



## TECHNICAL REPORT ON A SUBSIDENCE CLAIM



**Cruickshank Residents Association Ltd  
1 Mornington Crescent  
London  
NW1 7RH**



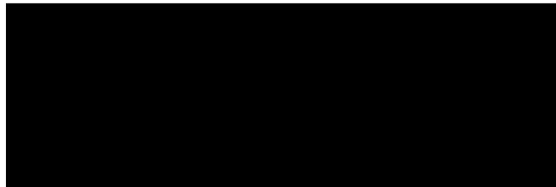
prepared for

**AXA Commercial - Strategic Partners**



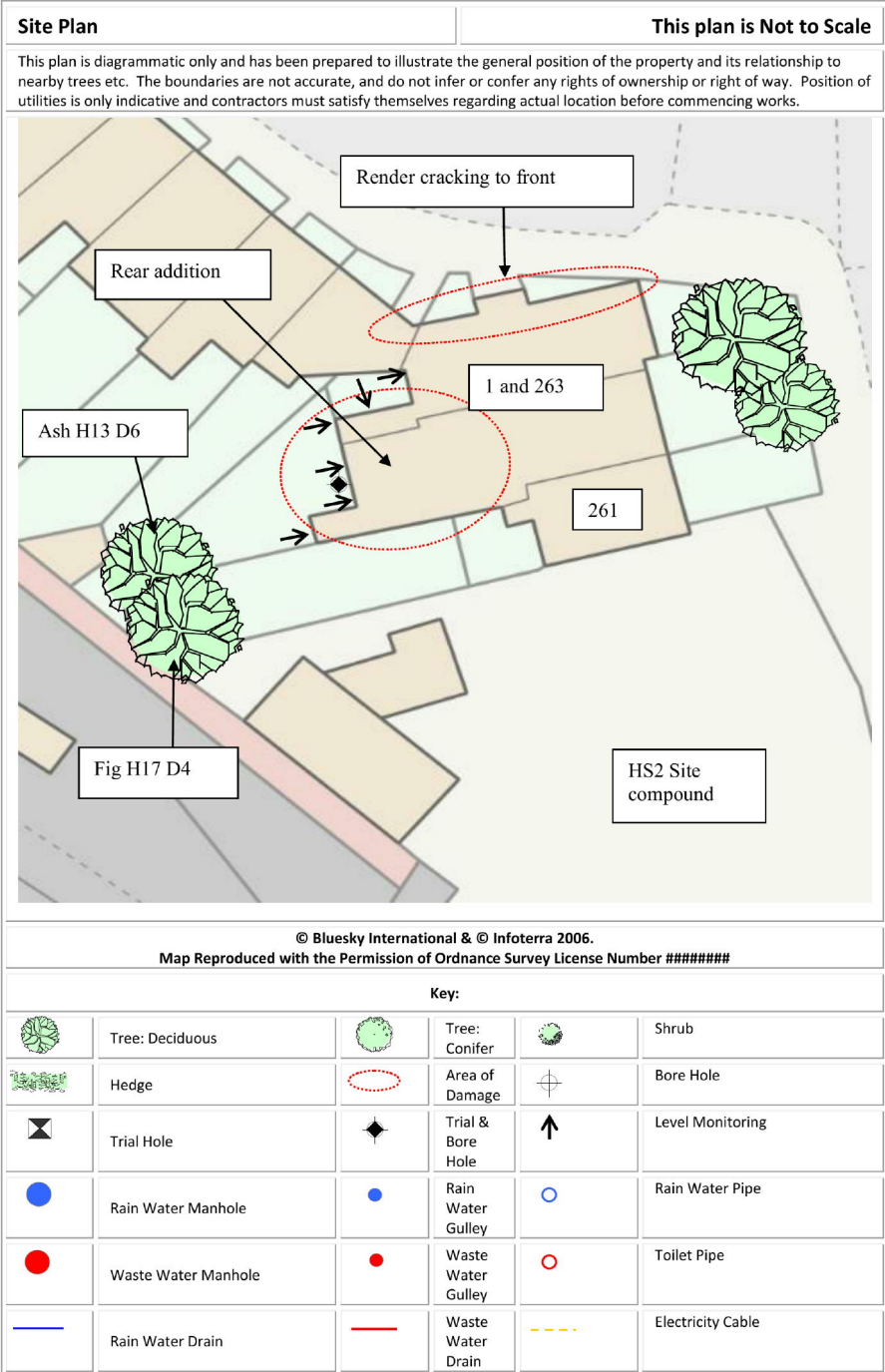
## SUBSIDENCE CLAIM




DATE 15<sup>th</sup> September 2020



Chartered Loss Adjusters





	Water Supply Pipe		Gas Supply Pipe		Incoming Gas Pipe
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**INTRODUCTION**

We have been asked by AXA Commercial - Strategic Partners 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 owner of flat 6 advised that she first noted cracking on the rear addition junction a couple of years ago but was not unduly concerned by this at first. In February 2020 the cracking to the rear corner of the main building was noted by a builder attending the property and he recommended that the insured get the cracking checked out. Insurers were notified of a potential claim.

**PROPERTY**

The risk address is a five storey end-terrace property of traditional construction with part rendered brick walls surmounted by an assumed ridged slated roof. The property has extended to the rear historically and has been converted into seven, self-contained flats.

**HISTORY & TIMESCALE**

Site investigations are being organised and crack / level monitoring is to be established.

Date of Construction .....	Circa 1780
Purchased .....	Various
Policy Inception Date.....	01/05/2015
Damage First Noticed .....	February 2020
Claim Notified to Insurer.....	08/03/2020
Date of our Inspection.....	09/09/2020
Issue of Report.....	15/09/2020
Anticipated Completion of Claim .....	Autumn 2021

**TOPOGRAPHY**

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

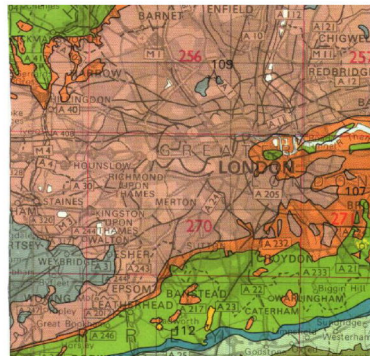
## GEOLOGY

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 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
Deciduous	12 m	8 m	Neighbour 1
Ash	13 m	6 m	Neighbour 1

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.

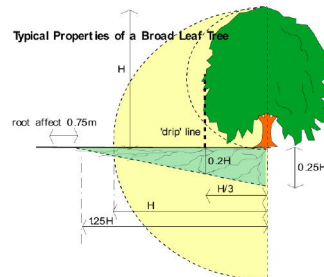
Broadleaf trees typically have wider spreading roots and higher water demands than coniferous species and many are better adapted to growing on heavy clay soils. Some are capable of sprouting from cut stumps or bare wood and most will tolerate pruning better than conifers.

<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>3</sup> Table 1, Chapter 4.2, Para. 2.3 of N.H.B.C. Standards, 1986.

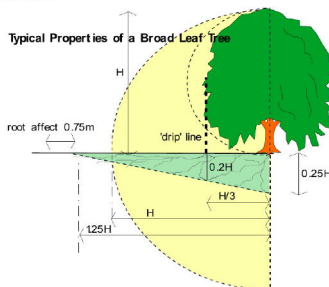


Typical proportions of a broadleaf tree. Note the potential root zone. It must be noted that every tree is different, and the root zone will vary with soil type, health of the tree and climatic conditions.

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.

Ash (*Fraxinus*) are deciduous and can reach heights between 20-30m depending on health, environment and soil conditions. They have a fast growth rate of around 500mm per year, medium root activity<sup>4</sup> and medium water demand.

It is naturally vigorous and large growing, preferring light, fertile soils, but will grow on heavy clay. The maximum tree-to-damage distance recorded in the Kew survey was 21mtrs, and 50% of recorded cases occurred within 6mtrs<sup>5</sup>.



Typical proportions of an Ash. Note the potential root zone.

Young and old trees are tolerant of quite heavy pruning and crown reduction, but the timber is not particularly decay resistant and re-growth will need periodic cutting to keep weight and wind resistance down. Life expectancy > 100years. Root pruning can leave tree vulnerable to disease.

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

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

**OBSERVATIONS**

The movement to the rear addition and render cracking to the front elevation / left hand flank are the focal points of the Insured's concerns.

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

**INTERNAL**

Cracking on rear addition junction in flat 6 rear bedroom



Cracking in flat 6 kitchen

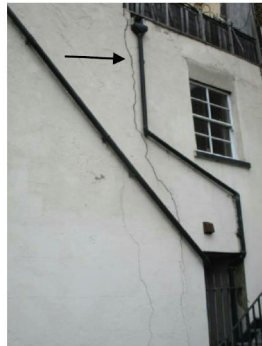
**Flat 6 - Kitchen** - 11mm vertical tapering crack to left hand flank in rear corner, 1mm vertical crack above right hand side of flank window, wall / ceiling junction cracking along rear wall.

**Rear Bedroom** - 5mm vertical tapering crack on rear addition junction right hand side, 2mm vertical tapering crack on rear addition junction left hand side, cracking to ceiling, wall / ceiling junction cracking around rear wall, 3mm diagonal crack to left hand flank in study room.

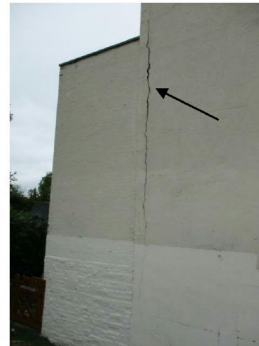
**Flat 4 - Kitchen** - Cracking to ceiling and wall / ceiling junction in rear left hand corner.

**Flat 3 - Lounge** - 1mm vertical crack below right hand side of flank window, hairline diagonal crack above flank window, hairline vertical crack down rear left hand corner junction - Not subsidence related damage.

**Hallway** - 1mm vertical crack to left hand wall continues across ceiling - Not subsidence related damage.

**EXTERNAL**

Cracking to rear addition



Cracking to rear addition

**Rear Addition** - 10mm vertical tapering separation down right hand side junction as viewed from flat 6 roof terrace, 15mm vertical tapering cracking to brickwork on rear corner of main building as viewed from flat 6 roof terrace, historic bowing noted to external walls of main building, 20mm vertical tapering crack on junction of two storey section to left hand flank, 20mm vertical tapering crack on junction of three storey section to left hand flank (left hand flank viewed from HS2 compound).

**Front Elevation** - Various 1mm - 5mm cracks in render noted at all levels above and below windows and doors, historic distortions and previous repairs noted to window and door openings - Not subsidence related damage.

**Left Hand Flank** - 2mm diagonal render cracking noted above basement windows towards front corner - Not subsidence related damage.

**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
<b>Category 4</b>	<b>"severe"</b>	<b>&gt;15 but &lt; 25mm</b>
Category 5	"very severe"	>25 mm

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

<sup>6</sup> Building Research Establishment, [REDACTED]



**DISCUSSION**

The pattern and nature of the cracking affecting the rear addition structure is indicative of an episode of subsidence. The cause of the movement appears to be clay shrinkage.

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.

The damage noted to the front section of the main property is not the result of subsidence because the pattern and nature of the cracks is not consistent with foundation movement. Apart from some minor, isolated cracking noted in Flat 3 which does not appear to be replicated externally and therefore is unlikely to be the result of foundation movement, the cracking appears to be restricted to the external rendered parts only. Previous repairs and distortions were noted across the front elevation indicating that there have been previous issues with cracking to the render historically. Whilst outside the scope of our instructions, the damage would appear to be possibly the result of normal wear and tear commonly found in rendered properties of this age and construction.

The damage to the front section of the property is excluded under the terms of the policy. The relevant exclusion is noted below:

We will not cover You in respect of:

- (1) Damage to the Property Insured caused by or consisting of
- (b) gradual deterioration or wear and tear

**RECOMMENDATIONS**

Although the cause of the movement needs to be dealt with, we note the involvement of Housing Association trees to the rear of the property. Unfortunately, they will require certain investigations to be carried out to demonstrate the influence of their vegetation.

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

We will report further once these investigations have been completed.

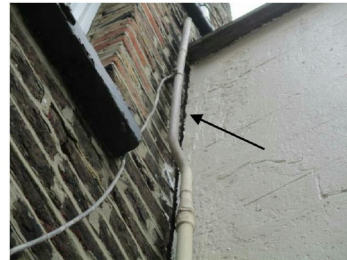
Further investigation of the damage affecting the front section of the property is beyond our brief which is to determine if the cause is due to subsidence or other events covered by the insurance policy. Consequently, you may wish to consider engaging the services of an appropriate construction professional to ensure the correct remedial action is taken in respect of this damage.

**Matt Deller BSc (Hons) MCIOS Dip CII**  
**Crawford Claims Solutions – Subsidence**

PHOTOGRAPHS



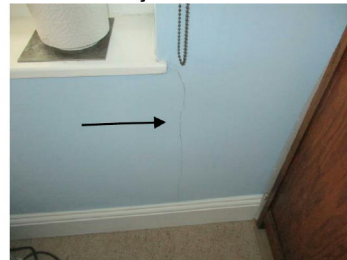
Cracking to rear elevation



View of separation at rear addition junction



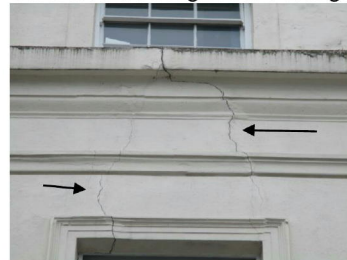
View of rear addition and trees to rear



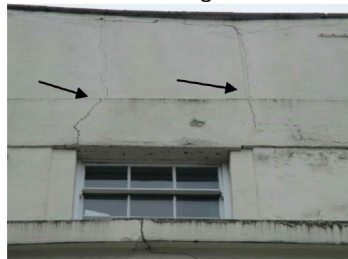
Unrelated cracking in flat 3 lounge



Unrelated cracking in flat 3 hall



Typical render cracking to front elevation



Typical render cracking to front elevation



Cracking in flat 6 rear bedroom study room