Cunningham Lindsey

Subsidence Scanning Centre, Woodhead House, Centre 27 Business Park, Woodhead Rd, Birstall, WF17 9TD
Telephone 01489 567700 Facsimile 01489 565816

Policyholder: [redacted]

Subject Property Address:

100, Chalvington Road

Chandler's Ford

Eastleigh

Hants

SO53 3EH

INSURANCE CLAIM

CONCERNING SUSPECTED SUBSIDENCE

ENGINEERING APPRAISAL REPORT

This report is prepared on behalf of [redacted] for the purpose of investigating a claim for subsidence. It is not intended to cover any other aspect of structural inadequacy or building defect that may otherwise have been in existence at the time of inspection.

Date: 27/8/2010

Cunningham Lindsey Ref: SOHPC/PXL/3706006

INTRODUCTION

The technical aspects of this claim are being overseen by our Project Manager R M Ireson BSc CEng MICE, in accordance with our Project Managed Service.

DESCRIPTION OF BUILDING

The subject property is a detached bungalow in a suburban location on a plot that is steeply sloping, sloping generally from back to front. The overall layout is recorded on our site plan.

DISCOVERY OF DAMAGE

The policyholder and homeowner, [redacted], first discovered the current damage in July 2010.

The damage appeared suddenly in the same area as had been repaired under a previous subsidence claim in 2005. The policyholder then advised insurers.

NATURE AND EXTENT OF DAMAGE

Description and Mechanism

The main area of damage is to the bungalow and takes the form of tapering diagonal, horizontal and vertical cracks to 5mm width, sloping floors, leaning walls and sloping windows.

This pattern of damage indicates a mechanism of downwards movement to the front right corner

Significance

The level of damage is moderate, and is classified as category 3 in accordance with BRE Digest 251 - Assessment of damage in low-rise buildings

Onset and Progression

[redacted] has advised that damage first commenced in July 2010.

We consider that the current crack damage has occurred in the summer of 2010, but that some of the distortions are historic.

It is likely that movement will be of a cyclical nature with cracks opening in the summer and closing in the winter.

SITE INVESTIGATIONS

A site investigation has been arranged to assist in identifying mitigation measures.

The results of the ground investigation indicate that the foundations in the area of damage are concrete strip footings at a depth of 270mm below ground level bearing on to a very stiff clay of high plasticity that showed signs of desiccation.

Roots were encountered in the excavations to a depth of 530mm below ground level. Samples taken from below the level of the foudnations were identified as Castanea. These roots must emanate from the adjacent sweet chestnut on the right boundary which is the only compatible species in the vicinity.

MONITORING

We consider that level monitoring is required. This is to confirm the operation of a clay shrinkage subsidence mechanism.

There are currently insufficient data for analysis.

CAUSE OF DAMAGE

Based on the information detailed above, we are of the opinion that damage has occurred due to clay shrinkage subsidence. This has been caused by moisture abstraction by roots altering the moisture content of the clay subsoil resulting in volume changes, which in turn have affected the foundations.

RECOMMENDATIONS

Mitigation

We consider the damage will not progress if appropriate measures are taken to remove the cause. In this instance it is likely that vegetation for which the adjoining private third party claims responsibilty is contributing toward the cause of damage.

We recommend that the adjacent sweet chestnut tree should be felled and the stump killed.

We do not consider that there is any significant heave potential.

No drainage mitigation repairs are required as there is no defective drainage in the area of movement and the site invistigation has not shown any sign of elevated moisture levels in the clay beneath the foundations.

Repair

We have not yet decided on the final type of repair required, but have produced an outline of the most likely requirements. This involves undertaking superstructure repairs and redecoration.

For Cunningham Lindsey
Project Management Services

R M Ireson BSc CEng MICE
Chartered Engineer
Penny Langley
Customer Support
Tel: 01489 567723
E-mail: penny.langley@cl-uk.com

FACTUAL REPORT

OF

INVESTIGATION

AT:-		100, Chalvington Road, Chandler's Ford Eastleigh
ON:-		18 August 2010
FOR:-		
	c/o	Cunningham Lindsey - Solent
REF:-		3706006-
JOB NO:-		91193
REPORT ISSUED:-		26/08/2010

SPECIALIST CONTRACTING DIVISION

CET SAFEHOUSE LIMITED

Lawness Barns, Mountnessing Road, Billericay, Essex CM12 0TS

WWW.CETSAFEHOUSE.COM

Tel: 01277 655377 Fax: 01277 655977

Investigation Layout Plan

Sheet: 1 of 1

Job No: 91193E

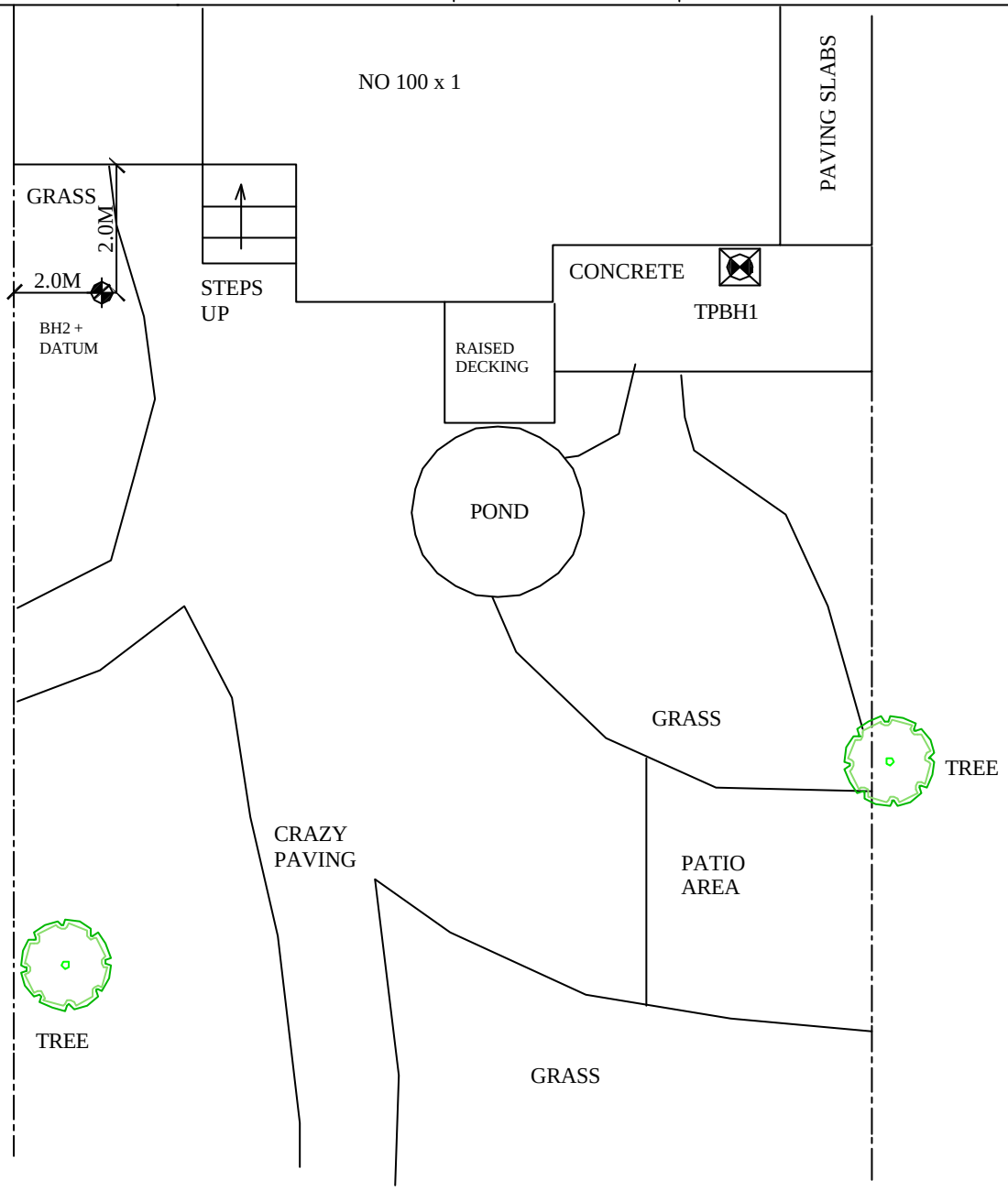
Date: 18/08/2010

Site: 100 Chalvington Road, Chandlers Ford

Work carried out for: Cunningham Lindsey

Weather: Fine

JMC	SE	VW
(SI)	(Checked)	(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		
Soil Vent Pipe	SVP	Trial Pit	
Waste Gulley	WG	Borehole	
Waste Pipe	WP		

Trial Pit No 1

Sheet: 1 of 1

Job No: 91193E

Date: 18/08/2010

Site: 100 Chavington Road, Chandlers Ford

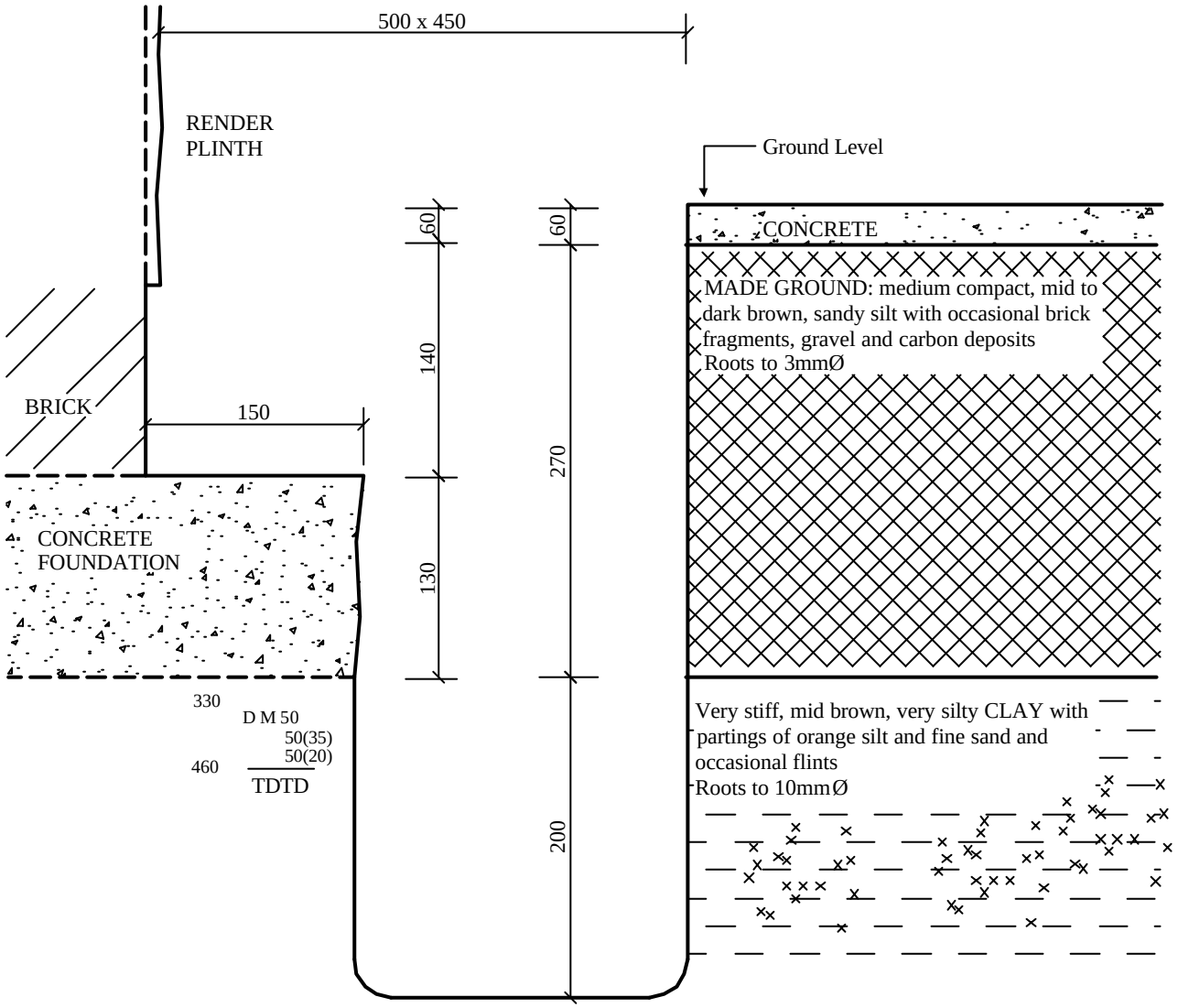
Work carried out for: Cunningham Lindsey

Excavation Method: Hand Tools

Drawn by: VW

Weather: Fine

Ground Level mOD:



FOR STRATA BELOW 530mm SEE BH LOG 1

Remarks: All measurements in millimetres.

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: JMC | Checked: SE | Approved: | Scale: N.T.S.

Borehole No: 1

Sheet: 1 of 1

Job No: 91193E

Site: 100 Chalvington Road

Boring Method: C.F.A.

Date: 18/08/2010

Chandlers Ford

Diameter: 100mm

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)
0.53	As trial pit 1	0.53						No roots observed below 5.3	
1.30	Very stiff, mid brown, grey veined, silty CLAY with numerous flints, thinly laminated with orange silt and fine sand	0.77		D	M	47 50(60) 50(45) TDTD	1.00		
1.80	Stiff, mid brown / orange, grey veined, silty CLAY thinly laminated with orange and brown silt and fine sand	0.50		D			1.50		
2.30	Stiff, mid brown, grey veined, silty CLAY thinly laminated with orange and brown silt and fine sand	0.50		D	V	94 100	2.00		
2.80	Stiff, mid brown, grey veined, silty CLAY with occasional gravel as above	0.50		D			2.50		
4.00	Stiff, mid brown, silty CLAY, thinly laminated with orange and brown silt and fine sand	1.20		D D D	V	130+ 130+ 130+	3.00 3.50 4.00		
4.30	Stiff, mid to dark brown, silty CLAY, as above	0.30				130+		Water seepage at	4.30
4.70	Firm, moist, orange, slightly sandy, very silty CLAY with occasional flints	0.40		D			4.50		
5.00	Stiff, light brown, silty CLAY, thinly laminated with orange and brown silt and fine sand	0.30		D	V	130+ 130+	5.00		
	Borehole ends at 5.0m								

Remarks: Borehole open with SWL at 4.5m on completion

Key: `oo 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: JMC Checked: SE Drawn By VW Scale: NTS Weather: Fine

Borehole No: 2 and DATUM			Sheet: 1 of 2			Site: 100 Chalvington Road			
Boring Method: C.F.A.			Job No: 91193E				Chandlers Ford		
Diameter: 100mm	Coordinates:		Date: 18/08/2010			Work Carried out for:	Cunningham Lindsey		
			Ground Level mOD:						

Depth (m)	Description of Strata	Thick-ness (m)	Legend	Sample	Test Type	Result	Depth (m)	Field Records/Comments	Depth to water (m)
GL	GRASS over MADE GROUND: medium compact to compact, mid to dark brown, sandy silt with occasional gravel and brick fragments	0.70		D			0.50	Roots to 4mm diameter to 0.3m with hair & fibrous roots to 0.7m	
0.70								No roots observed below 0.7m	
	Very stiff, mid brown / orange, silty CLAY with numerous flints	0.60		D	M	45 50(50_) 50(40) TDTD	1.00		
1.30	Stiff, mid orange, grey veined, silty CLAY thinly laminated with orange silt and fine sand	0.40		D			1.50		
1.70	Stiff, mid brown / grey, silty CLAY thinly laminated with orange silt and fine sand	0.40		D	V	106 100	2.00		
2.10	Stiff, mid brown, grey veined, silty CLAY with occasional gravel, as above	0.50		D			2.50		
2.60	Stiff, mid brown, grey veined, silty CLAY, thinly laminated with orange silt and fine sand	1.10		D D	V	90 100	3.00 3.50		
3.70	Stiff, light brown, silty CLAY, thinly laminated with orange silt and fine sand	0.40		D	V	130+ 130+	4.00	Water seepage at	4.10
4.10	Stiff, light brown, silty CLAY with occasional carbon deposits, thinly laminated with orange and brown silt and fine sand	1.00		D			4.50		

D Small disturbed sample
B Bulk disturbed sample
W Water sample
J Jar sample
V Pilcon Vane (kPa)
M Mackintosh Probe

Logged: JMC	Checked: SE	Drawn by VW	Scale: NTS	Weather: Fine

Borehole No: 2 and DATUM			Sheet: 2 of 2			Site: 100 Chalvington Road			
			Job No: 91193E						
Boring Method: C.F.A.			Date: 18/08/2010			Chandlers Ford			
Diameter: 100mm	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)
	Stiff, light brown, silty CLAY with occasional carbon deposits, thinly laminated with orange and brown silt and fine sand			D	V	130+	5.00		
5.10						130+			
	Stiff, moist, as above	0.90							
6.00									
	Borehole ends at 6.0m								

Remarks: Borehole open with SWL at 5.5m on completion
Datum installed at 6.0m No samples taken or insitu strength testing carried out below 5.0m

Key: `oo 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: JMC | Checked: SE | Drawn by: VW | Scale: NTS | Weather: Fine

Our Ref : 91193

Laboratory Testing Results

Date Sampled: 18/08/2010

Location : 100, Chalvington Road

Work carried out for: Cunningham Lindsey - Solent

Date Received : 19/08/2010

Date Tested : 19/08/2010

Date of Report : 25/08/2010

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	0.33(U/S)	D	12	30	49	14	34	-0.07	24	CI								
	1.0	D	16	33	56	15	41	0.03	28	CH								
	1.5	D	30	<5	74	22	52	0.16	52	CV								
	2.0	D	33	<5									97					
	2.5	D	33	<5	70	23	48	0.22	48	CV								
	3.0	D	38	<5									> 130					
	3.5	D	38	<5	75	26	49	0.24	49	CV								
	4.0	D	38	<5									> 130					
	4.5	D	29	18														
	5.0	D	33	<5									> 130					

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 Group 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 2001

Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the samnple 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 : 91193

Laboratory Testing Results

Date Sampled : 18/08/2010

Location : 100, Chalvington Road

Work carried out for: Cunningham Lindsey - Solent

Date Received : 19/08/2010

Date Tested : 19/08/2010

Date of Report : 25/08/2010

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	0.5	D	8	47														
	1.0	D	13	32	48	14	34	-0.04	23	CI								
	1.5	D	31	<5	74	26	48	0.09	48	CV								
	2.0	D	31	<5									103					
	2.5	D	23	25	88	25	63	-0.03	47	CV								
	3.0	D	34	<5									95					
	3.5	D	36	<5	83	28	55	0.14	55	CV								
	4.0	D	30	<5									> 130					
	4.5	D	33	<5														
	5.0	D	31	<5									> 130					

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

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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 : 91193

Location : 100, Chalvington Road

Work carried out for: Cunningham Lindsey - Solent

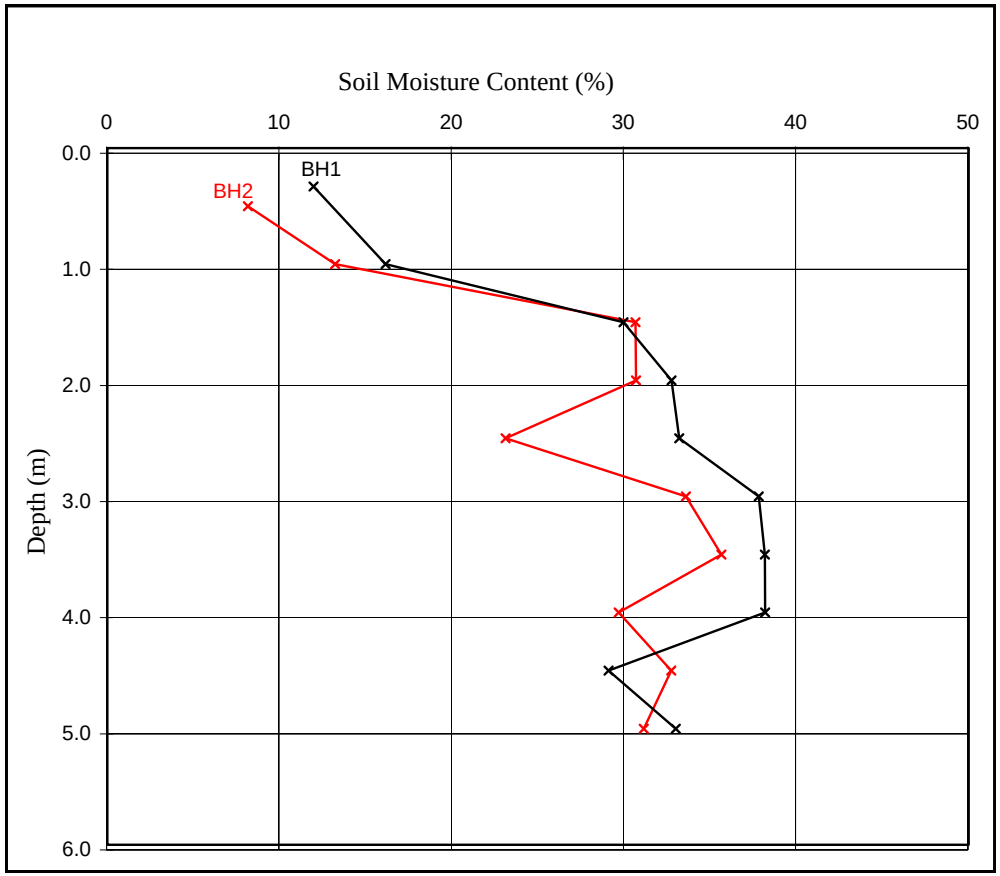
Note : Unless specifically noted the profiles have not been related to a site datum.

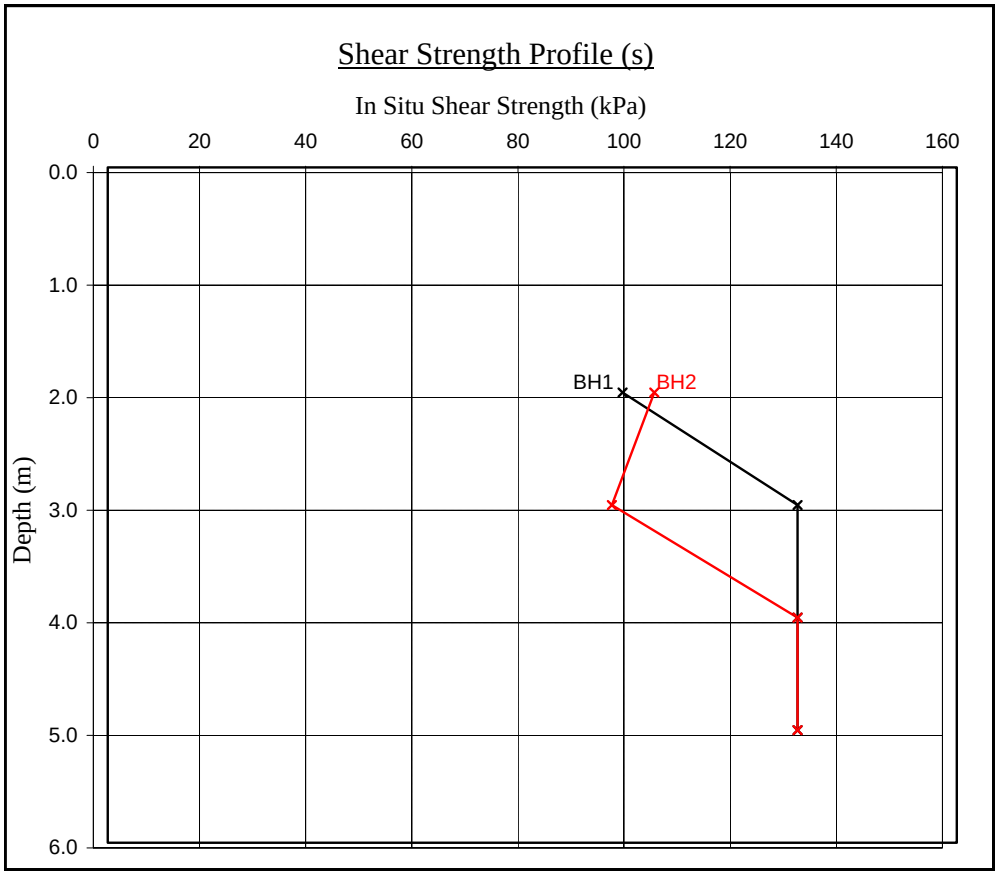
Date Sampled : 18/08/2010

Date Received : 19/08/2010

Date Tested : 19/08/2010

Date of Report : 25/08/2010





Notes

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder (calculated in accordance with BS 1377: Part 2 : 1990, cl.3.2.4 note 1) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. 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 Group using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa.

Tree Root Identification Ltd

Sheet: 1 of 1

Job No: 91193
Date: 26/08/2010
Order No: 314446

Our Ref: CET260810A

Site: 100 Chavington Road, Chandlers Ford.

Work carried out for: Cunningham Lindsey

Certificate of Analysis

The following work was commissioned by CET Safehouse Limited 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 (underside)	7.0	Quercus (oak) or Castanea (sweet chestnut) (3 roots)	positive

The presence of starch indicates that the root was alive in the recent past.

Ronald Macleod

DR RONALD D MACLEOD
Principal Scientist

Address for correspondence: 3 Langley Drive, Kinnoull Hill, Perth, PH2 7XA.
Telephone: 01738 630873
e-mail: rdmmacleod@btconnect.com
Principal Scientist: R.D. MacLeod, B.Sc., Ph.D.,
Accounts/Quality Manager: Fiona M. Sinclair, H.N.C. (Management)
Registered in Scotland, No. 358068. Registered Office: "Mandaya", Highfield Place, Bankfoot, PH1 4AX.

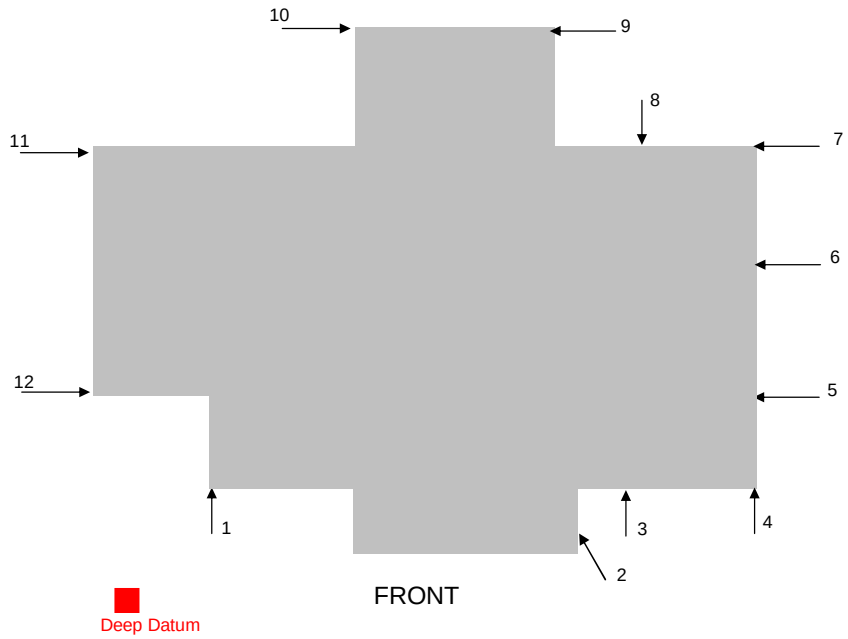
CETSAFEHOUSE

LEVEL MONITORING - RELATIVE SURVEY READINGS

Provider Details		Client Details		Risk Address	
Name:	CETSafehouse	Insurance Co.:		Occupier:	
		Client Name:	Cunningham Lindsey	Address:	100 Chalvington Road
Our Ref:	00/24931	Technical Mgr:	Richard Ireson	Address:	
Date of Issue:	12/5/11	Email:	pmssolent@cl-uk.com	Town:	Chandlers Ford
		Client Ref:	3706006	County:	
Monitoring Details		Address:	1460 Solent Business Park	Post Code:	SO53 3EH
Instruction Date:	12/08/10	Address:	Whiteley	Tel Day:	
First Reading Date:	24/08/10	Town:	Fareham	Tel Eve:	
Maximum No Visits:	8	County:	Hants	Mobile:	
Anticipated Expiry Date:	TBC	Post Code:	PO15 7AF	Other:	
Monitoring Int (Wks):	6	Other Email:		Other:	

Target Date:				5/10/10										
Reading Date:			24/8/10	13/10/10	22/11/10	5/1/11	9/2/11	23/3/11	5/5/11					
Issue Date:			28/8/10	20/10/10	29/11/10	14/1/11	20/2/11	30/3/11	12/5/11					
Row No.	**Point Name**	**X Co-ordinate**	**Y Co-ordinate**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	1	0.00	0.00	11.3316	11.3310	11.3327	11.3332	11.3335	11.3322	11.3310					
2		2.00	0.00												
3		2.00	-0.80												
4		5.00	-0.80												
5	2	5.00	0.00	11.6516	11.6545	11.6557	11.6569	11.6566	11.6547	11.6537					
6	3	6.20	0.00	10.7151	10.7187	10.7202	10.7215	10.7213	10.7193	10.7187					
7	4	7.10	0.00	10.5964	10.6014	10.6026	10.6034	10.6035	10.6016	10.6006					
8	5	7.10	1.50	11.3467	11.3478	11.3494	11.3500	11.3501	11.3480	11.3471					
9	6	7.10	3.50	11.2625	11.2628	11.2643	11.2651	11.2651	11.2627	11.2619					
10	7	7.10	5.40	11.4232	11.4229	11.4242	11.4249	11.4247	11.4224	11.4205					
11	8	5.10	5.40	11.2620	11.2623	11.2632	11.2644	11.2644	11.2619	11.2612					
12		4.30	5.40												
13	9	4.30	7.30	11.2552	11.2554	11.2565	11.2572	11.2580	11.2555	11.2547					
14	10	2.10	7.30	11.3152	11.3148	11.3168	11.3182	11.3185	11.3159	11.3146					
15		2.10	5.40												
16	11	-1.10	5.40	11.1834	11.1839	11.1846	11.1855	11.1861	11.1839	11.1836					
17	12	-1.10	1.20	10.7723	10.7721	10.7733	10.7742	10.7738	10.7715	10.7708					
18		0.00	1.20												
19															
20															
21															
22															
23															
24															
25															

Sketch Plan



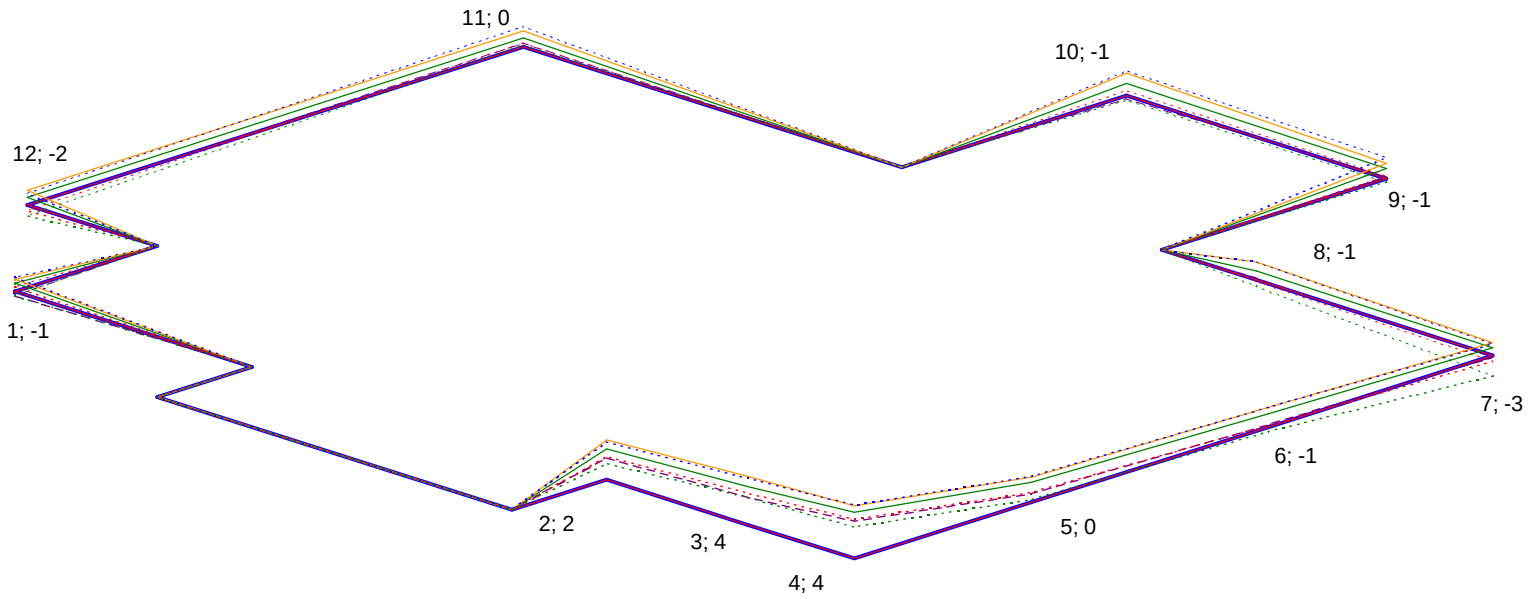
Comments

- Not same brick course
-
-
-

CETSAFEHOUSE

LEVEL MONITORING - RELATIVE MOVEMENT SKETCH

Client:	Cunningham Lindsey	Client Ref:	3706006	CETSafehouse Ref:	00/24931

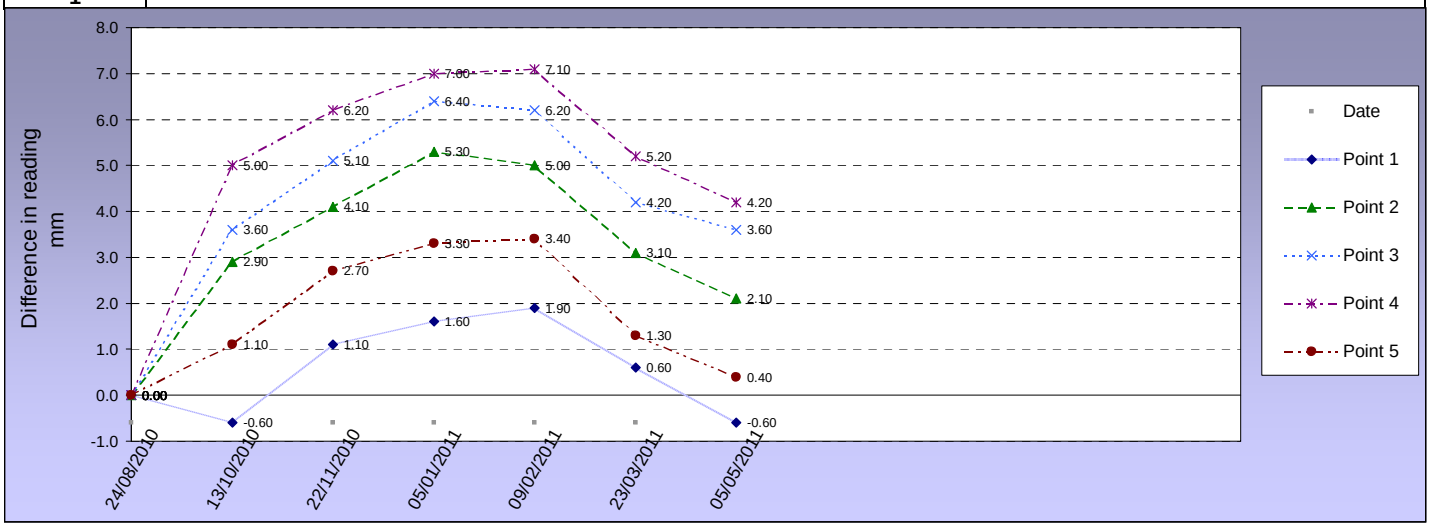


Notes:
Vertical distorted scale 1: 100
Chart is displaying Subsidence
Point labels give level difference of last reading from original datum in mm.

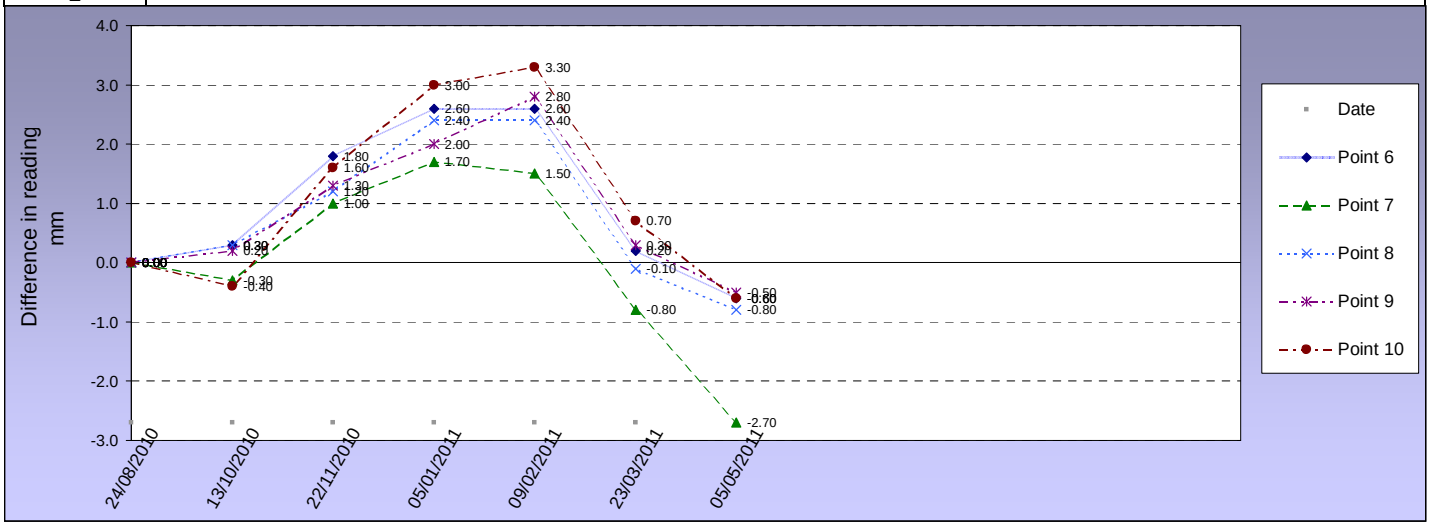
CETSAFEHOUSE **LEVEL MONITORING - RELATIVE SURVEY READINGS**

Client: Cunningham Lindsey **Client Ref:** 3706006 **CETSafehouse Ref:** 00/24931 **Chart Scale 1:1000**

1



2



3

