TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: SU1701142

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10 Shirlock Road
London
NW3 2HS

prepared for

Aviva - Commercial
Commercial Claims Dept., Northfield House, 110-114 Baxter Avenue, Southend On Sea, SS2 6FF

Claim Reference 8963168

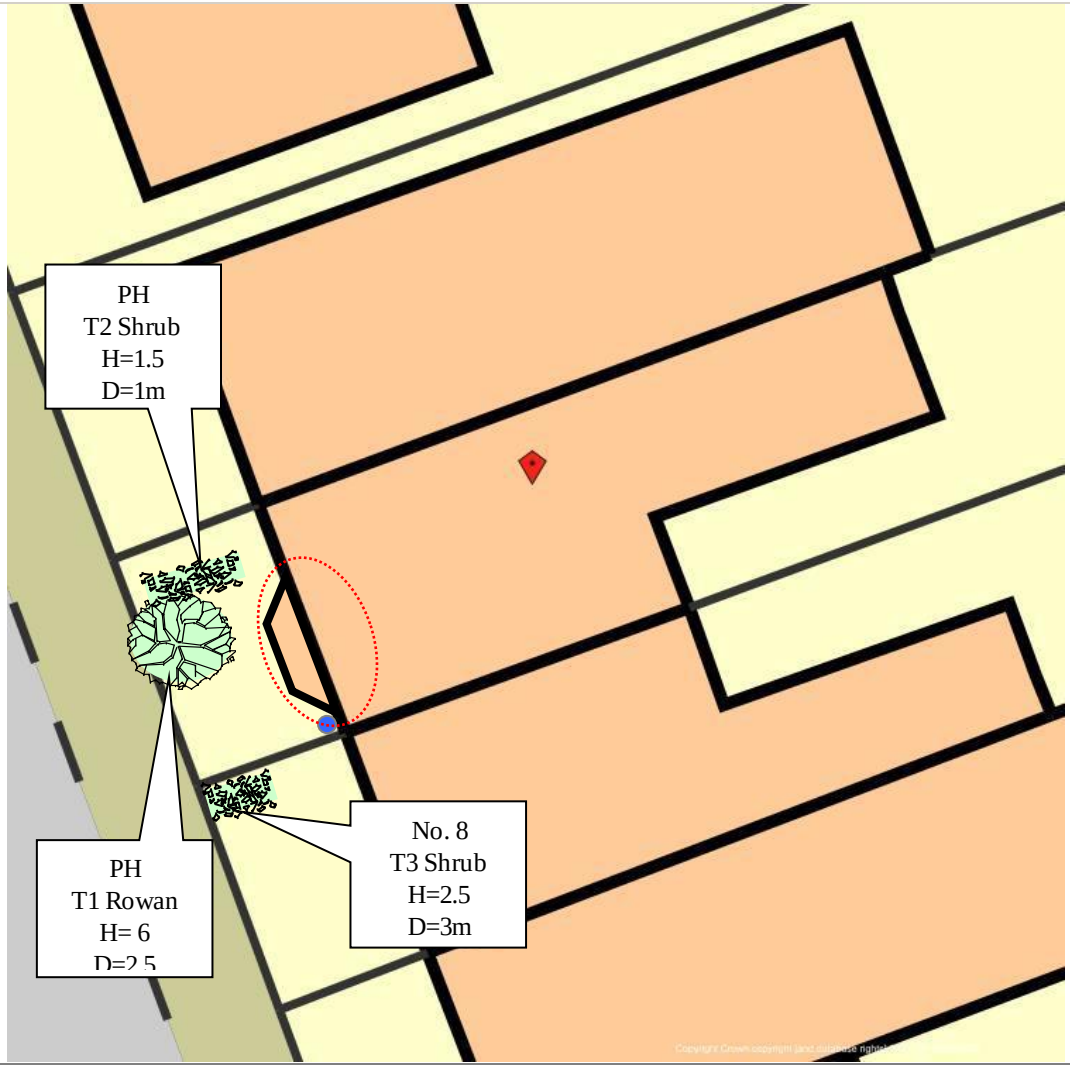
SUBSIDENCE CLAIM

DATE 17 May 2017

Specialist Property Services UK
First Floor, Cassiobury House
11-19 Station Road
Watford, Hertfordshire, WD17 1AP
Tel: 01923 471755

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 Aviva - 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 Insured noticed the damage in October and notified Insurers.

PROPERTY

Three storey mid-terrace house of traditional construction with brick walls surmounted by a ridged tiled roof.

HISTORY & TIMESCALE

Mitigation works are being organised.

Date of Construction	Circa 1900
Purchased	1974
Policy Inception Date	02/09/2015
Damage First Noticed	01/10/2016
Claim Notified to Insurer	29/03/2017
Date of our Inspection	16/05/2017
Issue of Report	22/05/2017
Anticipated Completion of Claim	Winter 2017

TOPOGRAPHY

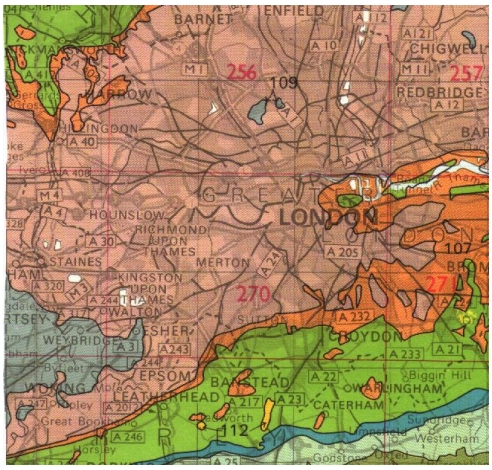
The property occupies a reasonably level site with no unusual or adverse topographic features.

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.



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
Rowan	6 m	2 m	Owners
Shrubs	1.5 m	1 m	Owners
Shrubs	2.5 m	3 m	No. 8

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.
Rowan or mountain ash, Sorbus aucuparia and the closely related whitebeam, S.aria are fairly vigorous medium sized trees. They are both native and there are also numerous exotic and cultivated forms which are commonly planted in gardens. They in the same division of the rose

[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.

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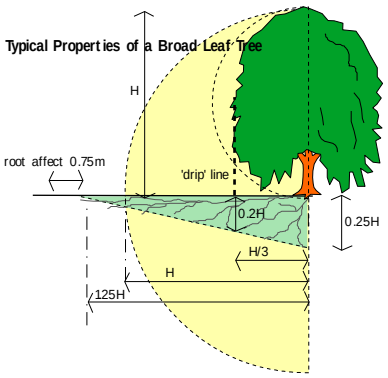
family as apples, pears and hawthorns and the ornamental forms are often grafted onto hawthorn root stocks. They are moderate water demanders and tolerate pruning quite well, particularly when young.



Shrubs. Sometimes even small shrubs can cause localised subsidence damage. In the Kew Garden Survey data was collected between 1979 - 86 to record the number of roots of each species received for identification. Of the 1009 roots identified, 367 (36%) belonged to the family *Rosoideae* or Rose. Next came the family *Oleaceae* (Forsythia, Jasmin, Privet and Lilac) with 354 (35%) enquiries.

Berberis, Viburnum, Hedera (ivy), *Hydrangea and Pyracanthus* are also regularly associated with foundation movement, the latter having surprisingly large roots on occasions.

OBSERVATIONS

The main area of damage affects the front bay.

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

INTERNAL

GF Front Bedroom – Diagonal Crack at Bay Junction

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Ground Floor Front Bedroom (5 x 3.9 x 3)

- Separation of front bay to left and right hand side - 2mm
- Vertical crack below bay - 2mm
- Vertical crack on rear wall - 2mm
- Cracking in ornate cornice to front - 2mm
- Separation in timber to front

Lobby (1.5 x 1.1 x 3)

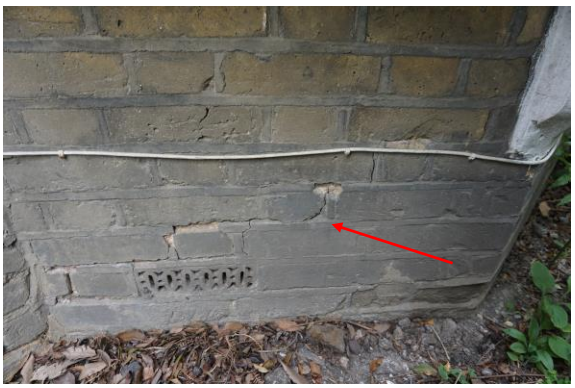
- Vertical crack on front wall - 2mm

First Floor Front Lounge (5 x 5.3 x 3)

- Diagonal crack at junctions of bay - 2mm
- Cracks in cornice to front - 1mm

EXTERNAL

Front Bay – Stonework Separation



Front Bay – Stepped Cracking

Front Elevation (7.4 x 9)

- Separation of left column from window - 3mm
- Stepped crack to left hand side - 2mm
- Separation of sill - 4mm

CATEGORY

In structural terms the damage falls into Category 2 of Table 1, Building Research Establishment[4] Digest 251, which describes it as "slight".

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.

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 your Rowan tree and shrub in front of the tree can be removed.

Please arrange removal of the Rowan and shrub at your earliest convenience.

Provided the tree management works are completed expeditiously, consideration may then be given to carrying out the appropriate repairs to the property.

Callan Harwood-Griffith BSc (Hons)
Subsidence Division
Direct Dial : 0115 943 8260
subsidence@crawco.co.uk

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

PHOTOGRAPHS

GF Front Bedroom – Vertical Crack Above Door to Lobby

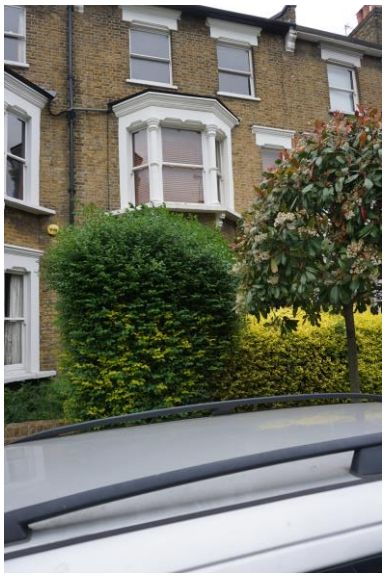
FF Front Bedroom – Diagonal Crack to Bay Junction

FF Front Bedroom – Diagonal Crack to Bay Junction

Front Bay – Separation of Sill from Main House

FF Bay – Separation at Junction to Main House

Rowan to Front



Neighbour's Hedge