

TECHNICAL REPORT ON A SUBSIDENCE CLAIM

Crawford Reference: SU1900914

Mr K & Mrs A Sum
4 Densley Close
Welwyn Garden City
Herts
AL8 7JX



prepared for

[REDACTED]

[REDACTED]

[REDACTED]

20 March 2019



Crawford®

Specialist Property Services – Subsidence Division

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Tottle Road,

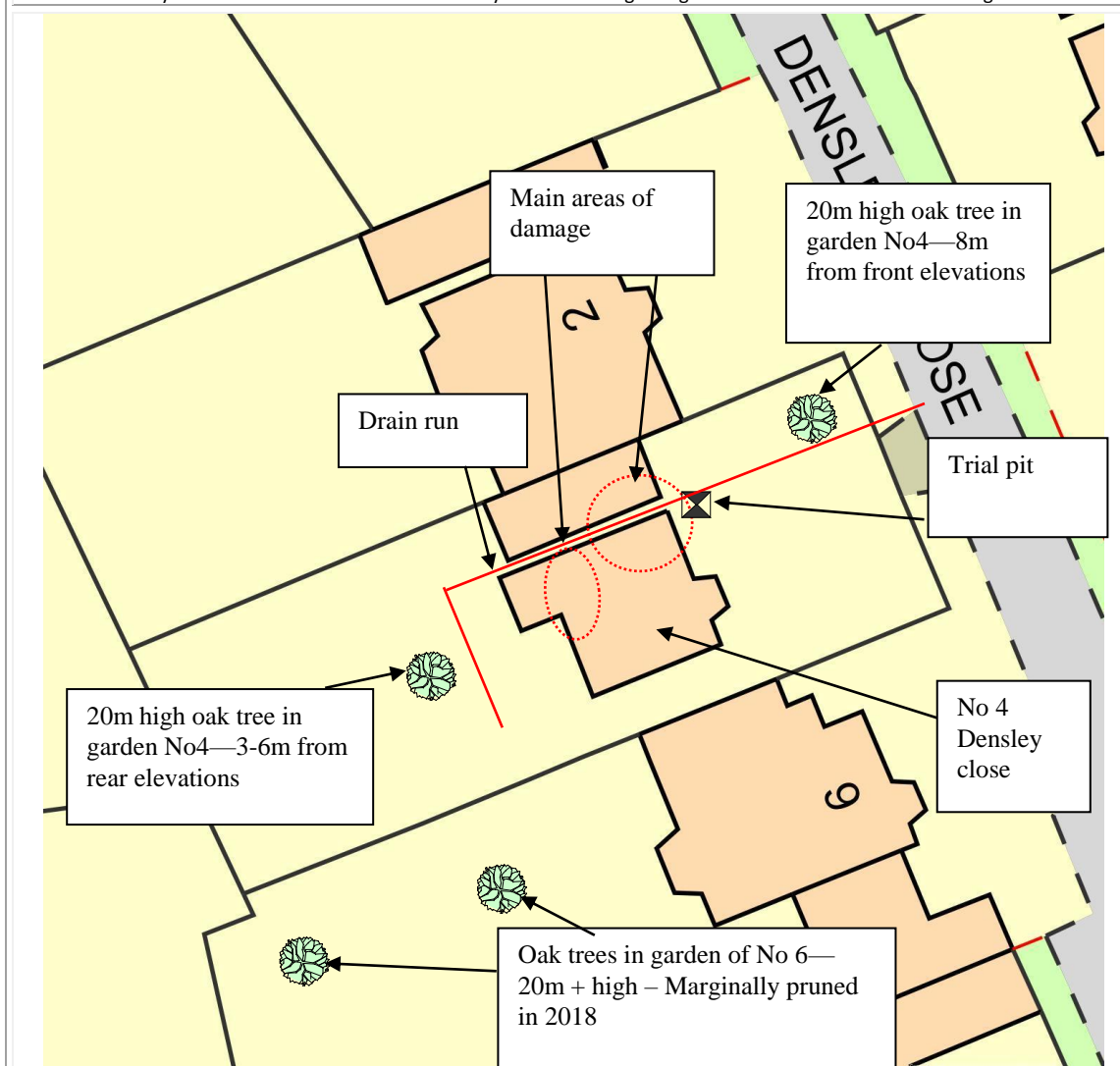
Riverside Business Park, Nottingham, NG2 1RT

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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 Gully		Rain Water Pipe
	Waste Water Manhole		Waste Water Gully		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 RSA - Nationwide 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 originally submitted a claim in 2017 when internal cracks appeared to rear of property. A short period of monitoring was undertaken by insurers between Oct 2017 and February 2018 and as movement was not deemed progressive the claim was closed and not pursued. However, during the late summer of 2018 the internal cracks opened up and external cracks in brick works were noted, plus internal doors began to stick. As the cracks have not closed up a claim was submitted in mid-February 2019

PROPERTY

The risk address is a two storey detached house of traditional construction with brick walls surmounted by a gabled, tiled roof. There is a single garage to side of property which has half brick thick walls

HISTORY & TIMESCALE

Date of Construction	Circa 1920
Purchased	2009
Policy Inception Date	27/09/2012
Damage First Noticed	31 August 2018
Claim Notified to Insurer.....	18/02/2019
Date of our Inspection.....	01/03/2019
Issue of Report	20/03/2019
Anticipated Completion of Claim	Winter 2019

TOPOGRAPHY

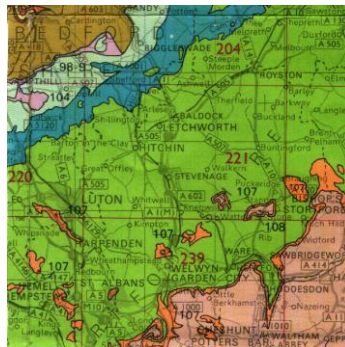
The property occupies a reasonably level site with no unusual or adverse topographic features.

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GEOLOGY

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

Clay soil superficial deposits are a cohesive soil characterised by their fine particle size and are usually derived from weathering of an underlying “solid geology” clay soil such as London Clay or Oxford Clay. Like the solid geology sub-soil from which they are derived they shrink when dry, and swell when wet and can be troublesome when there is vegetation¹ nearby and Gypsum and selenite crystals can be encountered (particularly in the south east). Protection using Class II Sulphate Resisting cement is therefore recommended for buried concrete. The superficial deposits are thought to be Clay Soils.



Geology. Reproduced with consent of The British Geological Survey at Keyworth.
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¹ Driscoll R. (1983) “Influence of Vegetation on Clays” Geotechnique. Vol 33.

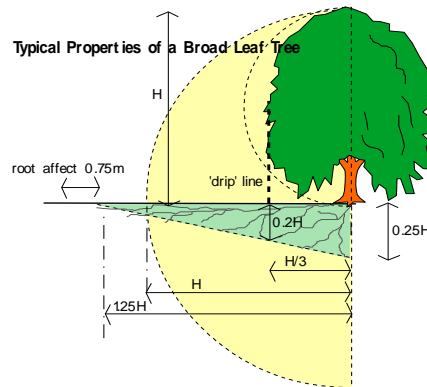
VEGETATION

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	8 m	Owners
Oak	20 m	3 m	Owners
Oak	20 m	10 m	Neighbour 1
Oak	20 m	15 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.

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 activity².



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 9.5mtrs³. 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 suction.

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.

² Richardson & Gale (1994) "Tree Recognition" Richardson's Botanical Identifications

³ Cutler & Richardson (1991) "Tree Roots & Buildings" Longman Scientific

OBSERVATIONS

Internal minor cracks in kitchen, hallway, landing and rear first floor bedroom. Externally-- stepped cracks on all four elevations along mortar line of brickwork, mainly to right flank wall when viewed from the front.

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

INTERNAL

Vertical 1 mm crack on kitchen side adjacent to hall



Max 1 mm wide crack - above bathroom door first floor rear

Hallway - Vertical crack less than 1mm wide above door to rear kitchen.

Kitchen - Vertical crack 1mm wide floor to ceiling to left of door just inside from hallway. Minor 0.5mm crack above kitchen door to hallway- same location as crack in hall. Minor cracks on wall internally below stairways above. Door to hall sticking.

Landing - Less than 1mm wide crack above door to rear bathroom on 1st floor

Bathroom - Less than 1mm wide crack above door into landing - same location as crack in landing. Door to landing sticking

EXTERNAL



Rear elevation



Stepped crack and brick distortion - side flank wall opposite garage

Front elevation -- Minor stepped cracks along mortar line below first floor window - less than 1mm wide.

Rear elevation - Minor stepped cracks along mortar line below first floor window - less than 1mm wide.

Flank wall - left -- when viewed from front. Minor stepped cracks at lower level along mortar line towards rear of property.

Flank wall - right -- when viewed from front. Minor stepped cracks along mortar line mid way along wall above and below side window. Bricks slightly distorted.

Garage -- Wall facing flank wall of house. Leaning 25mm from vertical towards main house at top. Gap between garage up and over door and wall making door hard to open and close. Cracking in concrete floor of garage.

Driveway - Beginning to break up in areas adjacent to insured's oak tree at front of property

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CATEGORY

In structural terms the damage falls into Category 1 of Table 1, Building Research Establishment⁴ Digest 251, which describes it as “very 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.

It is also possible that an escape of water from drains has exacerbated damage.

No structural changes to the building have been carried out which has contributed to the current subsidence related damage under investigation. Furthermore we are not aware of any previous underpinning.

RECOMMENDATIONS

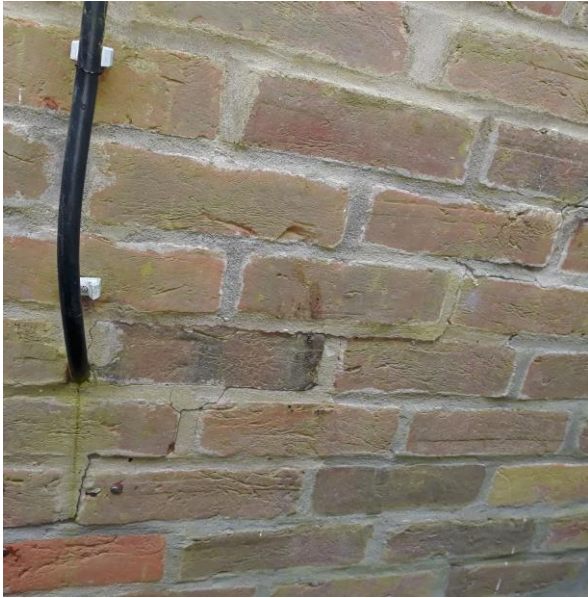
The cause of the movement needs to be dealt with and confirmed first. We have instructed a site investigation into the foundations and soil type and condition, with root identification along with a CCTV survey in the area of damage.

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

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

PHOTOGRAPHS



Stepped cracks - opposite garage on side flank wall



Minor stepped cracks rear elevation - evidence of previous works pre dates Insured's occupation

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Minor stepped cracks on front elevation
below first floor window



Crack in garage floor



Close up of gap to garage up and over
door



Areas of minor cracking in kitchen on wall
adjacent to hall

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25 mm gap at top of garage door on left side



1 mm wide crack above door from hall into kitchen beyond

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