TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: [redacted]

[redacted]

161 West End Lane
London
NW6 2LG

Prepared for

[redacted]

[redacted]

SUBSIDENCE CLAIM

DATE 12th December 2018

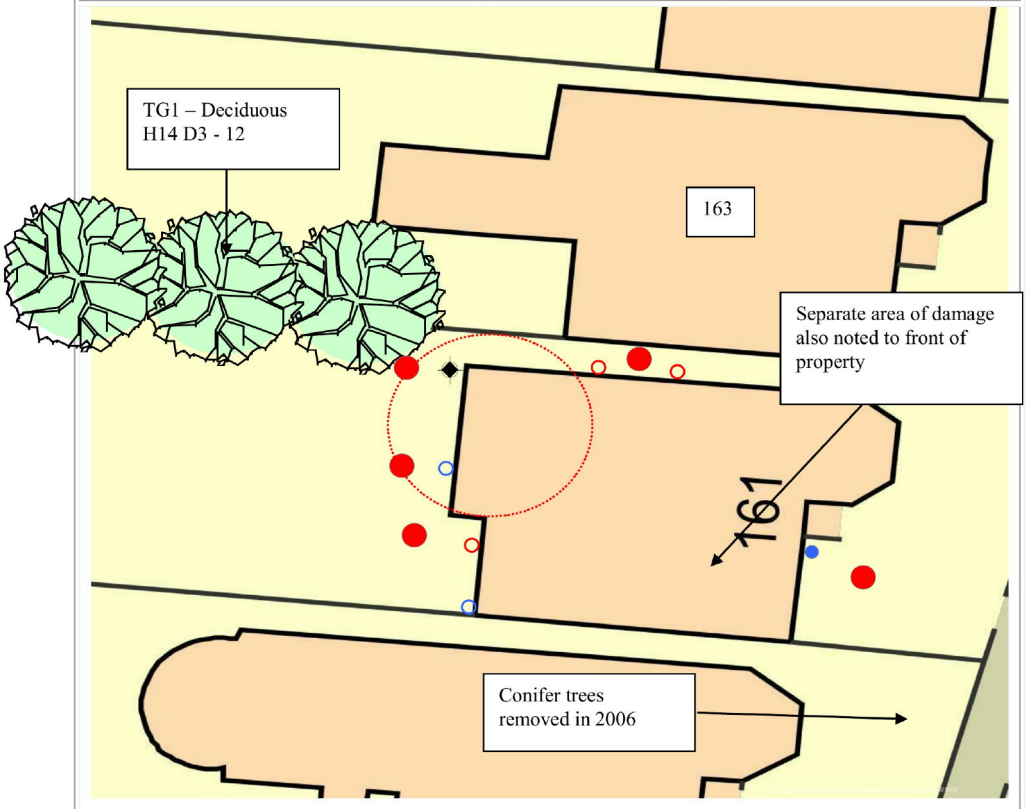
Crawford®
Subsidence Division

[redacted]

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.



Key:

	Tree: Deciduous		Tree: Conifer		Shrub
	Hedge		Area of Damage		Bore Hole
	Trial Hole		Trial & Bore Hole		Level Monitoring
	Rain Water Manhole		Rain Water Gulley		Rain Water Pipe
	Waste Water Manhole		Waste Water Gulley		Toilet Pipe
	Rain Water Drain		Waste Water Drain		Electricity Cable
	Water Supply Pipe		Gas Supply Pipe		Incoming Gas Pipe
	Incoming Water		Incoming Electrics		

[redacted]

INTRODUCTION

We have been asked by Allianz 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

Mr Hoffman advised that he first became aware of the cracking around four months ago. The cracking appeared to be progressing and he arranged for his Engineer to visit and inspect. Insurers were notified of a potential claim.

PROPERTY

The risk address is a three storey detached property of traditional construction with brick walls surmounted by a hipped, slated roof. The property has been converted into six, self-contained flats.

HISTORY & TIMESCALE

Site investigations are being organised and crack monitoring has been established. We have written to the third party regarding their trees.

Date of Construction	Circa 1900
Purchased	1960
Policy Inception Date	01/03/2010
Damage First Noticed	Circa July 2018
Claim Notified to Insurer	08/10/2018
Date of our Inspection	23/11/2018
Issue of Report	10/12/2018
Anticipated Completion of Claim	September 2020

TOPOGRAPHY

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

[redacted]

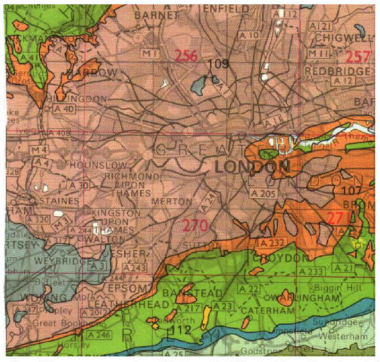
GEOLOGY

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[1] 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[2],[3] 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

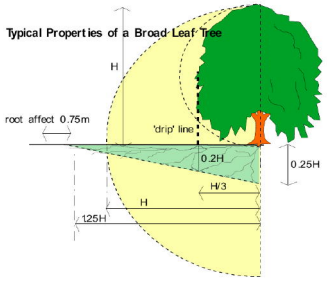
There are several trees and shrubs nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
Deciduous	14 m	3 m	Neighbour 5
Deciduous	14 m	8 m	Neighbour 5
Deciduous	14 m	12 m	Neighbour 5

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.

[1] Tomlinson M.J. (1991) *"Foundations Design & Construction"* Longman Scientific Publishing.
[1] B.S. 5930 (1981) *"Site Investigations"*
[2] DriscollL R. (1983) *"Influence of Vegetation on Clays"* Geotechnique. Vol 33.
[3] Table 1, Chapter 4.2, Para. 2.3 of N.H.B.C. Standards, 1986.

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.

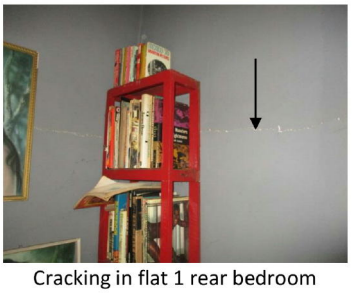
However heavy pruning of any tree should be avoided if possible, as it stimulates the formation of dense masses of weakly attached new branches which can become dangerous if not re-cut periodically to keep their weight down.

OBSERVATIONS

The movement to the rear right hand section of the property is the focal point 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 in flat 1 rear bedroom

Cracking in flat 1 rear bedroom

Flat 1 - Rear Bedroom - 4mm horizontal cracking to rear right hand corner, 4mm diagonal cracking above and below rear window, wall / ceiling junction cracking along front face of beam downstand, 5mm vertical tapering crack to left hand partition.

Communal Hall, Stairs and Landing - 3mm vertical tapering crack to right hand wall on half landing, 1mm vertical crack to left hand wall on half landing, 1mm vertical crack to right hand partition on 1st floor landing, hairline diagonal crack above door to flat 1, 1mm diagonal crack to flat 2 partition.

[redacted]

Flat 2 - Bathroom - Cracking to ceiling, hairline vertical crack to right hand side of door to hall, hairline vertical crack to left hand wall, wall / ceiling junction cracking to perimeter.

Hallway - Hairline diagonal crack to right hand wall by bathroom door.

Kitchen - Cracking to ceiling.

Lounge - 3mm diagonal previously repaired crack to communal hall partition, 2mm horizontal previously repaired crack to rear partition.

Rear Bedroom - Mirrored 2mm horizontal crack to lounge partition.

EXTERNAL

Cracking to rear right hand corner

Cracking to rear right hand corner

Right Hand Flank - 9mm stepped tapering crack to rear corner continues around onto rear elevation.

Rear Elevation - Movement noted to cill of ground floor left hand window (timber frame is extremely rotten - wear and tear issue), 3mm stepped crack below ground floor right hand window.

Right Hand Rear Boundary Wall - The majority of the brick wall has been taken down and replaced with a timber fence. The remaining section adjacent to the rear of the property is cracked and distorted.

CATEGORY

In structural terms the damage falls into Category 3 of Table 1, Building Research Establishment[4] 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.

[4] Building Research Establishment, Garston, Watford. Tel: 01923.674040

[redacted]

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.

At the time of our inspection cracking was also noted internally within flat 2 towards the front of the property. The pattern and location of this area of cracking was indicative of some movement to the front section of the property. This cracking had been repaired previously and did not appear to be recent in appearance. Our records indicate that there was a previous subsidence claim to the left hand neighbouring property (number 159) and a row of significant conifer trees which were growing within the front garden of the neighbouring property were removed in 2006. In the absence of any remaining external influences which could be causing movement to the front section of the property we must conclude that the cracking evident here is historic and was the result of the effects of the third party conifers which have now been removed. On the basis that this is a separate issue from the movement to the rear of the property, it would appear appropriate that this area of cracking should simply be repaired using appropriate crack repair techniques.

RECOMMENDATIONS

Although the cause of the movement needs to be dealt with, we note that the property is located within a conservation area and that the third party is likely to be resistant to requests to remove their trees. Unfortunately, we will need to carry out certain investigations 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.

Matt Deller BSc (Hons) MCIOB Dip CII
Subsidence Division
[redacted]

10th December 2018

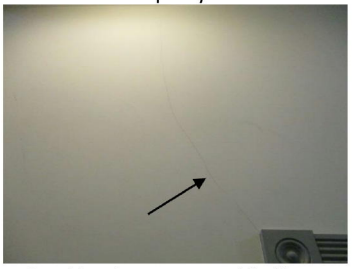
PHOTOGRAPHS

Cracking to cill (note rot to window frame - wear and tear issue)

Cracking to rear

View of thirtd party trees to rear

Cracking in communal hallway



Cracking in communal hallway

Cracking in flat 2 lounge to front of property

View of rear of property