TECHNICAL REPORT ON A SUBSIDENCE CLAIM

[redacted]

[redacted]
151 Gloucester Avenue
London
NW1 8LA

Prepared for

[redacted]

SUBSIDENCE CLAIM

DATE 13th November 2018

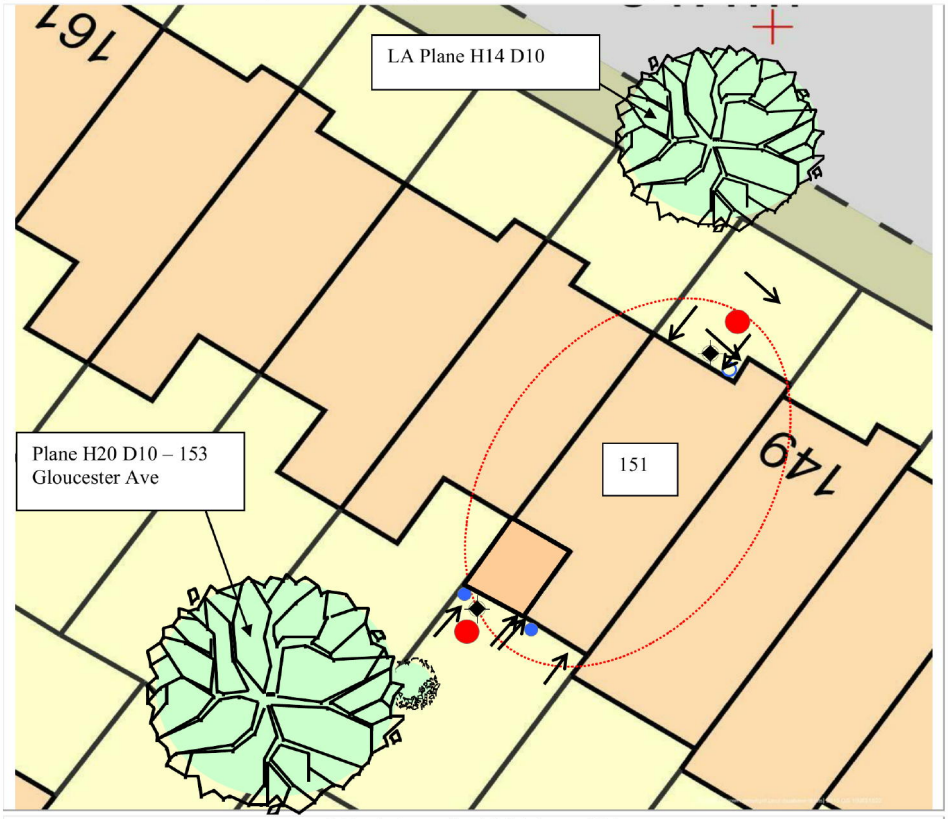
Crawford®
Subsidence Division

[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 Household 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 property was the subject of previous subsidence damage around 2008/9. A limited scheme of localised underpinning was completed to the rear of the property at that time. Mrs Hake advised that she noted a crack in the rear elevation which was previously underpinned around 5 years ago. She reported this to insurers who arranged for the damage to be inspected. The conclusion at the time was that the cracking was the result of settlement due to the underpinning and no claim arose. The crack was subsequently filled. The current cracking including the opening up of this crack has occurred over the summer months of 2018. Insurers were notified.

PROPERTY

The risk address is a five storey mid-terrace property of traditional construction with part rendered brick walls surmounted by an assumed, ridged slated roof. The property has been converted into two, self-contained flats.

HISTORY & TIMESCALE

Site investigations and crack / level monitoring will be required in the first instance. Arboricultural consultants will also need to be appointed to provide recommendations on the extent of tree works which can be undertaken.

Date of Construction	Circa 1850
Purchased	Hake - Nash -
Policy Inception Date	28/08/1996
Damage First Noticed	August 2018
Claim Notified to Insurer	08/08/2018
Date of our Inspection	01/11/2018
Issue of Report	08/11/2018
Anticipated Completion of Claim	January 2021

TOPOGRAPHY

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

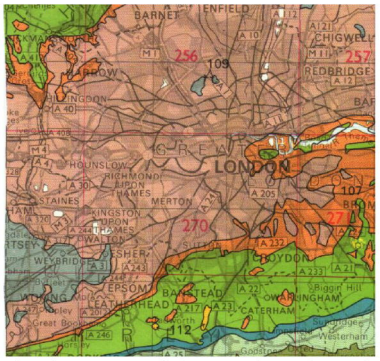
GEOLOGY

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[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

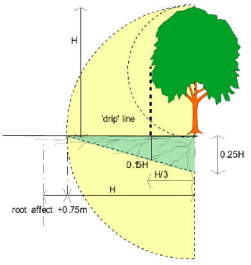
There are several trees and shrubs nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
Plane	20 m	10 m	153 Gloucester Ave
Plane	14 m	10 m	Council

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.
Planes (Platanus) are deciduous and can reach heights in excess of 30m depending on health, environment and soil conditions. They have a medium growth rate of around 300mm per year and medium root activity[4].

[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.
[4] Richardson & Gale (1994) *"Tree Recognition"* Richardson's Botanical Identifications

Maximum tree-to-damage distance recorded in the Kew survey was 15mtrs, with 50% of all cases occurring within 5.5mtrs[5]. Planes are moderately deep rooted, and are predominantly street trees.



Typical proportions of a Plane tree, showing the potential root zone.

Life expectancy > 100 years and both young and old trees tolerant of pruning and crown thinning. Urban trees are prone to infection by anthracnose, a fungal foliage disease, which can be disfiguring, if not lethal. There is also concern about canker stain disease, which can also be lethal, spreading from Europe into Britain.

OBSERVATIONS

The damage noted throughout 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 basement hallway

Cracking in ground floor dining room

Garden Maisonette - Basement Right Hand Bedroom - 5mm diagonal crack above door to hall, 1mm diagonal crack above left hand side of arch on both sides, cracking to ceiling, 2mm vertical tapering crack to right hand party wall, 4mm vertical tapering crack on extension junction right hand side.

Basement Left Hand Bedroom - Hairline diagonal crack to left hand party wall.

Basement Hall - 5mm diagonal crack above rear right hand bedroom door, 3mm diagonal crack above front bedroom door, cracking to ceiling.

[5] Cutler & Richardson (1991) *"Tree Roots & Buildings"* Longman Scientific

[redacted]

Basement Front Room - 2mm vertical / horizontal cracking above door to hall, 2mm diagonal crack above door to bathroom, various hairline cracks to right hand party wall.

Bathroom Under Front Steps - 2mm diagonal crack above door, 2mm horizontal tapering crack to front left hand corner, damp ingress damage below windows, wall / ceiling junction cracking to perimeter.

Basement Bathroom - Wall / ceiling junction cracking above door, hairline horizontal cracking to bedroom partition, gap noted along top of wall units.

Kitchen - Hairline cracking to left hand side of back door, 2mm tapering gap down wall unit junction with rear wall.

Hallway - Floor has dropped by front door and around into dining room area, front door is out of alignment and lock is difficult to operate, 2mm horizontal crack above left hand side of front door.

Lounge - Cracking to coving in front left hand corner.

Dining Room - 3mm vertical tapering crack to right hand side of French doors, cracking to coving.

Communal Hallway - Cracking to coving on right hand partition, 3mm diagonal crack above right hand side of front door, front door was sticking.

Upper Maisonette - Hall, Stairs and Landing - Cracking to ceiling in entrance section, 2mm diagonal crack above door to lounge, 1mm diagonal crack to right hand party wall, wall / ceiling junction cracking on half landings to rear wall, 3mm vertical crack above front bedroom door, historic distortions noted to stairs.

Kitchen - 2mm vertical tapering crack to right hand side of window, movement noted around window frame, 1mm vertical crack above doors to lounge.

Lounge - 1mm vertical crack above door to hall, hairline vertical crack above door to kitchen, cracking to ceiling and coving.

Rear Study - 2mm diagonal crack below window, 1mm diagonal crack above left hand side of hatch, cracking to ceiling, hairline diagonal crack above right hand side of window, coving / wall junction cracking along front elevation, 3mm vertical crack down door frame.

Front Bedroom – Hairline vertical crack above door to hall, cracking to ceiling and coving.

Top Floor Bedroom – Various cracks to ceiling, wall / ceiling junction cracking along en-suite partition.

En-Suite – Wall / ceiling junction cracking along bedroom partition.

EXTERNAL

[redacted]

Cracking to rear elevation

Cracking to rear elevation

Rear Elevation - 6mm vertical tapering cracking above both sides of French doors to terrace, 1mm vertical crack through cill to basement bedroom window, 1mm diagonal crack to left hand side of basement bedroom window, 1mm vertical crack above left hand side of door to kitchen.

Left Hand Rear Boundary Wall - 17mm horizontal tapering crack at low level along length of wall.

Front Left Hand Boundary Wall - 4mm and 2mm vertical cracks on landing section.

Front Elevation - 3mm horizontal crack above right hand side of front door, significant historic distortion noted to front door frame.

CATEGORY

In structural terms the damage falls into Category 3 of Table 1, Building Research Establishment[6] 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.

[6] Building Research Establishment, [redacted]

[redacted]

At the time of our visit some significant historic distortions were noted to be affecting predominantly the main front door area and the internal staircases particularly at upper level. These distortions appear to be longstanding and the rectification of these would fall outside of the scope of this claim.

RECOMMENDATIONS

Although the cause of the movement needs to be dealt with, we note that the vegetation to the rear is subject to a Preservation Order. Unfortunately, current legislation requires certain investigations to be carried out to support an application for the tree works. Additionally, the tree to the front of the property is the responsibility of the Local Authority. The investigations will also help to confirm whether heave will be an issue.

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.

We will report further once these investigations have been completed.

Matt Deller BSc (Hons) MCIOB Dip CII

[redacted]

13th November 2018

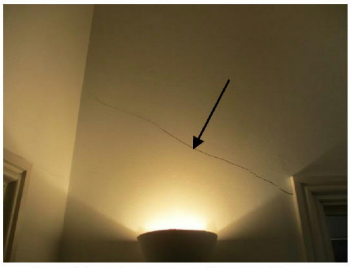
PHOTOGRAPHS

Cracking to rear left hand boundary wall

Cracking in basement bedroom

View of movement to floor in ground floor hall

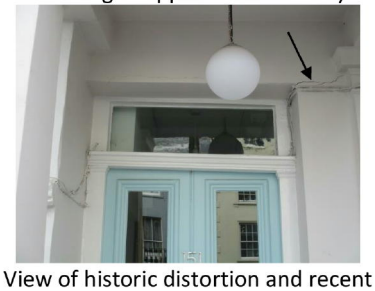
View of plane tree to rear



Cracking in upper flat hallway

Cracking in upper flat rear study

Cracking to front left hand steps boundary wall



View of historic distortion and recent cracking above front door