



Policyholder: [REDACTED]

Subject Property Address:

64 Thistle Road
Hedge End
SOUTHAMPTON
Hampshire
SO30 0TT

INSURANCE CLAIM

CONCERNING SUSPECTED SUBSIDENCE

ADDENDUM 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: 19/11/2024

INTRODUCTION

The technical aspects of this claim are being overseen by our Building Consultant Sarah Granlund BSc (Hons) Grad IEMA Cert CIL A Cert CII, in accordance with our Project Managed Service.

This report is an addendum to the Engineering Appraisal Report dated 26 May 2023 and should be read in conjunction with that document.

1.1. Description of building

The main property is a detached house constructed circa 1985 in a residential estate location on a plot that is considered generally to be level.

The property also has an attached garage to the front left which was extended upward to first floor level. The junction and extended first floor areas are the primary subject of the claim.

1.2. Discovery of damage

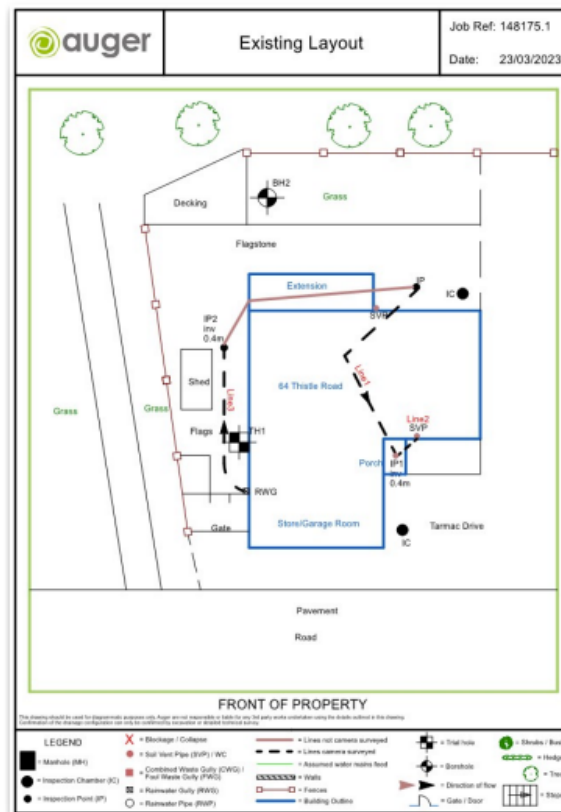
The policyholder first discovered the damage in 2018. The damage was only slight at that time and therefore, the property was monitored under the direction of a Structural Engineer. The monitoring demonstrated cyclical movements with the cracking more evident during the summer months. A claim for original damage was made to insurers in October 2020.

Following repairs and claim completion in April 2021, the policyholder noted damage occurring again in the same areas as before after the dry summer of 2022 and notified insurers of the damage in August 2022.

Nature and extent of damage

2. SITE INVESTIGATIONS

An initial site investigation was carried out by Auger in March 2023 to confirm the cause of damage. The investigation comprised of one trial hole and one remote borehole. The trial hole was located to the mid-left flank and the borehole within the grassed area of the rear garden (see site plan below).



The results of the site investigation confirm that the property is built off very stiff gravelly silty CLAY.

The trial hole was excavated to the target depth of 3000 mm below ground level (BGL). This exposed the foundation and confirmed this to be comprised of brickwork to 800 mm BGL, underlain by a 800 mm thick concrete strip to a total depth of 1600 mm BGL.

The foundation was seated onto a moist, very stiff brown fine-to-medium gravelly silty CLAY.

In-situ shear vane testing confirmed values of 95 kPa at the foundation underside, with increasing stiffness with depth, recording values of 121 kPa at the base of the borehole.

No roots were noted at the underside of the foundation.

A remote borehole was sunk through the rear lawned area, achieving a target depth of 3000 mm BGL. The soil composition was recorded from 1600 mm BGL as moist, very stiff brown fine-to-medium gravelly silty CLAY.

In-situ shear vane testing confirmed values of 95 kPa at 1600 mm BGL, with increasing stiffness with depth, recording values of 150 kPa at the base of the borehole.

Roots were encountered at 1600, 2100 and 2600 mm BGL.

Soil and root samples were bagged and taken off-site for laboratory analysis.

All soil samples were confirmed to be pure CLAY (> 95% passing the 0.425 mm sieve).

Moisture contents of the samples extracted from trial hole 1 ranged from 22 to 23%. Atterberg tests confirmed the CLAY to be intermediate to high plasticity and of medium volume change potential (VCP).

Moisture contents of the samples extracted from the remote borehole ranged from 26 to 30%. Atterberg tests confirmed the CLAY to be high plasticity and of medium-to-high VCP.

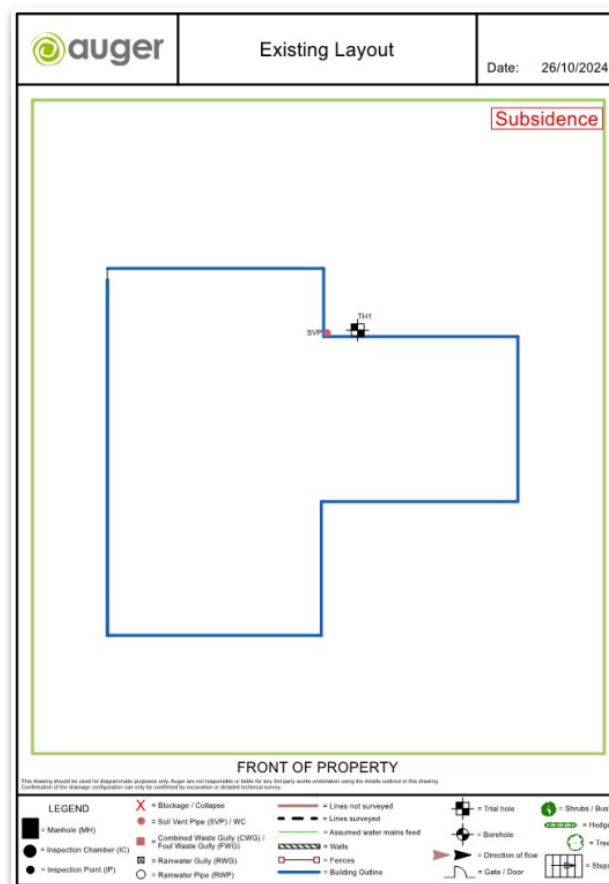
Roots recovered from the borehole were anatomically analysed with 16 roots identified as *Quercus* spp. which are oaks; one root was too decayed for identification.

The roots were tested for starch, and this returned a negative result indicating that they were dead at the time of testing. This result however does not necessarily reflect the state of the parent tree.

A survey of proximate drainage services was also undertaken, which confirmed no defects which could be allowing water to escape into the soils below foundation level.

SECONDARY SITE INVESTIGATIONS

A period of foundation monitoring was undertaken and, following confirmation of vegetation influence at the rear of the property, a further ground investigation comprising a single trial hole was undertaken by Auger in October 2024 relative to the areas of most pronounced movement (see site plan below).



The results of the site investigation confirm that the soil below the rear foundation is very stiff gravelly silty CLAY.

The trial hole was excavated to the target depth of 3000 mm below ground level (BGL). This exposed the foundation which comprised of brickwork to 1250 mm BGL, underlain by a 850 mm thick concrete strip to a total depth of 2100 mm BGL.

The foundation was seated onto a moist, very stiff fine-to-medium gravelly silty CLAY.

In-situ shear vane testing confirmed values of 80 kPa at the foundation underside, with increasing stiffness with depth, recording values of 100 kPa at the base of the borehole.

Roots were observed at the underside of the foundation and at 2600 mm BGL.

Soil and root samples were bagged and taken off-site for laboratory analysis.

Soil samples were confirmed to be pure CLAY (> 95% passing the 0.425 mm sieve).

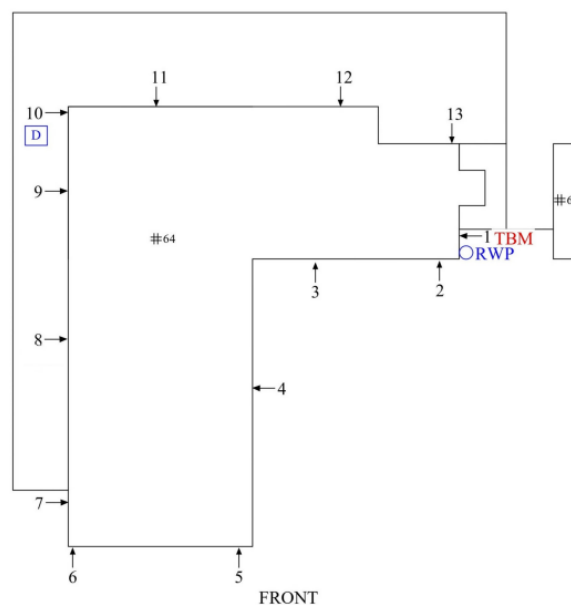
Moisture contents of the samples extracted from trial hole 1 ranged from 25 to 33%. Atterberg tests confirmed the CLAY to be intermediate to very-high plasticity and of intermediate to medium volume change potential (VCP).

The roots were tested for starch. Two roots retrieved at 2100 mm BGL and identified as oak were recorded as alive, confirming they were active at the time of retrieval. A conifer root was also recovered from this depth and was recorded as very decayed.

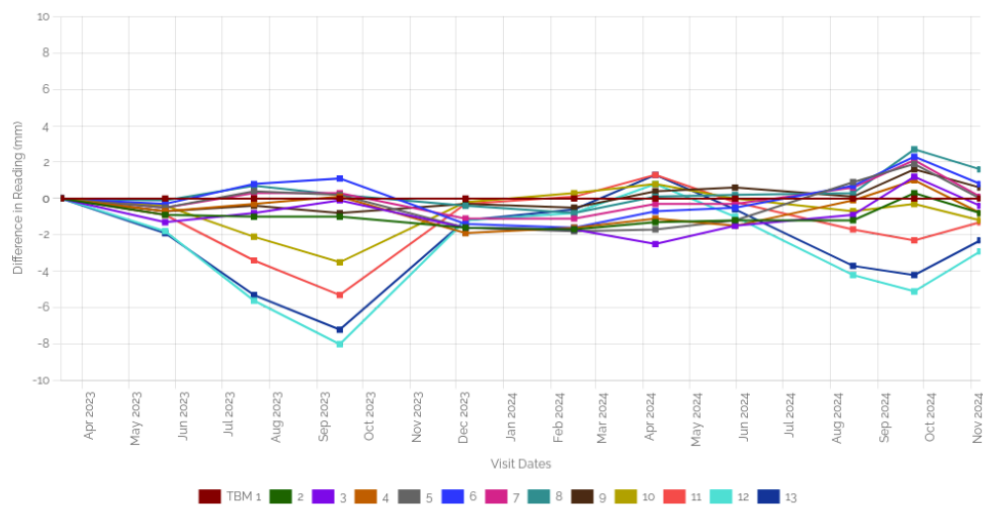
Another 4 roots retrieved from 2600 mm BGL were identified as oak. These were noted as dead however, the diameter of these roots was < 0.4 mm and the starch test can be unreliable with roots this thin. It is noted that even if the oak roots were dead, the result does not necessarily reflect the state of the parent tree.

3. MONITORING

Level monitoring commenced in March 2023 and readings have been obtained on an approximate bi-monthly basis since. Monitoring stations were affixed around the perimeter and taken relative to a temporary benchmark – see plan below:



Results to November 2024 have recorded pronounced cyclical movements at stations 12 and 13 (circa 8 mm) with lesser recorded at stations 10 and 11 (circa 5 mm) during 2023 and a recurrence of cyclical movement (albeit reduced) at stations 11, 12 and 13.



4. ARBORIST ASSESSMENT

An arboricultural assessment was undertaken by Property Risk Inspection (PRI) in February 2023 to confirm causal vegetation and provide management recommendations – see table below:

4.2 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T2	Oak (English)	Fell and treat stump with eco plugs (broadleaved).
T3	Oak (English)	Fell and treat stump with eco plugs (broadleaved).
T5	Oak (English)	Fell and treat stump with eco plugs (broadleaved).

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Location: 64 Thistle Road, Hedge End, Southampton, SO30 0TT
Job Ref: 252461
Survey Date: 16/02/2023 – NTS

Statutory checks were also completed and confirmed that the implicated oaks benefited from tree preservation orders.

The arborist report was revised by PRI in August 2023 to include the policyholder-owned Elaeagnus (T1). No roots were found for this vegetation; the arborist considered it prudent to remove and this work was completed in February 2024.

4.2 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T1	Elaeagnus	Fell and treat stump with eco plugs (broadleaved).
T2	Oak (English)	Fell and treat stump with eco plugs (broadleaved).
T3	Oak (English)	Fell and treat stump with eco plugs (broadleaved).
T5	Oak (English)	Fell and treat stump with eco plugs (broadleaved).

5. CONCLUSIONS

5.1. Cause of Subsidence

Based on all information gathered to date within this claim occurrence and referring to the previous claim and associated damage, we conclude that the movement and subsequent cracking to the property is due to root influence from the oak trees beyond the rear boundary of the property based on the following confirmed information:

- The foundation is of a depth below which normal seasonal volume change of the clay beneath will occur.
- The clay which supports the foundation is plastic, thus will shrink and swell with changes in moisture.
- Roots confirmed as oak were retrieved from two separate depths below foundation level.
- Drainage has confirmed to be defect free, ruling out contribution from water escaping into the subsoil.
- Clear cyclical pattern of movement supporting root influence as the cause of the movement.

Whilst there was a reduction in the magnitude of cyclical movement recorded within the level monitoring relative to 2023 and following removal of the policyholder Elaeagnus, we still consider the oaks as the dominant and effective cause due to a similar noted reductions at stations 10 and 11 which are remote from, and stand outside any possible root influence of the Elaeagnus.

5.2. Recommendations

4.2.1 Mitigation:

We consider that management of the oak trees beyond the rear boundary is fundamental to retaining stability of the property through removal of the current root influence on soil volume below foundation level.

We do not consider heave to be a risk in the event of oak removal. The original site investigations assessed the heave potential and calculated no adverse swell is expected.

As the oaks benefit from statutory protection, a formal application will be submitted to request work in-line with the recommendations made by Property Risk Inspection.

4.2.2 Repair:

We have not yet decided on the final type of repair required but have produced an outline of the most likely requirements. If tree work is completed, this will involve undertaking masonry strengthening and superstructure repairs and redecoration. If management of the implicated oaks is not permitted/undertaken, we anticipate a real risk of continuing adverse movement and associated damage. To counter this root influence, an engineering solution will need to be implemented.

Costs associated with strengthening/superstructure only repairs is anticipated in the region of £10, 000.

If tree work is not completed, we anticipate additional costs of £45,000 - £75,000 relative to root barrier or underpinning installation respectively.

On behalf of Sedgwick International UK

Sarah Granlund BSc (Hons) Grad IEMA Cert CIL A Cert CII
Building Consultant

Your claims technician: **Daniel Harris**
My direct dial: **+441924634031**
My email: **Daniel.Harris@uk.sedgwick.com**
Your Reference number: **9068683**
Your mySedgwick: mysedgwick.com