



ABBAY PYNFORD

DESIGN CALCULATION SHEET

Project	Designed	JO	Date	Dec 2014	Project No:	GA19787
69 REDINGTON ROAD, LONDON, NW3 7RP	Checked	MJ	Date	Dec 2014	Sheet No.	

APPENDIX C – Soil Investigation Report



Chelmer Site Investigations

Unit 15, East Hanningfield Industrial Estate
Old Church Road, East Hanningfield, Essex CM3 8AB
Telephone: 01245 400 930 Fax: 01245 400 933
Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk



Factual Report

Client:	Shakib & Co
Site:	69 Redington Road London NW3
CSI Ref:	FACT/4310
Dated:	6 th & 7 th March 2014

38 FA17536

FJ 14302

(NW3 7RG) →

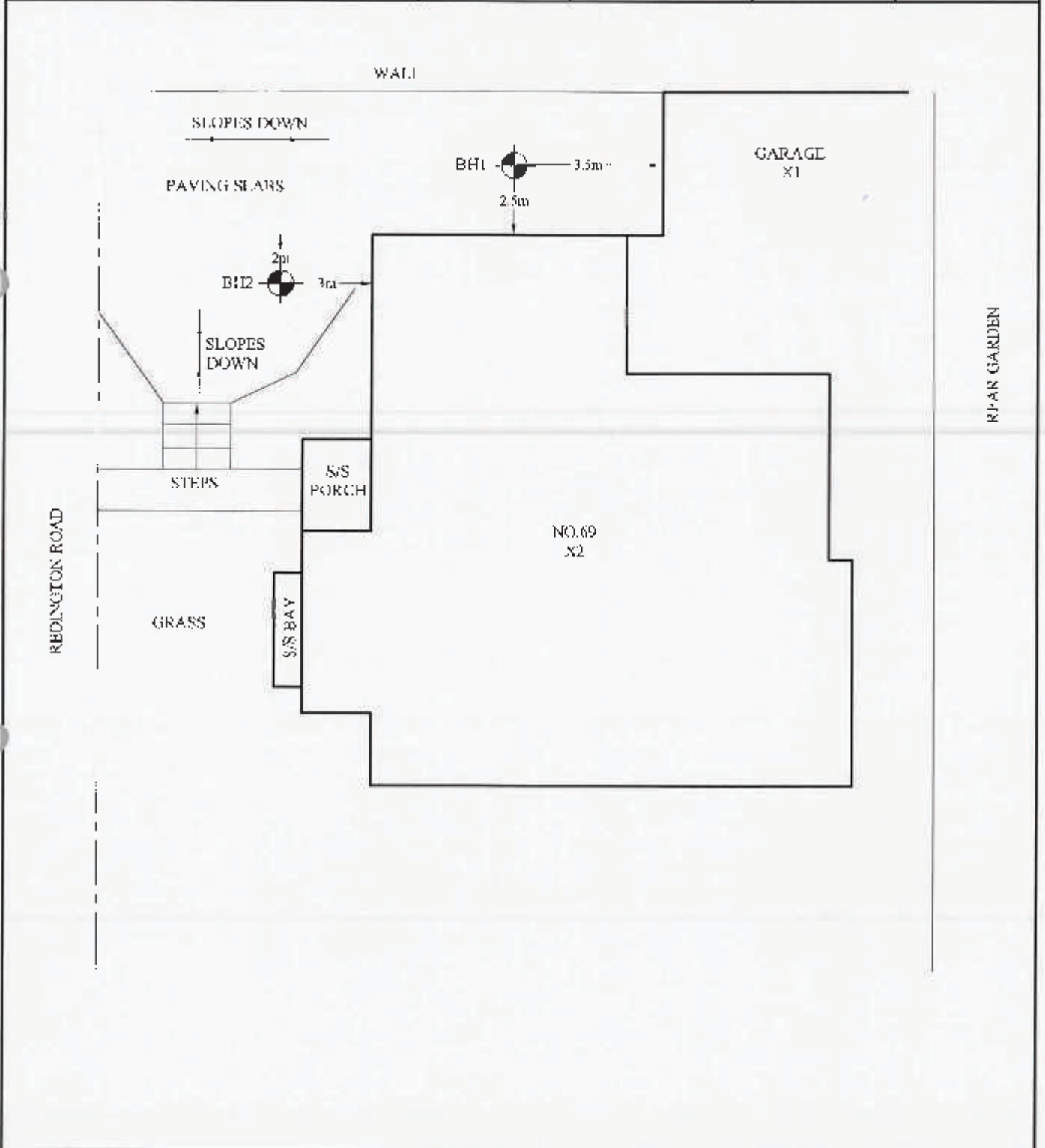
Chelmer Site Investigations

Unit 15 East Hanningfield Industrial Estate
 Old Church Road, East Hanningfield, Essex CM3 8AB
 Telephone: 01246 400930 Fax: 01246 400933



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

Client: Shalob & Co	Scale: N.T.S.	Sheet: 1 of 2	Date: 6.3.14
Location: 69 Redington Road, Landon NW3	Job No: 4310	Weather: Overcast	Drawn by: JJI Checked by: ME



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

Key:

Tree/Shrub	Fence	Limit	Gully	Tree Stump	Rain Water Still Type	Manhole
------------	-------	-------	-------	------------	-----------------------	---------

Chelmer Site Investigations

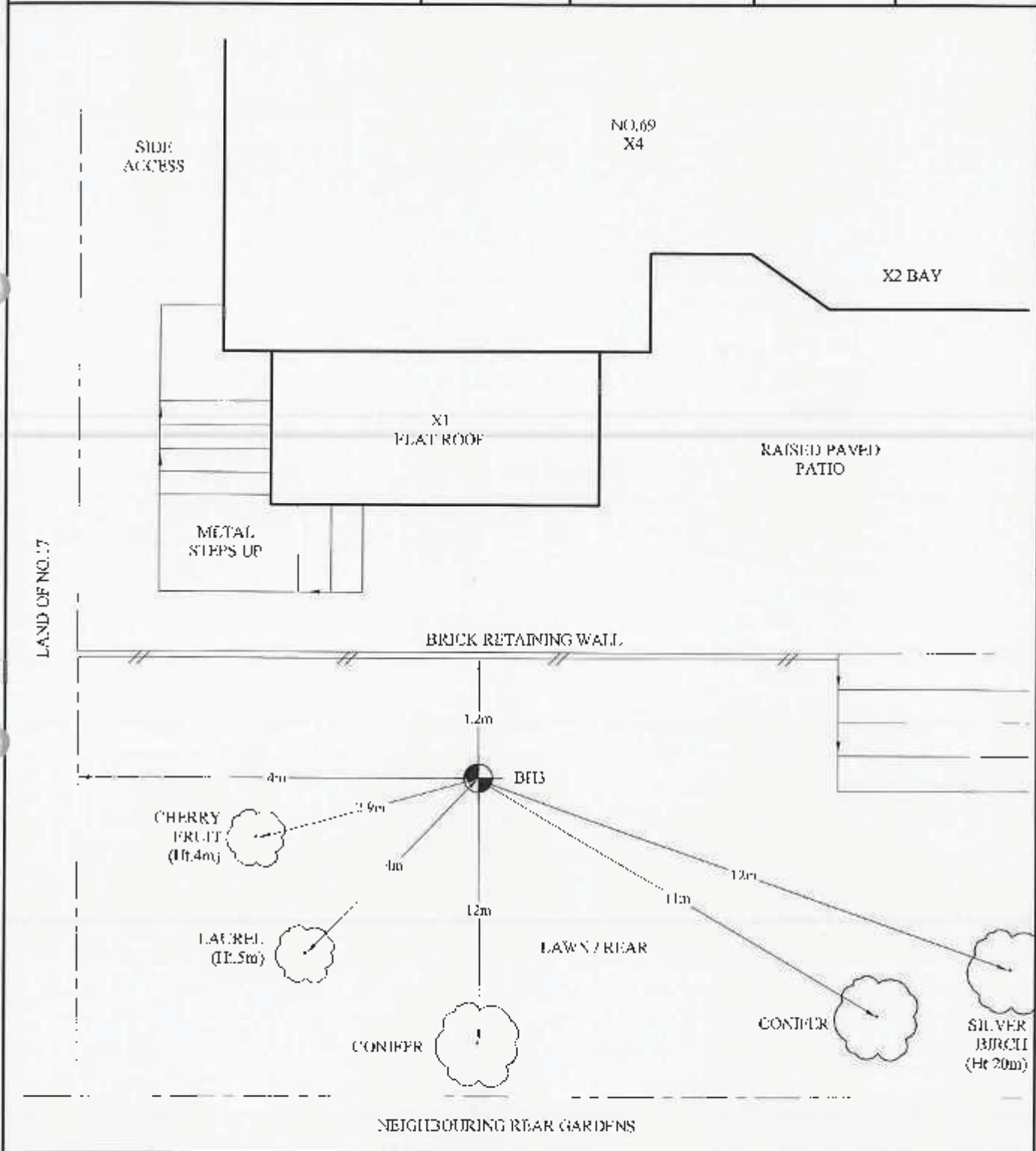
Unit 15 East Hanningfield Industrial Estate
 Old Church Road, East Hanningfield, Essex CM3 8AB
 Telephone: 01245 400930 Fax: 01245 400933



Chelmer
 Site
 Investigations

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

Client: Shakib & Co	Scale: N.T.S.	Sheet: 2 of 2	Date: 6.3.14
Location: 69 Redington Road, London NW3	Job No: 4310	Weather: Overcast	Drawn by: JH Checked by: ME



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

Key:

Tree	Benchmark	Trench	Gully	Tree Stump	Water/Soil Pipe	Manhole
------	-----------	--------	-------	------------	-----------------	---------

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: Stakib & Co		Scale: N.T.S.		Sheet No: 1 of 1		Weather: Overcast		Date: 6.5.14	
Site: 69 Redington Road, London NW3		Job No: 4310		Borehole No: J		Boring method: GEO 205 (150mm Ø) C.F.A.			
Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Result	Root Information	Depth to Water	Depth Mtrs
G.L. 0.1	CONCRETE PAVING SLAB	0.1					No roots observed.		
	Soft, orange-brown, sandy, very silty CLAY.	1.4		D					1.9
becoming firm from 1.5m.			D	SPT	N=14			1.5
				D					2.0
becoming stiff from 2.4m			D					2.5
				U				2.75 - 3.25	
				D					3.5
				D					4.0
4.5				D	SPT	N=19			4.5
				D					5.0
	Stiff, dark brown, silty CLAY, with partings of grey, silt and fine sand.	2.1		U				5.75 - 6.25	
				D				6.25	
6.6				D					7.0
	Stiff, dark grey, silty, very sandy CLAY.	1.4		D	SPT	N=24			7.5
8.0	Borehole ends at 8.0m			D					8.0
Drawn by: JII		Approved by: ME		Key: T.D.T.D. Too Dense to Drive					
Remarks: Groundwater 'seepage' at 6.25m. Plastic standpipe installed to 8.0m on completion. Borehole moist at base and open on completion.				D Small Disturbed Sample		J Jar Sample			
				B Bulk Disturbed Sample		V Pilon Vane (kPa)			
				U Undisturbed Sample (U100)		M Mackintosh Probe			
				W Water Sample		N Standard Penetration Test Blow Count			

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: Shakib & Co		Scale: N.T.S.		Sheet No: 1 of 1		Weather: Overcast		Date: 6.5.14	
Site: 69 Redington Road, London NW3		Job No: 4310		Borehole No: 2		Boring method: (H) 205 (150mm Ø) C.F.A.			
Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Result	Root Information	Depth to Water	Depth Mtrs
G.L. 0.12	CONCRETE PAVING SLAB	0.12							
	Soft, orange-brown, sandy, very silty CLAY, with partings of orange and brown silt and fine sand.	4.4		D			No roots observed.		1.0
	...becoming firm from 1.5m.			D	SPT N = 13			1.5	
	...becoming stiff from 2.3m.			D				2.0	
				D				2.5	
				U				2.75 - 3.25	
				D				3.5	
				D				4.0	
				D	SPT N = 18			4.5	
				D				5.0	
5.4				C				(No recovery) 5.75 6.3	6.25
	Stiff, dark grey, silty, very sandy CLAY.	2.6		D				7.0	
				D	SPT N = 19		7.5		
8.0	Borehole ends at 8.0m			D			8.0		
Drawn by: JLL		Approved by: ME		Key: T, D T.D. Too Dense to Drive D Small Disturbed Sample J Jar Sample B Bulk Disturbed Sample V Pilon Vane (kPa) U Undisturbed Sample (U100) M Mackintosh Probe W Wiger Sample N Standard Penetration Test Blow Count					
Remarks: Groundwater 'seepage' at 6.2m. Borehole wet and open on completion. Standpipe installed to 7.0m									

Chelmer Site Investigations

Unit 15 East Hanningfield Industrial Estate
Old Church Road, East Hanningfield, Essex CM3 8AB
Telephone: 01246 400930 Fax: 01245 400933



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

Client: Shakib & Co		Scale: N.T.S.	Sheet No: 1 of 2	Weather: Overcast	Date: 7.3.14			
Site: 69 Reddington Road, London NW3		Job No: 4310	Borehole No: 3	Boring method: Secondman (100mm Ø) C.F.A.				
Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type Result	Root Information	Depth to Water	Depth Mtrs
G.L.	TOPSOIL with occasional gravel and brick fragments	0.2				Roots of live appearance to 1mmØ to 0.2m.		
0.2	Firm, moist, orange-brown, grey veined, sandy, very silty CLAY. becoming stiff from 1.4m.	2.6		D		Hair and fibrous roots to 1.1m.		0.5
				D	V 60 64	No roots observed below 1.1m.		1.0
				D				1.5
				D	V 88 94			2.0
				D				2.5
2.8	Very stiff, moist, brown, silty, sandy CLAY, with brown, silt and fine sand.	1.0		D	V 140 140-			3.0
				D				3.5
3.8	Very stiff, grey, silty CLAY, with partings of grey, silt and fine sand.	1.1		D	V 140 140-		4.0	4.0
				D				4.5
4.9	Very stiff, grey, silty, very sandy CLAY.	1.0		D	V 140+ 1401		4.9	5.0
				D				5.5
5.9	Medium dense, wet, grey, clayey, silty, fine to medium SAND.	1.1		D	M 19 19 20 21	SPT N = N300 x D.1 N = 8		6.0
Drawn by: MM		Approved by: ML		Key: T.D.T.D. Too Dense to Drive				
Remarks: Groundwater standing at 4.9m Groundwater 'seepage' at 4.9m				D Small Disturbed Sample J Jar Sample B Bulk Disturbed Sample V Pilon Vane (kPa) U Undisturbed Sample (U100) M Marikintosh Probe W Water Sample N Standard Penetration Test Blow Count				
CONTINUED ON SHEET 2 OF 2								

Chelmer Site Investigations

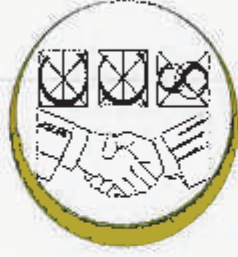
Unit 15 East Hanningfield Industrial Estate
 Old Church Road, East Hanningfield, Essex CM3 8AB
 Telephone: 01245 400930 Fax: 01245 400933



Chelmer
 Site
 Investigations

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

Client: Shalby & Co		Scale: N.T.S.		Sheet No: 2 of 2		Weather: Overcast		Date: 7.3.14	
Site: 69 Reddington Road, London NW3		Job No: 4310		Borehole No: 3		Boring method: Secondmar (100mm Ø) C.F.A.			
Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Result	Root Information	Depth to Water	Depth Mtrs
6.9								6.5	
				D	M	37 35 40 41 + 1/2	~ N = 15		7.0
				D	M	44 48 48 50 / 1/2	~ N = 19		8.0
				D	M	50(50) 50(40) TDTD			9.0
				D	M	50(50) 50(15) TDTD			10.0
	Stiff to very stiff, dark grey, silty, very sandy CLAY.	8.1		D	M	50(40) 50(20) TDTD			11.0
				D	M	50(50) 50(20) TDTD			12.0
				D	M	50(20) 50(20) TDTD			13.0
				D	M	50(20) 50(10) TDTD			14.0
15.0	Borehole ends at 15.0m.			D	M	50(15) 50(10) TDTD			15.0
Drawn by: MIM		Approved by: ME		Key: T.D.T.D. Too Dense to Drive					
Remarks: Circumwater 'strike' at 6.5m Borehole collapsed at 5.0m on completion Standpipe installed to 7.0m.				D Small Disturbed Sample J Jar Sample H Bulk Disturbed Sample V Piloni Vane (kPa) U Undisturbed Sample (U100) M Mackintosh Probe W Water Sample N Standard Penetration Test Blow Count					



Chelmer Consultancy Services
 Unit 15, East Lanningfield Industrial Estate, Old Church Road
 East Hammingfield, Essex CM3 8AB
 Telephone: 01205 400 930 Fax: 01205 400 933
 Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

**Groundwater Monitoring and
 Landbourne Gas Assessment**

Site Ref: 4310
 Site Name: 69 Redington Road, London NW3

Well	Date	Methane Peak	Methane Steady	Methane GSV	Carbon Dioxide Peak	Carbon Dioxide Steady	Carbon Dioxide GSV	Oxygen	Atmos.	Flow	Response Zone	Depth to Water	CO	H2S
		%v/v	%v/v	l/hr	%v/v	%v/v	l/hr	%v/v	mbar	l/hr	m bgl	ppm	ppm	ppm
BH1	14/03/2014	0.1	<0.1	0.0031	0.1	<0.1	0.0001	16.2	1016	0.1		5.02	2	0
	21/03/2014	0.1	<0.1	-0.0001	0.1	<0.1	-0.0001	19.6	997	-0.1	1.00-3.00	1.66	0	0
	27/03/2014	0.1	<0.1	0.0029	0.0	0.0	0.0000	20.6	1002	2.9		5.11	0	0
BH2	14/03/2014	0.1	<0.1	0.0031	0.1	<0.1	0.0001	20.1	1016	0.1		5.40	0	0
	21/03/2014	0.1	<0.1	0.0031	0.2	0.2	0.0002	21.1	997	0.1	0.00-7.00	1.66	0	0
	27/03/2014	0.1	<0.1	0.0034	0.7	0.7	0.0238	21.6	1002	3.4		5.48	0	0
BH3	14/03/2014	0.1	<0.1	0.0031	4.0	4.0	0.004	14.5	1016	0.1		3.25	0	0
	21/03/2014	0.1	<0.1	0.0031	3.3	3.3	0.0033	17.1	997	0.1	0.00-7.00	3.10	0	0
	27/03/2014	0.1	<0.1	0.0019	3.2	3.2	0.0608	17.9	1002	1.9		3.43	0	0

Notes

NR = Not recorded
 Values in Bold exceed the CO₂ Building Regulations threshold (>1.5%)
 Values in Red exceed the Buildings Regulations Action Level (CO₂ >5.0% and CH₄ >1.5%)



Chelmer Geotechnical Laboratories

Unit 15, East Hanningfield Industrial Estate

Old Church Road, East Hanningfield, Essex CM3 8AB

Telephone: 01245 400 930 Fax: 01245 400 933

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



Geotechnical Testing

Client : Shakib & Co

Site Name : 69 Redington Road, London NW3 7RP

Client Reference : CS14310

CGL Reference : CGL03923

Date of Completion : 21-Mar



Content Summary

This report contains all test results indicated on the attached test instruction/summary (Q17).

CGL Reference : CGL03923

Client Reference : CSI4310

For the attention of : Shakib & Co

This report comprises of the following :

- 3 Pages of Results
- 1 Moisture/Shear Strength Chart
- 1 Plasticity Chart
- 1 PSD
- 1 Triaxial

Notes :

General

Please refer to report summary notes for details pertaining to methods undertaken and their subsequent applications

Samples were supplied by Chelmer Site Investigations

All tests performed in-house unless otherwise stated

Deviant Samples

Samples were received in suitable containers	Yes
A date and time of sampling was provided	Yes
Runes damaged and/or denatured	No

Laboratory Testing Results

98-277-950



Job Number: UGL00923
 Client: Shabb & Co
 Client Reference: CS 4310
 Site Name: 55 Reddingo Road - Condo NW3 7RP

Date Received: 13/03/2014
 Date Testing Started: 17/03/2014
 Date Testing Completed: 21/03/2014
 Laboratory Used: Helmer Geotechnical, C/Box 898

Sample ID	Sample No.	UIC	Sample Type	Moisture Content (%)	Soil Classif. (ASTM)	Liquid Limit (%)	Plastic Limit (%)	Shrinkage (%)	Swell Index (ASTM)	Unconfined Comp. Strength (kPa)	Modulus of Elasticity (kPa)	End Class	Fiber Paper Count (mm)	Dist. Sample Size (mm)	Perk Shear Box Strength (kPa)	Organic Content (%)	Flow Value (mm)	Sample Type		
BH2	1.0	49998	D														4.1	C-10	DS-1	
BH2	1.5	49999	D	28	<5	66	20	36	0.23	96	36	CH								
RP2	3.5	50003	D	30	<5	64	19	45	0.24	45	45	CH								
BH2	5.5	50007	D	28	<5	45	16	29	0.42	29	29	CI								
BI 2	7.0	50008	D														7.1	0.10	0.12	DS-1

Notes:

- [1] IS 1377 Part 2: 1960, Test No 12
- [2] BS 5930: 1991, Part 2: 1991, Test No 12
- [3] BS 1377 Part 2: 1960, Test No 12
- [4] BS 1377 Part 2: 1960, Test No 12
- [5] BS 1377 Part 2: 1960, Test No 12
- [6] BS 1377 Part 2: 1960, Test No 12

Key:

- D: Disturbed sample
- E: Bulk sample
- C: 100mm undisturbed sample
- A: Water sample
- EMF: Essential for Plastic
- US: Undersize

Comments:

Produced by: VTL
 Checked By: GK
 Date Checked: 24-Mar-14

Laboratory Testing Results



25/03/2014

Job Number: CG-03023
 Client: Sheikh & Co
 Client Reference: 03/4310
 Site Name: E9 Redgiff Road, London NW3 7EP
 Date Received: 13/03/2014
 Date Testing Started: 17/03/2014
 Date Testing Completed: 27/03/2014
 Laboratory Used: Halmes Geotechnical, CH3 4AB

Sample No.	Specimen	Moisture Content (%)	Soil Group	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Quality Index	Moisture Plasticity Index	Soil Class	# Per Page	Soil Sample	Test Strength	Depth	pt value	Soil	Soil	Soil
SP-100%	Uplift	(%)	(S&M)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
BH3	5	50012	D	<5	18	34	0.27	39	CH					4.4	<0.01	<0.01	DS-1
BH3	3.0	50014	D	<5	17	34	0.34	34	CH			>140					
BH3	4.5	50018	D	<5	17	52	0.25	52	CH								
BH3	6.0	50021	D														
BH3	7.0	50022	D	<5	14	26	0.79	25	CI					7.2	0.18	0.22	DS-1
BH3	10.0	50025	D	<5	17	30	0.40	30	CI								
BH3	12.0	50027	D	<5	11	29	0.85	29	CI					7.4	0.31	0.27	DS-1
BH3	15.0	50030	D	<5	16	26	0.70	26	CI								

Notes:

- [1] BS 1377 - Part 2, Test No. 2
- [2] BS 1377 - Part 2, Test No. 4
- [3] Estimated (40% otherwise measured)
- [4] BS 1377 - Part 2, Test No. 3.3
- [5] BS 1377 - Part 2, Test No. 4
- [6] BS 1377 - Part 2, Test No. 4
- [7] BS 1377 - Part 2, Test No. 4

Comments:

1) BS 1377 - Part 2, Test No. 2

2) BS 1377 - Part 2, Test No. 4

3) BS 1377 - Part 2, Test No. 3.3

4) BS 1377 - Part 2, Test No. 4

5) BS 1377 - Part 2, Test No. 4

6) BS 1377 - Part 2, Test No. 4

7) BS 1377 - Part 2, Test No. 4

Page 3 of 4

Site Checked: 24/03/14

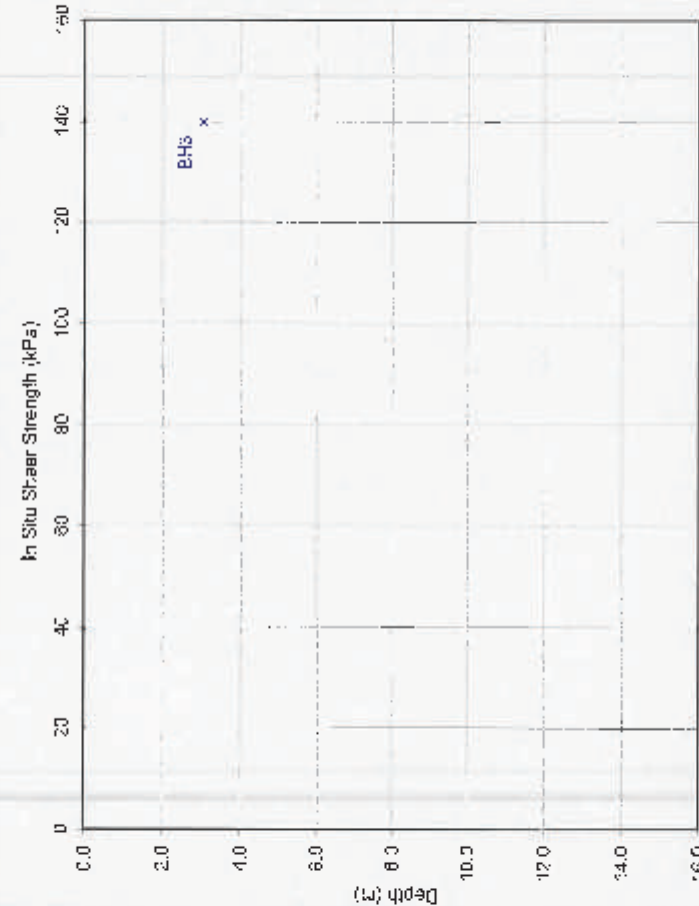
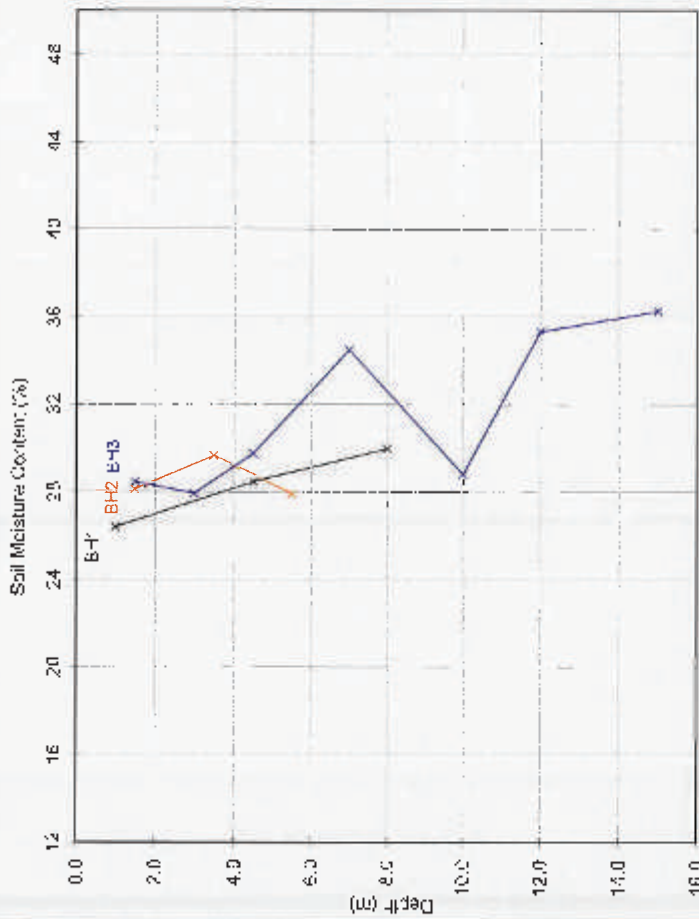
Laboratory Testing Results

Moisture Content/Shear Strength Profile



Job Number : CGL00323
 Client : Shakib & Co
 Client Reference : CS14310
 Site Name : 83 Roxingdon Road, London NW3 7RP

Date Received : 30/03/2014
 Date Testing Started : 17/03/2014
 Date Testing Completed : 21/03/2014
 Laboratory : Cheelmer Geotechnical Laboratories, CM3 6AB



Notes

- If the Soil Factor > 0.425mm sieve size Fraction Moisture Content of the remainder (calculated in accordance with BS 377, Part 2, 1982, at 2.2.7 rule 1) is also plotted and the alternative profile added to soil screen as an appropriately coloured broken line.
- If soaked, 0.425mm sieve (Dry) should only be applied to London Clay (and similarly over consolidated clays) but shallow depths.

Unless otherwise stated, values for Shear Strength were determined in situ by
 Unclassified Investigation using a Plisson Hard Valve (45° calibration) or when limited to
 a maximum reading of 140 kPa.

Comments

Checked by : AK

Data Checked : 24-Mar-14

Laboratory Testing Results

Hi-CHEM for the classification of fine soils, and the finer part of coarse soils in compliance with BS5930 - 1999



Job Number : CG1003023

Client : Sheikh & Co

Client Reference : CS14310

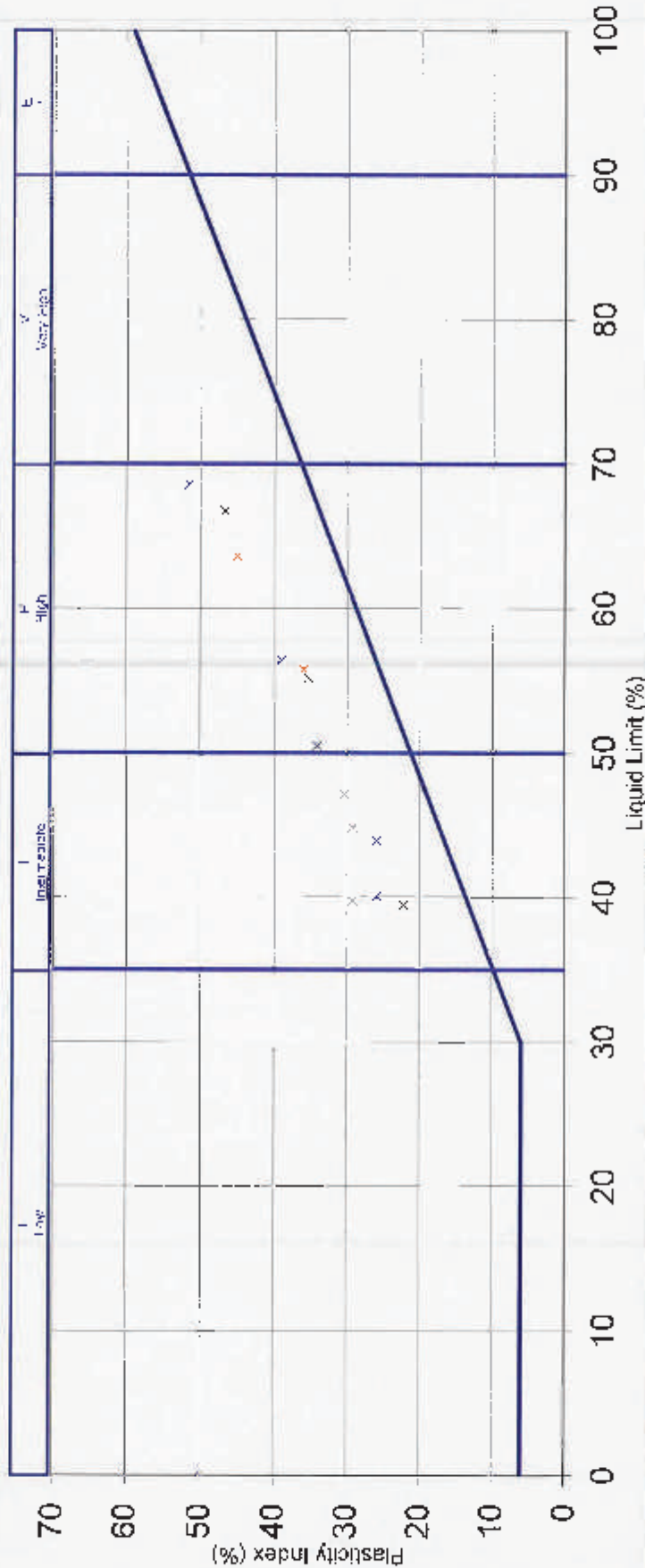
Site Name : 39 Redington Road, London NW3 7RP

Date Received : 13/03/2014

Date Testing Started : 17/03/2014

Date Testing Completed : 21/03/2014

Laboratory : Ghehmer Geotechnical Laboratories, CMS, SAB



Notes -

SILT (in SIL) - 'x' marks below A-Line

CLAY - 'x' marks above A-Line and U-Line

CLAY - 'x' marks above A-Line and U-Line

Comments -

Checked By : AK

Date Checked : 24-Mar-14



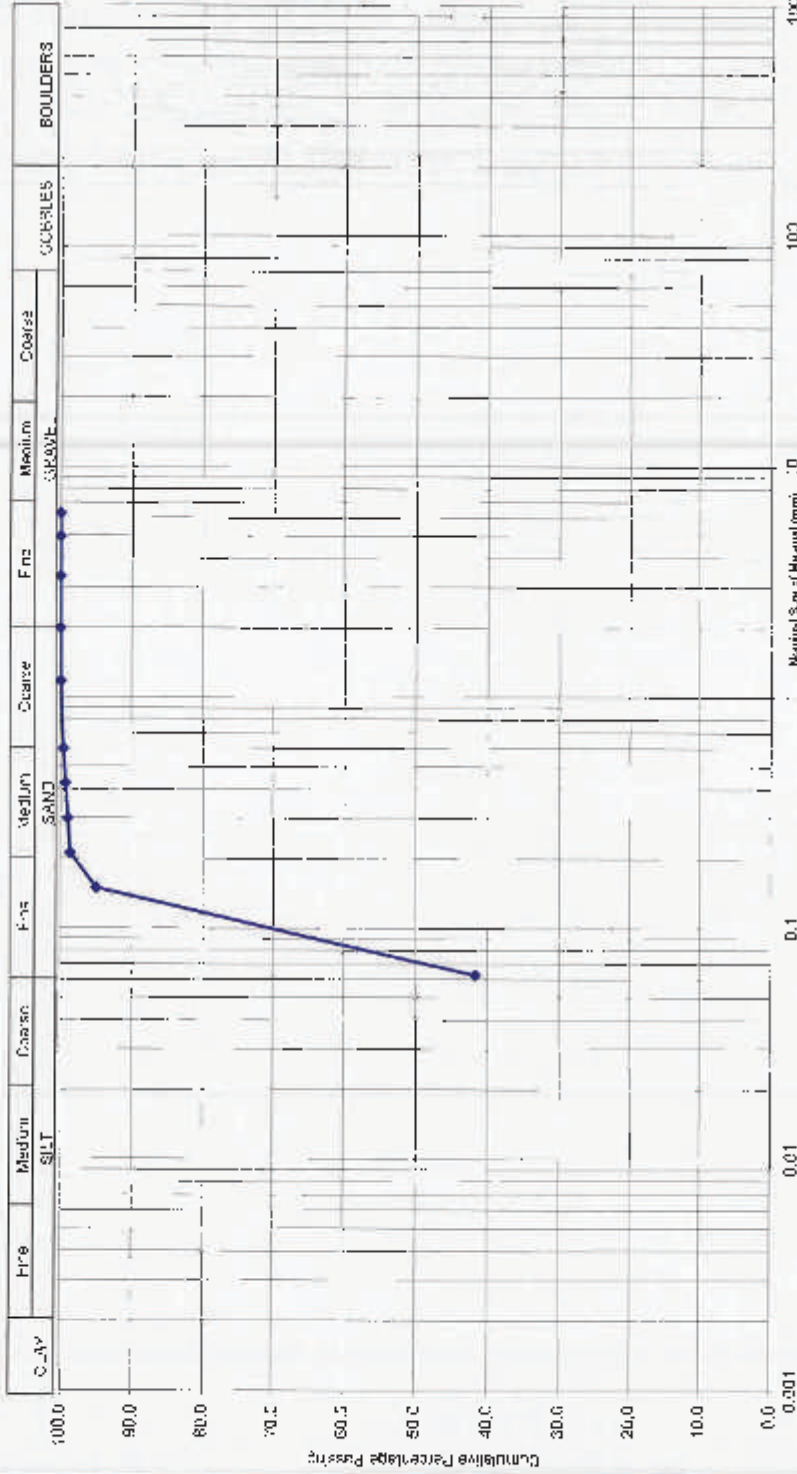
PARTICLE SIZE DISTRIBUTION

BS EN 1277-2:1990

Job Name: CCL23563
 Sample Name: 5B-4
 Depth: 6.5
 Sample Ref: 00021

Site Name: 09 Radtaylor Road, London W3A 7BP

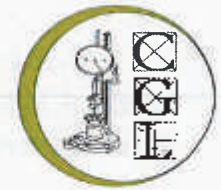
Type of Sample: Washed
 Date: 20-Mar-14
 Tested By: V-
 Laboratory: Chelmer Geotechnical CMS Ltd



Sieve Size (mm)	% Passing
84.0	100.0
75.0	100.0
63.0	100.0
50.0	100.0
37.5	100.0
28.0	100.0
20.0	100.0
14.0	100.0
10.0	100.0
5.0	100.0
3.35	100.0
2.00	100.0
1.18	99.8
0.500	99.2
0.425	99.2
0.300	98.8
0.250	98.8
0.150	98.9
0.085	47.7

Calculations: $F = \frac{M_1 + M_2 + P}{M} \times 100$
 $F = 100P/M$ (with sieving)
 $F =$ Percentage of fines passing 0.075mm
 $M_1 =$ Mass of dried test sample before washing (kg)
 $M_2 =$ Mass of dried residue retained on 0.075mm (kg)
 $P =$ Mass of remaining material remaining in the pan (kg)

Created by: CW Date Checked: 24-Mar-14



TRIAxIAL COMPRESSION TEST RESULTS

BOREHOLE NO.	MOISTURE CONTENT (%)	BULK DENSITY (Mg/m ³)	LATERAL PRESSURE (kN/m ²)	COMPRESSIVE STRENGTH (kN/m ²)	COLLAPSION (kN/m ²)	SHEAR VANE TEST RESULTS
BH1 @ 2.75- 3.25m	28	2.02	70	180	92	110 kN/m ²
			210	185		
			350	188		
BH1 @ 5.75 - 6.25m	25	Not Testable				76 kN/m ²
BH2 @ 2.75- 3.25m	29	2.02	70	176	91	106 kN/m ²
			210	182		
			350	185		
Comments:-						
BH1 - 5.75-6.25m not testable due to high silt and fine sand content. Sample collapsed on extraction.						

SITE:	69 Redington Road, London, NW3 7RP	JOB NO:	CGL03923
DATE:	25/03/2014	TESTED BY:	GW
		CHECKED:	MCE

TESTS CARRIED OUT UNDER UNDRAINED CONDITIONS UNLESS SPECIFIED

Chelmer Site Investigations

Unit 15, East Hanningfield Industrial Estate, Old Church Road
East Hanningfield, Essex CM3 8AB

Telephone: 01245 400 930 Fax: 01245 400 933

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



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.