



TECHNICAL REPORT ON A SUBSIDENCE CLAIM

[REDACTED]

14 Lindfield Gardens Management Co Ltd  
14 Lindfield Gardens  
London  
NW3 6PU



prepared for

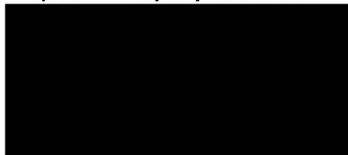
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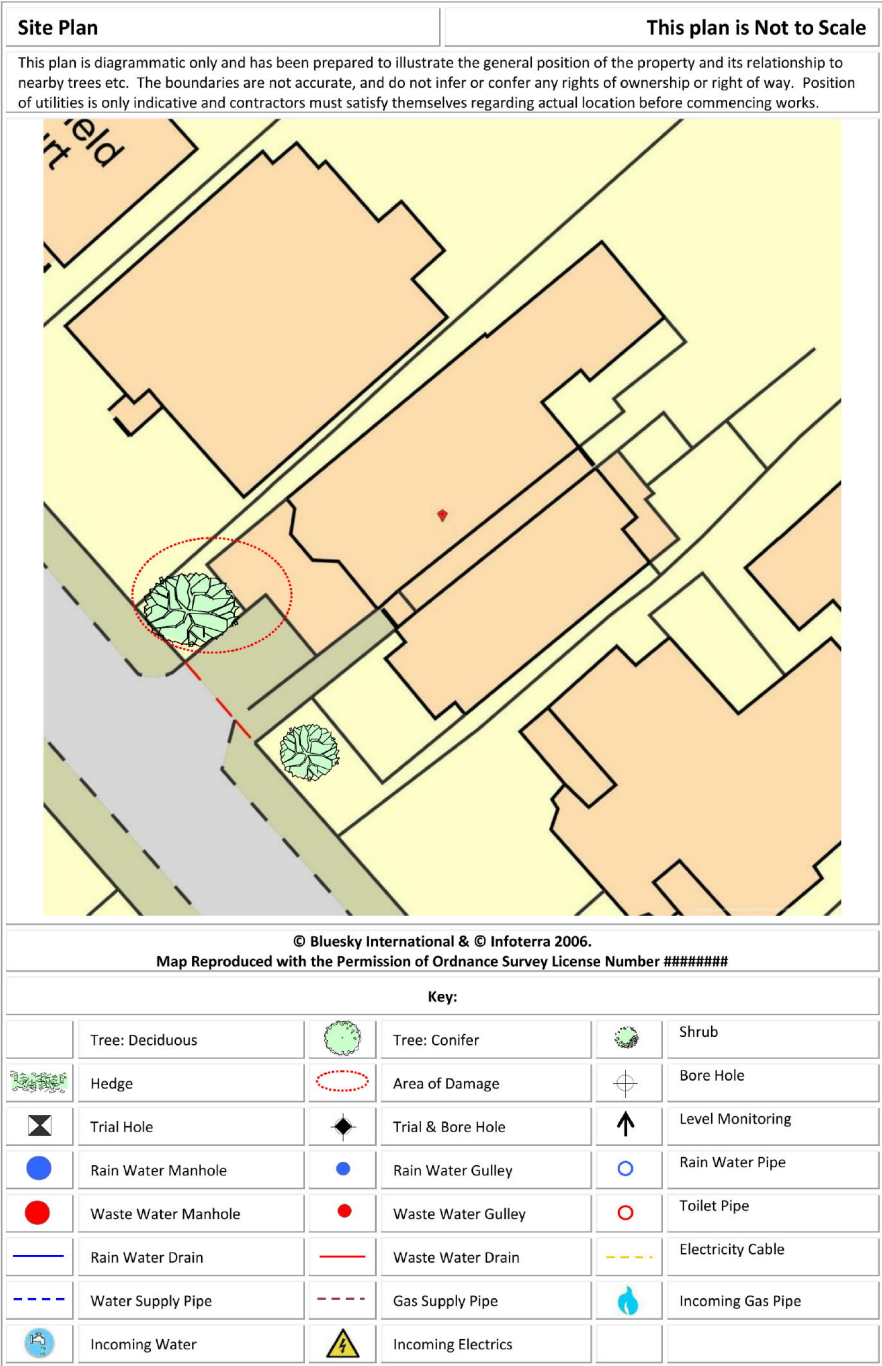
Specialist Property Services UK



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TECHNICAL REPORT



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## TECHNICAL REPORT

### INTRODUCTION

We have been asked by Covea Insurance to comment on movement that has taken place to the above property. We are required to briefly describe the damage, establish a likely cause and list any remedial measures that may be needed.

Our report should not be used in the same way as a pre-purchase survey. It has been prepared specifically in connection with the present insurance claim and should not be relied on as a statement of structural adequacy. It does not deal with the general condition of the building, decorations, timber rot or infestation etc.

The report is made on behalf of Crawford & Company and by receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of Statutory duty. Where works address repairs **that are not covered** by the insurance policy we recommend that you seek professional advice on the repair methodology and whether the works will involve the Construction (Design & Management) Regulations 2015. Compliance with these Regulations is compulsory; failure to do so may result in prosecution. We have not taken account of the regulations and you must take appropriate advice.

We have not commented on any part of the building that is covered or inaccessible.

### TECHNICAL CIRCUMSTANCES

The Insured noticed the damage in July and obtained advice from an engineer following which a claim was notified to Insurers.

### PROPERTY

The property comprises a four storey purpose built block of traditional construction with brick walls surmounted by a flat roof. The property benefits an underground carpark.

### HISTORY & TIMESCALE

We are proceeding with tree removal

Date of Construction .....	2003
Purchased .....	various
Policy Inception Date.....	01/08/2016
Damage First Noticed .....	July 2019
Claim Notified to Insurer.....	12/11/2019
Date of our Inspection.....	27/11/2019
Issue of Report.....	04/12/2019
Anticipated Completion of Claim .....	Summer 2020

### TOPOGRAPHY

The property occupies a reasonably level site with no unusual or adverse topographic features.

## TECHNICAL REPORT

### GEOLOGY

Reference to the 1:625,000 scale British Geological Survey Map (solid edition) OS Tile number TQNW suggests the underlying geology to be London Clay.

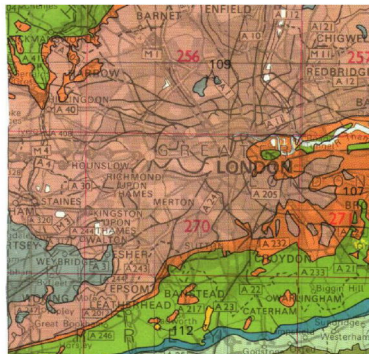
London Clays are marine deposits characterised by their silty, sandy composition. They are typically stiff, dark or bluish grey, weathered dark to mid-brown superficially with fine particle size (less than 0.002mm). Tomlinson<sup>1</sup> describes it as a 'fat' clay with high loadbearing characteristics due to pre-consolidation pressures in its geological history.

The upper horizon is often encountered at shallow depth, sometimes just below ground level. They have high shrink/swell potentials<sup>2,3</sup> and can be troublesome in the presence of vegetation.

The superficial deposits are thought to be Clay Soils.

Clay soil superficial deposits are a cohesive soil characterised by their fine particle size and are usually derived from weathering of an underlying "solid geology" clay soil such as London Clay or Oxford Clay.

Like the solid geology sub-soil from which they are derived they shrink when dry, and swell when wet and can be troublesome when there is vegetation<sup>4</sup> nearby and Gypsum and selenite crystals can be encountered (particularly in the south east). Protection using Class II Sulphate Resisting cement is therefore recommended for buried concrete.



Geology. Reproduced with consent of The British Geological Survey at Keyworth.  
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<sup>1</sup> Tomlinson M.J. (1991) "Foundations Design & Construction" Longman Scientific Publishing.

<sup>2</sup> B.S. 5930 (1981) "Site Investigations"

<sup>3</sup> Driscoll R. (1983) "Influence of Vegetation on Clays" Geotechnique. Vol 33.

<sup>4</sup> Table 1, Chapter 4.2, Para. 2.3 of N.H.B.C. Standards, 1986.

<sup>5</sup> Driscoll R. (1983) "Influence of Vegetation on Clays" Geotechnique. Vol 33.  
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### VEGETATION

There are several trees and shrubs nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
Hawthorn	16 m	1 m	Owners

Tree roots can be troublesome in cohesive (clay) soils because they can induce volumetric change. They are rarely troublesome in non-cohesive soils (sands and gravels etc.) other than when they enter drains, in which case blockages can ensue.

Hawthorn (*Crataegus monogyna*) are deciduous and can reach heights up to 14m depending on health, environment and soil conditions. On shrinkable clays they rarely achieve a height greater than 10mtrs. They have a slow growth rate of around 200mm per year and medium root activity<sup>5</sup>, although they can be deep rooted.

In the Kew Garden Survey 50% of all cases of damage occurred when the tree was within 5mtrs of the property. The maximum-recorded distance was 11.5mtrs. Interestingly they accounted for 4.6% of the total sample, and 3.5% of the tree population. In cases where the Hawthorn was implicated there was a 99% coincidence of shrinkable clays.

They were involved in 1.6% of all cases involving damage to drains.

Hawthorn's are tolerant of quite heavy pruning and crown thinning although suckering can be a problem.

Unfortunately the roots are similar to those of the apple, pear and Sorbus, all belonging to the family Pomoideae.

They have a life expectancy of less than 50 years.

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<sup>5</sup> Richardson & Gale (1994) "*Tree Recognition*" Richardson's Botanical Identifications  
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### OBSERVATIONS

The front terrace/bin store structure is the focal point of the Insured's concerns / movement.

The following is an abbreviated description. Photographs accompanying this report illustrate the nature and extent of the problem.

### INTERNAL



### BIN STORE

Water ingress to the bin store from the terrace above.

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EXTERNAL



FRONT BOUNDARY RETAINING WALL

Outwards rotation of up to 20mm of boundary retaining wall.

TERRACE/BIN STORE STRUCTURE

Outwards rotation of lower section of masonry up to 15mm.

CATEGORY

In structural terms the damage falls into Category 4 of Table 1, Building Research Establishment<sup>6</sup> Digest 251, which describes it as “severe”.

Category 0	"negligible"	< 0.1mm
Category 1	"very slight"	0.1 - 1mm
Category 2	"slight"	>1 but < 5mm
Category 3	"moderate"	>5 but < 15mm
Category 4	"severe"	>15 but < 25mm
Category 5	"very severe"	>25 mm

Extract from Table 1, B.R.E. Digest 251  
Classification of damage based on crack widths.

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## TECHNICAL REPORT

### DISCUSSION

The pattern and nature of the cracks is indicative of an episode of subsidence. The cause of movement appears to be clay shrinkage.

The timing of the event, the presence of shrinkable clay beneath the foundations and the proximity of vegetation where there is damage indicates the shrinkage to be root induced. This is a commonly encountered problem and probably accounts for around 70% of subsidence claims notified to insurers.

Fortunately, the cause of the problem (dehydration) is reversible. Clay soils will re-hydrate in the winter months, causing the clays to swell and the cracks to close. Provided the cause of movement is dealt with (in this case, vegetation) there should not be a recurrence of movement.

### RECOMMENDATIONS

The cause of the movement needs to be dealt with first. We have completed a Soil Risk Analysis (VISCAT Assessment) and we are satisfied that your Hawthorn Tree can be removed.

We will obtain a quotation for the recommended tree works. Whilst the trees are not subject of a Tree Preservation Order, they are located in a Conservation Area and therefore an application to the Council will be required.

Provided the tree management works are completed expeditiously, consideration may then be given to carrying out the appropriate repairs to the property.

**Gordon McEwan BSc (Hons) MCIOB Cert CILA**  
**Crawford Claims Solutions – Subsidence**



2 December 2019

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## TECHNICAL REPORT

### PHOTOGRAPHS



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