#### Richard F. Gill & Associates

Consulting Structural Engineers

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 CAUSATION

**INSURED NAME:** 

ADDRESS: 67 Aberdare Gardens

London NW6 3AN

**ENGINEERING PRACTICE:** Richard F Gill & Associates LLP



**INSPECTING ENGINEER:** R.E. Rock BEng Hons., C.Eng., M.I. Struct. E.

DATE OF INSPECTION: 11th March 2020

INSURER:

**ENGINEERS REFERENCE:** 



1st April 2020



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

Also at

#### INTRODUCTION

This report follows our preliminary report dated 20th February 2020.

#### SITE INVESTIGATIONS

A single trial pit and borehole were excavated to the front right-hand bay protrusion, as indicated on the attached site plan prepared by Arkley Soil Investigation LLP.

Foundations were seen to comprise a concrete strip foundation resting 1400mm deep below ground level on London Clay. A borehole within the trial pit revealed natural London Clay from underside of foundation to termination of the borehole at 4m below ground level.

Roots of live appearance up to 3mm in diameter were noted at underside of foundation with fine live roots to 2.5m. Roots taken from the trial pit and borehole were sent for analysis and were identified as live Acacia roots, live Prunus and live Bay, which is consistent with the vegetation observed on site.

Laboratory testing indicates clays of very high plasticity with slight desiccation to 2.5m but no desiccation at 3.0m or below. This assessment is consistent with the root evidence and in situ shear strength profile.

#### **CONCLUSIONS**

The property has suffered very slight crack damage to the front right-hand bay protrusion, Category 1 when assessed in accordance with BRE Digest 251. Damage has been caused by clay shrinkage due to the action of tree roots on the very highly shrinkable clay sub-soil. The primary causes are the Acacia and Bay trees located within the front garden although a contribution from the adjoining owners' shrubs could be anticipated from the root evidence.

#### RECOMMENDATION

Continue crack width monitoring internally and externally.

Appoint arboricultural consultant to inspect and advise on mitigation.

#### **LIMITATIONS**

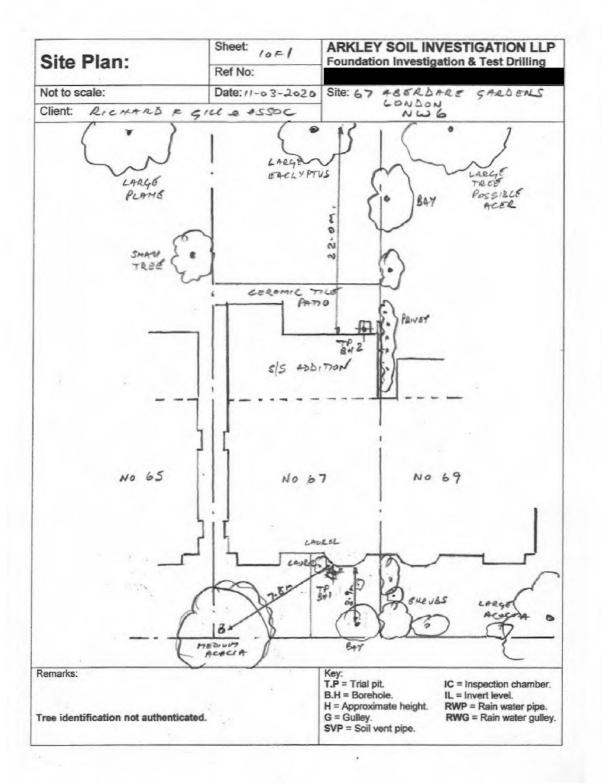
We have not inspected woodwork, damp proof courses, services, foundations except where exposed, or any other part of the structure which was covered, unexposed or inaccessible, and we are therefore unable to report any such part free from defect.

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



R.E. Rock BEng (Hons.) CEng MIStructE For Richard F. Gill and Associates LLP

1st April 2020



Sheet: 10F/ ARKLEY SOIL INVESTIGATION LLP Trial pit No: / Foundation Investigation & Test Drilling Ref No: Not to scale: Date: 11-03-2020 SITE: 67 ABERDARE CARDENS LONDON Client: RICHARD & GILL & ASSOC NWG CROWNE LEVEL

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Sheet: /or/ ARKLEY SOIL INVESTIGATION LLP Trial pit No: 2 Foundation Investigation & Test Drilling Ref No: Site: 67 ABERDARE LONDON NW6 SARDENS Not to scale: Date: //-03-2020 Client: RICHARD F GICL & ASSOC RENDER ACO BRAIN 15 MADE GROUND, MEDIUM COMPACT
HOGGIN WITH FISCES OF BRICK &
CONCRETE RUBBLE 80 165 20 500 CONCRETE RUSSEE

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RICHARD & GILL					Foundation Investigation & Test Drilling							
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Arkley Soil Investigation LLP Unit 10, Reeds Farm Estate Roxwell Road WRITTLE Chelmsford CM1 3ST

30/03/2020

Dr lan B K Richardson BSc, MSc, PhD, MRSB, FLS James Richardson BSc (Hons. Biology)



Dear Stephen

#### 67 Aberdare Gdns, London NW6 3AN

The samples you sent in relation to the above have been examined. Their structures were referable as follows:

TP1, u/s fo	oundation	
1 no.	Examined root: similar in many ways to PRUNUS species (Cherries, Plums and Damsons, Almonds, Peaches and Apricots, Blackthorn/Sloe, as well as the shrubby Cherry-laurel and Portugal-laurel).	Alive, recently*.
1 no.	Examined root: the family LEGUMINOSAE (a group of closely related trees: Robinia (False Acacia), Laburnum, Sophora (Pagoda tree), Gleditsia (Honey Locust), Cercis (Judas tree/Redbud), Albizia (Silk tree), Acacia (Mimosa), as well as such shrubs as Wisteria, Lupins, Gorse and Brooms).	Alive, recently*.
10 no.	Examined root: most referable to LAURUS (Bay).	Alive, recently*.
1 no.	Examined root: a SHRUB, could be CORNUS (Dogwoods). Slightly tentative.	Dead*.
2 no.	Sections of either twig, stem or sucker only - NOT roots. Although both were examined in our laboratory, neither were identifiable.	
10 no.	Unfortunately all with insufficient cells for identification.	
BH1, 1.5-2	.0m	
4 no.	Examined root: the family LEGUMINOSAE (as listed above).	Alive, recently*.
5 no.	Examined root: again, could be LAURUS (Bay).	Alive, recently*.
6 no.	Unfortunately all with insufficient cells for identification.	

/ continued overleaf

TP2, u/s fo	oundation	
4 no.	Examined root: HEDERA (Ivy) - or the related FATSIA (a robust shrub with fig-like leaves).	Alive, recently*.
30 no.	Examined root: another type of SHRUB. In many ways like CISTACEAE (includes CISTUS and HELIANTHEMUM (small shrubs with very delicate and short-lived pink, yellow or white-ish flowers)); also in some ways like LAVANDULA (Lavender). Tentative.	Alive, recently*.
4 no.	Sections of either twig, stem or sucker only - NOT roots. Although examined in our laboratory, they were not identifiable.	
10 no.	Unfortunately all with insufficient cells for identification.	

Click here for more information: LAURUS LEGUMINOSAE PRUNUS

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

Dr Ian B K Richardson

Based mainly on the lodine 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.

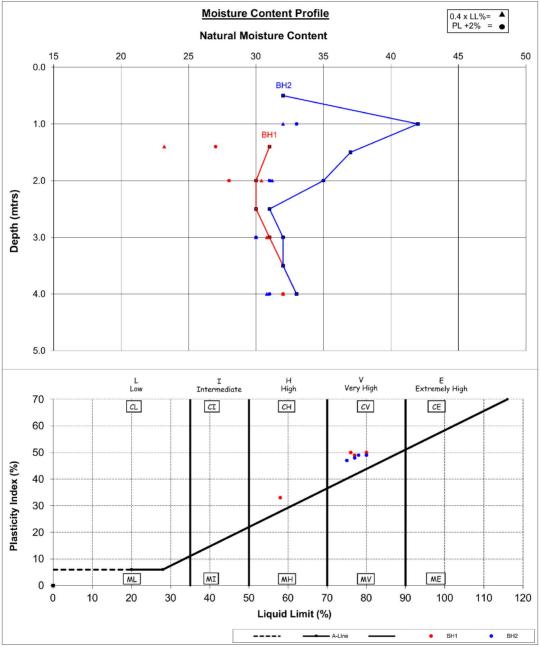
\* \* Try out our web site on www.botanical.net \* \*



# **Meridian Soils Limited**

Client Ref:

**Location:** 67 Aberdare Gardens, London, NW6 3AN **Date:** 25th March 2020



In Compliance with BS. 5930: 1982

Notes:

<sup>1)</sup> Unless specifically noted, the profiles have not been related to a site datum

<sup>2)</sup> If plotted, 0.4 LL and PL +2 (after Driscoll, 1983) should only be applied to London Clay (and similar overconsolidated clays) at shallow depths.

### **Meridian Soils Limited**

Location: 67 Aberdare Gardens, London, NW6 3AN

Client Ref:

Date: 25th March 2020

TP/BH No.	Sample No.	Depth mtrs.	Moisture Content %	Passing 0.425um sieve %	Equivalent Moisture %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Soil Class	Modified Plasticity Index %	Water Soluble Sulphate (g/l <sup>-1</sup> SO <sub>4</sub> )	pH value	Sulphate Class
1		1.40 (U.S) 2.00 2.50 3.00 3.50 4.00	% 31 30 30 31 32 33	72 100 100	43 30 31 33	58 76 77 80	% 25 26 28 30	% 33 50 49 50	CH CV CV	% 24 50 49 50	(g/i <sup>-1</sup> SO <sub>4</sub> )		

References BS 1377:Part 2:1990 BS 5930:1981

## **Meridian Soils Limited**

Location: 67 Aberdare Gardens, London, NW6 3AN

Client Ref: Date: 25th March 2020

TP/BH No.	Sample No.	Depth mtrs.	Moisture Content %	Passing 0.425um sieve %	Equivalent Moisture %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Soil Class	Modified Plasticity Index %	Water Soluble Sulphate (g/l <sup>-1</sup> SO <sub>4</sub> )	pH value	Sulphate Class
2		0.50 (U.S) 1.00 1.50 2.00 2.50 3.50 4.00	32 42 37 35 31 32 32 33	98 100 100 100	43 35 32 33	% 80 78 75 77	31 29 28 29	49 49 47 48	cv cv cv	48 49 47 48	(gil SV <sub>2</sub> )		

References BS 1377:Part 2:1990 BS 5930:1981