



2 The Boulevard, City West One Office Park, Gelderd Road, Leeds, LS12 6NY  
01924 428691

Policyholder: [REDACTED]

Subject Property Address:

6 Keble Close  
Chandler's Ford  
EASTLEIGH  
Hampshire  
SO53 3AN



## **INSURANCE CLAIM**

## **CONCERNING SUBSIDENCE DAMAGE**

## **ENGINEERING APPRAISAL REPORT**

This report is prepared on behalf of [REDACTED] for the purpose of investigating a claim for subsidence. It is not intended to cover any other aspect of structural inadequacy or building defect that may otherwise have been in existence at the time of inspection.

Date: 29/02/2024

Our Ref: 9678684

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## INTRODUCTION

This report has been prepared by our Chartered Building Surveyor, David Elliot BSc (Hons) MRICS, Dip CII (Claims), and is being investigated in accordance with our Project Managed Service.

Unless stated otherwise all directions are referred to as looking towards the front door from the outside the property.

## DESCRIPTION OF BUILDING

The risk address is a two bedroom detached chalet style house constructed in 1961. It is situated on the corner of a main road and a small cul-de-sac on a site which is essentially level. A single detached garage is located in the rear garden. No alterations or extensions have been added. The general layout of the site is shown on the sketch plan below.

██████████ purchased the property when new.

The property is dominated by a large oak located towards the left hand side in the garden of the risk address. No other relevant vegetation has been identified.

The only drainage close to the area of movement is a rainwater pipe which is believed to extend to a surface water sewer in the main road.

## CIRCUMSTANCES OF DISCOVERY OF DAMAGE

The policyholder and homeowner, ██████████, first discovered the damage in late Summer 2022.

This progressively worsened as the dry weather continued until she was concerned enough to discuss the damage with a friend. After realising that the cracking could be related to subsidence, a claim was submitted.

## NATURE AND EXTENT OF DAMAGE

Cracking affects the front elevation of the house within the entrance and living room to the right-hand side. The primary damage is as follows:

Externally – front elevation: hairline – 0.5 mm cracking to external wall on the right-hand side of entrance hallway extending to front elevation.

Right-hand elevation: 0.5 – 1 mm cracking on left hand elevation from corner of window.

Internally – Hallway: 1 mm cracking at several locations primarily to right-hand side of hallway on external wall and living room partition. Cracking extends diagonally and vertically.

Living room: cracking concentrated to front elevation and above window to right hand elevation. The external damage is not mirrored on the right hand elevation. 0.5 – 1 mm cracking in wall and on wall/ceiling junction. 0.5 mm cracking to ceiling.

Description and Mechanism

The downward movement of the foundations at the front of the property relative to the remainder of the house confirms that the movement is due to subsidence. In conjunction with this, the timing, location and orientation of the damage suggest that the cause of the subsidence is root induced clay shrinkage due to the Oak in the policyholder's garden.

#### Significance

The level of damage is slight, and is classified as category 2 in accordance with BRE Digest 251 - Assessment of damage in low-rise buildings.

#### Onset and Progression

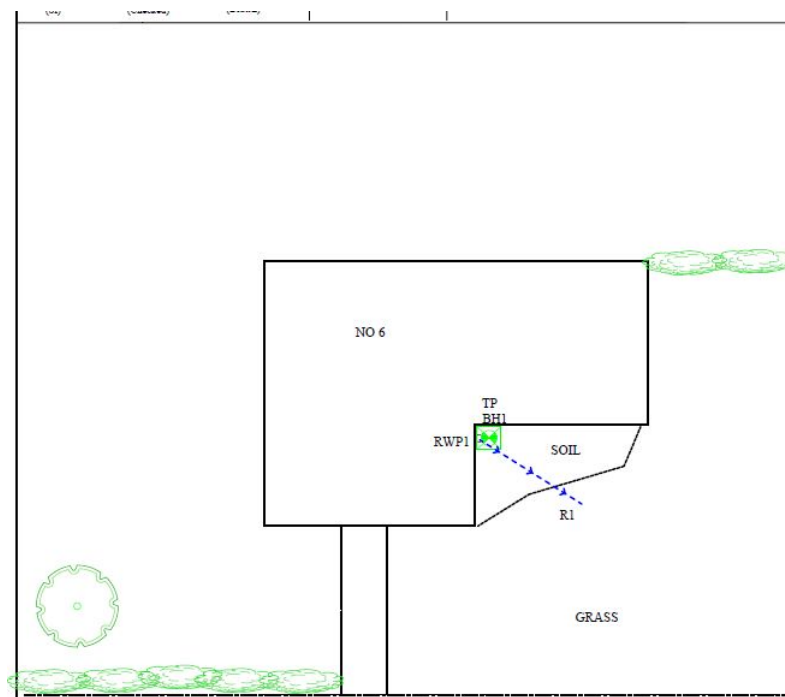
██████████ has advised that damage first commenced in Summer 2022.

We consider that the damage has occurred recently.

It is likely that movement will be of a cyclical nature with cracks opening in the summer and closing in the winter.

#### SITE INVESTIGATIONS

On 9/5/2023 CET Limited undertook a site investigation at the risk address to better understand the foundation arrangements and to secure soil and root samples for laboratory testing. The site investigation comprised a single trial hole in the area of movement at the front of the house. The general layout of the site and the location of the trial hole and relevant drainage run is shown below:



- TP/BH1 (Centre of property). The foundations to the front elevation are concrete strips extending to 650mm below ground level.
- The soil directly beneath the foundations has been identified as stiff moist slightly sandy clay which continued to completion of the extended borehole at 2400mm deep. The clay element of the soil varied with up to 8% being non-plastic.

- The maximum plasticity index of the soil was 41% confirming that the ground has a high plasticity index in accordance with NHBC Chapter 4.2.
- Roots of live appearance were noted a bearing level. Subsequent laboratory analysis has confirmed the roots originate from an Oak. Some of the root samples had moderate starch content indicated that they are alive.
- The closest Oak is the tree within the tree to the left hand side of the risk address owned by the policyholder as detailed within the Arboricultural Report.
- Moisture contents from the soil samples indicate that there is significant desiccation directly below bearing depth in the vicinity of the identified roots. The site investigation was undertaken in May 2023 and it is expected that moisture level would reduce further during the Summer months.

A camera survey of the drains located close by the area of damage have been undertaken and indicated that the rainwater pipe extending from the front elevation was silted up. There is no indication that excessive water has been leaking into the ground as a result but nevertheless the affected drainage pipework was repaired in July 2023.

Reference to the solid and drift geological survey map shows the anticipated subsoil as Wittering Formation comprising sand, silt and clay.

## **MONITORING**

Level and crack width monitoring was setup in February 2024 and at the time of writing this report only the initial reading has been taken.

## **CAUSE OF DAMAGE**

Taking an overview of all the site investigation results referred to above, it is my opinion that the cause of damage results from clay shrinkage subsidence brought about by the action of roots from the Oak tree located in the policyholder's garden.

I base this view on the fact that the foundations of the property in the area of damage have been built bearing onto shrinkable clay subsoil. The soil is susceptible to movement as a result of changes in volume of the clay with variations in moisture content and analysis of the site investigation results indicates that the soil is vulnerable to shrinkage during periods of dry weather. Live tree roots are present in the clay subsoil beneath the foundations.

The damage is slight (BRE 251 (Cat 3) and was noted by the policyholder during the dry summer of 2022. No prior cracking has been observed and the foundations are deep enough that they would not be expected to move as result of clay shrinkage without additional drying to due moisture abstraction by tree roots. In this case, I am satisfied that the damage has therefore been caused by clay shrinkage subsidence following moisture extraction by the tree following reduced rainfall during 2022.

There is no induration from the site investigations of any other factor, other than root induced clay shrinkage subsidence, that could be responsible for the damage.

## **RECOMMENDATIONS**

We consider the damage will not progress if appropriate measures are taken to remove the cause.

We have sought the advice of arboricultural consultants, Property Risk Inspection, who have advised on appropriate vegetation management to mitigate the cause of damage. Their recommendations are as follows:

**Recommended vegetation management to address the current subsidence:**

| Tree No: | Species       | Works Required                                    | CA | TPO | Ownership |
|----------|---------------|---------------------------------------------------|----|-----|-----------|
| T1       | Oak (English) | Fell and treat stump with eco plugs (broadleaved) | No | Yes | PH        |



**Location:** 6 Keble Close, Chandler's Ford, Eastleigh, SO53 3AN

T1 is owned by [REDACTED] and is subject to a Preservation Order. Subject to a successful application to the Local Authority the intention is to fell this tree.

## HEAVE ASSESSMENT

I have assessed whether significant heave will occur should the vegetation referred to above be removed.

I conclude that this is not the case as no significant desiccation has been found in the soil samples. The reason for the lack of desiccation is that the clay subsoil has rehydrated over the wetter winter months such that the moisture deficit that would have over a Summer 2022 has been replenished, and equilibrium moisture content has returned. Consequently, as there is no desiccation then there cannot possibly be any heave/swelling of the clay subsoil.

In addition, calculations using the suction readings obtained during the site investigations also confirm that there will be no significant heave if the tree is removed.

In summary, based on the site investigation results, the timing of the investigation and the nature and extent of damage within the property, I have concluded that significant heave will not occur should the vegetation management described above be undertaken.

## REPAIRS

The damage to the property is currently limited and is currently restricted externally to the front elevation, and internally to the entrance hall and living room. On the outside of the house repointing is likely to be necessary and internally standard crack repairs with EML and subsequent redecoration is required. The cost of this is anticipated to be less than £15,000 including VAT.

In the event that the tree was not to be removed we believe that the most appropriate solution would be to install a root barrier within the garden of the risk address. The cost is likely to be around £35,000 including VAT subject to a site survey in addition to the above crack repairs.

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