[redacted]

Site Investigation Report

[redacted]

Job Information	
Client	Crawford & Co
Client ref	[redacted]
Visit date	21/02/2023
Report date	05/04/2023

Job Summary

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

[redacted]

Job Information

Overview

Brief	Auger were commissioned by Crawford & Co 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	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 1,2,4 and 5** Our survey of these lines revealed joint displacements and fractures at multiple points throughout the line. **Line 3 - From MH1 upstream** Our survey of line 3 revealed no significant defects to the pipework on this line which could be allowing an escape of water. The above mentioned defects to the below ground drainage system have been caused by ground movement.

Recommendations

Refer Back to Client	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 2m of 100mm pipework at a depth no greater than 1.0m through crazy paving. **Line 2** Excavate and replace RWG and 1m of 100mm pipework at a depth no greater than 1.0m through crazy paving. Install 1.5m of 100mm flexi-liner directly upstream of MH1. **Line 4** Excavate and replace the SVP restbend and 1m of 100mm pipework at a depth no greater than 1.0m through crazy paving. Install 2m of 100mm liner directly downstream of the open excavation. **Line 5** Sonde, excavate and replace 1m of pipework and a rodding eye to surface level approximately 2.5m upstream of WG1 at a depth no greater than 1.0m through tiles and concrete slab. Install 2.5m of 75mm liner directly downstream of the open excavation. Install 2m of 75mm liner directly upstream of the open excavation. The surface will be temporarily reinstated with concrete to leave the area safe and tidy. A specialist contractor will be required to reinstate the original floor finish which will incur additional costs. 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/room we are working in clear and tidy and as close to how we found it as possible. There will always be an element of dust/general debris that will build up in the room which cannot be prevented. There may however be elements of this process that are outside our remit i.e., Decoration or deep cleaning. If this is the case, then we will need to speak to the customer's insures to help in this regard. 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. 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.* *The proposed repairs will require radio detection in order to confirm the location of the defects. Although this is usually very accurate, a number of factors such as depth of pipework and presence of other services below ground can have an effect on the signal. This can result in a change of the location of the proposed excavation as well as the assumed depth and this may impact the scope of works. Costs may be subject to change due to the potential of excavating to a different depth and/or through different surfaces.* *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. 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.* *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.* *We have allowed for taking up and then attempting reinstating the concrete flooring located directly over the damaged section of pipe. We are assuming this can be done without damaging any integral components including possible reinforcement, damp proof membranes etc. within the concrete floor slab, however this can only be confirmed upon attending site and attempting to take up the localised section of flooring. Should damage occur then a specialist contractor will be required to replace the flooring as necessary in order to restore the property to its previous condition prior to works taking place. We will notify you from site if this occurs so a decision can be made as how to proceed.* *We have allowed for taking up and then attempting to reinstate the tiled flooring located directly over the defective pipe. This will involve breaking out and replacing the tiled floor. We have included a provision cost in the quotation for a specialist contractor to attend site following the repairs to reinstate the tiled flooring. In the event it is not possible to match the current tiles it maybe necessary to replace the entire floor so it can be returned to its original condition.*

Photographs

Trial Hole 1

Fig 1.1: Trial Hole 1 Location

Fig 1.2: Trial Hole 1 Footing

CCTV Stills

Fig 2.1: 75mm pipework joint displacement and fracturing

Fig 2.2: pipework defects

Site Photos

Fig 3.1: Gully to be excavated

Fig 3.2: Front of the property

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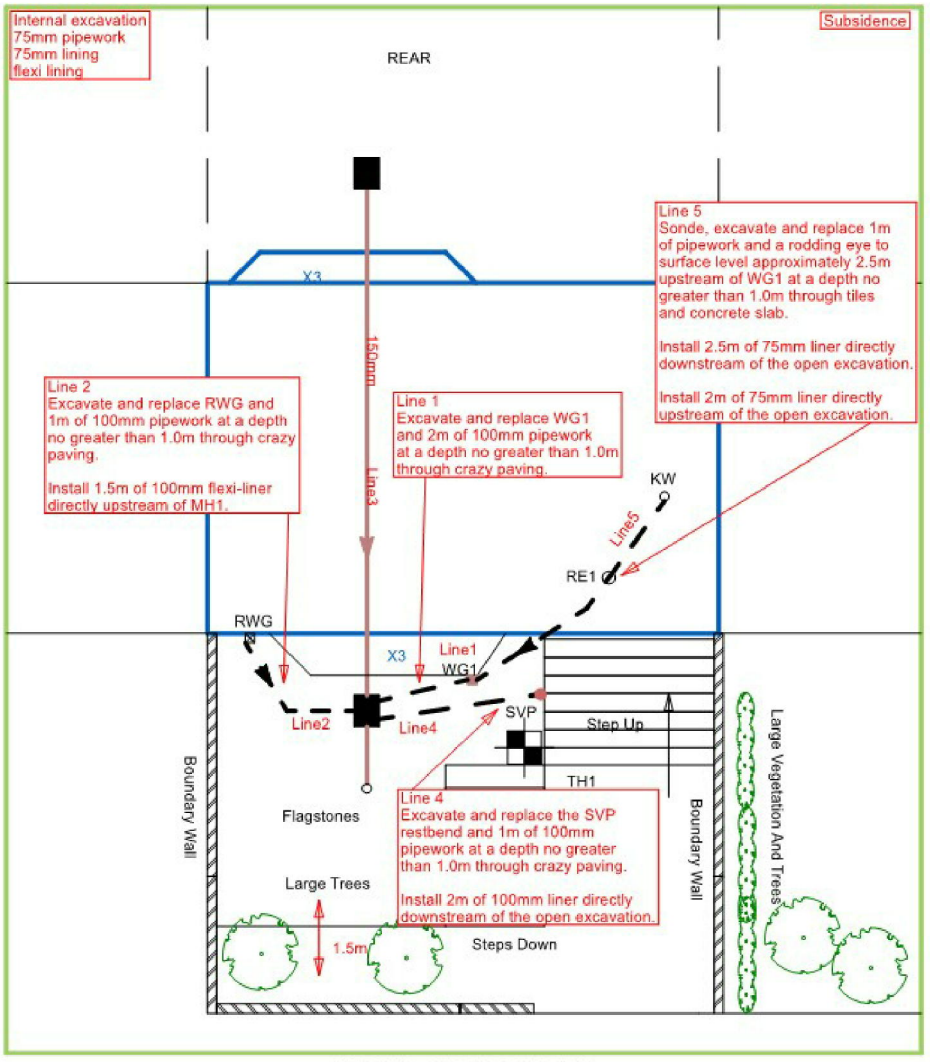
Proposed Layout

[redacted]

Date: 22/02/2023



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)
- = 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

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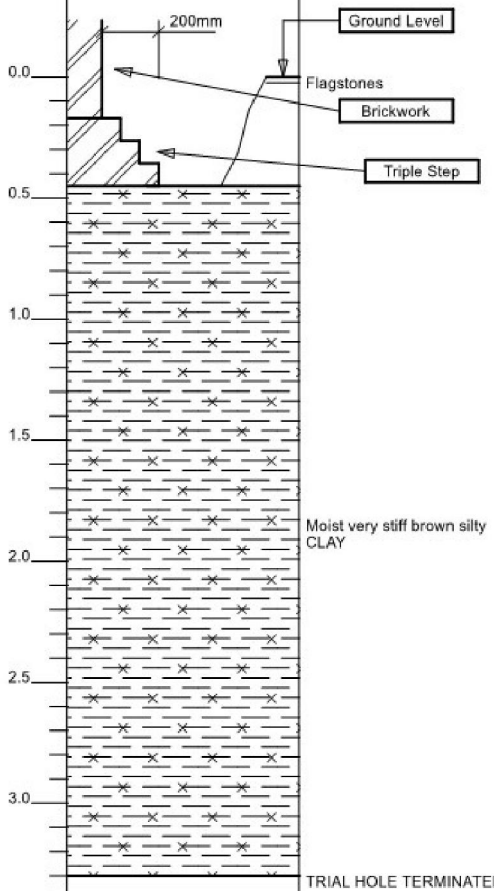
Trial Hole Log No.1

Location: Front left hand side of steps

[redacted]



Depth (m)	Symbolic Log	Strata Description	Insitu Tests SV(19)		Soil Sample	Root Sample
0.5			82kpa		Soil @ 0.45m	Root @ 0.45m
1.0			90kpa		Soil @ 0.95m	Root @ 0.95m
1.5			98kpa		Soil @ 1.45m	Root @ 1.45m
2.0		Moist very stiff brown silty CLAY	110kpa		Soil @ 1.95m	
2.5			116kpa		Soil @ 2.45m	
3.0			118kpa		Soil @ 2.95m	
3.5		TRIAL HOLE TERMINATED	120kpa			

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Geotechnical Testing Analysis Report**	auger environmental + claims mgmt + subsidence + drainage +
[redacted]	***The testing results contained within this report have been performed by GSTL a UKAS accredited laborotory on behalf of Auger.**	[redacted]

Summary Of Claim Details

Policy Holder	
GSTL Job Reference	[redacted]
SI Date	21/02/2023
Issue Date	21/02/2023
Report Date	08/03/2023
Auger Reference	144895.1.2.RSS
Insurance Company	[redacted]
LA Claim Reference	
LA Co. Reference	Crawford & Co

Checked and approved	09/03/2023	Wayne Honey	[redacted]

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	[redacted]	
Report Date	08/03/2023	
Auger Reference	[redacted]	

TH Trial Hole	Sample Type	Depth (m)	Sample Description
TH1	D	0.45	Brown fine to medium gravelly silty CLAY
TH1	D	0.95	Brown fine to medium gravelly silty CLAY
TH1	D	1.45	Brown fine to medium gravelly silty CLAY
TH1	D	1.95	Brown fine to medium gravelly silty CLAY
TH1	D	2.45	Brown fine to medium gravelly silty CLAY
TH1	D	2.95	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
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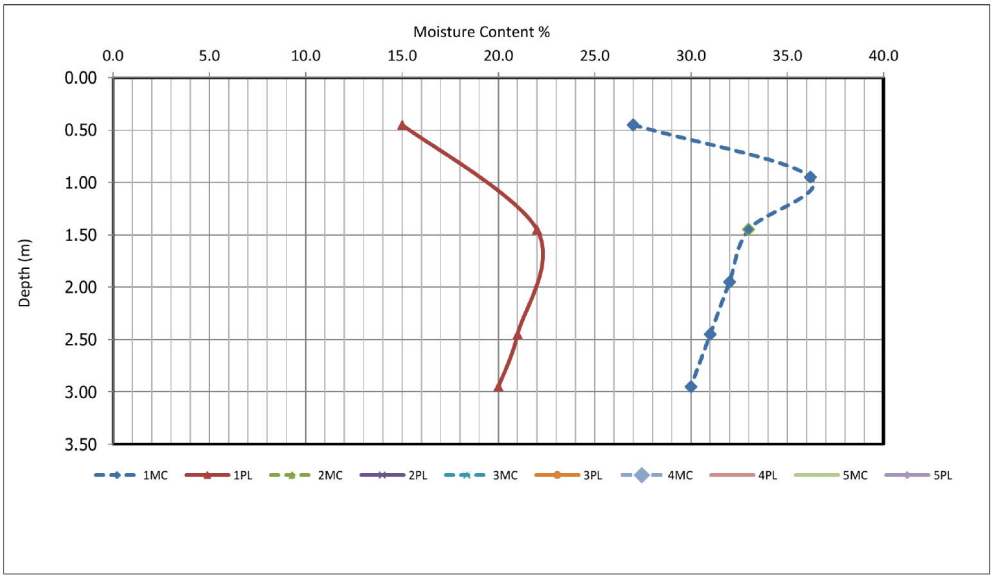
GSTL Contract Number	[redacted]	
Report Date	08/03/2023	
Auger Reference	[redacted]	
Remarks	NP - (Non-Plastic), # - (Liquid Limit and Plastic Limit Wet Sieved)	

TH Trial Hole	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	NHBC Chapter 4.2	Remarks
TH1	D	0.45	27	55	15	40	98	MEDIUM VCP	CH High Plasticity
TH1	D	0.95	36						
TH1	D	1.45	33	89	22	67	99	HIGH VCP	CV Very High Plasticity
TH1	D	1.95	32						
TH1	D	2.45	31	73	21	52	98	HIGH VCP	CV Very High Plasticity
TH1	D	2.95	30	77	20	57	97	HIGH VCP	CV Very High Plasticity

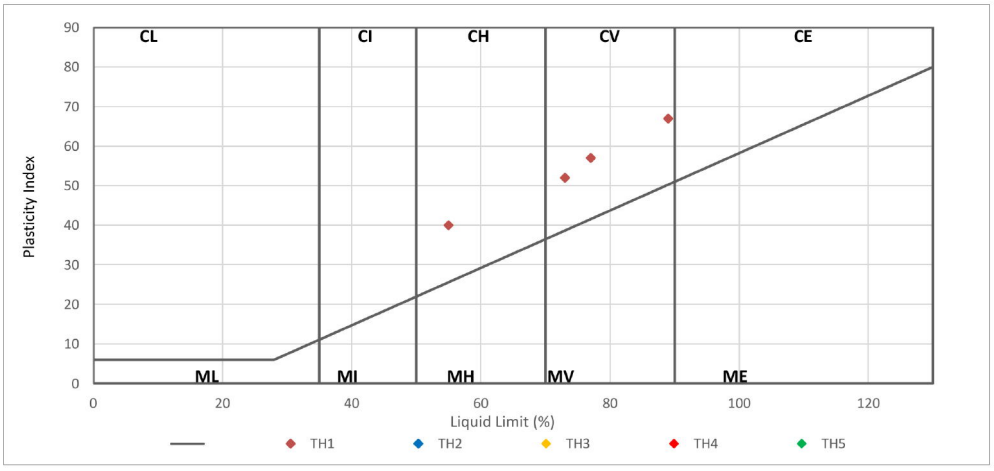
Modified Plasticity Index (PI) <10	: Non Classified
Modified PI = 10 to <20	: Low volume change potential (LOW VCP)
Modified PI = 20 to <40	: Medium volume change potential (Med VCP)
Modified PI = 40 or greater	: High volume change potential (HIGH VCP)

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



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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)

Auger Solutions

[redacted]

[redacted]

04/04/2023

Dear Sirs

Root ID

The samples you sent in relation to the above on 21/02/2023 have been examined. Their structures were referable as follows:

TH1, 0.45m		
2 no.	Examined root: TILIA (Lime). Less than 0.08mm in diameter.	Dead* (note this 'dead' result can be unreliable with such thin samples).
2 no.	Both samples revealed too few cells for microscopic identification.	
TH1, 0.95m		
3 no.	Examined root: TILIA (Lime). Under 0.8mm in diameter.	Dead*.
1 no.	Microscopic examination showed insufficient cells for recognition.	
TH1, 1.45m		
1 no.	Examined root: very THIN - not more than 0.4mm in diameter. Could also be TILIA (Lime).	Alive, recently*.
1 no.	Examined root: too DECAYED for identification.	
3 no.	Unfortunately all with insufficient cells for identification.	

Click here for more information: TILIA

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

Yours faithfully

[redacted]

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.

* * Try out our web site on www.botanical.net * *

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

Report commissioned by auger