

«brname»

«branchaddrh»

Telephone «branchTelNumber» Facsimile «branchFaxNumber»

Policyholder: [REDACTED]

Subject Property Address:

43, Hollybank Lane
Emsworth
Hants
PO10 7UE

INSURANCE CLAIM

CONCERNING SUBSIDENCE DAMAGE

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: 02/02/2011

Cunningham Lindsey Ref: SOHPC/CE/3423434

INTRODUCTION

This report has been prepared by our Chartered Engineer Richard West Msc CHE BSc C. Eng MICE and is being investigated in accordance with our Project Managed Service.

Unless stated otherwise all directions are referred to as looking towards the front door from the outside the property.

DESCRIPTION OF BUILDING

The subject property is a detached bungalow in a residential estate location. The overall layout is recorded on our site plan. The property was constructed in 1962. There is a detached garage to the rear RHS of the main property. The site is generally level. The general layout of the site is shown on the attached sketch plan.

There are trees within influencing distance of the property. These include an oak tree to the front right hand side of the property in the grounds of 45 Holly Bank (distance 14.2 m to front RHS), and an oak to the front LHS of the site (distance approximately 13.5 m. A beech tree is situated in the bank to the front of the property (distance 11.4m.) A small ash/ beech is present adjacent to the RH oak. Various shrubs are present in the front bank.

The drainage system is a separate system which is shown in the attached CET plan.

CIRCUMSTANCES OF DISCOVERY OF DAMAGE

The policyholder, [REDACTED], advises that a neighbouring house was underpinned in the 1990's due to clay shrinkage damage. He first discovered the damage to his own house in August 2009 and appointed local consulting engineers Cowan Consultancy. Their report of 10th November confirmed evidence of subsidence. Insurers were duly notified of a claim under the policy. Damage was initially repaired in 2010. Cracking however subsequently redeveloped .

In addition to the movement to the main house the garage was also found to have suffered movement and distortion. The insured had previously had the up and over door and frame renewed. This separate area of damage was advised to the contractor during a scheduling meeting on the 9th March 2010. A void was found beneath the garage foundation with a number if drain defects present. Localised drain repairs were subsequently undertaken and the void filled utilising the Uretek injection process.

NATURE AND EXTENT OF DAMAGE (MAIN PROPERTY)

Description and Mechanism

Externally, brickwork to the left-hand elevation of the main property slopes down to the front by between 2 mm and 5 mm per metre. At the time of the first visit there was a stepped vertical crack beneath the middle window of the elevation. There was distortion to the head of the entrance door to the WC which sloped down towards the front by 5 mm in a 600 mm level.

Distortion is evident to a number of the ground bearing floors was noted. The kitchen slab dips by between 10 mm and 15 mm per metre. There is a 12 mm gap present between skirting boards and the floor to the front wall of the front left-hand bedroom. A gap was also noted between the skirting to the left-hand wall of the lounge and the slab. We understand that some repairs were undertaken to the lounge slab in the 1980's

Within the hall, diagonal cracking was evident in brickwork above the lounge door with rucking of the paper against the rear wall. In the middle left-hand bedroom a stepped crack had developed in brickwork to the front of the left-hand window. In the lounge area a crack occurred adjacent to the entrance door with a gap developing between the wall and coving of the front wall.

The indicated mechanism of movement is a downward movement to the front, dipping in the direction of the trees

Significance

The damage would be placed in category 2 - 3 of the BRE Digest 251 classification i.e. slight to moderate.

Onset and Progression

██████████ has advised that damage first commenced in August 2009. Structural repairs were completed by June 2010. Further cracking to the property became evident by August 2010, with monitoring studs being installed 19/8/10

SITE INVESTIGATIONS

The geological Drift map for the locality indicates London Clay soil to be present to the Northern end of the road in which the property is located. Head (sandy silty clay) is present to the southern end of the road.

A ground investigation was carried out by CET Safehouse Ltd on 16/12/09 and for details of the trial pit and borehole locations, please refer to the attached CET factual report. A second investigation in respect of the garage and drains was undertaken 16/3/10.

Trial Pit 1/Borehole 1

This was located internally against the bedroom/ lounge wall. This showed that the foundation to the front lounge wall comprises a concrete footing bearing in medium compact silty clay fill 700 mm below the level of the slab. Natural silty clay was encountered below 1.m. At the time of the investigation in December 2009, the clay was described as stiff silty clay. Dead and decomposing roots were found to a depth of 3 m with a live oak/ sweet chestnut roots found in the zone 1.0 m – 1.5 m.

The second investigation undertaken was in respect of the damage to the garage 16/3/10. The supplementary site investigation confirmed silty with lamination of silt and sand clay soil to be present to the depth of the borehole of 1.6m where the soil was too gravely to hand auger. A void was found beneath the foundation slab

A camera survey of drains was undertaken in the area of the garage which is situated to the rear RHS of the main property. This revealed a number of fractures to sections of the drain between manhole 1 & 2 & upstream of manhole 1. Repairs have now been completed.

No further drainage Investigations were undertaken as the drains are a significant distance from the area of damage to the main house and the site investigation has shown the soil to be dry which suggests the drains have not adversely affected the soils.

MONITORING

Crack width monitoring of cracks to the LH wall has been underway since August 2010.

Stud nos	Align- ment	Visit	09/11/10	23/12/10
		19/8/10 (C.L)	09/11/10	23/12/10
		70.28		-
H	H	87.65	86.83	84.74
Check	Check	114.64	114.53	114.50
V	V	59.01	58.87	58.76
H	H	73.2	72.60	72.63
Check	Check	94.87	94.75	94.74

In summary, the results to date show a slight closure of cracks

Crack width monitoring was initiated in November 2010. The first reading to December 2010 shows point 2 (internal hall) dropped by 1.1mm, with the front right and front left corners of the house lifting by 0.4 and 0.3mm respectively.

CAUSE OF DAMAGE

Taking an overview of all the site investigation it is my opinion that limited foundation movement has occurred due to root exacerbated clay shrinkage subsidence. The pattern of distortion indicates that the front of the property has dropped. The properties foundations in the area of damage have been built at a relatively shallow depth, bearing onto shrinkable clay subsoil. The soil is susceptible to movement as a result of changes in volume of the clay with variations in moisture content. Analysis of the site investigation results has indicated that the soil has been affected by shrinkage. A number of tree roots identified as originating from an oak/ sweet chestnut were found in the clay subsoil beneath the foundations. In this case, the damage has therefore been caused by clay shrinkage subsidence following moisture extraction by nearby vegetation.

I base this view on the fact that the foundations of the property in the area of damage have been built at a relatively shallow depth, bearing onto shrinkable clay subsoil. The soil is susceptible to movement as a result of changes in volume of the clay with variations in moisture content and analysis of the site investigation results indicates that the soil has been affected by shrinkage. Oak/ sweet chestnut tree roots are present in the clay subsoil beneath the foundations. In this case, I am satisfied that the damage has therefore been caused by clay shrinkage subsidence following moisture extraction by the nearby trees.

I am satisfied that there is no factor, other than the trees that is causing the damage.

RECOMMENDATIONS

It is recommended that the trees located to the front left of the insured property in third party garden be removed to mitigate against further movement. The Mitigation Centre of Oriel Services Ltd will liaise with the Local Authority regard to the protected private trees. A copy of OCA UK Limited's report is attached herewith.

REPAIRS

If the trees are removed/severely pruned then I consider that works including structural crack repair and redecoration at an approximate cost of £4000 will be appropriate in order to repair the damage in this case.

If the street tree is not removed/severely pruned then it may be necessary to consider underpinning of the foundations of the property in the area of damage, in addition to structural crack repair and redecoration needed to repair the damage. The total cost of this option is estimated at £35,000.

FACTUAL REPORT OF INVESTIGATION

AT:- 43, Hollybank Lane
Emsworth

ON:- 04 October 2011

FOR:-
c/o Cunningham Lindsey - Solent

REF:- 3423434-

JOB NO:- 116349

REPORT ISSUED:- 17/10/2011

SPECIALIST CONTRACTING DIVISION

CET SAFEHOUSE LIMITED

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

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Fax: 01277 655977

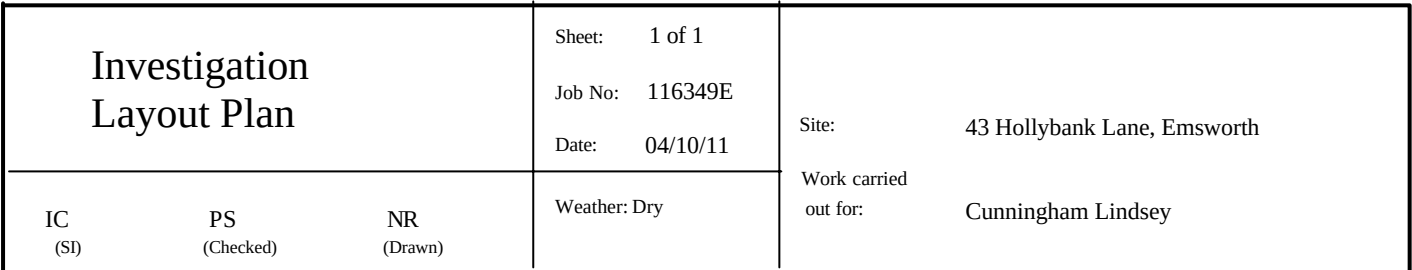
Investigation Layout Plan			Sheet: 1 of 1 Job No: 116349E Date: 04/10/11	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
IC (SI)	PS (Checked)	NR (Drawn)	Weather: Dry	

Investigation Layout Plan			Sheet: 1 of 1 Job No: 116349E Date: 04/10/11	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
IC (SI)	PS (Checked)	NR (Drawn)	Weather: Dry	

Investigation Layout Plan			Sheet: 1 of 1 Job No: 116349E Date: 04/10/11	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
IC (SI)	PS (Checked)	NR (Drawn)	Weather: Dry	

Investigation Layout Plan			Sheet: 1 of 1 Job No: 116349E Date: 04/10/11	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
IC (SI)	PS (Checked)	NR (Drawn)	Weather: Dry	

Investigation Layout Plan			Sheet: 1 of 1 Job No: 116349E Date: 04/10/11	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
IC (SI)	PS (Checked)	NR (Drawn)	Weather: Dry	



Trial Pit No: 1		Sheet: 1 of 1	Site: 43 Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
Excavation Method: Hand Tools		Job No: 116349E	
Weather: Dry		Date: 04/10/11	
		Drawn by: NR	
		Ground Level mOD:	

The diagram shows a cross-section of a trial pit. On the left, a vertical wall is composed of three layers: a top layer of brick (diagonal hatching), a middle layer of block (dashed diagonal hatching), and a bottom layer of concrete foundation (stippled pattern). The pit is 500 mm wide and 350 mm deep. The ground level is indicated by a horizontal line with an arrow. The soil profile on the right is divided into three layers: a top layer of grass over made ground (cross-hatching), a middle layer of stiff light grey gravelly sandy silty clay (dotted pattern with horizontal lines), and a bottom layer of orange & brown silt & fine sand (dotted pattern). The dimensions of the soil layers are 620 mm for the top layer, 180 mm for the middle layer, and 380 mm for the bottom layer. A dimension of 130 mm is shown for the width of the concrete foundation. A note at the bottom of the diagram reads 'FOR STRATA BELOW 1000mm SEE BH LOG 1'.

Remarks: All measurements in millimetres. Adjacent RWP recently & runs to new soakaway. Ground not wet at u/s		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: IC	Checked: PS	Approved:	Scale: N.T.S.

Borehole No: 1			Sheet: 1 of 1			Site: 43 Hollybank Lane, Emsworth				
Boring Method: CFA			Job No: 116349E							
Diameter: 100mm			Date: 04/10/2011							
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)
1.00	As Trial Pit 1		1.00						Roots to 1mm diameter to 1.5m	
1.05	Stiff light grey gravelly sandy very silty CLAY thinly laminated with orange & brown silt & fine sand		0.05	x. x						
1.30	Medium dense to dense mid brown silty clayey GRAVEL		0.25	o o o						
3.20	Stiff mid brown/orange, grey veined, silty CLAY with partings of orange & brown silt & fine sand, occasional carbon flecks & claystone nodules		1.90	.x	D			1.50	No roots observed below 1.5m	
				x	D	V	130+	2.00		
5.00	Stiff dark grey silty CLAY with partings of light grey & olive silt & fine sand		1.80	.x	D			2.50		
				x	D	V	130+	3.00		
5.00	BH ends at 5.0m					D	V	130+	5.00	
Remarks: BH dry & 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: IC		Checked: PS	Drawn By NR		Scale: NTS			Weather: Dry		

Our Ref : 116349

Location : 43, Hollybank Lane

Work carried out for: Cunningham Lindsey - Solent

Laboratory Testing Results

Date Sampled: 04/10/2011

Date Received : 05/10/2011

Date Tested : 05/10/2011

Date of Report : 14/10/2011

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)															so3 [12]	so4 [13]	
1	0.80(U/S)	D	14	28	31	16	15	-0.12	11	CL			> 130					
	1.5	D	18	5														
	2.0	D	19	12	53	17	36	0.07	32	CH	168	219	> 130					
	2.5	D	25	<5														
	3.0	D	26	<5	59	19	40	0.17	40	CH	168	136	> 130					
	3.5	D	27	<5														
	4.0	D	27	<5							168	224	> 130					
	4.5	D	28	<5														
	5.0	D	27	<5							168	246	> 130					
U/S 0.80m Not Suitable For Suction Testing -																		
Unable to cut compacted sample																		

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] SO₄ = 1.2 x SO₃

[14] BRE Special Digest One (Concrete in Aggressive Ground) August 2001

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 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

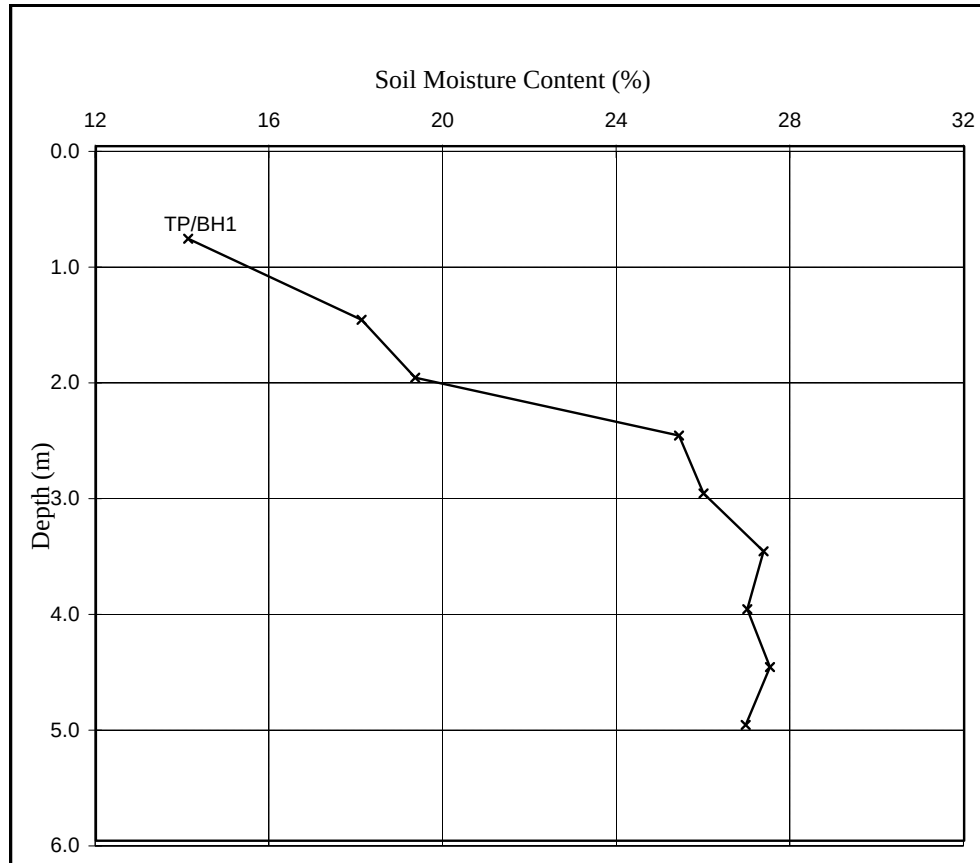
U/S Underside of Foundation

Our Ref : 116349
Location : 43, Hollybank Lane
Work carried out for: Cunningham Lindsey - Solent

Moisture Content and Suction Profiles

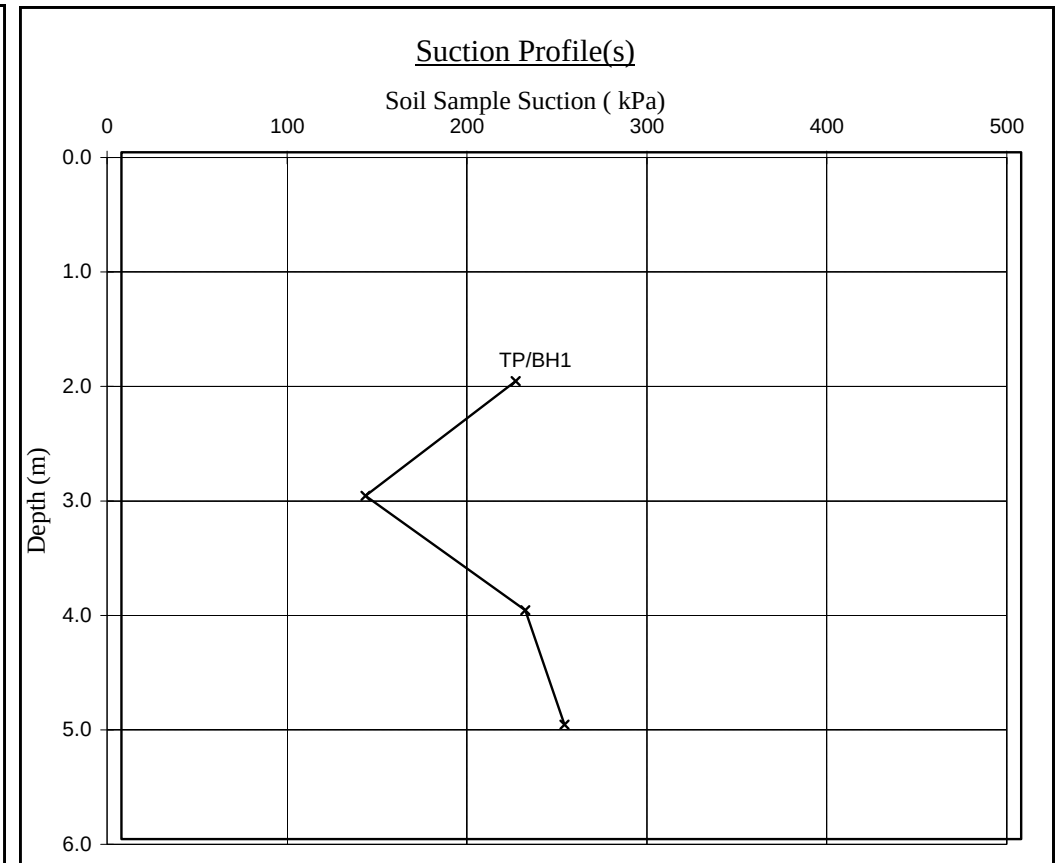
Note : Unless specifically noted the profiles have not been related to a site datum.

Date Sampled : 04/10/2011
Date Received : 05/10/2011
Date Tested : 05/10/2011
Date of Report : 14/10/2011



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

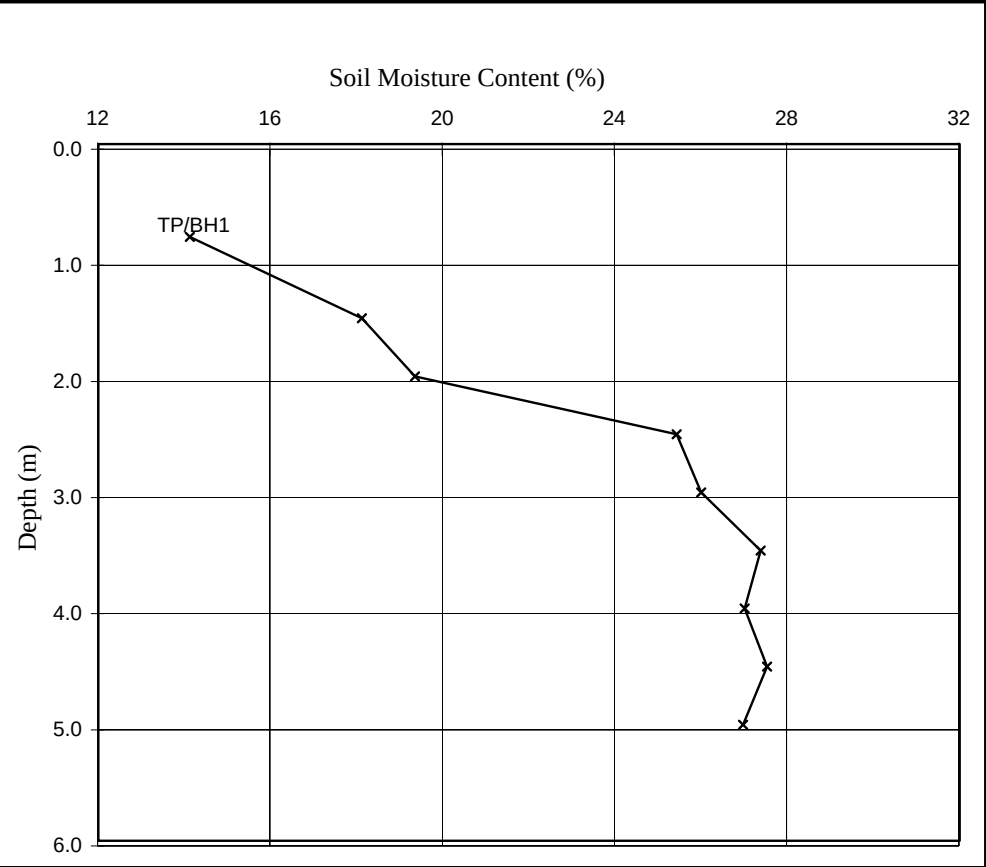
When shown, the theoretical equilibrium suction profiles are based on conventional assumptions associated with London Clay (and similarly overconsolidated clays) at shallow depths. Note that the sample disturbance component is dependant on the method of sampling and any subsequent recompaction. The above 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.

Our Ref : 116349
Location : 43, Hollybank Lane
Work carried out for: Cunningham Lindsey - Solent

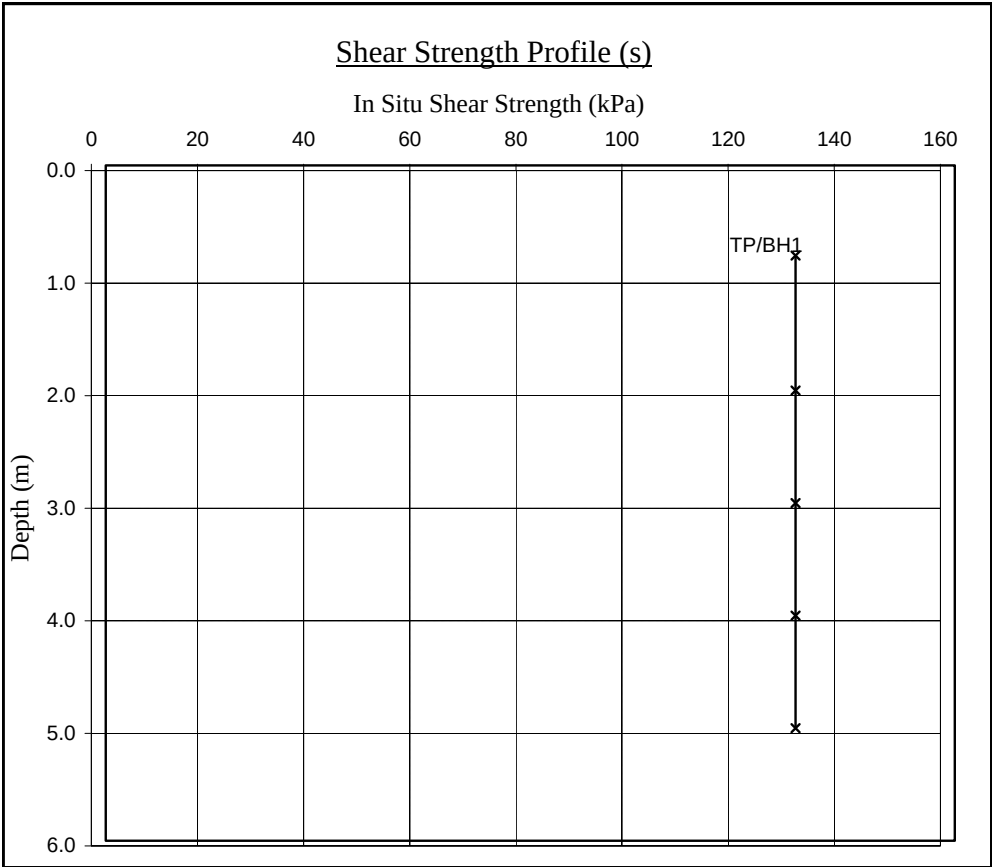
Moisture Content and Shear Strength Profiles

Date Sampled : 04/10/2011
Date Received : 05/10/2011
Date Tested : 05/10/2011
Date of Report : 14/10/2011

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



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 Group using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 130 kPa.

Tree Root Identification Ltd

Sheet: 1 of 1

Job No: 116349
Date: 06\10\2011
Order No: 374473
Our Ref: CET061011B

Site: 43 Hollybank Lane,
Emsworth, Hants.
Work carried
out for: Cunningham Lindsey

Certificate of Analysis

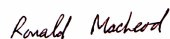
The following work was commissioned by CET Safehouse Limited on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated.

The results were as follows -

Trial pit/ Borehole <u>number</u>	Root diameter (<u>mm</u>)	<u>Tree, shrub or climber from which root originates</u>	<u>Result of starch test</u>[#]
TP1 (underside)	0.5	<u>Platanus</u> (plane) (1 root)	negative
BH1 (depth: 1.5m)	<0.5*	too immature to identify (1 root)	positive

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

* There were no 1.0mm in diameter roots in this sample.



DR RONALD D MACLEOD
Principal Scientist

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Telephone: 01738 630873

e-mail: rdmmacleod@btconnect.com **web site :** www.treerootidentification.co.uk

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.

FACTUAL REPORT OF INVESTIGATION

AT:- 43, Hollybank Lane, Emsworth
Emsworth

ON:- 16 December 2009

FOR:-
c/o Cunningham Lindsey - Solent

REF:- 3423434

JOB NO:- 75542

REPORT ISSUED:- 04/01/2010

SPECIALIST CONTRACTING DIVISION

CET SAFEHOUSE LIMITED

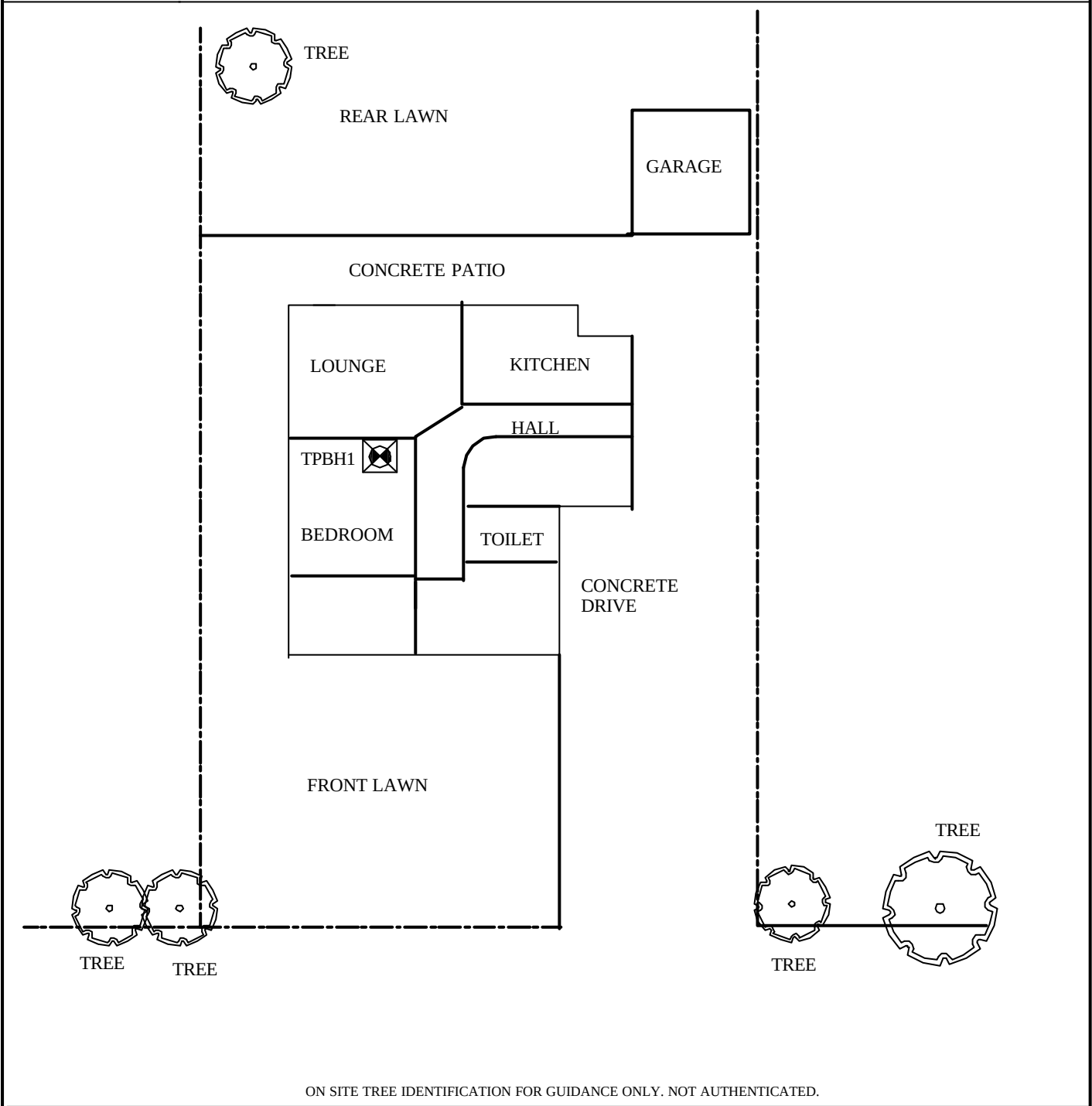
Lawness Barns, Mountnessing Road, Billericay, Essex CM12 0TS

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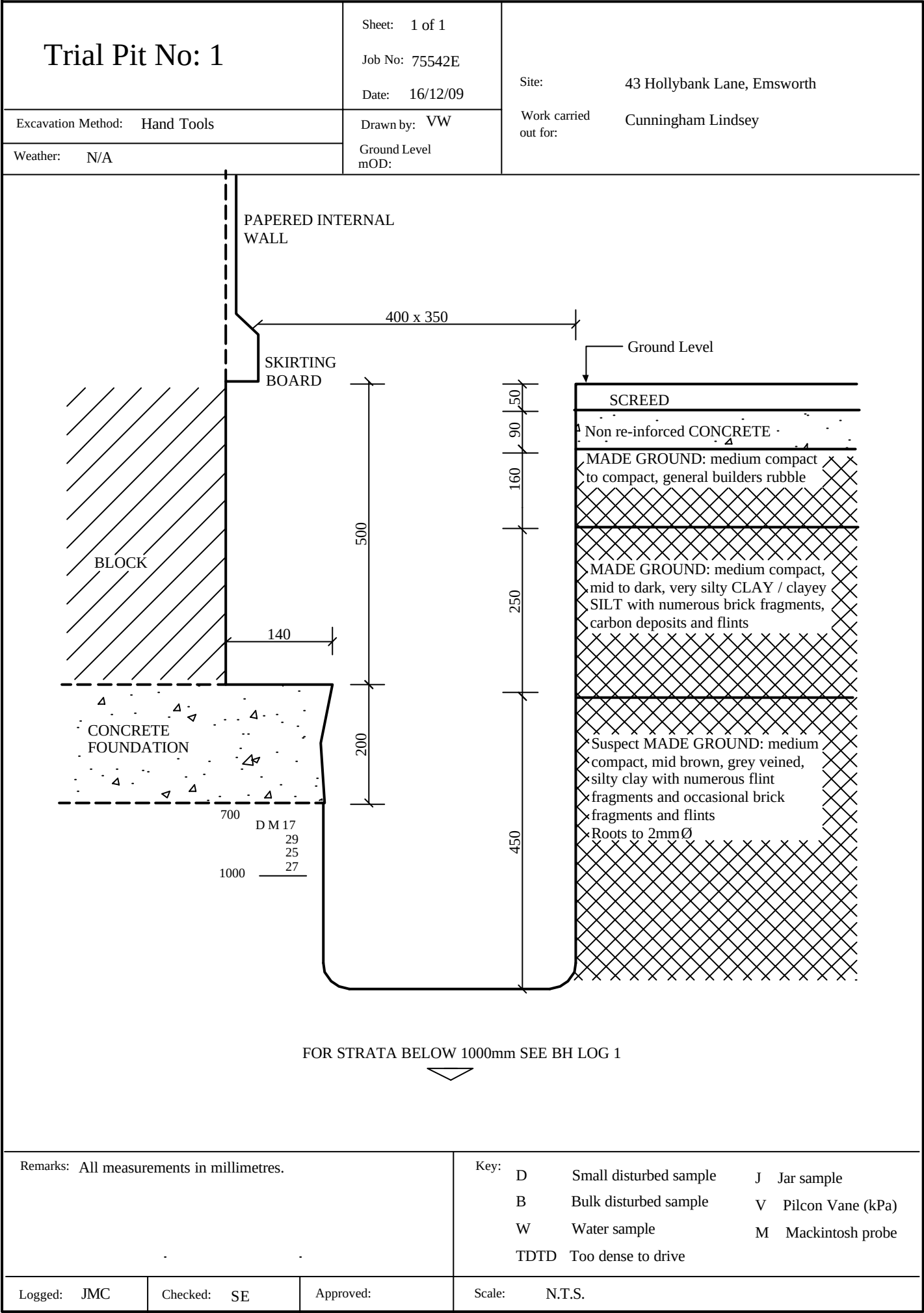
Tel: 01277 655377

Fax: 01277 655977

Investigation Layout Plan	Sheet: 1 of 1	Site: 43 Hollybank Lane, Emsworth
	Job No: 75542E	
	Date: 16/12/09	Work carried out for: Cunningham Lindsey
JMC (SI)	SE (Checked)	
Weather: Dry		



Remarks:	ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY. NOT AUTHENTICATED.			
	Key:			
Scale: N.T.S.	Combined Gully	RWWG	Surface Water Drain	---
	Manhole	MH	Foul Water Drain	---
	Rain Water Pipe	RWP	Tree / Bush	(approx. ht in m)
	Rain Water Gully	RWG	Trial Pit	
	Soil Vent Pipe	SVP	Borehole	
	Waste Gully	WG		
	Waste Pipe	WP		



Borehole No: 1			Sheet: 1 of 1		Site: 43 Hollybank Lane, Emsworth					
			Job No: 75542E							
Boring Method: Hand Auger			Date: 16/12/2009							
Diameter: 70mm		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
1.00	As trial pit 1			1.00		D	M	28	1.00	Roots to 1mm diameter to 2.5m
1.50	Stiff to very stiff, mid brown, grey veined silty CLAY with numerous flint fragments thinly laminated with orange silt and fine sand			0.50	____.x ____ ____ ____	D	M	32 50(65) 50(25)	1.00	
					x____	D	V	108 118	1.50	
3.00	Stiff, mid brown, grey veined, very silty CLAY thinly laminated with orange and brown silt and fine sand			1.50	x____x ____ x____x ____x ____ ____x____ x____x ____x ____ ____x____ x____.x ____ x____x ____x	D	V	104 112	2.00	
					____x____ x____.x	D	V	100 104	2.50	
					x____x	D	V	118 122	3.00	
					____x					

	Borehole ends at 3.0m									
									Water seepage at	
Remarks: Borehole open with SWL at 2.85 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: JMC		Checked: SE		Drawn by: VW		Scale: NTS		Weather: N/A		

Tree Root Identification Ltd

Sheet: 1 of 1

Job No: 75542
Date: 19/12/2009
Order No: 282151/E3
Our Ref: CET191209

Site: 43 Hollybank Lane,
Hants, PO10 7UE.
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 <u>number</u>	Root diameter (<u>mm</u>)	<u>Tree, shrub or climber from which root originates</u>	<u>Result of starch test</u>[#]
TP1 (underside)	1.0-1.5	<u>Quercus</u> (oak) or <u>Castanea</u> (sweet chestnut) (2 roots)	positive
BH1 (depth: 1.0 to 2.5m)	<0.5	<u>Quercus</u> (oak) or <u>Castanea</u> (sweet chestnut) (2 roots)	negative

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



DR RONALD D MACLEOD
Principal Scientist

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Accounts/Quality Manager: Fiona M. Sinclair, H.N.C. (Management)

Registered in Scotland, No. 358068. Registered Office: "Mandaya", Highfield Place, Bankfoot, PH1 4AX.

FACTUAL REPORT OF INVESTIGATION

AT:- 43, Hollybank Lane
Emsworth

ON:- 10 November 2011

FOR:-
c/o Cunningham Lindsey - Solent

REF:- 3423434-

JOB NO:- 119236

REPORT ISSUED:- 16/11/2011

SPECIALIST CONTRACTING DIVISION

CET SAFEHOUSE LIMITED

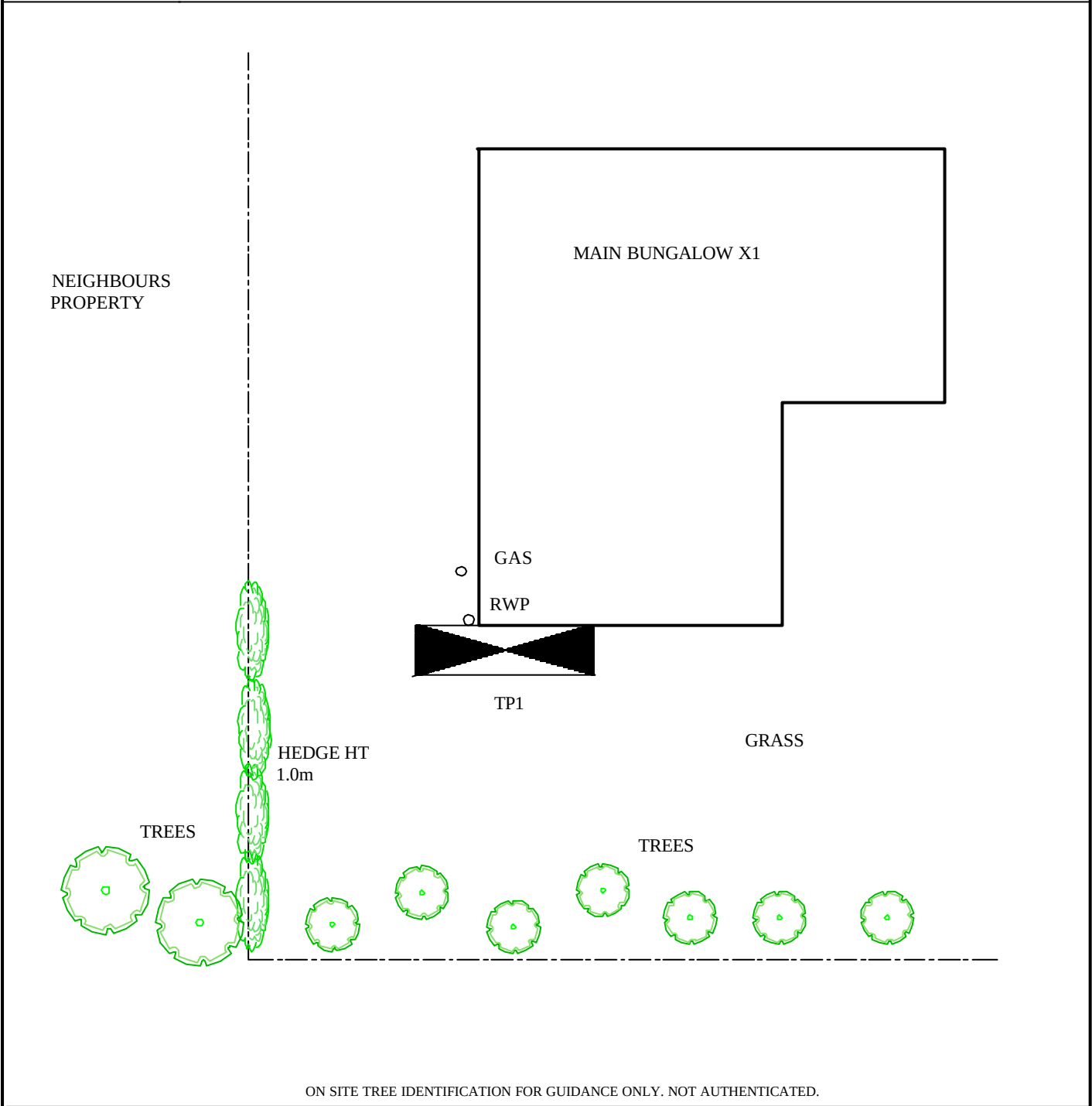
Lawness Barns, Mountnessing Road, Billericay, Essex CM12 0TS

WWW.CETSAFEHOUSE.COM

Tel: 01277 655377

Fax: 01277 655977

Investigation Layout Plan			Sheet: 1 of 1	Site: 43, Hollybank Lane, Emsworth
			Job No: 119236E	
MA (SI) PS (Checked:) JF (Drawn By)			Weather : Dry	Work carried out for: Cunningham Lindsey



Remarks:		Key:			
		Combined Gulley	RWWG	Surface Water Drain	-->--
		Manhole	MH	Foul Water Drain	→
		Rain Water Pipe	RWP	Tree / Bush	
		Rain Water Gulley	RWG	(approx. ht in m)	
		Soil Vent Pipe	SVP	Trial Pit	
		Waste Gulley	WG	Borehole	
		Waste Pipe	WP		
Scale:	N.T.S.				

Trial Pit No: 1		Sheet: 1 of 1	Site: 43, Hollybank Lane, Emsworth Work carried out for: Cunningham Lindsey
Excavation Method: Hand Tools		Job No: 119236E	
Weather: Dry		Date: 10/11/11	
		Drawn by: Jo F	
		Ground Level mOD:	
Diagram of Trial Pit No: 1 showing cross-section and plan view. The plan view is 500 x 1500 mm. The cross-section shows layers: DPC, BRICK, CONCRETE BLOCK, CONCRETE FOUNDATION, and MADE GROUND. Dimensions are given in millimeters. The trial pit ends at 1050mm depth.			
Remarks: All measurements in millimetres. TP dry and open on completion		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: MA	Checked : PS	Approved:	Scale: N.T.S.

Certificate of Analysis

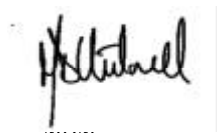
The following work was commissioned by CET Safehouse Limited on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated.

The results were as follows -

Trial pit/ Borehole <u>number</u>	Root diameter (<u>mm</u>)	Tree, shrub or climber <u>from which root originates</u>	Result of <u>starch test</u>
TP (USF)	3	Fagus spp. (4 roots)	Negative
TP (USF)	3	Quercus spp. (2 roots)	Positive

Fagus spp. include common beech and copper beech.

Quercus spp. are oaks (both deciduous and evergreen).



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., M.Phil.*

Plant Anatomist : *Dr G S Turner B.Sc., M.Sc., Ph.D*

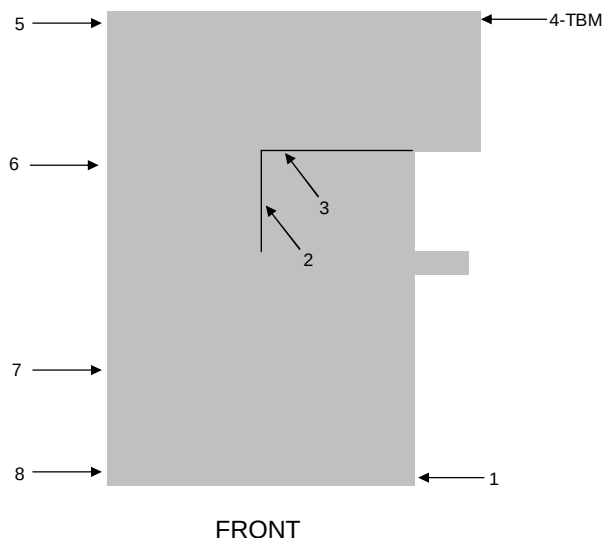
Plant Anatomist : *Dr F M Cardias Williams B.Sc., M.Sc., Ph.D.*

Consultant: *Dr M P Denne B.Sc., M.Sc., Ph.D*

Registered in England. No 295427, Registered Office: Bank Chambers, 29 High Street, Ewell, Epsom, Surrey, KT17 1SB

Provider Details				Client Details				Risk Address			
Name:	CETSafehouse			Insurance Co.:				Occupier:			
Our Ref:		00/25452		Client Name:	Cunningham Lindsey			Address:	43 Hollybank Lane		
Date of Issue:		15/11/11		Technical Mgr:	Richard West			Address:			
				Email:				Town:	Emsworth		
				Client Ref:	3423434			County:			
Monitoring Details				Address:				Post Code:	PO10 7UE		
Instruction Date:				Address:				Tel Home:			
First Reading Date:		09/11/10		Town:				Tel Work:			
Maximum No Visits:		9		County:				Mobile:			
Anticipated Expiry Date:				Post Code:				Other:			
Monitoring Int (Wks):		6		Other Email:				Other:			

Target Date:															
Reading Date:				9/11/10	23/12/10	2/2/11	23/3/11	5/5/11	6/7/11	17/8/11	29/9/11	7/11/11			
Issue Date:				17/11/10	2/1/11	7/2/11	5/4/11	12/5/11	13/7/11	23/8/11	3/10/11	15/11/11			
Row No.	Point Name	X Co-ordinate	Y Co-ordinate	1	2	3	4	5	6	7	8	9	10	11	12
1	8	0.00	0.00	9.5578	9.5581	9.5579	9.5587	9.5586	9.5565	9.5565	9.5541	9.5543			
2	1	4.50	0.00	9.6362	9.6366	9.6371	9.6365	9.6362	9.6353	9.6353	9.6351	9.6358			
3		4.50	4.40												
4		5.30	4.40												
5		5.30	4.90												
6		4.50	4.90												
7		4.50	6.90												
8	3	2.00	6.90	9.9152	9.9152	9.9155	9.9154	9.9151	9.9147	9.9148	9.9150	9.9151			
9	2	2.00	5.90	9.9075	9.9064	9.9075	9.9076	9.9073	9.9070	9.9072	9.9067	9.9068			
10		2.00	4.90												
11		2.00	5.90												
12		2.00	6.90												
13		4.50	6.90												
14		5.50	6.90												
15	4	5.50	9.90	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000			
16	5	0.00	9.90	9.6934	9.6934	9.6937	9.6923	9.6921	9.6920	9.6927	9.6908	9.6924			
17	6	0.00	6.00	9.6802	9.6800	9.6805	9.6798	9.6795	9.6790	9.6790	9.6782	9.6789			
18	7	0.00	1.50	9.5769	9.5770	9.5769	9.5773	9.5773	9.5757	9.5748	9.5732	9.5732			
19															
20															
21															
22															
23															
24															
25															

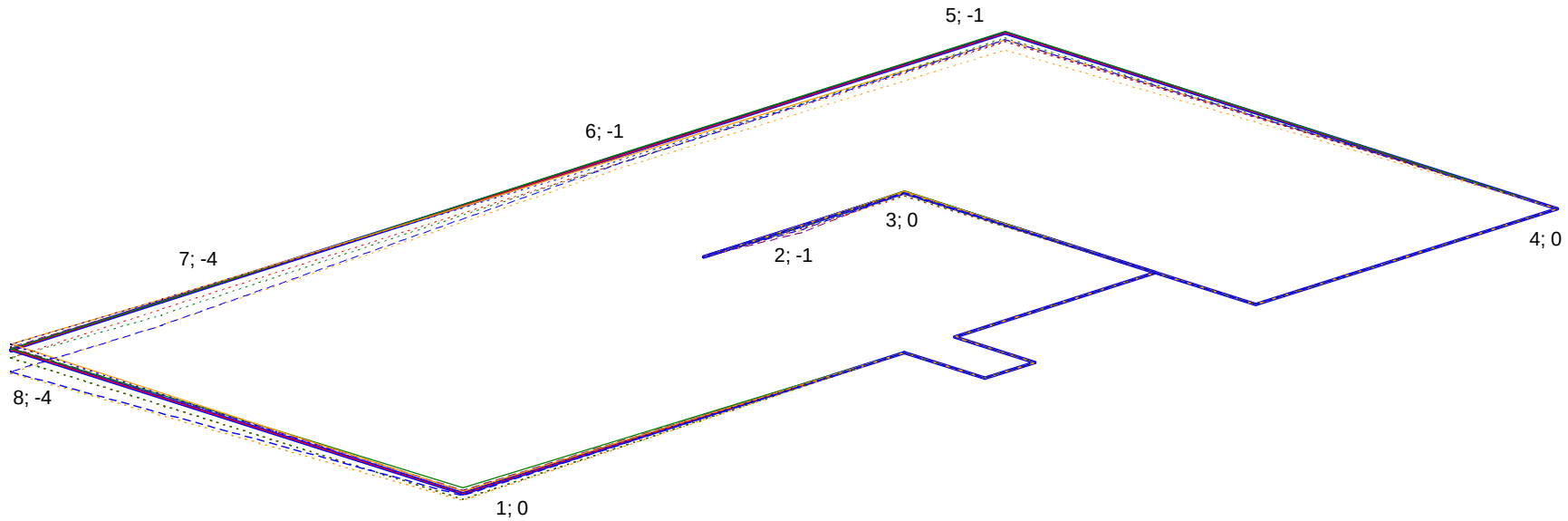
Sketch Plan

Comments

- 7-11-11 Pt 8 refitted.

Client: Cunningham Lindsey

Client Ref: 3423434

CETSafehouse Ref: 00/25452



— Datum Reading	— Reading 1 (9/11/10)	- - - Reading 2 (23/12/10)	— Reading 3 (2/2/11)	— Reading 4 (23/3/11)
····· Reading 5 (5/5/11)	····· Reading 6 (6/7/11)	····· Reading 7 (17/8/11)	····· Reading 8 (29/9/11)	- - - Reading 9 (7/11/11)
- - - Reading 10 (0/1/00)	- - - Reading 11 (0/1/00)	- - - Reading 12 (0/1/00)		

Notes:

Vertical distorted scale 1: 100

Chart is displaying Subsidence

Point labels give level difference of last reading from original datum in mm.

