TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: SU1703328

Mr Alasdair Graham
23 Rochester Square
London
NW1 9SA

Prepared for

Ecclesiastical Insurance Group
Beaufort House, Brunswick Road, Gloucester, GL1 1JZ

Claim Reference 179768

SUBSIDENCE CLAIM

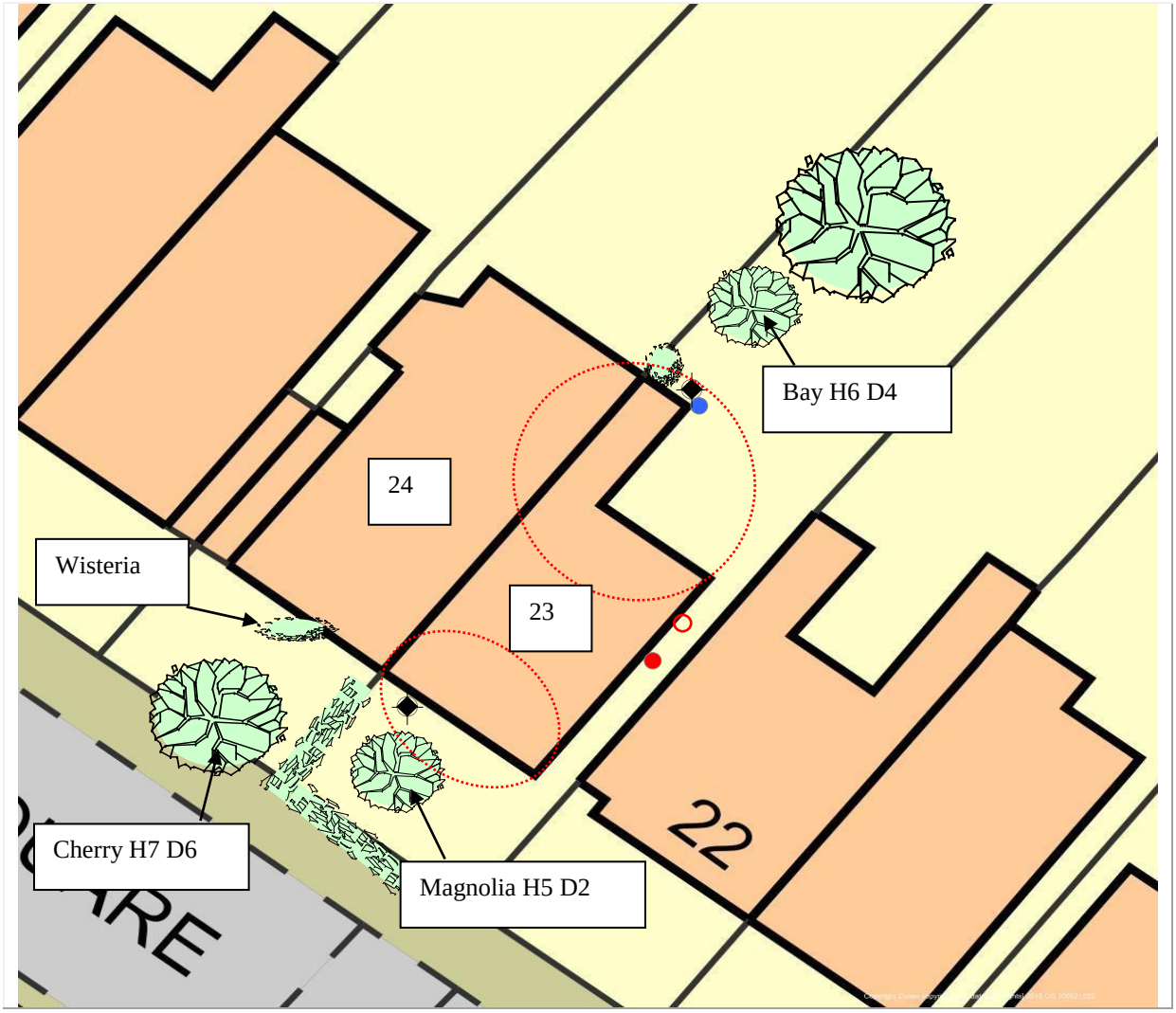
DATE 9th October 2017

Specialist Property Services UK
First Floor, Cassiobury House,
11-19 Station Road,
Watford, WD17 1AP.
Tel: 01923 471755
Fax: 01923 471720

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 Ecclesiastical Insurance Group 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 Graham advised that their adjoining left hand neighbours (number 24) are suffering from subsidence damage to the front and rear of their property. They made him aware of the problems and Mr Graham subsequently notified insurers of minor damage which he had observed within the property. We understand that Infront were appointed and undertook an inspection around 8 weeks ago. They concluded that the damage evident at that stage was not indicative of foundation movement and the claim was declined. We understand that the damage has progressed and insurers were contacted again regarding this. Crawford & Company were appointed to undertake an inspection.

PROPERTY

The risk address is a four storey semi-detached house of traditional construction with part rendered brick walls surmounted by a hipped, slated roof. There is a single storey addition to the rear of the property which appears to be part of the original construction.

HISTORY & TIMESCALE

Subject to Insurer's approval, site investigations will be instructed and arborist report obtained to provide recommendations on the extent of tree works which can be undertaken.

Date of Construction	Circa 1840
Purchased	2007
Policy Inception Date	31/07/2012
Damage First Noticed	July 2017
Claim Notified to Insurer	29/09/2017
Date of our Inspection	03/10/2017
Issue of Report	09/10/2017
Anticipated Completion of Claim	January 2019

TOPOGRAPHY

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

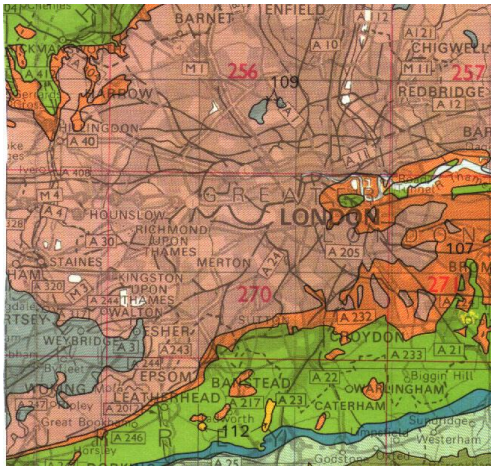
GEOLOGY

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. Licence IPR/34-7C CSL British Geological Survey. ©NERC. All rights Reserved.

[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.

VEGETATION

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

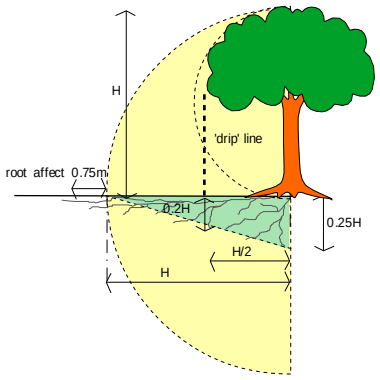
Type	Height	Distance	Ownership
Bay	6 m	4 m	Owner's
Magnolia	5 m	2 m	Owner's
Cherry	7 m	6 m	Neighbour 1
Wisteria	6 m	0 m	Neighbour 1

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.

The Bay (Laurus) is an evergreen that can reach heights of between 10 – 14mtrs. It's a slow growing tree (150mm p.a.) with weak root activity.

Magnolias are typically small deciduous flowering trees and shrubs with low water demands and structural problems associated with the smaller ones are relatively uncommon although they are frequently planted in gardens. The evergreen southern magnolia, Magnolia grandiflora, can grow large and is frequently grown against walls to give shelter.

The Magnolia can reach heights of between 8 - 12mtrs and are fairly slow growers - 200mm per year approximately[4]. They have weak root activity with low water demand.



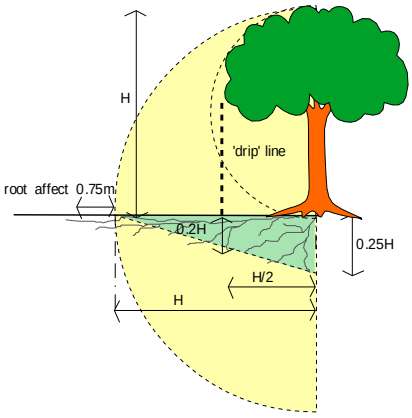
Typical proportions of a Magnolia, showing the potential root zone.

Most of them will grow fairly well on clay soils, though most prefer lighter, fairly acid sites. Healthy individuals will tolerate pruning better than their delicate appearance might suggest, but heavy pruning should be avoided if possible.

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

Cherries, Prunus species, include Japanese flowering species, which are mainly small growing short lived moderate water demanders and the native wild cherry, P.avium, which is generally longer lived and capable of reaching over 20m.

The growth rate is 300mm a year and they have medium root activity. They can be associated with subsidence, although they are not regarded as a particularly aggressive tree.



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

Most Prunus species have wide spreading roots and a tendency to send up sucker shoots, often a long way from the parent tree. The genus includes plums, laurels, Portugal laurel, the roots of which are indistinguishable from each other.

Climbers: Can be significant in subsidence cases as they are frequently planted close to the property, trained up house walls. As their roots do not need to spread to provide support they are frequently compact, and can have an intense but localised desiccation effect. Most tolerate pruning well, but respond by sprouting vigorously and need regular maintenance. Pyracantha or firethorn is common and has roots which cannot be distinguished anatomically from apple, pear and other members of the Pomoideae group of the rose family. Wistyeria roots are similar to those of other members of the pea family, including laburnum and false acacia.

OBSERVATIONS

The movement to the front and rear sections of the property 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 in utility room

Cracking in lounge

Utility Room - 5mm diagonal tapering crack above left hand side of flank window continues along wall / ceiling junction on rear wall, 5mm previously filled crack to left hand party wall, cracking to ceiling, 3mm separation along ceiling junction with house.

Kitchen - 1mm diagonal crack to left hand party at low level near front wall, various cracks to ceiling, wall / ceiling junction cracking along rear wall, 1mm vertical crack to left hand side of chimney breast above cooker.

Lounge - Cracking to ceiling and coving in front and rear sections, 1mm diagonal crack to front left hand corner at high level, hairline diagonal crack above right hand side of door to hall, rucking to wallpaper down rear right hand corner junction.

Hallway - Hairline diagonal crack to right hand side of front door, hairline vertical crack above door to lounge.

First Floor Rear Bedroom - Crack across ceiling, hairline vertical crack above door to en-suite.

En-suite - Cracking to ceiling, hairline diagonal crack above door to bedroom, condensation noted to walls and ceiling - not subsidence related damage.

First Floor Front Bedroom - Cracking to ceiling, hairline vertical crack above window, hairline diagonal crack to bathroom partition.

Stairs to Loft Rooms - 1mm vertical crack to right hand flank - Not subsidence related damage.

Rear Loft Bedroom - Cracking to ceiling - Not subsidence related damage.

EXTERNAL

Cracking at rear addition junction

Cracking to front elevation

Front Elevation - 1mm vertical tapering cracking above and below basement window, hairline cracking above right hand side of basement window. Historic cracking to Terrazzo paving at base of front steps, crack below coping to left hand side steps wall - Not subsidence related damage.

Rear Addition - 2mm vertical crack above right hand side of right hand window, 2mm vertical tapering separation at junction with house.

CATEGORY

In structural terms the damage falls into Category 2 of Table 1, Building Research Establishment[5] 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.

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

DISCUSSION

The pattern and nature of the cracking 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.

Minor cracking was noted within the loft area which is not indicative of that associated with foundation movement. The cracking appears to be the result of normal thermal / differential movement and the repair of these areas will fall outside the scope of this claim. Cracking was also noted to the Terrazzo paving within the front garden and the front steps wall. This appeared to be longstanding damage unconnected to the recent minor movement to the main property. The repair of these areas will fall outside the scope of this claim.

RECOMMENDATIONS

The cause of the movement needs to be dealt with first. The adjoining left hand property (number 24) has an ongoing subsidence claim and we understand that their adjusters have recommended vegetation management works relating to shrubs and trees in their front garden. If this work is completed in addition to possible further works to vegetation under the control of Mr Graham, this should assist in restoring stability to the front section of the property.

We suspect that the bay tree within Mr Graham's rear garden is the most likely cause of the movement to the rear addition. The property is located within a conservation area so site investigations will be required to obtain evidence confirming the influence of the relevant vegetation. We will update further on completion of the site investigations.

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

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5 October 2017

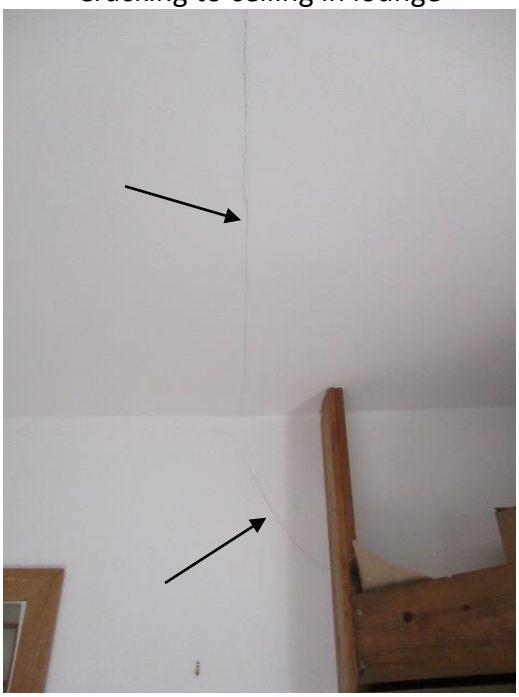
PHOTOGRAPHS

View of trees to rear

Cracking in kitchen

Cracking to ceiling in lounge

Cracking in lounge



Cracking in front bedroom

Cracking to front elevation

View of insured's magnolia in front garden