SITE INVESTIGATION
FACTUAL REPORT

Report No:	169121
Client:	Cunningham Lindsey - Maidstone
Site:	14, Eldon Grove, London London
Client Ref:	7441220-Mrs E Schneider Goldernberg
Date of Visit:	21/11/2013

Unit E2 First Floor Suite, Boundary Court
Willow Farm Business Park, Castle Donington
Leicestershire, DE74 2NN

☎ 0843 2272362
✉ enquiries@cet-uk.com
💻 www.cet-uk.com

Investigation Layout Plan

Sheet: 1 of 1

Job No: 169121E

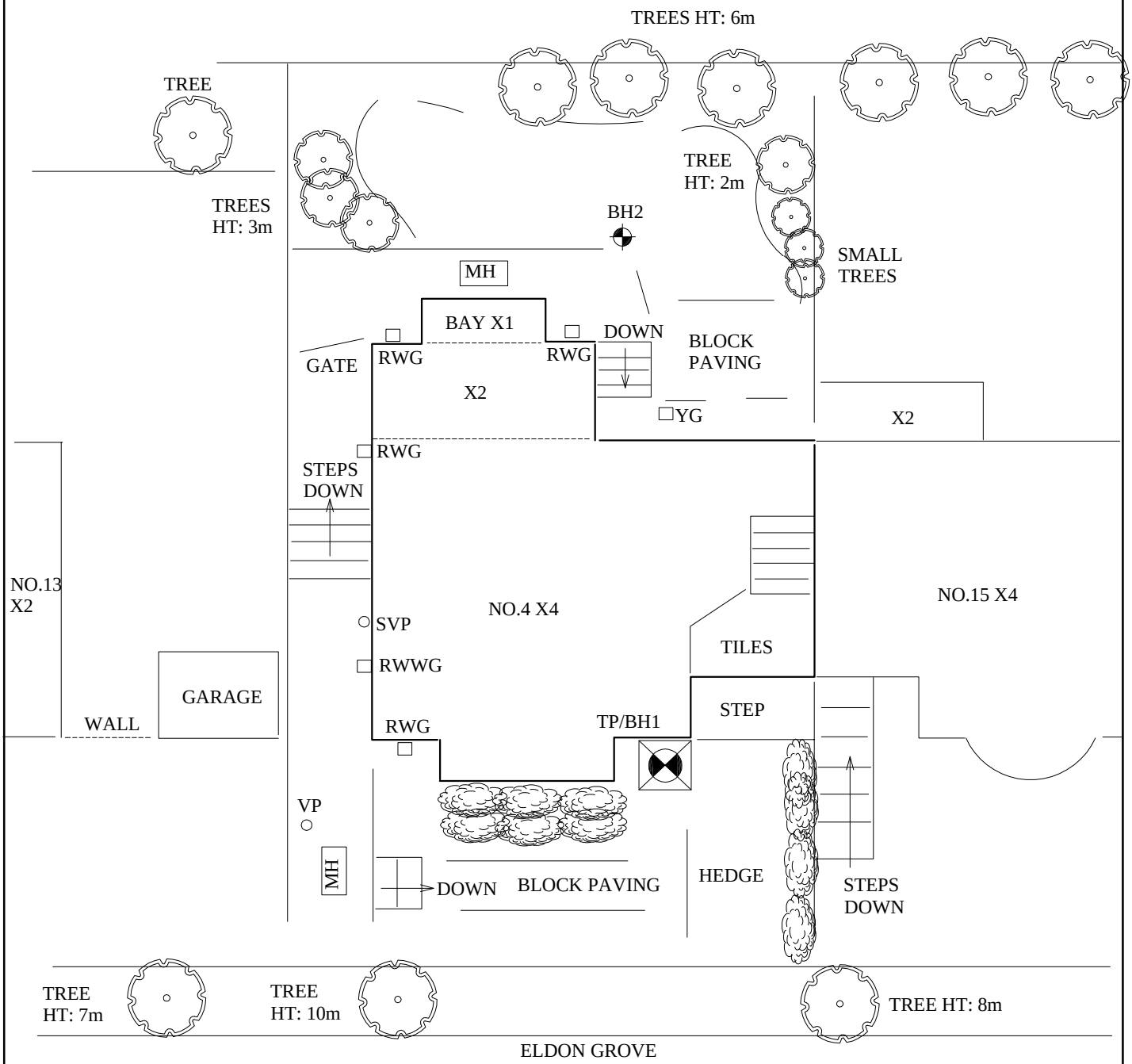
Date: 11/11/2013

Site: 14 Eldon Grove, NW3

Work carried out for: Cunningham Lindsey

MH	SE	AR
(SI)	(Checked)	(Drawn)

Weather: RAIN



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		
Soil Vent Pipe	SVP	Trial Pit	
Waste Gulley	WG	Borehole	
Waste Pipe	WP		

Investigation Layout Plan

Sheet: 1 of 1

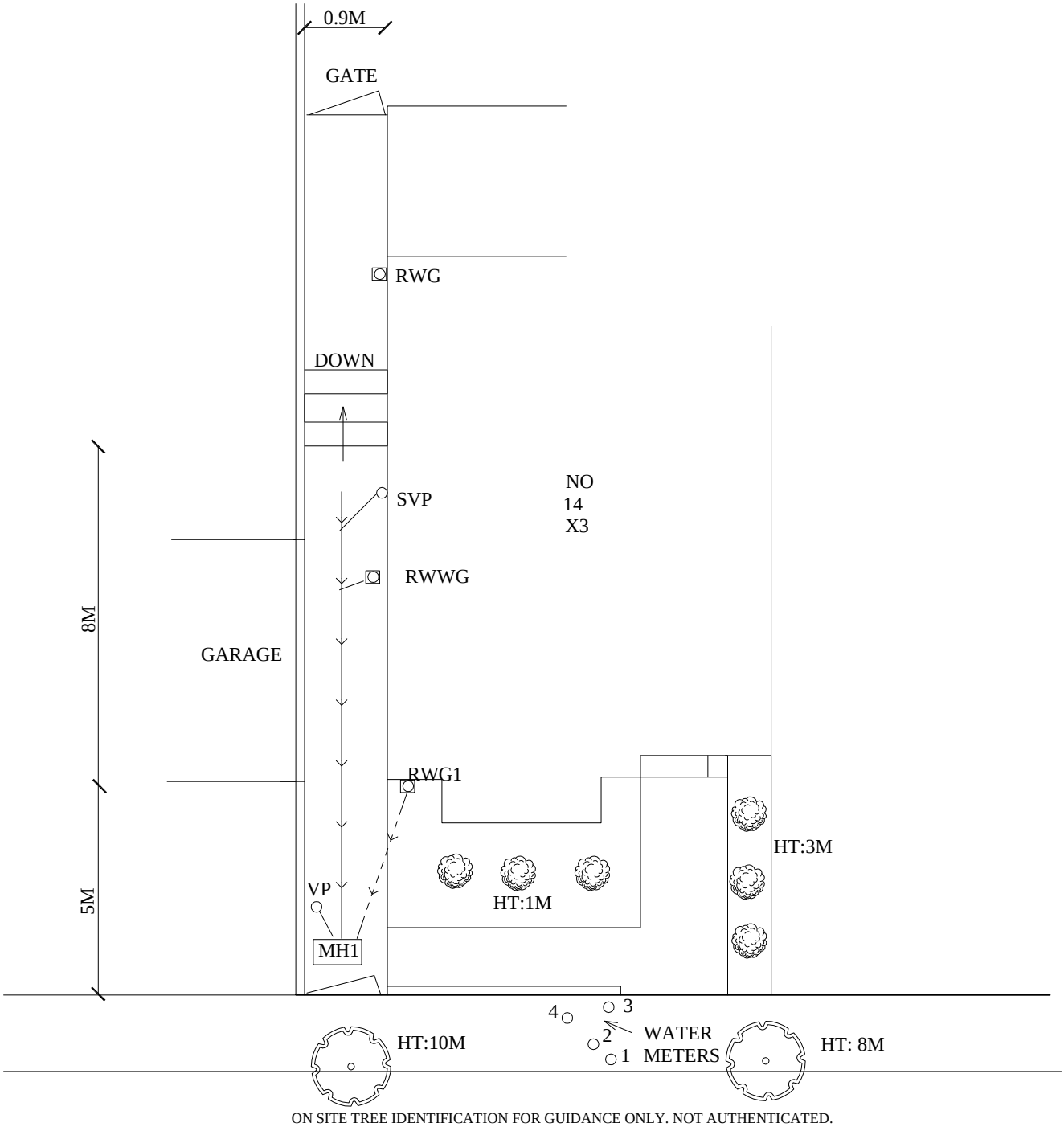
Job No: 169121E

Date: 21/11/2013

Site: 14 Eldon Grove, NW3

Work carried out for: Cunningham Lindsey

AC (SI) | GB (Drawn) | Weather: Dry



ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY. NOT AUTHENTICATED.

Remarks:

1-Basement
2-Ground Floor
3-Top Floor
4-1st Floor

Continuouss movement of top foor water meter with no sign of appliances on

Scale: N.T.S.

Key:

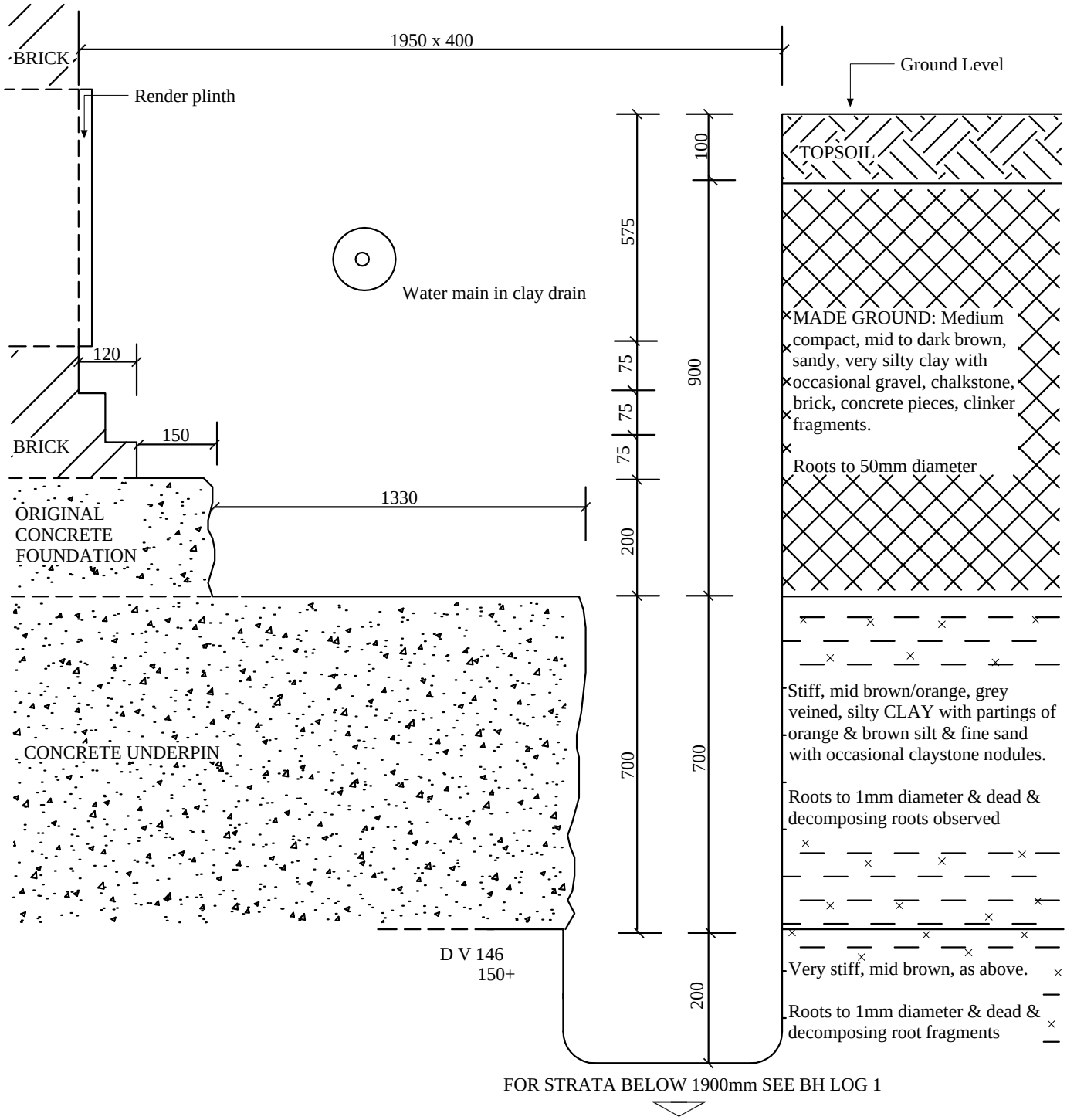
Combined Gulley	RWWG	Surface Water Drain	
Manhole	MH	Foul Water Drain	
Rain Water Pipe	RWP	Tree / Bush (approx. ht in m)	
Rain Water Gulley	RWG		
Soil Vent Pipe	SVP	Trial Pit	
Waste Gulley	WG	Borehole	
Waste Pipe	WP		

Trial Pit No: 1

Sheet: 1 of 1
Job No: 169121E
Date: 11.11.13

Site: 14 Eldon Grove, London NW3
Work carried out for: Cunningham Lindsey

Excavation Method: Hand Tools
Weather: Rain
Drawn by: DVC
Ground Level mOD:



Remarks: All measurements in millimetres.
Thought to be underside at 1700mm. Curved steel pin hammered 300mm beyond concrete foundation. House and bay foundations are similar depth

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

Logged: MH | Checked: SE | Approved: | Scale: N.T.S.

Borehole No: 1

Sheet: 1 of 1

Job No: 169121E

Site: 14 Eldon Grove, London NW3

Boring Method: Hand Auger

Date: 11/11/2013

Diameter: 75mm

Coordinates:

Ground Level mOD:

Work Carried out for: Cunningham Lindsey

Depth (m)	Description of Strata	Thick-ness (m)	Legend	Sample	Test Type	Test Result	Depth (m)	Field Records/Comments	Depth to water (m)
	As Trial Pit 1	1.90							
1.90								Roots to 1mm diameter to 3m	
	Very stiff, mid brown, grey veined, silty CLAY with partings of orange & brown silt & fine sand with occasional claystone nodules.	1.10		D	V	150+ 150+	2.00		
				D	V	150+ 150+	2.50		
3.00				D	V	150+ 150+	3.00	Dead & decomposing root fragments to 4.5m	
	Very stiff, as above with crystals.	2.00		D	V	150+ 150+	3.50		
				D	V	150+ 150+	4.00		
				D	V	150+ 150+	4.50	No roots observed below 4.5m	
5.00				D	V	150+ 150+	5.00		
	Borehole ends at 5m								

Remarks: Borehole dry and open on completion

Key: T.D.T.D. Too Dense to Drive
D Small disturbed sample
B Bulk disturbed sample
W Water sample
J Jar sample
V Pilcon Vane (kPa)
M Mackintosh Probe

Logged: MH Checked: SE Typed by: DVC Scale: NTS Weather: Rain

Borehole No: 2			Sheet: 1 of 1							
			Job No: 169121E		Site: 14 Eldon Grove, London NW3					
Boring Method: Hand Auger			Date: 11/11/2013							
Diameter: 75mm	Coordinates:		Ground Level mOD:		Work Carried out for: Cunningham Lindsey					

Depth (m)	Description of Strata	Thick-ness (m)	Legend	Sample	Test Type	Test Result	Depth (m)	Field Records/Comments	Depth to water (m)
G.L	Turf over MADE GROUND: Medium compact, mid to dark brown, sandy, very silty clay with occasional gravel & brick,	0.20							
0.20	concrete & clinker fragments.							Roots to 1mm diameter to 3m	
	MADE GROUND: Medium compact, mid brown/orange, silty clay with occasional	0.30							
0.50	gravel & brick, concrete & clinker fragments								
	Firm, mid brown, grey veined, silty CLAY with partings of orange & brown silt &	0.50							
	fine sand with occasional claystone								
1.00	nodules.			D	V	78	1.00		
						78			
				D	V	104	1.50		
	Stiff, as above.	1.50				106			
				D	V	114	2.00		
						116			
2.50				D	V	110	2.50		
	Stiff, mid brown, grey veined, silty CLAY with partings of orange & brown silt & fine	0.50				110			
	sand with occasional claystone nodules &								
3.00	crystals.			D	V	150+	3.00	Dead & decomposing root fragments to 4.2m	
						150+			
				D	V	150+	3.50		
						150+			
	Very stiff, as above.	2.00		D	V	150+	4.00		
						150+		No roots observed below 4.2m	
				D	V	150+	4.50		
						150+			
5.00				D	V	150+	5.00		
	Borehole ends at 5m					150+			

Remarks: Borehole dry and open on completion

Key: T.D.T.D. Too Dense to Drive
D Small disturbed sample J Jar sample
B Bulk disturbed sample V Pilcon Vane (kPa)
W Water sample M Mackintosh Probe

Logged: MH	Checked: SE	Typed by: DVC	Scale: NTS	Weather: Rain

Our Ref : 169121

Laboratory Testing Results

Date Sampled: 11/11/2013

Location : 14, Eldon Grove, NW3

Work carried out for: Cunningham Lindsey - Maidstone

Date Received : 12/11/2003

Date Tested : 13/11/2013

Date of Report : 20/11/2013

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	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) *[8]*	(kPa)	(kPa) *[9]*	(%)*[10]*	*[11]*	SO_3 *[12]*	SO_4 *[13]*	*[14]*
1	1.70(U/S)	D	25	<5	67	25	42	-0.01	42	CH			148					
	2.0	D	24	<5	68	22	46	0.05	46	CH			> 150					
	2.5	D	27	<5									> 150					
	3.0	D	27	<5	68	24	44	0.07	44	CH			> 150					
	3.5	D	29	<5									> 150					
	4.0	D	30	<5									> 150					
	4.5	D	29	<5									> 150					
	5.0	D	31	<5									> 150					

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] Values of shear strength were determined in situ by CET using a Pilcon hand vane or Geonor vane (GV).

[10] BS 1377 : Part 3 : 1990, Test No 4

[11] BS 1377 : Part 2 : 1990, Test No 9

[12] BS 1377 : Part 3 : 1990, Test No 5.6

[13] $SO_4 = 1.2 \times SO_3$

[14] BRE Special Digest One (Concrete in Aggressive Ground) August 2005
Note that if the SO_4 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

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

Our Ref : 169121

Laboratory Testing Results

Date Sampled : 11/11/2013

Location : 14, Eldon Grove, NW3

Date Received : 12/11/2003

Work carried out for: Cunningham Lindsey - Maidstone

Date Tested : 13/11/2013

Date of Report : 20/11/2013

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	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) *[8]*	(kPa)	(kPa) *[9]*	(%)*[10]*	*[11]*	SO_3 *[12]*	SO_4 *[13]*	*[14]*
BH2	1.0	D	30	<5	75	23	52	0.15	52	CV			78					
	1.5	D	31	<5									105					
	2.0	D	29	<5	74	25	49	0.09	49	CV			115					
	2.5	D	30	<5									110					
	3.0	D	30	<5	73	26	47	0.09	47	CV			> 150					
	3.5	D	30	<5									> 150					
	4.0	D	29	<5									> 150					
	4.5	D	29	<5									> 150					
	5.0	D	30	<5									> 150					

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] Values of shear strength were determined in situ by CET using a Pilcon hand vane or Geonor vane (GV).

[10] BS 1377 : Part 3 : 1990, Test No 4

[11] BS 1377 : Part 2 : 1990, Test No 9

[12] BS 1377 : Part 3 : 1990, Test No 5.6

[13] $SO_4 = 1.2 \times SO_3$

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

Note that if the SO_4 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

Key

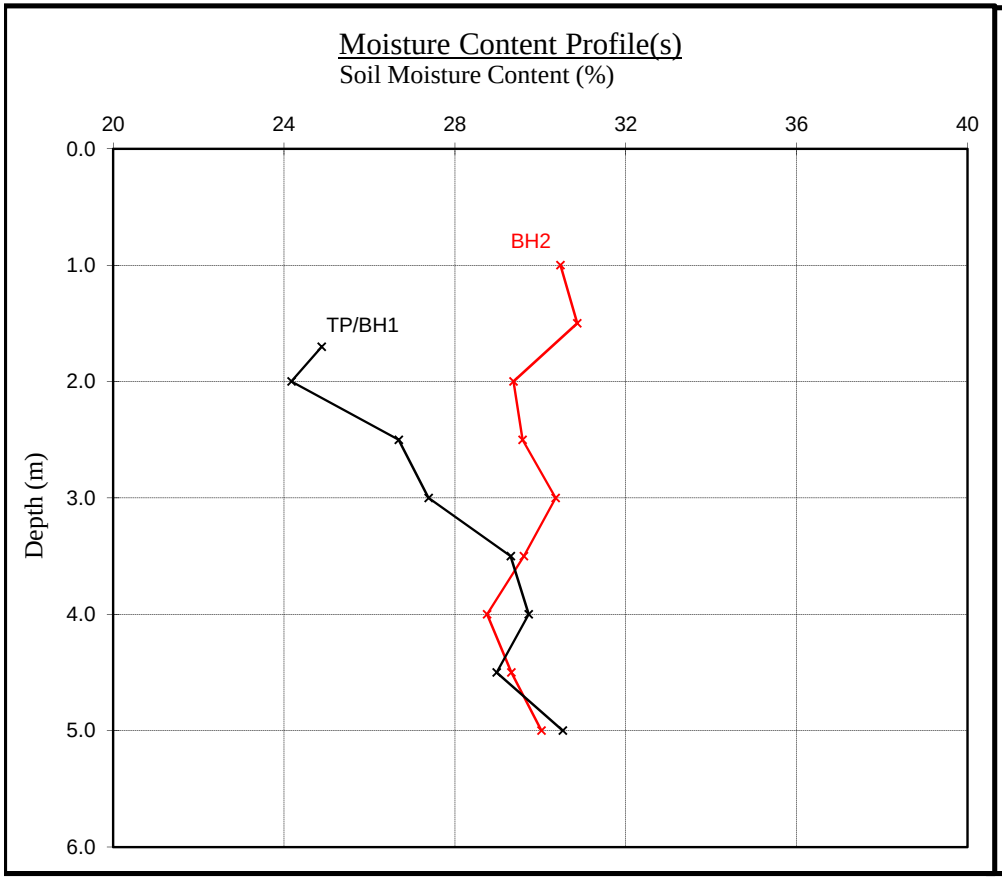
D	Disturbed sample (small)
B	Disturbed sample (bulk)
U	Undisturbed sample
W	Groundwater sample
ENP	Essentially Non-Plastic by inspection
U/S	Underside of Foundation

Moisture Content and Shear Strength Profiles

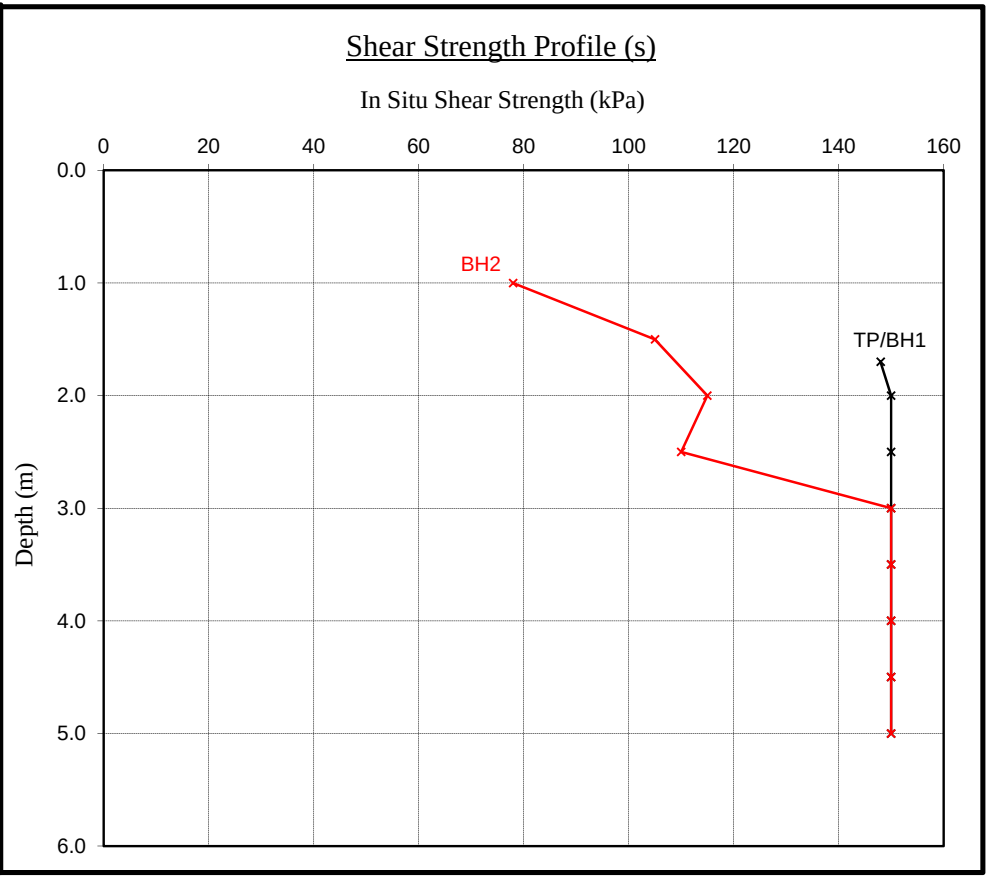
Our Ref :	169121	Date Sampled :	11/11/2013
Location :	14, Eldon Grove, NW3	Date Received :	12/11/2003
Work carried out for:	Cunningham Lindsey - Maidstone	Date Tested :	13/11/2013
		Date of Report :	20/11/2013

Note : Unless specifically noted the profiles have not been related to a site datum.

Moisture Content Profile(s)



Shear Strength Profile (s)



Notes

1. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clays) at shallow depths.

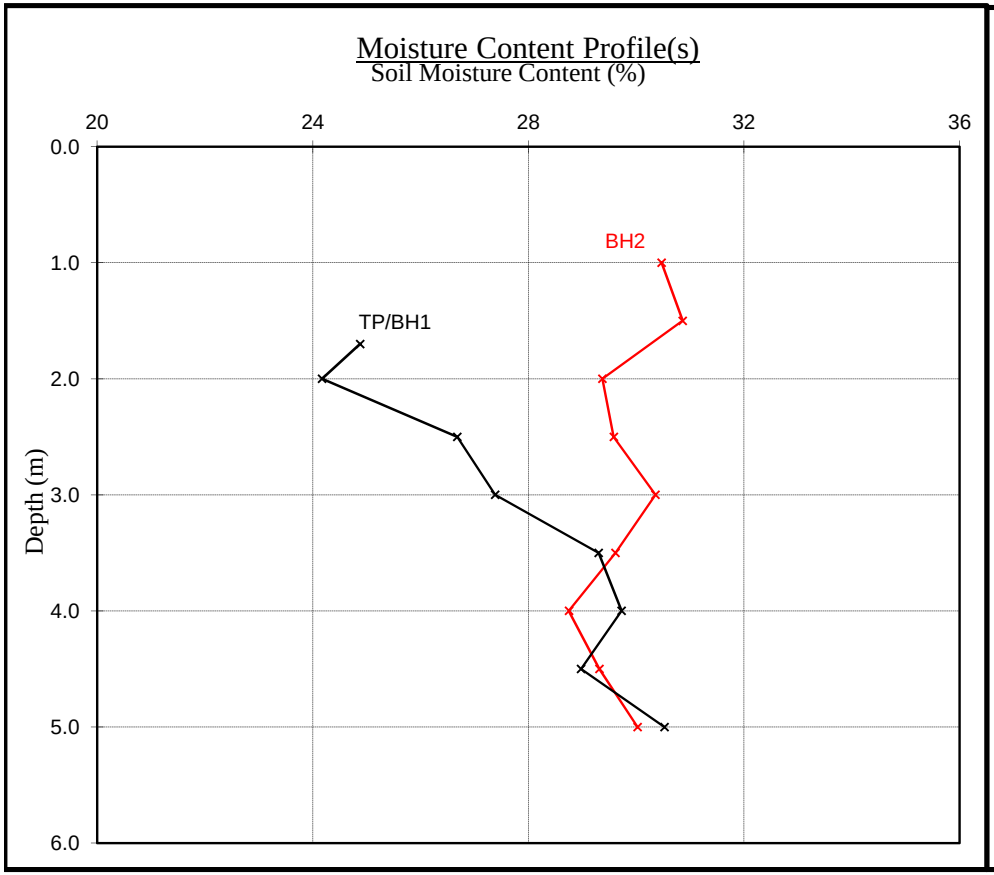
Note

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 150 kPa.

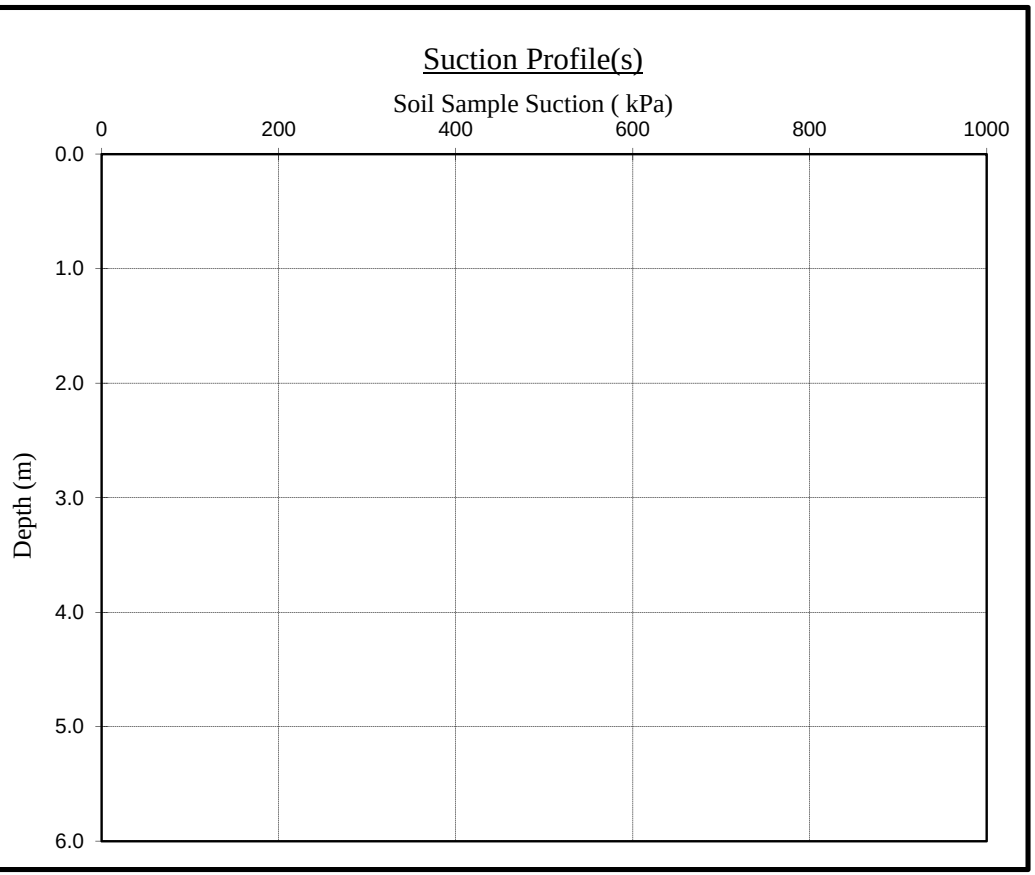
Moisture Content and Suction Profiles

Our Ref :	169121		Date Sampled : 11/11/2013
Location :	14, Eldon Grove, NW3		Date Received : 12/11/2003
Work carried out for:	Cunningham Lindsey - Maidstone	Note : Unless specifically noted the profiles have not been related to a site datum.	Date Tested : 13/11/2013
			Date of Report : 20/11/2013

Moisture Content Profile(s)



Suction Profile(s)



Notes

1. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clays) at shallow depths.

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***	Sheet: 1 of 1 Job No: **169121** Date: **13/11/2013** Order No: **491299** EPSL Ref: **R3837**	Site: **14 Eldon Grove, London,** 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**
TP1 (USF)	1 mm	Carpinus spp. 3 roots	Positive
BH2 (to 3m)	1 mm	Carpinus spp. 3 roots	Positive
BH2 (to 3m)	<1 mm	broadleaved species, too decayed for positive identification 4 roots	Negative

Carpinus spp. are hornbeams.

MDM

Address for correspondence: EPSL , Intec, Parc Menai, Bangor, Gwynedd, North Wales, LL57 4FG
Telephone: 01248 672 652
e-mail: lab@marishalthompson.co.uk
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
Consultant: Dr M P Denne B.Sc. (Hons), M.Sc., Ph.D
Registered in England. No 295427, Registered Office: 6G Greensfield Court, Alnwick, Northumberland, NE66 2DE

To: Cunningham Lindsey - Maidstone
4 North Court
South Park Business Village
Armstrong Road
Kent
ME15 6JZ

Ftao: Bob Walker

Our Ref: **169121**

Your Ref: **7441220**

Date: **22-Nov-13**

ESTIMATE

Site:- **14, Eldon Grove, London**

Item		Amount
	No recommendations required to the private drainage surveyed.	

Notes

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

Total	£0.00
plus VAT @20%	£0.00
Total + VAT	£0.00

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.

Underground Drainage Report	Sheet: 1 of 2 Job No: 169121 Date: 21-Nov-13	Site: 14, Eldon Grove, London Work carried out for: Cunningham Lindsey - Maidstone

MANHOLE DETAILS

Manhole	Depth to Invert	Condition
MH1	3850mm	As built

CCTV Survey:-

1. **Drainage Run:**

From Manhole 1 run A to 10 metres upstream-150mm cast iron combined -upstream (shared with flats)

Metres:	Code:	Observations:	Surface Material/ Condition:
0.0		Start	Brick Paving
6.8	JN	At 1 o'clock, 100mm - RWWG1	
9.6	JN	At 2 o'clock, 100MM - SVP1	
10.0	FH	Reached 10 m U/S	

2. **Drainage Run:**

From rain water gully 1 run X to manhole 1-100mm cast iron surface water-downstream (shared with flats)

Metres:	Code:	Observations:	Surface Material/ Condition:
0.0		Start	Flower bed for 1.0m then
2.4	LD		Brick paving
2.4	FH	Reached MH1-internal backdrop	

END OF SURVEY

Water Test Grade:

0 - Unable to fill
1 - Heavy Loss
2 - Medium Loss over 2 minutes
3 - Slow Loss over 5 minutes
4 - No Loss

Underground Drainage Report	Sheet: 2 of 2 Job No: 169121 Date: 21-Nov-13	Site: 14, Eldon Grove, London Work carried out for: Cunningham Lindsey - Maidstone

Our assessment of the drainage system is based on our visual inspection and on information collated at the time of the survey. Where assumptions have been made these are based on our experience and do not constitute any form of guarantee, nor do we guarantee that further deterioration will not occur following this survey. CCTV video records will be stored for a period of 3 months from date of inspection and then destroyed.

Water Test Grade:

0 - Unable to fill
1 - Heavy Loss
2 - Medium Loss over 2 minutes
3 - Slow Loss over 5 minutes
4 - No Loss

Water Authority Sewer Condition Codes

B	Broken pipe at… (or from… to..) o'clock
BR	Branch Major
CC	Crack circumferential from… to… o'clock
CL	Crack longitudinal @… o'clock
CM	Cracks multiple from… to… o'clock
CN	Connection at… o'clock, diameter… mm
CNI	Connection at… o'clock, diameter… mm, intrusion… mm
CU	Camera under water
CX	Connection defective at… o'clock
CXI	Connection defective at… o'clock, diameter… mm, intrusion… mm
D	Deformed sewer… %
DB	Displaced bricks at (or from.. to..) o'clock
DC	Dimension of sewer changes at this point
DE	Debris (non silt/grease)… % cross-sectional loss
DEG	Debris grease… % cross-sectional area loss
DES	Debris silt… % cross-sectional area loss
DI	Dropped invert, gap… mm
EHJ	Encrustation heavy from.. to.. o'clock % cross-sectional area loss (at joint)
ELJ	Encrustation light from.. to.. o'clock%
EMJ	Encrustation medium from.. to.. o'clock %, cross-sectional area loss (at joint)
ESH	Scale heavy… % cross-sectional area loss from... to… o'clock
ESL	Scale light from… to… o'clock
ESM	Scale medium… % cross-sectional area loss from… to… o'clock
FC	Fracture circumferential from… to… o'clock
FL	Fracture longitudinal at… o'clock
FM	Fractures multiple from… to… o'clock
GO	General observation at this point
GP	General photograph number… taken at this point
H	Hole in sewer at… o'clock
IDJ	Infiltration dripper at (or from… to…) o'clock (at joint)
IGJ	Infiltration gusher at (or from… to…) o'clock (at joint)
IRJ	Infiltration runner at (or from… to…) o'clock (at joint)
ISJ	Infiltration seeper at (or from… to…) o'clock (at joint)
JDM	Joint displaced medium
JDL	Joint displaced large
JN	Junction at…o'clock, diameter…mm
JX	Junction defective at.. o'clock, diameter.. mm
LC	Lining of sewer changes/starts/finishes at this point
LD	Line of sewer deviates down
LL	Line of sewer deviates left
LN	Line defect at (or from.. to..) o'clock
LR	Line of sewer deviates right
LU	Line of sewer deviates up
MB	Missing bricks at.. (or from.. to..) o'clock
MC	Material of sewer changes at this point
MH	Manhole/node
MM	Mortar missing medium at.. (or from.. to..) o'clock
MS	Mortar missing surface at.. (or from.. to..) o'clock
MT	Mortar missing total at.. (or from.. to..) o'clock
OB	Obstruction… % height/diameter loss
OJL	Open joint large
OJM	Open joint medium
PC	Length of pipe forming sewer changes at this point, new length…mm
RFJ	Roots fine (at joint)
RMJ	Roots mass… % cross-sectional area loss (at joint)
RTJ	Roots tap (at joint)
SA	Survey abandoned
SC	Shape of sewer changes at this point
SSL	Surface damage, spalling large at (or from.. to..) o'clock
SSM	Surface damage, spalling medium at (or from.. to..) o'clock
SSS	Surface damage, spalling slight at (or from.. to..) o'clock
SWL	Surface damage, wear large at… (or from.. to..) o'clock
SWM	Surface damage, wear medium at… (or from.. to..) o'clock
SWS	Surface damage, wear slight at.. (or from.. to..) o'clock
V	Vermin (rats and mice)
WL	Water level… % height/diameter
X	Sewer collapsed… % cross-sectional area loss
FH	End of survey

Contract: 169121

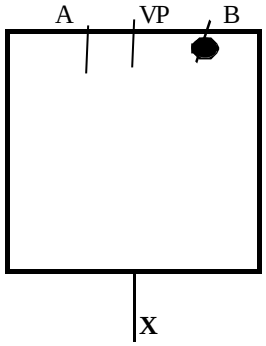
Site Address: 14, Eldon Grove, London

Date: 21-Nov-13

Operative Initial: AC

Page: 1 of 1

M/H: 1 **Depth:** 3850mm



Chamber Dimension (mm): 900/550

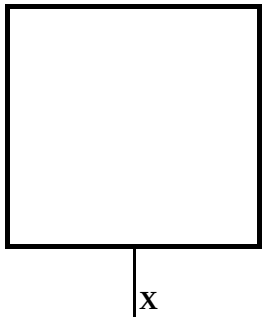
Depths of run if different to invert level:-

A
B 1200MM
C
D
E
F
G
H

Manhole Condition

As built

M/H: **Depth:**



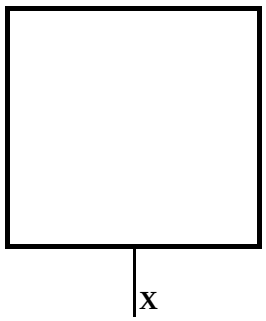
Chamber Dimension (mm):

Depths of run if different to invert level:-

A
B
C
D
E
F
G
H

Manhole Condition

M/H: **Depth:**



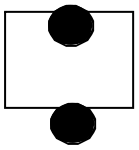
Chamber Dimension (mm):

Depths of run if different to invert level:-

A
B
C
D
E
F
G
H

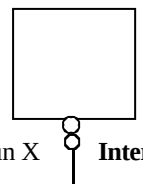
Manhole Condition

KEY….



Internal Back Drop

External Back Drop



Interceptor

Water Pressure Test Results

From: To: Pass / Fail