

Site Investigation Report

Auger Ref:

168490.1.BSI



Job Information

Client	HGE Surveying Services Ltd
Client ref	BRW.041305
Visit date	01/05/2024
Report date	08/05/2024

Job Summary

- ✓ CCTV survey undertaken. [Read more.](#)
- ! Drainage repairs required. [Read more.](#)
- ✓ 4 trial holes undertaken. [Read more.](#)
- ! Water encountered in TH1 [Read more.](#)
- ! Requested root samples not taken. [Read more.](#)



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We invest in people Gold

Job Information

Overview

Brief

Auger were commissioned by HGE Surveying Services Ltd 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

Trial hole 1 was completed in the requested location and reached the requested depth. The footing was discovered.

Soil samples were taken at 1.3m, 1.8m, 2.3m and 2.8m. No roots were found to be present.

Water was encountered at 0.9m.

Trial Hole 2

Trial hole 2 was completed in the requested location and reached the requested depth. The footing was discovered.

Root samples were taken at 1.2m and 1.7m. Soil samples were taken at 1.2m, 1.7m, 2.2m and 2.7m.

Trial Hole 3

Trial hole 3 was completed in the requested location and reached the requested depth. The footing was discovered.

Soil samples were taken at 1.3m, 1.8m, 2.3m and 2.8m. No roots were found to be present.

Trial Hole 4

Trial hole 4 was completed as a remote borehole to the front of the property and a depth of 3m was reached.

Soil samples were taken at 1.2m, 1.7m, 2.2m and 2.7m. No roots were found to be present.

Drain Survey

We carried out high pressure water jetting in order to clear silt / debris from within the underground drainage system. Our jetting was successful and we were able to restore full flow to the system.

We carried out a CCTV survey of the below ground drainage system, our findings of which are as follows:

Line 1 - From Manhole 1 (MH1) upstream to Restbend

Our survey of line 1 revealed cracking.

Line 2 - From MH1 upstream to Beyond Area Of Concern (AOC)

Our survey of line 2 revealed no significant defects to the pipework on this line which could be allowing an escape of water.

Line 3 - From MH2 upstream to Beyond AOC

Our survey of line 3 revealed root ingress and cracking.

Line 4 - From MH2 upstream to Rain Water Pipe (RWP) 1

Our survey of line 4 revealed no significant defects to the pipework on this line which could be allowing an escape of water.

Line 5 - From MH2 downstream to Beyond AOC

Our survey of line 5 revealed root ingress and cracking.

Recommendations

Refer Back to Client	<p>It is recommended that the following repairs are carried out to prevent an escape of water from the system:</p> <p>Line 1</p> <p>Install a 100mm patch liner approximately 1.8m upstream of MH1. Deep manhole entry will be required to install the liner.</p> <p>Install a 100mm patch liner approximately 2.5m downstream of MH1. Deep manhole entry will be required to install the liner.</p> <p>Line 3</p> <p>We need to perform root cutting of the drains for approximately 2 hours prior to lining.</p> <p>Install 6m of 100mm liner directly upstream of MH2.</p> <p>Line 5</p> <p>We need to perform root cutting of the drains for approximately 1 hours prior to lining.</p> <p>Install a 150mm patch liner approximately 0.7m downstream of MH2.</p> <p>Install a 150mm patch liner approximately 1.6m downstream of MH2.</p> <p>We will now refer the claim back to the client in order to progress the claim.</p>
Repair Caveats	<p><i>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.</i></p> <p><i>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.</i></p> <p><i>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. If any issues arise in the future regarding this pipework, then excavation within the property would be required to replace the defective area of pipework. This in turn would result in major inconvenience to the occupier and a potentially large repair bill.</i></p> <p><i>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.</i></p>

Photographs

Trial Hole 1

Fig 1.1: Trial Hole 1 Location



Fig 1.2: Trial Hole 1 Footing



Trial Hole 2

Fig 2.1: Trial Hole 2 Location

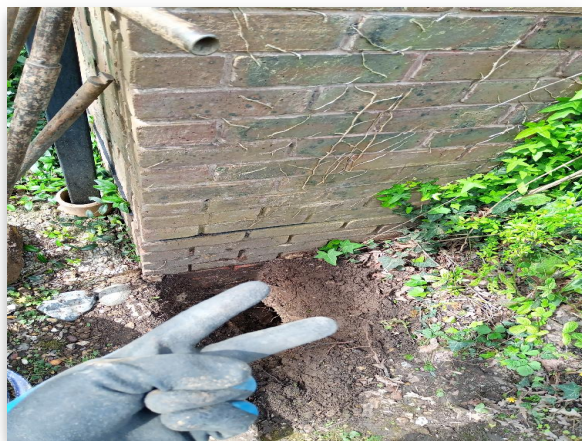


Fig 2.2: Trial Hole 2 Footing



Trial Hole 3

Fig 3.1: Trial Hole 3 Location



Fig 3.2: Trial Hole 3 Footing



Trial Hole 4

Fig 4.1: Trial Hole 4 Location



Fig 4.2: Trial Hole 4 Footing



CCTV Stills

Fig 5.1: Line 1



Fig 5.2: Line 3



Site Photos

Fig 6.1: MH1

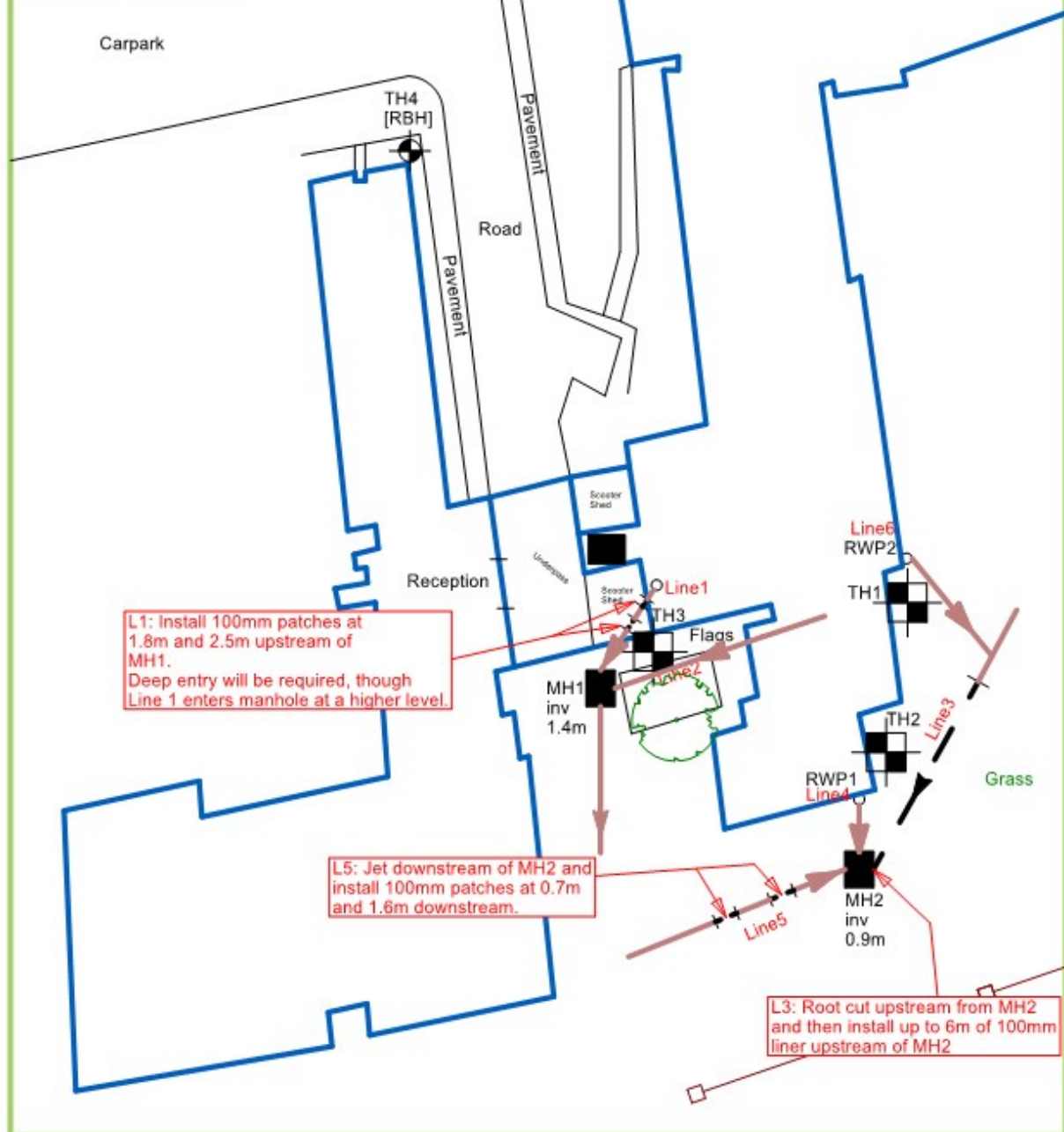


Fig 6.2: MH2



Confined space/deep entry
Jetting & Root cutting
4 100mm patches
6m 100mm liner

Subsidence



FRONT OF PROPERTY

This drawing should be used for diagrammatic purposes only. Auger are not responsible or liable for any 3rd party works undertaken using the details outlined in this drawing. Confirmation of the drainage configuration can only be confirmed by excavation or detailed technical survey.

LEGEND

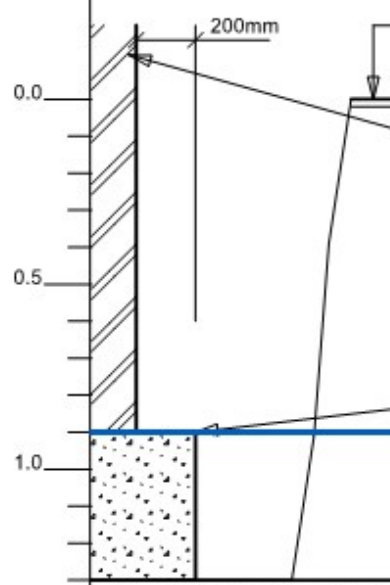
 = Manhole (MH)	 = Blockage / Collapse	 = Lines not to be repaired	 = Trial hole	 = Shrubs / Bush
 = Inspection Chamber (IC)	 = Soil Vent Pipe (SVP) / WC	 = Lines to be repaired	 = Borehole	 = Hedge
 = Combined Waste Gully (CWG) / Foul Waste Gully (FWG)	 = Rainwater Gully (RWG)	 = Assumed water mains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



Trial Hole Log No.1

Location: Rear left elevation

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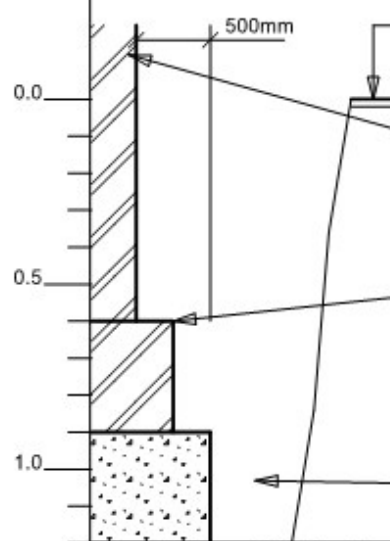
Depth (m)	Symbolic Log	Strata Description	Insitu Tests		Soil Sample	Root Sample
			SV(19)			
0.0		Ground Level				
		Grass				
		Brickwork				
0.5						
		Concrete				
1.0		Water encountered here				
1.5			120kpa		Soil @ 1.3m	
2.0		Moist very stiff orange brown fine to medium gravelly silty CLAY	150kpa		Soil @ 1.8m	
2.5			150kpa		Soil @ 2.3m	
		Moist very stiff brown fine to medium gravelly silty CLAY	150kpa		Soil @ 2.8m	
3.0		TRIAL HOLE TERMINATED	150kpa			



Trial Hole Log No.2

Location: Rear left corner

Job Ref:
168490.1.BSI

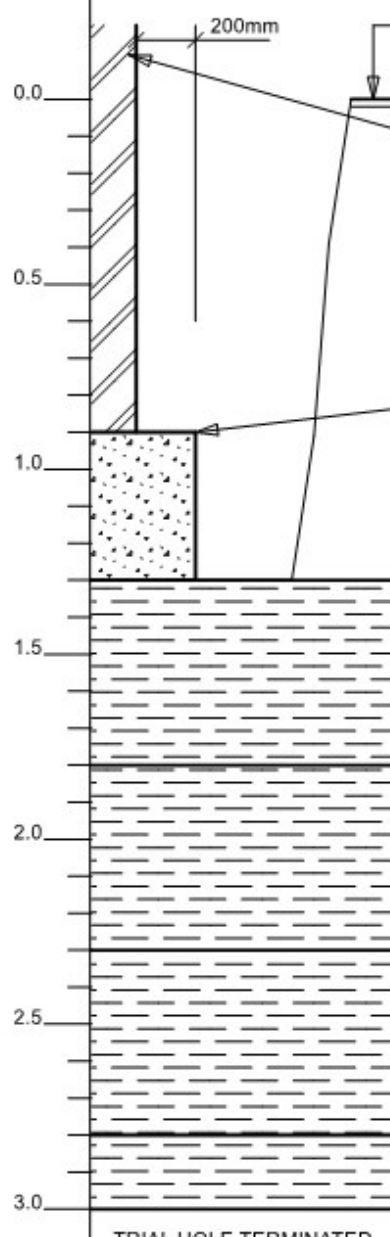
Depth (m)	Symbolic Log	Strata Description	Insitu Tests		Soil Sample	Root Sample
			SV(19)			
0.0		Ground Level				
		Soil (Border)				
		Brickwork				
0.5		Step Underpinned				
1.0		Concrete				
1.2		Moist very stiff orange brown fine to medium gravelly silty CLAY	100kpa		Soil @ 1.2m	Root @ 1.2m
1.7			125kpa		Soil @ 1.7m	Root @ 1.7m
2.2			150kpa		Soil @ 2.2m	
2.7		Moist very stiff brown fine to medium gravelly silty CLAY	150kpa		Soil @ 2.7m	
3.0		TRIAL HOLE TERMINATED	150kpa			



Trial Hole Log No.3

Location: Opposite Cherry Tree

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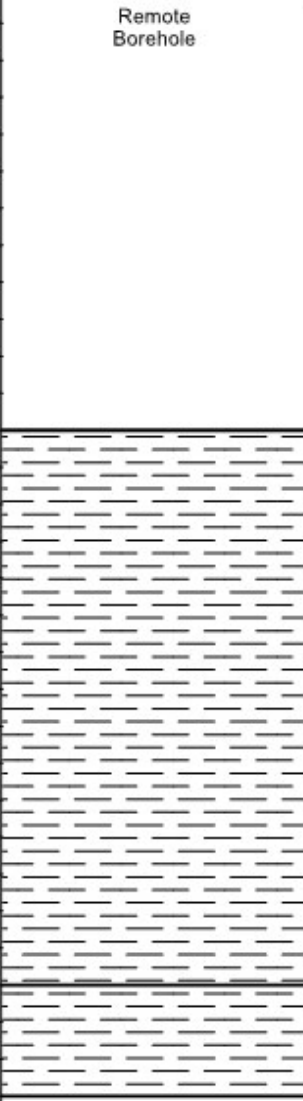
Depth (m)	Symbolic Log	Strata Description	Insitu Tests		Soil Sample	Root Sample
			SV(19)			
0.0		Ground Level				
		Flagstones				
		Brickwork				
		Concrete				
1.0						
1.5		Moist very stiff brown fine to medium gravelly silty CLAY	115kpa		Soil @ 1.3m	
2.0		Moist very stiff orange brown fine to medium gravelly silty CLAY	120kpa		Soil @ 1.8m	
2.5		Moist very stiff brown fine to medium gravelly silty CLAY	125kpa		Soil @ 2.3m	
3.0		Moist very stiff orange brown fine to medium gravelly silty CLAY	150kpa		Soil @ 2.8m	
	TRIAL HOLE TERMINATED		150kpa			



Trial Hole Log No.4

Location: Remote BH 4

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Depth (m)	Symbolic Log	Strata Description	Insitu Tests		Soil Sample	Root Sample
			SV(19)			
0.0		Ground Level Soil (Border)				
0.5						
1.0						
1.5			95kpa		Soil @ 1.2m	
2.0		Moist very stiff orange brown fine to medium gravelly silty CLAY	95kpa		Soil @ 1.7m	
2.5			100kpa		Soil @ 2.2m	
3.0		Moist very stiff brown fine to medium gravelly silty CLAY	125kpa		Soil @ 2.7m	
		TRIAL HOLE TERMINATED	150kpa			

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

72662

SI Date

01/05/2024

Issue Date

01/05/2024

Report Date

15/05/2024

Auger Reference

168490.1.3.RSS

Insurance Company

Zurich

LA Claim Reference

BRW.041305

LA Co. Reference

HGE Surveying Services Ltd

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

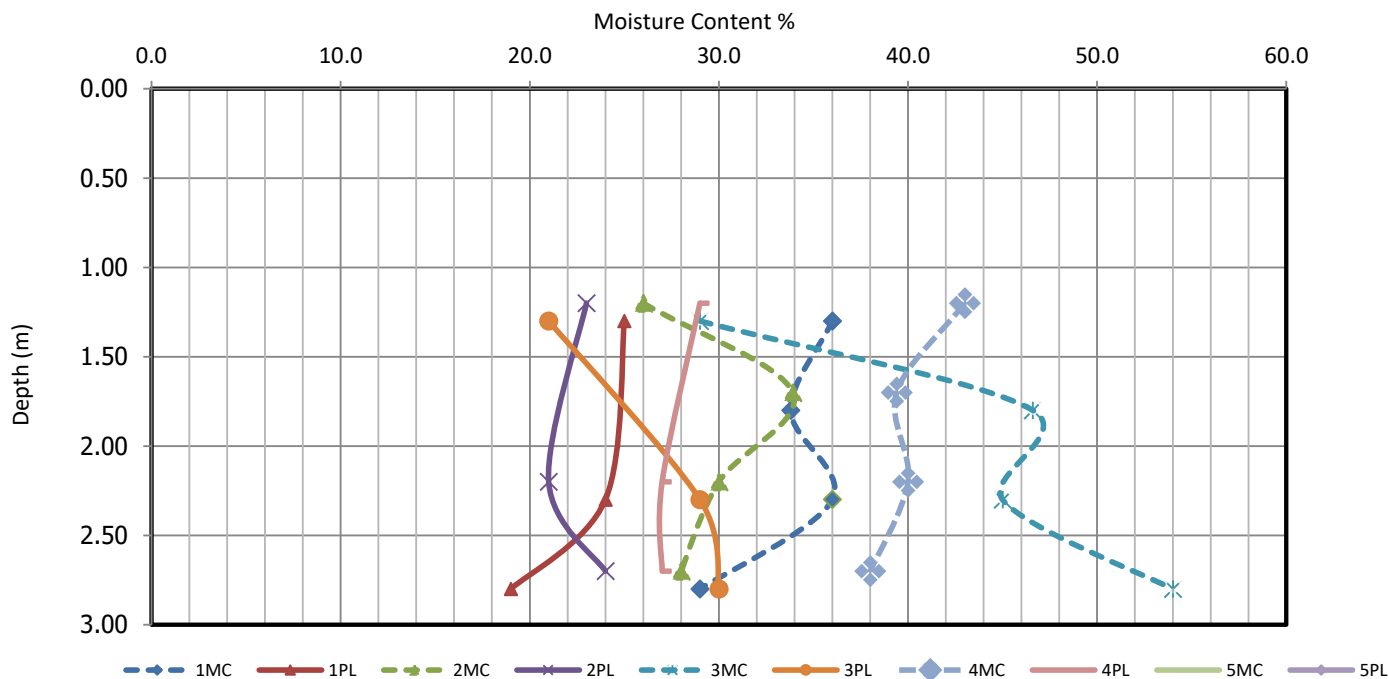
Checked and approved

15/05/2024

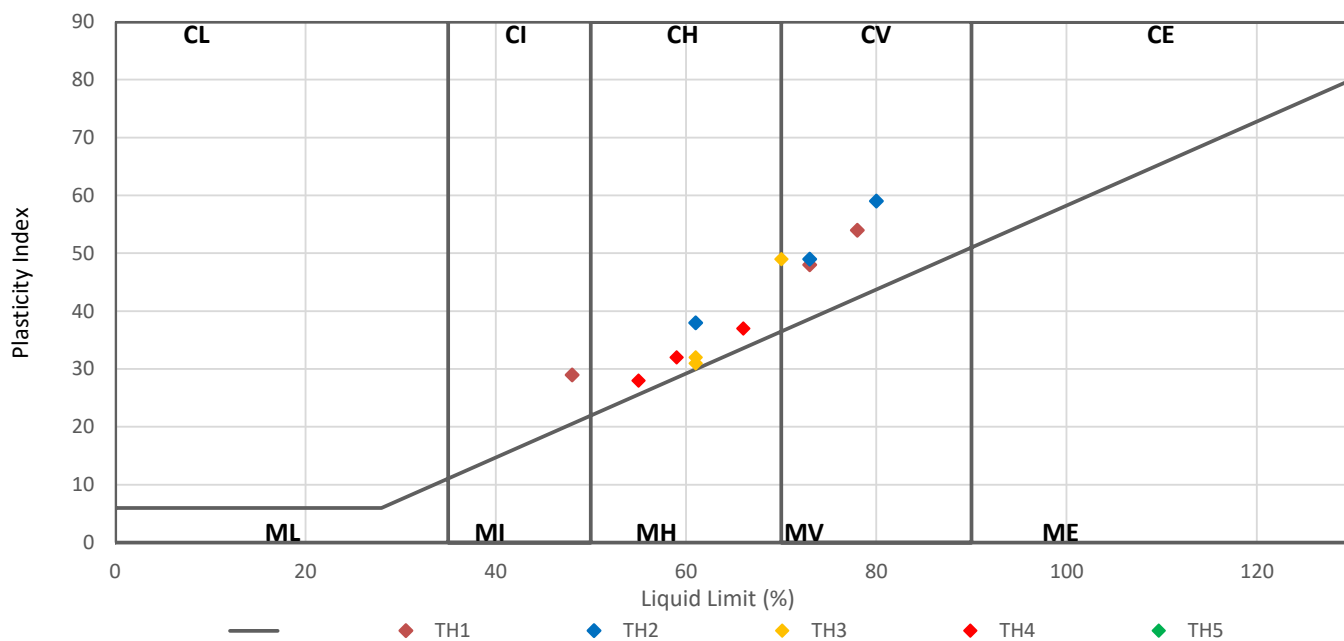
Wayne Honey



2788



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

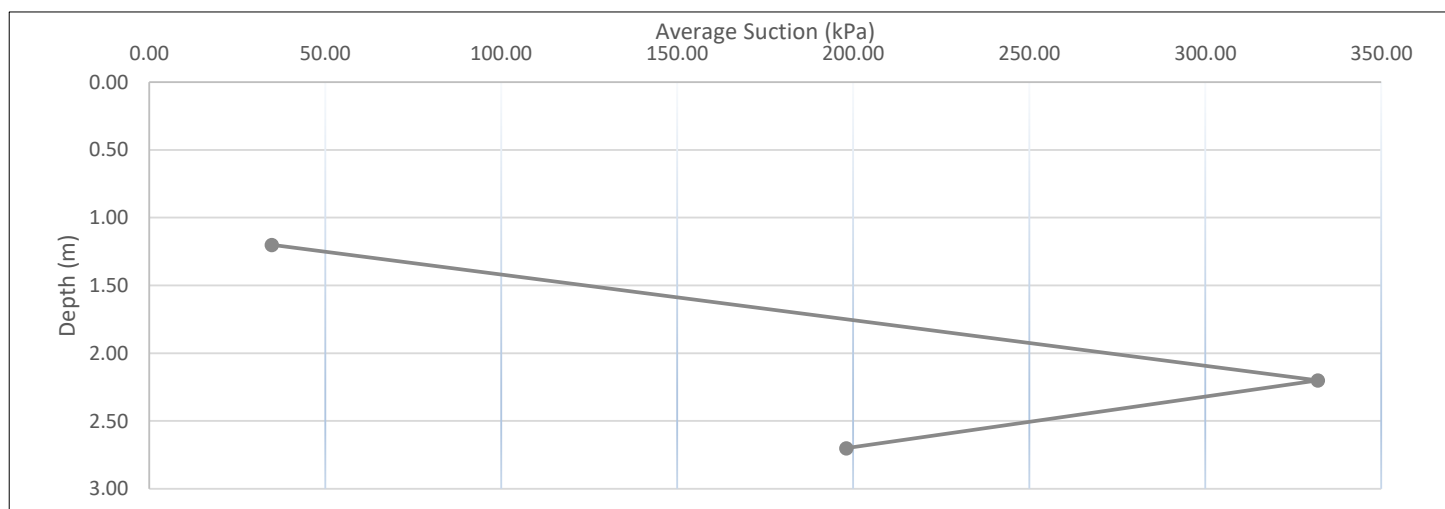
GSTL Contract Number	72662	
Report Date	15/05/2024	
Auger Reference	168490.1.3.RSS	
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample	

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)	Cumulative Heave Potential (mm) from bottom of the hole
TH2	1.20	Top	I	D	5	65.5	35	34.8	14
TH2	1.20	Middle	II	D	5	65.8	35		
TH2	1.20	Bottom	III	D	5	66.0	35		
TH2	1.70								
TH2	1.70								
TH2	1.70								
TH2	2.20	Top	I	D	5	37.2	337	332	14
TH2	2.20	Middle	II	D	5	37.3	333		
TH2	2.20	Bottom	III	D	5	37.4	327		
TH2	2.70	Top	I	D	5	40.8	201	198	4
TH2	2.70	Middle	II	D	5	40.9	199		
TH2	2.70	Bottom	III	D	5	41.0	196		

Heave potential is calculated from the bottom of the hole and heaves above the bottom of the hole are reported as a cumulative 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

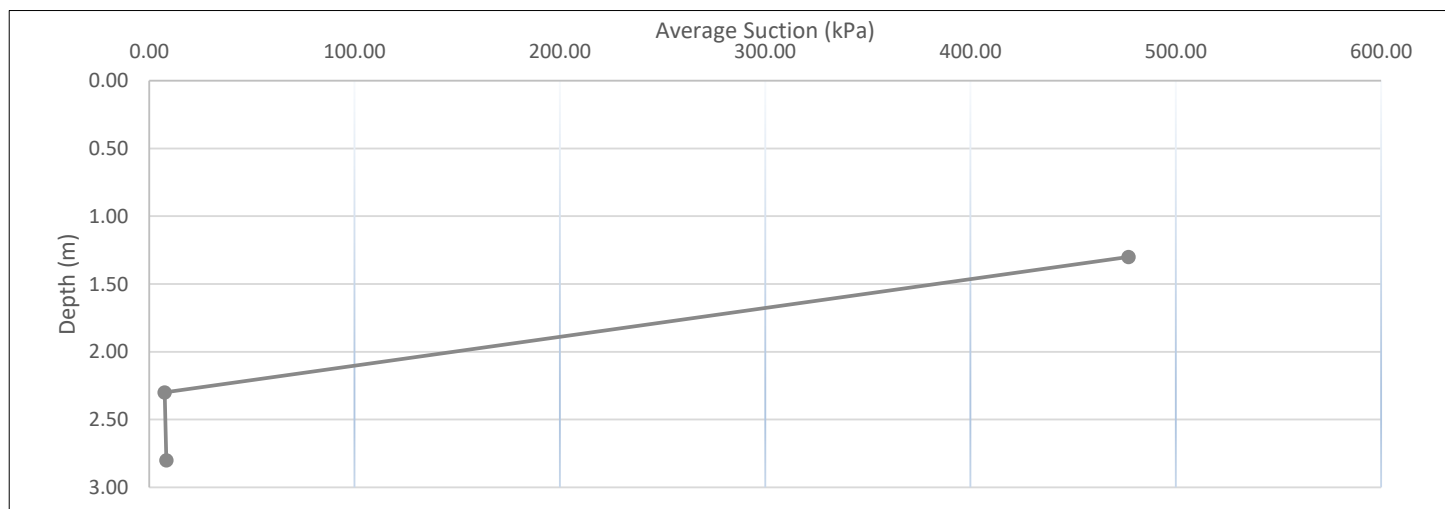
GSTL Contract Number	72662	
Report Date	15/05/2024	
Auger Reference	168490.1.3.RSS	
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample	

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)	Cumulative Heave Potential (mm) from bottom of the hole
TH3	1.30	Top	I	D	5	34.4	500	477	31
TH3	1.30	Middle	II	D	5	34.5	492		
TH3	1.30	Bottom	III	D	5	35.3	438		
TH3	1.80								
TH3	1.80								
TH3	1.80								
TH3	2.30	Top	I	D	5	121.0	8	7.53	0
TH3	2.30	Middle	II	D	5	122.0	8		
TH3	2.30	Bottom	III	D	5	122.0	7		
TH3	2.80	Top	I	D	5	117.0	8	8.27	0
TH3	2.80	Middle	II	D	5	117.0	8		
TH3	2.80	Bottom	III	D	5	118.0	8		

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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.



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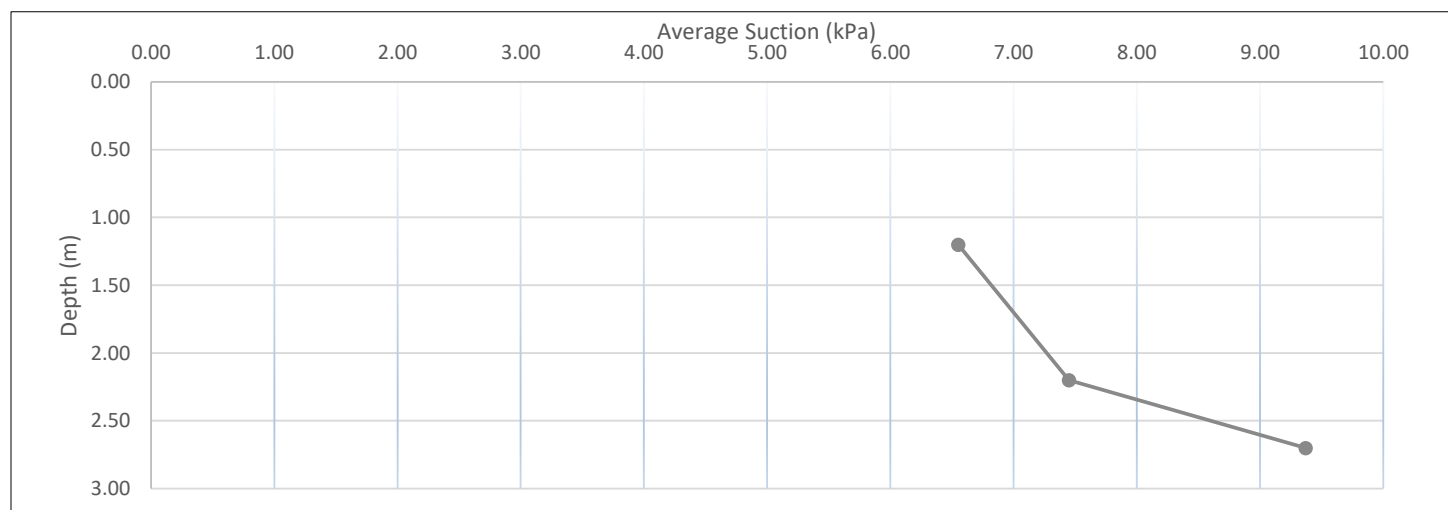
GSTL Contract Number	72662	
Report Date	15/05/2024	
Auger Reference	168490.1.3.RSS	
Remarks	D - Disturbed (Recompacted 2.5kg Rammer), U - Undisturbed Sample	

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)	Cumulative Heave Potential (mm) from bottom of the hole
TH4	1.20	Top	I	D	5	129.0	7	6.55	0
TH4	1.20	Middle	II	D	5	129.0	7		
TH4	1.20	Bottom	III	D	5	129.0	6		
TH4	1.70								
TH4	1.70								
TH4	1.70								
TH4	2.20	Top	I	D	5	122.0	8	7.45	0
TH4	2.20	Middle	II	D	5	122.0	7		
TH4	2.20	Bottom	III	D	5	123.0	7		
TH4	2.70	Top	I	D	5	111.0	9	9.37	0
TH4	2.70	Middle	II	D	5	112.0	9		
TH4	2.70	Bottom	III	D	5	112.0	9		

Heave potential is calculated from the bottom of the hole and heaves above the bottom of the hole are reported as a cumulative 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



Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy

Richardson's Botanical Identifications

Dr Ian B K Richardson
BSc, MSc, PhD, MRSB, FLS

James Richardson
BSc (Hons. Biology)

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Auger House

Cross Lane

WALLASEY

Wirral CH45 8RH

Enterprise House
49-51 Whiteknights Road
Reading
RG6 7BB

Tel: (0118) 986 9552 (Direct line)

E-mail: richardsons@botanical.net

Web: www.botanical.net

15/05/2024

Your ref: 168490-1-2

Our ref: 88/4604

Dear Sirs

Root ID

The samples you sent in relation to the above on 01/05/2024 have been examined. Their structures were referable as follows:

TH2, 1.2m		
5 no.	Examined root: QUERCUS (Oak).	Alive, recently* .
1 no.	Examined root: QUERCUS (Oak) or the related CASTANEA (Sweet Chestnut). A very POOR and THIN sample (under 0.6mm in diameter).	Alive, recently* .
1 no.	Microscopic examination showed insufficient cells for recognition.	
TH2, 1.7m		
9 no.	Examined root: QUERCUS (Oak).	Alive, recently* .
1 no.	Examined root: ULMUS (Elm).	Alive, recently* .
5 no.	Unfortunately all with insufficient cells for identification.	

Click here for more information: [CASTANEA](#) [QUERCUS](#) [ULMUS](#)

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

Yours faithfully



Dr

* 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.

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