒	Borehole Log	☒	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	Horsham District Council
TPO / Conservation Area / Planning Protection Searches	Insured: Conservation Area Adjacent & Adjoining properties: Conservation Area
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 on our understanding, at the time of visiting the property, that engineers are satisfied that damage is the result of clay shrinkage subsidence exacerbated by the indirect influence of vegetation.

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

A CCTV (Closed Circuit Television) survey of the drainage system on the property was undertaken, the drainage layout mapped and a report prepared on the system structure, condition and functionality together with any recommendations for remedial works.

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We note that drain investigations identified some defects within the indicative area of damage.

Foundations are also noted to bear onto subsoil described within BH1 as "Stiff light grey SILT"

The above noted soil conditions are atypical of that expected where vegetation is deemed to be causal (based on advised mechanism of movement) and as such, we would advocate a period of monitoring to confirm the mechanism of movement.

Given the above, monitoring should be undertaken to confirm the mechanism of movement.

Where monitoring confirms that the soils are susceptible to volumetric fluctuations (based on moisture contents) and also that engineers do not consider damaged or leaking drains to be a material cause of the current subsidence then vegetation is deemed to retain the capacity to be causal to the current movement / damage.

Roots have been recovered below the property (TP/BH1); samples of these roots were recovered from underside of foundations and throughout the borehole, these roots were identified (using anatomical analysis) as having emanated from the genus' Buddleia spp. and Fraxinus spp.

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

Our survey of the site identified the Ash component within TG1 and the Buddleia component within SG1, given their position relative to the damage it is our opinion that the roots identified will emanate from this vegetation and accordingly we have identified them as the principal cause of the subsidence damage.

The size and proximity of the above vegetation is consistent with the location of damage and advised mechanism of movement; accordingly, we have identified their collective / cohesive influence as the primary cause of the subsidence damage.

Given the above and 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 management as listed by this report.

Please refer to Section 6 for management prescriptions.

The recommendations contained within this arboricultural report are prescribed to give the most reliable arboricultural solution likely to restore long-term stability.

Consequently, where monitoring confirms the role of vegetation, then the complete removal of the advised Ash component within TG1 (see plan for details) in conjunction within the Buddleia component of SG1 will offer the most certain arboricultural solution likely to restore long-term stability.

Known practice and establish research (Hortlink 212) suggest that pruning in isolation is a largely ineffective means of controlling water uptake.

We recommend the efficacy of the management recommendations be qualified by means of further monitoring to confirm stability.

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.

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.

Whilst replacement planting is considered appropriate, 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.

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Is vegetation likely to be a contributory factor in the current damage?	See above
Is vegetation management likely to contribute to the future stability of the property?	See above
Is replacement planting considered appropriate?	See above
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
SG2	Mixed species shrubs: Viburnum, Pyracantha, Buddleia, Bay Laurel & Lilac.	1	3	1,3	A - Third Party	Maintain as detailed	Remove Buddleia component close to ground level and treat stump(s) to inhibit regrowth. Maintain remaining shrubs at broadly current dimensions by way of regular pruning.
TG1	Mixed Species Group: Ash, Sycamore & Oak.	1	15	12.5	E - Boundary Veg (ownership to be confirmed)	Maintain as detailed	Remove the x3 closest Ash trees to the front of the property (close to ground level); 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 at broadly 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
C1	Mixed species climbers: Grape & Ivy.	1	1,5	1,2	C - Insured	Action to avoid future risk	Maintain at broadly current dimensions by way of regular pruning.
S1	Buddleia	1	2	2,3	A - Third Party	Action to avoid future risk	Maintain at, or below current dimensions by way of regular pruning.
SG1	Mixed species shrubs: Skimmia & Dogwood.	1	1	0,2	C - Insured	No action	No works.
T1	Laburnum	1	3	9	A - Third Party	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

8. Photographs



C1 - Mixed species climbers



S1 - Buddleia



SG1 - Mixed species shrubs



SG2 - Mixed species shrubs

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TG1 - Mixed species group



T1 - Laburnum

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Date: 11/11/2020

Property: 5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

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

Insured Property Tree Works	£0,00
Third Party Tree Works	£3750,00
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”.

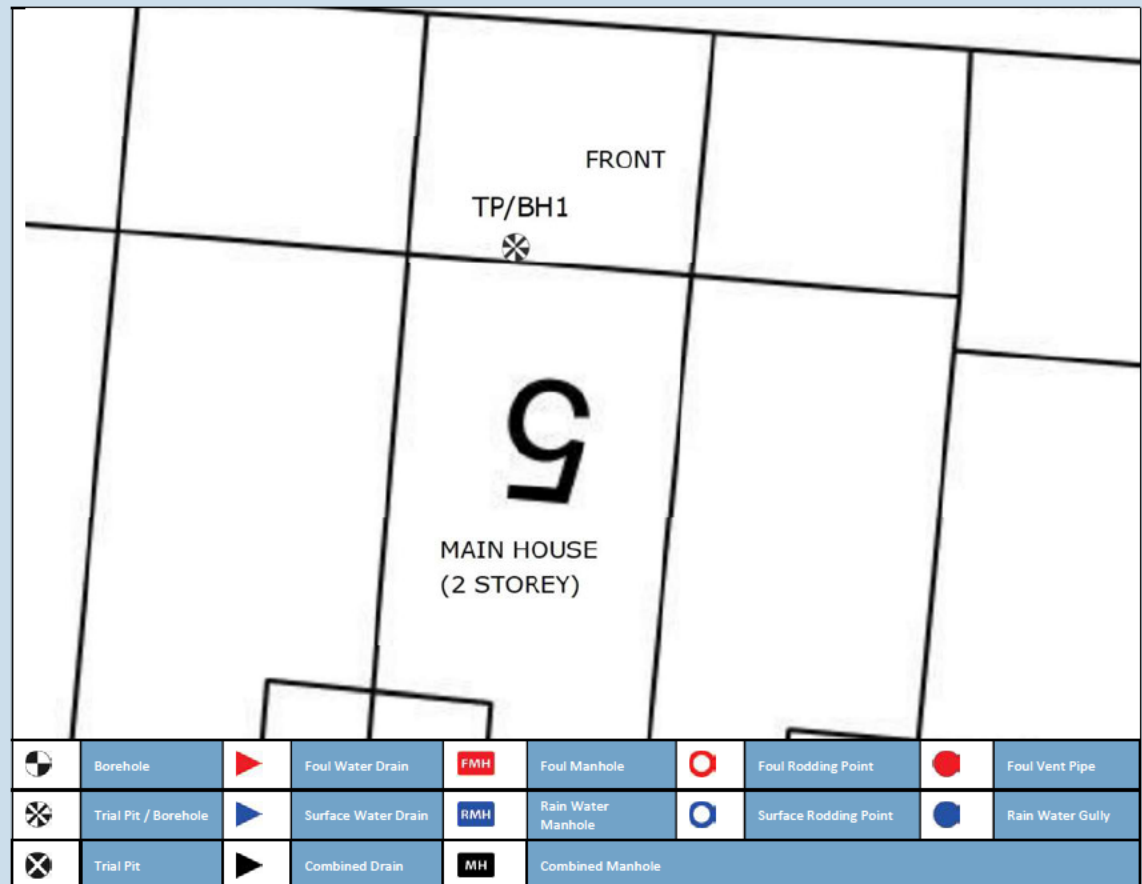
GEOTECHNICAL

for Subsidence Management Services

5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

Client: Subsidence Management Services
Client Contact: [REDACTED]
Client Ref: IFS-LBG-SUB-20-0087273
Policy Holder: [REDACTED]
Report Date: 5 September 2020
Our Ref: C55835G24831

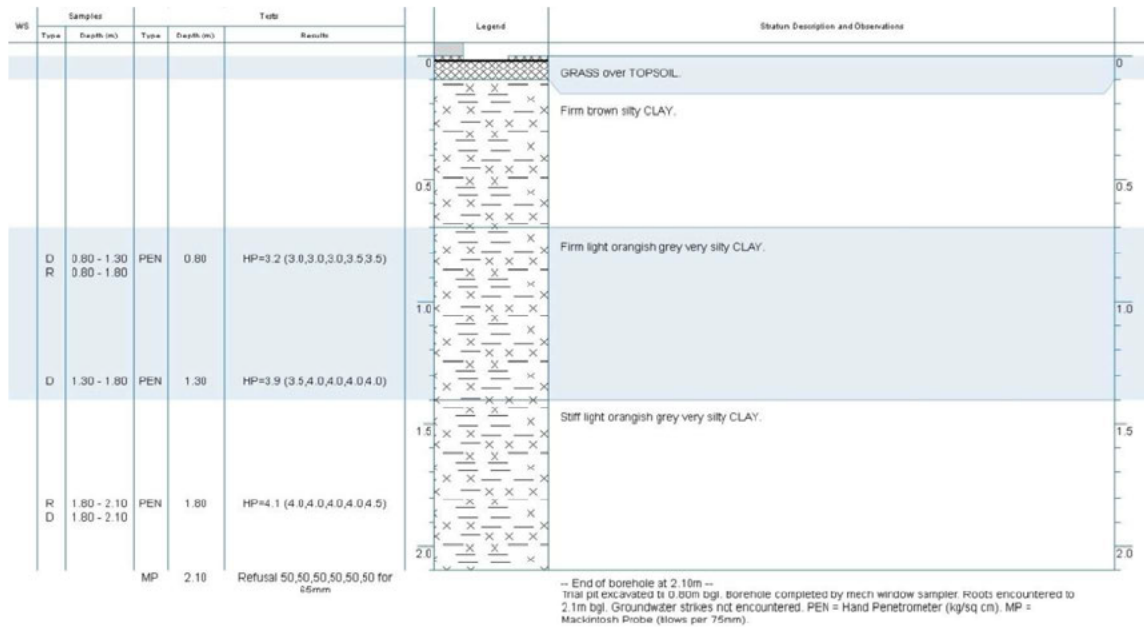
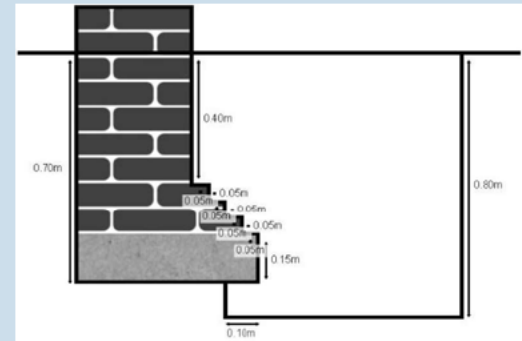
Site Plan



TP/BH1 Foundation Detail and Borehole Log

Foundation Detail

Bay foundation comprised of brick wall to 550mm bgl, bearing on stepped concrete to 700mm bgl with a total projection of 200mm from the elevation. Underside of foundation (USF) was exposed to 100mm back from the face of the foundation and probed 500mm back from the face of the foundation.



Site Observations

GENERAL:

Site Investigation works (TP/BH 1) undertaken on 19 August 2020 during moderate rain.

HEALTH AND SAFETY:

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

FOUNDATIONS:

Bay foundation was exposed and the underside of foundation (USF) recorded to be 0.7m bgl (TP/BH 1).

BOREHOLE:

Hand Held Percussive Window Sampler and Mackintosh Probe refusal at 2.1m bgl due to stiffness within the clay (TP/BH 1). Borehole terminated. No further works undertaken.

ROOTS:

Roots encountered to 2.1m bgl (TP/BH 1).

IN SITU TESTING:

Hand Penetrometer (PEN) undertaken at 0.8m bgl (TP/BH 1) within the window sampler and thereafter in the window sampler at maximum 0.5m intervals.

Mackintosh Probe (MP) test undertaken at 2.1m bgl (TP/BH 1) within the window sample borehole only with no further Mackintosh Probe (MP) testing undertaken.

WATER STRIKES:

No water strikes (NWS) encountered (TP/BH 1).

SOIL ANALYSIS Revision 1

for Subsidence Management Services

5 Southdown Terrace, West Sussex, BN44 3YJ

Client: Subsidence Management Services
Claim Number: 500199791
Policy Holder: [REDACTED]
Report Date: 05/11/2020
Our Ref: L19185

Compiled By:

Name	Position	Signature
Saira Dougan	Laboratory Technician	[REDACTED]

Checked By:

Name	Position	Signature
Bob Walker	Laboratory Manager	[REDACTED]

Date samples received: 24-Aug-20
Water Content Test Date: 03-Sep-20
Atterberg Limits Test Date: 04-Sep-20



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

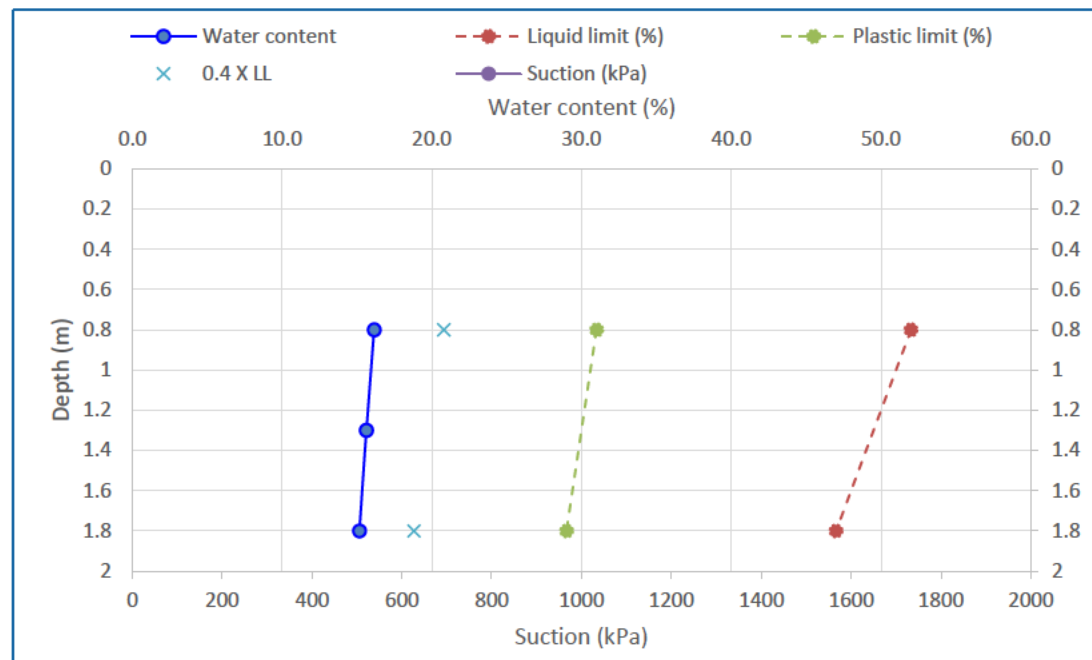
The Liquid Limit test is undertaken in accordance with BS1377:Part 2:1990 Section 4.4 using an 80g cone with a 30° tip. Sieve percentages reported in blue denote that the sample has been sieved otherwise it has been prepared from its natural state.

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

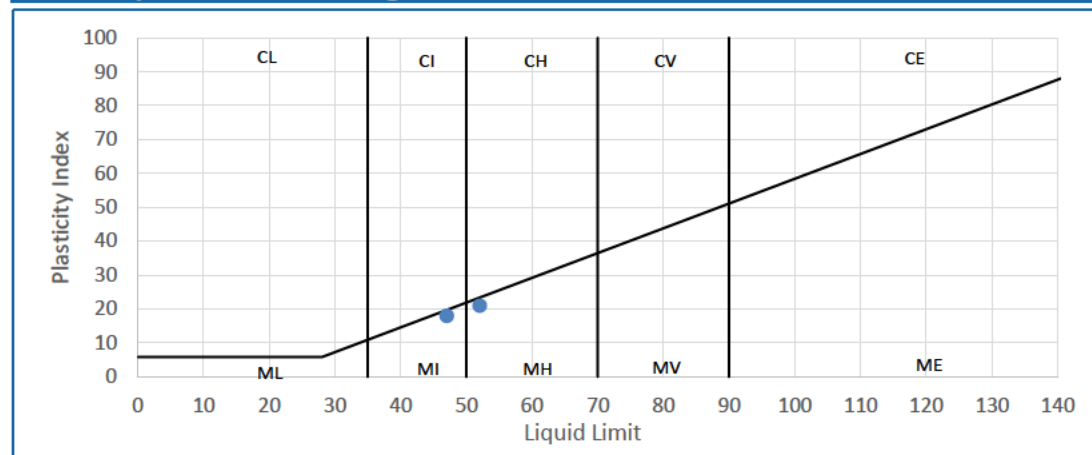
The Plastic Limit test and the determination of the Plasticity Index is undertaken in accordance with BS1377:Part 2:1990. Where a plastic limit has been denoted with an asterisk (*) then it has been derived from the liquid limit and has not been tested.

Samples from BH1

Lab Ref	Depth (m)	MC (%)	LL (%)	PL (%)	PI (%)	.425 mm(%)	mod. PI (%)	Av. Suc. (kPa)	Description
1	0.8	16.1	52	31	21	100	21		Stiff light grey SILT
2	1.3	15.6							Stiff light grey SILT
3	1.8	15.2	47	29	18	100	18		Stiff light grey SILT



Plasticity Chart for Casagrande Classification



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					

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).

Revision History

Revision Number	Revision date	Revision	Revised by
1	05/11/2020	Corrected plastic results	Bob Walker

ROOT IDENTIFICATION

for Subsidence Management Services

5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

Client: Subsidence Management Services
Client Contact: Paul Taylor
Claim Number: 500199791
Client Reference: IFS-LBG-SUB-20-0087273
Policy Holder: Mrs Catherine McDonald-Bowyer
Report Date: 25 August 2020
Our Ref: R37124



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

Sub Sample	Species Identified		Root Diameter	Starch
TP/BH1:				
0.8-1.8m	<i>Fraxinus</i> spp.		2 mm	Abundant
0.8-1.8m	<i>Buddleia</i> spp.	1	2 mm	Abundant
0.8-1.8m	too juvenile for identification		1 mm	Low
1.8-2.8m	<i>Fraxinus</i> spp.		<1 mm	Moderate
1.8-2.8m	too juvenile for identification		<1 mm	Low

Comments:

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

Fraxinus spp. include common ash.

Buddleia spp. are common flowering shrubs, including the butterfly bush.

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 Lloyds

Risk Address: 5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

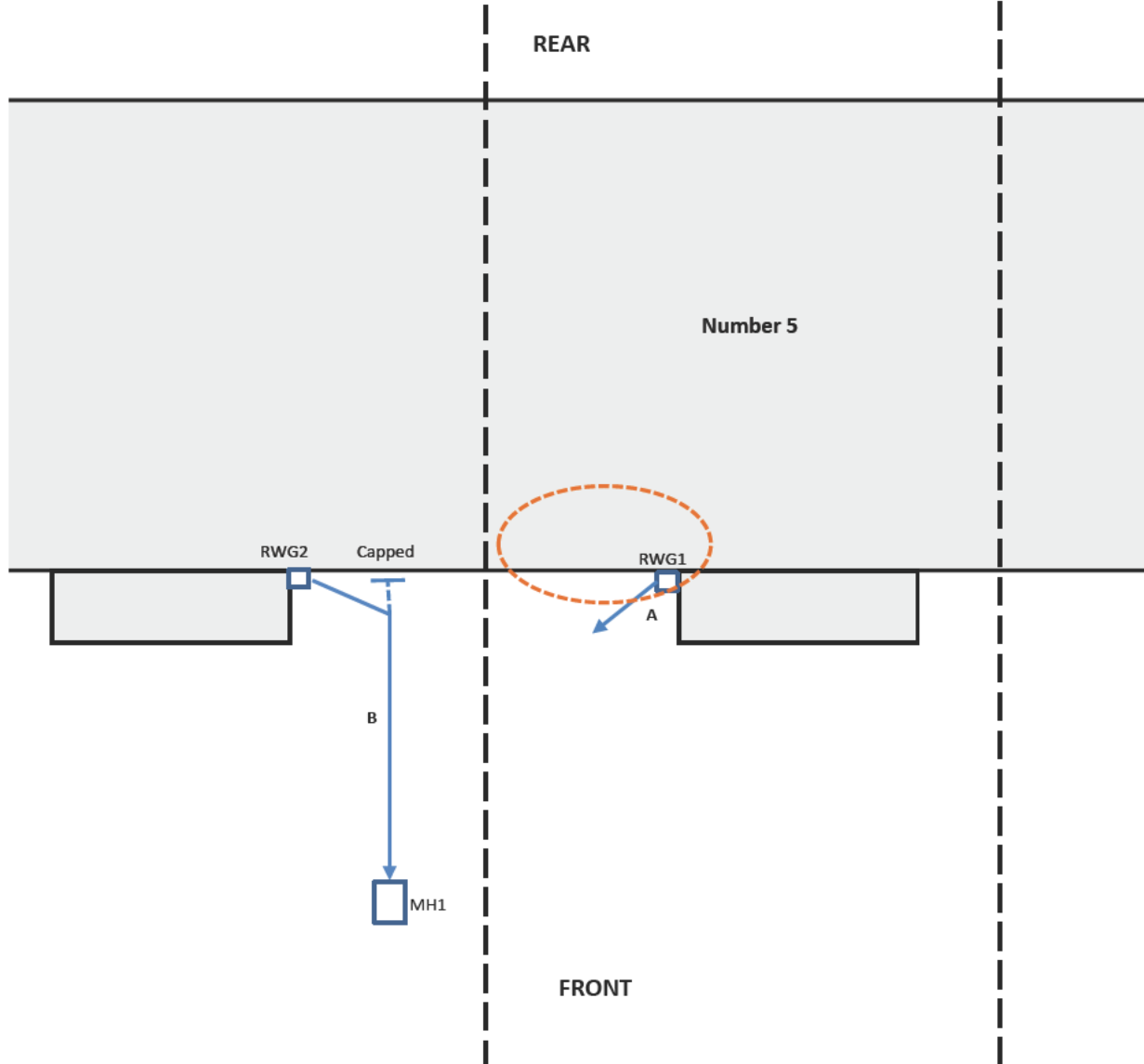
Visit Date: 07/08/2020

Client Reference: IFS-LBG-SUB-20-0087273

Our Reference: C55835 D18378

Report Date: 14/08/2020

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

5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

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.

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: RWP1 Downstream to Possible Soakaway

Pipe Diameter: 100mm

Responsibility: Home Owner

Hydraulic Pressure Test: Not Tested

CCTV Survey Result: No structural damage but discharges into ground (possible catch-pit or soakaway) close to property

Recommended Repair:

- 1) To excavate and replace existing gully including 1m of adjacent pipework.
- 2) To carry out a further look-see CCTV survey and report findings as to where the line discharges.

Drain Run B: MH1 Upstream to Capped End

Pipe Diameter: 100mm

Responsibility: 3rd Party

Hydraulic Pressure Test: Not Tested

CCTV Survey Result: Structural damage & exhausted soakaway

Recommended Repair:

No repairs have been recommended as they are the responsibility of the 3rd party owner

Water Main Test	From	To	Result	Notes
	ESV	ISV	PASS	No drop in 10 minutes

Address:

5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

RUN / LOCATION: RUN A

Repair Item	Description	Unit	Rate (£)	Quantity	Amount (£)
UK0010	Remove existing UPVC pipework in isolated lengths, refix with new 69mm 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. n.e. 1000mm deep.	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 n.e 100mm thick.	m2	£24.61	1.00	£24.61
	CCTV survey of underground drainage & report (where undertaken as part of other drainage works on site)	nr	£165.00	1.00	£165.00
Total (Excl VAT)					£618.49

REPAIR ESTIMATE TOTALS:

Run / Location	Amount (£)
RUN A	£618.49
Total (Excl VAT)	£618.49

Address:

5 Southdown Terrace, Steyning, West Sussex, BN44 3YJ

Classification: General