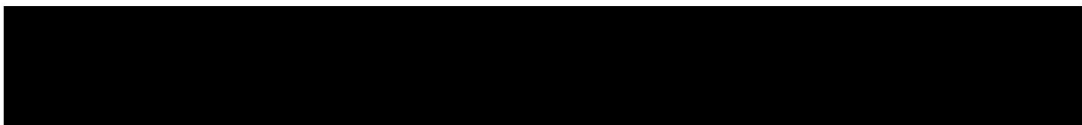


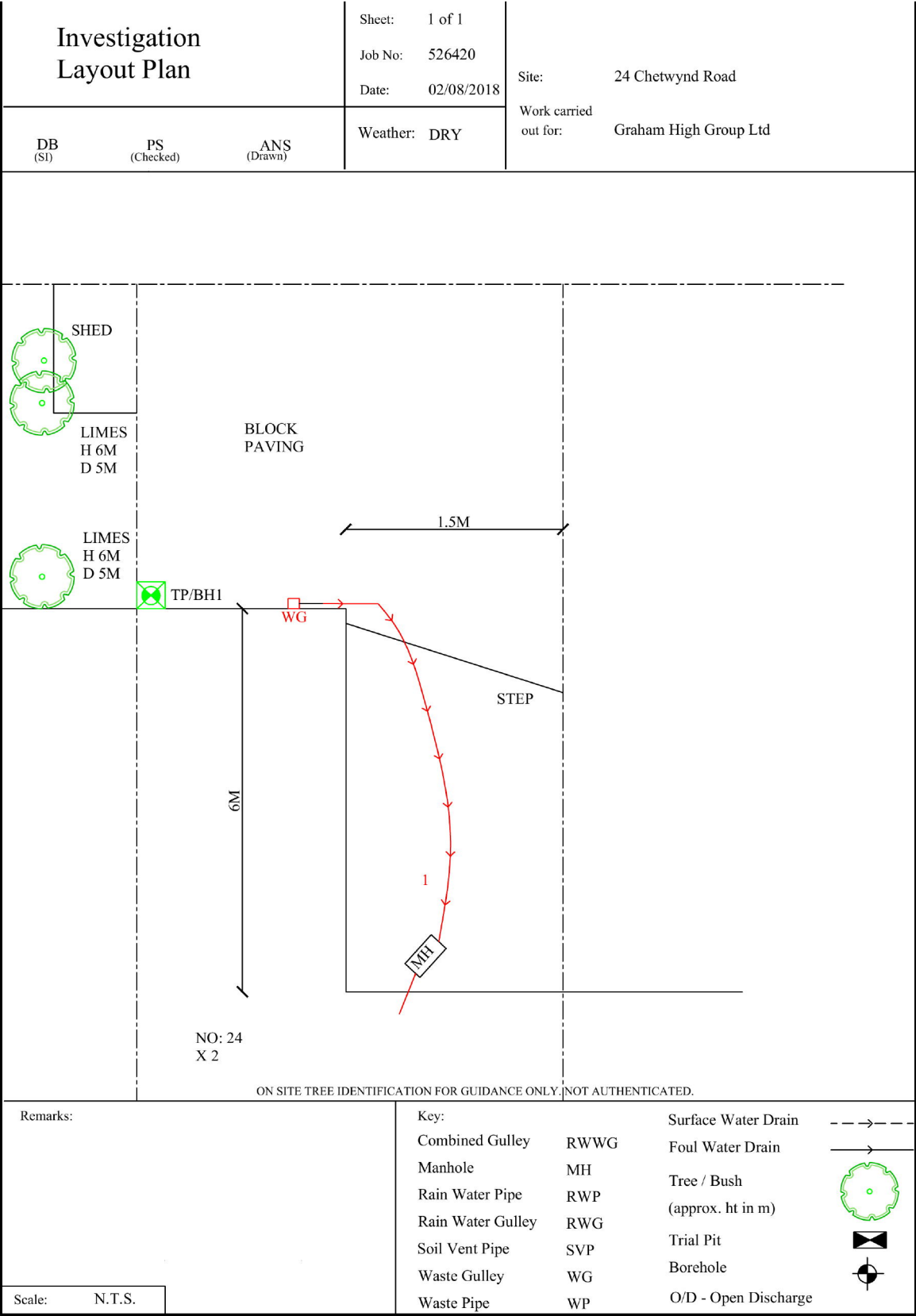
## SITE INVESTIGATION FACTUAL REPORT

Report No: 526420  
Client: Graham High Group Limited  
Site: 24 Chetwynd Road  
Client Ref: [REDACTED]  
Date of Visit: 02/08/18



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





TEST REPORT: Trial Pit

REPORT NUMBER: C351758 / 1903.1.1.1

TRIAL PIT REF: TP1

DATE: 02/08/2018

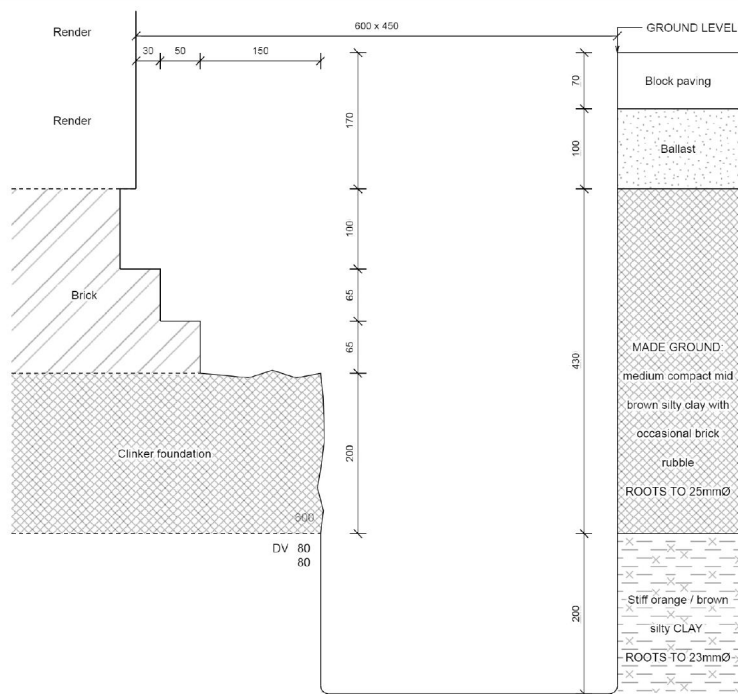
CLIENT: Graham High Group

SITE: 24 Chetwynd Road, NW5

JOB NO: 526420

WEATHER: Dry

EXCAVATION METHOD: Hand tools



For Strata below 800mm see Bore Hole log

Key:  
D Small disturbed sample J Jar sample  
B Bulk disturbed sample V Pilcon vane (kPa)  
W Water sample M Mackintosh probe  
TDTD Too dense to drive

Remarks:  
Amended report. This test report supersedes test report version 1

For and on behalf of CET  
Steve Lumley - Regional Manager

Report Format:

Approved Signatory  
17-Aug-18

Borehole		1	Sheet: 1 of 1		Site: 24 Chetwynd Road						
			Job No: 526420								
			Date: 02/08/2018								
Boring Method: Hand Auger				Ground Level:	Client: Graham High Group Limited						
Diameter (mm): 75		Weather: Dry									
Depth	Soil Description				Samples and Tests						
(m)					Thickness	Legend	Depth	Type	Result		
0.00	See Trial Pit				0.80						
0.80	Stiff orange-brown silty CLAY				0.20	⌘ — ⌘ ⌘ — ⌘					
1.00	Firm orange-brown silty CLAY				0.70	⌘ — ⌘ ⌘ — ⌘ ⌘ — ⌘ ⌘ — ⌘ ⌘ — ⌘ ⌘ — ⌘	1.00	DV	74 70		
1.70	End of BH						1.50	DV	62 72		
Remarks: BH ends at 1.7m,claystone obstructs ,too dense to hand auger.BH dry and open on completion.No roots observed below 1.5m.					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)
Logged:	DB	PS	Checked:	Approved:	Version	V1.0 28/01/16	N.T.S.				

## Laboratory Summary Results

Our Ref : 526420  
 Location : 24, Chetwynd Road, London  
 Client : Graham High Group Limited

Date Sampled: 02/08/18  
 Date Received : 06/08/18  
 Date Tested : 07/08/18  
 Date of Report : 14/08/18

Sample Ref TP/SH No	Depth (m)	Type	Moisture Content (%) [1]	Soil Fraction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity Index [3]	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]	Sulphate Content * (g/l)		Class [16]
																		SO <sub>3</sub> [14]	SO <sub>4</sub> [15]	
1	U/S 0.60	D	32	<5	85	28	57	0.07	57	CV	168	367			80					
	1.0	D	33	<5	83	29	54	0.07	54	CV	168	136			72					
	1.5	D	33	<5	76	29	47	0.09	47	CV	168	105			67					

### Test Methods / Notes

[1] BS 1377: Part 3: 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: 1991 - Figure 31 - Plasticity Chart for the classification of fine soils

[8] In-house method S9a adapted from BRE IP 493

[9] In-house Test Procedure S17c One Dimensional Swell/Shrink Test

[10] Estimated Heave Potential (Dd)

[11] Values of shear strength were determined in situ by CET using

a Pileow hand vane or (where 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] SO<sub>4</sub> = 1.2 x SO<sub>3</sub>

[16] BRE Special Digest One (Concrete in Aggressive Ground) August 2005

Note that if the SO<sub>4</sub> content falls into the D5-4 or D5-5 class, it would be

prudent to consider the sample as falling into the D5-4M or D5-5M

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.

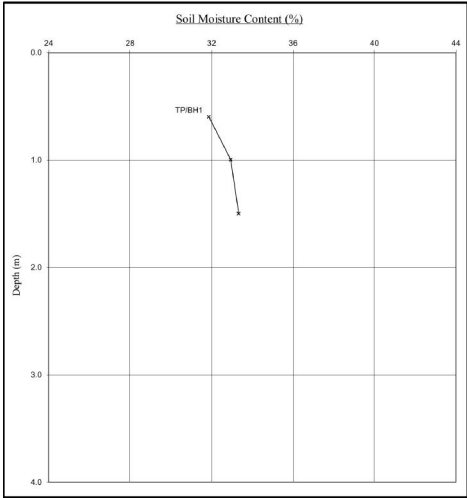
### Key

D Disturbed sample (small)  
 B Disturbed sample (bulk)  
 U Undisturbed sample  
 W Groundwater sample  
 FNP Presumably Non-Plastic by inspection  
 UFS Underside of Foundation



Moisture Content Profiles

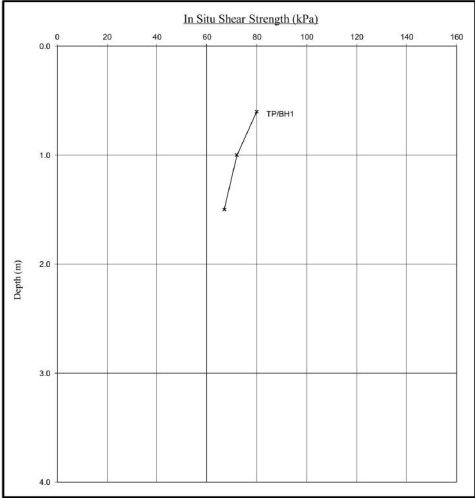
Our Ref: 526420  
Location: 24, Chetwynd Road, London  
Work carried out for: Graham High Group Limited



Notes  
1. If plotted,  $0.4LL$  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.

Shear Strength Profiles

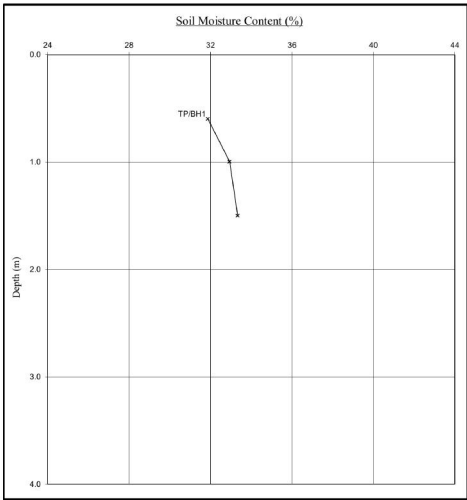
Date Sampled: 02/08/18  
Date Received: 06/08/18  
Date Tested: 07/08/18  
Date of Report: 14/08/18



Note  
1. Unless otherwise stated, values of Shear Strength were determined in situ by CET using a Picon 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

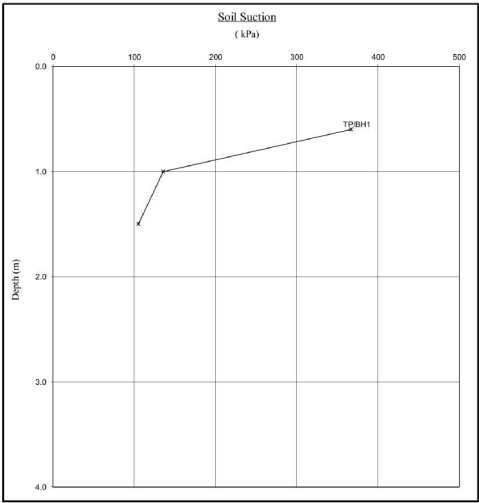
Our Ref: 526420  
Location: 24, Chetwynd Road, London  
Work carried out for: Graham High Group Limited



Notes  
1. If plotted,  $0.4LL$  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.

Soil Suction Profiles

Date Sampled: 02/08/18  
Date Received: 06/08/18  
Date Tested: 07/08/18  
Date of Report: 14/08/18



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.

<b>EPSL</b> <b>European Plant Science Laboratory</b>	Sheet: 1 of 1	Site: <b>24 Chetwynd Road,</b>
	Job No: <b>526420</b>	Work carried out for: <b>Graham High Group Ltd</b>
	Date: <b>10/08/2018</b>	
	Order No: <b>1180315</b>	
EP SL Ref: <b>R22829</b>		


***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 -

<u>Trial pit/ Borehole number</u>	<u>Root diameter (mm)</u>	<u>Tree, shrub or climber from which root originates</u>	<u>Result of starch test</u>
TP1 (USF)	23 mm	Tilia spp. 4 roots	Positive
TP1 (USF)	10 mm	probably Prunus spp. *	Positive
BH1 (to 1.5m)	<1 mm	Tilia spp. **	Negative
BH1 (to 1.5m)	<1 mm	broadleaved species, too juvenile for positive identification 2 roots	Positive

\* In poor condition, lacking bark.  
\*\* In a state of decay.

Tilia spp. are limes.  
Prunus spp. include blackthorn, cherry, cherry-laurel, Portuguese laurel, peach, plum, and related species.

  
MDM

Head of Laboratory Services : M D Mitchell B.Sc. (Hons), M.Phil.

Plant Anatomist : Dr G S Turner B.Sc. (Hons), M.Sc., Ph.D

Plant Anatomist : Dr R J Shaw B.Sc. (Hons), Ph.D

Consultant: Dr M P Denne B.Sc. (Hons), M.Sc., Ph.D

Registered in England. No 3256771,



To: Graham High Group Limited

Our Ref: 526420

Your Ref: 018/53239/S/DC/

Date: 06-Aug-18

Fiao:

## ESTIMATE

Site:- 24 Chetwynd Road

Item

1.0	Location	Mh 1 upstream to Wg 1 - Run 1
	Shared System	No
	Condition Grade	B
	Drain Serviceability	Unserviceable
	Probable Cause	Unknown
	Work Spec	Excavate and replace 3 meters of pipework upstream from Mh 1.

**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

Quotation is binding only if accepted within 28 days from date of issue and is subject to our Standard Terms and Conditions

The price qualification notes, stated on this Schedule of rates, apply to this quotation.

The CET Structures Ltd undertakes to return to site free of charge to carry out remedial work to the drainage repairs set out above for a period of 2 months from the date of this invoice. The company standard charge rates will apply to the visit should the work requested be unrelated to the said repairs.

**ESTIMATING & COSTING SHEET - DOMESTIC DRAINAGE**

Site:-

24 Chetwynd Road

Client :-

Graham High Group Limited

Attention of:-

David Cahoon

Job Number

526420

Insurer

Unknown Insurer (Not Relevant)

Date:-

06-Aug-18

Recommendation

1

Description			
Item No	Mh 1 upstream to Wg 1 - Run 1	Unit	Quantity
0.01	Ram-6pm Initial 1 hr	item	
0.02	Subsequent 1/2 hr	item	
1.00	Site Call Out for CCTV		
1.01	CCTV up to 2 hrs on site - 08.00 to 17.59 hrs	item	
1.02	E/O per 1/2 hour	item	
2.00	Gullies/Bends/Junctions/Interceptors(excavate and replace)		
2.01	Gully 110mm	item	
2.02	Rodding eye/rest bend 110mm	item	
2.03	Rest Bend 160mm	item	
2.04	Junction/bend 110mm 0-1m depth	item	
2.05	Junction/bend 110mm up to 2m depth	item	
2.06	Junction /bend 110mm 2m+	item	
2.07	Junction/bend 160mm 0-1m depth	item	
2.08	Junction/bend 160mm up to 2m depth	item	
2.09	Junction /bend 160mm 2m+	item	
2.10	Interceptor 100mm connections up to 1m depth	item	
2.11	Interceptor 150mm connections up to 1m depth	item	
2.12	Interceptor 100mm connections up to 2m depth	item	
2.13	Interceptor 150mm connections up to 2m depth	item	
2.14	Interceptor 2m+	item	
3.00	Pipe Excavation/Replacement/Materials		
3.01	Excavate and remove 110 pipework - 0-1m depth	m	3.0
3.02	Excavate and remove 110mm pipework - 1-1.5m depth	m	
3.03	Excavate and remove 110mm pipework - 1.5-2.0m depth	m	
3.04	Excavate and remove 110mm pipework - 2.0m+ depth	m	
3.05	Excavate and remove 160mm pipework - 0-1m depth	m	
3.06	Excavate and remove 160mm pipework - 1-1.5m depth	m	
3.07	Excavate and remove 160mm pipework - 1.5-2.0m depth	m	
3.08	Excavate and remove 160mm pipework - 2.0m+ depth	m	
4.00	Supplement for breaking out and reinstatement of surfaces		
4.01	Slabs	m	
4.02	Block Paving	m	3.0
4.03	Concrete	m	
4.04	Reinforced Concrete	m	
4.05	Tarmac (cold lay)	m	
5.00	Supplement for difficult ground conditions		
5.01	Dry Clay	m	
5.02	Wet Clay	m	
5.03	Rocky Soil	m	
5.04	Running Sand	m	
6.00	Supplement for Concrete Pipe Surround		
6.01	Breaking Out	m	
6.02	Replacing	m	
7.00	Cleaning of Drains		
7.01	Cleaning of drains up to 150mm diameter including root cutting & removal of scale	hr	
7.02	Removing debris in manhole	hr	
8.00	Lining works		
8.01	Set up for 100mm diameter drain lining includes first 3m lined	m	
8.02	100mm diameter drain lining > 3m length	m	
8.03	Set up for 150mm diameter drain lining includes first 3m lined	m	
8.04	150mm diameter drain lining > 3m length	m	
8.05	Pre-clean drain of normal silt & debris	hr	
8.06	Root cutting if required	hr	
8.07	Post cctv survey of runs lined	item	
8.08	Minimum lining charge	item	
9.00	"Patch Liner"		
9.01	1st Application 110mm	item	
9.02	Each subsequent application	nr	
9.03	1st Application 160mm	item	
9.04	Each subsequent application	nr	
10.00	Lateral cutting upto 150mm diameter		
10.01	Re-open lateral branch upto 2m deep	nr	
10.02	Re-open lateral branch upto 3m deep	nr	
10.03	Re-open lateral branch upto 3m+ deep	nr	
11.00	Reinstatement	nr	
11.01	Reinstatement of other surfaces, cost of materials = 25% (provisional sum)	cost	
11.02	Days works Labour (2 man team)	hr	
12.00	Miscellaneous		
12.01	Confined space equipment on manholes between 1.2 - 2.5m	Sum	
12.02	Confined space equipment plus extra man, manholes > 2.5m	Sum	
12.03	Manhole works (benching etc.)	hr	
12.04	Excavation & backfill of new soakaway (1m <sup>3</sup> ) with stone rejects	item	
12.05	Spoil disposal fee	Sum	1.0
12.06	Ferry crossing charge at cost plus 25%	cost	
12.07	Estimate based on survey by others. Pre-survey of runs by repair crew	item	
12.08	Shoring up trenches (work exceeding 1.2m depth subject to risk assessment)	item	
12.09	Highway Work Permit Required		
Total subject to VAT @ 20%			

Note: Subject to the attached Terms and Conditions

A - When calculating prices, all measurements are rounded up

C - Every effort will be made to match existing surfaces where disturbed although this cannot be guaranteed

G - Daywork rates do not include for materials that are charged at cost plus 25%

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

B - Depths are taken to the base of excavations

D - All rates exclude VAT

F - The above rates are subject to re-measurement

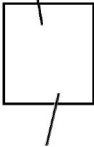
E - Depths are taken to the base of excavations

<b>Coding Sheet</b>		Sheet:		Site:	24 Chetwynd Road				
		Job No.:	526420						
		Date:	02/08/18	Client:	Graham High Group Limited				
<b>Run:</b>	<b>1</b>								
From:		MH1	Invert Level:	500	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:	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)		
1.00	GO			25	Concrete squeeze	Block Paving	6		
1.00	DEG			20	Debris grease				
1.20	JDM				Joint displaced medium				
1.70	JDM				Joint displaced medium				
2.70	GO			15	Concrete squeeze				
2.70	WL			10	Water level				
4.70	LL				Line deviates left				
6.00	FH				reached Wg				
Comments:									

Manhole Details	Sheet:	1 of 1	Site:	24 Chetwynd Road
	Job No.:	526420		
		Date:	02/08/18	Client:

MH:- MH1

Depth:- 500 (mm)



Chamber Dimension:- 600 / 450 (mm)

Depths of run if different to invert level:-


Run	Depth (mm)

Manhole Condition:- Good

Reasons for poor condition.


MH:-

Depth:- (mm)



Chamber Dimension:- / (mm)

Depths of run if different to invert level:-


Run	Depth (mm)

Manhole Condition:-

Reasons for poor condition.


MH:-

Depth:- (mm)



Chamber Dimension:- / (mm)


Depths of run if different to invert level:-

Run	Depth (mm)


Manhole Condition:-

Reasons for poor condition.



Key



Interceptor



Internal Back Drop.



External Back Drop.

Additional Comments for Poor Condition