

TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: SU2300596

**Finlandia
Kings Walden Road
Hitchin
SG5 3DT**



SUBSIDENCE CLAIM

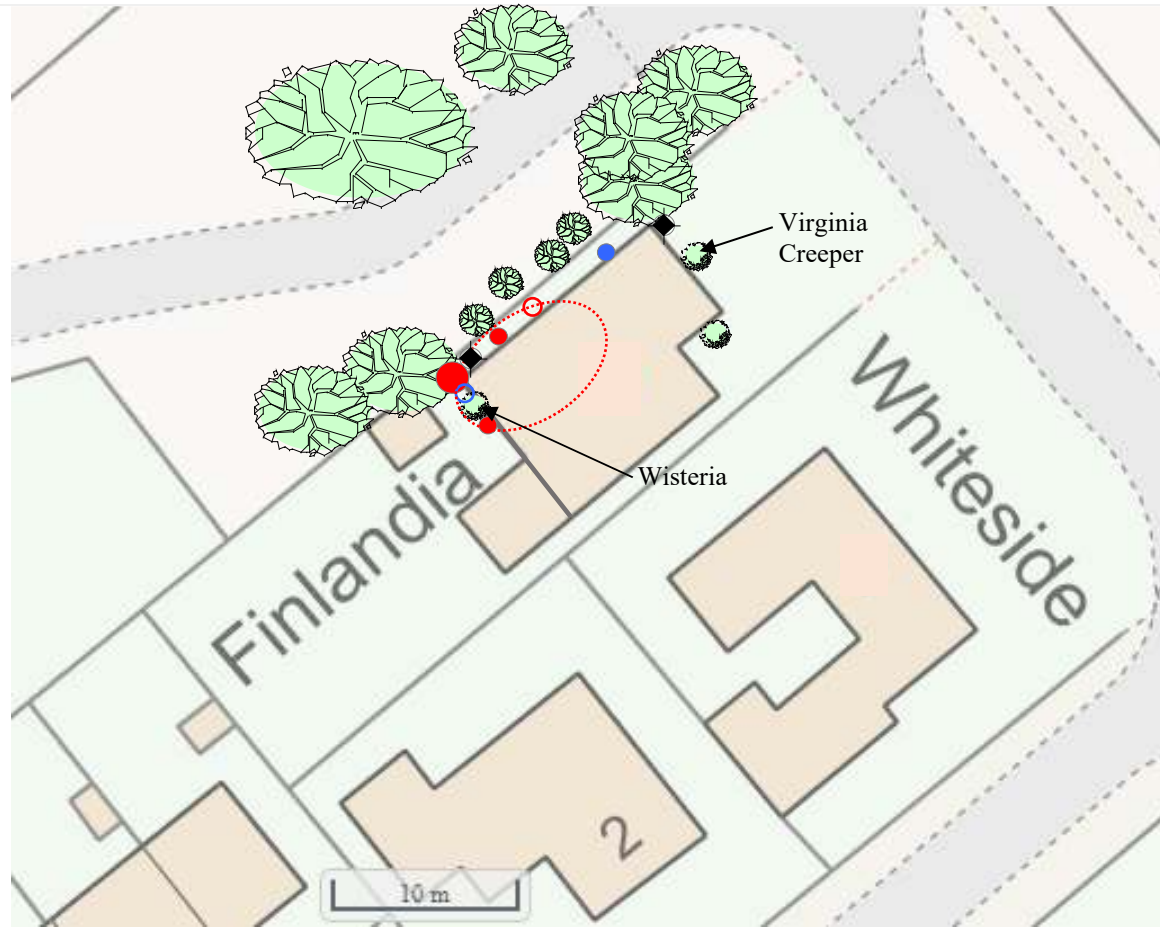
DATE 12 February 2024

**Crawford Claims Solutions – Subsidence
Cartwright House,
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Tel: 0115 943 8260
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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.



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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		

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INTRODUCTION

We have been asked by Insurers 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

In March 2017 (prior to the Policyholder's purchase of the property) a subsidence claim was submitted to the then insurer (Direct Line Group) in respect of cracking to the front of the property. The damage was investigated by Subsidence Management Services who concluded that this damage was due to differential settlement of the foundations as a result of the differing foundation depths between the front addition and the main property. We understand from the Policyholder that this cracking was identified by their mortgage lender during the purchase and as a result their mortgage application was initially declined. The Policyholder used the services of Structural Engineers, Ian Trotter Associates Ltd, who surveyed the property and undertook site investigations. Ian Trotter Associates Ltd, concluded the damage was not due to subsidence. The current damage was first noted on 06/08/2022, after the expiry of the RSA Policy but referred back to RSA under the ABI Domestic Subsidence Agreement, Option 1. Prior to being referred back, the current Insurers instructed Davies Group, who concluded the damage was the result of clay shrinkage subsidence, primarily due to the moisture demands of a climber at the right rear of the property (a wisteria) but possibly also due to a row of trees in the neighbours' garden.

PROPERTY

The Policyholder's property is a two storey detached house of traditional construction with brick walls surmounted by a pitched tiled roof. There are two storey extensions to front and rear, age unknown but constructed prior to the year 2000. Beyond the rear extension is a conservatory constructed between 2000 and 2010.

HISTORY & TIMESCALE

We are arranging removal of the Policyholder's wisteria at the rear and virginia creeper at the front. We will arrange a soil investigation to confirm the influence of the neighbour's trees. We will instruct an Arboricultural Report to make recommendations for further vegetation management. We will also set up level monitoring.

Date of Construction 1960
 Damage First Noticed 10/07/2022

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 TLSW suggests the underlying geology to be Chalk.

Chalk¹ is a white, fine grained, powdery, limestone formed of calcium carbonate, containing small amounts of silt and mud but predominantly microscopic organic remains and shell debris. It is a marine deposit and effervesces strongly when in contact with cold, dilute hydrochloric acid. It is finer grained than limestones.

High porosity (>40%) and variable permeability. Often associated with aquifers.

The superficial deposits are thought to be Clay with flints.

Clay with flints is typically red/brown clay containing unworn flint that fills hollows in the chalk that they overlie. They are of varied composition, comprising sands and flints loosely bound in a clay matrix, and have medium to low shrink/swell characteristics. They can be troublesome where vegetation is present² although this will depend on the clay content.

Clay soils shrink when dry, and swell when wet. To determine the index properties of a clay with flints soil, it is recommended³ that the index property of the clay sample should be multiplied by the clay fraction (that is, soil particles finer than 0.075mm⁴) of the sample.

The modified Plasticity Index would therefore be: -

$$I_p = I_{pX} (\% < 0.075 \text{mm} / 100)$$

If the soil sample contains 50% clay (by dry weight), and that clay sample has an index property of 40%, the modified value for I_p would be 40% x 50% = 20%.

The matrix is thought to be derived from the chalk by solution⁵, and then mixed with glacial deposits. They are restricted to the chalk beds found in the south and south-east of England.

They can suffer erosion and softening in the presence of water due to the relatively high sand content.

¹ BS 5930 (1981) "Code of Practice for Site Investigation"

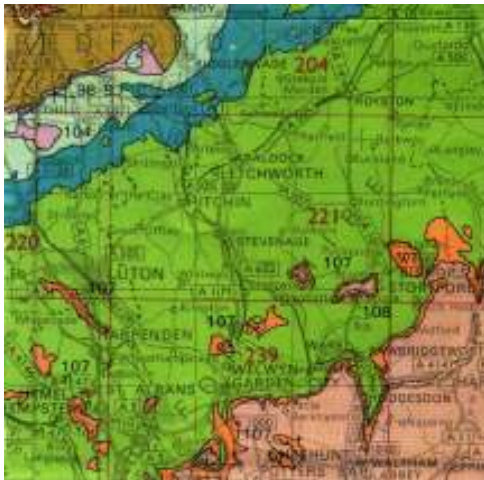
² Tomlinson M.J. (1986) "FOUNDATION DESIGN & CONSTRUCTION" Longman Scientific & Technical

³ B.R.E. Digest 240 (1993). H.M.S.O.

⁴ B.S. 1377 (1990) "Method of tests for Soils for Civil Engineering Purposes" H.M.S.O.

⁵ Sherlock R.L. (1962) "LONDON & THAMES VALLEY" H.M.S.O.

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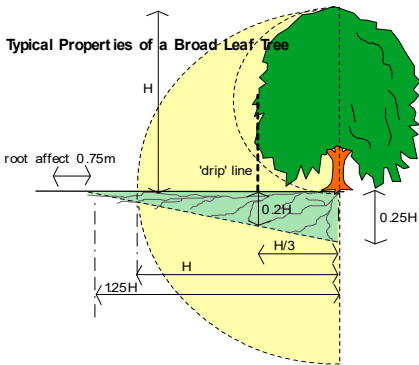
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VEGETATION

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	20 m	2 m	Neighbour 5
Climbers	10 m	1 m	Owners
Climbers	7 m	1 m	Owners

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. 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.

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. Wisteria roots are similar to those of other members of the pea family, including laburnum and false acacia.

OBSERVATIONS

There is damage around the centre of the property internally and to the right flank externally, but the significant damage was at the right rear.

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

INTERNAL

Kitchen

Ceiling/wall separation

Utility Room

In August 2022, there was cracking between the window in the flank wall and the door frame.

Hallway

Vertical crack on the construction joint between extension and original.

Ceiling/wall separation and a crack across the ceiling.

Living Room

Cracking above the door.

Landing

Crack to top rear of window in right flank.

Crack over door

Right Rear Bedroom

Crack over door

Ceiling/wall separation

EXTERNAL

Right Flank Wall

Diagonal crack running up to the rear from the front of the ground floor window in the original building, to the soil pipe, then up to the front.

Right Rear Corner

In August 2022, there was tapering separation on the DPC, maximum 4mm wide. This has now closed up.

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CATEGORY

In structural terms the damage falls into Category 2 of Table 1, Building Research Establishment⁶ 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 closure of the cracks at the right rear confirms the damage is the result of clay shrinkage subsidence. The pattern of damage at the right rear implicates the Policyholder's Wisteria but we anticipate the neighbour's trees are also a factor.

The external damage to the right flank wall, is clearly historical and we suspect dates back to at least 2017, pre-purchase and consequently pre-inception. This crack has not closed like the other cracks and we consider this crack is the result of thermal expansion. This wall, in its extended form, is around 14m long. Thermal expansion joints are required at 12m centres in clay brickwork.

RECOMMENDATIONS

We are arranging removal of the Policyholder's wisteria at the rear and Virginia creeper at the front. We will arrange a soil investigation to confirm the influence of the neighbour's trees. We will instruct an Arboricultural Report to make recommendations for further vegetation management. We will also set up level monitoring.

We will report further once the results of the investigations and the Arboricultural Report are received

Crawford Claims Solutions – Subsidence
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12th February 2024

⁶ Building Research Establishment, Garston, Watford. Tel: 01923.674040

PHOTOGRAPHS



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