

**TECHNICAL REPORT ON A SUBSIDENCE CLAIM**

**Crawford Reference:** [REDACTED]

**46 Parliament Hill  
London  
NW3 2TL**



Prepared for

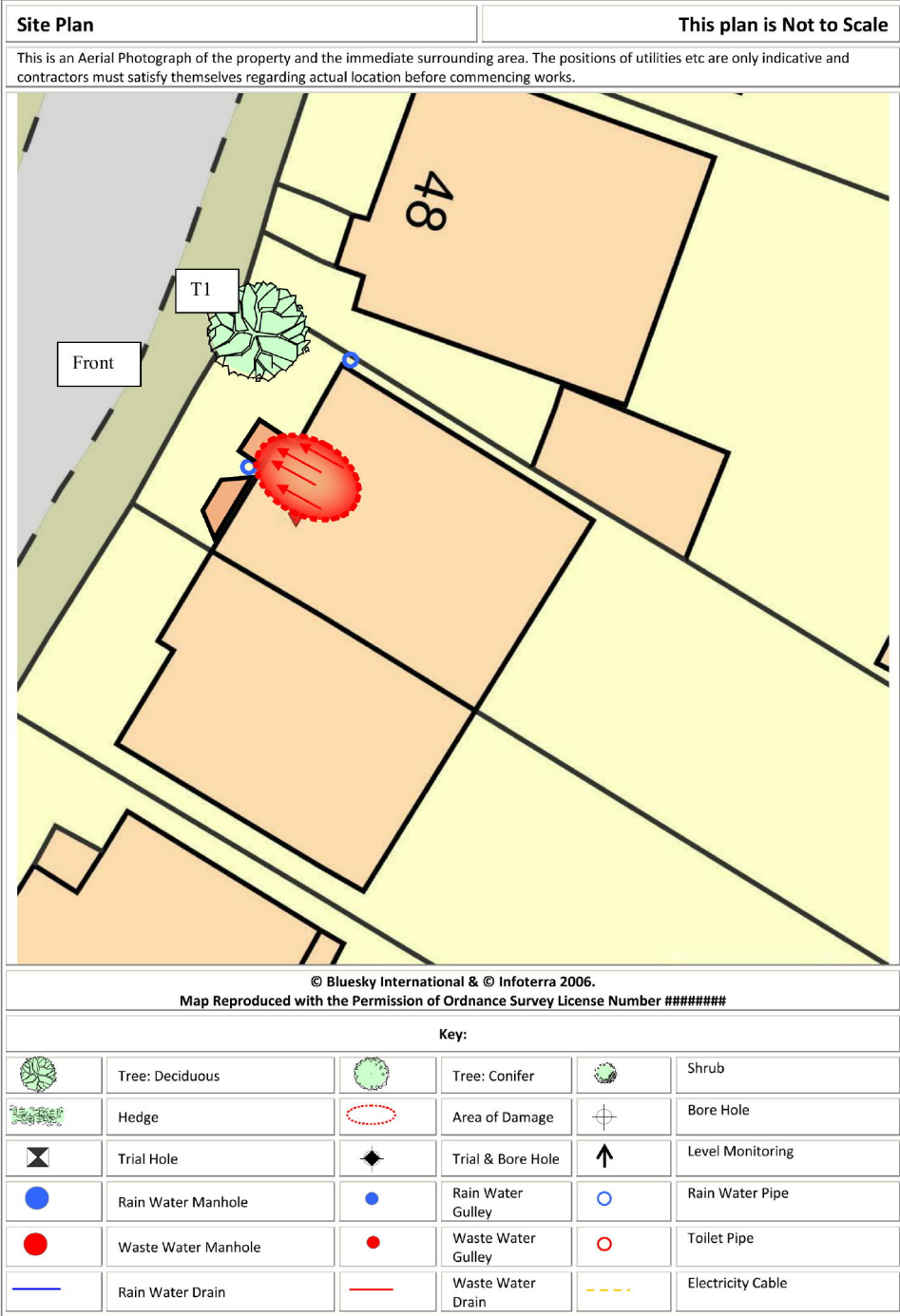
[REDACTED]

DATE 18 February 2019



[REDACTED]

[REDACTED]



## INTRODUCTION

We have been asked by RSA - Commercial 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 ground floor flat no. 2 leaseholder noticed cracks within their lounge 2 to 3 months ago with visible cracks around the front porch and hallway communal area.

There were fine cracks previously but over the last 2 to 3 months the cracks were getting wider.

Previous claim for subsidence approximately 40 years ago and the rear bay structure was underpinned.

The basement flat no. 1 was subject to an insurance claim for subsidence in 2002 however following 12 months of crack monitoring the files were closed due to negligible movement.

The loft conversion was completed 6 years ago.

The leaseholder confirmed the front porch underwent extensive repairs 15 to 20 years ago as part of property maintenance.

## PROPERTY

Five storey semi-detached house of traditional construction with brick walls surmounted by a gabled slated roof.

## HISTORY & TIMESCALE

Date of Construction .....	1900
Purchased .....	Multiple owners
Policy Inception Date .....	24/06/2014
Damage First Noticed .....	01 November 2018
Claim Notified to Insurer.....	08/01/2019
Date of our Inspection.....	30/01/2019
Issue of Report .....	18/02/2019

## TOPOGRAPHY

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

## 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.

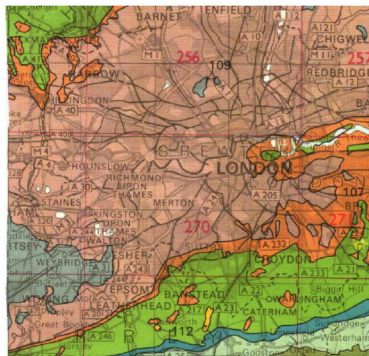
London Clays are marine deposits characterised by their silty, sandy composition. They are typically stiff, dark or bluish grey, weathered dark to mid-brown superficially with fine particle size (less than 0.002mm). Tomlinson<sup>1</sup> describes it as a 'fat' clay with high loadbearing characteristics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

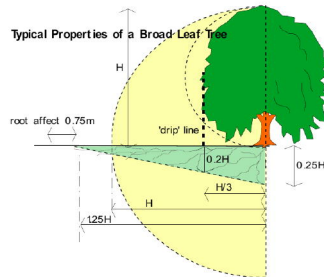
**VEGETATION**

There is a single tree nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
T1 Deciduous	8 m	4 m	Owner

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.

Broadleaf trees typically have wider spreading roots and higher water demands than coniferous species and many are better adapted to growing on heavy clay soils. Some are capable of sprouting from cut stumps or bare wood and most will tolerate pruning better than conifers.



Typical proportions of a broadleaf tree. Note the potential root zone. It must be noted that every tree is different, and the root zone will vary with soil type, health of the tree and climatic conditions.

However heavy pruning of any tree should be avoided if possible, as it stimulates the formation of dense masses of weakly attached new branches which can become dangerous if not re-cut periodically to keep their weight down.



**OBSERVATIONS**

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

**INTERNAL**

Communal hall – crack



Flat 3 front lounge - crack

**Related damage****Ground floor flat no. 2****Front lounge**

Diagonal crack to left partition wall - full height 1 to 4mm which continues across the front left of front bay structure

**1st floor flat no. 3****Front lounge**

Vertical crack to front left corner and front wall/left partition wall corner 1 to 4mm

**Communal hallway**

Diagonal crack to left partition wall to flat no. 2 front lounge - full height 1 to 5mm

**Unrelated damage****2nd floor flat no. 4****Front left bedroom**

Surface crack 1mm at low level along right partition wall

**Right side study**

Surface cracks x 3 above front window with separation crack of 3mm to left of window frame  
Slight separation to ceiling/wall junction

**1st floor flat no. 3****Rear bedroom 1**

Vertical crack below rear window

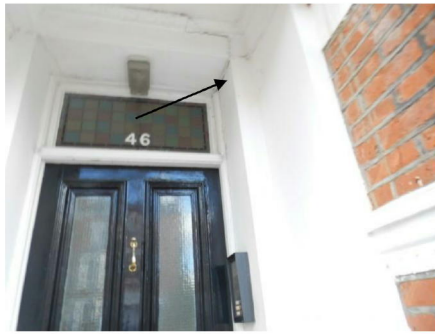
**Rear bedroom 2**

Crack below window

**Basement flat no. 1****Front bedroom**

Fine cracks above dado rail - to left partition wall

**EXTERNAL**



Cracks round front door



Cracks around front door

**Front porch**

Stepped crack above right of front door 1 to 7mm

**CATEGORY**

In structural terms the damage falls into Category 3 of Table 1, Building Research Establishment<sup>5</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
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.

**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.

<sup>5</sup> Building Research Establishment, Garston, Watford. Tel: 01923.674040

**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 the tree T1 (please see drawing) can be removed. We recommended tree removal works be undertaken, however we note that the property falls within a conservation area and as such our mitigation department will be in contact to discuss further.

Unfortunately, your Insurers do not cover the cost of tree removal works and this is something you will need to arrange and fund. Should you have any difficulty in arranging removal please let us know.

An investigation will also be undertaken to establish the condition of the drains in the vicinity of the subsidence damage. This will also enable us to determine responsibility for the drainage repairs.

Following completion of the mitigation works, we will undertake a suitable period of monitoring to confirm stability has been achieved before undertaking repairs to the property.

**Matin Abdul BSC (Hons)**  
**Subsidence Division**





**PHOTOGRAPHS**



Tree T1



Basement flat 1 – unrelated damage



Flat 2 front lounge – crack



Flat 3 rear bedroom – unrelated damage

