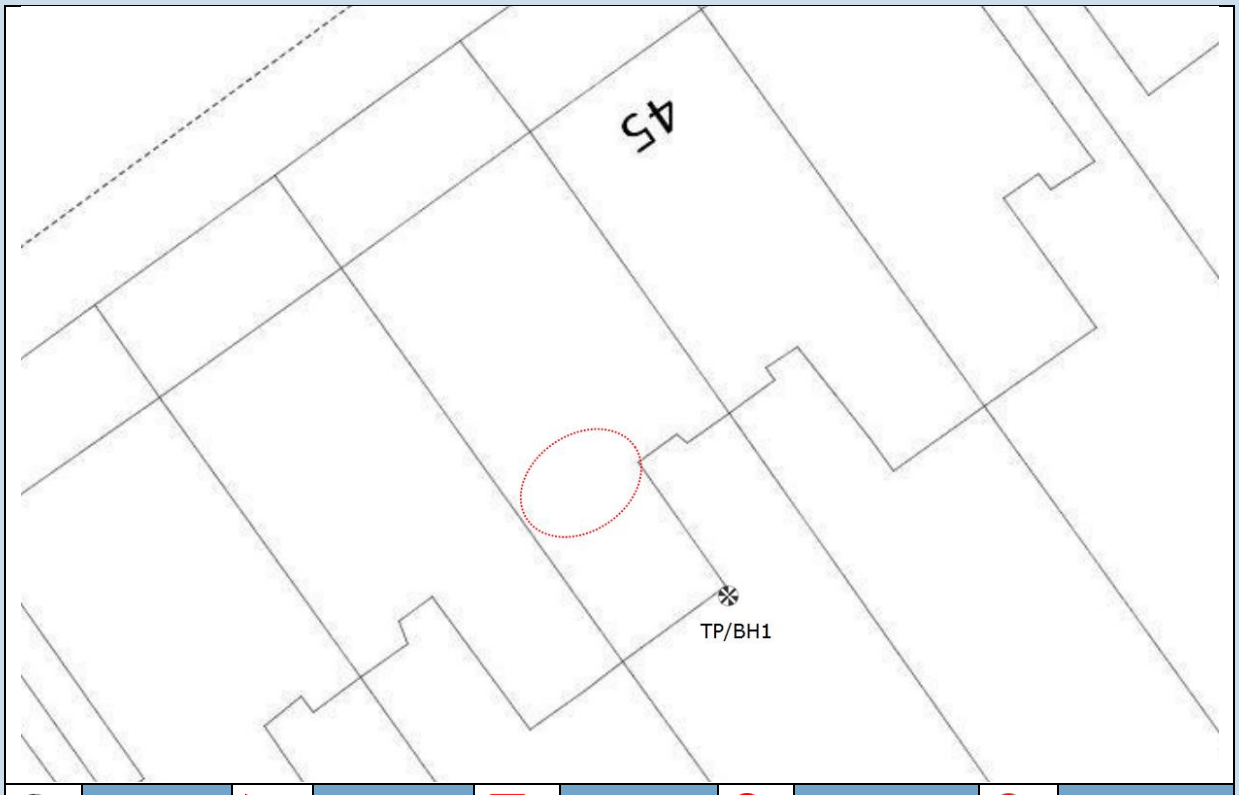
GEOTECHNICAL
for Infront Innovation

43 Woodsome Road, London, NW5 1SA

Client:	Infront Innovation
Client Contact:	Paula Sheldon
Client Ref:	IFS-AVI-SUB-13-0046234
Policy Holder:	Mrs H Megarry
Report Date:	8 November 2013
Our Ref:	C9399G4125

Site Plan



	Borehole		Foul Water Drain	FMH	Foul Manhole		Foul Rodding Point		Foul Vent Pipe
	Trial Pit / Borehole		Surface Water Drain	RMH	Rain Water Manhole		Surface Rodding Point		Rain Water Gully
	Trial Pit		Combined Drain	MH	Combined Manhole				

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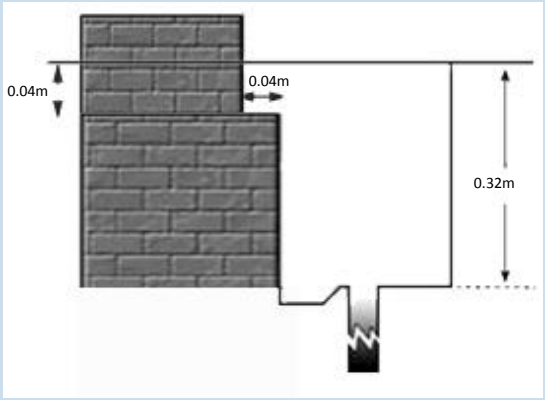
TP/BH1 Foundation Detail and Borehole Log

Foundation Detail

Foundation comprised continuation of brick wall to 40mm bgl, bearing on brick to 320mm bgl, projecting 40mm from the brick wall. Underside of foundation exposed to 100mm back from the face of the brick. Borehole completed by Hand Held Percussive Window Sampler. Groundwater strikes not encountered.



WS	Samples Type	Samples Depth (m)	Tests Type	Tests Depth (m)	Tests Results	Legend	Stratum Description and Observations
						0	CONCRETE
	D	0.32	PEN	0.32	HP=2.5 (2.5,2.5,2.5,2.5,2.5)		MADE GROUND: Dark brown sandy gravelly CLAY. Gravel fine to coarse of porcelain fragments ...at 0.05m to 0.32m bgl soils described as being moist. ...at 0.20m to 0.32m bgl roots encountered.
						0.5	Firm brown slightly sandy CLAY. ...at 0.32m bgl UNDERSIDE OF FOUNDATION ...at 0.32m to 1.70m bgl roots encountered and sampled. ...at 0.32m to 1.70m bgl roots encountered. ...at 0.32m to 2.00m bgl soils described as being moist. ...at 0.50m bgl base of hand excavated trial pit.
	D	0.82	PEN	0.82	HP=2.9 (2.5,3.0,3.0,3.0,3.0)	1.0	
	D R	1.32 1.32	PEN	1.32	HP=3.4 (3.5,3.0,3.0,4.0,3.5)	1.5	
	R	1.70					
	D	1.82	PEN	1.82	HP=3.5 (3.5,3.5,3.5,3.5,3.5)		
						2.0	Stiff brown sandy gravelly CLAY. Gravel fine to coarse of flint ...at 2.00m to 2.50m bgl soils described as being moist.
	D	2.32	PEN	2.32	HP=4.5 (4.5,4.5,4.5,4.5,4.5)	2.5	Stiff brown CLAY with rare sand. ...at 2.50m to 4.00m bgl soils described as being moist.
	D	2.82	PEN	2.82	HP=4.5 (4.5,4.5,4.5,4.5,4.5)	3.0	
	D	3.32	PEN	3.32	HP=4.5 (4.5,4.5,4.5,4.5,4.5)	3.5	
	D	3.82	PEN	3.82	HP=4.0 (4.0,4.0,4.0,4.0,4.0)		
	D	4.00	PEN	4.00	HP=4.0 (4.0,4.0,4.0,4.0,4.0)	4.0	...at 4.00m bgl target depth achieved.

-- End of borehole at 4.00m --
Foundation comprised continuation of brick wall to 40mm bgl, bearing on brick to 320mm bgl, projecting 40mm from the brick wall. Underside of foundation exposed to 100mm back from the face of the brick. Borehole completed by Hand Held Percussive Window Sampler. Groundwater strikes not encountered.

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Site Observations

GENERAL:
Site Investigation works undertaken during dry weather conditions (i.e. no rain).

HEALTH, SAFETY AND ENVIRONMENTAL:
No positive signals detected in Power and Radio mode at TP/BH1 location.

FOUNDATIONS:
Property foundations were exposed and underside confirmed in TP/BH1.

ROOTS:
Roots encountered in TP/BH1.

IN-SITU TESTING INFO:
Hand Penetrometer (PEN) tests undertaken in TP/BH1 within the window sampler at maximum intervals of 0.50m.

GROUNDWATER:
Ground water strike not encountered in TP/BH1.
The groundwater observation does not necessarily indicate equilibrium conditions. It should be appreciated that groundwater levels are subject to both seasonal and weather induced variations. Other effects such as construction activities may also change groundwater levels.

ROOT IDENTIFICATION

for Infront Innovation

43 Woodsome Road, London, NW5 1SA

Client:	Infront Innovation
Client Contact:	Paula Sheldon
Claim Number:	13NU602531
Client Reference:	IFS-AVI-SUB-13-0046234
Policy Holder:	Mrs H Megarry
Report Date:	31 October 2013
Our Ref:	R3439

European Plant Science Laboratory
Intec
Parc Menai, Bangor,
Gwynedd, North Wales
LL57 4FG
Tel: 01248 672652

Sub Sample	Species Identified		Root Diameter	Starch
TP/BH1:				
0.32-1.32m	Leguminosae spp.	1	11 mm	Abundant
0.32-1.32m	Pomoideae gp.	2	3 mm	Abundant
1.32-1.7m	Leguminosae spp.	3	10 mm	Moderate

Comments:

1 - Plus 1 other also identified as Leguminosae spp.
2 - Plus 2 others also identified as Pomoideae gp.
3 - Plus 1 other also identified as Leguminosae spp.

Leguminosae spp. include laburnum, *Robinia* (false acacia or locust), broom, the pagoda tree and the climber wisteria.
Pomoideae gp include apple, cotoneaster, hawthorn, pear, pyracantha, quince, rowan, snowy mespil and whitebeam.

Signed: M D Mitchell

Unless we are otherwise instructed in writing, the above sample material will normally be disposed of 6 years after the date of this report.

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SOIL ANALYSIS

for Infront Innovation

43 Woodsome Road, London, NW5 1SA

Client:	Infront Innovation
Client Contact:	Paula Sheldon
Claim Number:	13NU602531
Policy Holder:	Mrs H Megarry
Report Date:	6 November 2013
Our Ref:	C2661S9399

Compiled By:

Checked By:

SubsNetUK

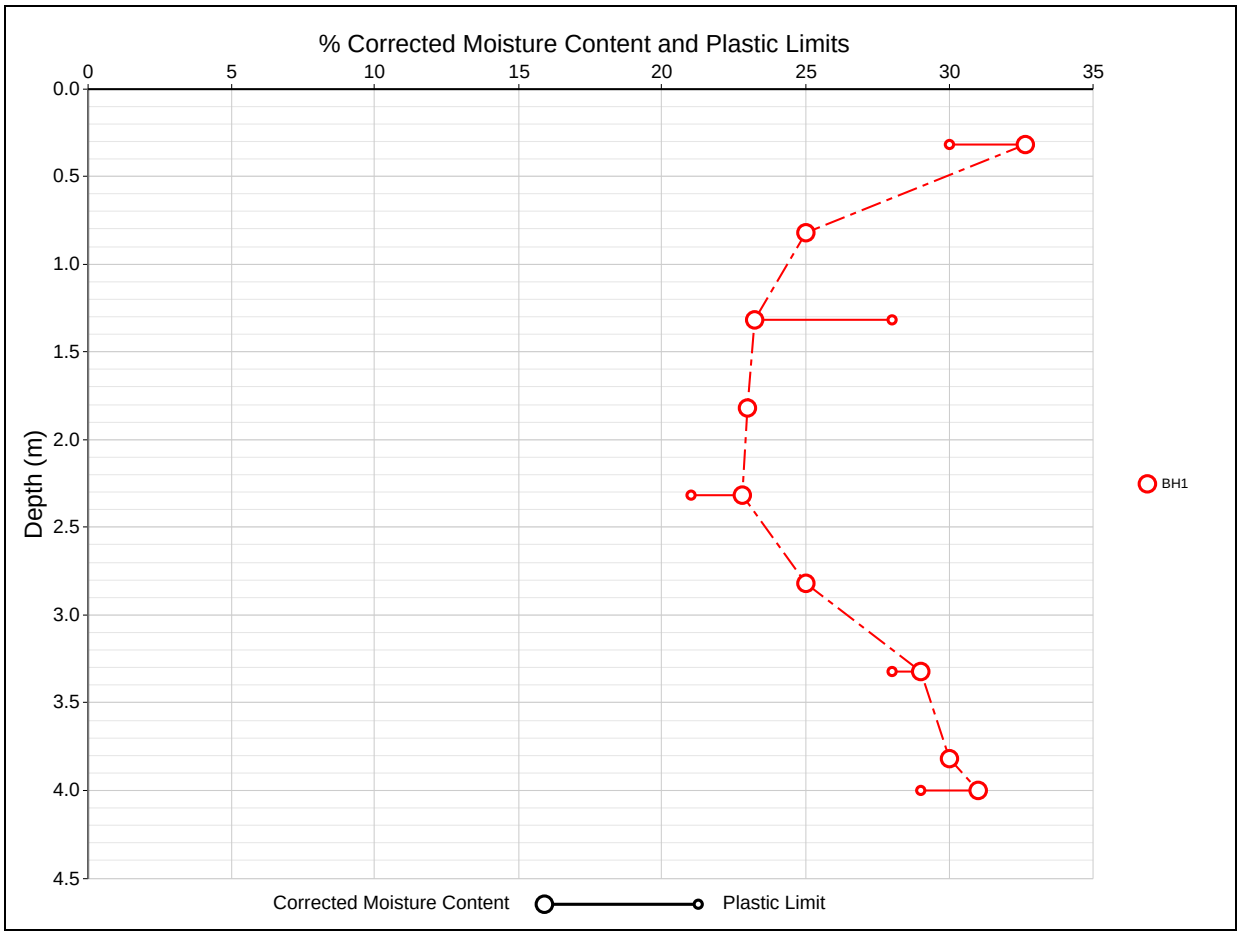
UKAS TESTING 4043

Note

Where appropriate moisture contents have been corrected to demonstrate the equivalent moisture content following the sample being passed through a .425 mm sieve for comparison with the Liquid & Plastic Limit. Where this is not available, uncorrected moisture contents have been used in the graph on the following page.

Lab Ref	Depth (m)	MC (%)	Corr MC (%)	LL (%)	PL (%)	PI (%)	% Passing .425mm
Samples from BH1							
001	0.32	32	33	73	30	43	98
002	0.82	25					
003	1.32	23	23	68	28	40	99
004	1.82	23					
005	2.32	13	23	47	21	26	57
006	2.82	25					
007	3.32	29	29	72	28	44	100
008	3.82	30					
009	4.00	31	31	73	29	44	100

Corrected Moisture Content and Plastic Limits Graph



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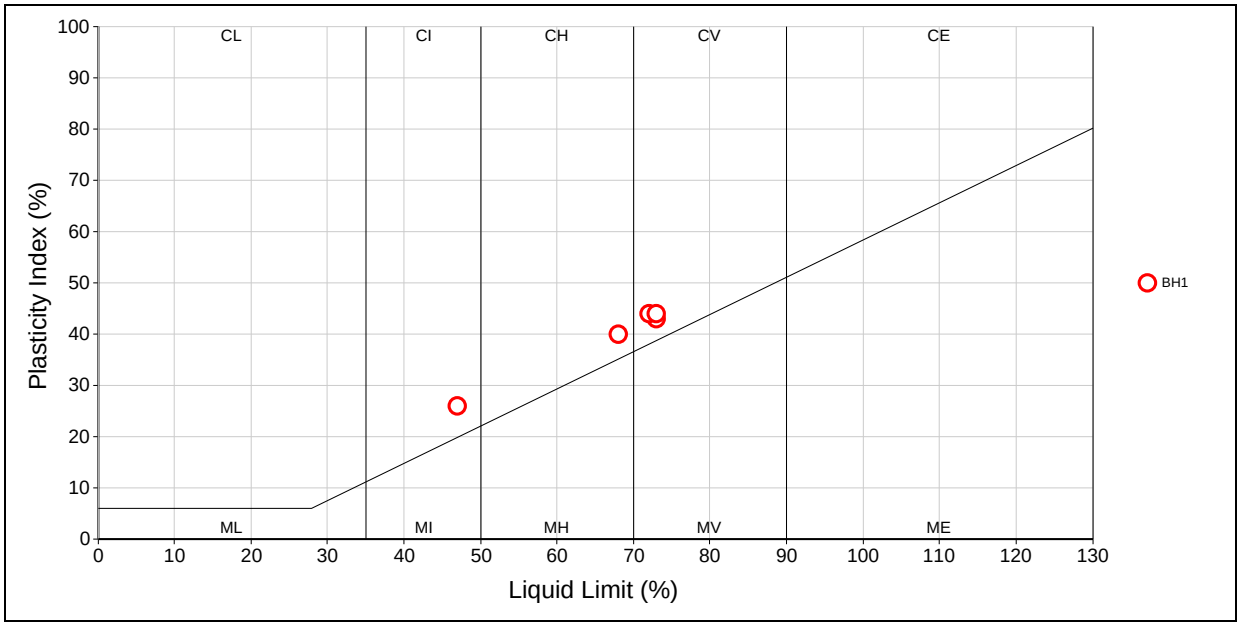
Lab Ref	Depth (m)	Description	BS:5930	NHBC Chapter 4.2
Samples from BH1				
001	0.32	Brown slightly gravelly CLAY.	CV	High
002	0.82	Brown slightly gravelly CLAY.		
003	1.32	Brown slightly gravelly CLAY.	CH	High
004	1.82	Brown slightly gravelly sandy CLAY.		
005	2.32	Brown very gravelly sandy CLAY.	CI	Medium
006	2.82	Brown slightly gravelly CLAY.		
007	3.32	Brown CLAY.	CV	High
008	3.82	Brown CLAY.		
009	4.00	Brown CLAY.	CV	High

Plasticity Chart for Casagrande Classification



References and Interpretation

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 BS5930:1999 "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.

DRAINAGE
for Infront Innovation

43 Woodsome Road, London, NW5 1SA

Client:	Infront Innovation
Client Contact:	Paula Sheldon
Claim Number:	IFS-AVI-SUB-13-0046234
Policy Holder:	Mrs H Megarry
Report Date:	11 November 2013
Our Ref:	C9399D2390

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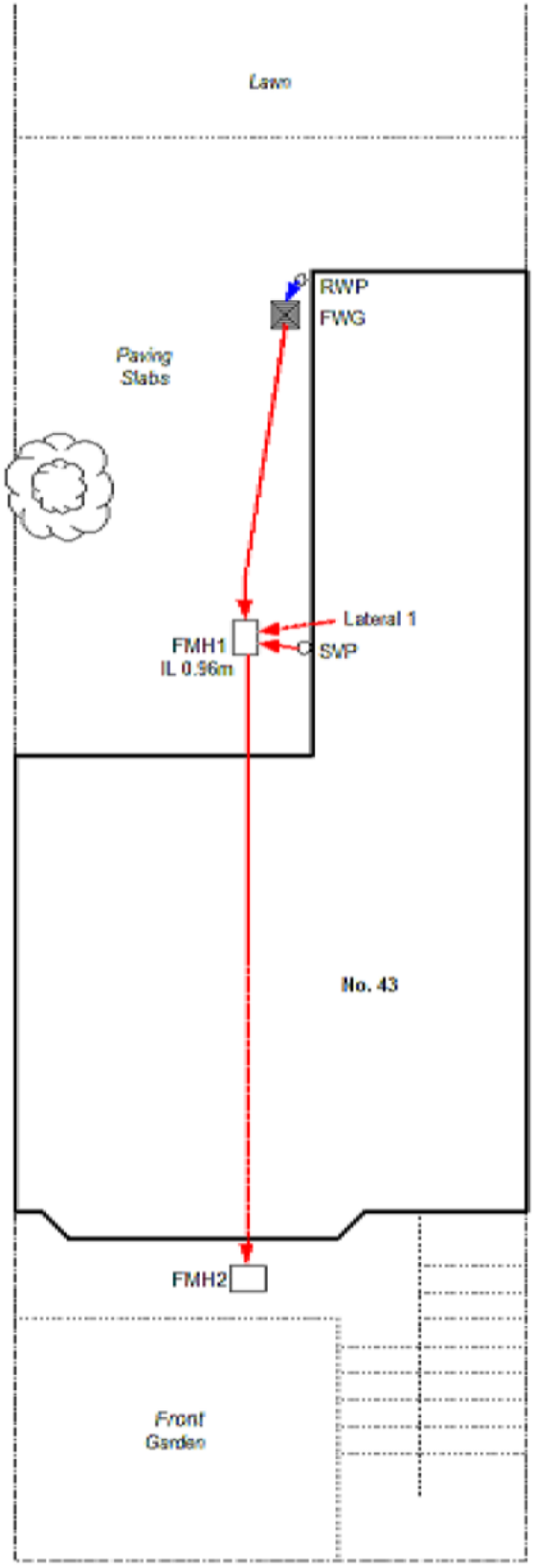
Site Plan



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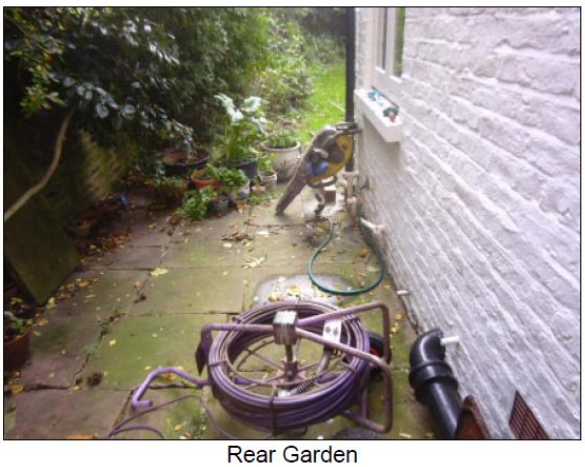
Site Images


FMH1


Rear Garden


FMH1 Channel


RWP & FWG


Rear Garden Facing House

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Inspection Summary

Further to your recent instruction we attended the above property in order to carry out a drainage investigation to the drainage within three meters of the manhole in the rear garden.

We attended site on the 29th October 2013 to carry out a CCTV survey. Upon arrival to site our engineer identified defect drainage runs throughout and a disused run underneath the property.

Prior to the survey being carried out high pressure water jetting was carried out to remove foul waste and debris from within the drainage system to enable the survey to be carried out. The results of our investigations are as follows:

Drain Run 1: FMH1 Upstream to FWG
Pipe Diameter: 100mm
Pipe Material: SALT-GLAZED CLAY
Run is Shared: NO
Water Pressure Test Result: Run failed
CCTV Survey Result: Fractured and cracked sections of pipework
Recommended Repair:
1. To excavate and replace FWG and pipework downstream to FMH1, reinstating all surfaces upon completion.

Drain Run 2: FMH1 Up lateral 1
Pipe Diameter: 100mm
Pipe Material: SALT-GLAZED CLAY
Run is Shared: NO
Water Pressure Test Result: Run not tested
CCTV Survey Result: Run is redundant
Recommended Repair:
2. Cap off the redundant run with insitu concrete to create a water tight seal within the drainage System

Drain Run 3: FMH1 Upstream to SVP
Pipe Diameter: 100mm
Pipe Material: SALT-GLAZED CLAY
Run is Shared: NO
Water Pressure Test Result: Run failed
CCTV Survey Result: Run failed water pressure test is therefore not water tight
Recommended Repair:
3. To carry out high pressure water jetting to prepare the line for insitu patch liner and install patch line at 1m upstream of FMH1.

Inspection Summary

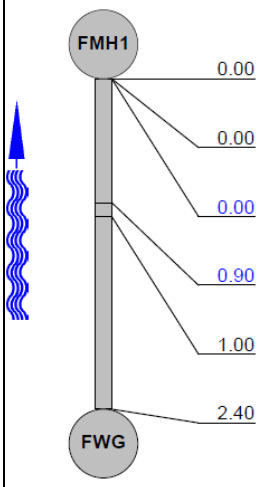
Drain Run 4: FMH1 Downstream to FMH2
Pipe Diameter: 100mm
Pipe Material: SALT-GLAZED CLAY
Run is Shared: NO
Water Pressure Test Result: Run failed downstream for three meters
CCTV Survey Result: Displaced joints, encrustations and cracked section of pipework
Recommended Repair:
4. To carry out high pressure water jetting to prepare the line for insitu pipelining and pipeline from FMH1 downstream for 4m.

Drain Run 5: FWG Upstream to RWP
Pipe Diameter: 100mm
Pipe Material: SALT-GLAZED CLAY
Run is Shared: NO
Water Pressure Test Result: Run not tested
CCTV Survey Result: No damage identified within this drain run
Recommended Repair: N.A

Inspection Report (Section 1)

Place :	**London, NW5 1SA**	Location details:		U/S MH :	**FWG**
Road :	**43 Woodsome Road**	Catchment:		U/S Depth :	
Location		Tape number :		D/S MH :	**FMH1**
Inspection Direction	**FMH1 (U/S) FWG**	Pipe Length		D/S Depth :	**0.96**
Use:	**Combined**			Pipe shape :	**Circular**
Year laid :				Pipe size :	**100 mm**
Purpose :				Pipe material :	**Vitrified clay**
Total length :	**2.40 m**			Lining :	
Comment :					

1:50 Position Depth: 0.96	Code	Observation	Photo	Grade
0.00	MH	Start node type, manhole, reference number : FMH1	1_1_1_A.jpg	
0.00	WL	Water level, 0% of the vertical dimension		
0.00	CC	Crack, circumferential, from 12 to 12 o'clock	1_1_9_A.jpg	B
0.90	FC	Fracture, circumferential, from 12 to 5 o'clock	1_1_10_A.jpg	B
1.00	LU	Line deviates up, full	1_1_11_A.jpg	
2.40	MHF	Finish node type, manhole reference number: FWG	1_1_12_A.jpg	



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Inspection Report (Section 2)

Place :	**London, NW5 1SA**	Location details:		U/S MH :	**Lateral 1**
Road :	**43 Woodsome Road**	Catchment:		U/S Depth :	
Location		Tape number :		D/S MH :	**FMH1**
Inspection Direction	**FMH1 (U/S) Lateral 1**	Pipe Length		D/S Depth :	**0.96**
Use:	**Foul**			Pipe shape :	**Circular**
Year laid :				Pipe size :	**100 mm**
Purpose :				Pipe material :	**Vitrified clay**
Total length :	**0.00 m**			Lining :	

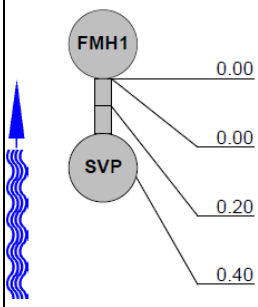
Comment :

1:50 Position	Code	Observation	Photo	Grade
Depth: 0.96				
FMH1				
0.00	MH	Start node type, manhole, reference number : FMH1	3_3_3_A.jpg	
0.00	WL	Water level, 0% of the vertical dimension		
0.00	DER	Settled deposits, coarse, 60% cross-sectional area loss	3_3_14_A.jpg	A
0.00	SA	Survey abandoned Remarks: Lateral is redundant		

Inspection Report (Section 3)

Place :	**London, NW5 1SA**	Location details:		U/S MH :	**SVP**
Road :	**43 Woodsome Road**	Catchment:		U/S Depth :	
Location		Tape number :		D/S MH :	**FMH1**
Inspection Direction	**FMH1 (U/S) SVP**	Pipe Length		D/S Depth :	**0.96**
Use:	**Foul**			Pipe shape :	**Circular**
Year laid :				Pipe size :	**100 mm**
Purpose :				Pipe material :	**Vitrified clay**
Total length :	**0.40 m**			Lining :	
Comment :					

1:50 Position	Code	Observation	Photo	Grade
Depth: 0.96				
0.00	MH	Start node type, manhole, reference number : FMH1	4_4_4_A.jpg	
0.00	WL	Water level, 0% of the vertical dimension		
0.20	LU	Line deviates up, full	4_4_17_A.jpg	
0.40	MHF	Finish node type, manhole reference number: SVP	4_4_18_A.jpg	



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Inspection Report (Section 4)

Place :	**London, NW5 1SA**	Location details:		U/S MH :	**FMH1**
Road :	**43 Woodsome Road**	Catchment:		U/S Depth :	**0.96**
Location		Tape number :		D/S MH :	**Past AOC**
Inspection Direction	**FMH1 (D/S) Past AOC**	Pipe Length		D/S Depth :	
Use:	**Combined**			Pipe shape :	**Circular**
Year laid :				Pipe size :	**150 mm**
Purpose :				Pipe material :	**Vitrified clay**
Total length :	**5.00 m**			Lining :	

Comment :

1:50 **Depth: 0.96**

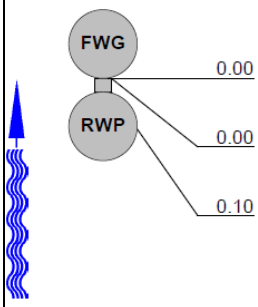
Position		Code	Observation	Photo	Grade
FMH1					
0.00		MH	Start node type, manhole, reference number : FMH1	5_5_5_A.jpg	
0.00		WL	Water level, 0% of the vertical dimension		
0.30		JDM	Joint displaced, medium	5_5_27_A.jpg	B
2.20	**S01**	DEE	Attached deposits, encrustation, at 6 o'clock, 10% cross-sectional area loss	5_5_20_A.jpg	A
2.20		JDM	Joint displaced, medium	5_5_26_A.jpg	B
3.70	**F01**	DEE	Attached deposits, encrustation, at 6 o'clock, 10% cross-sectional area loss		A
3.80		DEE	Attached deposits, encrustation, at 6 o'clock, 20% cross-sectional area loss		A
3.80		CC	Crack, circumferential, from 3 to 5 o'clock	5_5_24_A.jpg	B
5.00		MHF	Finish node type, manhole reference number: Past AOC	5_5_25_A.jpg	
Past AOC					

Inspection Report (Section 5)

Place :	**London, NW5 1SA**	Location details:		U/S MH :	**RWP**
Road :	**43 Woodsome Road**	Catchment:		U/S Depth :	
Location		Tape number :		D/S MH :	**FWG**
Inspection Direction	**FWG (U/S) RWP**	Pipe Length		D/S Depth :	
Use:	**Surface water**			Pipe shape :	**Circular**
Year laid :				Pipe size :	**100 mm**
Purpose :				Pipe material :	**Vitrified clay**
Total length :	**0.10 m**			Lining :	

Comment :

1:50	Position	Code	Observation	Photo	Grade
	0.00	MH	Start node type, manhole, reference number : FWG		
	0.00	WL	Water level, 0% of the vertical dimension		
	0.10	MHF	Finish node type, manhole reference number: RWP		



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Repair Estimate

No.	Code	Description	Qty	Unit	Unit Rate £	Total Price £
1	UK0595	Gully, 225mm x 225mm	1.0	item	£146.43	£146.43
1	UK0825	Pipe Replacement n.e. 1000mm deep.	3.0	m	£81.39	£244.17
1	UK1045	Concrete slab paving	3.0	m2	£24.61	£73.83
1	UK1060	Surround drain run in concrete.	1.0	m	£14.40	£14.40
1	UK0025	1000 gauge polythene.	3.0	m2	£1.79	£5.37
1	UK20500 05	Disposal of contaminated/saturated material off site.	1.0	m3	£45.30	£45.30
1	UK812030 0	Hardcore Filling to excavations	1.0	m3	£35.35	£35.35
2	UK5066504	In-situ concrete	1.0	m3	£106.88	£106.88
3	UK1133	Van pack HPWJ & CCTV	1.0	item	£148.44	£148.44
3	UK1135	Drain Lining Set-Up	1.0	item	£332.64	£332.64
3	UK1180	Patch Lining -100mm	1.0	item	£290.94	£290.94
4	UK1140	Drain Lining -100mm	1.0	m	£55.52	£55.52
4	UK002 5	1000 gauge polythene.	3.0	m2	£1.79	£5.37
					Sub-total	**£1,504.64 + VAT**