

ADDENDUM TECHNICAL REPORT

[REDACTED]

151 Gloucester Avenue
London
NW1 8LA



Prepared for

Allianz Household

SUBSIDENCE CLAIM

DATE 29 March 2021


Crawford[®]
Crawford and Company

[REDACTED]

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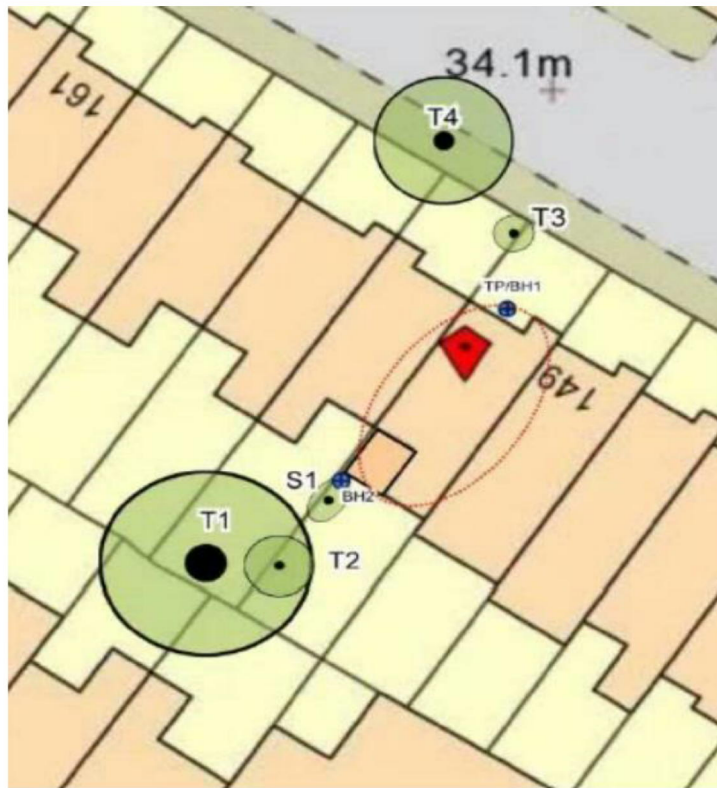
Chartered Loss Adjusters

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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 Gulley		Rain Water Pipe
	Waste Water Manhole		Waste Water Gulley		Toilet Pipe
	Rain Water Drain		Waste Water Drain		Electricity Cable
	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

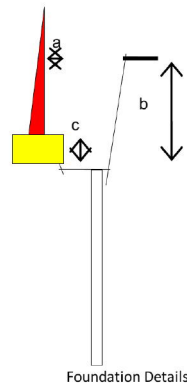
The following investigations were undertaken to identify the cause of movement.

TRIAL HOLES

Trial holes were excavated to expose the foundations - see site plan for location and the diagram below for details. Trial Hole 1 revealed a brick corbel on a concrete / crushed brick footing founded at a depth of 0.7m below ground level which bears onto firm, orange / brown, grey veined silty CLAY.

Trial Hole 2 revealed a concrete footing founded at a depth of 0.5m below ground level which bears onto a medium compact made ground. This footing is believed to be a concrete beam spanning between a deeper foundations beneath the rear doors of the extension.

Root activity of live appearance was noted to the underside of the foundations.



No.	Borehole Depth	Footing (a)	Underside (b)	Thickness (c)
TH1	2.80 m.	150 mm.	700 mm.	400 mm.
TH2	1.30 m.	0 mm.	500 mm.	500 mm.

AUGERED BOREHOLES

A 50mm diameter hand auger was sunk - see site plan for location(s). Due to issues with reaching depth with the original boreholes, a 2nd site investigation was completed to sink new boreholes. Borehole 1 which went to a depth of 5.6m confirmed the continuation of the clay subsoil encountered within the original trial pit, with roots to a depth of 1.2m below ground level. The borehole remained dry and open upon completion.



Borehole 2 which went to a depth of 5m confirmed the continuation of the made ground to 1.3m where it changed to a stiff brown clay for the remainder with roots to a depth of 3.1m below ground level. The borehole remained dry and open upon completion.

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.

ROOTS

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

DRAINS

The drainage is remote from the area of current damage and trial pit/ borehole investigations did not reveal any suggestion that leakage from drainage is adversely affecting the property. As such, a drainage investigation was not warranted.

ARBORICULTURAL REPORT

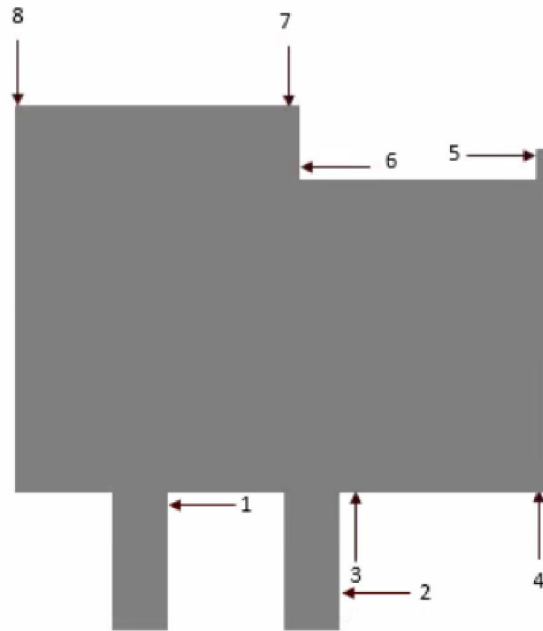
Independent arboricultural experts at MWA Arboriculture provided a report and identified T1 and S1 as the principle cause of movement and damage to the rear of the property. S1 was removed by the insured in August 2020.

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Plane (London)	25.3	1500 *	16.5 *	10.8	Similar Age to Property	Third Party 153 Gloucester Road NW1 8LA
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T4	Plane (London)	12.4	560	8	11.1	Younger than Property	Local Authority
Management history		Recently reduced/pruned.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
S1	Bamboo	2.3	15 Ms	0.7 *	2.1	Younger than Property	Policy Holder
Management history		No recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					

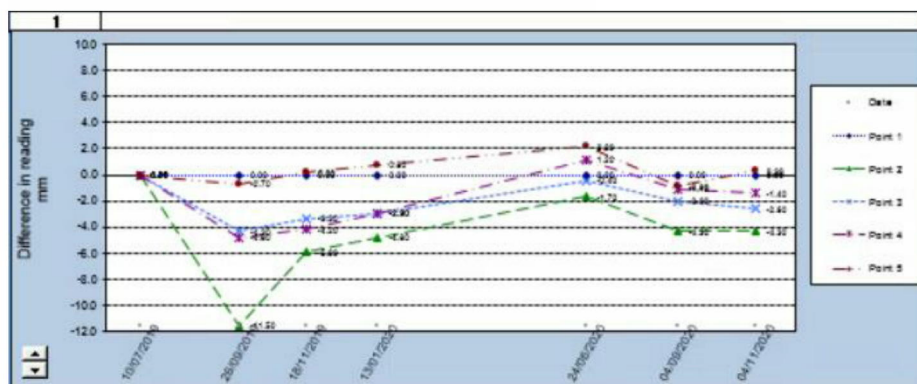


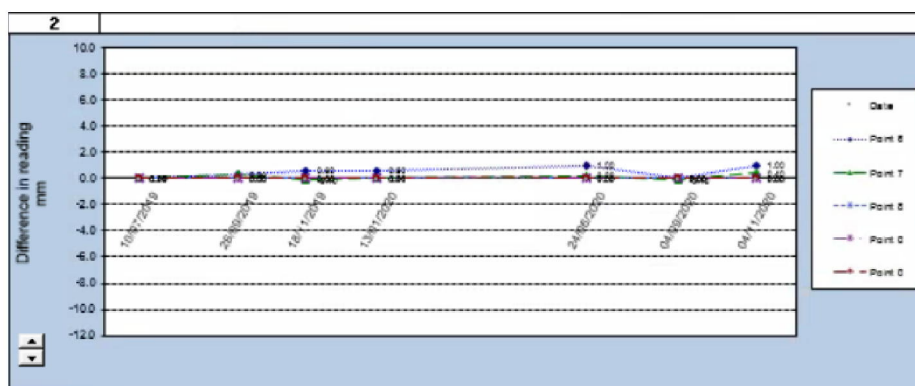
LEVEL MONITORING

Level monitoring has been completed over the period from July 2019 to November 2020. Over this period, on point 5 to the rear, upward movement has been recorded over the winter months of 2019/2020 followed by downward movement over the summer months of 2020. This seasonal movement confirms a clay shrinkage mechanism. No other type of movement produces these results.



FRONT





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 0.7m at the front of the property and the design drawings indicate a foundation depth of 2.5m on the rear extension. The rear elevation of the main house has previously been underpinned to a depth of 3 metres in 2008 all of which are below the level that normal seasonal movement would occur.
- The moisture content profile indicates a reduction in moisture content between a depth of 0.7m and 2.5m in borehole 1 and between a depth of 1.0m and 3.0m in borehole 2 which is 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/very high plasticity and hence will shrink and swell with changes in moisture content.
- Suction tests indicate very severe desiccation at a depth of 2.5m coincident with the depth of root activity.
- Roots in the borehole were identified as the species *Platanus* which includes London Plane and *Monocotyledon* which includes palms and grasses. Starch was present which indicates that the roots were alive at the time of retrieval.
- Level monitoring on point 5 at the rear of the property indicates seasonal cyclical movement with downward movement in the summer months (as the clay shrinks) and upward movement in the winter months (as the clay swells).

RECOMMENDATION

The cause of the movement needs to be dealt with first. From the results of the site investigation, the arborist originally recommended removal of T1 London Plane and S1 Bamboo however, the recommendation has now been revised to a reduction of T1 and removal of S1. S1 was removed in August 2020. Based on our analysis, we are satisfied there is no adverse heave risk to the property.



If tree remains at its current dimensions localised underpinning will be required to stabilise the property. The costs of which are expected to be [REDACTED]

If the tree is reduced and the property stabilises then repair costs will be [REDACTED]

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Crawford Claims Solutions – Subsidence

29 March 2021

Chartered Loss Adjusters