TECHNICAL REPORT ON A SUBSIDENCE CLAIM

[redacted]

[redacted]

22 Daleham Gardens
London
NW3 5DA

Prepared for

[redacted]

[redacted]

SUBSIDENCE CLAIM

DATE 07 November 2018

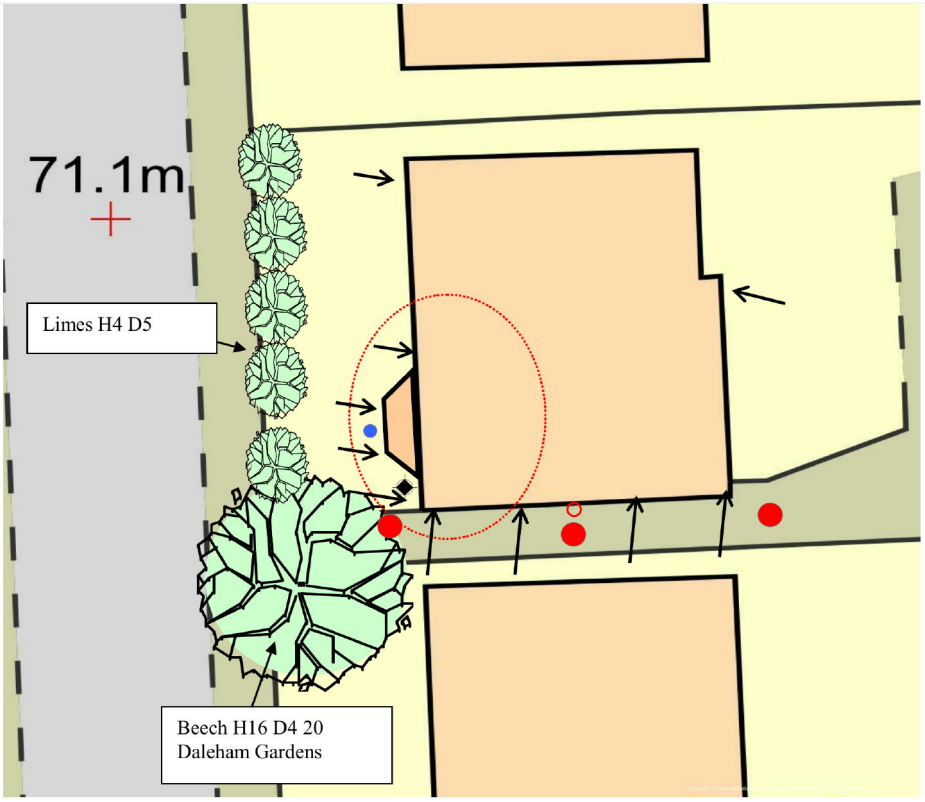
Crawford®

[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		

INTRODUCTION

We have been asked by LV= 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 Geller advised that they noted cracking appearing over the last 6 months. An engineer was instructed to visit and inspect in October 2018 and he advised that the property was showing signs of foundation movement. Insurers were notified.

PROPERTY

The risk address is a three storey with part basement to the right hand side, detached property of traditional construction with brick walls surmounted by a ridged tiled roof. The property has been converted into seven, self-contained flats.

HISTORY & TIMESCALE

Site investigations are being organised and level monitoring is to be established. We have written to the third party regarding their tree.

Date of Construction	Circa 1900
Purchased	Various
Policy Inception Date	29/01/2018
Damage First Noticed	May 2018
Claim Notified to Insurer	19/10/2018
Date of our Inspection	01/11/2018
Issue of Report	08/11/2018
Anticipated Completion of Claim	October 2020

TOPOGRAPHY

The property occupies a site sloping from the front down to the rear and sloping from the right down to the left.

[redacted]

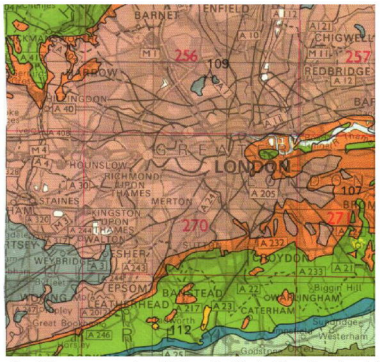
GEOLOGY

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

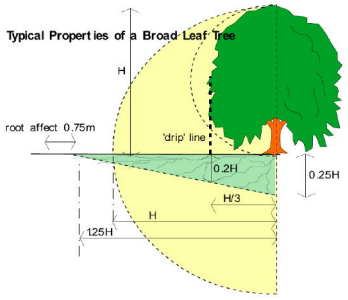
There are several trees and shrubs nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
Beech	16 m	4 m	20 Daleham Gdns

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.

Beech, (Fagus sylvatica) is a large growing deciduous species. Water demand is low, but it's size can lead to problems. It will tolerate pruning when young and can be a useful hedge species. However mature and older trees will not stand heavy pruning and can be killed by it. Lifespan is typically up to about 200 years after which they often decline rapidly.

[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.



Typical proportions of a Beech tree. Note the potential root zone.

The beech grows at a rate of 300mm a year to reach heights of between 20 - 28mtrs depending on soil and climate etc. It is regarded as having weak root activity[4].

OBSERVATIONS

The movement to the front right hand side 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 communal hall

Cracking in communal stairway

Communal Hall, Stairs and Landing - Hairline - 1mm diagonal cracking below front windows on 1st floor and 2nd floor levels, 1mm diagonal crack to right hand partition by front door, front was sticking and has been adjusted.

Flat 5 - Lounge - Wall / ceiling junction cracking along left hand flank.

Kitchen - Wall / ceiling junction cracking along right hand partition.

Hallway - Cracking to ceiling.

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

Flat 6 - Lounge - Cracking to ceiling and coving, cracking to ceiling in dormer and along top of dormer window, hairline vertical crack to left hand side of door to hall.

Kitchen - Wall / ceiling junction cracking to perimeter, cracking to ceiling.

Rear Right Hand Bedroom - 1mm vertical crack to right hand partition down solid wall / stud partition junction continues into and across ceiling.

Rear Left Hand Bedroom - Coving / wall junction cracking to perimeter.

Hallway - Coving / wall junction cracking along lounge partition, hairline vertical crack above door to lounge.

En-suite - Wall / ceiling junction cracking to perimeter, cracking to ceiling.

No access was available to other flats at the time of our inspection.

EXTERNAL

Cracking to right hand bay

Cracking to right hand bay

Right Hand Bay - 7mm vertical tapering cracking to left hand side bay junction at upper ground floor cill level, 1mm vertical crack to right hand splay at basement level above window, 3mm vertical tapering crack to right hand side junction at upper ground floor cill level.

Front Elevation - 1mm stepped crack below left hand side of 1st floor communal landing window.

Right Hand Flank - 1mm diagonal crack to front corner, 2mm diagonal tapering crack on chimney breast near front corner, concrete driveway has lifted and dropped locally around the base of the tree area.

[redacted]

CATEGORY

In structural terms the damage falls into Category 3 of Table 1, Building Research Establishment[5] 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 cracking to the communal hallway and right hand front bay area 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.

The damage noted within flats 5 and 6 is not the result of subsidence because the pattern and nature of the cracks is not consistent with foundation movement. Whilst outside the scope of our instructions, the damage would appear to be possibly the result of a combination of thermal / differential movement and possible vibration which we understand is a problem in the property due to passing vehicles. The repair of the damage in these flats falls outside the scope of this claim.

[5] Building Research Establishment, [redacted]

[redacted]

RECOMMENDATIONS

Although the cause of the movement needs to be dealt with, we note the vegetation is subject to a Preservation Order. Unfortunately, current legislation requires certain investigations to be carried out to support an application for the tree works.

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.

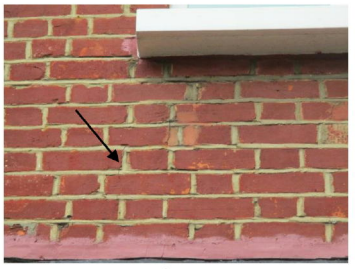
It will also be necessary to obtain a specialist Arboricultural Report. We will report further once these investigations have been completed.

Matt Deller BSc (Hons) MCIOB Dip CII
Specialist Property Services - Subsidence Division
[redacted]

07 November 2018

PHOTOGRAPHS

Cracking in communal stairway



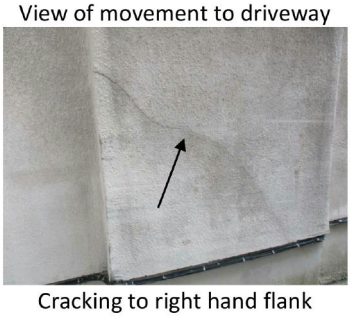
Cracking to front elevation

View of third party beech tree

Cracking to right hand bay

View of movement to driveway

Cracking to right hand flank



Cracking to right hand flank