

SITE INVESTIGATION FACTUAL REPORT

NAME: Fleming

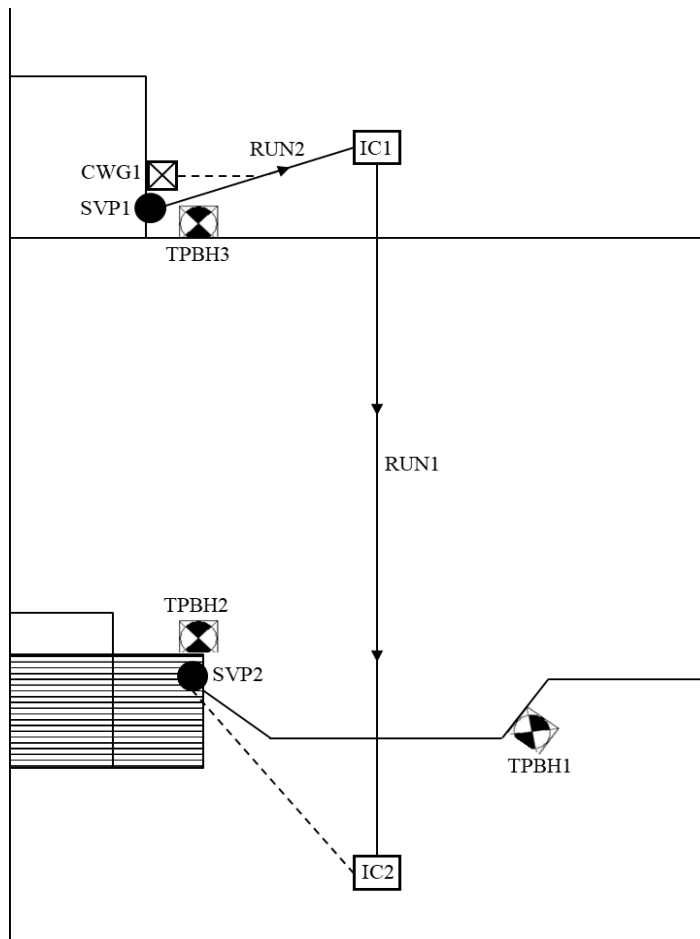
ADDRESS: 139 Stapleton Hall Road, London, N4 4RB

CLIENT REF: QG1S1119416

OUR REF: HH/20/66555

SITE AND DRAINAGE LAYOUT

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416



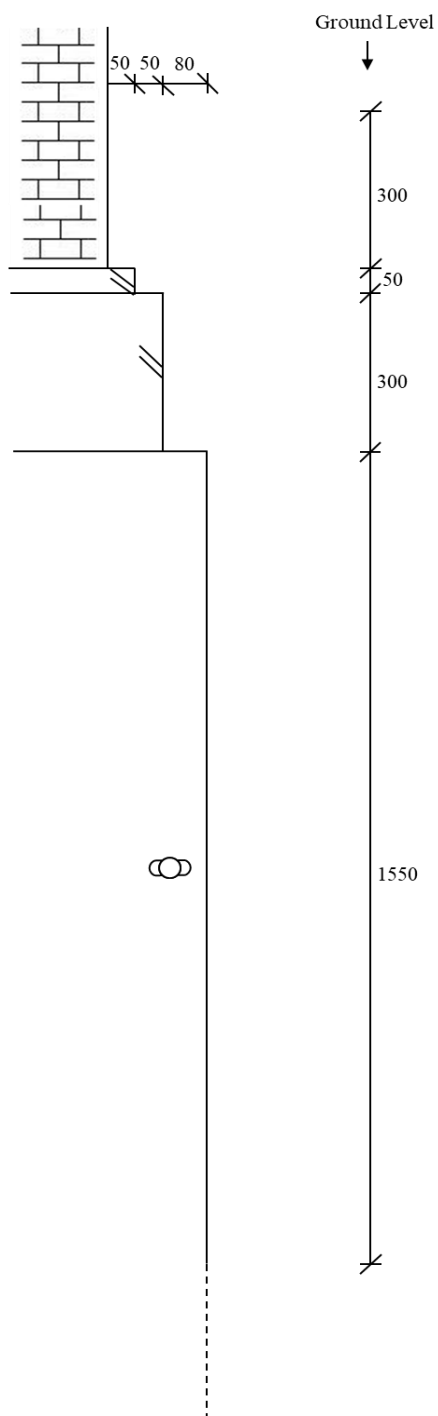
General Comments: TP/BH3 relocated to avoid buried services in the original location.

Key: =RWGully =RWPipe =FWGully =W/C or S/V pipe =Inspection Chamber
 =Rodding Eye =Surveyed pipe indicating fall =Unsurveyed pipe
 =E/H=Exploratory Hole (hand dug pit and/or window sample
 =Hedge or Shrub =Tree =Boundary line



FOUNDATION PIT RECORD

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416
Trial Pit No: 1			



Unable to find the underside in
TP/BH1..

For strata information, please refer to borehole log TPBH1.



BOREHOLE LOG RECORD

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416
Borehole No: 1			

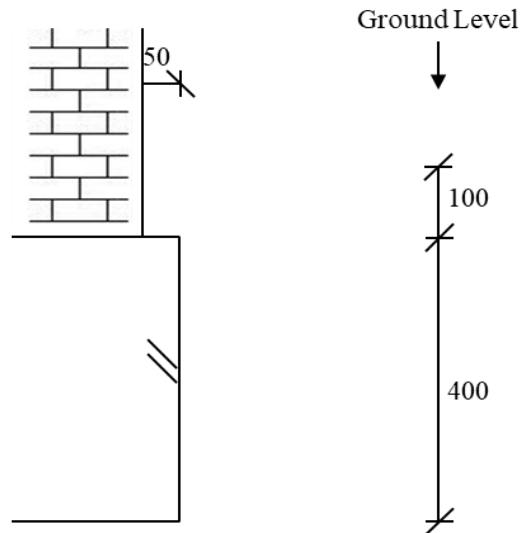
GEOCORE Site Investigations Ltd.		BOREHOLE LOG		Geocore Site Investigations Ltd Tralee Close, Kirkleatham Bus Pk Redcar, TS10 5SG Telephone: 01642 481144					
Location 139 Stapleton Hall Road, London, N4 4RB					BOREHOLE No TP/BH1				
Job No HH/20/66555	Date 03-03-21	Ground Level (m)	Co-Ordinates ()						
Client QuestGates				Sheet 1 of 1					
SAMPLES & TESTS			STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/Backfill	
0.50	HV	56kPa@0.5m				0.01 0.08 0.15	MADE GROUND Block paving. MADE GROUND Builder's sand. MADE GROUND Dark grey slightly clayey, slightly gravelly organic sand. Gravel is of fine to coarse sub angular quartz and slate. Firm brown slightly sandy, slightly gravelly CLAY. Gravel is of fine to medium sub rounded chalk and coal.		
1.00	HV	58kPa@1.0m							
1.50	IIV	56kPa@1.5m				(2.85)			
1.80	D1								
2.00	HV	60kPa@2.0m							
2.30	D2								
2.50	IIV	63kPa@2.5m							
2.80	D3								
3.00	HV	70kPa@3.0m				3.00	Unable to determine base of foundation.		
Boring Progress and Water Observations			Chiselling			Water Added		GENERAL REMARKS Borehole terminated at 3m. Excavation remained dry and open on completion.	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To		Hours
All dimensions in metres Scale 1:25		Client Engineer Edsel Meneaud		Method/ Plant Used III window sampler		Logged By S Bond			

GEOCORE BH 066555.GPJ AUGUST 788.GPJ 21/04/21



FOUNDATION PIT RECORD

Site Crew:		S Bond & S Hodgson	Date:	3rd March 2021
Address:		139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:		HH/20/66555	Client Ref:	QG1S1119416
Trial Pit No: 2				



For strata information, please refer to borehole log TPBH2.



BOREHOLE LOG RECORD

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416
Borehole No: 2			

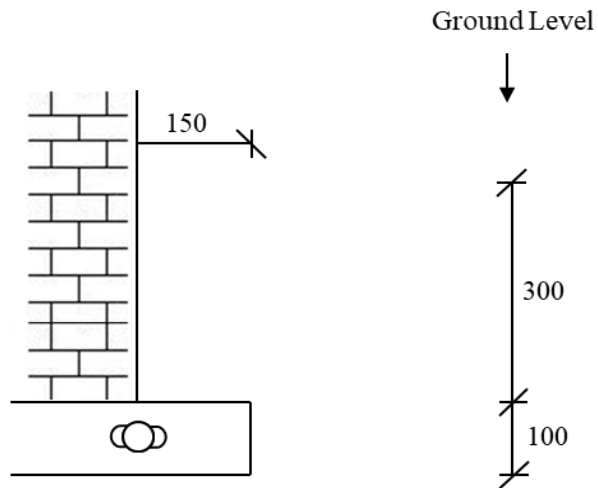
GEOCORE		BOREHOLE LOG		Geocore Site Investigations Ltd Tralee Close, Kirkleatham Bus Pk Redcar, TS10 5SG Telephone: 01642 481144					
Location 139 Stapleton Hall Road, London, N4 4RB					BOREHOLE No TP/BH2				
Job No HH/20/66555	Date 03-03-21	Ground Level (m)	Co-Ordinates ()						
Client QuestGates					Sheet 1 of 1				
SAMPLES & TESTS			STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/Backfill	
						(0.20) 0.20	MADE GROUND Concrete.		
						(0.30) 0.50	MADE GROUND Brick.		
0.50 0.60	HV D1	110kPa@0.5m					Base of foundation at 0.5m. Firm brown slightly sandy, slightly gravelly CLAY. Gravel is of fine to medium sub rounded chalk and coal.		
1.00 1.10	IV D2	120kPa@1.0m				(1.80)			
1.50 1.60	HV D3	120kPa@1.5m							
2.00 2.10	HV D4	125kPa@2.0m				2.30			
Boring Progress and Water Observations			Chiselling			Water Added		GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To		Hours
All dimensions in metres Scale 1:25			Client Engineer Edsel Meneaud			Method/ Plant Used III auger		Logged By S Bond	

GEOCORE BH 66555.GPJ AUGUST 788.GPJ 21/4/21



FOUNDATION PIT RECORD

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416
Trial Pit No: 3			



For strata information, please refer to borehole log TPBH3.



BOREHOLE LOG RECORD

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416
Borehole No: 3			

GEOCORE Site Investigation Ltd		BOREHOLE LOG		Geocore Site Investigations Ltd Tralee Close, Kirkleatham Bus Pk Redcar, TS10 5SG Telephone: 01642 481144				
Location 139 Stapleton Hall Road, London, N4 4RB					BOREHOLE No TP/BH3			
Job No HH/20/66555	Date 03-03-21	Ground Level (m)	Co-Ordinates ()					
Client QuestGates					Sheet 1 of 1			
SAMPLES & TESTS			STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/ Backfill
0.60	D1					0.10	MADE GROUND Concrete.	
1.10	D2						Firm brown slightly sandy, slightly gravelly CLAY. Gravel is of fine to medium sub rounded chalk and coal.	
1.60	D3					(2.90)	Base of foundation at 0.4m	
2.10	D4							
2.60	D5					3.00		
Boring Progress and Water Observations			Chiselling		Water Added		GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours
All dimensions in metres Scale 1:25			Client Engineer Edsel Meneaud		Method/ Plant Used HH window sampler		Logged By S Bond	

GEOCORE BH 66555 GPJ AUGUST 788 GPJ 21/4/21



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Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

SUMMARY OF SOIL CLASSIFICATION TESTS

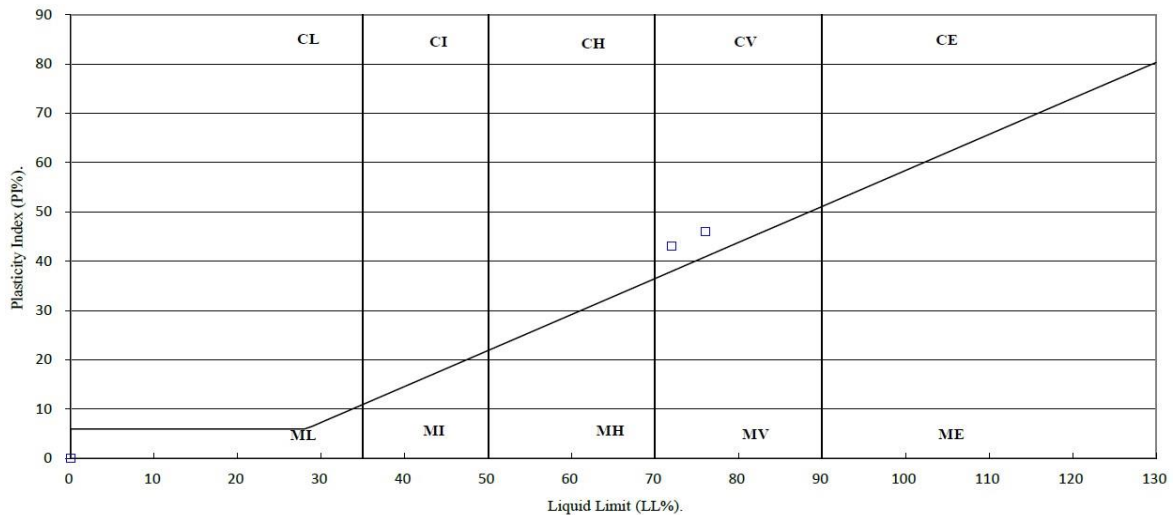
(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.





Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
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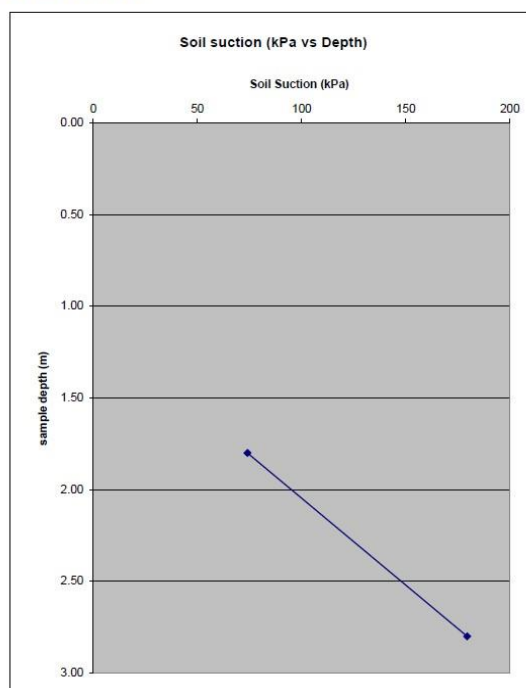
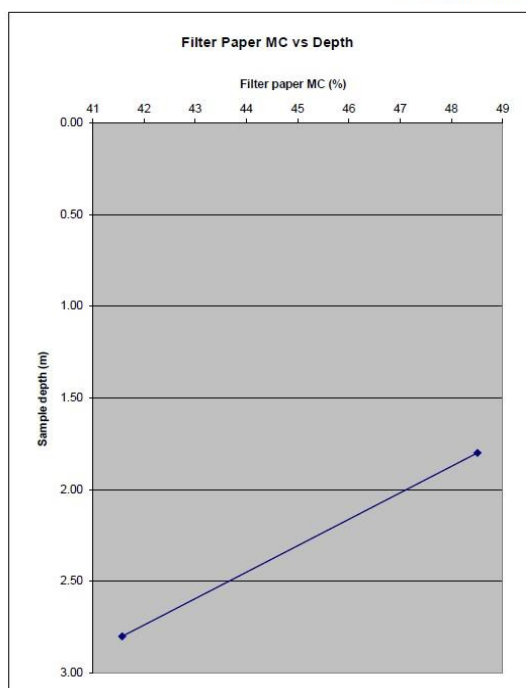
SUMMARY OF SOIL CLASSIFICATION TESTS

Soil Suction Test

BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)

[illegible]

Soil Suction Test - Graphical data
BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)





Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
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Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

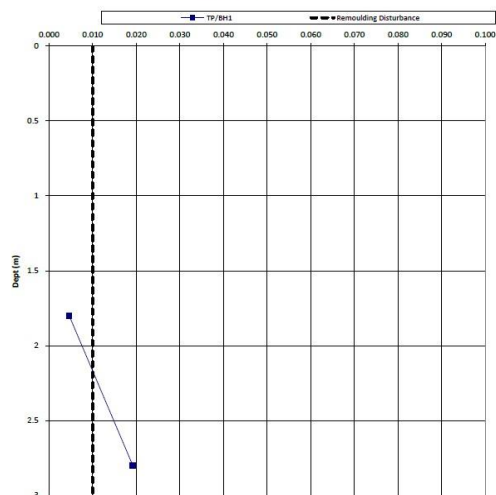
Summary of results

One Dimensional Swell / Strain test - In House Method

Hole Number	Sample Number	Sample Type	Depth m	Strain	Dd (mm)	Moisture Content (%)	Remarks
TP/BH1	1	D	1.80	0.0046	4.2	33	
TP/BH1	3	D	2.80	0.0192	9.6	31	
Total column Dd TP/BH1 =				13.8 mm			

Oedometer Strain

One Dimensional Swell / Strain test - In House Method



TESTING RESULTS

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

SUMMARY OF SOIL CLASSIFICATION TESTS

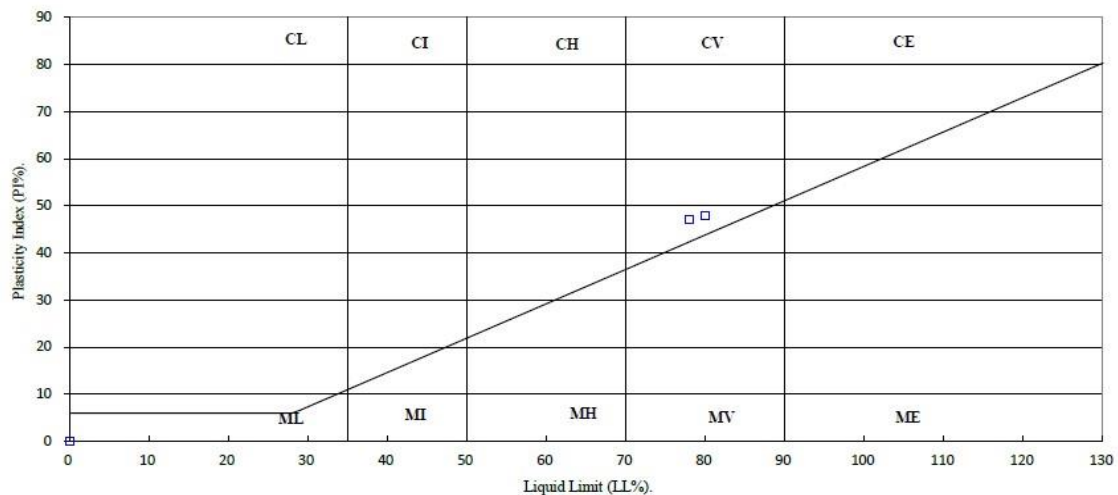
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.





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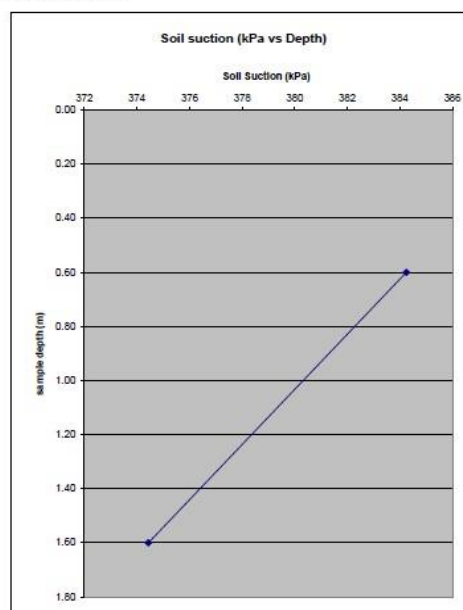
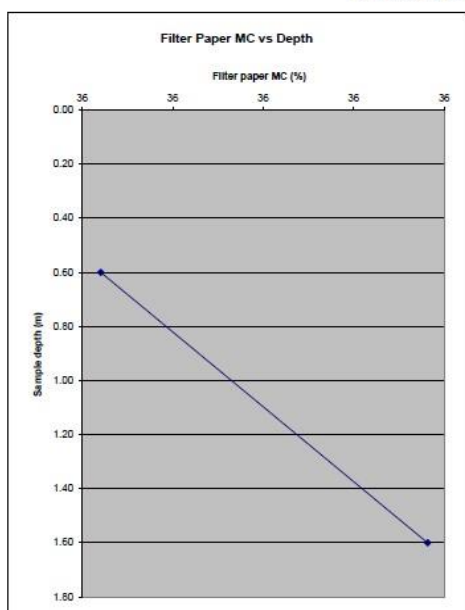
SUMMARY OF SOIL CLASSIFICATION TESTS

Soil Suction Test

BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)

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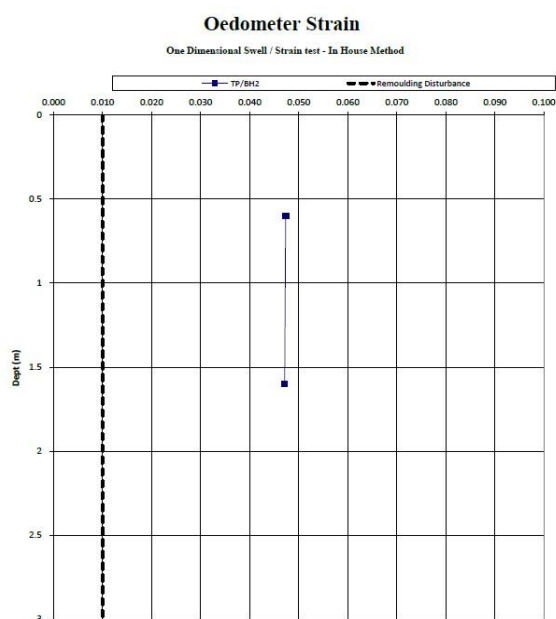
Soil Suction Test - Graphical data
BRE Information Paper IP 4/93 February 1993 (CI/SfB p1)





Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

Summary of results							
One Dimensional Swell / Strain test - In House Method							
Hole Number	Sample Number	Sample Type	Depth m	Strain	Dd (mm)	Moisture Content (%)	Remarks
TP/BH2	1	D	0.60	0.0473	14.2	32	
TP/BH2	3	D	1.60	0.0471	23.6	31	
Total column Dd TP/BH2 =				37.8 mm			





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SUMMARY OF SOIL CLASSIFICATION TESTS

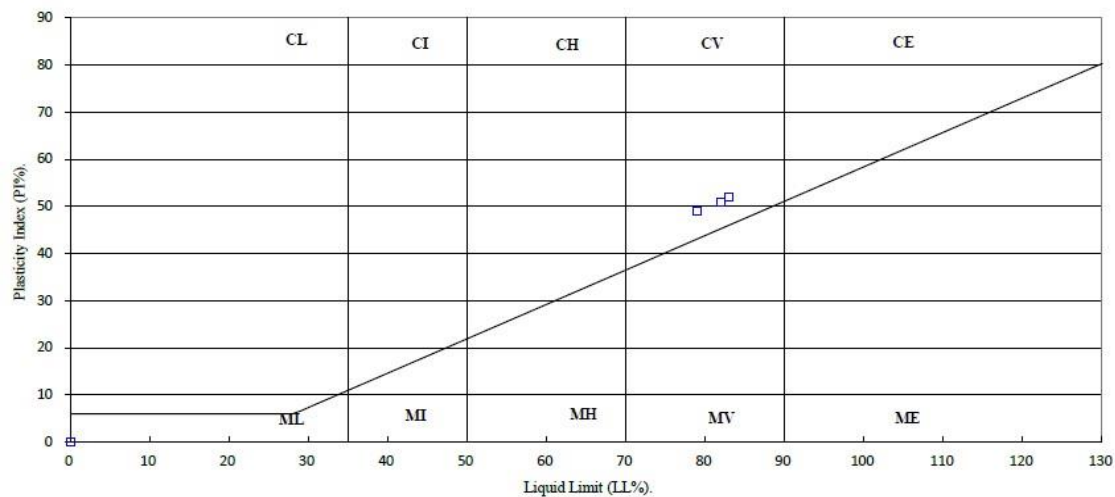
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SYMBOLS : NP : Non Plastic

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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.





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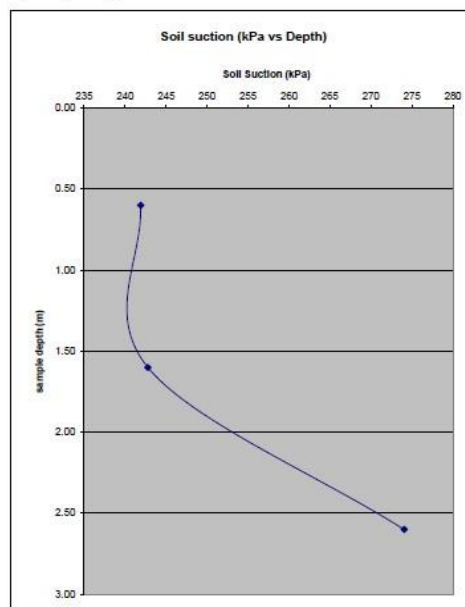
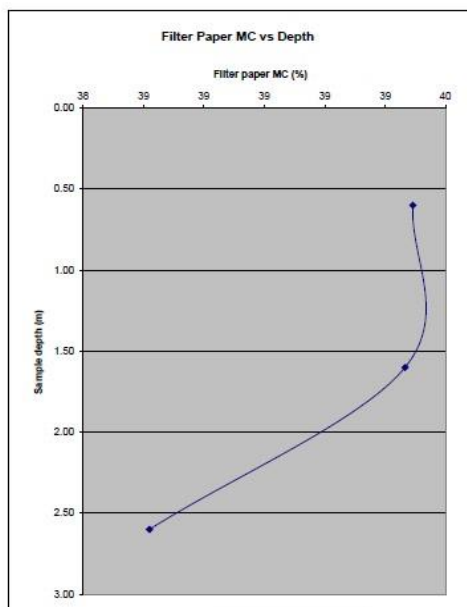
Soil Suction Test

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[illegible]

Soil Suction Test - Graphical data

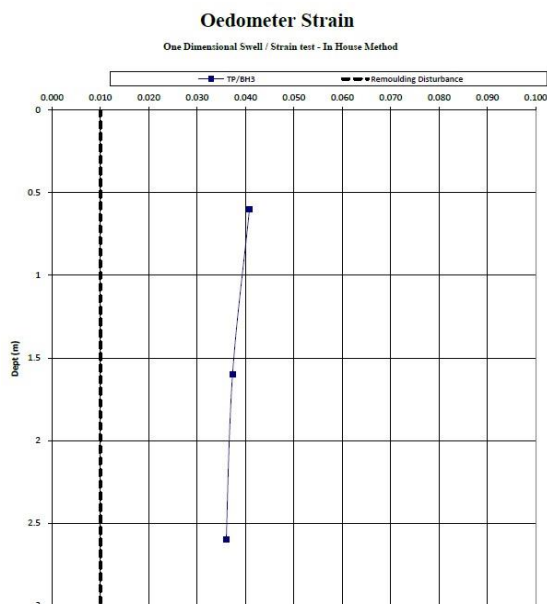
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Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

Summary of results							
One Dimensional Swell / Strain test - In House Method							
Hole Number	Sample Number	Sample Type	Depth m	Strain	Dd (mm)	Moisture Content (%)	Remarks
TP/BH3	1	D	0.60	0.0408	12.2	31	
TP/BH3	3	D	1.60	0.0373	18.7	31	
TP/BH3	5	D	2.60	0.0360	18.0	31	
Total column Dd TP/BH3 =				48.9 mm			



HEAVE ANALYSIS RESULTS

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

Moisture content values across the site are below or approaching both the plastic limit and 40% of the Liquid limit. It is therefore likely that the ground has attained desiccation in this area. Oedometer strain test results are indicative of this showing potential heave of 13.8mm, 37.8mm and 48.9mm in BH1, BH2 and BH3 respectively. These should be considered the maximum value. Heave calculations have also been undertaken via the soil suction method for BH2 and BH3, predicting surface heave of approximately 18mm (BH2) and 25mm (BH3). These should be considered the minimum value. Unfortunately, owing to an anomalous suction result and limited data, it has not been possible to undertake a heave calculation via the suction method for BH1

Heave Calculation

TP/BH2

Depth (m)	Measured Soil Suctions (kPa)		Excess suction (kPa)	Equilibrium mean effective stress (kPa)	Layer thickness (mm)	Average layer excess suction (kPa)	Average equilibrium mean effective stress (kPa)	Layer water deficiency (mm)	Cumulative water deficiency (mm)	Heave potential (mm)
	Arbitrary* (control)	TP/BH2								
0.6	116.64	384.3	267.66	41.64					74.43	18.61
		LAYER 1			1000	252.593333	51.84	74.43		
1.6	137.04	374.567	237.526667	62.04					0.00	0.00

Arbitrary Control Ass Ko =2.5 Sample Dist. =75Kpa

TOTAL SURFACE HEAVE POTENTIAL OVER BH DEPTH = Approx 18mm

(Based Upon BRE Digest 412 Feb 1996 'Using Suction Profiles')

Heave Calculation

TP/BH3

Depth (m)	Measured Soil Suctions (kPa)		Excess suction (kPa)	Equilibrium mean effective stress (kPa)	Layer thickness (mm)	Average Layer Excess Suction (kPa)	Average equilibrium mean effective stress (kPa)	Layer water deficiency (mm)	Cumulative water deficiency (mm)	Heave potential (mm)
	Arbitrary* (control)	TP/BH3								
0.6	116.64	241.867	125.226667	41.64					97.51	24.38
		LAYER 1			1000	115.543333	51.84	53.33		
1.6	137.04	242.9	105.86	62.04					44.18	11.04
		LAYER 2			1000	111.31	72.24	44.18		
2.6	157.44	274.2	116.76	82.44					0.00	0.00

Arbitrary Control Ass Ko =2.5 Sample Dist. =75Kpa

TOTAL SURFACE HEAVE POTENTIAL OVER BH DEPTH = 25mm

(Based Upon BRE Digest 412 Feb 1996 'Using Suction Profiles')



ROOT ANALYSIS RESULTS

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416

Richardson's Botanical Identifications

Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy

Geocore Site Investigations Limited

**Tralee Close
Kirkleatham Business Park
REDCAR**

Cleveland TS10 5SG

18/03/2021

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

James Richardson
BSc (Hons. Biology)

**Enterprise House
49-51 Whiteknights Road
Reading
RG6 7BB**

Tel: (0118) 986 9552 *(Direct line)*

E-mail: richardsons@botanical.net

Web: www.botanical.net

Your ref: **66555**

Our ref: **82/0412**

Dear Sirs

139 Stapleton Hall Road London N4 4RB

The samples you sent in relation to the above on 03/03/2021 have been examined. Their structures were referable as follows:

TP/BH3, 0.4-2.2m

1 root: ACER (Maples, Sycamores). 8 further samples, not examined in detail appeared similar under low magnification. Alive, recently*.

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

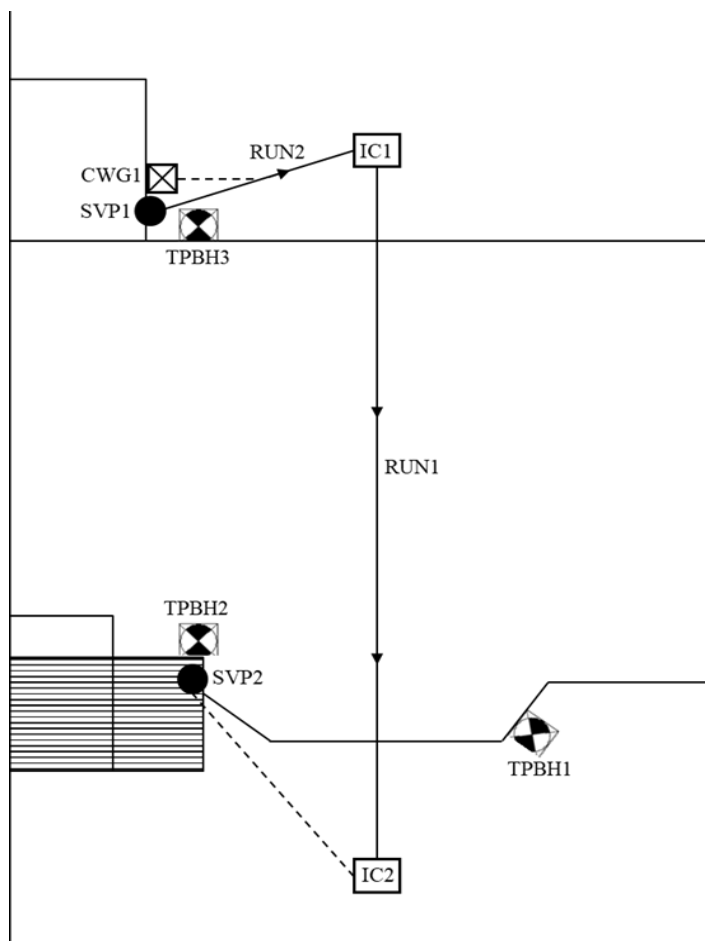
* Based mainly on the Iodine test for starch. Starch is present in some cells of a living woody root, but is more or less rapidly broken down by soil micro-organisms on death of the root, sometimes before decay is evident. This result need not reflect the state of the parent tree.

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

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

SITE AND DRAINAGE LAYOUT

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocore Ref:	HH/20/66555	Client Ref:	QG1S1119416



General Comments:

Key:	 =RW Gully	 =RW Pipe	 =FW Gully	 =W/C or S/V pipe	 =Inspection Chamber
	 =Rodding Eye	 =Surveyed pipe indicating fall	 =Unsurveyed pipe		
	 =E/H=Exploratory Hole (hand dug pit and/or window sample)				
	 =Hedge or Shrub	 =Tree	 =Boundary line		



CCTV SURVEY DETAILS

Site Crew:		S Bond & S Hodgson				Date:	3rd March 2021
Address:		139 Stapleton Hall Road, London, N4 4RB					
Geocore Ref:		HH/20/66555				Client Ref:	QG1S1119416
Run: 1	Dir: D/S	Pipe Dia(mm):	100	System:	C/W	Made Of:	V/C
From:	I/C1	Inv(m):	0.5	To:	I/C2	Inv(m):	2.6
Metres	Faults/Defects					Internal Condition Grade (ICG)	Remarks
0	ST						
0	WL: 0%						
13.8	CM: 12 o'clock to 6 o'clock					Grade 3	
14	FH						
Run: 2	Dir: D/S	Pipe Dia(mm):	100	System:	C/W	Made Of:	V/C
From:	I/C1	Inv(m):	0.5	To:	SVP1	Inv(m):	N/A
Metres	Faults/Defects					Internal Condition Grade (ICG)	Remarks
0	ST						
0	WL: 0%						
0.1	LL						
0.59	Hole in pipe at 11 o'clock with root protruding through hole					Grade 3	
0.7	JN: At 3 o'clock (Defective)						CWG 1
0.7	CC: 9 o'clock to 12 o'clock					Grade 2	Edge of junction
1.31	LR						
1.69	FH						

Key: I/C=Inspection Chamber, Inv=Invert, RWG=Rainwater Gully, FWG=Foul Water Gully, CWG = Combined Water Gully



SURVEY NOTES

Site Crew:	S Bond & S Hodgson	Date:	3rd March 2021
Address:	139 Stapleton Hall Road, London, N4 4RB		
Geocode Ref:	HH/20/66555	Client Ref:	QG1S1119416

Parking permit required from Monday to Friday between 12 o'clock and 2 o'clock. No outside tap.
Access to rear of property through flat.

Run 1: I/C 1 downstream to I/C 2: Defects identified just before the camera enters I/C 2.

Run 2: I/C 1 upstream to SVP 1: Defects identified including the junction that links CWG 1 to the drain run.

Operatives on site were unable to CCTV any of the drains into I/C 3 due to the invert depth of the chamber. The benching within the chamber is in poor condition so our operatives were unable to rest the pipe onto the concrete to guide the camera up the branches as this would have caused the concrete to fall into the channel and potentially block the drains.



RECOMMENDATIONS

Item 1: Run 1: I/C 1 downstream to I/C 2 and drains to the front of the property from I/C 2. Confined space equipment required for manhole entry to I/C 1.

Patch lining required for defects identified within the drain run just before I/C 2.
Replace benching in I/C 2 using rapid drying cement.

Item 2: Run 2: I/C 1 upstream to the SVP including the CWG 1: Excavate and replace the defective junction
CCTV upstream of the excavated junction towards the CWG 1 and report the findings.



QUOTATION

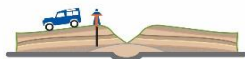
Site Crew:		S Bond & S Hodgson		Date:	3rd March 2021	
Address:		139 Stapleton Hall Road, London, N4 4RB				
Geocore Ref:		HH/20/66555		Client Ref:	QG1S1119416	
Item	Description	No	Unit	Rate	Total	
Item 1	Run 1: I/C 1 downstream to I/C 2 to include all branches within I/C 2					
	Confined space entry equipment				£200.00	
	Patch line				£230.00	
	Replace benching within chamber				£100.00	
	High pressure water clean and CCTV				£280.00	
				TOTAL	£810.00	
Item 2	Run 2: I/C 1 upstream to the SVP (Including CWG 1)					
	Excavate and replace the junction per metre				£140.00	
	E.O for bends x 3				£36.00	
	E.O for band seals x 3				£75.00	
	E.O for waste disposal				£65.00	
	CCTV from excavated junction upstream to CWG 1. Price included within item 1					
	Reinstatement of surface upon completion				£40.00	
				TOTAL	£356.00	
	Report				£50.00	
NOTES:			Sub Contract Value		£1,216.00	
			Minimum Charge		£830.00	
			VAT at 20%		£243.20	
			Grand Total		£1,459.20	

Internal Condition Grade (ICG)	Typical Defect Descriptions
5	Already collapsed Deformation >10% and broken Extensive areas of fabric missing Fracture with deformation >10%
4	Broken Deformation >10% and broken Fracture with deformation 6-10% Multiple fracture Serious loss of level Serious joint defects with voids or soil visible (open joint with >50mm soil or void visible or joint displacement >25% of diameter) Surface damage - spalling large (entire surface of brick missing) Surface damage - wear large (entire surface of brick missing)
3	Fracture with no deformation or deformation <5% Longitudinal cracking with or multiple cracking Minor loss of level Severe joint defects, ie open joint (large) or displaced joint (large) Surface damage - spalling medium (large areas of chipped brick) Surface damage - wear medium (entire surface of brick missing)
2	Circumferential crack Moderate joint defects, ie open joint (medium) or displace joint (medium) Surface damage - spalling slight (small fragments breaking away from surface) Surface damage - wear slight (increased roughness)
1	No or slight structural defects
Note	Deformed sewers that have subsequently been relined with a structural lining can normally be considered to have no deformation

DRAINAGE CODES			
Code	Description	Code	Description
B	Broken pipe at (or from to) o'clock	JN	Junction at o'clock, diameter mm
CC	Crack circumferential from to o'clock	JX	Junction defective at o'clock, diameter mm
CL	Crack longitudinal @ o'clock	LC	Lining of sewer changes/starts/finishes at this point
CM	Cracks multiple from to o'clock	LD	Line of sewer deviates down
CN	Connection at o'clock, diameter mm	LL	Line of sewer deviates left
CNI	Connection at o'clock, diameter mm, intrusion mm	LR	Line of sewer deviates right
CU	Camera under water	LU	Line of sewer deviates up
CX	Connection defective at o'clock	MC	Material of sewer changes at this point
D	Deformed sewer %	MH	Manhole/node
DC	Dimension of sewer changes at this point	OB	Obstruction % height/diameter loss
DE	Debris (non silt/grease) % cross-sectional loss	OJL	Open joint large
DEG	Debris grease % cross sectional area loss	OJM	Open joint medium
DES	Debris silt % cross-sectional area loss	RFJ	Roots fine (at joint)
FC	Fracture circumferential from to o'clock	RMJ	Roots mass % cross-sectional area loss (at joint)
FL	Fracture longitudinal at o'clock	RTJ	Roots tap (at joint)
FM	Fractures multiple from to o'clock	SA	Survey abandoned
GO	General observation at this point	WL	Water level % height/diameter
H	Hole in sewer at o'clock	X	Sewer collapsed % cross-sectional area loss
JDM	Joint displaced medium	FH	End of survey
JDL	Joint displaced large		



WINDOW
SAMPLING



CHAPTER 1

DOMESTIC
SUBSIDENCE
INVESTIGATIONS



CHAPTER 2

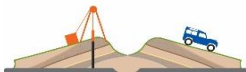
WINDOWLESS
SAMPLING



CHAPTER 3

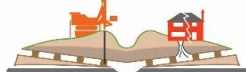
THE HOLE STORY

CABLE
PERCUSSION
DRILLING



CHAPTER 4

ROTARY
DRILLING



CHAPTER 5

GROUND
SOURCE
DRILLING



CHAPTER 6

CCTV DRAIN
SURVEYS



CHAPTER 7