

## **ADDENDUM TECHNICAL REPORT**

**Crawford Reference: SU1604808**

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



Prepared for

**Aviva - Commercial**

**SUBSIDENCE CLAIM**

DATE 23 May 2018

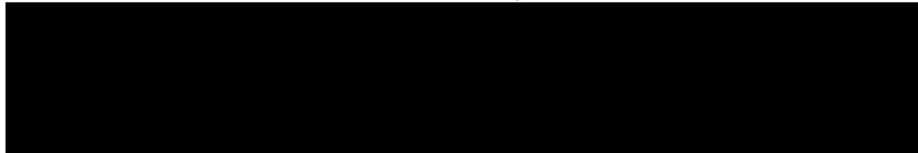


Specialist Property Services UK - Subsidence



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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.



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**Key:**

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

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## 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.

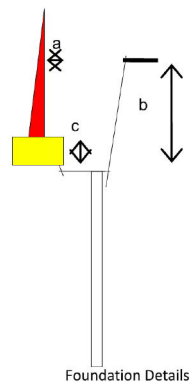
This report is the second Addendum Report, the first Addendum Report being dated 11<sup>th</sup> August 2017. This second Addendum Report describes further site investigations undertaken to reinforce an application for the lifting of a Tree Preservation Order.

## INVESTIGATIONS

The following investigations were undertaken.

### TRIAL HOLES

A trial hole was excavated to the right hand corner of the main entrance projection to expose the foundations - see site plan for location and the diagram below for details.



No.	Borehole Depth	Footing (a)	Underside (b)	Thickness (c)
TH1	3.00 m.	350 mm.	1,500 mm.	600 mm.

Trial Hole 1 revealed a brick corbel footing on a concrete and brick rubble strip footing founded at a depth of 1.5m below ground level which bears onto firm brown CLAY. Root activity of live appearance was noted to the underside of the foundations.

### AUGERED BOREHOLES

A 50mm diameter hand auger was sunk - see site plan for location.

Borehole 1 confirmed the continuation of the clay subsoil encountered within the trial pit. The borehole remained dry and open upon completion. In-situ shear vane testing confirmed the clay subsoil to be firm to 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 29% to 31% over the depth of 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.

**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 Aesculus which includes horse chestnuts. These roots had no starch content and were in a state of decay. They are therefore dead.

**DRAINS**

A CCTV survey of drainage in the vicinity of the right hand side of the main entrance projection was carried out. This revealed that all the runs surveyed had root penetration.

**DISCUSSION**

The results of this site investigations found limited evidence of root-induced clay shrinkage. The clay is plastic and thus will shrink and swell with changes in moisture content. This is supported by the following investigation results:-

- The foundations are at a depth of 1.5m which is below the level that normal seasonal movement would occur.
- The moisture contents over the full depth of the borehole are depressed which is indicative of desiccation.
- Atterberg limit testing indicates that the soil has a high volume change potential and hence will shrink and swell with changes in moisture content.
- Level monitoring has been carried out over a period from May 2017 to March 2018. The results indicate downward movement in the area of damage over the summer period (maximum 9mm) and upward movement over the winter period (maximum 9mm). This is characteristic of the seasonal pattern of foundation movement where vegetation is involved. No other cause produces a similar pattern.

**RECOMMENDATION**

The cause of the movement needs to be dealt with first. The results of the *first* site investigation, to the left side of the main entrance, confirmed that the cause of the subsidence damage was roots emanating from the lime tree adversely affecting subsoil conditions. Based on our analysis, we are satisfied there is no adverse heave risk to the property when the lime tree is removed. We are satisfied that the lime trees that are protected by a Tree Preservation Order must be removed to halt ground movement.



We note that no live roots were found in the second site investigation, to the right side of the main entrance. We note that the lime tree is immediately opposite the left side of the main entrance, and is therefore away from the right side of the entrance.

We also note that all of the trees along the frontage of Gilling Court were reduced in May 2017. The ground movement during the period of level monitoring is therefore shown to be solely due to the presence of the lime trees.

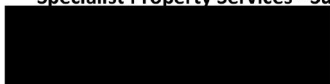
Our Mitigation Unit will liaise with the Local Authority to arrange a TPO application to be submitted and advise of the outcome when it is received. A decision is normally taken by the Local Authority after 8 weeks of submission.

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.

If the application to remove the trees is granted, this work should be completed without delay. Monitoring will then continue to confirm stability, and superstructure only repair will be undertaken. In the event that the application is refused, installation of a root barrier to the left flank, front left corner and across the front of the property would be required.

We hold a best case reserve for superstructure only repairs of c. £40,000 however, in the event root barrier installation is required, we hold a worst cases reserve of c. £90,000

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**Specialist Property Services - Subsidence Division**



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