

SITE INVESTIGATION FACTUAL REPORT

Report No: 509700
Client: Cunningham Lindsey - Maidstone
Site: 15 Mallard Way,
Client Ref: 6757279-
Date of Visit: 30/05/18



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

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

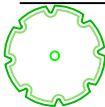
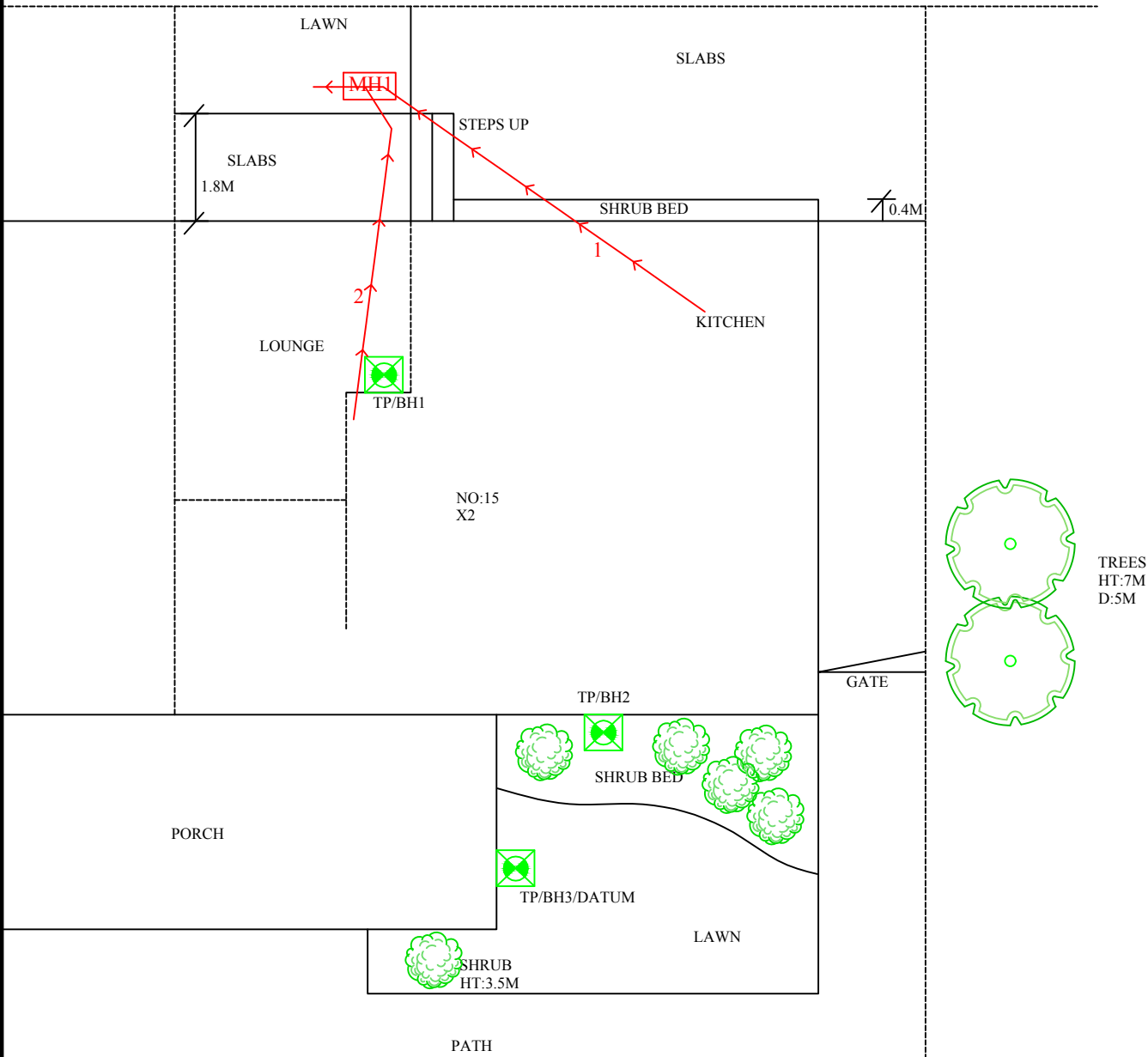
Investigation
Layout Plan

Sheet: 1 of 1
Job No: 509700
Date: 30/05/2018

Site: 15 Mallard Way, HA6
Work carried out for: Cunningham Lindsey

DB (SI) SA (Checked) SK (Drawn)

Weather: DRY



POLLARDED TREE
HT:8M
D:20M



TREE
HT:15 - 20M
D:9M

ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY. NOT AUTHENTICATED.

Remarks:

Key:
Combined Gulley RWWG
Manhole MH
Rain Water Pipe RWP
Rain Water Gulley RWG
Soil Vent Pipe SVP
Waste Gulley WG
Waste Pipe WP

Surface Water Drain
Foul Water Drain
Tree / Bush
(approx. ht in m)
Trial Pit
Borehole
O/D - Open Discharge



Scale: N.T.S.

Trial Pit No: 1		Sheet: 1 of 1	Site: 15 Mallard Way Work carried out for: Cunningham Lindsey
Hand Tools		Job No: 509700	
Weather: N/A		Date: 30/05/2018	
		Drawn by: ANS	
		Ground Level mOD:	

300 X 300

FLOOR LEVEL
CARPET OVER
SAND & CEMENT SCREED

CONCRETE FLOOR SLAB

NO REINFORCING OBSERVED

POLYTHENE MEMBRANE

LOOSE REJECT STONES WITH SAND

600

D V 88
92

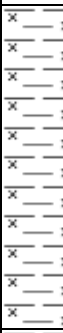
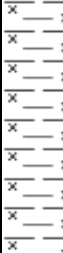
100

140

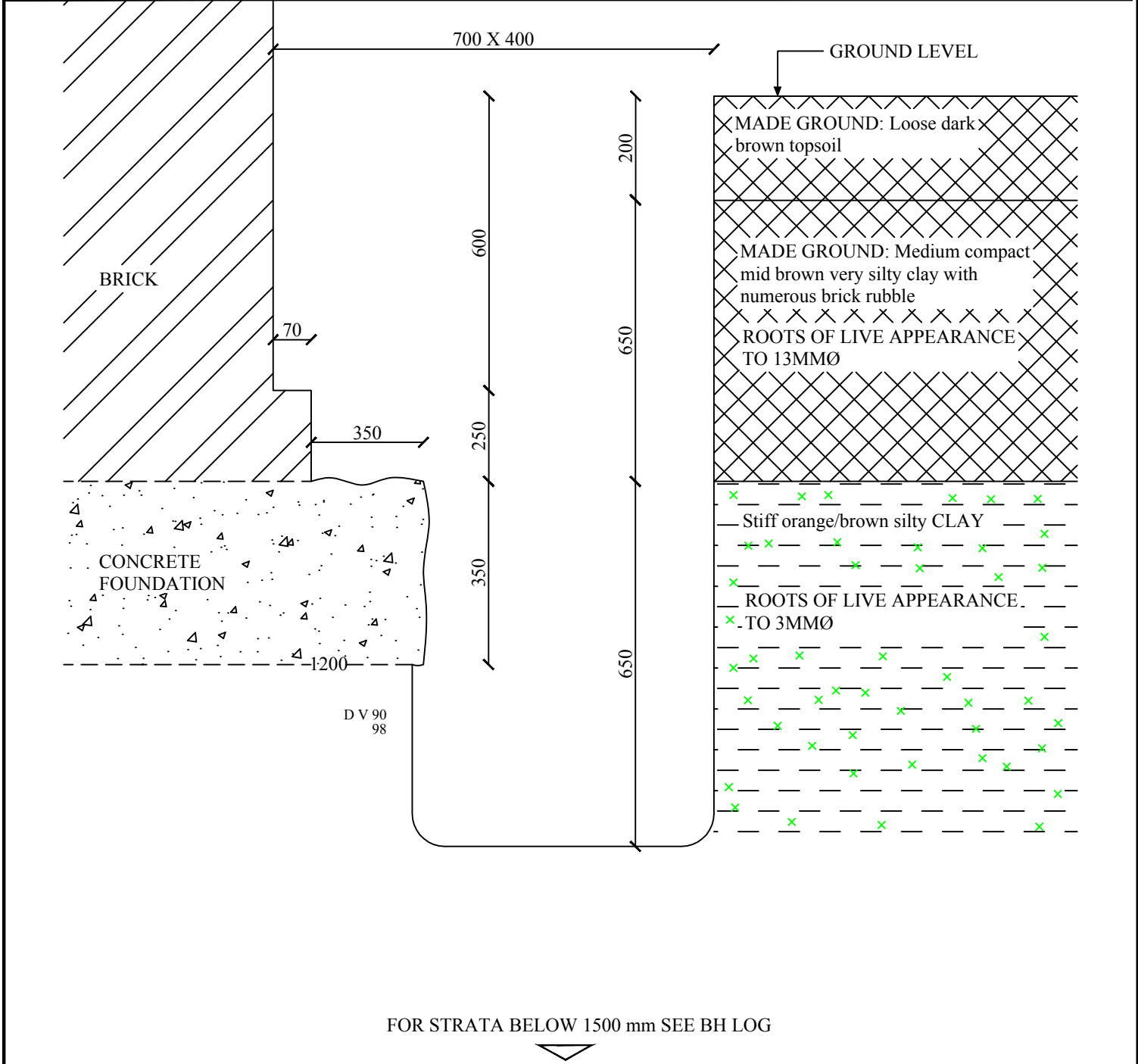
420

FOR STRATA BELOW 700 mm 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: AG	Checked: SA	Approved:	Scale: N.T.S.

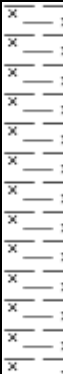
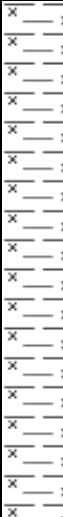
Borehole		1			Sheet:	1 of 1	Site:	15 Mallard Way,													
					Job No:	509700															
					Date:	30/05/2018															
Boring Method:		Hand Auger			Ground Level:			Client:	Cunningham Lindsey - Maidstone												
Diameter (mm):		50	Weather:		N/A																
Depth	Soil Description							Samples and Tests													
(m)								Thickness	Legend	Depth	Type	Result									
0.00	See Trial Pit							0.70													
0.70	Stiff brown silty CLAY thinly laminated with orange silt and fine sand with gravel and chalk nodules							1.10													
1.80	Very Stiff brown silty CLAY thinly laminated with orange silt and fine sand with gravel and chalk nodules							0.90													
2.70	End of BH																				
										Remarks: BH ends at 2.7m,too stiff/hard to hand auger. BH dry and open on completion ,no roots observed below 1.5m.					Key: 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					To	Max
																				Depth	Dia
(m)	(mm)																				
1.50	Fibrous																				
Logged:	AG	SA	Checked:	Approved:	Version	V1.0 28/01/16		N.T.S.													

Trial Pit No: 2	Sheet: 1 of 1	Site: 15 Mallard Way Work carried out for: Cunningham Lindsey
	Job No: 509700	
	Date: 30/05/2018	
Hand Tools	Drawn by: ANS	
Weather: RAIN	Ground Level mOD:	



Remarks: All measurements in millimetres.			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: DB	Checked: SA	Approved:	Scale:	N.T.S.

[illegible]

Borehole		3			Sheet:	1 of 1	Site:	15 Mallard Way,							
					Job No:	509700									
					Date:	30/05/2018									
Boring Method:		Hand Auger			Ground Level:			Client:	Cunningham Lindsey - Maidstone						
Diameter (mm):		50	Weather:		dry										
Depth	Soil Description									Samples and Tests					
(m)								Thickness	Legend	Depth	Type	Result			
0.00	See Trial Pit							1.50							
1.50	Stiff orange-brown silty CLAY thinly laminated with orange silt and fine sand with silt stone nodules							1.30							
2.80	Very Stiff brown silty CLAY thinly laminated with orange silt and fine sand with silt stone nodules							1.80		1.50	DV	96			
												98			
4.60	Very Stiff brown sandy silty CLAY thinly laminated with orange silt and fine sand							1.40		3.00	DV	140+			
												140+			
6.00	End of BH														
Remarks: BH ends at 6m. BH dry and open on completion, no roots observed below 3.5m. Datum installed at 6m, no soil sample or insitu strength tests carried out below 5m.							Key: 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							To	Max
														Depth	Dia
														(m)	(mm)
														3.50	1
Logged:		AG	SA	Checked:	Approved:	Version	V1.0 28/01/16		N.T.S.						

Laboratory Summary Results

Our Ref : 509700

Location : 15 Mallard Way, Northwood

Client: Cunningham Lindsey - Maidstone

Address: 4 North Court, South Park Business Village, Armstrong Road, ME15 6JZ

Date Sampled: 30/05/18

Date Received : 31/05/18

Date Tested : 01/06/18

Date of Report : 13/06/18

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)	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)		* Class [16]
TP/BH No	Depth (m)																	SO3 [14]	SO4 [15]	
1	U/S 0.60	D	23	18	77	28	49	-0.11	40	CV	168	200			90					
	1.0	D	31	<5	97	26	71	0.07	71	CE	168	334			98					
	1.5	D	17	25											131					
	2.0	D	20	<5	64	18	46	0.04	46	CH	168	310			> 140					
	2.5	D	16	23	60	16	44	-0.01	34	CH	Insufficient sample for suction testing				> 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] SO₄ = 1.2 x SO₃

[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 soluble 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



Our Ref : 509700

Location : 15 Mallard Way, Northwood

Client: Cunningham Lindsey - Maidstone

Address: 4 North Court, South Park Business Village, Armstrong Road, ME15 6JZ

Laboratory Testing Results

Date Sampled : 30/05/18

Date Received : 31/05/18

Date Tested : 01/06/18

Date of Report : 13/06/18

Sample Ref.		Type	Moisture Content (%) [1]	Soil Fraction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquididity * 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)		* Class [16]
TP/BH No.	Depth (m)																	SO3 [14]	SO4 [15]	
2	U/S 1.20	D	20	<5	58	18	40	0.06	40	CH	168	126			94					
	1.5	D	24	<5																
	2.0	D	22	<5	66	22	44	0.00	44	CH	168	316			> 140					
	2.5	D	21	<5																
	3.0	D	20	<5	61	20	41	-0.01	41	CH	168	435			> 140					
	3.5	D	13	<5																
	4.0	D	11	<5	Not suitable for suction testing - Too Stiff										> 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 TP 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] SO₄ = 1.2 x SO₃

[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 soluble magnesium testing is undertaken to prove otherwise.

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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



Our Ref : 509700

Location : 15 Mallard Way, Northwood

Client: Cunningham Lindsey - Maidstone

Address: 4 North Court, South Park Business Village, Armstrong Road, ME15 6JZ

Laboratory Testing Results

Date Sampled : 30/05/18

Date Received : 31/05/18

Date Tested : 01/06/18

Date of Report : 13/06/18

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)	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)		* Class [16]
TP/BH No.	Depth (m)																	SO ₃ [14]	SO ₄ [15]	
3	U/S 1.15	D	21	<5	58	27	31	-0.18	31	CH	168	75.1			100					
	1.5	D	24	<5											97					
	2.0	D	20	<5	59	19	40	0.03	40	CH	168	102			107					
	2.5	D	24	<5											132					
	3.0	D	22	<5	66	19	47	0.05	47	CH	168	225			> 140					
	3.5	D	14	<5											> 140					
	4.0	D	17	<5	Not suitable for suction testing - Too Stiff										> 140					
	4.5	D	17	<5											> 140					
	5.0	D	9.35	16	Not suitable for suction testing - Too Stiff										> 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

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[8] In-house method S9a adapted from BRE TP 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] SO₄ = 1.2 x SO₃

[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 soluble magnesium testing is undertaken to prove otherwise.

* These tests are not UKAS accredited

Full reports can be provided upon request

Key

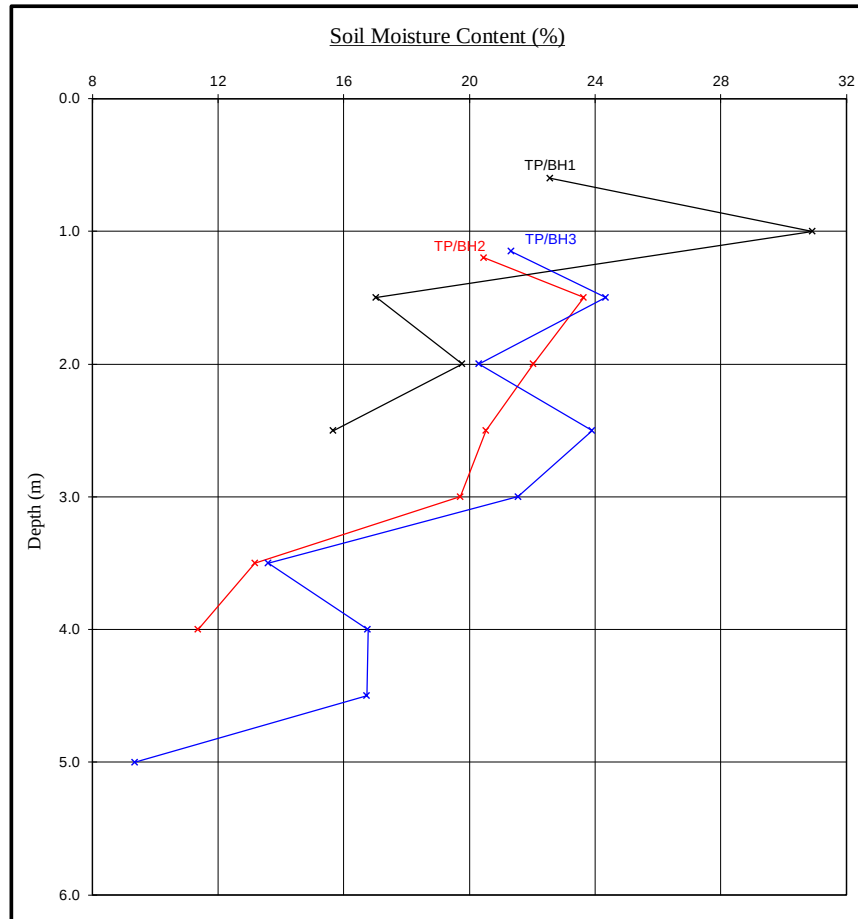
D Disturbed sample (small)
 B Disturbed sample (bulk)
 U Undisturbed sample
 W Groundwater sample
 ENP Essentially Non-Plastic by inspection
 U/S Underside of Foundation



Moisture Content Profiles

Our Ref : 509700
 Location : 15 Mallard Way, Northwood
 Work carried out for: Cunningham Lindsey - Maidstone

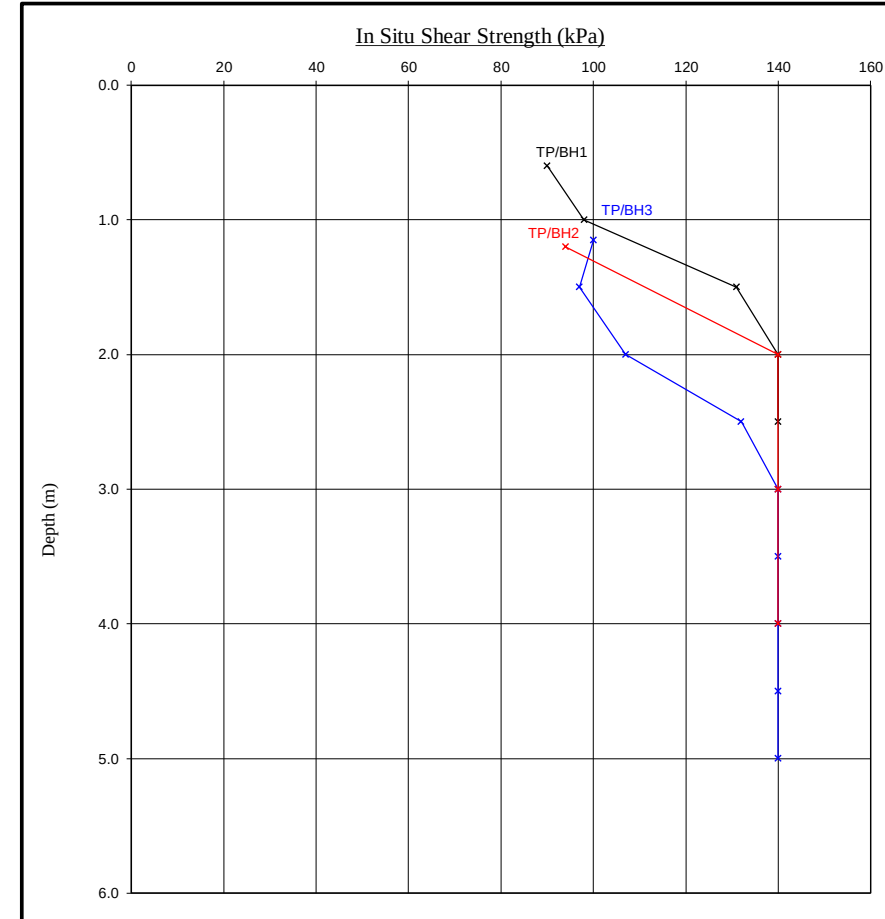
Date Sampled : 30/05/18
 Date Received : 31/05/18
 Date Tested : 01/06/18
 Date of Report : 13/06/18



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



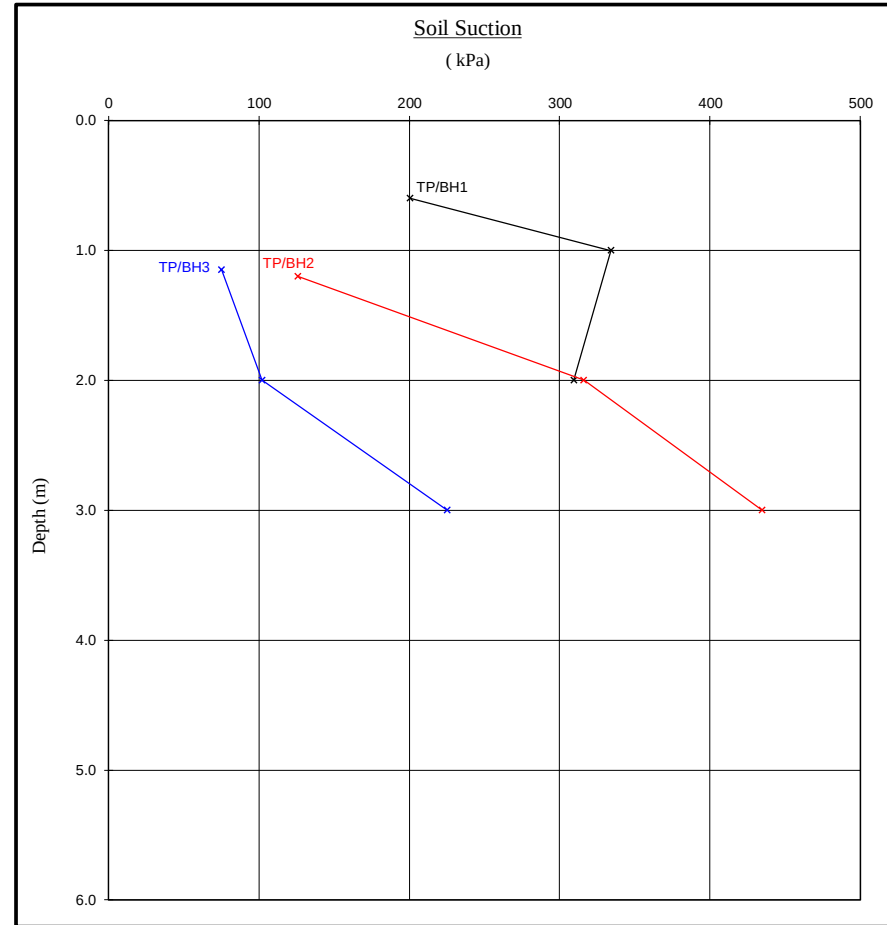
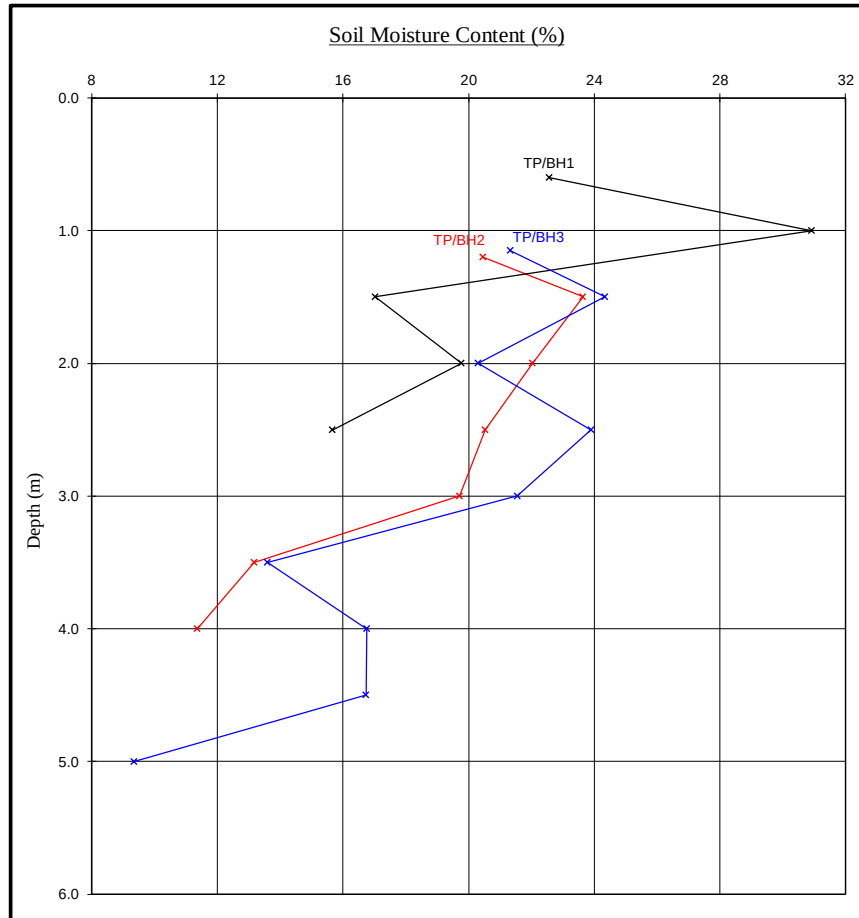
Note

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.

Moisture Content Profiles

Our Ref : 509700
 Location : 15 Mallard Way, Northwood
 Work carried out for: Cunningham Lindsey - Maidstone

Date Sampled : 30/05/18
 Date Received : 31/05/18
 Date Tested : 01/06/18
 Date of Report : 13/06/18



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.

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: **509700**Date: **05/06/2018**Order No: **1155703**EPSL Ref: **R22346**Site: **15 Mallard Way,**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 -

<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 (USF)	2 mm	Prunus spp. 2 roots	Positive
TP2 (USF)	2 mm	Cupressaceae spp. 4 roots	Positive
BH2 (to 3.2m)	1.5 mm	Cupressaceae spp. 3 roots	Negative
BH2 (to 3.2m)	<1 mm	Populus or Salix spp. *	Negative
TP3 (USF)	3 mm	Euonymus spp. 4 roots	Positive
TP3 (USF)	1 mm	Prunus spp.	Positive
BH3 (to 3.5m)	1.5 mm	Cupressaceae spp. 4 roots	Positive
BH3 (to 3.5m)	1 mm	Populus or Salix spp.*	Negative

* In a state of decay.

Prunus spp. include blackthorn, cherry, cherry-laurel, Portuguese laurel, peach, plum, and related species.

Cupressaceae spp. include Lawson cypress, western red cedar, Monterey cypress, Leyland cypress and junipers.

Populus spp. are poplars and aspen; Salix spp. are willows.

Euonymus spp. are deciduous or evergreen garden shrubs, including spindleberries.



MDM

Address for correspondence: EPSL, Intec, Parc Menai, Bangor, Gwynedd, North Wales, LL57 4FG

Telephone: 01248 672 652

e-mail: lab@innovation-environmental.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

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: Yarmouth House, 1300 Parkway, Solent Business Park, Hampshire, PO15 7AE

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

Our Ref: 509700
Your Ref: 6757279
Date: 01-Jun-18

Ftiao: Michael Robinson

ESTIMATE

Site:- 15 Mallard Way,

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

Condition Grade

- A - Structurally sound with no leakage evident.
- B - Cracks and fractures observed.
- C - Structurally unsound

plus VAT @20%

Total + VAT

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.

Coding Sheet		Sheet:		Site:	15 Mallard Way,			
		Job No.:	509700					
		Date:	30/05/18	Client:	Cunningham Lindsey - Maidstone			

Run:	1								
From:			MH1	Invert Level:	900		Direction:	U/S	
To:			U/S	Invert Level:			Function:	F/W	
Pipe Material:			VC	Pipe Dia:	100				
Water/Pressure Test:				Drain Break-In:	No		Gully Condition:		
Distance (m)	Code	Clock Ref at to		Dia mm	Intrusion % mm		Shared Run:	No	
							If Shared How:		
0.00	ST						Remarks	Surface Material	Length (m)
0.00	MC						liner	slabs	1.8
0.50	DEG				5		Debris grease	Soil	0.4
0.80	WL				5		Water level	under x2	1
2.50	MC						to Vc		
2.60	LU						Line deviates up		
3.20	FH						Reached upstream		

Comments:

Run:	2								
From:			MH1	Invert Level:	900		Direction:	U/S	
To:			Svp	Invert Level:			Function:	F/W	
Pipe Material:			Liner	Pipe Dia:	100				
Water/Pressure Test:				Drain Break-In:	No		Gully Condition:		
Distance (m)	Code	Clock Ref at to		Dia mm	Intrusion % mm		Shared Run:	Yes	
							If Shared How:	With flats	
0.00	ST						Remarks	Surface Material	Length (m)
1.20	LR						Line deviates right	slabs	2.2
1.80	DE				20		Debris	under x2	6
4.40	MC						To Vc		
8.20	LU						Line deviates up		
8.20	FH						Reached upstream		

Comments:

Manhole Details

Sheet:

1 of 1

Site:

15 Mallard Way,

Job No.:

509700

Date:

30/05/18

Client:

Cunningham Lindsey - Maidstone

MH:-MH1

Depth:-900

(mm)

Depths of run if different to invert level:-

Run	Depth (mm)

Manhole Condition:-

Very 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