TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: SU2204195

Heath Farm
Henfield Road
Coalpit Heath
Bristol
BS36 2UL

Prepared for

NFU Mutual
Avon House, Ryon Hill Business Park, Stratford Upon Avon, Warwickshire, CV37 0UY

Claim Reference 2022C0739006

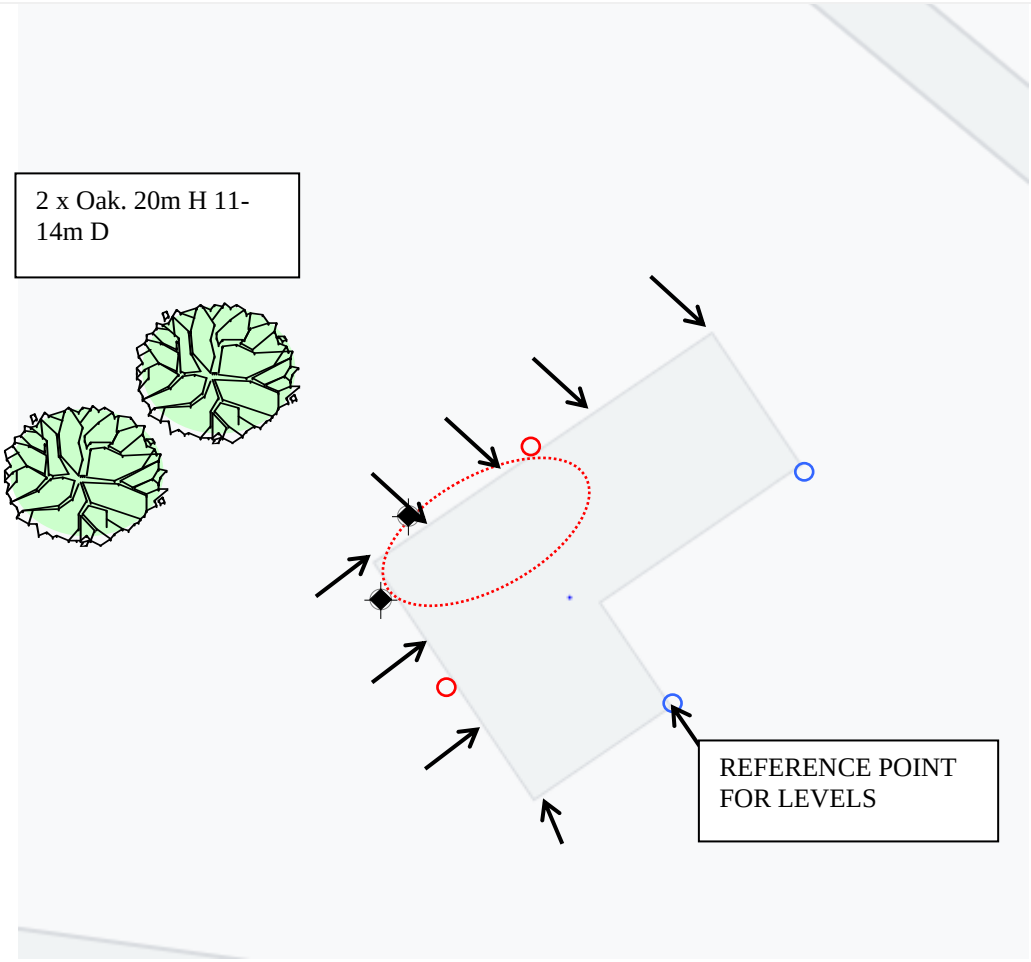
SUBSIDENCE CLAIM

DATE 29 October 2022

Crawford Claims Solutions – Subsidence
Cartwright House,
Tottle Road,
Riverside Business Park, Nottingham, NG2 1RT
Tel: 01923 916918

Site Plan	This plan is Not to Scale

This is an Aerial Photograph of the property and the immediate surrounding area. The positions of utilities etc are 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 NFU Mutual 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 advised that in august 2022 he noticed cracks in the bathroom and rear bedroom. He then noticed cracks on the external walls and became concerned and contacted insurers.

PROPERTY

The property comprises a two storey detached house of traditional construction with reconstituted block walls surmounted by a gabled, tiled roof.

HISTORY & TIMESCALE

A site investigation will be completed in the next few weeks.

Date of Construction	1987
Purchased	1987
Policy Inception Date	12/05/2010
Damage First Noticed	Aug 2022
Claim Notified to Insurer	09/09/2022
Date of our Inspection	13/10/2022
Issue of Report	29/10/2022
Anticipated Completion of Claim	July 2024

TOPOGRAPHY

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

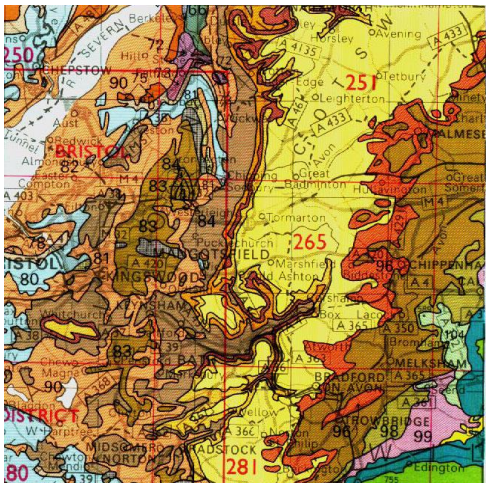
GEOLOGY

Reference to the 1:625,000 scale British Geological Survey Map (solid edition) OS Tile number STNE suggests the underlying geology to be Sandstone.

Sandstones comprise cemented sand particles. They have an average porosity of around 30% or more, depending on the degree and nature of the cementitious material that binds the grains. Although not shrinkable, the superficial weathered deposits may be.

The superficial deposits are thought to be none - Solid Outcropping.

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

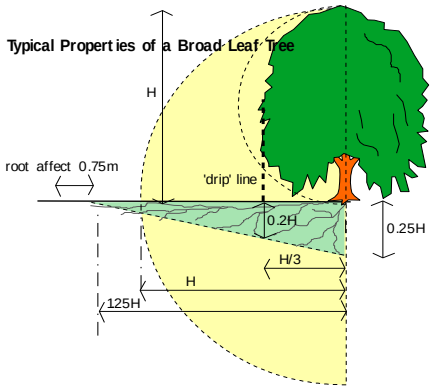
There are several trees and shrubs nearby, some with roots that may extend beneath the house foundations. The following are of particular interest:-

Type	Height	Distance	Ownership
Oak	20 m	11 m	Owners
Oak	20 m	14 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.

Oak trees (Quercus) are deciduous and native to Europe. They can reach heights in excess of 35m, but more typically grow to between 18 - 25m, depending on health, environment and soil conditions. They have a medium growth rate of around 250mm per year and strong root activity[1].

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



Typical proportions of an Oak showing the potential root zone. They have by far the most aggressive of root systems, often spreading considerable distances (1.5 x height or more).

Maximum tree-to-damage distance recorded in the Kew survey was 30mtrs, with 50% of all cases occurring within 9.5mtrs[2]. Life expectancy > 100 years, although they are vulnerable to insect and fungal attack. Old and young trees are tolerant of quite heavy pruning and crown reduction, although re-growth can be an ongoing problem.

Oaks are, in my experience, worthy of considerable respect when dealing with subsidence claims. Their root system extends for surprising distances and can be associated with particularly high soil suctions.

Because of difficulties in controlling the oak, and its vigorous root system, I regard it as being far more significant (in terms of a subsidence league table) than either the willow or poplar tree.

OBSERVATIONS

The area of damage affects the rear left corner of the building.

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

INTERNAL

Cracking to bathroom

Cracking to bedroom

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

The rear left corner of the property has subsidence and cracking on the rear and side walls reflect the drop of the rear corner.

In the rear bedroom and bathroom at first floor level, 3-4mm diagonal tapering cracking is evident on the rear and side wall.

At ground floor level, the kitchen office and utility room all have 2-4mm diagonal cracking on the rear / side wall as well as internal dividing walls.

EXTERNAL

Cracking below kitchen window.

Cracking below bathroom window.

On the rear and left side walls, tapering cracking is evident extending from low level to roof level

The cracking is noted above and below the kitchen window and above the rear door and below the bathroom window.

CATEGORY

In structural terms the damage falls into Category 2 of Table 1, Building Research Establishment[3] 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.

No structural changes to the building have been carried out which has contributed to the current subsidence related damage under investigation. Furthermore, there has been no previous underpinning installed.

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

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.

Andrew Wyse BSc (Hons) CEng MICE FGS
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PHOTOGRAPHS

Large Oak trees to rear of property.

Cracking above office door head..

Cracking above kitchen window.