SITE INVESTIGATION
FACTUAL REPORT
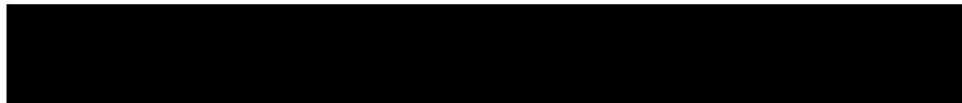
Client: Crawford Claims Management

Site: Flat 2, 34 Frognall

Date of Visit: 16/01/2020

Home Emergency Response - Subsidence Investigation - Drainage Services – Crack & Level Monitoring – Property Video Surveys

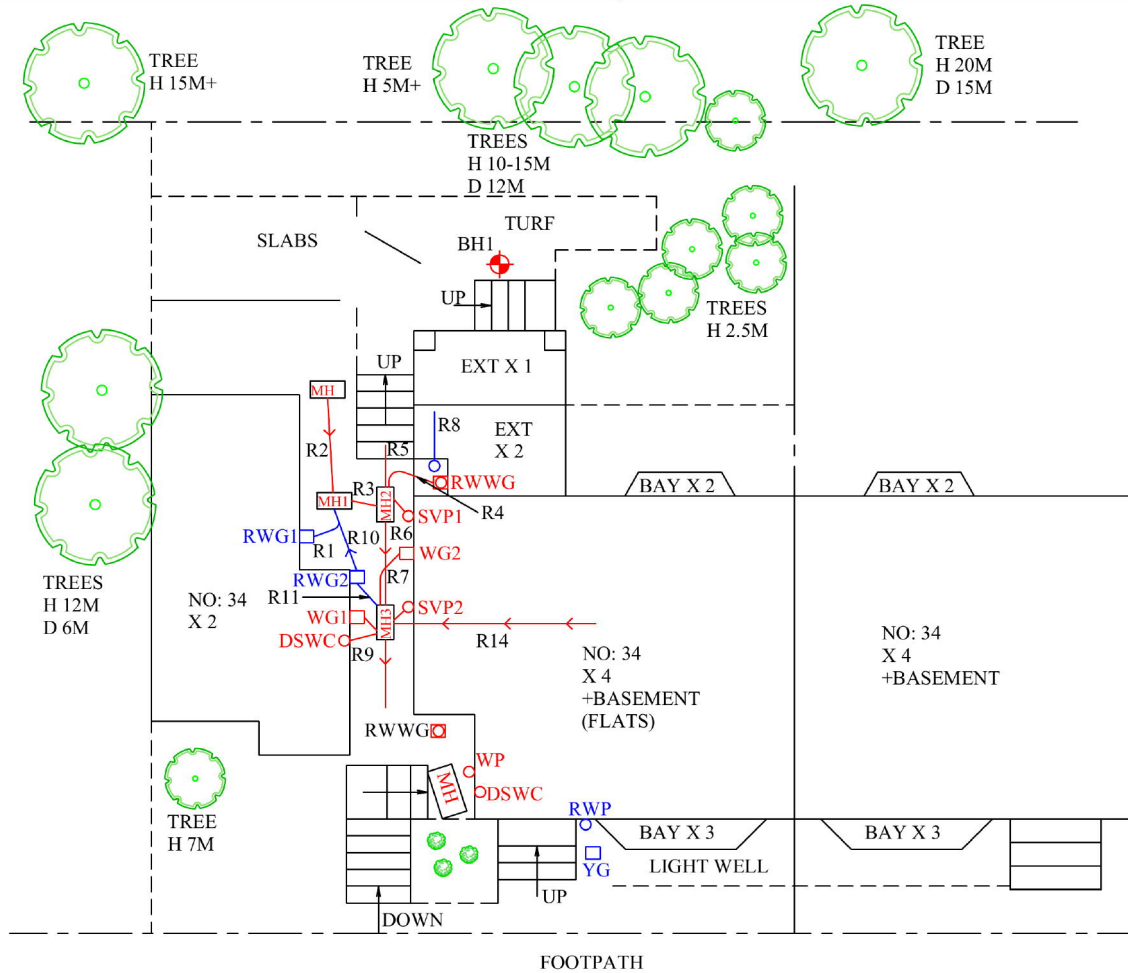| Drainage Layout Plan | Sheet: 1 of 1 | Site: 34 Frognal NW3 |
| | ▇▇▇▇▇▇ | Work carried out for: Crawford Claims MGMT SUS |
| | Date: 16/01/2020 | |

| (SI) | SA (Checked) | CFT (Drawn) | Weather: DRY |

TREE H 15M+

TREE H 5M+

TREES H 10-15M D 12M

TREE H 20M D 15M

SLABS

TURF
BH1

UP

TREES H 2.5M

UP

EXT X 1

MH

R2

R8

EXT X 2

R5

R3

MH1

MH2

RWWG

R4

BAY X 2

BAY X 2

RWG1

R1

R10

SVP1

R6

WG2

RWG2

R7

TREES H 12M D 6M

NO: 34 X 2

R11

WG1

DSWC

R9

MH3

SVP2

R14

NO: 34 X 4 +BASEMENT (FLATS)

NO: 34 X 4 +BASEMENT

RWWG

TREE H 7M

MH

WP

DSWC

RWP

BAY X 3

BAY X 3

YG

LIGHT WELL

UP

DOWN

FOOTPATH

SLOPE DOWN ⟶   FROGNAL ⟶

DRAIN REPAIR RECOMMENDATIONS

Remarks: MH3 upstream to WG 2 - Run 12.Excavate and replace gully plus pipe work downstream to manhole 3.

Surface Water Drain   – – –▸– –

| Scale: N.T.S. | Parking: | Power: | Water: | Approx age: | Foul Water Drain ———▸——— |

Borehole	1			Sheet:	1 of 1	Site:	34 Frognall				
				Job No:	████						
				Date:	16/01/2020						
Boring Method:	Hand Auger			Ground Level:		Client:	Crawford Claims Management				
Diameter (mm):	75	Weather:	Dry								

Depth (m)	Soil Description	Thickness	Legend	Samples and Tests
				Depth	Type	Result
0.00	MADEGROUND very loose topsoil	0.10				
0.10	MADEGROUND medium compact mid to dark brown silty sandy clay with occasional gravel, brick and clinker pieces.	1.10				
				0.50	DM	18
						20
						14
						13
				1.00	DM	12
						12
1.20	Firm mid brown/orange, grey veined sandy silty CLAY with partings of orange and brown silt and fine sand and very occasional gravel.	0.60				18
						19
				1.50	DV	60
						66
1.80	Very stiff mid brown, grey veined sandy silty CLAY with partings of orange and brown silt and fine sand and very occasional gravel.	0.40				
				2.00	DV	140+
						140+
2.20	Very stiff mid brown, grey veined sandy silty CLAY with partings of orange and brown silt and fine sand.	1.80				
				2.50	DV	140+
						140+
				3.00	DV	140+
						140+
				3.50	DV	140+
						140+
4.00	End of BH			4.00	DV	140+
						140+

Remarks:
BH ends at 4.0m. Water seepage at 3.0m. BH open with standing water level at 3.7m on completion. No roots observed below 3.0m.

Key:
D - Disturbed Sample
B - Bulk Sample
W - Water Sample   Roots
J - Jar Sample   Roots
V - Pilcon Shear Vane (kPa Roots
M - Mackintosh Probe   Depth to Water (m)
TDTD - Too Dense To Drive

To Depth (m)	Max Dia (mm)
1.20	6
2.70	2
3.00	1
3.70	

| Logged: | AC | SA | Checked: | | Approved: | | Version | V1.0 28/01/16 | | N.T.S. |

Laboratory Summary Results

Our Ref :

TP/BH No	Depth (m)	Type	Moisture Content (%) [1]	Soil Fraction >0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity Index [5]	Modified Plasticity Index (%) [6]	Soil Class [7]	Filter Paper Contact Time (h)	Soil Sample Suction (kPa) [8]	Oedometer Strain [9]	Estimated Heave Potential (Dd) (mm) [10]	In situ Shear Vane Strength (kPa) [11]	Organic Content (%) [12]	pH Value [13]	SO3 [14]	SO4 [15]	Class [16]
BH1	0.5	D	21	28	49	20	29	0.05	21	CI	Not suitable for suctions - Made Ground									
	1.0	D	25	16							Not suitable for suctions - Made Ground									
	1.5	D	32	<5							168	37.3			63					
	2.0	D	26	<5	55	21	34	0.14	34	CH	168	97.6			> 140					
	2.5	D	24	<5							168	88.2			> 140					
	3.0	D	21	<5							168	34.7			> 140					
	4.0	D	31	<5	52	20	32	0.33	32	CH	168	19.2			> 140					

Test Methods / Notes

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 2018 : Figure 8 - Plasticity Chart for the classification
of fine soils

[8] In-house method S9a adapted from BRE IP 4/93
[9] In-house Test Procedure S17a: One Dimensional Swell/Strain Test
[10] Estimated Heave Potential (Dd)
[11] Values of shear strength were determined in situ by CPT using
n Pilcon hand vane or Geonor vane (GV).
[12] BS 1377 : Part 3 : 1990, Test No 4
[13] BS 1377 : Part 2 : 1990, Test No 9
[14] BS 1377 : Part 3 : 1990, Test No 5.6
[15] SO₃ = 1.2 x SO₄

[16] BRE Special Digest One (Concrete in Aggressive Ground) August 2005
Note that if the SO4 content falls into the DS-4 or DS-5 class, it would be
prudent to consider the sample as falling into the DS-4M or DS-5M
class respectively unless water soluble magnesium testing is undertaken
to prove otherwise.

* These tests are not UKAS accredited
Full reports can be provided upon request.

Key
D   Disturbed sample (small)
B   Disturbed sample (bulk)
U   Undisturbed sample
W   Groundwater sample
ENP   Essentially Non-Plastic by inspection
US   Underside of Foundation

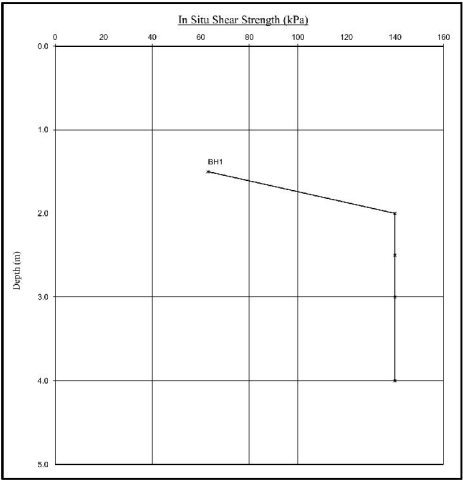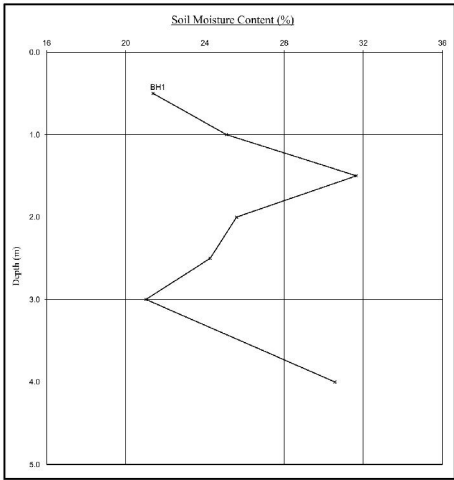Test results reported relate only to the items tested.
This report shall not be reproduced except in full without approval of the laboratory.

Version: 5B11 V1.6 - 26.02.19   8618

Moisture Content Profiles

Shear Strength Profiles

Soil Moisture Content (%)
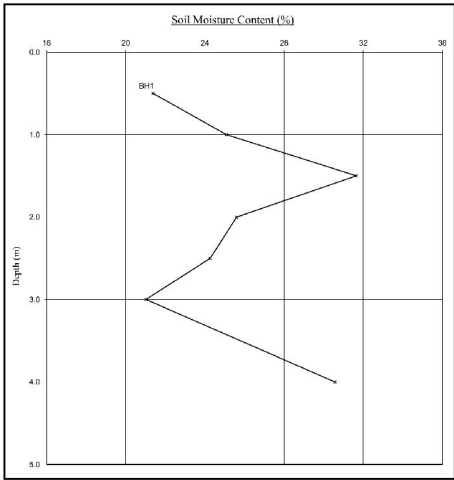
In Situ Shear Strength (kPa)

Notes
1. If plotted, 0.4 LL and PI=2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated
   clay) at shallow depths.
2. Unless specifically noted the profiles have not been related to a site datum.

Note
1. Unless otherwise stated, values of Shear Strength were determined in situ by
CET using a Pilcon Hand Vane the calibration of which is limited to
a maximum reading of 140 kPa.
2. Unless specifically noted the profiles have not been related to a site datum.
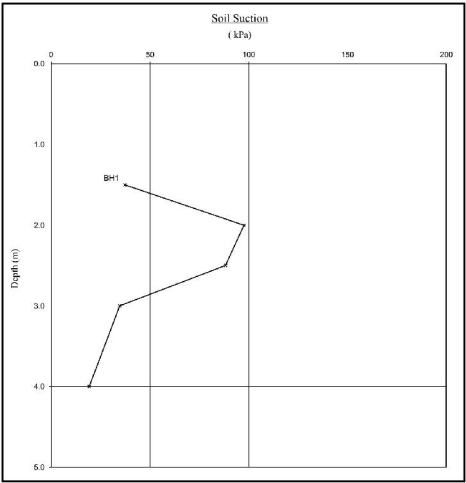
Moisture Content Profiles

Soil Suction Profiles

Soil Moisture Content (%)

Soil Suction
(kPa)

Notes
1. If plotted, 0.4 LL and PL=2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clay) at shallow depths.
2. Unless specifically noted the profiles have not been related to a site datum.

Note
When shown, the theoretical equilibrium suction profiles are based on conventional assumptions associated with London Clay (and similarly overconsolidated clays) at shallow depths. Note that the sample disturbance component is dependant on the method of sampling and any subsequent recompaction. The above plots show this to be 100kPa which is the value suggested by the BRE on the basis of their limited number of tests on recompacted samples. This may or may not be appropriate in this instance and judgement should be exercised.

EPSL
European Plant Science Laboratory

Date: **22/01/2020**

Site: **34 Frognall,**

Work carried
out for: **Crawford Claims MGMT SUS**

Certificate of Analysis

The following work was commissioned by CET on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated.
The results were as follows -

Trial pit/ Borehole number	Root diameter (mm)	Tree, shrub or climber from which root originates	Result of starch test
BH1 (0-2m)	4 mm	Platanus spp. 2 roots	Positive
BH1 (0-2m)	2 mm	Tilia spp.	Positive
BH1 (2-3m)	1.5 mm	Platanus spp. 3 roots	Positive

Platanus spp. include London plane and Oriental plane.
Tilia spp. are limes.

RJS

ESTIMATE

Item			
1.0	Location	**MH3 upstream to WG 2 - Run 12.**	
	Shared System	No	
	Condition Grade	B	
	Drain Serviceability	Unserviceable	
	Work Spec	Excavate and replace gully plus pipe work downstream to manhole 3.	

Notes
Repairs to shared runs and off boundary pipe-work may be the responsibility of the water authority.

Condition Grade
A - Structurally sound with no leakage evident.
B - Cracks and fractures observed.
C - Structurally unsound

ESTIMATING & COSTING SHEET - DOMESTIC DRAINAGE

Site:- 34 Frognall

Client :- **Crawford Claims Management**

Recommendation 1

Rate Code	Description	Unit	Qty
	MH3 upstream to WG 2 - Run 12.		
TITLE	**Gullies / Rest Bend / Rodding Eye - 110mm Isolated repair or connections to lined drains**		
SN0590	Gully, 150mm x 150mm. Remove existing and replace with new PVCu item. Bed, surround and backfill .	nr	1
TITLE	**110mm Pipework - Isolated repair of lengths up to 1.0m**		
SN0605	Excavate & remove isolated length. Replace in new 110mm PVCu. Bed, surround & backfill. n.e. 1000mm deep.	nr	1
TITLE	**110mm Pipe Replacement - Bends / Junctions / etc**		
SN0880	Short Radius Bend. Remove existing item and replace with new 110mm PVCu.	nr	3
TITLE	**Extra-Over Surfacing Costs for drainage Repair / Replacement**		
SN1045	Removal, set aside and reinstatement of concrete slab paving n.e 100mm thick.	m2	2
TITLE	**Preparations / General Groundworks / Reinstatements**		
SN0025	Protection Temporary works to floors, 1000 gauge polythene.	m2	2
SN2050005	Disposal by hand excavated contaminated/saturated material off site.	m3	2
SN006	1 Litre of disinfectant.	nr	1
	Total subject to VAT @ 20%		

Note: Subject to the attached Terms and Condtions

Depths are taken to the base of excavations. Every effort will be made to match existing surfaces where disturbed although this cannot be guaranteed. All rates exclude VAT. Depths are taken to the base of excavations. The above rates are subject to re-measurement. Daywork rates do not include for materials that are charged at cost plus

KEY: ne = not exceeding, eo = extra over rate, m = linear metre, nr = number, hr = hour

Coding Sheet			Sheet:		Site:	34 Frognall		
					Client:	Crawford Claims Management		

Run: 1

From:		MH1	Invert Level:		380	Direction:		U/S	
To:		RWG1	Invert Level:			Function:		S/W	
Pipe Material:		PVC	Pipe Dia:		100				
Water/Pressure Test:			Drain Break-In:		No	Gully Condition:		As Built	

Distance (m)	Code	Clock Ref at	Clock Ref to	Dia mm	Intrusion %	Intrusion mm	Shared Run:		No	
							If Shared How:			
0.00	ST						Remarks	Surface Material		Length (m)
0.20	LR						Line deviates right	slabs		0.5
0.50	FH						reached RWG1			

Comments:

Run: 2

From:		MH1	Invert Level:		450	Direction:		U/S	
To:		MH	Invert Level:			Function:		F/W	
Pipe Material:		PVC	Pipe Dia:		100				
Water/Pressure Test:			Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	Clock Ref to	Dia mm	Intrusion %	Intrusion mm	Shared Run:		No	
							If Shared How:			
0.00	ST						Remarks	Surface Material		Length (m)
2.50	MH						Manhole	slabs		2.5
2.50	FH						reached MH (unable to access)			

Comments:

Run: 3

From:		MH1	Invert Level:		380	Direction:		U/S	
To:		MH2	Invert Level:		450	Function:		F/W	
Pipe Material:		VC	Pipe Dia:		75				
Water/Pressure Test:			Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	Clock Ref to	Dia mm	Intrusion %	Intrusion mm	Shared Run:		No	
							If Shared How:			
0.00	ST						Remarks	Surface Material		Length (m)
0.20	WL				20		Water level	slabs		0.4
0.30	DEG				20		Debris grease			
0.40	MH						MH2			
0.40	FH						reached MH2			

Comments:

Run: 4

From:	MH1	Invert Level:		450	Direction:		U/S	
To:	RWWG1	Invert Level:			Function:		Comb	
Pipe Material:	VC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		As Built	

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No	
							If Shared How:		
0.00	ST						Remarks	Surface Material	Length (m)
0.10	LR						Line deviates right	Concrete	0.8
0.80	FH						reached RWWG1		

Comments:

Run: 5

From:	MH1	Invert Level:		450	Direction:		U/S	
To:	U/S	Invert Level:			Function:		F/W	
Pipe Material:	PVC	Pipe Dia:		68				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No	
							If Shared How:		
0.00	ST						Remarks	Surface Material	Length (m)
0.50	LU						Line deviates up	concrete	0.4
0.50	SA						unable to push further	steps	0.1

Comments:

Run: 6

From:	MH1	Invert Level:		450	Direction:		U/S	
To:	SVP1	Invert Level:			Function:		F/W	
Pipe Material:	VC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No	
							If Shared How:		
0.00	ST						Remarks	Surface Material	Length (m)
0.10	LU						Line deviates up	slabs	0.4
0.40	FH						reached SVP1		

Comments:

Run: 7

From:	MH2	Invert Level:		450	Direction:		D/S	
To:	MH3	Invert Level:			Function:		Comb	
Pipe Material:	Cast Iron	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No	
							If Shared How:		
0.00	ST						Remarks	Surface Material	Length (m)
3.30	MH						MH3	slabs	3.4
3.40	FH						reached MH3		

Comments:

Run: **8**

From:	RWWG1	Invert Level:			Direction:		U/S	
To:	U/S	Invert Level:			Function:		S/W	
Pipe Material:	PVC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No		
							If Shared How:			
0.00	ST							Remarks	Surface Material	Length (m)
0.40	DES				30		Debris silt	under extension	1
1.00	DES				100		Debris silt		
1.00	SA						unable to push further		

Comments:

unsure where this comes from, could be dis-used(run is dry).

Run: **9**

From:	MH3	Invert Level:		700	Direction:		U/S	
To:	DS/WC1	Invert Level:			Function:		F/W	
Pipe Material:	VC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:			

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No		
							If Shared How:			
0.00	ST							Remarks	Surface Material	Length (m)
0.10	JN	6		100			backdrop	concrete	0.3
0.70	LU						Line deviates up		
1.00	FH						reached DS/WC1		

Comments:
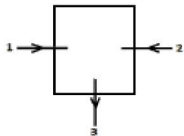
Run: **10**

From:	MH3	Invert Level:		700	Direction:		U/S	
To:	WG1	Invert Level:			Function:		F/W	
Pipe Material:	VC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		As Built	

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:			
							If Shared How:			
0.00	ST							Remarks	Surface Material	Length (m)
0.10	FH						reached WG1	slabs	0.1

Comments:

Run: **11**

From:	MH3	Invert Level:		700	Direction:		U/S	
To:	RWG2	Invert Level:			Function:		S/W	
Pipe Material:	VC	Pipe Dia:		100				
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		As Built	

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run:	No		
							If Shared How:			
0.00	ST							Remarks	Surface Material	Length (m)
0.10	LR						Line deviates right	slabs	0.6
0.60	FH						reached RWG2		

Comments:

Run: 12

From:	MH3	Invert Level:		700	Direction:	U/S	
To:	WG2	Invert Level:			Function:	F/W	
Pipe Material:	VC	Pipe Dia:		100			
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run: If Shared How:	No

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Remarks	Surface Material	Length (m)
0.00	ST								
0.10	LR						slight	slabs	1
0.60	JDM						Joint displaced medium		
0.90	JDL						Joint displaced large		
1.00	FH						reached WG2		

Comments:

Run: 13

From:	MH3	Invert Level:		700	Direction:	U/S	
To:	SVP2	Invert Level:			Function:	F/W	
Pipe Material:	VC	Pipe Dia:		100			
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run: If Shared How:	No

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Remarks	Surface Material	Length (m)
0.00	ST								
0.10	LU						Line deviates up	slabs	0.3
0.30	FH						reached SVP1		

Comments:

Run: 14

From:	MH3	Invert Level:		700	Direction:	U/S	
To:	U/S	Invert Level:			Function:	F/W	
Pipe Material:	VC	Pipe Dia:		100			
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run: If Shared How:	No

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Remarks	Surface Material	Length (m)
0.00	ST								
1.30	WL				5		Water level	slabs	0.1
6.20	JN	3		100			unknown	under building	7.7
7.50	LR						Line deviates right		
7.80	LU						Line deviates up		
7.80	FH						reached unknown		

Comments:

Run: 15

From:	MH3	Invert Level:		700	Direction:	D/S	
To:	D/S	Invert Level:			Function:	Comb	
Pipe Material:	VC	Pipe Dia:		100			
Water/Pressure Test:		Drain Break-In:		No	Gully Condition:		

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Shared Run: If Shared How:	No

Distance (m)	Code	Clock Ref at	to	Dia mm	Intrusion %	mm	Remarks	Surface Material	Length (m)
0.00	ST								
2.00	FH						Reached D/S	slabs	

Comments:

Manhole Details	Sheet:	1 of 1	Site:	34 Frognall
	████████			
	Date:	16/01/20	Client:	Crawford Claims Management

MH:- [MH1]   Depth:- [380] (mm)

Depths of run if different to invert level:-

Run	Depth (mm)

Manhole Condition:- [Good]

Reasons for poor condition.

Chamber Dimension:- [450] / [450] (mm)

MH:- [MH2]   Depth:- [450] (mm)
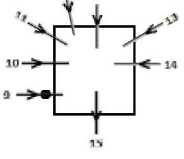
Depths of run if different to invert level:-

Run	Depth (mm)
5	150

Manhole Condition:- [Good]

Reasons for poor condition.

Chamber Dimension:- [600] / [450] (mm)

MH:- [MH3]   Depth:- [700] (mm)

Depths of run if different to invert level:-

Run	Depth (mm)
9	250
10	350
11	450
14	250

Manhole Condition:- [Good]

Reasons for poor condition.

Chamber Dimension:- [600] / [450] (mm)

Key

Interceptor

Internal Back Drop.

External Back Drop.

Additional Comments for Poor Condition