

# **Richard F. Gill & Associates**

**Consulting Structural Engineers**

120 SHENFIELD PLACE  
SHENFIELD  
ESSEX  
CM15 9AG  
01277 200056,  
07961 377145

Partner: I.R. Gill, B.Sc.(Hon), C.Eng., M.I.Struct.E.,  
L.A. Gill, B.Sc.(Hon), C.Eng., M.I.Struct.E., M.I.C.E.,

## **STRUCTURAL ENGINEER'S REPORT ON SITE INVESTIGATIONS**

**INSURED NAME:** 26 Frognal Limited

**ADDRESS:** 26 Frognal  
London  
NW3 6AG

**ENGINEERING PRACTICE:** Richard F Gill & Associates LLP  
120 Shenfield Place  
Shenfield  
Essex  
CM15 9AG  
Tel/Fax 01277 200056

**INSPECTING ENGINEER:** L. A. Gill BSc Hons., C.Eng., M.I.Struct.E., M.I.C.E.

**DATE OF INSPECTION:** 27<sup>th</sup> September 2013

**INSURER:** Aviva

**ENGINEERS REFERENCE:** 13307



2<sup>nd</sup> December 2013



Richard F Gill & Associates is a trading name of  
Richard F Gill & Associates LLP (partnership No. OC385641)

Also at  
147 Gloucester Terrace, London, W2 6DX, 0207 402 9534

## **INTRODUCTION**

This report follows our preliminary report dated 3<sup>rd</sup> October 2013.

## **SITE INVESTIGATIONS**

A single trial pit and borehole were excavated to the rear bay window, as indicated on the attached site plan prepared by Soiltech Surveys.

The trial hole revealed a shallow brick corbel and clinker concrete foundation resting 550 mm deep on stiff silty clay. A borehole within the trial pit revealed similar silty clays to termination at 4 m deep. A water strike at 3.5 m deep was standing at a similar depth on completion.

Roots of live appearance up to 8 mm in diameter were noted at underside of foundation with fine live roots to 1.6 m deep within the borehole. Roots taken from the trial pit and borehole were identified as live Ash roots from the large Ash tree located within the rear garden at a separation of 5 – 6 m.

Laboratory testing indicates clays of very high plasticity with clear, and severe, desiccation at underside of foundation and 1 m deep and probably no desiccation at 1.5 m deep and below.

## **CONCLUSIONS**

The property has suffered moderate crack damage to the rear two storey bay, category 3 when assessed in accordance with BRE Digest 251. Damage has been caused by subsidence due to the action of tree roots on the shrinkable clay subsoil's.

Tree management is a clear option that will result in a rapid stabilisation; however unless effective tree management is undertaken continued seasonal movements, and eventual underpinning, should be anticipated. Site investigations indicate that desiccation is shallow, the risk of heave is minimal and recovery should occur rapidly following tree removal.

## **RECOMMENDATION**

Appoint arboricultural consultant to advise on mitigation.

Continue crack width monitoring externally.

## LIMITATIONS

We have not inspected wood work, damp proof courses, services, foundations except where exposed, or any other part of the structure which was covered, unexposed or inaccessible, and we are therefore unable to report any such part free from defect.

This report has been prepared for the sole use and benefit of Aviva, and the liability of R. F. Gill and Associates LLP shall not be extended to any third party.



L. A. Gill BSc Hons, C.Eng, M.I.Struct.E, M.I.C.E.  
For Richard F. Gill and Associates LLP

2<sup>nd</sup> December 2013

[illegible]

**Key:**

T.P = Trial pit.  
B.H = Borehole.

H = Approximate height.

G = Gulley.

**SVP** = Soil vent pipe.

IC = Inspection chamber.

IL = invert level.

RWP = Rain water pipe.

Trial pit No: 1	Sheet: 1001	Soiltech Surveys Foundation Investigation & Test Drilling Tel/Fax: 01245 496389 Site: FLAT A 26, FREEMAN LONDON NW12
	Ref No:	
Not to scale:	Date: 8-10-2013	
Client: RICHARD A GILL - C 10000		

200

740

170

150

230

2

GROUND LEVEL

FOR SAMPLES 1001-1004

1001-1002: 0-100mm

1003-1004: 100-200mm

1005-1006: 200-300mm

1007-1008: 300-400mm

1009-1010: 400-500mm

500mm

500mm of 2.0m of 100mm

500mm of 2.0m of 100mm

500mm of 2.0m of 100mm

500mm of 2.0m of 100mm

500mm of 2.0m of 100mm

Remarks:

Key:

D = Small Disturbed sample

U = Undisturbed sample

S.P.T. = Standard Penetration Test

M = Mackintosh Probe Penetration Test

V = Pilon Shear Vane Test

W = Water sample

B = Bulk sample

Borehole No: 1

Sheet: 1001

Ref No:

## Soiltech Surveys

Foundation Investigation &amp; Test Drilling

Tel/Fax: 01245 496389

Boring Method: HAND TOOLS

Date: 18-10-2013

Site: PLAT A, 26, FROGHAL  
LOUSON  
MWS

Client: RICHARD E GILL &amp; ASSOC

Depth (m)	Description	Sample	Test Type Result	Field Comments	Depth to Water
1					
2					
3					
4	AS TRIAL PIT 1			AS TRIAL PIT 1	
5					
6	SOFT TO FIRM MID BROWN MOTTLED			0.7M SEVERAL	
7	ORANGE GREY VEINED SILTY CLAY			ROOTS OF LIVE	
8		1.0		APPEARANCE TO	
9		2	132	3.0M	
10			132		
11					
12	SOFT TO			1.0M SEVERAL	
13				ROOTS OF LIVE	
14	FIRM MID BROWN MOTTLED	1.5		APPEARANCE TO	
15	ORANGE GREY VEINED SILTY CLAY	3	136	1.0M	
16			136		
17				TO 1.0M	
18					
19		2.0			
20	FIRM MID BROWN MOTTLED	2	136		
21	ORANGE GREY VEINED SILTY CLAY		80		
22					
23					
24		1.5			
25		3	138		
26			138		
27					
28					
29		3.0			
30	FIRM MID BROWN MOTTLED	2	116		
31	ORANGE GREY VEINED SILTY CLAY		116		
32					
33					
34		3.5			
35	CLAYSTONE 3.5 TO 3.80	A		WATER SAMPLE	3.5
36					
37					
38					
39		4.0			
40	END END AT 4.0M	2	112		
41			112		
42					
43					
44					
45					
46					
47					
48					
49					
50					

## Remarks:

END WHEN AN OBSTRUCTION  
STOPPED WATER 2.5M BELOW  
S.C. ON COMPLETION.

## Key:

D = Small Disturbed sample

U = Undisturbed sample

S.P.T. = Standard Penetration Test

M = Mackintosh Probe Penetration Test

V = Picon Shear Vane Test

W = Water sample

B = Bulk sample

# Tree Root Identification Limited

ADDRESS FOR CORRESPONDENCE: 3 Langley Drive, Kinnoull Hill, PERTH, PH2 7XA

TELEPHONE: 01738 630873 e-mail: [rdmmacleod@btconnect.com](mailto:rdmmacleod@btconnect.com)

web site: [www.treerootidentification.com](http://www.treerootidentification.com)

22nd October 2013

Richard F. Gill and Associates  
120 Shenfield Place  
Shenfield  
Essex  
CM15 9AG

Dear Sirs,

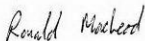
**Re: Flat A, 26 Frognal, London, NW3 6AG.**  
**Our reference: 221013.**

I have completed my examination of root samples taken from the above property. The results were as follows -

<b><u>Trial pit/ Borehole</u></b>	<b><u>Root diameter (mm)</u></b>	<b><u>Tree, shrub or climber from which root originates</u></b>	<b><u>Result of starch test#</u></b>
TP1 (roots underside foundation)	7.0	<u>Fraxinus</u> (ash)	positive
BH1 (roots at a depth of 1.0 to 1.6m)	0.5	<u>Fraxinus</u> (ash)	positive

# The presence of starch indicates that the root was alive in the recent past.

Yours faithfully,



DR R D MACLEOD  
Principal Scientist

# Meridian Soils Limited

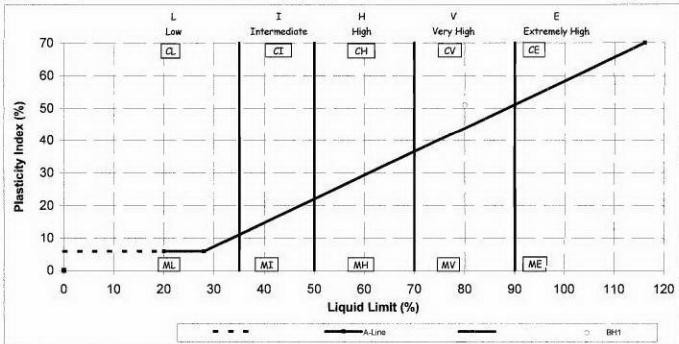
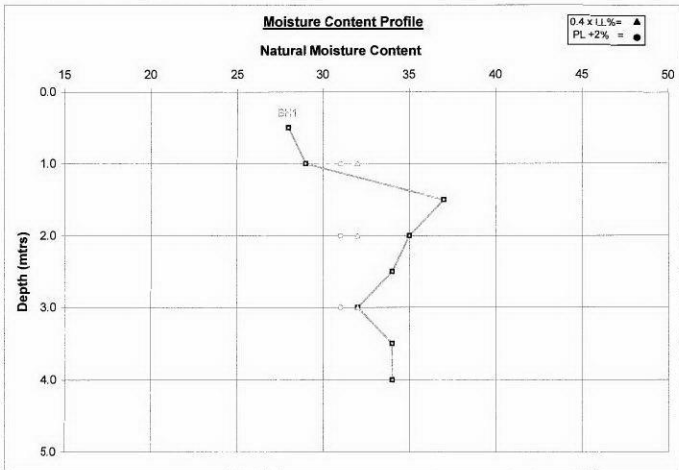
Electron House, Office & Technology Centre, West Hanningfield Road, Great Baddow, Essex. CM2 8JT  
Telephone:- 01245 473113 E-mail:- meridiansoils@supanet.com

Our Ref: S.7053

Client Ref:

Location: Flat A 26 Frognaal, London, NW3 6AG.

Date: 6th November 2013



In Compliance with BS. 5930: 1982

Notes:

- 1) Unless specifically noted, the profiles have not been related to a site datum
- 2) If plotted, 0.4 LL and PL + 2 (after Driscoll, 1963) should only be applied to London Clay (and similar overconsolidated clays) at shallow depths.

# Meridian Soils Limited

Electron House, Office & Technology Centre, West Hanningfield Road, Great Baddow, Essex. CM2 8JT  
Telephone :- 01245 473113 Fax :- 01245 243829 E-mail:- meridiansoils@supanet.com

Our Ref: S.7053

Location: Flat A 26 Frognal, London, NW3 6AG.

Client Ref:

Date: 6th November 2013

TP/BH No.	Sample No.	Depth mtrs.	Moisture Content %	Passing 0.425mm sieve %	Equivalent Moisture %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Soil Class	Modified Plasticity Index %	Water Soluble Sulphate ( $\text{gr}^1 \text{SO}_4$ )	pH value	Sulphate Class
1		0.50 (U.S)	28										
		1.00	29	100	29	80	29	51	CV	51			
		1.50	37										
		2.00	35	100	35	80	29	51	CV	51			
		2.50	34										
		3.00	32	100	32	80	29	51	CV	51			
		3.50	34										
		4.00	34										

## References

BS 1377: Part 2:1990  
BS 5930:1981