




Subject Property Address:

10 Hook Lane
Northaw
POTTERS BAR
Hertfordshire
EN6 4DA

INSURANCE CLAIM

CONCERNING SUSPECTED SUBSIDENCE

ENGINEERING APPRAISAL REPORT

This report is prepared on behalf of  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: 21/02/2019

Our Ref: 6873723

INTRODUCTION

The technical aspects of this claim are being overseen by our Building Consultant David Taylor , in accordance with our Project Managed Service.

DESCRIPTION OF BUILDING

The subject property is Semi detached house in a residential estate location on a plot that is level from left to right. The overall layout is recorded on our site plan.

DISCOVERY OF DAMAGE

The policyholder and homeowner, [REDACTED], first discovered the damage in August 2018.

The policyholders came back off of holiday during August 2018 and noticed that cracks had developed to the left side of the property. The policyholders then called insurers.

NATURE AND EXTENT OF DAMAGE

Description and Mechanism

The main area of damage is to the The rear left corner effecting utility room and kitchen and garage. and takes the form of Vertical tapering cracks in render on left flank wall..

This pattern of damage indicates a mechanism of Downwards movement of rear left corner relative to remainder.

Significance

The level of damage is moderate, and is classified as category 3 in accordance with BRE Digest 251 - Assessment of damage in low-rise buildings.

Onset and Progression

[REDACTED] has advised that damage first commenced in Summer 2018.

We consider that the damage has occurred recently. It is likely that movement is progressive.

SITE INVESTIGATIONS

In order to confirm the foundation and bearing arrangements for the affected area of the house, two test excavation trial holes were carried out and extended by machine drilled boreholes were carried on 21/1/2019 by CET, at the front left and rear left corners of the property respectively,

A survey of the nearby foul and rainwater drainage at the rear of the house close to the damaged area was also undertaken at the same time.

Trial pit 1 (TP1) was dug to the front left corner of the house.

The foundation was confirmed as a concrete trench fill with top formed at depth of 850mm below ground level. CET got to 1200mm depth but then abandoned the trial pit and continued with hand auger. The underside was not determined with certainty but it will be greater than 1700mm below ground level. CET suggested that this might be an underpinned foundation because of its depth, although there was no other indicating evidence for this.

The footing was penetrating into MADEGROUND medium compact mid brown-orange silty sand with gravel and brick fragments down to 2000 below ground level. No roots were encountered in the made ground down to 2000.

At 2000mm below ground level, Stiff orange-brown silty CLAY was encountered, down to 5000 at which point the borehole was terminate (of high volume change potential - Plasticity index 32% at 3000 depth).

Roots were recovered down to 2500 below ground level in the borehole. These were identified in the laboratory as being live samples and from species as follows;

2.5m In the borehole:1 live root of 1mm dia: the family POMOIDEAE gp include apple, cotoneaster, hawthorn, pear, pyracantha, quince, rowan, snowy mepsil and whitebeam

The soils samples in the borehole were also tested and confirmed low moisture contents (these between just 25% and 24%) with correspondingly high suction values (e.g. between 395kPa and 323 kPa) as evidence of desiccation, reaching its maximum at 2.0m depth where the highest suction value was recorded.

Due to the timings of the investigation being carried out in January 2019 proceeding the previous dry summer 2018, we anticipate that some recovery of the clay subsoil has already taken place over the winter months as indicated by the lower suction readings than would be the case if the investigation had been carried out at the height of the late summer.

Trial pit 2 (TP2) was dug to the rear left corner of the house

The foundation was confirmed as a concrete trench fill footing bearing at depth of 1400mm below ground level, bearing into Stiff mid brown-orange grey veined silty CLAY with partings of orange silt and fine sand, down to 4600 below ground level. (of high volume change potential - Plasticity index 52%) The borehole was terminated at 6.0m depth and turned in deep level monitoring datum.

There were roots found in the bearing Clay subsoil from the foundation underside of TP2 and in the borehole down to 3500 below ground level. These were identified in the laboratory as being live samples and from species as follows;

Under the footing:2 live roots 1mm dia: the family QUERCUS spp (Oak) but possibly CASTANEA spp (sweet chestnut)

2.5 to 3.0m In the borehole:3 live roots 1.5mm dia: the family QUERCUS spp (Oak) but possibly CASTANEA spp (sweet chestnut)

2.5 to 3.0m In the borehole:2 live roots 1mm dia: the family POMOIDEAE gp include apple, cotoneaster, hawthorn, pear, pyracantha, quince, rowan, snowy mepsil and whitebeam

The soils samples in the borehole at between the depth of 2m and 3m were also tested and confirmed low moisture content of 25% and 27% with correspondingly high suction value of 677 kPa and 6817 kPa, within the zone of root influence, as well as evidence of desiccation.

Due to the timings of the investigation being carried out in January 2019 proceeding the previous dry summer 2018, we anticipate that some recovery of the clay subsoil has already taken place over the winter months as indicated by the lower suction readings than would be the case if the investigation had been carried out at the height of the late summer.

The site investigations also involved the CCTV survey of the drainage located at the rear of the house. Foul drains were found to run from within the building, off, towards the rear right. Defects with the drainage were picked up indicating these had been affected by ground movement. This included circumferential cracks and root ingress into the pipework.

A rainwater drain located on the rear left corner was found to run away towards the rear. No defects on this were found.

Leaking drain effects can therefore be ruled out as contributing towards this subsidence event.

MONITORING

As the nearby oak trees which might belong to the Local Authority, have been implicated by the site investigation findings, then in support of our applications to them, a period of crack and level monitoring is now required for 6 to 12 months. We have arranged this to be implemented and following installation of the deep datum on 21/1/2019, the first readings are yet to be taken.

CAUSE OF DAMAGE

Based on the information detailed above, we are of the opinion that damage has occurred due to clay shrinkage subsidence. This has been caused by moisture extraction by roots altering the moisture content of the clay subsoil, resulting in volume changes, which in turn have affected the foundations. The low moisture contents seen in the sampling and the high suction value between 2m and 3m in borehole 2, all support this diagnosis as does the timing of the damage. The escalation of cracking during a period of dry weather is a typical feature of clay shrinkage in the growing season and where the bearing subsoil is influenced by moisture extraction to nearby vegetation.

RECOMMENDATIONS

Mitigation

We consider the damage will not progress if appropriate measures are taken to remove the cause. In this instance it is likely that vegetation for which the Local Authority might be responsible is contributing toward the cause of damage.

We will now arrange for insurers approved solicitors – Beachcrofts, to secure removal of any implicated vegetation, in support of which an arboricultural report on the effects of the trees has already been obtained from Property Risk Inspections Insurance Services.

Although on this occasion the effects of leaking drains have not contributed to the subsidence problem, the drains have been damaged by ground movement which has caused opened joints and resulted in root ingress in to the clay pipework to occur.

We are therefore recommending that defective foul drains at the rear of the property be repaired in accordance with CET's recommendations, under the accidental damage to underground services peril in the policy.

Repair

We have not yet decided on the final type of repair required, but have produced an outline of the most likely requirements. This involves undertaking superstructure repairs and redecoration. This decision has been taken based on our knowledge and experience of dealing with similar claims. In addition the results of the Site Investigation, laboratory testing and monitoring will be taken into account.

If the influencing local authority owned oak trees at the rear can be removed we anticipate simple repair costs in the range £11,000 to £14,000 will be incurred. Were the local authority tree were to remain and the damage progresses, then costly foundation stabilisation would likely be needed, on similar schemes we have seen sums of £80,000 projected and so it is to be hoped the trees can soon be removed to avoid such an outcome being necessary.

David Taylor
Building Consultant

Sarah Hartley
Claims Technician

