

## SITE INVESTIGATION FACTUAL REPORT

Report No: 169254  
Client: Cunningham Lindsey - Maidstone  
Site: Flat 4, 14, Greville Road  
LONDON  
Client Ref: 1837760  
Date of Visit: 25/11/2013



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

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

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Registered in England No. 02527130

# Investigation Layout Plan

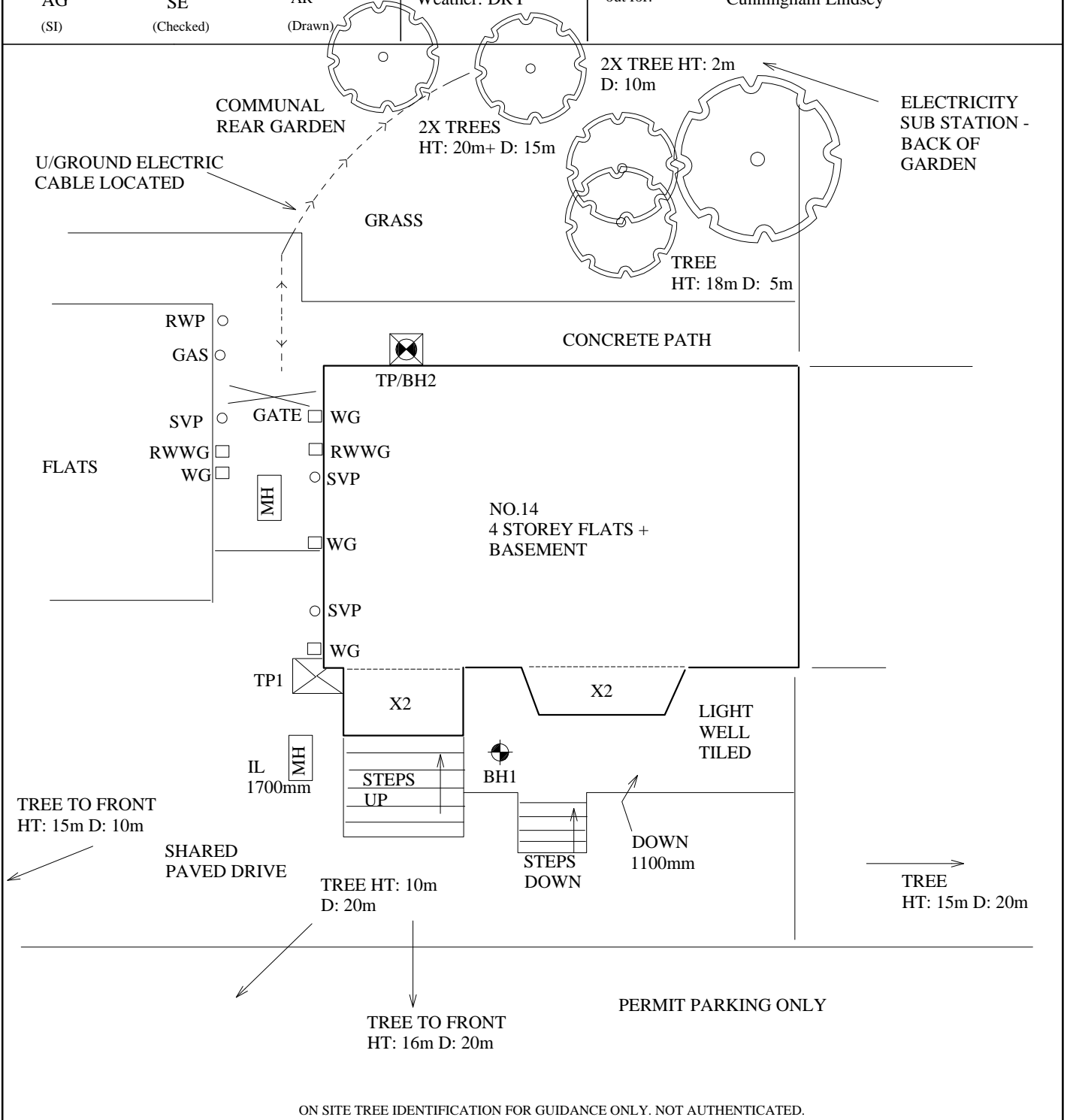
Sheet: 1 of 1  
 Job No: 169254E  
 Date: 25/11/2013

Site: 14 Greville Road, NW6

AG (SI) SE (Checked) AR (Drawn)

Weather: DRY

Work carried out for: Cunningham Lindsey



ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY. NOT AUTHENTICATED.

**Remarks:**

All services and drains area within shared paved area.  
 Parking - permit - parking not arranged - parking dispensation to pay, received on site.  
 Water supply - outside tap - rear.  
 Site access - lock gate to side.  
 Power - internal.

**Key:**

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

Scale: N.T.S.

# Trial Pit No: 2

Sheet: 1 of 1  
 Job No: 169254E  
 Date: 25/11/13

Site: 14, Greville Road, NW6

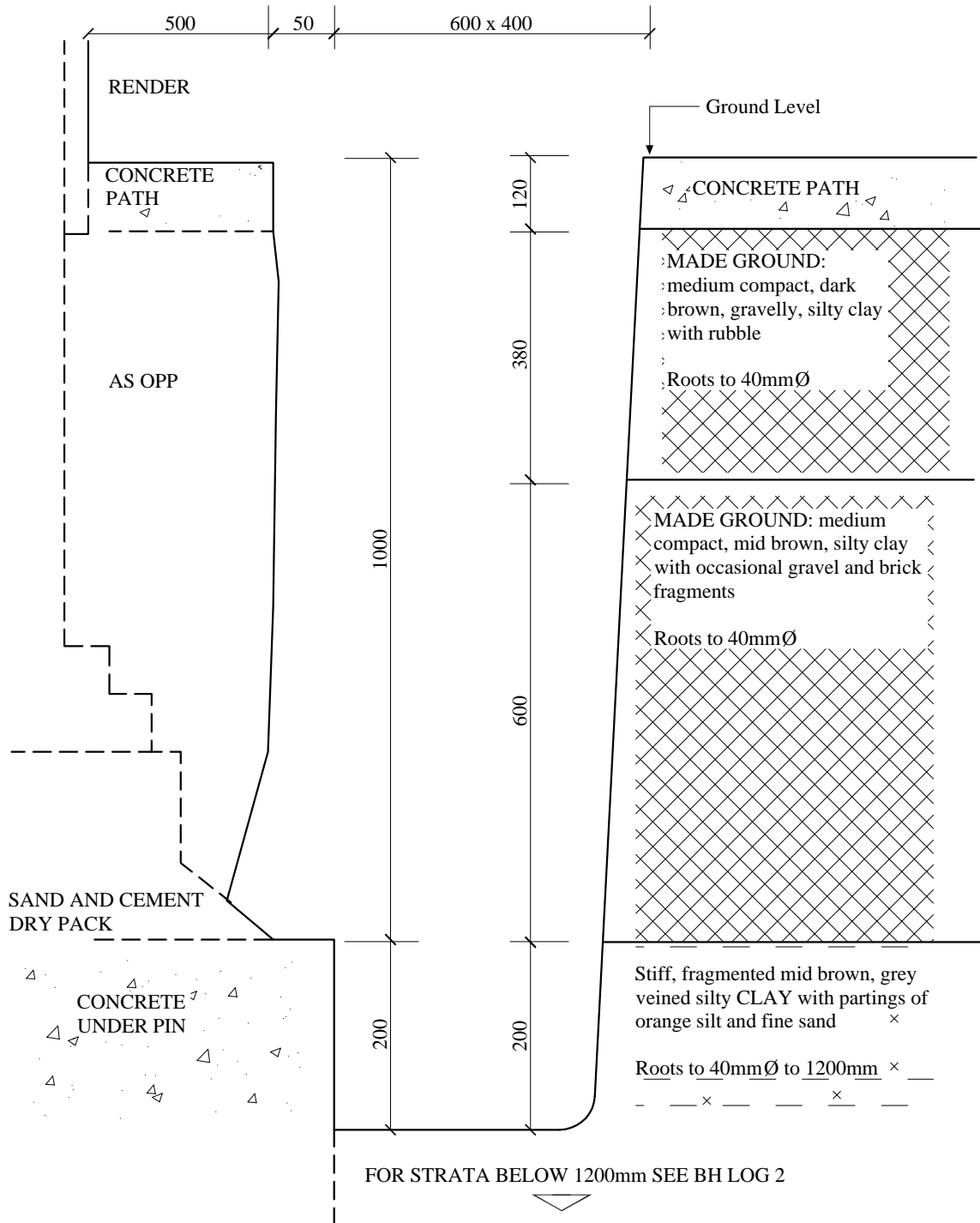
Excavation Method: Hand Tools

Drawn by: Jo F

Work carried out for: Cunningham Lindsey

Weather: Dry

Ground Level mOD:



Remarks:  
 All measurements in millimetres.  
 U/pin believed to be 4.0m deep, engineer aware. Has design and drawings exposed top and side with BH within trial pit to 5.0m

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

Logged: AG Checked By: SE Approved:

Scale: N.T.S.

# Trial Pit No: 1

Sheet: 1 of 1  
 Job No: 169254E  
 Date: 25/11/13

Site: 14, Greville Road, NW6

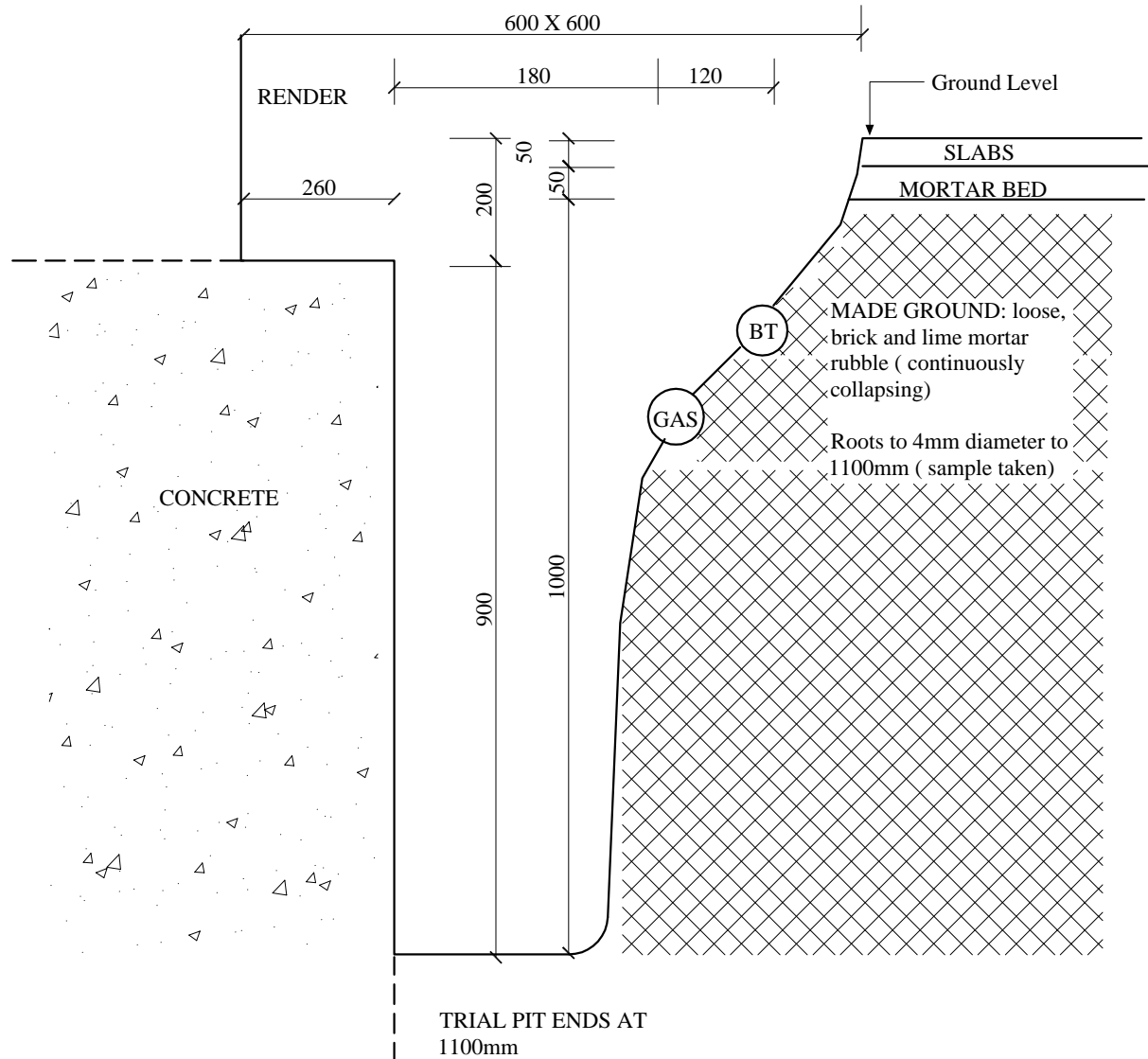
Excavation Method: Hand Tools

Drawn by: Jo F

Work carried out for: Cunningham Lindsey

Weather: Dry

Ground Level  
 mOD:



**Remarks:**

All measurements in millimetres.  
 U/S of foundation not determined - loose made ground continuously collapsing and limited access due to services and drains.  
 BH moved to another location at front, away from services

**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: AG

Checked By: PS

Approved:

Scale: N.T.S.

Borehole No: 1		Sheet: 1 of 1			Site: 14, Greville Road, NW6				
Boring Method: Hand Auger		Job No: 169254E			Date: 25/11/2003				
Diameter: 60mm		Coordinates:			Ground Level mOD:		Work Carried out for: Cunningham Lindsey		
Depth (m)	Description of Strata	Thick-ness (m)	Legend	Sample	Test Type	Result	Depth (m)	Field Records/Comments	Depth to water (m)
GL 0.20	Clay tiles on CONCRETE	0.20							
0.80	Firm, mid brown, grey veined silty CLAY with partings of orange silt and fine sand	0.60	___x					Roots to 4mm diameter to 1.6m	
			x___						
5.00	Stiff, mid brown, grey veined silty CLAY with partings of orange silt and fine sand and crystals	4.20	___x	D	V	60 70	1.00		
			x___	D	V	110 118	1.50	Roots to 2mm diameter to 2.0m	
			___x.	D	V	120+ 120+	2.00	Roots to 1mm diameter to 2.5m	
			___x	D	V	120+ 120+	2.50	Hair and fibrous roots to 2.8m	
			___x.	D	V	120+ 120+	3.00	No roots observed below 2.8m	
			___x.	D	V	120+ 120+	3.50		
			___x	D	V	120+ 120+	4.00		
			___x.	D	V	120+ 120+	4.50		
	Borehole ends at 5.0m				D	V	120+ 120+	5.00	
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: AG	Checked: SE	Drawn by Jo F		Scale: NTS		Weather: Dry			

Borehole No: 2		Sheet: 1 of 1			Site: 14, Greville Road, NW6				
Boring Method: Hand Auger		Date: 25/11/2003			Work Carried out for: Cunningham Lindsey				
Diameter: 60mm		Coordinates:			Ground Level mOD:				
Depth (m)	Description of Strata	Thick-ness (m)	Legend	Sample	Test Type	Test Result	Depth (m)	Field Records/Comments	Depth to water (m)
1.20	As trial pit 2	1.20							
1.90	Stiff, fragmented mid brown, grey veined silty CLAY with partings of orange silt and fine sand and crystals	0.70		D	V	10+ 120+	1.50	Roots to 10mm diameter to 1.8m	
								Roots to 3mm diameter to 2.3m	
			___x	D	V	120+ 120+	2.00	Roots to 1mm diameter to 4.2m	
			x___	D	V	120+ 120+	2.50		
			___x.	D	V	120+ 120+	3.00		
	Stiff, mid brown, grey veined silty CLAY with partings of orange silt and fine sand and crystals	3.10	x___	D	V	120+ 120+	3.50		
			___						
			___	D	V	120+ 120+	4.00		
			x. ___						
			___	D	V	120+ 120+	4.50	Hair and fibrous roots to 5.0m	
			___x.						
5.00			___	D	V	120+ 120+	5.00		
	Borehole ends at 5.0m								
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: AG	Checked: SE	Drawn by Jo F		Scale: NTS			Weather: Dry		

Our Ref : 169254

# Laboratory Testing Results

Date Sampled: 25/11/2013

Location : Flat 4, 14, Grenville Road, NW6

Date Received : 26/11/2013

Work carried out for: Cunningham Lindsey - Maidstone

Date Tested : 26/11/2013

Date of Report : 29/11/2013

Sample Ref		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) [8]	Soil Sample Suction (kPa)	In situ Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	pH Value [11]	Sulphate Content (g/l)		Class [14]
TP/BH No	Depth (m)															SO <sub>3</sub> [12]	SO <sub>4</sub> [13]	
BH1	0.5	D	30	<5	72	27	45	0.07	45	CV			65					
	1.0	D	30	<5	71	26	45	0.09	45	CV			114					
	1.5	D	28	<5									> 120					
	2.0	D	28	<5	71	26	45	0.04	45	CV			> 120					
	2.5	D	29	<5									> 120					
	3.0	D	29	<5	75	26	49	0.07	49	CV			> 120					
	3.5	D	30	<5									> 120					
	4.0	D	31	<5									> 120					
	4.5	D	30	<5									> 120					
	5.0	D	30	<5									> 120					

**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<sub>4</sub> = 1.2 x SO<sub>3</sub>

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

Note that if the SO<sub>4</sub> 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 : 169254

# Laboratory Testing Results

Date Sampled : 25/11/2013

Location : Flat 4, 14, Grenville Road, NW6

Date Received : 26/11/2013

Work carried out for: Cunningham Lindsey - Maidstone

Date Tested : 26/11/2013

out for:

Date of Report : 29/11/2013

Sample Ref.		Type	Moisture Content (%) [11]	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) [8]	Soil Sample Suction (kPa)	In situ Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	pH Value [11]	Sulphate Content (g/l)		Class [14]
TP/BH No.	Depth (m)															SO <sub>3</sub> [12]	SO <sub>4</sub> [13]	
BH2	1.5	D	24	<5	69	20	49	0.06	49	CH			> 120					
	2.0	D	21	<5	69	20	50	0.04	50	CH			> 120					
	2.5	D	23	<5									> 120					
	3.0	D	26	<5	73	25	48	0.03	48	CV			> 120					
	3.5	D	29	<5									> 120					
	4.0	D	28	<5									> 120					
	4.5	D	30	<5									> 120					
	5.0	D	30	<5									> 120					

**Test Methods / Notes**

- [1] BS 1377 : Part 2 : 1990, Test No 3.2
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a Pilcon hand vane or Geonor vane (GV).

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[13] SO<sub>4</sub> = 1.2 x SO<sub>3</sub>

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Note that if the SO<sub>4</sub> 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**

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Our Ref : 169254

# Moisture Content and Shear Strength Profiles

Date Sampled : 25/11/2013

Location : Flat 4, 14, Grenville Road, NW6

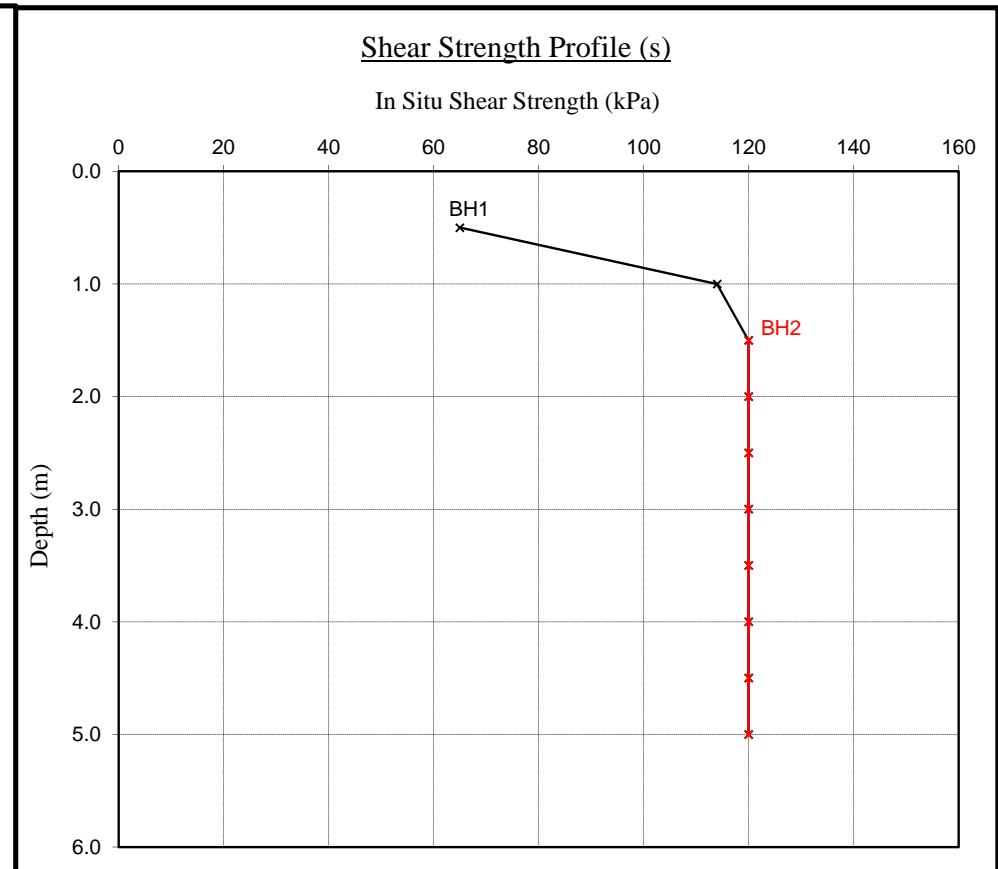
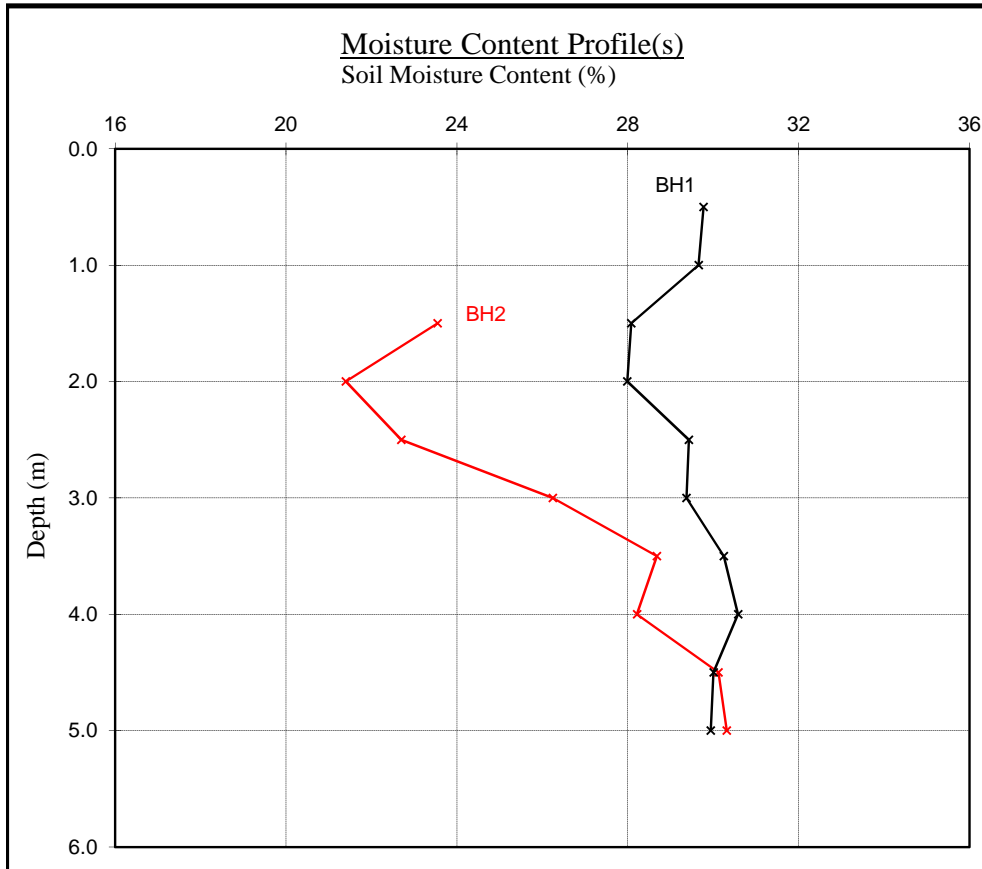
Date Received : 26/11/2013

Work carried out for: Cunningham Lindsey - Maidstone

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

Date Tested : 26/11/2013

Date of Report : 29/11/2013



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

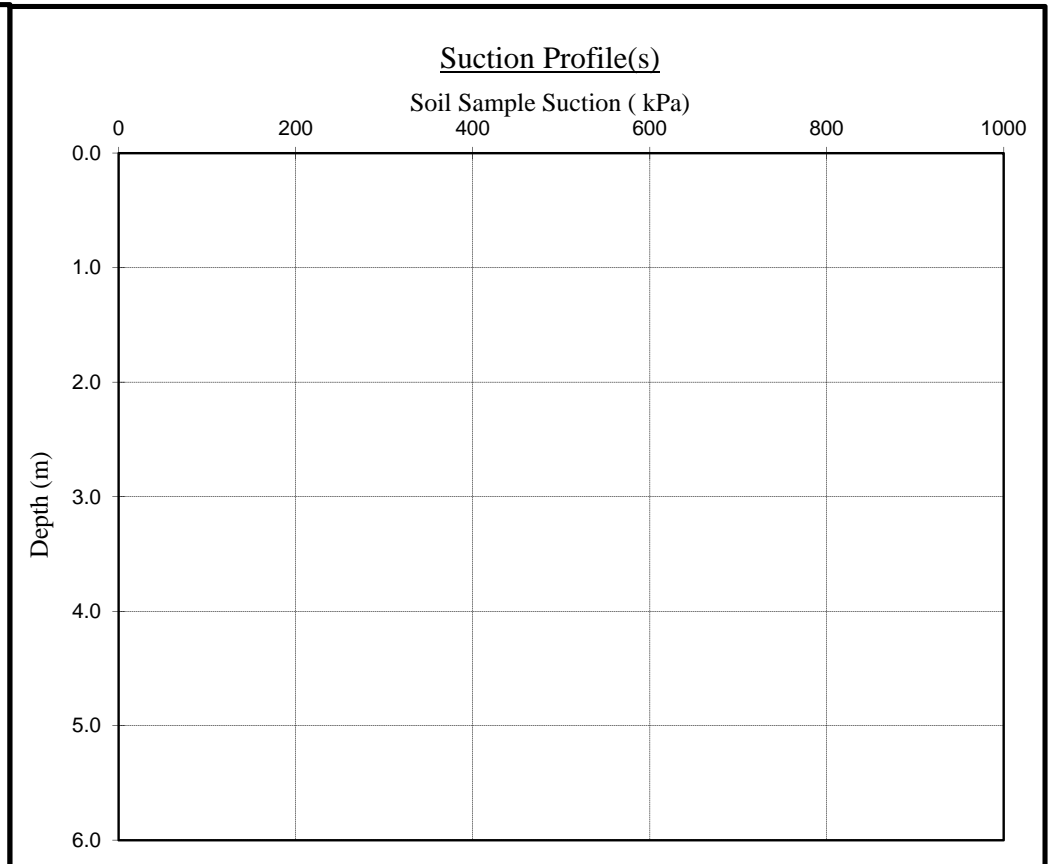
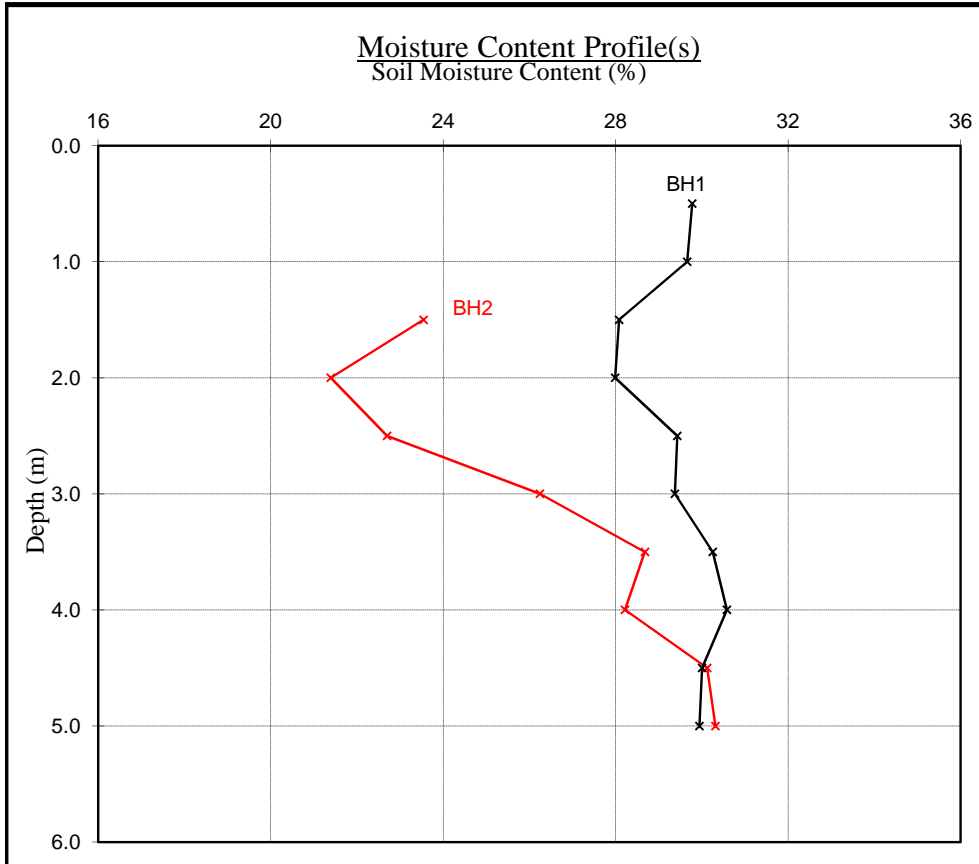
Unless otherwise stated, values of Shear Strength were determined in situ by CET using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 120 kPa.

# Moisture Content and Suction Profiles

Our Ref : 169254  
 Location : Flat 4, 14, Grenville Road, NW6  
 Work carried out for: Cunningham Lindsey - Maidstone

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

Date Sampled : 25/11/2013  
 Date Received : 26/11/2013  
 Date Tested : 26/11/2013  
 Date of Report : 29/11/2013



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.

*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 (0.2-1.1m)	3 mm	Tilia spp. 2 roots	Positive
TP1 (0.2-1.1m)	2 mm	Populus spp. †	Negative
BH1 (to 2.5m)	2 mm	Populus spp. † 4 roots	Positive
BH1 (to 2.5m)	1 mm	Tilia spp.	Positive
TP2 (0-1.2m)	30 mm	Populus spp. † 4 roots	Positive
BH2 (1.2-5m)	6 mm	Populus spp. † 5 roots	Positive

Tilia spp. are limes.

Populus spp. are poplars and aspens.

† Recent EPSL research has developed a unique ability to differentiate Willows from Poplars. No other laboratory in the UK can currently provide this service. We now offer this benefit at no extra cost.



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:** MD 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

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