

SITE INVESTIGATION FACTUAL REPORT

Report No: 472002
Client: Crawford Claims Management
Site: South lodge, Stanbury Park
Client Ref: [REDACTED]
Date of Visit: 06/11/17

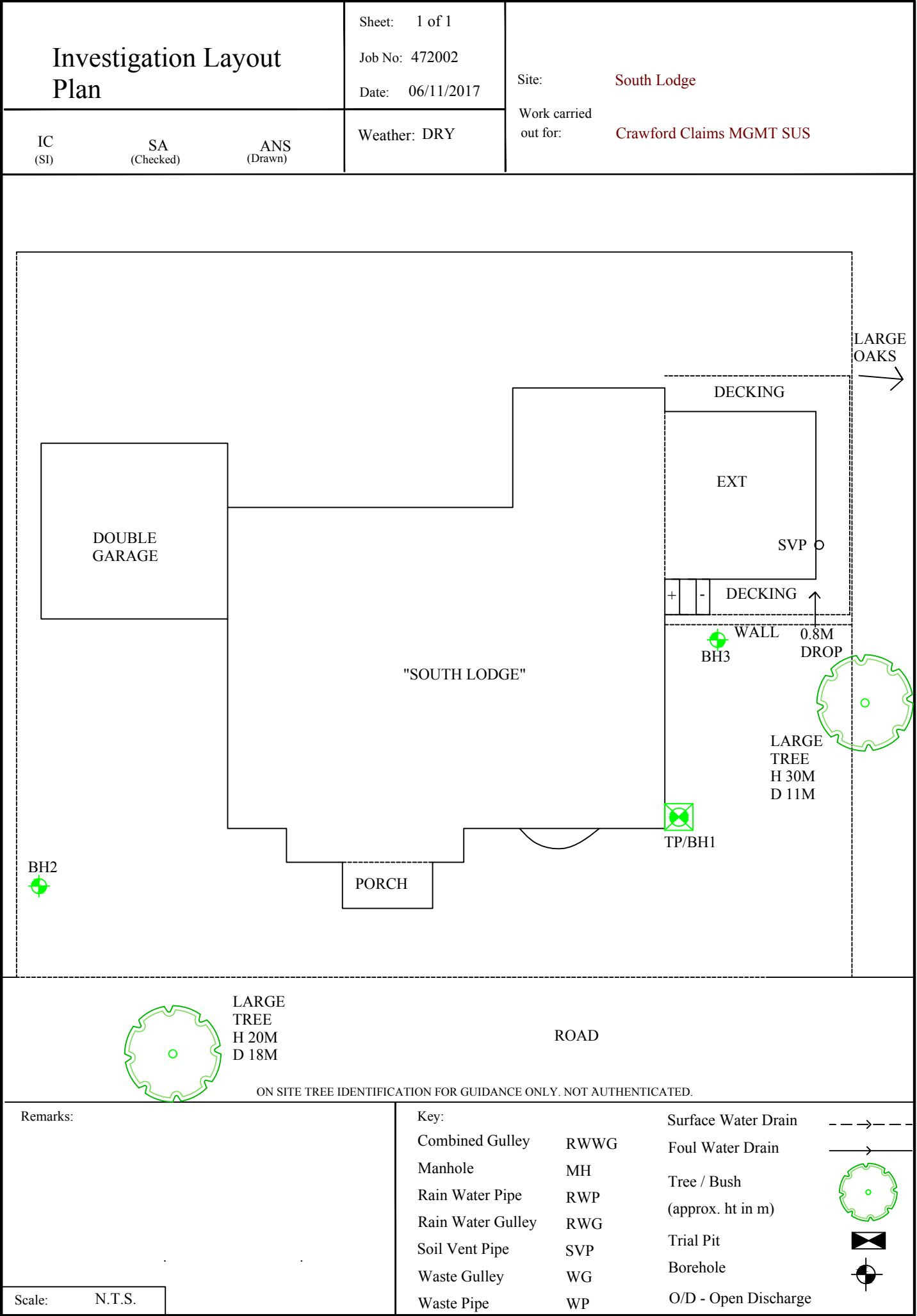


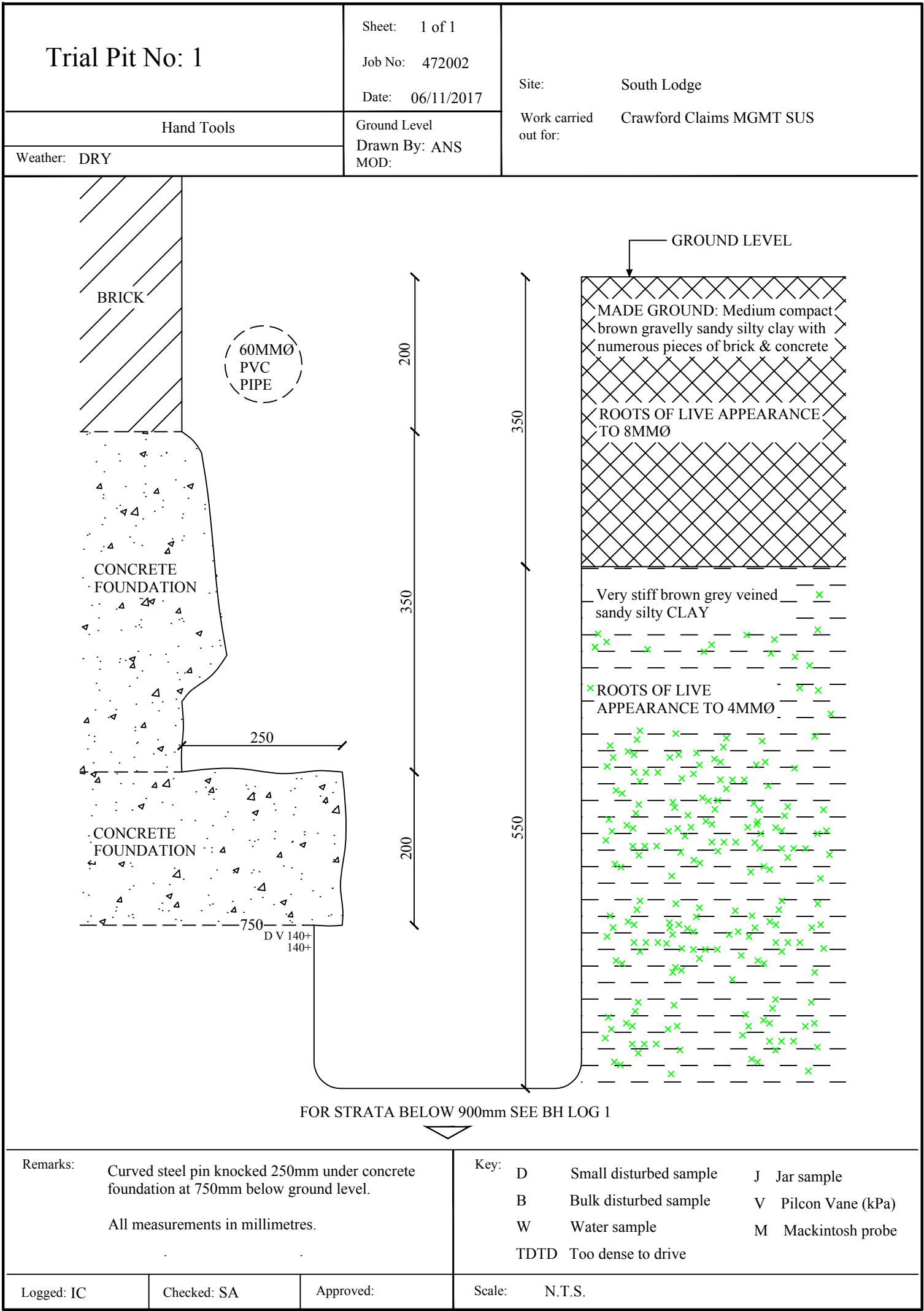
Home Emergency Response - Subsidence Investigation - Drainage Services – Crack & Level Monitoring – Property Video Surveys

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





Borehole		1		Sheet:	1 of 1	Site:	South lodge				
				Job No:	472002						
				Date:	06/11/2017						
Boring Method:		Rotary Auger		Ground Level:		Client:	Crawford Claims Management				
Diameter (mm):		100	Weather:	dry							
Depth	Soil Description						Samples and Tests				
(m)						Thickness	Legend	Depth	Type	Result	
0.00	See Trial Pit					0.90					
0.95	Very Stiff brown-grey veined silty sandy CLAY					1.10					
								1.00	DV	140+	
										140+	
								1.50	D		
2.00	Very Stiff moist grey silty sandy gravelly CLAY					0.70		2.00	DV	140+	
										140+	
								2.50	D		
2.70	Medium Dense Wet brown-grey clayey gravelly SAND					1.50					
								3.00	DM	25	
										19	
										27	
										19	
								3.50	D		
							4.00	D			
4.20	Medium Dense Wet orange-brown gravelly SAND					0.80					
								4.50	D		
5.00	End of BH										
Remarks:					Key:					To	Max
BH ends at 5.0m .BH collapsed to 3.4m on completion.No roots observed below 3.0m.No insitu strength tests carried out below 3.0m due to collapseds BH.Unable to extract sample at 5.0m.					D - Disturbed Sample					Depth	Dia
					B - Bulk Sample					(m)	(mm)
					W - Water Sample Roots					2.00	3
					J - Jar Sample Roots					3.00	1
					V - Pilcon Shear Vane (kPa± Roots						
					M - Mackintosh Probe Depth to Water (m)						
					TDTD - Too Dense To Drive						
Logged:	ic	SA	Checked:	Approved:	Version	V1.0 28/01/16			N.T.S.		

Borehole		2			Sheet:	1 of 1	Site:	South lodge				
					Job No:	472002						
					Date:	06/11/2017						
Boring Method:		Rotary Auger			Ground Level:			Client:	Crawford Claims Management			
Diameter (mm):		100	Weather:		dry							
Depth	Soil Description							Samples and Tests				
(m)								Thickness	Legend	Depth	Type	Result
0.00	MADEGROUND medium compact moist brown silty sandy clay with occasional brick pieces							0.40				
0.40	Firm brown-grey silty sandy CLAY							1.60				
										1.00	DV	108
												112
2.00	Medium Dense Wet orange-brown gravelly SAND							2.20		2.00	DM	27
												25
												28
												28
										2.50	D	
										3.00	DM	24
												32
4.20	Very Stiff Wet dark grey silty CLAY							0.80				
										4.50	D	
										5.00	D	
5.00	End of BH											
Remarks: BH ends at 5.0m .BH collapsed to 3.7m,no roots observed.No insitu strength tests carried out below 3.0m due to collapsed BH.							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)	
Logged:	ic	SA	Checked:	Approved:	Version	V1.0 28/01/16	N.T.S.					

Borehole		3			Sheet:	1 of 1	Site:	South lodge					
					Job No:	472002							
					Date:	06/11/2017							
Boring Method:		Rotary Auger			Ground Level:			Client:	Crawford Claims Management				
Diameter (mm):		100	Weather:		dry								
Depth	Soil Description							Samples and Tests					
(m)								Thickness	Legend	Depth	Type	Result	
0.00	MADEGROUND medium compact to compact brown silty sandy clay with brick and clinker pieces							0.70					
0.70	Very Stiff brown silty sandy CLAY							1.30					
2.00	Very Stiff brown-grey silty sandy gravelly CLAY							0.40		2.00	DV	140+	
												140+	
2.40	Medium Dense moist brown-grey clayey gravelly SAND							0.30		2.50	D		
2.70	Medium Dense Wet orange-brown clayey gravelly SAND							2.30					
5.00	End of BH												
Remarks: BH ends at 5.0m. BH collapsed to 3.2m on completion. No roots observed below 3.0m, no insitu strength tests carried out below 3.0m due to collapsed BH.							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)			
									3.00	2			
Logged:							ic	SA	Checked:	Approved:	Version	V1.0 28/01/16	N.T.S.

Laboratory Summary Results

Our Ref : 472002

Location : South lodge, Stanbury Park, Wellington Court

Client: Crawford Claims Management

Address: Cartwright House, Tottle Road, Riverside Business Park, NG2 1RU

Date Sampled: 06/11/17

Date Received : 07/11/17

Date Tested : 08/11/17

Date of Report : 15/11/17

Sample Ref		Type	Moisture Content	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]	
1	U/S 0.75	D	17	<5	43	19	24	-0.07	24	CI	168	498			> 140					
	1.0	D	17	<5							168	208			> 140					
	1.5	D	16	<5	53	17	36	-0.02	36	CH	168	352								
	2.0	D	18	<5							168	56.0			> 140					
	2.5	D	14	36	54	14	40	0.01	26	CH	Not suitable for suction testing - Too gravelly									
	3.0	D	21	41	Not suitable for further testing - ENP															
	4.0	D	18	54	Not suitable for further testing - ENP															

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 : 472002

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Client: Crawford Claims Management

Address: Cartwright House, Tottle Road, Riverside Business Park, NG2 1RU

Laboratory Testing Results

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Sample Ref.		Type	Moisture Content	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 *		* Class [16]
TP/BH No.	Depth (m)																	(g / l)		
																		SO ₃ [14]	SO ₄ [15]	
BH2	1.0	D	21	<5	49	19	30	0.08	30	CI	168	52.2			110					
	1.5	D	20	<5	50	17	33	0.08	33	CH	168	71.8								
	2.0	D	18	49	Not suitable for further testing - ENP															
	2.5	D	19	37	Not suitable for further testing - ENP															
	3.0	D	17	69	Not suitable for further testing - ENP															
	4.0	D	17	70	Not suitable for further testing - ENP															
	5.0	D	31	<5	52	20	32	0.34	32	CH	168	29.1								

Test Methods / Notes

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[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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D Disturbed sample (small)
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TP/BH No.	Depth (m)																	SO ₃ [14]	SO ₄ [15]	
BH3	1.0	D	14	<5	48	15	33	-0.03	33	CI	Not suitable for suction testing - Too stiff				> 140					
	1.5	D	15	<5							Not suitable for suction testing - Too stiff									
	2.0	D	16	23	38	14	24	0.06	19	CI	Not suitable for suction testing - Too stiff				> 140					
	2.5	D	14	45	Not suitable for further testing - ENP															
	3.0	D	15	62	Not suitable for further testing - ENP															
	4.0	D	19	58	Not suitable for further testing - ENP															
	5.0	D	Insufficient sample for testing																	

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

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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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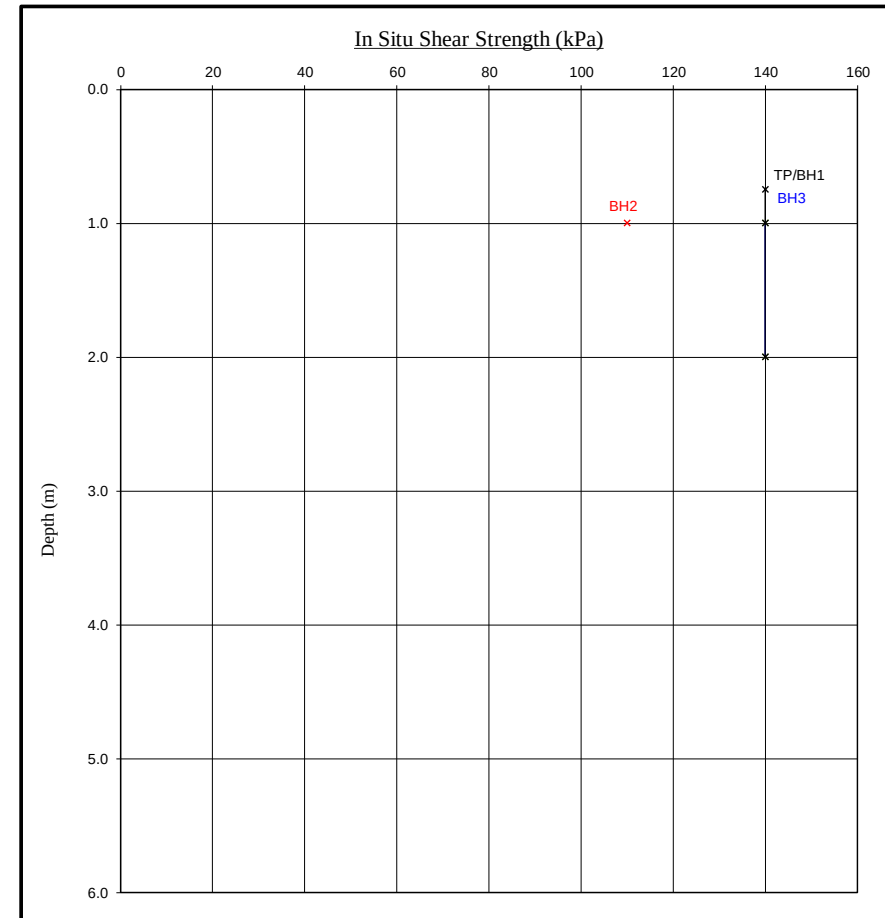
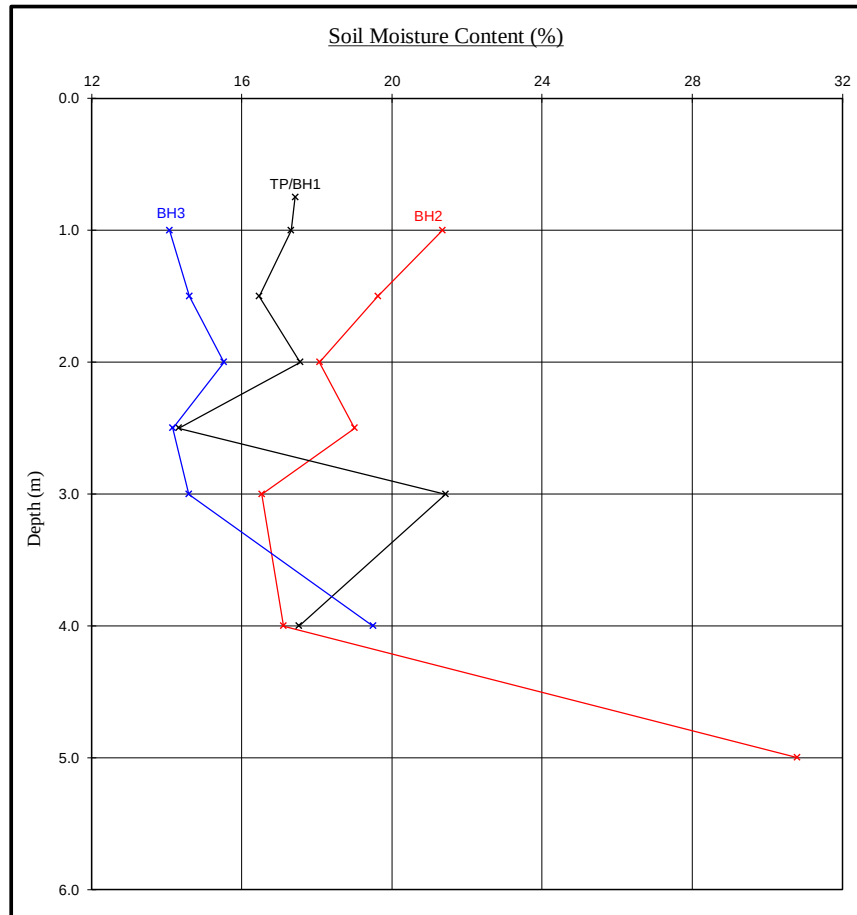
D Disturbed sample (small)
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Moisture Content Profiles

Our Ref : 472002
 Location : South lodge, Stanbury Park, Wellington Court
 Work carried out for: Crawford Claims Management

Date Sampled : 06/11/17
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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.

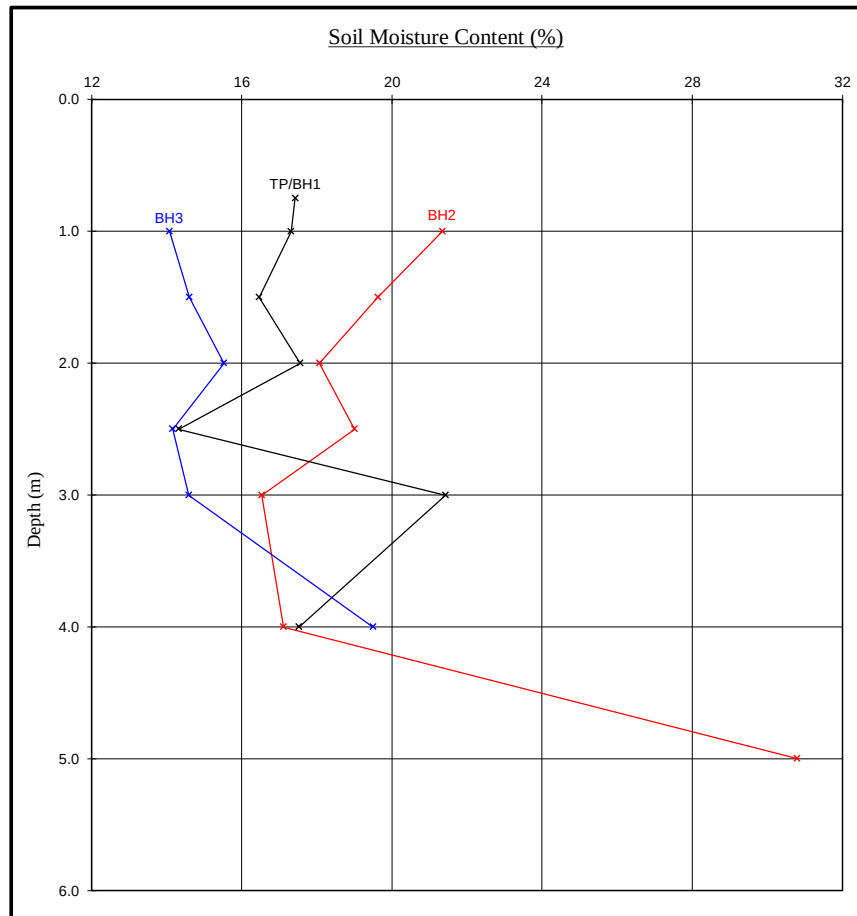
Note

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 : 472002
 Location : South lodge, Stanbury Park, Wellington Court
 Work carried out for: Crawford Claims Management

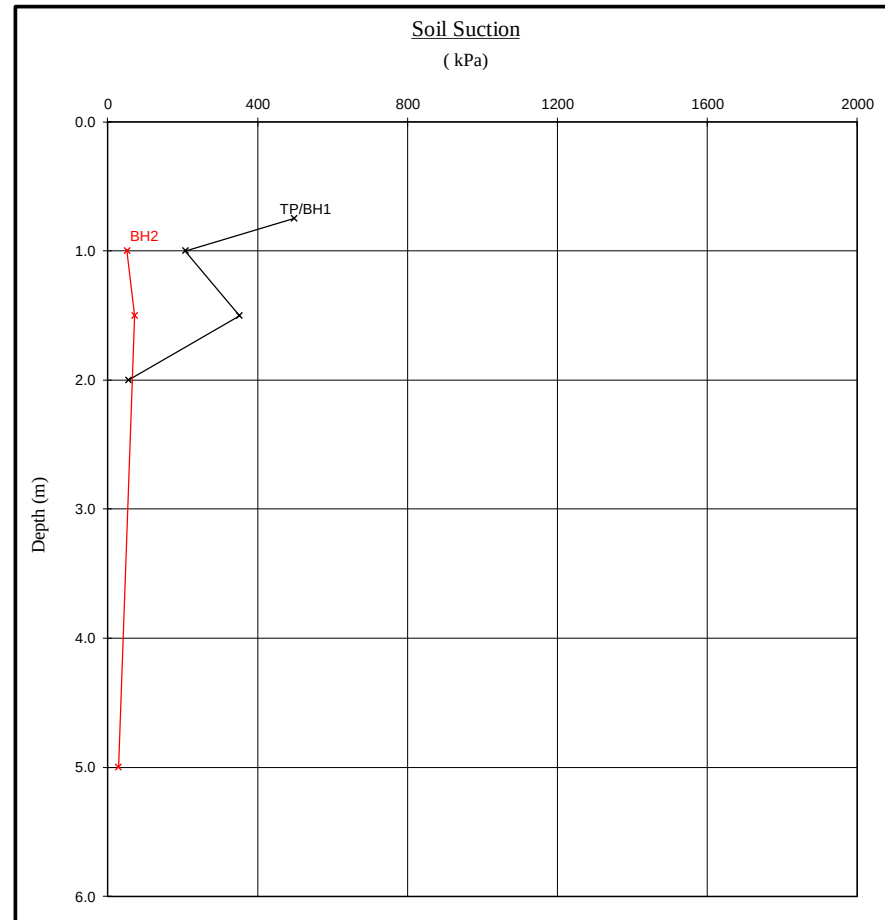
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Notes

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.

Soil Suction Profiles



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 (USF)	4 mm	Taxodiaceae spp. 5 roots	Positive
BH1 (2-3m)	5 mm	Taxodiaceae spp. 3 roots	Positive
BH3 (to 3m)	1.5 mm	Taxodiaceae spp. 3 roots	Positive

Taxodiaceae spp. include coast redwood, dawn redwood, Wellingtonia and Japanese red cedar.



MDM

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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

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