

Supplementary Committee Agenda



**Epping Forest
District Council**

Area Planning Subcommittee East Wednesday, 27th October, 2010

Place: Council Chamber
Civic Offices, High Street, Epping

Time: 7.30 pm

Democratic Services: Gary Woodhall (The Office of the Chief Executive)
Email: gwoodhall@eppingforestdc.gov.uk
Tel: 01992 564470

7. DEVELOPMENT CONTROL (Pages 97 - 118)

Supplementary Agenda

To also consider the Groundwater Movement report attached in respect of the application at 7 Green View, The Green, Theydon Bois.

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Agenda Item 7


**Proposed Basement at
7 Green View, Theydon Bois
Groundwater Movement Report**

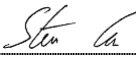
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Project Ref: SJC/613687/JRC
Date: 15 October 2010
Revision: -

Prepared:  James Calvert
(Chartered Engineer)

Checked:  Steve Cox
(Director)

Approved:  Steve Cox
(Director)

Civil, Structural and Building Services Engineers

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Appendix

- MLM letter to Mr Beaumanoir dated 09 September 2010
- Chelmer Site Investigation Report
- Borehole Logs obtained from British Geological Survey (BGS)
- Location map for BGS boreholes

1 Introduction

- 1.1 Further to the Area Planning Subcommittee East meeting of 15 September 2010 and the decision to Defer the decision on whether to grant planning for the development at 7 Green View (planning reference: EPF/1362/10), this report now submits further evidence with regard to the issues raised at the meeting in connection with groundwater.
- 1.2 MLM previously wrote to Mr Beaumanoir on 09 September 2010; see Appendix for a copy of this letter. This letter covered the hydrological concerns raised by the objectors to the proposed development.

In summary, the findings of the letter were:

- The site is underlain by head deposits over London Clay, both are of low permeability.
 - The two borehole logs taken on site (see appendix) confirmed the mapped geology and recorded no groundwater presence (whether standing water or seepage).
- 1.3 The letter concluded that the development would therefore not impact on groundwater and that any waterlogged soils at the surface were due to surface water not being able to pass rapidly into the low permeability soils below.
 - 1.4 The Area Planning Subcommittee East meeting is available online in the form of a webcast and information relating to the reasons for objecting to the proposed development was obtained by viewing the available footage of the meeting. The main concerns raised are addressed in this report.
 - 1.5 In addition Planning Policy Statement 25 (PPS25) was also mentioned and it was suggested by some that a Flood Risk Assessment (FRA) compliant with PPS25 should be undertaken for the development. PPS25 states that an FRA is required when
 - the site is greater than 1 ha,
 - the site is located in flood zone 2 or 3,
 - where the development may be subject to other forms of flooding; and
 - where the Environment Agency (EA), Internal Drainage Board (IDB) or other bodies have indicated there may be drainage problems.
 - 1.6 The development does not fall within the first three points listed above and no evidence has been received from the EA or any IDB or the Local Authority Land Drainage Engineer to indicate that there may be drainage problems that would justify a requirement for an FRA. Therefore an FRA is not required to accompany the planning application for the site. The report presented here specifically addresses groundwater.

2 The Water Table in Theydon Bois

- 2.1 As stated in MLM's letter to Mr Beaumanoir (see Appendix), two borehole investigations were undertaken within the site; neither of these boreholes struck water and there was no seepage into the boreholes. This demonstrates that the water table was not struck and so is at least 10m below ground level in this area.
- 2.2 To investigate the surrounding area further and to supplement these borehole records, MLM obtained through the British Geological Survey (BGS) three more borehole records (see Appendix) from locations in the vicinity of the site. These records show that no groundwater was encountered in any of these boreholes including one to a depth of 80' (24.38m) below ground level. These boreholes are consistent with the onsite borehole records and demonstrate that no water table was found to exist within the depths proven by the boreholes that were up to 24.38m or 80' deep.
- 2.3 There is a well in No 3 Green View and it has been alleged that the presence of this well somehow proves that there is a high water table. The presence of a well in the area is not sufficient to demonstrate that the geology is capable of accepting, transmitting and releasing groundwater/moisture at a productive rate. As stated previously the geology as indicated on regional mapping and recorded within on and off-site boreholes does not support the assertion that significant groundwater flow (movement of water through connected inter-granular pore spaces) is occurring beneath the site (or in the general area).
- 2.4 We do not have any details of the well but sometimes Head material, which overlies the Clay in this area, can have a locally variable granular content within otherwise low permeability soils. This could act as a localised sump which could potentially trap some surface water, which might explain the presence of a small well nearby, but this does not change the fact that the ground conditions within the site have been proven to be of low permeability.
- 2.5 While most of the excavations that have been undertaken on site have remained dry, there are understood to have been some occasions when one excavation has been left open during or following heavy rainfall, that this excavation has become partially filled with water. When this excavations was pumped out it remained dry. This is entirely consistent with waterlogged permeable near surface soils simply draining into an adjacent open excavation, it is not in itself indicative of a high water table, which has been shown by the borehole to be not present.

3 Disruption of Water Table (Groundwater Movement) due to Construction of Basement

- 3.1 The evidence provided in Section 2 of this report shows that the water table is not intercepted or interfered with by the proposed basement development, therefore there is no noticeable disruption to the flow of groundwater within the water table as a result of construction of the basement.
- 3.2 There is no evidence within the borehole records of a high water table within Theydon Bois. There is the possibility of localised waterlogged or poorly drained permeable soils such as topsoil near surface. This is normal where the underlying soils such as clay are of low permeability such that water cannot infiltrate at any noticeable rate into the ground below.
- 3.3 The on-site borehole records do not indicate the presence of groundwater within the site and therefore there proposed basement could not disrupt the movement of groundwater within the site to any noticeable or measurable extent.
- 3.4 The basement walls will need to be fully waterproofed as is normal with any modern basement. This is to guard against the risk of long term seepage of water which could occur from the permeable surface layers into any backfill surrounding the basement.

4 Covering of Garden in Impermeable Material (Concrete)

- 4.1 The development plans show that the top of the concrete cover slab will be approximately 500mm below existing ground levels.
- 4.2 It is also part of the proposals to reinstate the garden to its original level once construction is completed. There will be no increase in run-off rate or volume from the garden post construction as the imported topsoil is likely to be no less permeable than the existing silty Clay, thus retaining any pluvial water no longer than the existing ground would have done. This will not increase overland flow from the development to the watercourse, therefore will not increase flood risk to others downstream of the development.
- 4.3 There is the possibility that land drains may be encountered whilst excavating the basement. If any land drains are uncovered these will be diverted around the basement and reconnected to ensure that there is no disruption to land drainage in the area.

5 Summary

- 5.1 An FRA is not required to accompany the planning application as none of the trigger requirements of PPS 25 paragraph E9 are met.
- 5.2 If any land drains are found within the footprint of the basement they will be diverted around the basement so that their operation is not affected.
- 5.3 The proposed development will not materially affect groundwater flow.
- 5.4 The borehole logs found no groundwater within their full depth of 10 m below ground level on the site. Other published borehole logs in the vicinity obtained by MLM did not show any groundwater.

Appendix

- MLM letter to Mr Beaumanoir dated 09 September 2010
- Chelmer Site Investigation Report
- Borehole Logs obtained from British Geological Survey (BGS)
- Location map for BGS boreholes

Our Ref: 002L/JOH

09 September 2010

Mr M Beauminoir
7 Green View
The Green
Theydon Bois
Essex
CM16 7SD

Dear Mr Beauminoir

**Proposed Basement, 7 Green View, Theydon Bois
Hydrological Concerns**

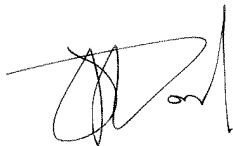
We understand that objections relating to a potential impact on groundwater flows have been raised in regard to the proposed development at the above site.

Having reviewed both the regional geological mapping and engineer's logs of the two boreholes we have the following comments/observations.

- Geological mapping shows that the site is underlain by head deposits over London Clay. Both strata are of low permeability.
- The borehole logs provided to us confirm the presence of the mapped geology and record no groundwater presence (either standing water or seepages).
- Any water logged soils in the area will tend to be due to surface water (from rainfall) being unable to pass rapidly into low permeability soils.

The borehole logs show that there is no groundwater to a depth of at least 10 m beneath the site. We would consider that the proposals will not therefore impact on groundwater. We also consider that two boreholes represent an appropriate investigation of groundwater at the site.

Yours sincerely



James Howard
Hydrologist
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Please respond to our Cambridge office

Encs: MLM Terms and Conditions Revision 3

Civil, Structural and Building Services Engineers

A
Factual Report
of
Site Investigation
undertaken for
Martin Beaumanoir
at
7 Green View
The Green
Theydon Bois
on
16th January 2009



Chelmer Site Investigations,
Unit 15, East Hanningfield Industrial Estate, Old Church Road,
East Hanningfield, Essex CM3 8AB
Telephone: 01245 400930 Fax: 01245 400933
Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

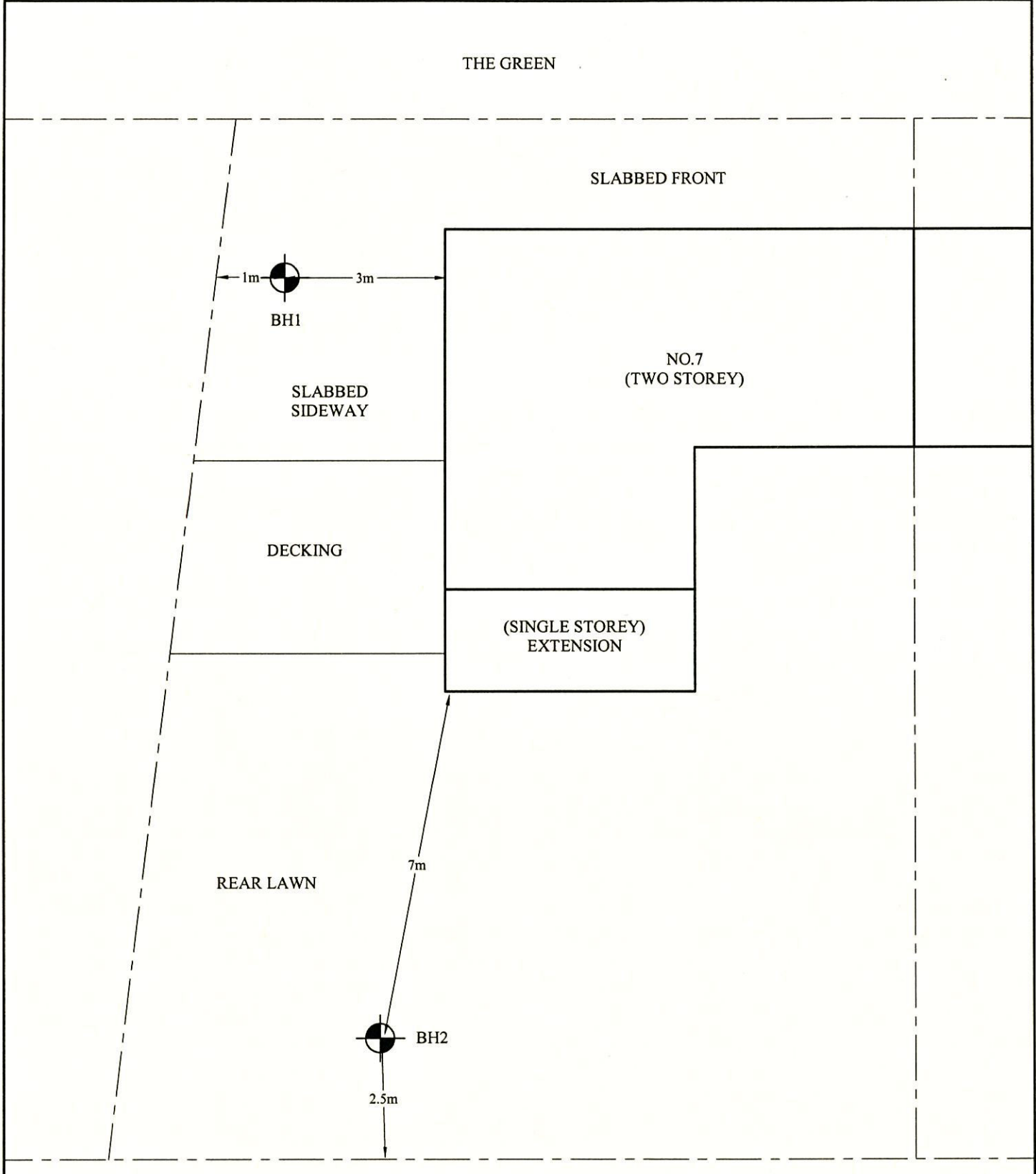


Chelmer Site Investigations

Unit 15 East Hanningfield Industrial Estate
 Old Church Road, East Hanningfield, Essex CM3 8AB
 Telephone: 01245 400930 Fax: 01245 400933

Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

Client: Martin Beaumanoir	Scale: N.T.S.	Sheet No: 1 of 1	Date: 16.1.09	
Location: 7 Green View, The Green Theydon Bois	Job No: 1480	Weather: Overcast	Drawn by: JG	Checked by: ME



Notes: On site tree identification for guidance only. Not authenticated.

Key:

 Tree/Shrub
  Borehole
  Trial Pit
  Gully
  Tree Stump
  Rain Water/ Soil Pipe
  Manhole



Client: Martin Beamanoir		Scale: N.T.S.		Sheet No: 1 of 1		Date: 16.1.09			
Site: 7 Green View, The Green, Theydon Bois		Job No: 1480		Borehole No: 1		Boring Method: C.F.A.			
Weather: Overcast				Drawn by: JG		Approved by: MCE			
Depth Mtrs	Description of Strata	Thickness	Legend	Sample	Test Type	Test Result	Root Information	Depth of Water	Depth Mtrs
G.L.	SLABS OVER SAND	0.10							
0.10	TYPE 1 ROADSTONE	0.10							
0.20	MADE GROUND: medium compact dark brown/grey silty clay with gravel and brick fragments.	0.40		D			Hair and fibrous roots to 1.2m ↓ No roots observed below 1.2m		0.50
0.60	Firm mid brown/orange grey veined silty CLAY with partings of orange and brown silt and fine sand claystone nodules and crystals.	1.00		D	V	68 72			1.00
1.60	Stiff as above.	1.80		D	V	94 100		1.50	
3.40				D	V	122 132		2.00	
				D	V	140+ 140+		2.50	
				D	V	140+ 140+		3.00	
				D	V	140+ 140+		3.50	
				D	V	140+ 140+		4.00	
	Very stiff mid brown silty CLAY with partings of orange and brown silt and fine sand claystone nodules and crystals.	3.10		D	V	140+ 140+		4.50	
				D	V	140+ 140+		5.00	
				D	V	140+ 140+		6.00	
6.50				D	V	140+ 140+		7.00	
				D	V	140+ 140+		8.00	
	Very stiff mid grey silty CLAY with partings of brown silt and fine sand and crystals.	3.50		D	V	140+ 140+		9.00	
				D	V	140+ 140+		10.00	
10.00	Borehole ends at 10.0m			D	V	140+ 140+			10.00

Remarks: Borehole dry and open on completion.

Key: T.D.T.D. Too Dense to Drive

D Small Disturbed Sample
 B Bulk Disturbed Sample
 U Undisturbed Sample(U100)
 W Water Sample
 J Jar Sample
 V Pilcon Vane (kPa)
 M Mackintosh Probe
 N Standard Penetration Test Blow Count



Client: Martin Beamanoir		Scale: N.T.S.		Sheet No: 1 of 1		Date: 16.1.09			
Site: 7 Green View, The Green, Theydon Bois		Job No: 1480		Borehole No: 2		Boring Method: C.F.A.			
Weather: Overcast				Drawn by: JG		Approved by: MCE			
Depth Mtrs	Description of Strata	Thickness	Legend	Sample	Test Type	Result	Root Information	Depth of Water	Depth Mtrs
G.L. 0.10	Turf over TOPSOIL	0.10							
0.70	MADE GROUND: medium compact dark brown/grey silty clay with gravel brick and china fragments.	0.60					Hair and fibrous roots to 1.2m ↓ No roots observed below 1.2m		
2.30	Firm mid brown/orange grey veined silty CLAY with partings of orange and brown silt and fine sand claystone nodules and crystals.	1.60		D	V	68 66			
3.70	Stiff as above.	1.40		D	V	116 120			2.50 3.00 3.50
5.50	Very stiff mid brown/orange silty CLAY with partings of orange and brown silt and fine sand claystone nodules and crystals.	1.80		D	V	140+ 140+			4.00 4.50
6.70	Very stiff mid to dark brown silty CLAY with partings of orange and brown silt and fine sand claystone nodules and crystals.	1.20		D	V	140+ 140+			5.00 6.00
10.00	Very stiff mid grey silty CLAY with partings of brown silty and fine sand and crystals.	3.30		D	V	140+ 140+			7.00 8.00 9.00
Borehole ends at 10.0m				D	V	140+ 140+			10.00

Remarks: Borehole dry and open on completion.

Key: T.D.T.D. Too Dense to Drive
 D Small Disturbed Sample
 B Big Disturbed Sample
 U Undisturbed Sample(U100)
 W Water Sample
 J Jar Sample
 V Pilon Vane (kPa)
 M Mackintosh Probe
 N Standard Penetration Test Blow Count

Chelmer Geotechnical Laboratories

Unit 15 East Hanningfield Industrial Estate Old Church Road East Hanningfield Essex CM3 8AB Tel: 01245 401393 Fax: 01245 400933 Email: info@soillabs.co.uk

Laboratory Testing Results

Job No: CGL01106 Received: 16.01.09
 Client: Martin Beaumanoir CSI Ref: 1480 Tested: 20.01.09
 Site: 7 Green View The Green Theydon Bois Complete: 22.01.09

BH / Sample No	Sample Ref	Depth (m)	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
																	SO3 [12]	SO4 [13]	
1/006164		1.0	D	35	<5	81	27	54	0.15	54	CV			70					
1/006165		2.0	D	32	<5	77	26	51	0.11	51	CV			97					
1/006166		3.0	D	33	<5	80	30	50	0.06	50	CV			137					
1/006167		4.0	D	33	<5	81	29	52	0.06	52	CV			> 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] Values of shear strength were determined in situ by Chelmer Site Investigations using a Picon 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) 2005

Note that if the SO₃ 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
- B Bulk sample
- U U100 (undisturbed sample)
- W Water sample
- ENP Essentially Non-Plastic by inspection
- U/S Underside Foundation

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Laboratory Testing Results

Job No: CGL01106 Received: 16.01.09
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 Site: 7 Green View The Green Theydon Bois Complete: 22.01.09

BH / Sample No	Sample Ref. Depth (m)	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]
																SO3 [12]	SO4 [13]	
2/006168	1.0	D	40	11	86	28	58	0.20	52	CV			67					
2/006169	2.0	D	31	<5	72	27	45	0.10	45	CV			74					
2/006170	3.0	D	32	<5	75	28	47	0.09	47	CV			118					
2/006171	4.0	D	31	<5	76	27	49	0.09	49	CV			> 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] Values of shear strength were determined in situ by Chelmer Site Investigations using a Picon hand vane or Geopon 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) 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

- ### Key
- D Disturbed sample
 - B Bulk sample
 - U U100 (undisturbed sample)
 - W Water sample
 - ENP Essentially Non-Plastic by inspection
 - U/S Underside Foundation

Chelmer Geotechnical Laboratories

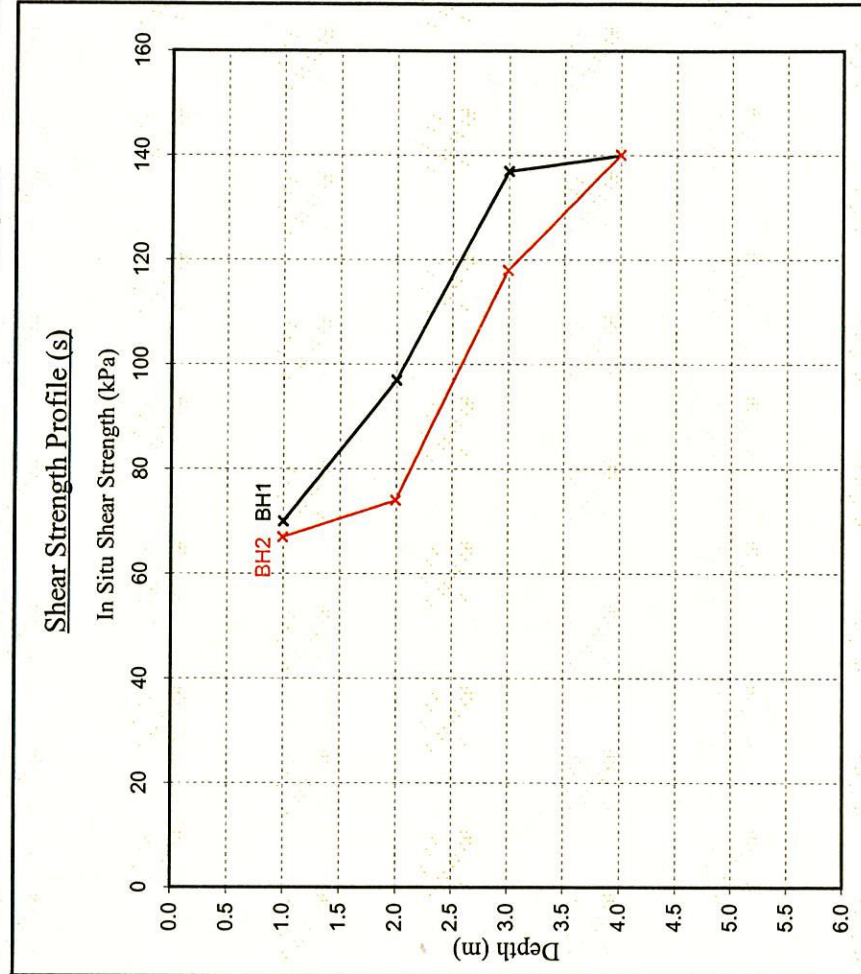
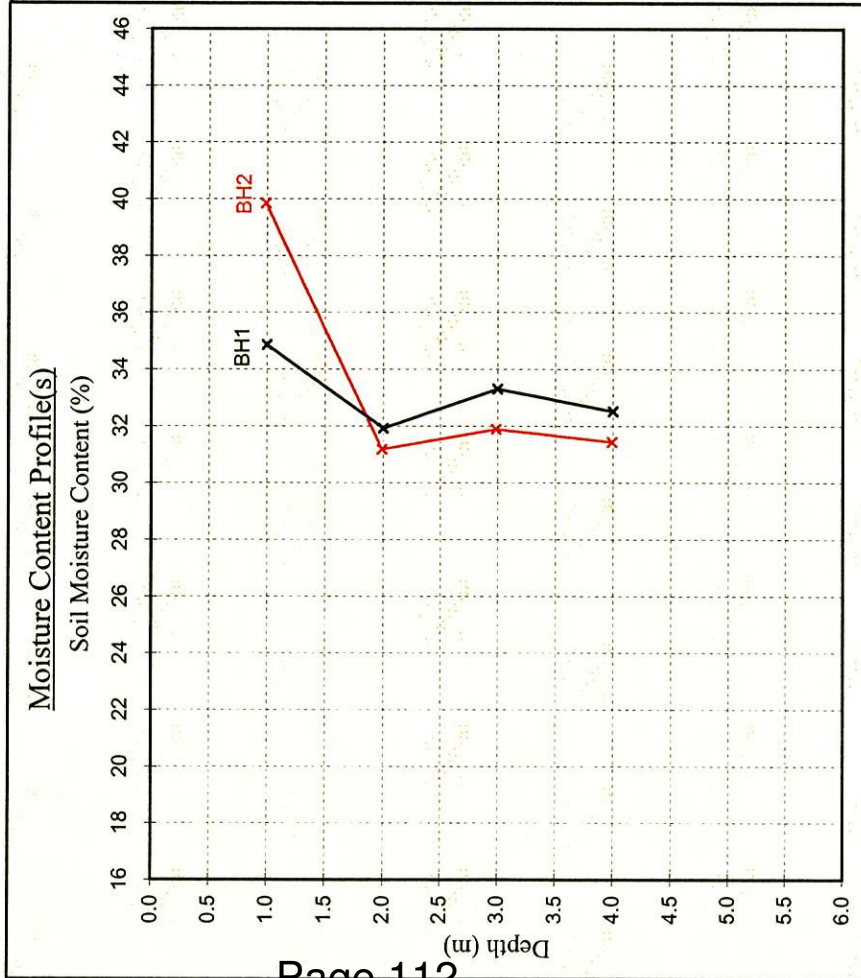
Unit 15 East Hanningfield Industrial Estate Old Church Road East Hanningfield Essex CM3 8AB Tel: 01245 401393 Fax: 01245 400933 Email: info@soillabs.co.uk

Moisture Content and Shear Strength Profiles

Client: Martin Beaumanoir CSI Ref: 1480
 Site: 7 Green View The Green Theydon Bois

Job No: CGL01106
 Received: 16.01.09
 Tested: 20.01.09
 Complete: 22.01.09

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



Notes

- 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.
- 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

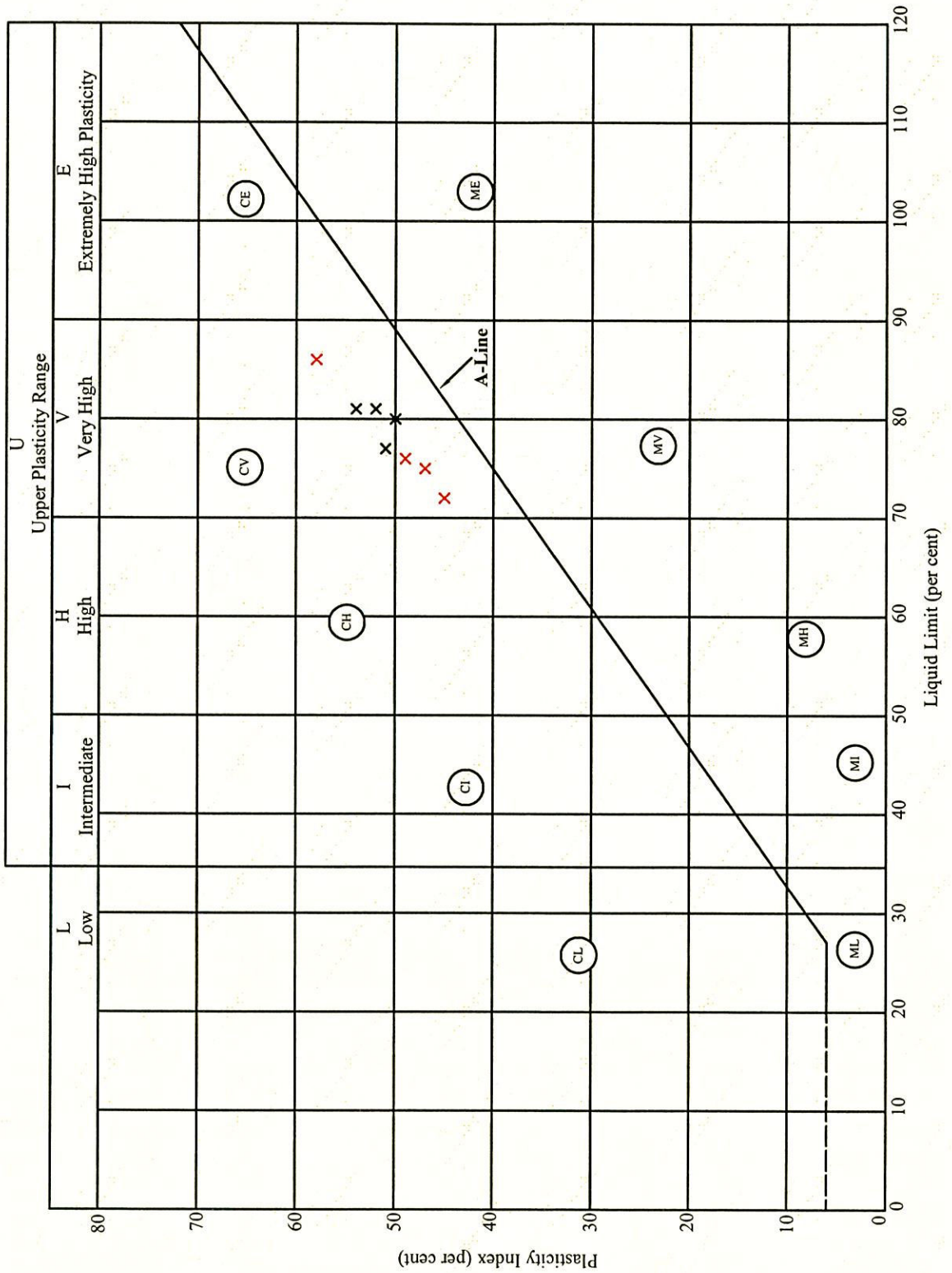
Unless otherwise stated, values of Shear Strength were determined in situ by Chelmer Site Investigations using a Pilon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa.

Chelmer Geotechnical Laboratories

Unit 15 East Hanningfield Industrial Estate Old Church Road East Hanningfield Essex CM3 8AB Tel: 01245 401393 Fax: 01245 400933 Email: info@soillabs.co.uk

Job No: CGL011106
 Client: Martin Beaumanoir CSI Ref: 1480
 Site: 7 Green View The Green Theydon Bois

Received: 16.01.09
 Tested: 20.01.09
 Complete: 22.01.09



Key	
BH 1	X
BH 2	X

Plasticity Chart for the classification of fine soils and the finer part of coarse soils.

In Compliance with BS 5930 : 1981

SILT (M-SOIL), M, plots below A-Line }
 CLAY, C, plots above A-Line }



REPORT NOTES

Equipment Used

Hand tools, Mechanical Concrete Breaker and Spade, Hand Augers, 100mm/150mm diameter Mechanical Flight Auger Rig, GEO205 Flight Auger Rig, Window Sampling Rig, and Large or Limited Access Shell & Auger Rig upon request and/or access permitting.

On Site Tests

By Pilcon Shear-Vane Tester (Kn/m^2) in clay soils, and/or Mackintosh Probe in granular soils or made ground and/or upon request Continuous Dynamic Probe Testing and Standard Penetration Testing.

Note:

Details reported in trial-pits and boreholes relate to positions investigated only as instructed by the client or engineer on the date shown.

We are therefore unable to accept any responsibility for changes in soil conditions not investigated i.e. variations due to climate, season, vegetation and varying ground water levels.

Full terms and conditions are available upon request.

TQ 49 NE / 32
45319890

LOG OF BOREHOLE N° 306

GROUND LEVEL... (71.75m) 235.4 A.O.D.
DATE STARTED..... 22/7/1966
DATE COMPLETED..... 26/7/1966

TYPE OF BORING... SHELL & AUGER
DIA. OF BORING..... 8 ins.
BOREHOLE LINED TO... 25 m O.D.

Geological Formation	Legend	Description of Strata	Depth	Samples	Water Levels
MADE GROUND		FRAGMENTS OF LARGE STONES	2.29m 7' 6"		
GLACIAL BOULDER CLAY		STONES AND CHALK FRAGMENTS IN A MATRIX OF BROWN SILTY CLAY	3.36m 12' 0"		
		FIRM BROWN SILTY CLAY WITH SCATTERED STONES	5.79m 19' 0"	10	
LONDON CLAY		FIRM BLUE FISSURED SILTY CLAY WITH SILT PARTINGS	9.14m 30' 0"		10
		STIFF BLUE			13
		FISSURED			14
		SILTY CLAY			12
					12
				9	
			24.38m 80' 0"		13

REMARKS:
NO GROUNDWATER ENCOUNTERED

KEY:
 WATER STRUCK
 STANDING WATER LEVEL
 UNDISTURBED SAMPLE
 STANDARD PENETRATION TEST
 (25) N° OF BLOWS FOR 12" PENETRATION
 SLIPPED CORE



TECHNICAL SERVICES DEPARTMENT
W. & C. French Ltd., Buckhurst Hill, Essex
BUCKhurst 4444

Location **Theydon Bois.**
Client **Epping & Ongar R.D.C.**
Ground Level

Diameter of Boring **8 in.**

Ref. No. **E.313.**

TQ49 NE 147

BORING RECORD

4S34 9905

Borehole No. **1.**
Date **25th July 1966.**
Depth of Lining Tubes. **Not used.**

Description	D. Level	Leg- end	Sam- ple	Depth	Thick- ness	S.P. or Vane Test	Depth to Water below ground level
Soft dark brown slightly silty clay with some brick fragments & roots - Topsoil.			○ 1	0	1'-0"		Borehole dry throughout.
			○ 2	1'-0"			
Firm brown & grey mottled CLAY with some pockets of fine orange sand.					4'-0"		
Stiff brown fissured CLAY, light blue, becoming light brown in fissures, with some pockets of fine orange sand & some gypsum crystals.				5'-0"			
			○ 3				
			○ 4				
			○ 5				
			○ 6				
			○ 7			15'-0" penetrated	
			○ 8				
			○ 9				
			○ 10				
			○ 11				
			○ 12				
			○ 13		20'-0"		

Scale: 1 in. to 4 ft.

■ Tube Sample N Standard Penetration Test ▲ Water Sample
○ Disturbed Sample + Vane Test (shear strength in lb/sq. ft.)

F



TECHNICAL SERVICES DEPARTMENT
W. & C. French (Construction) Ltd
01-504 4444

Location Woburn Avenue, Theydon Bois.
Client Epping & Ongar R.D.C.
Ground Level

Diameter of Boring 4 in H/A.

Ref. No. 892

TQ49 NE 153

BORING RECORD

452 988

Borehole No. 2

Date 16th January 1972

Depth of Lining Tubes Not Used

Description	D. Level	Leg- end	Sam- ple	Depth	Thick- ness	S.P. or Vane Test	Depth to Water below ground level
Dark brown sandy organic CLAY with brick rubble.			○ 1	0	0.50		
Firm light grey-brown silty CLAY with pockets red-brown silt.			■ 2	0.50	0.50		
Stiff grey CLAY with some gypsum crystals & a few pockets of organic matter.			■ 3	1.00	0.50		
Firm brown & slightly light grey mottled CLAY with a few gypsum crystals.			■ 4	1.50	1.00		
			■ 5				
			■ 6	2.50			
			■ 7				
Stiff brown fissured CLAY, light grey in a few fissures with a few gypsum crystals.			○ 8				
			■ 9			3.70 pen- trated.	
			○ 10				
			■ 11				
			○ 12				
			■ 13	6.20			Borehole dry throughout.


Scale: 1:50

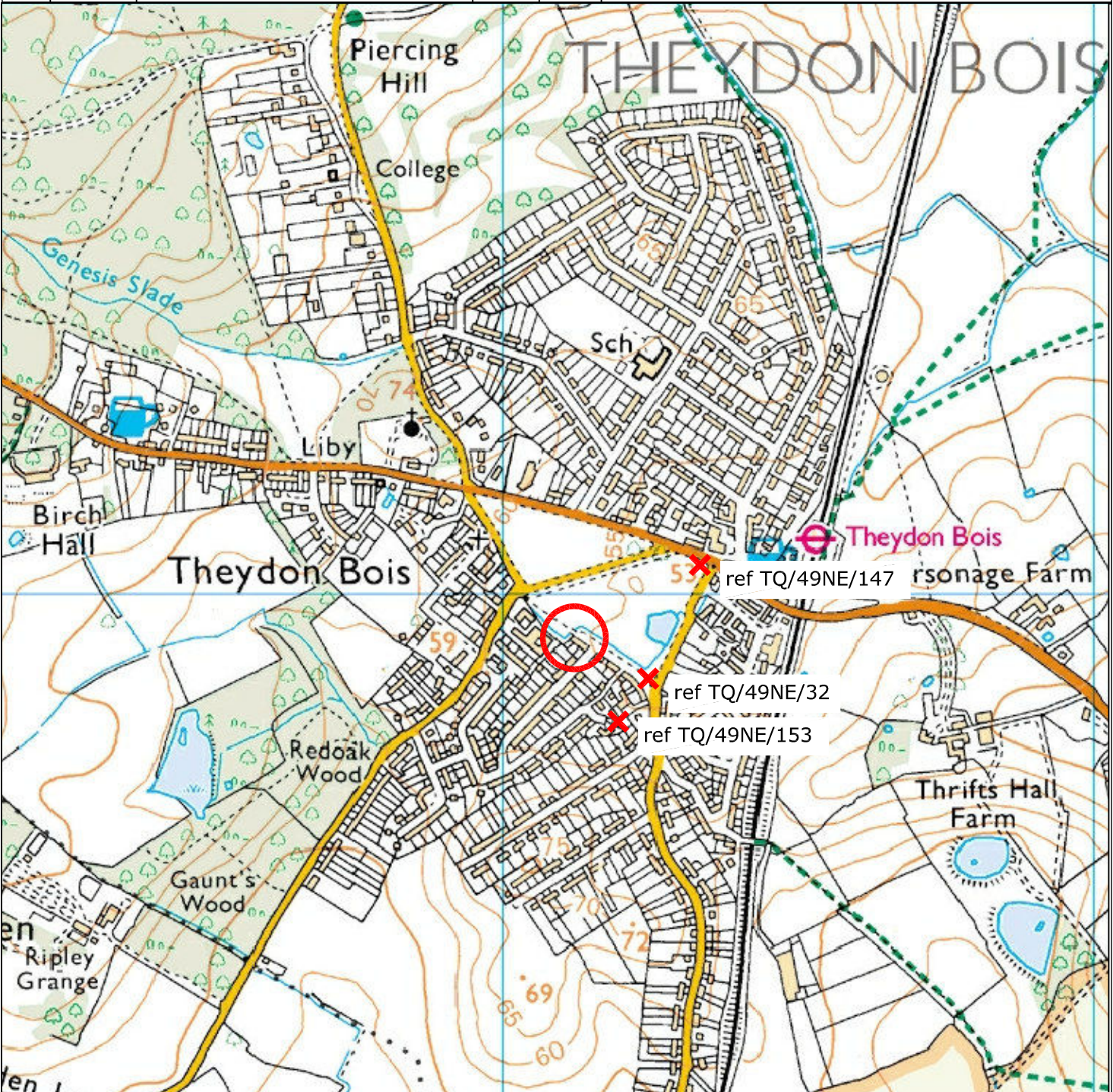
■ Tube Sample N Standard Penetration Test ▲ Water Sample
○ Disturbed Sample + Vane Test (shear strength in $\frac{\text{lb}}{\text{sq. ft.}}$ or $\frac{\text{KN}}{\text{m}^2}$)

Fig. No. 2

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Project 7 GREEN VIEW THEYDON BOIS		Drawn JRC	Drawing No. 613687/100		
Drawing Title BOREHOLE LOCATION PLAN		Checked SJC	Scale NTS		
		Approved SJC	Date 11/10/10		
Rev	Date	Description	Made	Chk'd	Drawing Status: PRELIMINARY



Site Location



ref TQ/49NE/32

Borehole Location/ Reference