Cunningham Lindsey

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Policyholder: [redacted]

Subject Property Address:

25 Frognal
London
NW3 6AR

INSURANCE CLAIM

CONCERNING SUSPECTED SUBSIDENCE

ENGINEERING APPRAISAL REPORT

RECOVERY

This report is prepared on behalf of Legal & General Insurance 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: 14/02/2018

Cunningham Lindsey Ref: 6635888

INTRODUCTION

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

DESCRIPTION OF BUILDING

The subject property is Semi detached house in a suburban location on a plot that is terraced from front to back. The overall layout is recorded on our site plan.

The property also has a two storey extension to the right hand and rear elevations of the main house.

There are trees within influencing distance of the property. Several trees are located to the front, rear and side of the property. The arborist's report has highlighted the trees required for works, in order to mitigate the current subsidence damage, with T4, located at the front right of the risk address, being protected by a tree preservation order.

The drainage system is a separate system which is shown on the attached plan.

DISCOVERY OF DAMAGE

The policyholder and homeowner, [redacted], first discovered the damage in Early 2017.

The insured noted h/l cracks in the house but noted that these had increased significantly after retuning from summer holidays, in August 2017. The insured's brother is an Architect who recommended a structural report. Redbourne Consultants were appointed to carry out a structural survey/ report - advised that subsidence was taking place.

NATURE AND EXTENT OF DAMAGE

Description and Mechanism

The main area of damage is to the internal areas of the property, to all 3 levels and takes the form of tapering vertical cracking to junction of house/ extension, stepped cracking below windows, tapering diagonal cracks to structural openings, cracking to ceilings and to coving details. Crack widths vary between 1mm – 10mm, throughout the property. Step cracking to 2mm in width, was also noted to the external brickwork, around structural openings.

This pattern of damage indicates a mechanism of Downwards movement to front and rear areas of the property. The mechanism movement to the front area of the main house, is also towards the area of the site where the Lime tree is located, i.e front right corner.

Significance

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

Onset and Progression

[redacted] has advised that damage first commenced in Late 2016.

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. The damage to the rear area of the property appears to be progressive, with cracks steadily continuing to open.

SITE INVESTIGATIONS

A site investigation will be arrangedto assist in identifying mitigation measures

The ground investigation was carried out by Auger on 17th January 2018. For details of the trial pit and borehole locations, together with test results, please refer to the attached Auger factual report.

Trial Pit 1/Borehole 1

This was located at the front right corner of the main house

The underside of the foundation is at 1500mm below ground level with the foundation comprising brick masonry, bearing onto a fine to medium, gravely, silty clay which extends to a depth of 1900mm below ground level, where the borehole ended. Roots were discovered at a depth of 1600mm & 1800mm below ground level, therefore roots were present at underside level, of foundations. This type of soil is consistent with drift geological survey maps, for the region.

Atterberg limit testing was carried out on the samples taken from the borehole, with shear vanes recorded at between 20- 150 kpa and the plasticity index of the clay soils indicating that the clays are of an intermediate plasticity, with volume change potential. Full details of the laboratory results are included within the attached Auger report, for reference. The shear vane results would indicate that desiccation of the clay sub soils appears to have taken place on this occasion, hence why the soils have been influenced/ affected by the adjacent tree.

Samples of root taken from beneath the foundations have been analysed and originate from the PRUNUS and LIME groups of trees.

Trial Pit 2/ Borehole 2

This was located at the rear left corner of the rear extension

The underside of the foundation is at 950mm below ground level with the foundation comprising 750mm thick concrete detail, bearing onto what appears to be a fine to medium, gravely, silty clay to

a depth of 3000mm, where the borehole terminated. . Roots were discovered at a depth of 1000mm & 1500mm below ground level, therefore roots were present at underside level, of foundations. This type of soil is consistent with drift geological survey maps, for the region.

No drainage Investigations have been undertaken as the drains are a significant distance from the area of damage and the site investigation has shown the soil to be dry which suggests the drains have not adversely affected the soils.

MONITORING

Crack width/level monitoring has now been instructed and we will await the results of these further investigations in due course.

CAUSE OF DAMAGE

Taking an overview of all the site investigation results referred to above, it is my opinion that the cause of damage to the property results from clay shrinkage subsidence brought about by the action of roots from the action of tree roots, located within the policyholder’s property and adjoining properties also.

I base this view on the fact that the foundations of the house in the area of damage have been built at a reasonable depth, 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 has been affected by shrinkage. In particular, TILIA tree roots are present in the clay subsoil beneath the foundations to the front area of the property. In this case, I am satisfied that the damage has therefore been caused by clay shrinkage subsidence following moisture extraction by this family of trees and others.

I have also considered whether there could be any other influencing factors however we have concluded that the damage to the property is attributable to root exacerbated clay shrinkage subsidence, influenced by trees within the ownership of the policyholder and a private third party. The Lime (TILIA) tree at thr front right corner of the site, is protected by a tree preservation order as well as other trees being within a Conservation area.

I am satisfied that there is no factor, other than the trees, to the rear area of the property which is causing the current damage.

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 policyholder and other private owners are responsible is contributing toward the cause of damage. We will now instruct the Mitigation Centre of Oriel Services Ltd in this regard, following their initial inspection and production of subsequent report,

by OCA UK Limited. They will liaise with the owners of all trees to ensure suitable mitigation measures are achieved and submit an application to the Local Authority for felling of the Lime tree (T4).

Crack width/level monitoring may continue after removal of the tree in order to check for stability. A detailed scope of repairs will be finalised upon conclusion of the monitoring.

HEAVE ASSESSMENT

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

I conclude that this is not the case as no desiccation has been found in the soil samples. The reason for the lack of desiccation is that the clay subsoil has re-hydrated over the wetter winter months such that the moisture deficit that would have existed last summer 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 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 and/or ground recovery will not occur should the vegetation management described above be undertaken.

Repair

We have decided on the final type of repair required and have produced an outline of the 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 and laboratory testing have been taken into account.

For Cunningham Lindsey:

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