ADDENDUM TECHNICAL REPORT

Crawford Reference: SU1604808

Gilling Court (Hampstead) Ltd
Flat 2 Gilling Court
Belsize Grove
Hampstead
London
NW3 4UY

prepared for

[redacted]

SUBSIDENCE CLAIM

DATE 11 August 2017

Crawford®

Specialist Property Services UK - Subsidence

[redacted]

Chartered Loss Adjusters

[redacted]

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Site Plan	This plan is Not to Scale

This plan is diagrammatic only and has been prepared to illustrate the general position of the property and its relationship to nearby trees etc. The boundaries are not accurate, and do not infer or confer any rights of ownership or right of way. Position of utilities is only indicative and contractors must satisfy themselves regarding actual location before commencing works.

Key:

	Tree: Deciduous		Tree: Conifer		Shrub
	Hedge		Area of Damage		Bore Hole
	Trial Hole		Trial & Bore Hole		Level Monitoring
	Rain Water Manhole		Rain Water Gulley		Rain Water Pipe
	Waste Water Manhole		Waste Water Gulley		Toilet Pipe
	Rain Water Drain		Waste Water Drain		Electricity Cable

[redacted]

- - - -	Water Supply Pipe	- - - -	Gas Supply Pipe		Incoming Gas Pipe
	Incoming Water		Incoming Electrics		

INTRODUCTION

We have been instructed by insurers to investigate a claim for subsidence at the above property. The area of damage, timescale and circumstances are outlined in our initial Technical Report. This report should be read in conjunction with that report.

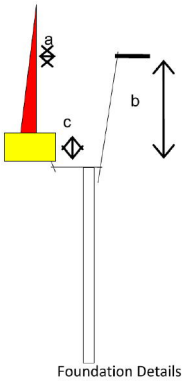
To establish the cause of damage, further investigations have been undertaken and these are described below.

INVESTIGATIONS

The following investigations were undertaken to identify the cause of movement.

TRIAL HOLES

Trial holes were excavated to expose the foundations - see site plan for location and the diagram below for details.



Foundation Details

No.	Borehole Depth	Footing (a)	Underside (b)	Thickness (c)
TH1	3.00 m.	120 mm.	1,050 mm.	150 mm.
TH2	3.00 m.	110 mm.	1,050 mm.	150 mm.

Trial Hole 1 was excavated against the main front elevation and revealed a brick corbel footing founded at a depth of 1.05m below ground level which bears onto very loose MADE GROUND in the form of pea shingle. This material is usually used for pipe surrounds.

Trial Hole 2 was excavated against the porch projection and revealed a similar brick corbel footing founded at a depth of 1.05m below ground level which bears onto loose becoming medium compact MADE GROUND consisting of sandy gravelly silt with numerous brick and concrete pieces. Root activity of live appearance was noted to the underside of this foundation.

[redacted]

AUGERED BOREHOLES

A 50mm diameter hand auger was sunk - see site plan for location. This borehole was extended to a depth of 6.0m and will be used as the deep datum for level monitoring.

Borehole 1 confirmed the continuation of the made ground to a depth of 1.7m, with stiff CLAY below to a depth of 3m. Roots extended to a depth of 4m. The borehole remained dry and open upon completion.

In-situ shear vane testing confirmed the clay subsoil to be stiff to very stiff in nature.

SOIL SAMPLES

Soil samples were retrieved from the bore, wrapped in clingfilm before being bagged and deposited with a testing laboratory the same day. The laboratory have instructions to test the samples to determine if there is evidence of root induced desiccation.

The following laboratory tests were carried out on soil samples retrieved from the boreholes:-

Moisture Content

Values ranged from 27% to 31% over the depth of the clay in Borehole 1

Atterberg Limits

Results indicate that the clay subsoil can be classified as a high volume change potential as defined by the National House Building Council.

Oedometer Tests

Oedometer testing on disturbed samples is a recognised method of assessing clay desiccation. The results in Borehole 1 indicate evidence of severe desiccation between a depth of 2.0m and 3.0m.

ROOTS

Roots were retrieved from the trial hole and have been submitted to a botanist for identification.

Roots in borehole 1 were identified as the Species Tilia which includes lime, and the Species Berberis and Mahonia which include shrubs. These roots extended to a depth of 4m. Starch was present which indicates that the roots were alive at the time of retrieval

DRAINS

A CCTV survey of drainage in the vicinity of damage was carried out at the time of initial site investigations. This revealed that the nearest drainage runs are approximately 8m distance from the focus of movement and are therefore beyond the zone of influence.

These drains exhibited root penetration where they pass close to the shrubbery close to the main front wall, and cracks where they pass under the access road. It is likely other drains against the front elevation are in a similar condition.

[redacted]

DISCUSSION

The results of the site investigations confirm that the cause of subsidence is root-induced clay shrinkage. The clay is plastic and thus will shrink and swell with changes in moisture content. Roots have extracted moisture below the depth of the footings, thus causing differential foundation movement to occur. This is supported by the following investigation results:-

- The foundations are at a depth of 1.05m which is below the level that normal seasonal movement would occur.
- The moisture content profile indicates a reduction in moisture content below a depth of 2.0m indicative of desiccation at this level. This is also co-incident with the depth of root activity.
- Atterberg limit testing indicates that the soil has a high volume change potential and hence will shrink and swell with changes in moisture content.
- Oedometer tests indicate severe desiccation at a depth of 2.m and below coincident with the depth of root activity.
- Roots were found to a depth of 4.0m.

RECOMMENDATION

The cause of the movement needs to be dealt with first. From the results of the site investigation, we are satisfied that the lime can be removed. Based on our analysis, we are satisfied there is no adverse heave risk to the property.

Our Mitigation Unit will liaise with the Local Authority to arrange an application to be submitted and advise of the outcome when it is received. A decision is normally taken by the Local Authority after 8 weeks of submission.

If the decision is favourable, our Mitigation Unit will arrange for the tree works to be undertaken, subject to authority from the tree owner. If the application is refused, there are possible grounds to Appeal or submit a further Application if there is new evidence. This will be reviewed in detail at the time.

Following completion of the tree management works, we will undertake a suitable period of monitoring to confirm stability has been achieved before undertaking repairs to the property.

[redacted]

HISTORY & TIMESCALE

Date of Construction	1933
Purchased	Various
Policy Inception Date	25/04/2016
Damage First Noticed	October 2016
Claim Notified to Insurer	21/11/2016
Date of our Inspection	03/01/2017
Issue of Report	20/06/2017
Anticipated Completion of Claim	February 2019
Anticipated Duration of Works	5 weeks
Anticipated Completion of Works	February 2019

Yours faithfully,

Philip Gardner BSc, MIStructE, CEng, Cert CILA
Specialist Property Services - Subsidence Division
[redacted]

11 August 2017