



## TECHNICAL REPORT ON A SUBSIDENCE CLAIM



19 Lawford Road, Kentish Town  
London, NW5 2LH

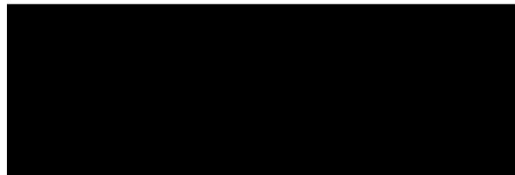


Prepared for



**SUBSIDENCE CLAIM**

30 September 2019

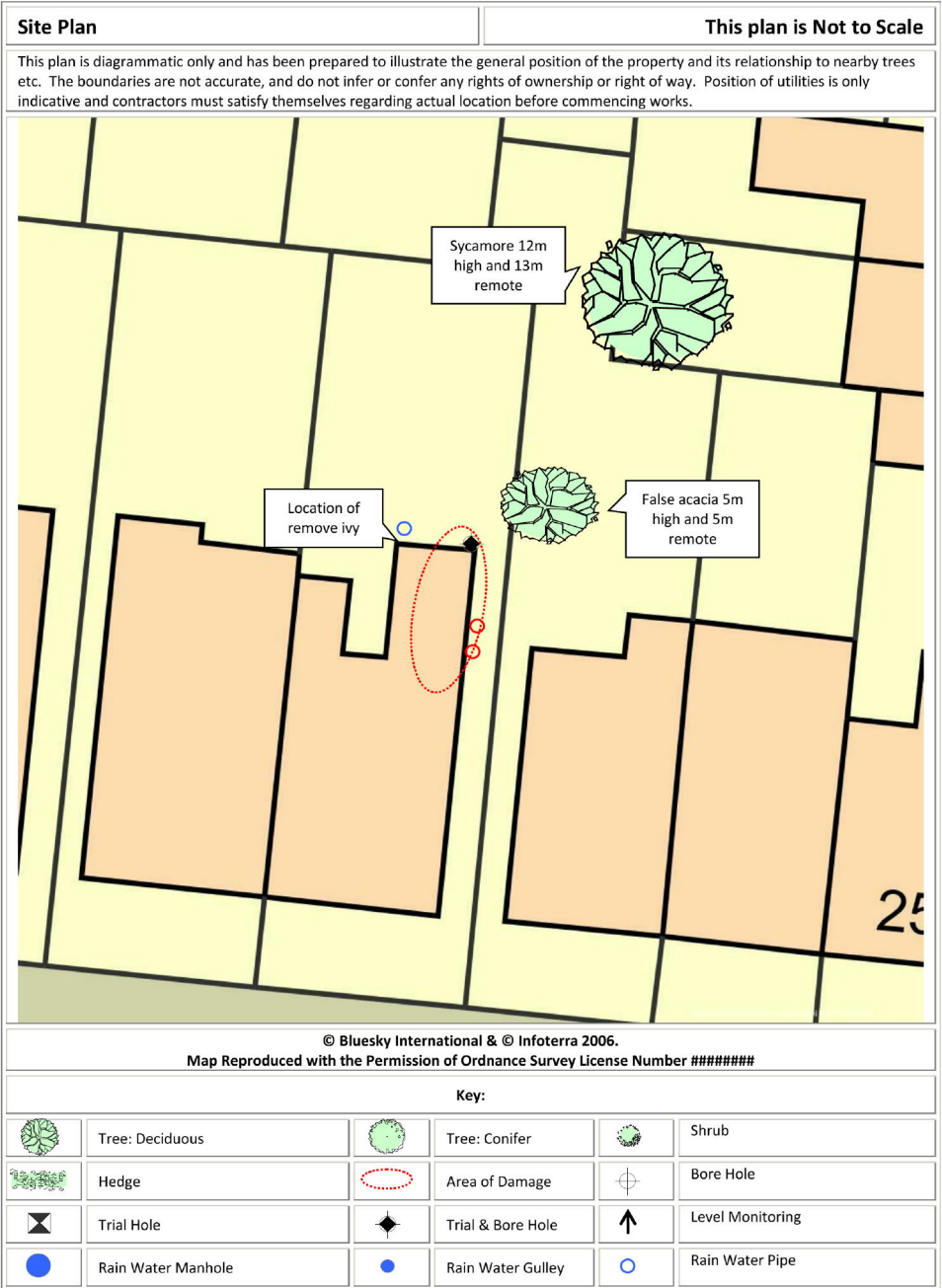


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TECHNICAL REPORT



## TECHNICAL REPORT

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

### INTRODUCTION

We have been asked by RSA 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

We understand that the internal cracking materialised relatively recently but was not considered to be of concern. However, arrangements were made to remove the Ivy from the rear of the property and this identified more notable damage. This prompted referral to Insurers

### PROPERTY

The subject property comprises of a three storey end-terrace house of traditional construction with brick walls surmounted by a hipped, slated roof. The property was originally constructed with a rear outrigger with the original being at a lower level than the main dwelling. However, prior to purchase the outrigger was extended to full height of the main body of the property.

### HISTORY & TIMESCALE

We will ascertain whether the Sycamore is subject to a Preservation Order

Date of Construction ..... Circa 1880  
Claim Notified to Insurer..... 28/08/2019  
Date of our Inspection..... 16/09/2019  
Issue of Report ..... 30/09/2019

### TOPOGRAPHY

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

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### GEOLOGY

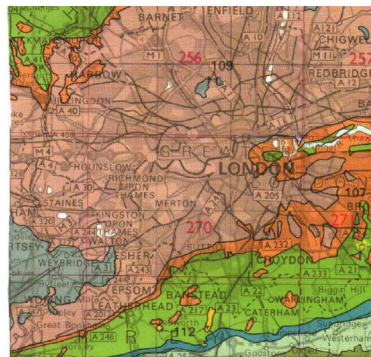
Reference to the 1:625,000 scale British Geological Survey Map (solid edition) OS Tile number TQNW suggests the underlying geology to be London Clay.

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 None - Solid Outcropping.

The solid geology appears to outcrop in this location, although we cannot rule out the presence of superficial deposits at shallow depth.



Geology. Reproduced with consent of The British Geological Survey at Keyworth.  
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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
Acacia	5 m	5 m	Neighbour
Sycamore	12 m	13 m	Neighbour

<sup>1</sup> Tomlinson M.J. (1991) "Foundations Design & Construction" Longman Scientific Publishing.

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

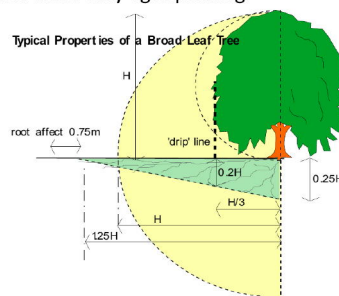
<sup>3</sup> Driscoll R. (1983) "Influence of Vegetation on Clays" Geotechnique. Vol 33.

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

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See sketch. 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.

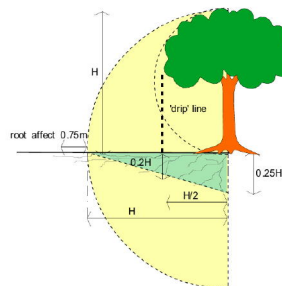
**False Acacia** (Robinia) are deciduous and can reach heights between 15-25m depending on health, environment and soil conditions. They have a fast growth rate of around 700mm per year and medium root activity<sup>4</sup>. Maximum tree-to-damage distance recorded in the Kew survey was 12.4mtrs, and 50% of cases occurred within 7mtrs<sup>5</sup>. Life expectancy between 50 - 100 years. Young trees withstand surgery, but older trees only light pruning.



Typical proportions of a Robinia. Note the potential root zone.

Sycamores (Acer) are deciduous and can reach heights between 20-30m depending on health, environment and soil conditions. They have a fast growth rate of around 600mm per year and medium root activity<sup>6</sup>.

The Sycamore is a hardy tree, and can withstand quite aggressive environments. Maximum tree-to-damage distance recorded in the Kew survey was 20mtrs, with 50% of cases occurring within 6mtrs<sup>7</sup>. They are deep rooting on clay soils and have a life expectancy > 100 years.



They can usually tolerate quite heavy pruning or crown thinning, although this can create large wounds which decay rapidly.

<sup>4</sup> Richardson & Gale (1994) "Tree Recognition" Richardson's Botanical Identifications

<sup>5</sup> Cutler & Richardson (1991) "Tree Roots & Buildings" Longman Scientific

<sup>6</sup> Richardson & Gale (1994) "Tree Recognition" Richardson's Botanical Identifications

<sup>7</sup> Cutler & Richardson (1991) "Tree Roots & Buildings" Longman Scientific

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### OBSERVATIONS

The main focal point of concern is the junction between the main body of the property and rear outrigger

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

### INTERNAL



Fracturing at junction between main body and rear outrigger

Damage to ceiling in rear bathroom

#### First floor landing

On the right-hand side, below the window, there is a 1 mm tapered vertical fracture. To the rear of the window there is a diagonal crack and evidence of pulling at the junction between the window frame and the adjacent masonry reveal.

On the internal left-hand wall there is a 1 mm diagonal crack which is present from the stair string continuing up to the ceiling

#### Rear left bedroom

The diagonal fracture present within the first floor landing is replicated within this bedroom. In addition there is a fracture in close proximity to the rear wall. This cracking is up to 1 mm in width.



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### Second floor landing

At the junction between the original dwelling and the rear outrigger there is a vertical fracture which is 0.75 mm wide. This extends down to beneath the picture rail. There is also movement and disturbance at the junction between the right-hand flank wall and the stair string. On the internal wall there is a diagonal crack present below the ceiling level.

### First floor landing

On the right-hand wall there is a 0.9 mm diagonal fracture at high-level. This cracking continues beneath the picture rail albeit it is less pronounced in this location.

### Bathroom

On the right-hand wall there is separation between the wall and ceiling. There is also a fracture which is up to 2mm in width within the ceiling.

### First floor rear left bedroom

Within the wardrobe to the right-hand side there is a diagonal fracture which is 1 mm in width.

## EXTERNAL



Separation between main building and outrigger

Cracking extends for full height of wall

### Right-hand flank

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At the junction between the main body and rear outrigger there is a tapered vertical fracture. The cracking is up to 14 mm wide at high-level. We can be satisfied that much of this movement and cracking occurred sometime ago and has been hidden by the now removed Ivy. This conclusion being drawn on the basis that the internal damage is much less pronounced than that noted externally.

The cracking reduces in width as it migrates down the building towards ground level.

On the left-hand side there was no notable obvious displacement between the main dwelling and rear outrigger.

### CATEGORY

In structural terms the damage falls into Category 3 of Table 1, Building Research Establishment<sup>8</sup> Digest 251, which describes it as "moderate".

Category 0	"negligible"	< 0.1mm
Category 1	"very slight"	0.1 - 1mm
Category 2	"slight"	>1 but < 5mm
<b>Category 3</b>	<b>"moderate"</b>	<b>&gt;5 but &lt; 15mm</b>
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.

### 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

Although the cause of the movement needs to be dealt with, Current legislation requires certain investigations to be carried out to support an application for the tree works.

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<sup>8</sup> Building Research Establishment, Garston, Watford. Tel: 01923.674040



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Typically, these investigations would involve trial pit(s) to determine the depth and type of footings, boreholes to determine the nature of the subsoil/influence of any roots and monitoring to establish the rate and pattern of movement. The monitoring data provided must be sufficient to show a pattern of movement consistent with the influence of the vegetation and therefore it may be necessary to carry out the monitoring for up to a 12 month period.

It will also be necessary to obtain a specialist Arboricultural Report.

Prior to proceeding in line with the above we will check the status of the Sycamore.

**Craig Fookes BSc (Hons) LCGI Cert CII MRICS MFPWS C.Build E FCABE BDMA Ins Tech  
Crawford Claims Solutions – Subsidence**



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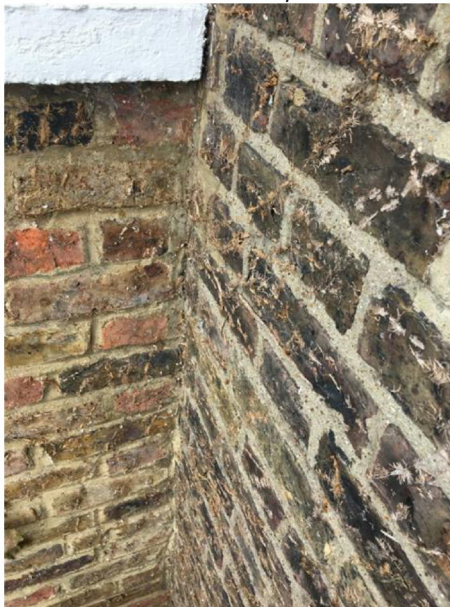
PHOTOGRAPHS



Removed ivy



Sycamore to rear



No evidence of damage to left hand side