

ADDENDUM TECHNICAL REPORT

Crawford Reference: SU1503854

**16 Heath Hurst Road
Hampstead
London
NW3 2RX**



Prepared for

**RSA
3rd Floor
Bowling Mill
Dean Clough
Halifax
HX3 5WA**

Claim Reference 201509032573



Crawford and Company

Cartwright House,
Tottle Road,
Riverside Business Park,
Nottingham, NG2 1RT



SUBSIDENCE CLAIM

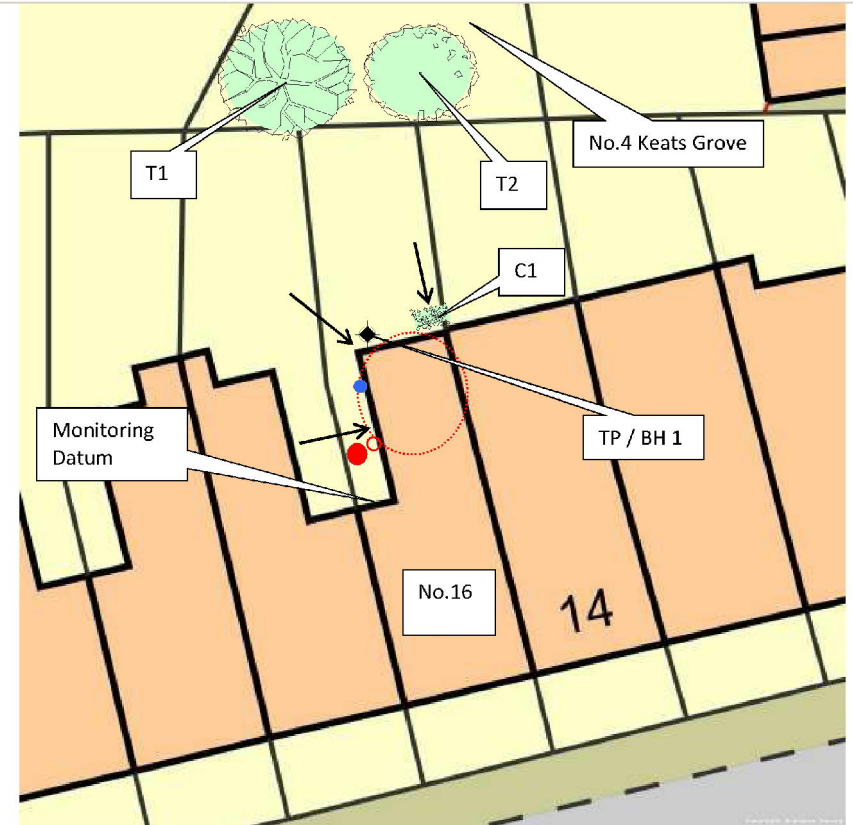
DATE 20 July 2016

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

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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, the CET report dated 4 December 2015 and the MWA report dated 26 January 2016.

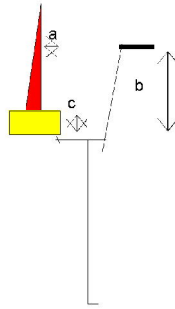
To establish the cause of damage, further investigations have been undertaken and these are described below:

INVESTIGATIONS

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

TRIAL HOLES

A trial hole was excavated to expose the foundations - see site plan for location and the diagram below for details.



FOUNDATION DETAILS

The trial hole revealed a concrete foundation at a depth of 470mm to its underside on a firm silty clay material, fully described within the CET report.

No.	Borehole Depth	Footing (a)	Underside (b)	Thickness (c)
TH1/BH1	3.00 m	200 mm	470 mm	200 mm

AUGERED BOREHOLES

A 50mm diameter hand auger was sunk at the base of the trial pit and silty clay was found down to a depth of 3.00m, again as described within the CET report.

SOIL SAMPLES / ATTERBERG LIMITS

Results indicate that the clay subsoil can be classified as very high plasticity clay in accordance with the Casagrande chart. The results in Borehole 1 indicate evidence of severe desiccation below the property foundation level.

ROOTS

Rosa (Rose) and Fraxinus (Ash) roots were found in the trial pit/borehole below the property foundation level and down to a depth of 2.60m.

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DRAINS

The CCTV investigation revealed no drainage defects, no water rise was recorded and the clay is absorbent of water. Although the drainage runs are located within the area of damage, the trial pit/borehole investigations did not reveal any suggestion that potential leakage is adversely affecting the property. As such, an escape of water has been dismissed as a possible cause.

MONITORING AND ARBORICULTURAL REPORT

Cyclical movement has been recorded up to June 2016, with the property moving upward through the wet period of 2015/2016. This type of movement can only be created by rehydrating soil, following clay shrinkage subsidence. The movement is focused to point 3 which is nearest the Ash tree (T1).

MWA have formed an arboricultural report which cites the Ash tree (T1) as the effective and substantive cause of the movement. No other local vegetation has been identified as a contributory cause. The Lawson Cypress (T2) and Jasmin shrub (C1) are identified as posing a future risk only.

DISCUSSION

The results of the site investigations confirm that the prime and effective cause of subsidence is root-induced clay shrinkage. The Ash tree (T1) is seen as the trigger of the claim. This is supported by the following investigation results:

- Rosa (Rose) and Fraxinus (Ash) roots were found in the trial pit/borehole below the foundation of the moving structure, specifically beneath the foundations to a depth of 2.60m.
- The moisture content profile indicates a reduction in moisture content between a depth of 1m and 2m in borehole 1, which is indicative of significant desiccation caused by root induced moisture extraction. The reduction in moisture coincides with the presence of Ash roots.
- The level monitoring conducted between November 2015 and June 2016 shows cyclical movement due to subsidence of the site.
- Atterberg limit testing indicates that the soil has very high plasticity and hence will shrink and swell with changes in moisture content, especially in the presence of vegetation.

RECOMMENDATION

Property stability is expected following the removal of the Ash tree (T1) and we are happy that the work can proceed without risk of heave damage being created.

Arboricultural experts have considered the efficacy of reduction works and confirmed that such measures will not be sufficient to create property stability.

Repairs are estimated to be in the region of [REDACTED] if the tree is removed promptly, before the next dry season. Underpinning localised to the affected area of the damaged property will be needed if tree felling is blocked. The cost of this work is estimated [REDACTED]

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Specialist Property Services - Subsidence Division**

[REDACTED]

20 July 2016

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