INVESTIGATION REPORT

ON

CRACK DAMAGE

Name of Insured:	Mutley International Ltd
Address of Insured:	18 Ferncroft Avenue Hampstead London NW3 7PH
Situation of Damage:	Front Right hand Corner of House
Carmichaels Ref:	10/52271/NGH
Date of Investigation:	8 December 2011
Weather Conditions:	Overcast & Dry
Engineer:	Geoff Shoebridge
Engineer's Ref:	GS/JF/11322
Date of Report:	20 January 2012

1. **Relevant Damage to the Property**

External Wall Cracking:

Location Of Damage	Description
Front Elevation	1. 1.0mm stepped vertical crack below bottom right hand corner of Study window. 2. 2.0mm vertical crack below bottom right hand corner bay window. 3. 0.5mm vertical crack at junction left hand side bay with front wall runs up between ground and first floor windows. 4. 0.5mm vertical crack at junction right hand side bay with front wall.
Flank Elevation Front Section	1. Vertical crack above centre of first floor window.
Flank Elevation Main Section	No visible damage noted.

Internal Wall Cracking:

Location Of Damage	Description
Ground Floor	
Hall	1. Full height vertical crack in Study partition beside front door running from ground level up to ceiling. 2. Vertical crack beneath wallpaper above top right hand corner of Sitting Room door. 3. Fine crack in coving above same door. 4. Diagonal crack in coving above Dining Room door, runs diagonally down the wall for a short distance. 5. Possible vertical crack above top left hand corner of Study door where plaster loose and wallpaper peeling.
Study	No visible defects noted.

Dining Room	1. Signs of historic movement at left hand side of bay with Study partition with hairline crack in ceiling above. 2. Ceiling cracks adjacent to chimney breast and party wall to No. 16. 3. Diagonal ceiling crack in rear left hand corner at junction of party wall and Sitting Room wall.
Sitting Room	1. Fine vertical crack above top left hand corner of Hall door. 2. 0.5mm wide cracking in coving and ceiling junction to the front of the chimney breast on the No. 16 party wall, running to the rear of the chimney breast as well. 3. Tapered vertical crack in Kitchen partition, wider at the top (1.0mm), running through the cornice and along the ceiling to the Sitting Room partition (noted that this crack aligns with the chimney breast within the Kitchen on the other side of the wall).
Kitchen	1-2mm wide vertical crack at junction of Utility Room partition and flank wall above wall units and below wall units in tiles behind worktops.
Utility Room	Vertical crack at junction of Kitchen partition and flank wall.
First Floor	
Landing	1. Tapered vertical crack in en-suite partition at the junction of the return external wall, 3mm wide at top. This crack continues at the stair soffit/wall junction with 2-3mm of lateral displacement and shear movement. 2. 1mm crack at cornice/ceiling junction running along the same wall, returns down the Front Bedroom wall then down to the top right hand corner of the Bedroom door.

Front Bedroom	1. Hairline crack above top right hand corner of Landing door continues as a ridge in the wallpaper then as a hairline crack through the cornice. Further diagonal crack was present in the cornice nearby. 2. 1mm wide vertical crack at the top left hand corner of the En-suite Bathroom door, also running through the cornice. 3. Hairline crack at high level at the junction of the En-suite Bathroom partition with the left hand side of the bay, also running through the cornice. 4. 1mm wide diagonal crack at the bottom right hand corner of the bay, with a hairline vertical crack above the window.
En-Suite Bathroom	1. Slight movement noted at wall/ceiling junctions, especially to the front wall. 2. Within the WC a 2-3mm wide vertical crack at the junction of the Landing wall and flank wall, and a 1mm wide crack at the junction of the En-suite stud wall with the flank wall.

BRE Digest 251 Classification: Category 2

Outbuildings/Garage: N/A

Patio/Pavings: N/A

2. **General Comments**

Is Movement Recent? Discovered 2011

3. **Site Conditions**

Terrain/Topography: Gentle fall to left and front.

Subsoil Type Established by Site Investigations: Stiff silty clay becoming sandy clay at depth.

List Trees in Vicinity: See attached site plan.

Any Relevant Knowledge of Subsidence in Area: None known.

Other Factors: BGS Sheet indicates Claygate Beds.

4. **a) Investigations Completed at Time of Inspection**

Trial Pits:	Yes 3 attempted
Boreholes:	Yes 2
Hydraulic Tests on Drainage:	No
CCTV Survey of Private Drainage:	Yes
Others (Specify):	N/A

b) Laboratory Analysis Undertaken

Atterberg Limit:	Yes 5
Moisture Content Profiles:	Yes 2
Root Identification:	Yes
Others (Specify):	No

c) Water main Check No

Survey Requested on Local Authority Drainage: No

5. **Summary of Investigations Completed**

A **Trial Pit 1**

(i) Foundation
- (a) Type: Mass concrete strip
- (b) Depth below ground level: 1050 mm

(ii) Soil
- (a) Type: Stiff silty clay
- (b) Plasticity: highly plastic, therefore, prone to volumetric change with variations in moisture content.

(iii) Roots
- (a) Type: Plane, mahonia, rose & shrubs
- (b) Location of tree root identified: Plane in street to front. Other shrubs within risk address.

A **Trial Pit 2**

(i)	Foundation	(a)	Type: Mass concrete
		(b)	Depth below ground level: 550mm
(ii)	Soil	(a)	Type: Still fissured silty clay
		(b)	Plasticity: highly plastic, therefore, prone to volumetric change with variations in moisture content
(iii)	Roots	(a)	Type: Clematis and Privet
		(b)	Location of tree root identified: Clematis within risk address. Privet in neighbours garden.

A **Trial Pit 3** Attempted but aborted due to drainage present.

(i)	Foundation	(a)	Type: Mass concrete
		(b)	Depth below ground level: Not proved
(ii)	Soil	(a)	Type: N/A
		(b)	Plasticity: N/A
(iii)	Roots	(a)	Type: N/A
		(b)	Location of tree root identified: N/A

B **Drainage**

Refer to Inten Ltd's CCTV Drainage Survey Report for full details of the drainage layout and defects found.

Note that Inten were unable to check the condition of the short branch runs from the main sewer line between manholes 1 and 2 because these were cast iron pipes and therefore could not be breached.

Defects

No defects were found in the main sewer run between manholes 1 and 2 down the right hand side of the property. However, in the run from manhole 2, connection A, towards the combined gully of the front elevation of the house, a number of defects were found including circumferential cracks, encrustation and root infiltration.

Recommendations

Manhole 2, Connection A: Excavate and replace gully, provide suitable benching and kerbing for gully, replace pipe downstream to suitable connection and clean remainder of drain run to remove roots prior to installing a liner down to the manhole.

Cost

£1,660 + VAT

C Engineer's Conclusions

The pattern of cracking within the property is consistent with foundation movement, mainly towards the front right hand corner of the property which includes the Entrance Hall and main stairwell.

The foundations to the house were found to be mass concrete strip footings founded at various depths as follows. In Trial Hole 1 at the front bay, the foundation was 1.05m deep and founded on a stiff silty clay. In Trial Hole 2 at the front right hand corner the foundation was 0.55m deep and again founded on a stiff fissured silty clay. A third trial hole was attempted at the front right hand corner of the flank wall but had to be aborted because of the presence of pea shingle and drainage running down the side of the property.

Roots were found below foundation level in both Trial Hole 1 and Trial Hole 2. In Trial Hole 1 these were identified as being from the Plane tree in the public footpath outside the property, and also from some of the shrubs close to the front wall of the property. In Trial Hole 2 roots were found from the clematis growing close to this corner of the house and also from the privet hedge within the neighbours property along the right hand boundary.

Analysis of retrieved soil samples has confirmed the upper layers of the clay as being of high shrinkability, although below 3 to 4 metres depth the clays became more sandy and were analysed as being of medium shrinkability. Comparison of moisture contents with Atterberg Limits indicates that within Trial Hole 1 the clay soil was slightly desiccated down to 3m depth, but in Trial Hole 2 no desiccation was indicated at the time of investigation.

The CCTV drain survey found no defects from the main sewer run down the right hand side of the property between Manhole 2 at the front and Manhole 1 at the rear, although it was not possible to survey the branch runs. However, defects were found within the run from Manhole 2 at the front to the combined gully adjacent to the front elevation wall. These defects would allow leakage under normal use and could cause softening of the clay soils and loss of support to foundations.

It is therefore concluded that the damage to the house is foundation subsidence, primarily due to the influence of the street Plane trees at the front. Roots were also found from some of the shrubs planted close to the front elevation and these may also have contributed to the desiccation of the clay soils.

It is possible that leakage from the defective drainage at the front may have contributed to the subsidence, although at the time of investigation no particular wetting of soils was noted.

D Engineer's Recommendations

1. Remove mahonia, clematis, rose and other 'woody' shrubs planted too close to the front wall.

2. Contact Local Authority to request removal of the two Plane trees in the pavement to the front. It is noted that these trees had been pollarded, but the frequency of tree maintenance is not known and it appears to be insufficient to prevent tree roots influencing the clay soils beneath foundation.

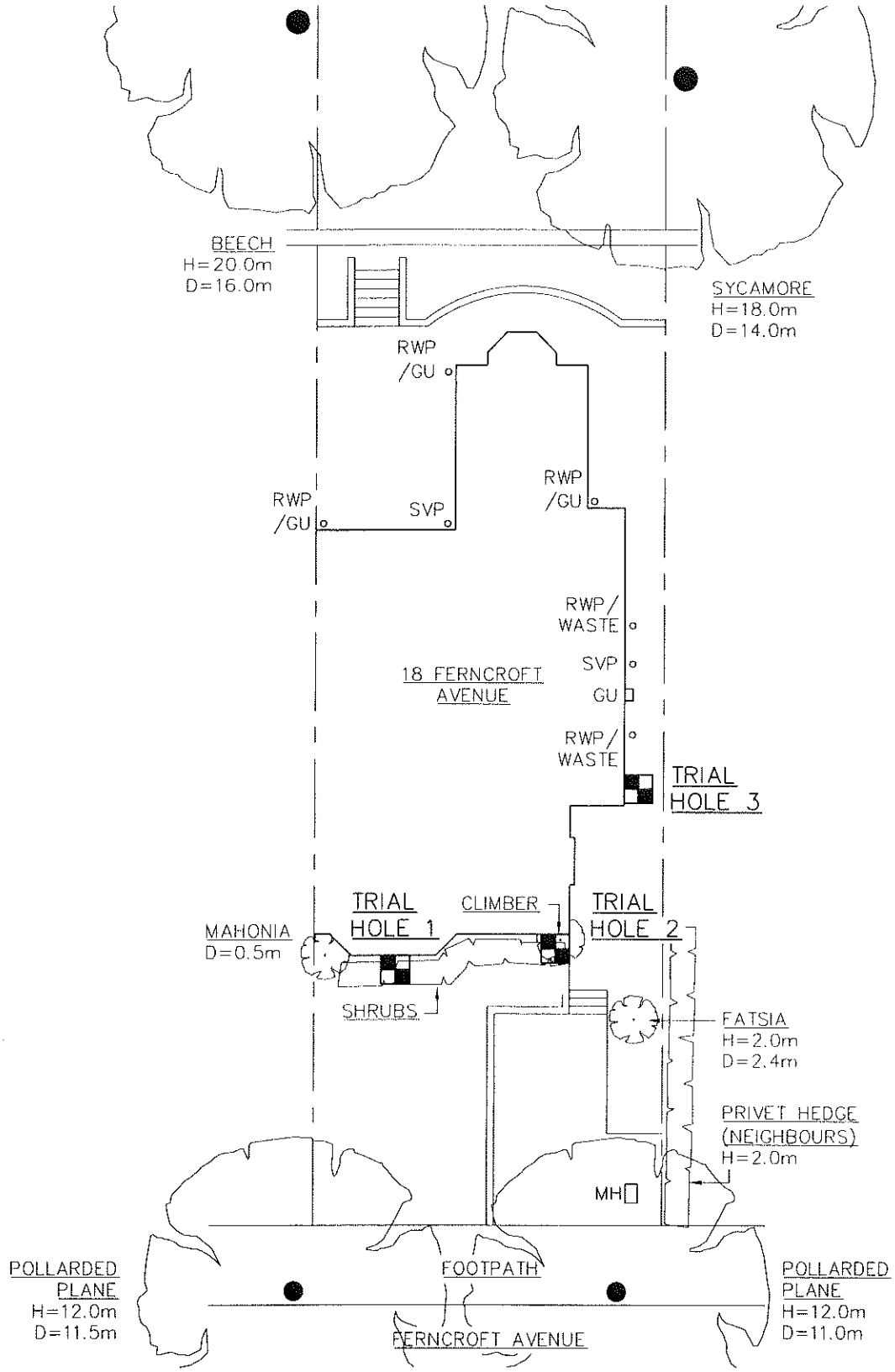
3. Contact neighbour to request cutting back of the privet hedge.

4. Carry out recommended drainage repairs.

5. Monitor at eight weekly intervals prior to and following mitigation works until property stabilises.

6. When property stable carry out superstructure repairs.

GEOFF SHOEBRIDGE
B.Eng. (Tech) (Hons.), C.Eng., M.I.Struct.E., MRICS, M.B.Eng.



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Client
MUTLEY INTERNATIONAL LTD
18 FERNCROFT AVENUE
HAMPSTEAD, LONDON

Drawing Title
TRIAL HOLE LOCATION PLAN

(SHEET 01 of 04)

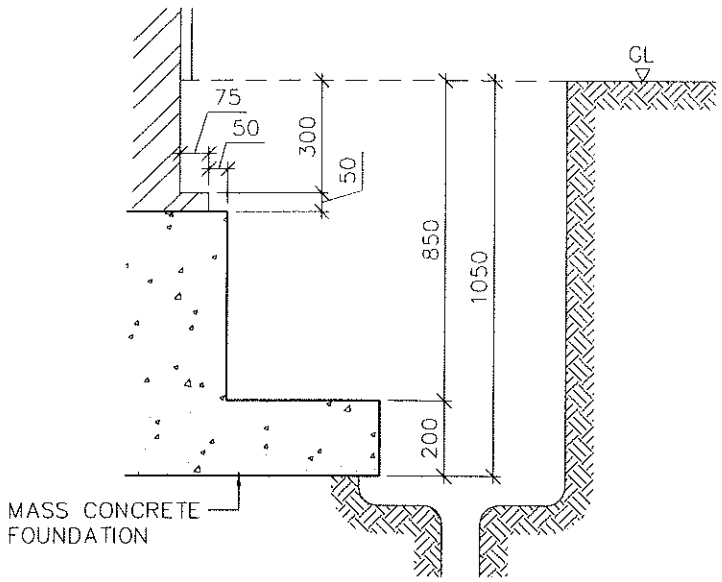
Rev	Description	Date

Scales 1:200 @ A4

Date DEC 2011 | Drawn MJH | Checked GS

Drawing No. 11322 / 01 of 04 | Rev.

Contract: 18 FERNCROFT AVENUE HAMPSTEAD, LONDON Client: MUTLEY INTERNATIONAL LTD		Coordinates: Date: 08/12/11
Equipment & Methods HAND DUG	Job Number: 11322 Borehole Number T.H.1 Location:	Orientation: VERTICAL Ground Level:



Daily Prog.	Water Level	Insitu Tests	Samples Taken	Sample Depths	Remarks	Depth (m)	Strata Descriptions	Red. Level	Legend
						0.00	TOPSOIL + roots		
							Orange sandy CLAY with silt partings.		
		PP	D	1.05	PP=180-210	1.05	Stiff orange brown silty CLAY with occassional selenite crystals and roots.		
		PP	D	2.00	PP=150-170	2.00	Stiff orange brown silty CLAY with occassional selenite crystals.		
		PP	D	3.00	PP=180-250	3.00	Stiff red brown mottled silty CLAY with rootlets.		
		PP	D	4.00	PP=110	4.00	Firm mottled red/brown very sandy CLAY/clayey SAND.		
							End of Borehole		

KEY

Sample Types
U – Undisturbed
D – Disturbed
B – Bulk Disturbed
W – Water
P – Piston
J – Jar
T – Thin Wall
* – No recovery
R – Roots

INSITU TESTS

S – SPT Value
C – CPT Value
V – Vane Test (kPa)
PP – Pocket Penetrometer

PROGRESS/WATER LEVELS

Borehole Depth
Casing Depth
Water Level a.m.
Water Level p.m.
Water Strike
Standpipe Reading

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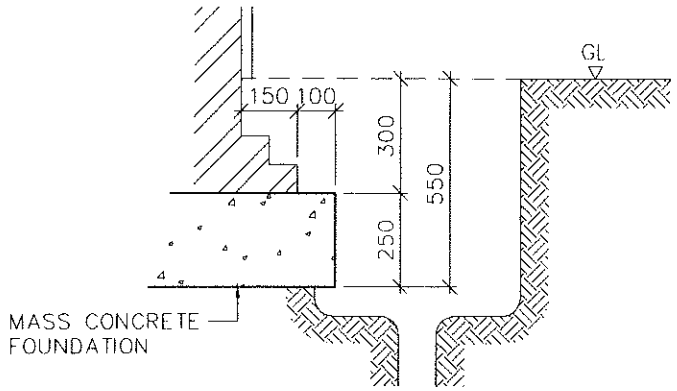
ISO 9001 REGISTERED FIRM

General Remarks

Scale	Operator	Sheet No.
1:20 @ A4	GS/MJH	02 of 04

Contract: 18 FERNCROFT AVENUE HAMPSTEAD, LONDON Client: MUTLEY INTERNATIONAL LTD		Coordinates: Date: 08/12/11
Equipment & Methods HAND DUG	Job Number: 11322 Borehole Number T.H.2 Location:	Orientation: VERTICAL Ground Level:



Daily Prog.	Water Level	Insitu Tests	Samples Taken	Sample Depths	Remarks	Depth (m)	Strata Descriptions	Red. Level	Legend
						0.00	TOPSOIL + many roots		
		PP	D	1.00	PP=200-230	0.60	Stiff fissured mottled red/grey/ brown silty CLAY with many fine rootlets.		
		PP	D	1.00	PP=200-240	1.00	Stiff fissured mottled red/grey/ brown silty CLAY with occassional roots.		
		PP	D	2.00	PP=70-100	2.00	Firm red brown silty, very sandy CLAY with fine rootlets.		
		PP	D	3.00	PP=210-230	3.00	Stiff red brown silty fine sandy CLAY with occassional fine rootlets.		
		PP	D	4.00	PP=70-90	4.00	Soft to firm red/brown mottled grey very sandy CLAY.		
							End of Borehole		

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PROGRESS/WATER LEVELS
Borehole Depth
Casing Depth
Water Level a.m
Water Level p.m.
Water Strike
Standpipe Reading

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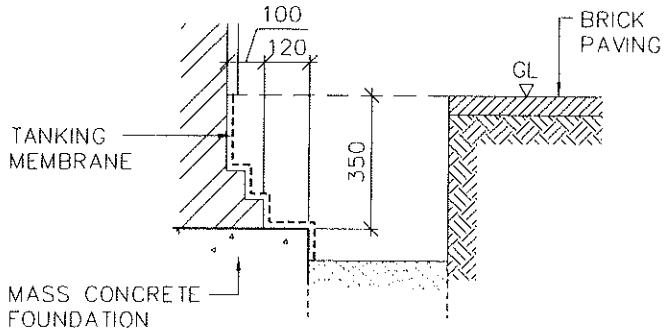
General Remarks

Scale	Operator	Sheet No.
1:20 @ A4	GS/MJH	03 of 04

Contract: 18 FERNCROFT AVENUE HAMPSTEAD, LONDON Client: MUTLEY INTERNATIONAL LTD		Coordinates: Date: 08/12/11
Equipment & Methods HAND DUG	Job Number: 11322 Borehole Number T.H.3 Location:	Orientation: VERTICAL Ground Level:



Daily Prog.	Water Level	Insitu Tests	Samples Taken	Sample Depths	Remarks	Depth (m)	Strata Descriptions	Red. Level	Legend
						0.00	Pea Shingle fill and drainage prevented further Excavation.		

KEY

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R – Roots

INSITU TESTS

S – SPT Value
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PROGRESS/WATER LEVELS

Borehole Depth
Casing Depth
Water Level a.m
Water Level p.m.
Water Strike
Standpipe Reading

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ISO 9001 REGISTERED FIRM

General Remarks

Scale	Operator	Sheet No.
1:20 @ A4	GS/MJH	04 of 04

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LABORATORY REPORT

RECEIVED 14 DEC 2011

Date : 14th December 2011

Report No : 05133/17

Client : PBA Structural Consulting Ltd
Ground Floor
Warnford House
St. Leonards Road
20/20 Maidstone
Kent ME16 0LS

Client Ref : GS/JF/11322

Site : 18 Ferncroft Avenue
Hampstead
London
NW3 7PH

This report details the results of soils laboratory tests carried out on samples of soil submitted for test on 8th December 2011.

Tests carried out –

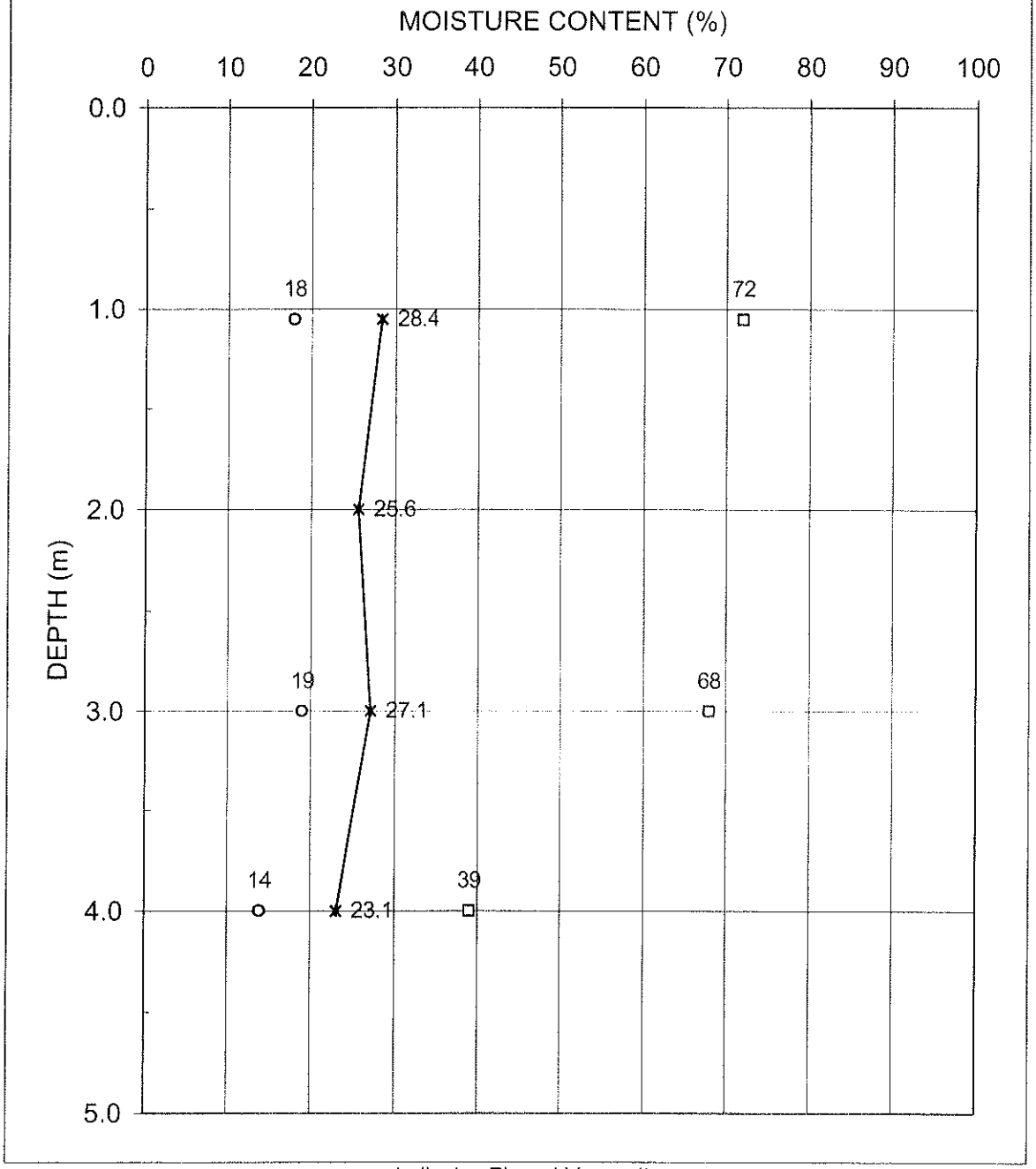
5 nr Atterberg Limits

9 nr Natural Moisture Contents

All test have been carried out in accordance with BS 1377 : 1990

For and on behalf of
Soiltec Laboratories Limited

NATURAL MOISTURE CONTENT



○ - □ indicates PL and LL results

♦ - indicates 0.4 LL and should only be applied to London Clay

Location :	18 Ferncroft Avenue, Hampstead, London	Job ref:	05133/17
		BH/TP no:	TH1
Checked			
Approved		Date	14-Dec-11

Soiltec

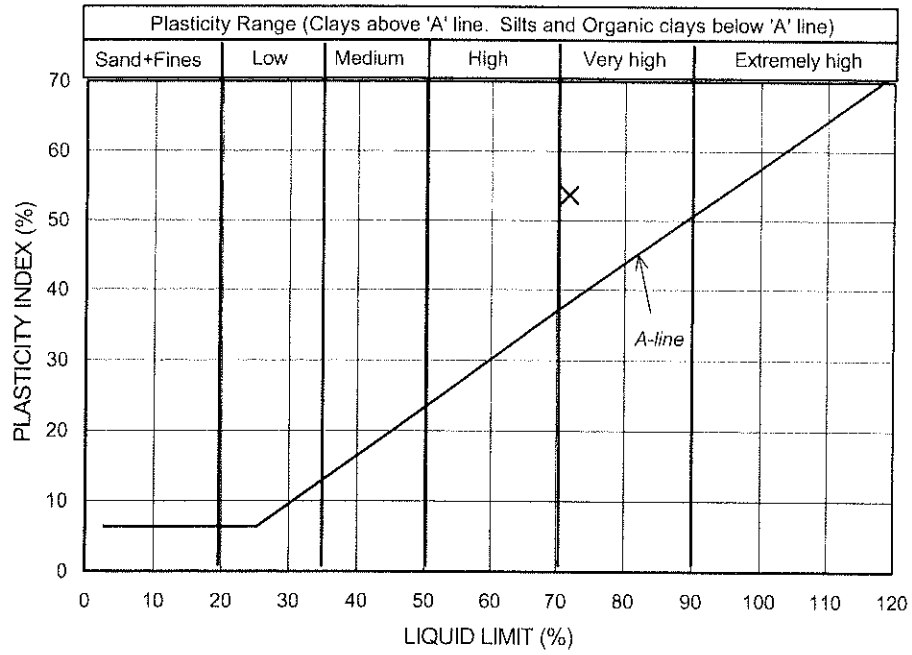
PLASTICITY INDEX

Client :	PBA Structural Consulting	Rep No:	05133/17
Site:	18 Ferncroft Avenue, Hampstead, London	Borehole/Trial Pit :	1
		Sample No:	1
		Sample Depth (m)	1.05
		Date:	14/12/11

Sample description	:	0
Test Method	:	BS1977:Part2:1990:4.3 Multiple point method
Sample preparation	:	as received
Material passing 425µm	:	100.00 %
Natural Water Content	:	**28.4 %**
Liquid Limit	:	**72 %**
Plastic Limit	:	**18 %**
Plasticity Index	:	**54 %**
Liquidity Index	:	**0.19**
Modified Plasticity Index		**54 %** ref : NHBC 4.2

Avg. = 19.8%
Enc = 25.0%

CASAGRANDE PLASTICITY CHART



Operator	
Checked	
Approved	

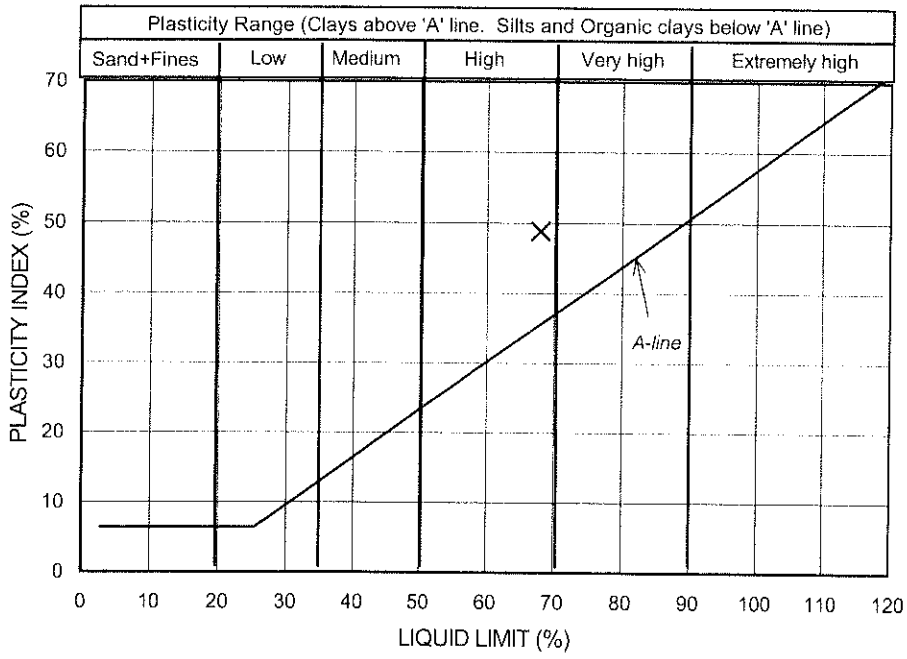
PLASTICITY INDEX

Client :	PBA Structural Consulting	Rep No:	05133/17
Site:	18 Ferncroft Avenue, Hampstead, London	Borehole/Trial Pit :	1
		Sample No:	3
		Sample Depth (m)	3.00
		Date:	14/12/11

Sample description	:	0	
Test Method	:	BS1977:Part2:1990:4.3 Multiple point method	
Sample preparation	:	as received	
Material passing 425µm	:	100.00 %	
Natural Water Content	:	**27.1 %**	
Liquid Limit	:	**68 %**	
Plastic Limit	:	**19 %**	
Plasticity Index	:	**49 %**	
Liquidity Index	:	**0.16**	
Modified Plasticity Index		**49 %**	ref : NHBC 4.2

0.444 = 27.1%
Ene = 24.9%

CASAGRANDE PLASTICITY CHART



Operator	
Checked	
Approved	

Soiltec

PLASTICITY INDEX

Client :	PBA Structural Consulting	Rep No:	05133/17
Site:	18 Ferncroft Avenue, Hampstead, London	Borehole/Trial Pit :	1
		Sample No:	4
		Sample Depth (m)	4.00
		Date:	14/12/11

Sample description : 0

Test Method : BS1977:Part2:1990:4.3 Multiple point method

Sample preparation : as received

Material passing 425µm : 100.00 %

Natural Water Content : **23.1 %**

Liquid Limit : **39 %**

Plastic Limit : **14 %**

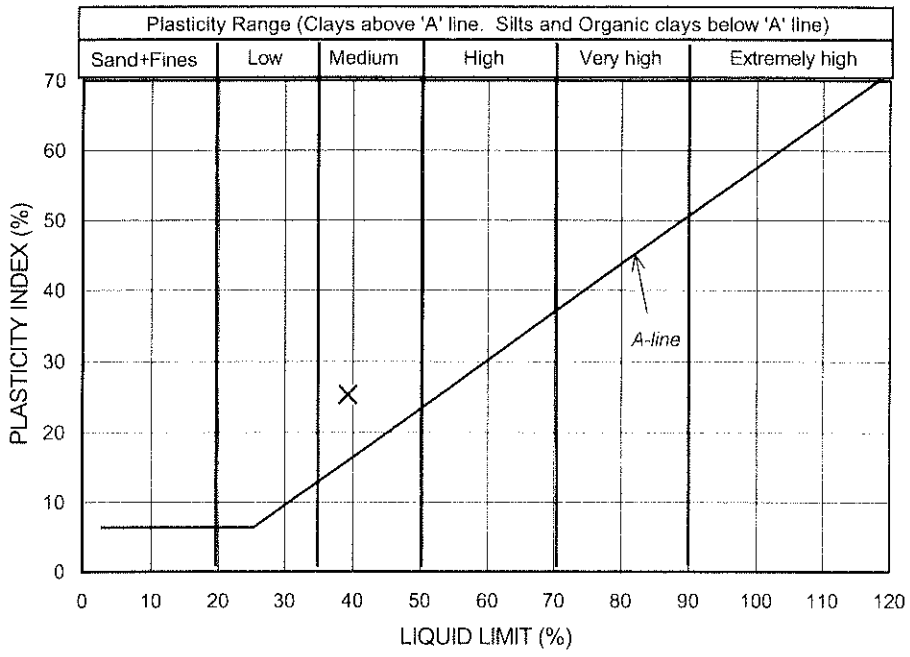
Plasticity Index : **25 %**

Liquidity Index : **0.36**

Modified Plasticity Index **25 %** ref : NHBC 4.2

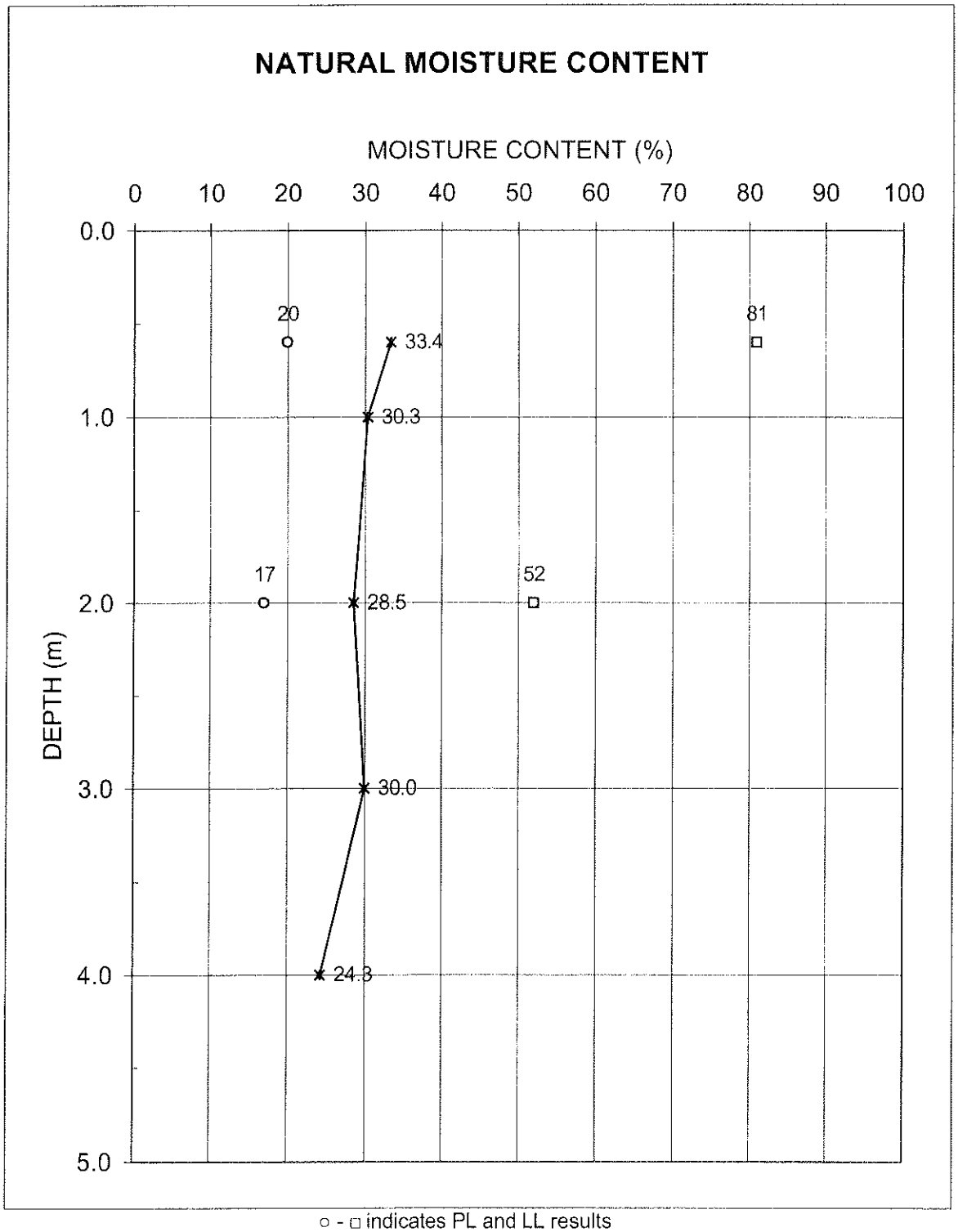
O.U w = 15.6%
Emc = 15.9%

CASAGRANDE PLASTICITY CHART



Operator	
Checked	
Approved	

NATURAL MOISTURE CONTENT



○ - □ indicates PL and LL results

♦ - indicates 0.4 LL and should only be applied to London Clay

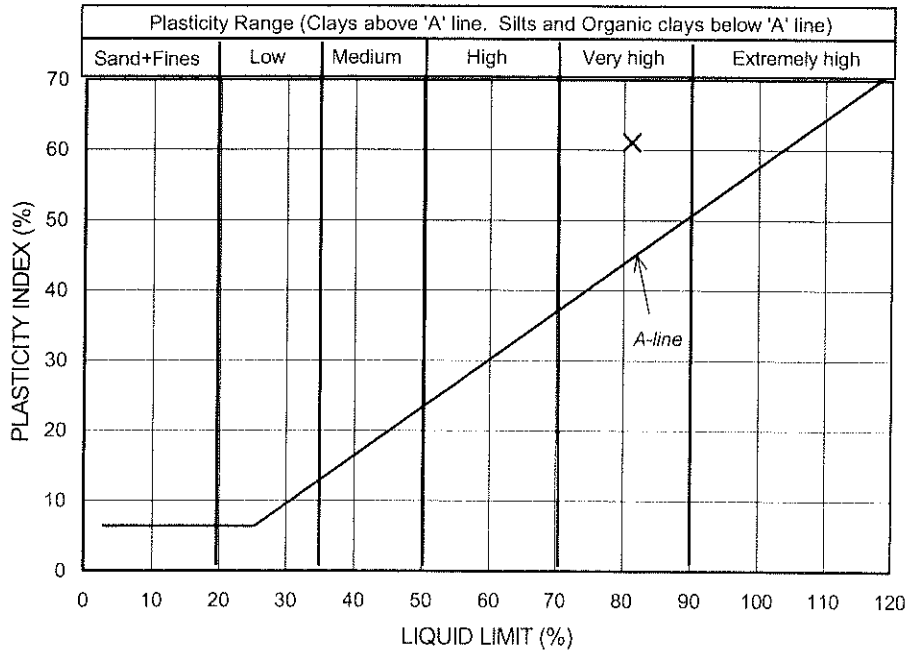
Location :	18 Ferncroft Avenue, Hampstead, London	Job ref:	05133/17
		BH/TP no:	TH2
Checked			
Approved		Date	14-Dec-11

PLASTICITY INDEX

Client :	PBA Structural Consulting	Rep No:	05133/17
Site:	18 Ferncroft Avenue, Hampstead, London	Borehole/Trial Pit :	2
		Sample No:	1
		Sample Depth (m)	0.60
		Date:	14/12/11

Sample description	:	0	
Test Method	:	BS1977:Part2:1990:4.3 Multiple point method	
Sample preparation	:	as received	
Material passing 425µm	:	100.00 %	
Natural Water Content	:	**33.4 %**	
Liquid Limit	:	**81 %**	
Plastic Limit	:	**20 %**	
Plasticity Index	:	**61 %**	
Liquidity Index	:	**0.22**	
Modified Plasticity Index		**61 %**	ref : NHBC 4.2

CASAGRANDE PLASTICITY CHART



Operator	
Checked	
Approved	

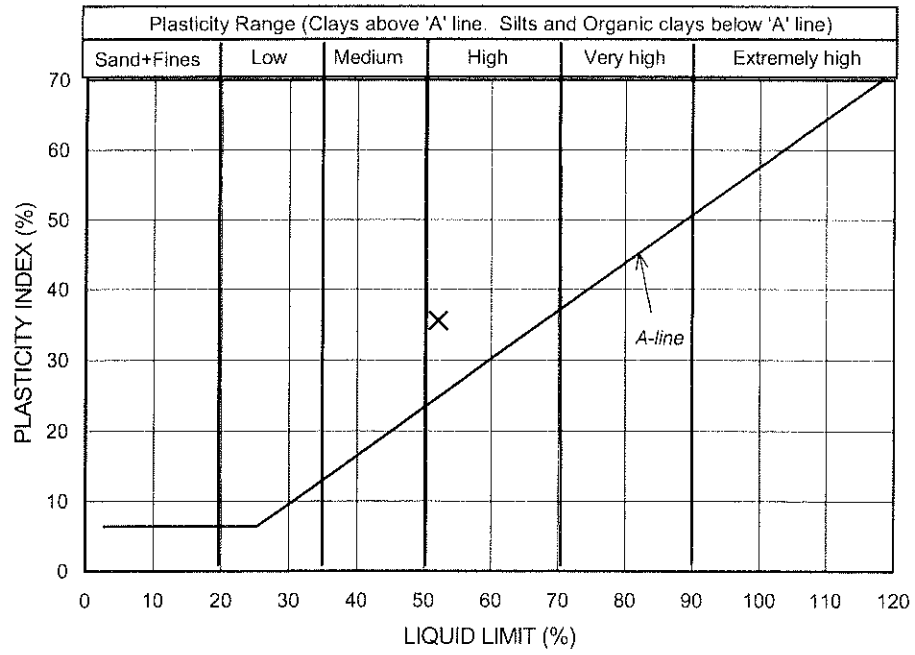
PLASTICITY INDEX

Client :	PBA Structural Consulting	Rep No:	05133/17
Site:	18 Ferncroft Avenue, Hampstead, London	Borehole/Trial Pit :	2
		Sample No:	3
		Sample Depth (m)	2.00
		Date:	14/12/11

Sample description	:	0	
Test Method	:	BS1977:Part2:1990:4.3 Multiple point method	
Sample preparation	:	as received	
Material passing 425µm	:	100.00 %	
Natural Water Content	:	18.5% ~~33.4~~ %	
Liquid Limit	:	**52 %**	
Plastic Limit	:	**17 %**	
Plasticity Index	:	**36 %**	
Liquidity Index	:	**0.47**	
Modified Plasticity Index		**36 %**	ref : NHBC 4.2

O.C.C. = 10.8%
EMC = 19.9%

CASAGRANDE PLASTICITY CHART



Operator	
Checked	
Approved	

Richardson's Botanical Identifications

Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy

- 3 JAN 2012

Dr Ian B K Richardson
BSc, PhD, PGCE, MSB, FLS
James Richardson
BSc (Hons. Biology)

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Tel: (0118) 986 9552 *(Direct line)*
E-mail: richardsons@botanical.net
Web: www.botanical.net

19/12/2011

Your ref: GS-JF-11322
Our ref: 71/4716

Dear Sirs

18 Ferncroft Avenue, Hampstead

The samples you sent in relation to the above on 09/12/2011 (received by us on 12/12/2011) have been examined. The structure was referable as follows:

TH1, 1.05m

1 root: the family Rosaceae, subfamily ROSOIDEAE (shrubs including Roses, Brambles, Raspberries, Kerria and Potentilla). Alive, recently*.

1 root: PLATANUS (Plane). Alive, recently*.

1 root: BERBERIS and MAHONIA (shrubs with holly-like leaves and clusters of yellowish flowers). A further root, not examined in detail appeared similar under low magnification. Alive, recently*.

1 root: the family Rosaceae, subfamily POMOIDEAE (a group of closely related trees: Malus (Apple) Pyrus (Pear), Crataegus (Hawthorn), Sorbus (Rowan, Whitebeam, Service tree), Mespilus (Medlar), and some shrubs (Pyracantha (Firethorn), Chaenomeles (Japonica), Cydonia (Quince), Amelanchier, Cotoneaster)). A further root, not examined in detail appeared similar under low magnification. Alive, recently*.

TH1, 2.00m

1 section of TWIG or STEM only, not a root. Not identified.

TH2, 0.60m

1 root: shrubby members of the family OLEACEAE (Syringa (Lilac), Ligustrum (Privet), Forsythia, Jasminum (Jasmine), Osmanthus, Phillyrea). 2 further roots, not examined in detail appeared similar under low magnification. Alive, recently*.

1 root: CLEMATIS. 2 further roots, not examined in detail appeared similar under low magnification. Alive, recently*.

5 roots: unfortunately insufficient cells for identification.

TH2, 1.00m
1 section of TWIG or STEM only, not a root. Not identified.

I trust this is of help. Please call us if you have any queries; our invoice is enclosed.

Yours faithfully

Dr Ian B K Richardson

* Based mainly on the Iodine test for starch. Starch is present in some cells of a living woody root, but is more or less rapidly broken down by soil micro-organisms on death of the root, sometimes before decay is evident. This result need not reflect the state of the parent tree.

* * Try out our web site on www.botanical.net * *

Identified with no information on vegetation, on or off site.

Inten Ltd
4 Conqueror Court
Watermark
Sittingbourne
Kent
ME10 5BH

CCTV DRAINAGE SURVEY REPORT

Date: 16/01/2012 Report No: K7997

Client:

PBA Structural Consulting Ltd
Ground Floor
Warneford House
St Leonards Road
20/20 Maidstone
Kent ME16 0LS

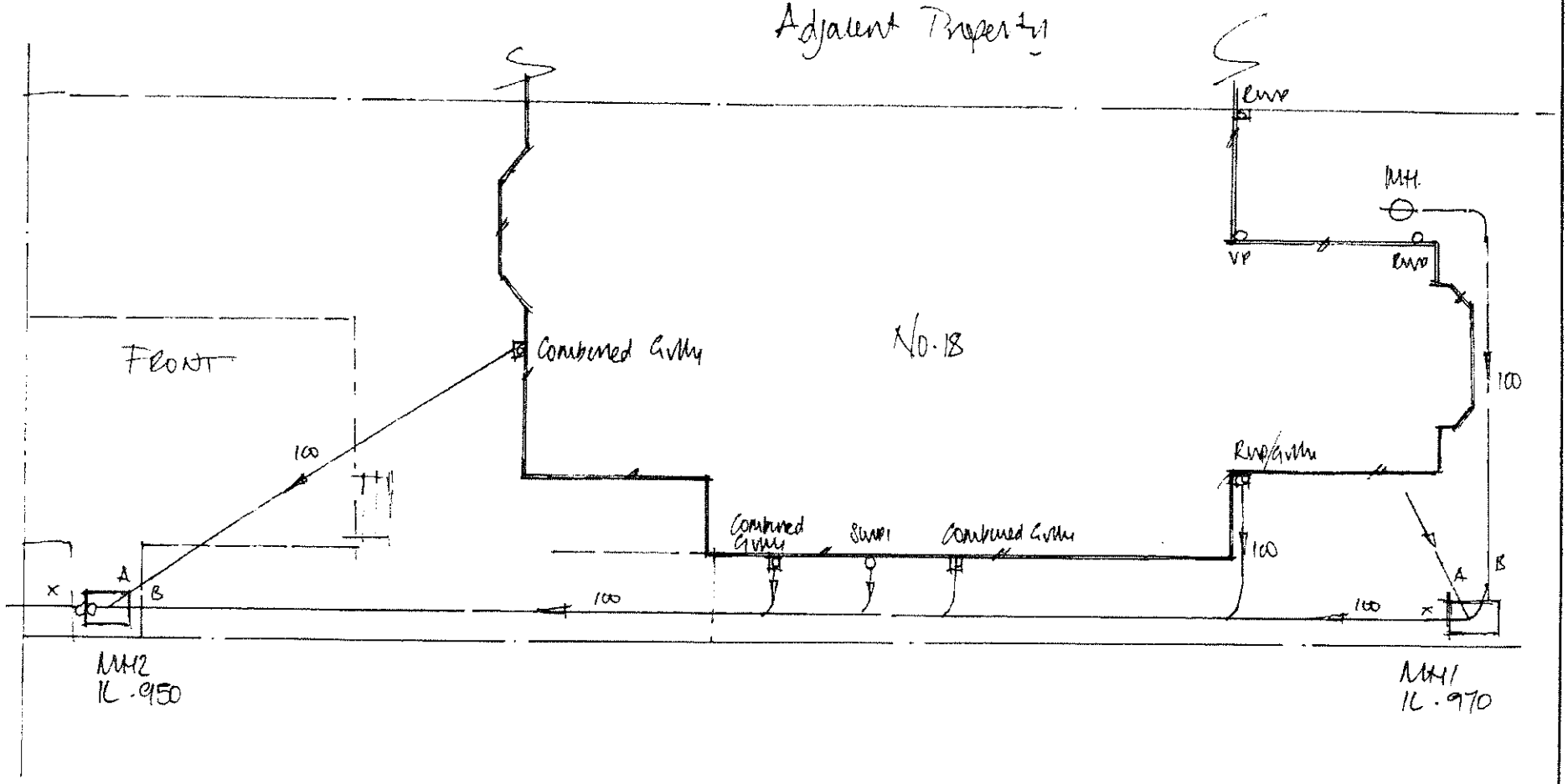
Your Ref: 13222

Site/Subject: CCTV Survey of 18 Ferncroft Avenue, Hampstead, NW3 7PH

The enclosed report details findings of a CCTV Survey carried out on the Drainage System serving the above property.

For and on behalf of

Inten Ltd



Site: 18 FERNCLIFF AVE.	Job No: K7997
Description: DRAINAGE LAYOUT	Drawing No: 1
	Scale: NTS
	Drawn By: MB.

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CCTV DRAINAGE SURVEY

Address	: 18 Ferncroft Avenue, Hampstead, NW3 7PH		
Reference No	: 13222	Date	: 16/01/2012
Commence survey	: MH1	Line	: Connection X
Upstream depth	*: 970mm*	*Direction*	*: D/S*

Diameter	: 100mm
Material	*: Cast*
Type	*: Combined*

DIST (m)	OBSERVATIONS and REMARKS	
0.0	ST	
0.0	EL	10%
4.25	JN, EH	Branch connection 1 O'clock 100mm, 25%
5.70	DES	20%
8.81	JN, EH	Branch connection 1 O'clock 100mm, 25%
10.41	JN	Branch connection 2 O'clock 100mm
12.00	JN	Branch connection 2 O'clock 100mm,
13.37	Joint	
25.15	MH	Entered Manhole

End of Survey

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CCTV DRAINAGE SURVEY

Address	: 18 Ferncroft Avenue, Hampstead, NW3 7PH		
Reference No	: 13222	Date	: 16/01/2012
Commence survey	: MH1	Line	: Connection A
Upstream depth	*: 970mm*	*Direction*	*: U/S*

Diameter	: 100mm
Material	*: Cast*
Type	*: Unclear*

DIST (m)	OBSERVATIONS and REMARKS	
0.0	ST	
0.30	Joint	
0.98	Joint	
1.74	Joint	
2.35	Joint, DES	20%
		Run appears redundant

End of Survey

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CCTV DRAINAGE SURVEY

Address	: 18 Ferncroft Avenue, Hampstead, NW3 7PH		
Reference No	: 13222	Date	: 16/01/2012
Commence survey	: MH1	Line	: Connection B
Upstream depth	*: 970mm*	*Direction*	*: D/S*

Diameter	: 100mm
Material	*: Cast*
Type	*: Combined*

DIST (m)	OBSERVATIONS and REMARKS	
0.0	ST	
0.60	JDS	
1.21	Joint	
1.97	Joint	
2.50	Joint	
3.11	JDS	
3.72	Joint	
4.33	Joint	
5.01	Joint	
5.54	Joint	Changes to plastic
6.30	LL	
7.22	MH	Enters Manhole

End of Survey

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CCTV DRAINAGE SURVEY

Address	: 18 Ferncroft Avenue, Hampstead, NW3 7PH		
Reference No	: 13222	Date	: 16/01/2012
Commence survey	: SWVP	Line	: Connection 1
Upstream depth	:	*Direction*	*: D/S*

Diameter	: 100mm
Material	*: Cast*
Type	*: Foul*

DIST (m)	OBSERVATIONS and REMARKS	
0.0	ST	
0.83	Joint	Changes to clay
0.98	LU	Rest bend
1.36	Joint	
1.67	Joint	Changes to cast
1.82	JN	

End of Survey

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CCTV DRAINAGE SURVEY

Address	: 18 Ferncroft Avenue, Hampstead, NW3 7PH		
Reference No	: 13222	Date	: 16/01/2012
Commence survey	: MH2	Line	: Connection A
Upstream depth	*: 950mm*	*Direction*	*: U/S*

Diameter	: 100mm
Material	*: Cast*
Type	*: Combined*

DIST (m)	OBSERVATIONS and REMARKS	
0.0	ST	
0.0	RM	
0.38	CC	
0.83	RF(J)	
1.44	RF(J)	
2.05	CC(J)	
2.66	EL(J)	
3.26	Joint	
3.95	Joint	
4.56	Joint	
5.32	Joint	
5.92	Joint	
6.53	Joint	
7.22	Joint	
7.82	RF(J)	
9.04	RM, SA	Survey Abandoned

End of Survey

Notes on Survey

As per discussion with engineer from site, no breaches undertaken to gully runs to side of property, it is likely that pipe runs below, gully traps are cast iron. We would not be able to breach cast iron pipes.

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Recommendations

MH2 Connection A to excavate and replace gully, provide suitable benching and kerbing for gully. To replace downstream to suitable connection, the remainder of the run to Manhole needs to be pre cleaned and all roots removed. When completed we will install a felt impregnated liner in the pipe to MH.

Manhole Details

MH1
Cover: Steel
Condition; Good
Location: Rear of property
Surface: Block Paving
Benching: Good Condition
Chamber: Brickwork Fractured/Root intrusion into chamber
IL: 970mm

MH2
Cover: Steel
Condition; Good
Location: Rear of property
Surface: Block Paving
Benching: Root intrusion into benching
IL: 950mm

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QUOTATION

PBA Structural Consulting Ltd
Ground Floor
Warneford House
20/20 Maidstone
Kent,
ME16 0LS

Quotation No: QU000193

Your Ref: 13222

Contract Ref: K7997

Date: 16/01/2012

For the attention of Mr. Martyn Grant

Tel: 01622 764467
Fax: 01622 764364

Drainage Remedial Works required at

18 Ferncroft Avenue, Hampstead, NW3 7PH

MH2 Connection A to excavate and replace gully, provide suitable benching and kerbing for gully. To replace downstream to suitable connection, the remainder of the run to Manhole needs to be pre cleaned and all roots removed. When completed we will install a felt impregnated liner in the pipe to MH

1. Line 9mtrs of 100mm
2. Excavate Gully and replace

TOTAL £1660.00.00 + VAT at 20 %

All quotations are subject to our general terms and conditions of business. All prices are valid for 30 days from the Date of our quotation. If any of the above items are omitted from the Contract, we reserve the right to re-quote for Items required.

INTEN

Sewer Condition Codes

BP	Broken pipe at ... (Or from ... to ...) O' Clock
BR	Branch Major
CC	Crack circumferential from ... to ... O'Clock
CL	Crack Longitudinal at ... O' Clock
CM	Cracks multiple from ... to ... O' Clock
CN	Connection at ... O' Clock, diameter ... mm
CNI	Connection at ... O' Clock, diameter ... mm, intrusion ... mm
CU	Camera under water
CX	Connection defective at ... O' Clock, diameter ... mm
CXI	Connection defective at ... O' Clock, diameter ... mm, intrusion ... mm
D	Deformed Sewer at Joint
DB	Displaced bricks at ... (Or from ... to ...) O' Clock
DC	Dimension of sewer changes, new dimension ... mm
DE	Debris (non-silt / grease) ... % cross-sectional area loss
DEG	Debris grease ... % cross-sectional area loss
DEL	Debris silt / Rubble Large ... % cross -sectional area loss
DES	Debris silt ... % cross-sectional area loss

DI	Dropped invert, gap ... mm
EH (J)	Encrustation heavy from ... to ... O' Clock ... % cross-sectional area loss (at joint)
EL (J)	Encrustation light from ... to ... O' Clock (at joint)
EM (J)	Encrustation medium from ... to ... O' Clock ... % cross-sectional area loss (at joint)
ESH	Scale heavy ... % cross-sectional area loss from ... to ... O' Clock
ESL	Scale light from ... to ... O' Clock
ESM	Scale medium ... % cross-sectional area loss from ... to ... O' Clock
FC	Fracture circumferential from ... to ... O' Clock
FH	Finish Survey
FL	Fracture longitudinal at ... O' Clock
FM	Fractures multiple from ... to ... O' Clock
GO	General observation at this point
GP	General photograph number ... taken at this point
H	Hole in sewer at ... (Or from ... to ... O' Clock
IC	Inspection Chamber
ID (J)	Infiltration dripper at ... (Or from ... to ...) O' Clock (at joint)
IG (J)	Infiltration gusher at ... (Or from ... to ...) O' Clock (at joint)
IR (J)	Infiltration runner at ... (Or from ... to ...) O' Clock (at joint)
IS (J)	Infiltration seeper at ... (Or from ... to ...) O' Clock (at joint)
JDS	Joint displaced small
JDL	Joint displaced large
JDM	Joint displaced medium

JN	Junction at ... O' Clock, diameter ... mm
JX	Junction defective at ... O' Clock, diameter ... mm
LC	Lining of sewer changes / starts / finishes at this point
LD	Line of sewer deviates down
LL	Line of sewer deviates left
LN	Lining defect at ... (Or from ... to ...) O' Clock
LR	Line of sewer deviates right
LU	Line of sewer deviates up
MB	Missing bricks at ... (Or from ... to ...) O' Clock
MC	Material of sewer changes at this point
MH	Manhole / node
MM	Mortar missing medium at ... (Or from ... to ...) O' Clock
MS	Mortar missing surface at ... (Or from ... to ...) O' Clock
MT	Mortar missing total at ... (Or from ... to ...) O' Clock
OB	Obstruction ... % height / diameter loss
OJL	Open joint large
OJM	Open joint medium
OJS	Open joint small

PC	Length of pipe forming sewer changes at this point, new length ... mm
RF (J)	Roots fine (at joint)
RF	Roots fine
RM (J)	Root mass ... % cross-sectional area loss (at joint)
RM	Root mass... % cross-sectional area loss
RT (J)	Roots tap (at joint)
RT	Root tap
SA	Survey abandoned
SC	Shape of sewer changes at this point
SSL	Surface damage, spalling large at ... (Or from ... to ...) O' Clock
SSM	Surface damage, spalling medium at ... (Or from ... to ...) O' Clock
SSS	Surface damage, spalling slight at ... (Or from ... to ...) O' Clock
ST	Start of Survey
SWL	Surface damage, wear large at ... (Or from ... to ...) O' Clock
SWM	Surface damage, wear medium at ... (Or from ... to ...) O' Clock
SWS	Surface damage, wear slight at ... (Or from ... to ...) O' Clock
V	Vermin (Rats and Mice)
WL	Water Level ... % cross-sectional area loss
X	Sewer collapsed ... % cross-sectional area loss