SITE INVESTIGATION
FACTUAL REPORT

Report No: 505888

Client: Cunningham Lindsey - Morley (Leeds)

Site: 221 Goldhurst Terrace

Client Ref: [redacted]

Date of Visit: 25/04/18

ISO 9001 REGISTERED FIRM | ISO 14001 REGISTERED FIRM | OHSAS 18001 REGISTERED FIRM

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

[redacted]

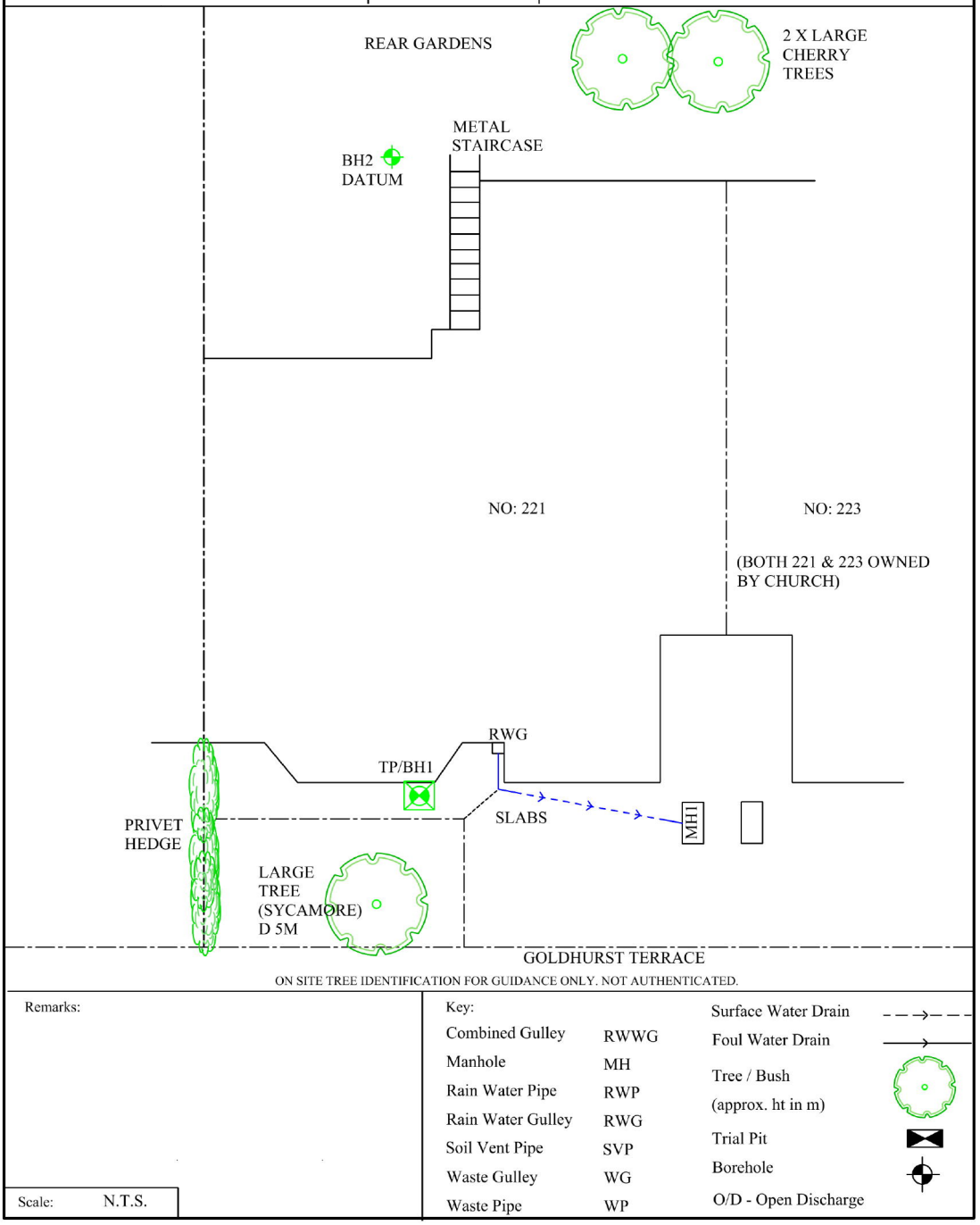
CET is the trading name of CET Structures Ltd
Registered in England No. 02527130

Investigation Layout Plan

Sheet: 1 of 1
Job No: 505888
Date: 25/04/2018
Weather: DRY

Site: 221 Goldhurst Terrace
Work carried out for: Cunningham Lindsey

IC (SI) SA (Checked) ANS (Drawn)



ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY. NOT AUTHENTICATED.

Remarks:

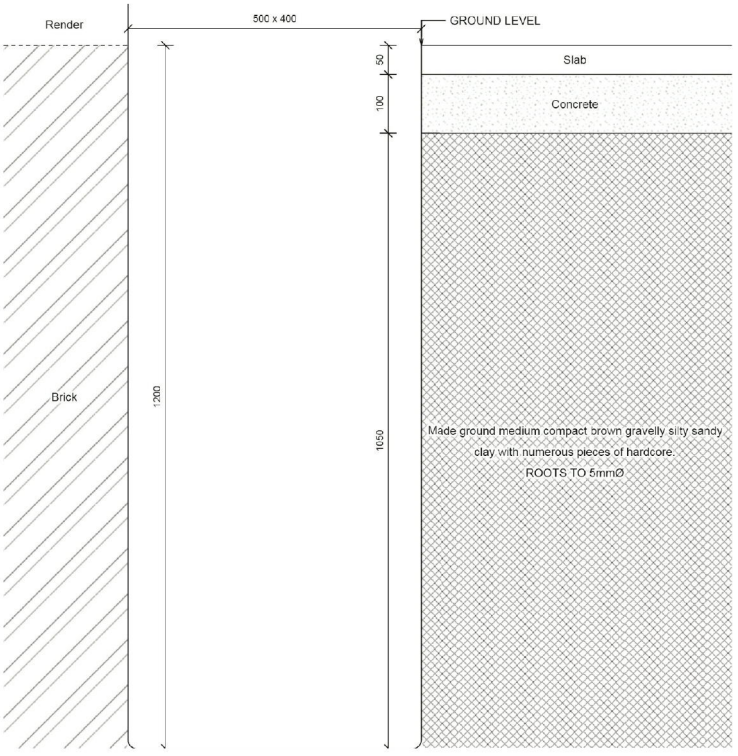
Scale: N.T.S.

Key:

Combined Gulley	RWWG	Surface Water Drain
Manhole	MH	Foul Water Drain
Rain Water Pipe	RWP	Tree / Bush (approx. ht in m)
Rain Water Gulley	RWG	Trial Pit
Soil Vent Pipe	SVP	Borehole
Waste Gulley	WG	O/D - Open Discharge
Waste Pipe	WP	

PROPERTY ASSURANCE
Giving our all

TEST REPORT:	**Trial Pit**		
REPORT NUMBER:	C351157 / 1097.1.1.1		
TRIAL PIT REF:	Tp1 1of1	DATE:	25/04/2018
CLIENT:	Cunningham Lindsey	SITE:	221 Goldhurst Terrace, NW6 3EP
JOB NO:	505888	WEATHER:	Clear
EXCAVATION METHOD:	Hand tools		



For Strata below 1200mm see Bore Hole log

TP abandoned at 1200mm due to depth. BH carried out in back of trial pit. u/s of foundation not found ,no soil sample taken.

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
Scott Alger - Lab

Approved Signatory
26-Apr-18

Report Format:

[redacted]

Borehole	1		Sheet:	1 of 1	Site:	221 Goldhurst Terrace
			Job No:	505888		
			Date:	25/04/2018		
Boring Method:	Rotary Auger		Ground Level:		Client:	Cunningham Lindsey - Morley (Leeds)
Diameter (mm):	100	Weather:	dry			

Depth	Soil Description	Thickness	Legend	Samples and Tests		
(m)				Depth	Type	Result
0.00	See Trial Pit	1.20				
1.20	MADEGROUND medium compact brown silty sandy clay with pieces of hardcore	0.30				
1.50	Stiff orange-brown silty CLAY with gravel	0.30		1.50	D	
1.80	Stiff brown-grey veined silty CLAY	0.20				
2.00	Very Stiff brown-grey veined silty CLAY with claystone nodules	3.00		2.00	DV	140+
						140+
				2.50	D	
				3.00	DV	140+
						140+
				3.50	D	
				4.00	DV	140+
						140+
				4.50	D	
				5.00	DV	140+
5.00	End of BH					140+

Remarks:
BH ends at 5.0m .BH dry and open on completion,no roots observed below 2.2m.

Key:

D - Disturbed Sample
B - Bulk Sample
W - Water Sample
J - Jar Sample
V - Pilcon Shear Vane (kPa
M - Mackintosh Probe
TDTD - Too Dense To Drive

Roots
Roots
Roots
Depth to Water (m)

To Depth (m)	Max Dia (mm)
2.20	1

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

Borehole	2		Sheet:	1 of 1	Site:	221 Goldhurst Terrace
			Job No:	505888		
			Date:	25/04/2018		
Boring Method:	Hand Auger		Ground Level:		Client:	Cunningham Lindsey - Morley (Leeds)
Diameter (mm):	75	Weather:	dry			

Depth	Soil Description	Thickness	Legend	Samples and Tests		
(m)				Depth	Type	Result
0.00	MADEGROUND medium compact brown silty sandy clay with gravel and brick pieces	0.80				
0.80	Stiff brown-grey veined silty CLAY with claystone nodules	1.70		1.00	DV	76
						78
				1.50	DV	82
						88
				2.00	DV	96
						102
2.50	Very Stiff brown-grey veined silty CLAY with claystone nodules	3.30		2.50	DV	140+
						140+
				3.00	DV	140+
						140+
				3.50	DV	140+
						140+
				4.00	DV	140+
						140+
				4.50	DV	140+
						140+
				5.00	DV	140+
5.80	End of BH					140+

Remarks:
BH ends at 5.8m,too stiff/hard to hand auger.BH dry and open on completion, no roots observed.No access for drill.Datum installed at 5.8m.

Key:

		To Depth (m)	Max Dia (mm)
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

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

Laboratory Summary Results

Our Ref : 505888

Location : 221, Goldhurst Terrace, London, NW6 3EP

Client: Cunningham Lindsey - Morley (Leeds)

Address: Subsidence Scanning Centre, Ground Floor, Fountain Court, LS27 0JG

Date Sampled: 25/04/18

Date Received : 26/04/18

Date Tested : 26/04/18

Date of Report : 01/05/18

Sample Ref TP/BH No	Sample Ref 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]	Sulphate Content * (g/l) SO_3 [14]	Sulphate Content * (g/l) SO_4 [15]	* Class [16]
1	1.5	D	24	18	65	21	44	0.06	36	CH										
	2.0	D	34	<5											> 140					
	2.5	D	30	<5	74	26	48	0.08	48	CV										
	3.0	D	32	<5											> 140					
	3.5	D	33	<5	78	26	52	0.14	52	CV										
	4.0	D	34	<5											> 140					
	4.5	D	33	<5																
	5.0	D	34	<5											> 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 : 1981 : Figure 31 - 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 CET using a 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] $SO_4 = 1.2 \times SO_3$

[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 soluable 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
U/S	Underside of Foundation

UKAS TESTING

8618

Version: 5BH V1.4 - 11/05/15

Our Ref : 505888

Laboratory Testing Results

Date Sampled : 25/04/18

Location : 221, Goldhurst Terrace, London, NW6 3EP

Date Received : 26/04/18

Client: Cunningham Lindsey - Morley (Leeds)

Date Tested : 26/04/18

Address: Subsidence Scanning Centre, Ground Floor, Fountain Court, LS27 0JG

Date of Report : 01/05/18

Sample Ref.		Type	Moisture Content	Soil Fraction	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity * Index	Modified * Plasticity Index	Soil * Class	Filter Paper Contact Time	Soil Sample Suction	Oedometer Strain	Estimated Heave Potential (Dd)	In situ * Shear Vane Strength	Organic * Content	pH * Value	Sulphate Content * (g / l)		* Class
TP/BH No.	Depth (m)		(%) *[1]*	> 0.425mm (%) *[2]*	(%) *[3]*	(%) *[4]*	(%) *[5]*	*[5]*	(%) [6]	*[7]*	(h)	(kPa) [8]	*[9]*	*(mm)[10]*	(kPa) *[11]*	(%)*[12]*	*[13]*	SO_3 *[14]*	SO_4 *[15]*	*[16]*
BH2	U/S 1.00	D	35	<5	77	25	52	0.19	52	CV					77					
	1.5	D	30	<5	73	23	50	0.15	50	CV					85					
	2.0	D	32	<5											99					
	2.5	D	34	<5	77	29	48	0.10	48	CV					> 140					
	3.0	D	34	<5											> 140					
	3.5	D	30	<5	77	26	51	0.07	51	CV					> 140					
	4.0	D	32	<5											> 140					
	4.5	D	30	<5											> 140					
	5.0	D	32	<5											> 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 : 1981 : Figure 31 - 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 CET using a 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] $SO_4 = 1.2 \times SO_3$

[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 soluable magnesium testing is undertaken to prove otherwise.

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Full reports can be provided upon request

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D	Disturbed sample (small)
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ENP	Essentially Non-Plastic by inspection
U/S	Underside of Foundation

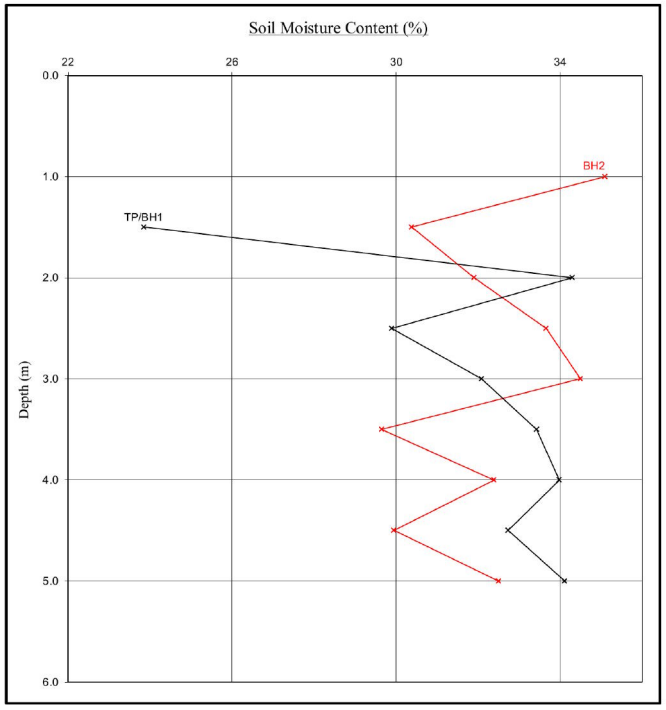
UKAS TESTING

8618

Version: 5BH V1.4 - 11/05/15

Moisture Content Profiles

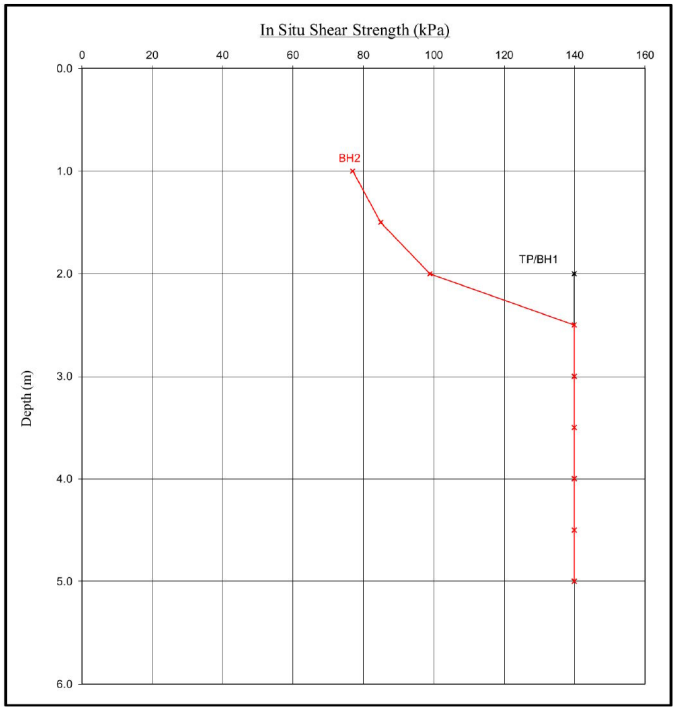
Our Ref : 505888
Location : 221, Goldhurst Terrace, London, NW6 3EP
Work carried out for: Cunningham Lindsey - Morley (Leeds)



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.

Shear Strength Profiles

Date Sampled : 25/04/18
Date Received : 26/04/18
Date Tested : 26/04/18
Date of Report : 01/05/18



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.

EPSL ***European Plant Science Laboratory***	Sheet: 1 of 1 Job No: **505888** Date: **01/05/2018** Order No: **1142902** EPSL Ref: **R22165**	Site: **221 Goldhurst Terrace, NW6,** Work carried out for: **Cunningham Lindsey**

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 (to 2.2m)	2 mm	Acer spp. * 2 roots	Positive

* Plus 3 other decayed roots the same.

Acer spp. are maples, including sycamore, Norway maple, and Japanese maples.

[redacted] [redacted]

MDM RJS

[redacted]

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, Registered Office: [redacted]

To: Cunningham Lindsey - Morley (Leeds)
Subsidence Scanning Centre
Ground Floor
Fountain Court
West Yorkshire
LS27 0JG

Our Ref: **505888**

Your Ref: **6667535**

Date: **28-Apr-18**

Ftao: Gavin Catheline

ESTIMATE

Site:- 221 Goldhurst Terrace

[redacted]

Item		
1.0	Location	**Rwg 1 downstream - Run 1**
	Shared System	No
	Condition Grade	B
	Drain Serviceability	Unserviceable
	Work Spec	Excavate and replace gully + 1 meter of pipework downstream. From excavation Hpwj to clear and line downstream to Mh 1 with super flex liner.

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

[redacted]

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 the drainage solutions schedule of rates, apply to this quotation.
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:- **221 Goldhurst Terrace**

Client :- **Cunningham Lindsey - Morley (Leeds)**
Attention of:- **Gavin Catheline**

Client ref	6667535
Job Number :-	505888
Insurer	Allianz Insurance
Date:-	28-Apr-18
Recommendation	1

Item No	Description Rwg 1 downstream - Run 1	Unit	Quantity	[redacted]
1.0	**Emergency Drain Blockage Clearance**			
1.1	Unblock drain 8am-6pm - First 1/2 Hour	Item		
1.2	Unblock drain 8am-6pm- Subsequent 1/2 Hour	Item		
1.3	Unblock drain 6pm-midnight	Item		
1.4	Unblock drain 6pm-midnight - Subsequent 1/2 hour	Item		
2.1	**CCTV Surveys**			
2.2	Undertake CCTV survey 8am-6pm (up to 3 hours)	Item		
2.3	Additional 1/2 hr survey charge	Item		
3.0	**Replacing Underground Drainage**			
3.1	**Gullies**			
3.2	Take out and replace gulley (100mm outlet)	Item	1	
3.3	Take out and replace rodding point (100mm outlet)	Item		
3.4	**Bends/junctions**			
3.5	Excavate and replace rest bend (100mm outlet)	Item		
3.6	Excavate and replace rest bend (150mm outlet)	Item		
3.7	Excavate and replace junction/bend (100mmØ), Excavation depth 0-1m.	Item	2	
3.8	Excavate and replace junction/bend (150mmØ), Excavation depth 0-1m	Item		
3.9	Excavate and replace junction/bend (100mmØ), Excavation depth 1-1.5m.	Item		
3.10	Excavate and replace junction/bend (150mmØ), Excavation depth 1-1.5m.	Item		
3.11	Excavate and replace junction/bend (100mmØ), Excavation depth 1.5-2.0m.	Item		
3.12	Excavate and replace junction/bend (150mmØ), Excavation depth 1.5-2.0m.	Item		
3.13	**Pipes**			
3.14	Excavate trench and replace 100mmØ pipework, Excavation depth 0-1m, First 10m.	m	1	
3.15	Excavate trench and replace 150mmØ pipework, Excavation depth 0-1m, First 10m.	m		
3.16	Excavate trench and replace 100mmØ pipework, Excavation depth 0-1m.	m		
3.17	Excavate trench and replace 150mmØ pipework, Excavation depth 0-1m.	m		
3.18	Excavate trench and replace 100mmØ pipework, Excavation depth 1-1.5m, First 10m.	m		
3.19	Excavate trench and replace 150mmØ pipework, Excavation depth 1-1.5m, First 10m.	m		
3.20	Excavate trench and replace 100mmØ pipework, Excavation depth 1-1.5m.	m		
3.21	Excavate trench and replace 150mmØ pipework, Excavation depth 1-1.5m.	m		
3.22	Excavate trench and replace 100mmØ pipework, Excavation depth 1.5-2.0m, First 10m.	m		
3.23	Excavate trench and replace 150mmØ pipework, Excavation depth 1.5-2.0m, First 10m.	m		
3.24	Excavate trench and replace 100mmØ pipework, Excavation depth 1.5-2.0m.	m		
3.25	Excavate trench and replace 150mmØ pipework, Excavation depth 1.5-2.0m.	m		
3.26	**Surface Reinstatement of Trenches**			
3.27	Excavate through and reinstate turf.			
3.28	Excavate through and replace concrete paving slabs	m		
3.29	Excavate through and replace block paving	m		
3.30	Excavate through and reinstate plain concrete, maximum thickness 100mm.	m	2	
3.31	Excavate through and reinstate plain concrete, thickness 100- 200mm.	m		
3.32	Excavate through and reinstate reinforced concrete, maximum thickness 100mm.	m		
3.33	Excavate through and reinstate reinforced concrete, thickness 100-200mm.	m		
3.34	Excavate through and reinstate Tarmac - Cold rolled	m		
3.35	Excavate through and reinstate Tarmac - Hot rolled	m		
3.36	Reinstatement of crazy paving	m		
4.0	**Lining**			
4.1	Set up lining rig for drain lining including first 3m of lining per run, for 100mm or 150mm	Item	1	
4.2	Line 100mmØ drain	m		
	Super Flex Liner 100mm drain	m	2	
4.3	Line 150mmØ drain	m		
	Super Flex Liner 150mm drain	m		
4.4	Post lining CCTV survey	no	1	
4.5	Minimum lining charge	Item		
4.6	Root cutting of drain prior to lining	hr		
4.7	Set up lining rig for patch lining	Item		
4.8	Patch line 100mmØ drain	no		
4.9	Patch line 150mmØ drain	no		
4.10	Post patch lining CCTV survey	Item		
4.11	Minimum patch lining charge	Item		
4.12	Re-open lateral branch up to 2m length, pipe up to 150mm	no		
4.13	Re-open lateral branch over 2m length, pipe up to 150mm	no		
	Epoxy resin	no	1	
5.0	**Miscellaneous**			
5.1	Excavation and backfill of soakaway (1m3) with stone	Item		
5.2	% Uplift on disbursements and suppliers charges	%		
5.3	Daywork - Hourly labour rate	hr		
5.4	Minimum project value	Item		
5.5	Confined space equipment	Item	1	
5.6				
5.7				
5.8				
6.0	**Additional items**			
6.1	De-scaling (fat/grime)	hr	1	
6.2	De-scaling (scale using chain flails)	hr		
6.3	Gully surround	item		
6.4	Manhole works (up to 1.2m)	item		
6.6	Oversize soakaway (1.5m3)	item		
6.7	Soakaway >1.5m3	item		
6.8	Waste disposal	m	2	
6.9	Shoring	m	0	
	Total Estimate Price For Recommendation Number		1.0	
	[redacted]		**0.00**	

Note: Subject to the attached Terms and Condtions
A - When calculating prices, all measurements are rounded up
B - Depths are taken to the base of excavations
C - Every effort will be made to match existing surfaces where disturbed although this cannot be guaranteed
D - All rates exclude VAT
G - Daywork rates do not include for materials that are charged at cost plus 25%
F - The above rates are subject to re-measurement
KEY: ne = not exceeding, eo = extra over rate, m = linear metre, nr = number, hr = hour
E - Depths are taken to the base of excavations

Coding Sheet	Sheet:		Site:	221 Goldhurst Terrace
	Job No.:	505888		
	Date:	25/04/18	Client:	Cunningham Lindsey - Morley (Leeds)

Run:	1							
From:		Rwg		Invert Level:			Direction:	D/S
To:		MH1		Invert Level:			Function:	S/W
Pipe Material:		VC		Pipe Dia:		100		
Water/Pressure Test:				Drain Break-In:		Yes	Gully Condition:	Poor
							Shared Run:	No
							If Shared How:	

Distance (m)	Code	Clock Ref at	Clock Ref to	Dia mm	Intrusion %	Intrusion mm	Remarks	Surface Material	Length (m)
0.00	ST								
0.00	LD						Line deviates down		
0.20	JDL						Joint displaced large	slabs	
0.60	GO						Line levels		
0.60	LL						Line deviates left		
1.20	FC	12	12				Fracture circumferential		
1.20	JDM						Joint displaced medium		
1.20	RFJ						Roots fine at joint		
1.80	CC	12	12				Crack circumferential		
1.80	RFJ						Roots fine at joint		
2.20	LD						slight		
2.50	JDM						Joint displaced medium		
2.60	CC	12	12				Crack circumferential		
2.60	RFJ						Roots fine at joint		
3.10	CC	12	12				Crack circumferential		
3.60	CC	12	12				Crack circumferential		
4.10	GO						Line levels		
4.50	FH						reached mh1		

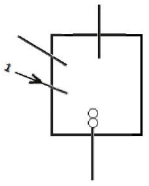
Comments:

too steep to push from mh1 (2.0m deep)

Manhole Details

	Sheet:	1 of 1	Site:	221 Goldhurst Terrace
	Job No.:	505888		
	Date:	25/04/18	Client:	Cunningham Lindsey - Morley (Leeds)

MH:- MH1 Depth:- 2000 (mm)



Depths of run if different to invert level:-

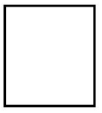
Run	Depth (mm)

Manhole Condition:- Good

Reasons for poor condition.

Chamber Dimension:- 600 / 450 (mm)

MH:- Depth:- (mm)



Depths of run if different to invert level:-

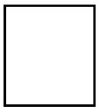
Run	Depth (mm)

Manhole Condition:-

Reasons for poor condition.

Chamber Dimension:- / (mm)

MH:- Depth:- (mm)



Depths of run if different to invert level:-

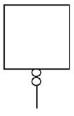
Run	Depth (mm)

Manhole Condition:-

Reasons for poor condition.

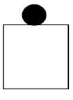
Chamber Dimension:- / (mm)

Key



Interceptor

Internal Back Drop.



External Back Drop.

Additional Comments for Poor Condition