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Site Investigation Report

Auger Ref:

152939.1.1.BSI

Job Information	
Client	
Client ref	QG1T1228431
Visit date	27/06/2023
Report date	13/07/2023

Job Summary

- CCTV survey undertaken. Read more.
- Drainage repairs required. Read more.
- 1 trial hole undertaken. Read more.

Job Information

Overview

Brief	Auger were commissioned by to undertake a site investigation and CCTV inspection of the underground drainage within the area of concern (AOC) at the property.

Findings

Trial Hole Findings	**Trial Hole 1** Within TH1 we revealed the footing and augered to the required depth (3m) in the proposed location. We took soil and root samples. These measurements are shown in Trial Hole Log 1 below.
Drain Survey	We carried out a CCTV survey of the below ground drainage system, our findings of which are as follows: **Line 4, 5, 6, 9, 10 and 12 - From MH1 upstream to Away From AOC** Our survey of line 4, 5, 6, 9, 10 and 12 revealed no significant defects to the pipework on these lines which could be allowing an escape of water. **Line 1 - From MH1 upstream to WG1** Our survey of line 1 revealed cracking on the gully pot. **Line 2 - From MH1 downstream to MH2** Our survey of line 2 revealed root ingress at 0.1 and 3.16m. **Line 3 - From MH2 upstream to WG2** Our survey of line 3 revealed a joint displacement at 0.8m. **Line 7 - From MH3 upstream to WG3** Our survey of line 7 revealed joint displacements at 3.6 and 4.4m. **Line 8 - From MH3 upstream to SWG** Our survey of line 8 revealed joint displacements and cracking at 0.16 and 0.55m. **Line 11 - From MH4 upstream to WG4** Our survey of line 11 revealed joint displacements and cracking at 0.24 and 2.37m. The above mentioned defects to the below ground drainage system have been caused by ground movement.

Recommendations

It is recommended that the following repairs are carried out to prevent an escape of water from the system:

Line 1
Excavate and replace WG1 and 1m of 100mm pipework at a depth no greater than 1.0m through concrete.

This excavation may require tunnelling under a fence.

Line 2

We need to perform high pressure jetting of the drains for approximately 2 hours prior to lining.

Install 3m of 100mm liner directly downstream of MH1.

We will then need to conduct a further CCTV investigation downstream on this line.

Line 3
Excavate and replace WG2 and 1m of 100mm pipework at a depth no greater than 1.0m through hot lay tarmac.

Line 7
Excavate and replace WG3 and 1m of 100mm pipework at a depth no greater than 1.0m through hot lay tarmac.

Line 8
Excavate and replace SWG and 1m of 100mm pipework at a depth no greater than 1.0m through hot lay tarmac. Connecting the SWG into MH3 with all new pipework.

Refer Back to Client	**Line 11** Excavate and replace WG4 and 1m of 100mm pipework at a depth no greater than 1.0m through grass. Install a 100mm patch liner approximately 0.5m upstream of MH4. **Please Note: In order to carry out repairs to line 1 the customer will have to get permission from the neighbouring property prior to auger attending to excavate and replace the gully.** **Please Note: The surface will be temporarily reinstated with cold lay tarmac to leave the area safe and tidy. A specialist contractor will be required to reinstate the hot lay tarmac which would incur additional costs.** Please note that the further CCTV investigation may reveal additional defects to the drainage system. This will be reported whilst on-site and could potentially cause an increase in repair costs and provide further inconvenience to the customer/occupants. Auger have not allowed or will not be held responsible for any alteration or modification to the above ground drainage following the removal of the existing gully and reinstatement of a new gully. The customer must ensure that the above ground drainage correctly expels into the gully pot and avoids overcrowding the gully with numerous downpipes which could lead to the gully overflowing. During the clean-up/reinstatement process we will endeavour to leave the area we are working in clean and tidy and as close to how we found it as possible. There will always be an element of general debris/mud/waste that will build up in the area which cannot be prevented. There may however be elements of this process that are outside our remit i.e., Repainting or cleaning. If this is the case, then we will need to speak to the customer's insures to help in this regard. **Please Note:** We would like to note that the gully we are proposing to replace has a large concrete surround. When installing the new gully Auger will install a type 3 gully at ground level with a smaller surround. We would therefore like to make the customer aware that the newly installed gully will aesthetically differ from the current arrangement. We will now refer the claim back to the client in order to progress the claim.
Repair Caveats	*Once repairs have been undertaken the customer should ensure the drainage system is periodically inspected in the future for any deterioration and kept free flowing / free of blockages. Any damage noted during future inspections should be repaired immediately in accordance with current Building Regulations.* *With any repair process, complications and unforeseen circumstances can arise. These scenarios will be reported whilst on-site and could potentially cause an increase in repair costs and inconvenience.* *Where any excavation reinstatement of the surface is required, the reinstatement will always attempt to match the previous surface patterns and colouring, however we cannot guarantee an exact match.* *If any of the above lining recommendations fail then excavation and replacement of the pipework would be required. This would severely increase the cost of repairs and would provide greater inconvenience to the residents. The relining of a severe joint displacement is normally unadvised due to the potential for complications in the future.* *Recommendations have been made to reline or patch reline sections of the drainage system at the property. This process combines a number of chemicals in a resin, which then harden in a fibreglass matting to create a new section of drain within the original. The reaction creates* ***a strong smell which can linger for up to 72 hours*** *once works are completed - this is not harmful. It is recommended that any areas where smells are experienced are kept well ventilated until the odour subsides.* *The above recommendations allow for the replacement of gullies & connected underground drainage only. The insured should be made aware that the aesthetic appearance of this gully may be different from what is currently in place.*

Photographs

Trial Hole 1

Fig 1.1: Trial Hole 1 Location

Fig 1.2: Trial Hole 1 Footing

Site Photos

Fig 3.1: MH1

Fig 3.2: MH2

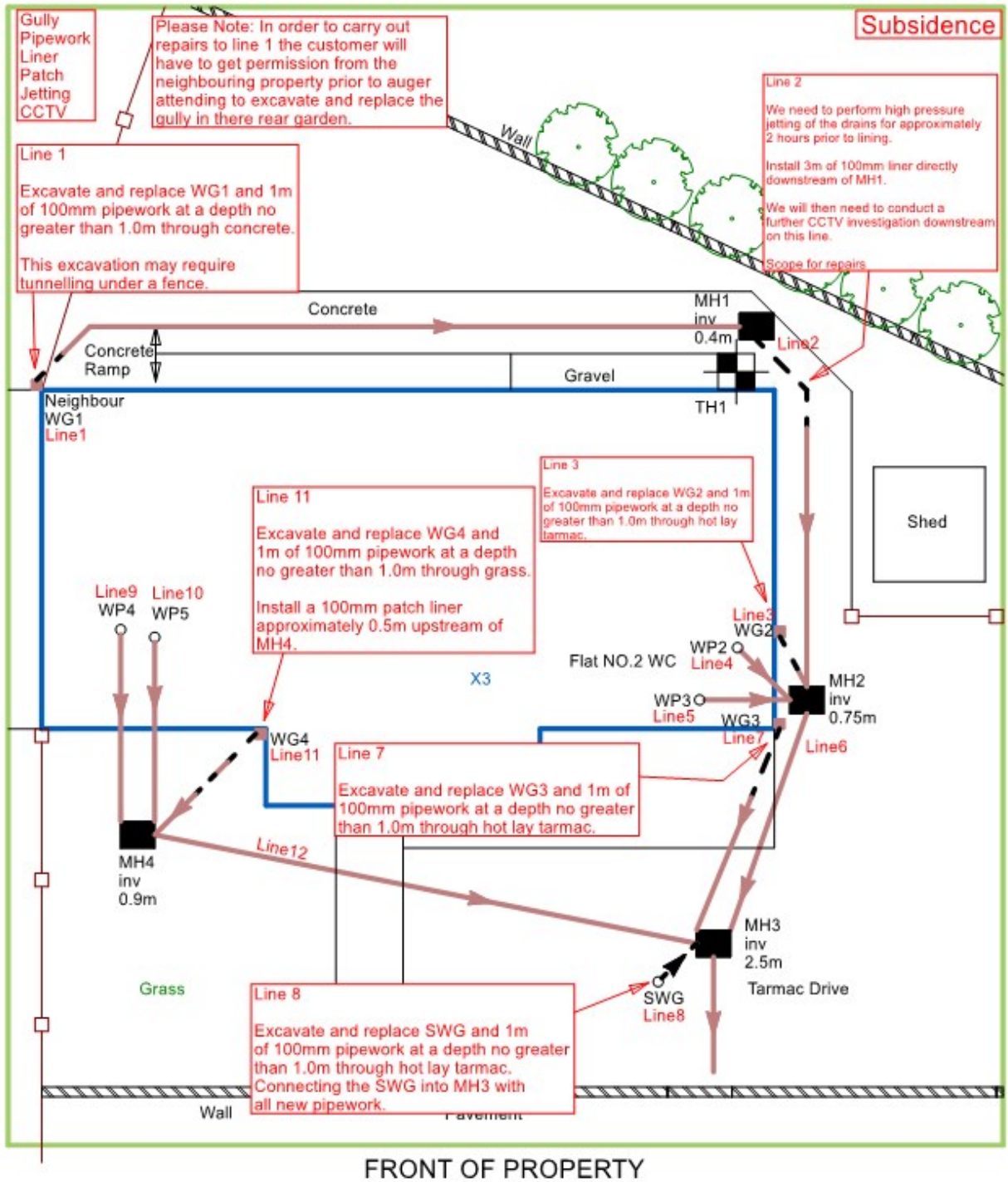
Fig 3.3: MH3

auger

Proposed Layout

Job Ref: 152939.1

Date: 28/06/2023



FRONT OF PROPERTY

LEGEND

- = Manhole (MH)
- = Inspection Chamber (IC)
- = Inspection Point (IP)
- = Blockage / Collapse
- = Soil Vent Pipe (SVP) / WC
- = Combined Waste Gully (CWG) / Foul Waste Gully (FWG)
- = Rainwater Gully (RWG)
- = Rainwater Pipe (RWP)
- = Lines not to be repaired
- = Lines to be repaired
- = Assumed water mains feed
- = Walls
- = Fences
- = Building Outline
- = Trial hole
- = Borehole
- = Direction of flow
- = Gate / Door
- = Shrubs / Bush
- = Hedge
- = Tree
- = Steps

Trial Hole Log No.1

Location: Rear right corner

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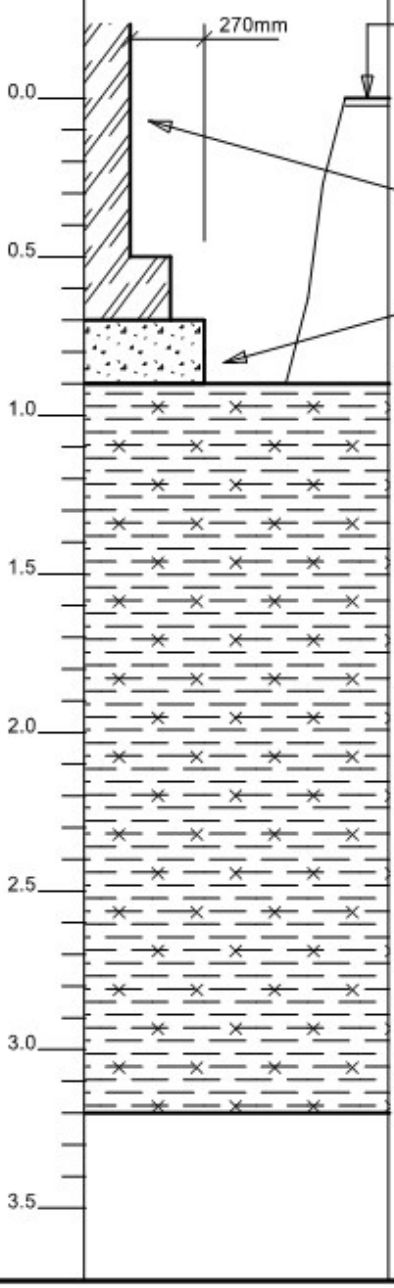


Depth (m)	Strata Description	Insitu Tests SV(19)	Soil Sample	Root Sample
1.0	Very dry very stiff Brown fine to medium gravelly silty CLAY	140kpa	Soil @ 0.9m	Root @ 0.9m
1.5		140kpa	Soil @ 1.4m	Root @ 1.4m
2.0		140kpa	Soil @ 1.9m	Root @ 1.9m
2.5		140kpa	Soil @ 2.4m	Root @ 2.4m
3.0		140kpa	Soil @ 2.9m	Root @ 2.9m
	TRIAL HOLE TERMINATED	140kpa		

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Geotechnical Testing Analysis Report**	auger environmental + claims mgmt + subsidence + drainage +
Unit 3 & 4, Heol Aur, Dafen Ind Estate, Dafen Llanelli, Carmarthenshire, SA14 8QN	***The testing results contained within this report have been performed by GSTL a UKAS accredited laboratory on behalf of Auger.**	**Auger House, Cross Lane, Wallasey, Wirral, CH45 8RH**

Summary Of Claim Details

Policy Holder	
GSTL Job Reference	67364
SI Date	28/06/2023
Issue Date	28/06/2023
Report Date	10/07/2023
Auger Reference	152939.1.3.RSS
Insurance Company	Accelerant
LA Claim Reference	QG1T1228431
LA Co. Reference	

Checked and approved	10/07/2023	Wayne Honey	W. Honey

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.4 & 5.3) DESCRIPTIONS	auger environmental + claims mgmt + subsidence + drainage +
GSTL Contract Number	67364	
Report Date	10/07/2023	
Auger Reference	152939.1.3.RSS	

TH Trial Hole	Sample Type	Depth (m)	Sample Description
TH1	D	0.90	Brown fine to medium gravelly silty CLAY
TH1	D	1.40	Brown fine to medium gravelly silty CLAY
TH1	D	1.90	Brown fine to medium gravelly silty CLAY
TH1	D	2.40	Brown fine to medium gravelly silty CLAY
TH1	D	2.90	Brown fine to medium gravelly silty CLAY

Test Operator
Jason Smith

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.4 & 5.3)

auger
environmental + claims mgmt + subsidence + drainage +

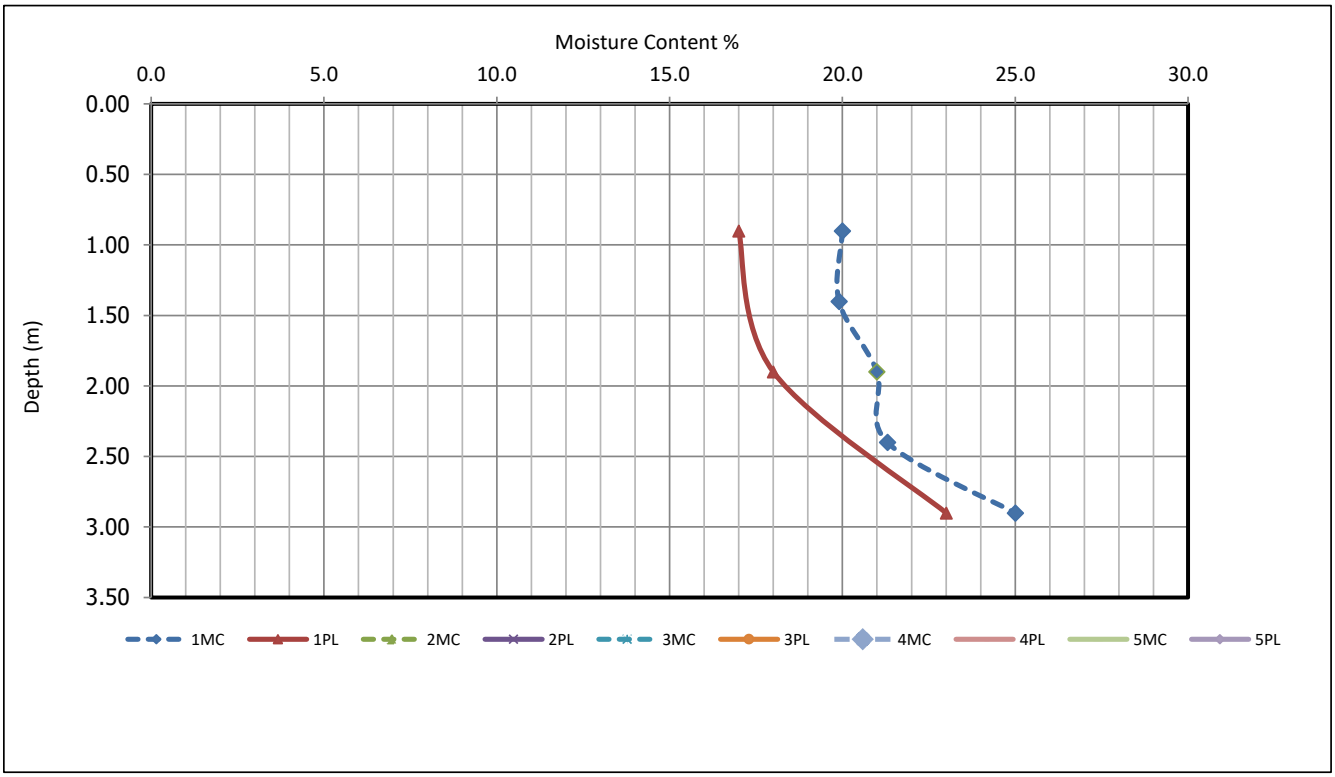
GSTL Contract Number	**67364**	
Report Date	**10/07/2023**	
Auger Reference	**152939.1.3.RSS**	
Remarks	NP - (Non-Plastic), # - (Liquid Limit and Plastic Limit Wet Sieved)	

TH Trial Hole	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	NHBC Chapter 4.2	Remarks
TH1	D	0.90	20	65	17	48	96	HIGH VCP	CH High Plasticity
TH1	D	1.40	20						
TH1	D	1.90	21	65	18	47	97	HIGH VCP	CH High Plasticity
TH1	D	2.40	21						
TH1	D	2.90	25	70	23	47	98	HIGH VCP	CH/V High/HighPlasticity

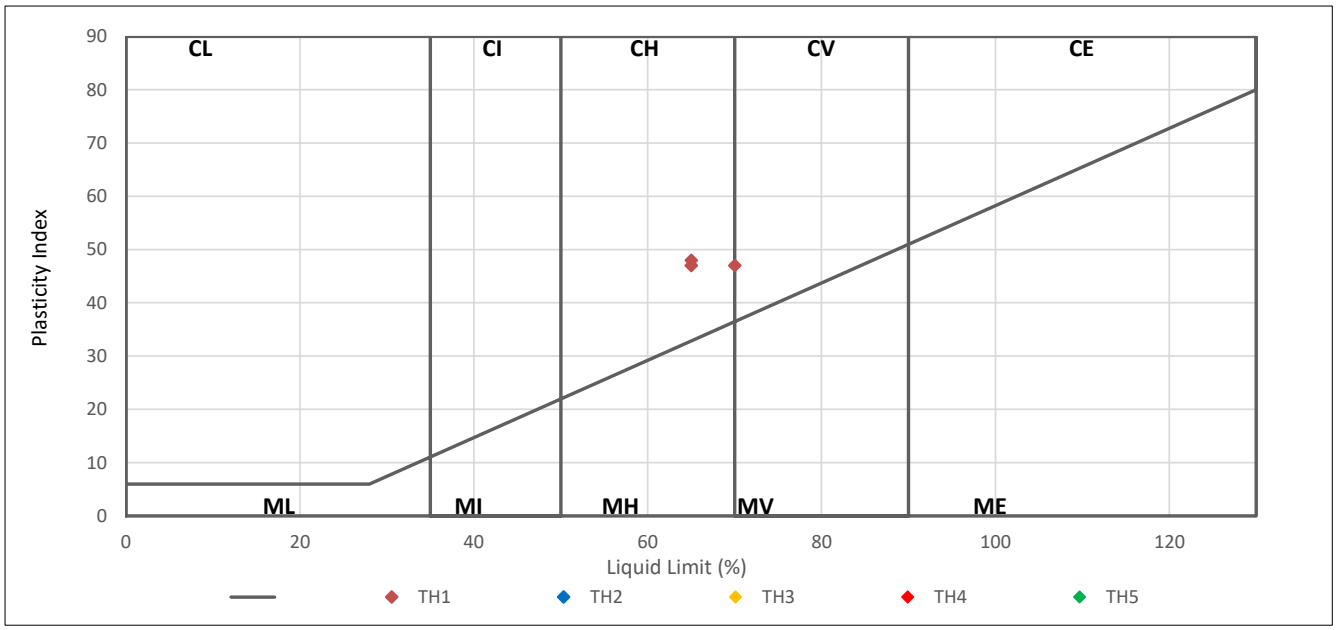
Modified Plasticity Index (PI) <10	: Non Classified
Modified PI = 10 to <20	: Low volume change potential (LOW VCP)
Modified PI = 20 to <40	: Medium volume change potential (Med VCP)
Modified PI = 40 or greater	: High volume change potential (HIGH VCP)

The Atterberg Limits May also be used to classify the volume change potential of fine soils using the National House building system, as given in the NHBC's Standards Chapter 4.2 (2003) "Building Near Trees"

Test Operator
Jason Smith



PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Modified Plasticity Index (PI) <10	: Non Classified
Modified PI = 10 to <20	: Low volume change potential (LOW VCP)
Modified PI = 20 to <40	: Medium volume change potential (Med VCP)
Modified PI = 40 or greater	: High volume change potential (HIGH VCP)

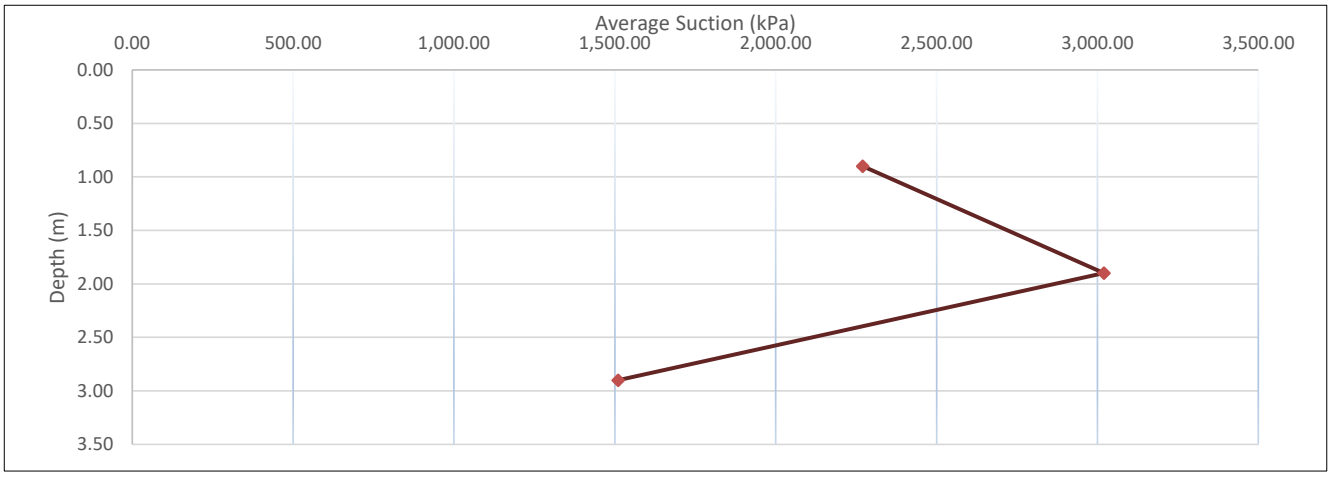
The Atterberg Limits May also be used to classify the volume change potential of fine soils using the National House building system, as given in the NHBC's Standards Chapter 4.2 (2003) "Building Near Trees"

Test Operator
Jason Smith

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	SUMMARY OF SOIL CLASSIFICATION TESTS, BRE Information Paper IP 4/93 February 1993 (Cl/SfB p1), BRE Information Paper Digest 412 ci/sFb (A3s) February 1996	auger environmental + claims mgmt + subsidence + drainage +
GSTL Contract Number	**67364**	
Report Date	**10/07/2023**	
Auger Reference	**152939.1.3.RSS**	
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample	

TH Trial Hole	Depth (m)	Filter Paper Location	Filter Paper	Sample Prep Method	Test Duration (Days)	Water Content (%)	Soil Suction Pk (kPa)	Average Soil Suction Pk (kPa)	Cumalative Heave Potential (mm) from bottom of the hole
TH1	0.90	Top	I	D	5	23.8	2290	2270	84
TH1		Middle	II	D	5	23.9	2270		
TH1		Bottom	III	D	5	23.9	2250		
TH1	1.40								
TH1									
TH1									
TH1	1.90	Top	I	D	5	21.8	3060	3020	39
TH1		Middle	II	D	5	21.9	3010		
TH1		Bottom	III	D	5	21.9	2980		
TH1	2.40								
TH1									
TH1									
TH1	2.90	Top	I	D	5	26.7	1510	1510	16
TH1		Middle	II	D	5	26.6	1530		
TH1		Bottom	III	D	5	26.7	1510		

Heave potential is calculated from the bottom of the hole and heaves above the bottom of the hole are reported as a cumalative value.
The values reported for heave above only apply to the strata the suction and plasticity have been performed on. The shallowest depth reported is assumed to be a strata thickness to GL and Heave is calculated based on that layer thickness, if the next sample is in 0.5m increments the heave is calculated based on the layer thickness of 0.5m and depths 1m from the sample above will include heave over 1m.
Consideration should be made for other stratas where values are not reported and when working out the heave potential over the entire trial hole.



Test Operator
Jason Smith

Richardson's Botanical Identifications

Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy

Dr Ian B K Richardson
BSc, MSc, PhD, MRSB, FLS
James Richardson
BSc (Hons. Biology)

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Auger Solutions
Auger House
Cross Lane
WALLASEY
Wirral CH45 8RH

Your ref: **152939-1-2**

Our ref: 87/1016

11/07/2023

Dear Sirs

Root ID

The samples you sent in relation to the above on 27/06/2023 have been examined. Their structures were referable as follows:

TH1, 0.9m		
2 no.	Examined root: a conifer - particularly like the family CUPRESSACEAE (cypresses ('macrocarpa', 'Leylandii' etc.), Thuja (Western Red Cedar), Junipers).	Alive, recently*.
1 no.	Examined root: could be a SHRUB. Similar in some ways to EUONYMUS (Spindle) - bushes with small green-white flowers growing in clusters, that in Autumn turn into popcorn-like pink fruits enclosing bright orange seeds. In its absence, other suggestions would be CISTACEAE (includes CISTUS and HELIANTHEMUM (small shrubs with very delicate and short-lived pink, yellow or white-ish flowers)) - and also - LAVANDULA (Lavender). Tentative - very THIN.	Alive, recently*.
1 no.	A piece of BARK only, insufficient material for identification.	
5 no.	Unfortunately all with insufficient cells for identification.	
TH1, 1.4m		
2 no.	Examined root: the family CUPRESSACEAE (as listed above). Less than 0.2mm in diameter.	Alive, recently*.
1 no.	A piece of BARK only, insufficient material for identification.	
5 no.	Unfortunately all with insufficient cells for identification.	
TH1, 1.9m		
2 no.	Examined root: the family CUPRESSACEAE (as listed above).	Alive, recently*.
3 no.	All pieces of BARK only - not enough material for identification.	
4 no.	Unfortunately all with insufficient cells for identification.	

/ continued overleaf

TH1, 2.4m		
2 no.	Examined root: the family CUPRESSACEAE (as listed above).	Alive, recently*.
5 no.	Unfortunately all with insufficient cells for identification.	
TH1, 2.9m		
1 no.	Examined root: the family CUPRESSACEAE (as listed above).	Alive, recently*.
2 no.	Examined root: could be ACER (Maples, Sycamores). Very immature - not more than 0.1mm in diameter; also without any BARK.	Dead* (note this 'dead' result can be unreliable with such thin samples).
2 no.	Examined root: too DECAYED for identification.	
9 no.	Unfortunately all with insufficient cells for identification.	

Click here for more information: ACER CUPRESSACEAE

I trust this is of help. Please call us if you have any queries; our Invoice is enclosed.

Yours faithfully

Dr Ian B K Richardson

* Based mainly on the Iodine test for starch. Starch is present in some cells of a living woody root, but is more or less rapidly broken down by soil micro-organisms on death of the root, sometimes before decay is evident. This result need not reflect the state of the parent tree.

Identified with no information on vegetation, on or off site.

Report commissioned by auger