14 Greville Road Management

Flat 4
14, Greville Road
LONDON
NW6 5JA

INSURANCE CLAIM

CONCERNING SUSPECTED SUBSIDENCE

RÉSUMÉ OF TECHNICAL ASPECTS

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

08/07/2014

INTRODUCTION

Technical aspects of this claim are being overseen by our Chartered Engineer, Lewis Bryer BEng CEng MICE, in accordance with our Project Managed Service. This further report has been prepared following an on site meeting with the Camden tree officer and OCA arboriculturists on Tuesday 8th July 2014.

DESCRIPTION OF BUILDING

The subject property is a four storey block of flats constructed in the 19th century, on a plot that is essentially level.

The claim concerns damage to whole of the main building.

CIRCUMSTANCES OF DISCOVERY OF DAMAGE

The policyholder, [redacted] first discovered the damage in 2003. Investigations were carried out which implicated nearby rear vegetation. Limited vegetation removal was carried out as the remaining vegetation became protected with a blanket tree preservation order. Subsidence repairs were carried out on numerous occasions eventually leading to stabilisation works being incorporated to the building in the form of partial underpinning of up to 4 metres depth towards the rear.

Despite previous subsidence stabilisation (underpinning to the rear elevation) further slight but extensive crack damage has occurred to all the four flats in the building over 2012 and 2013. In early 2012 it was agreed that level monitoring be instructed.

NATURE AND EXTENT OF DAMAGE

Description and Mechanism

The pattern of cracking reveals raking and tapering crack damage of up to 5 mm width specifically to the rear left side and front elevations of the main building at all four levels.

The indicated mechanism of movement is movement towards the front left side of the building.

Significance

The damage is categorised as being slight, category 2 in accordance with BRE digest 251.

Onset and Progression

Damage is considered to be cyclical and is continuing to progress.

SITE INVESTIGATIONS

Recent site investigations have been carried out comprising of two trial pits extended by hand auger boreholes. The trial pit located to the left side of the rear elevation revealed previous underpinning to this location but more particularly revealed a desiccated clay soil at depth incorporating roots to the full depth of the 5m depth borehole.

The trial pit located to the front left corner of the main building at the interface with the front step structure revealed that the building was supported by a concrete foundation – the depth of which was not able to be determined. However, roots were also encountered within the clay soil to a depth of 2.8 metres. The clay at depth was not as desiccated as the clay located to the rear borehole location.

Roots when analysed were determined as being related to poplar trees to the rear borehole and poplar and lime trees to the front borehole.

MONITORING

Level monitoring has revealed downward movement of up to 6 mm in the autumn of 2013. Cyclical movement is being recorded.

CAUSE OF DAMAGE

The damage is currently considered to be progressing as a result of clay shrinkage subsidence exacerbated by the rear mature sycamore and poplar tree vegetation. A street tree to the front may also be involved. The monitoring readings suggest movement is occurring away from the location of the trees but this is because the rear elevation has previously been underpinned.

The results of the investigation have revealed that tree roots are now located beneath the depth of the rear 4000mm depth underpinning when previously (before underpinning) tree roots were not recorded at this depth. This demonstrates that the only effective solution to this problem is to remove the offending vegetation. Simply increasing the depth of foundations is not now considered to be a long term effective solution to the problem.

The building has suffered subsidence over a considerable period, as the distortions noted to the building are in excess of any movements that have been observed in the building since our first involvement at the property in 2003. I note from the site investigation trial pit at the front of the property that there is a substantial concrete foundation in excess of 1 m deep, which would tend to suggest that the building was previously underpinned at this location. Given the presence of relatively young street trees at the front, it is possible that an earlier tree/trees was the cause of the distortion evident in the front of building, whilst it is likely that the trees at the rear had previously caused the more significant distortion in this area.

The monitoring presently indicates that the largest amplitude of movement is occurring at the front left-hand corner of the building. It is surprising that a Poplar root was identified within the trial pit at this corner, but I would suggest that it is more significant that Lime roots were also identified. The pattern of the monitoring suggests a downwards rotation towards the front left-hand corner rather than a general downwards movement of the front elevation. I therefore conclude that the main influence at the front is the relatively young and vigorous Lime tree situated in front of No 16. However, Poplars are capable of exerting influence in shrinkable clays at distances of over 30 m and some influence from the Poplars at the rear is not disputed.

Given that much of the external walls appear to have been underpinned, and based on the various investigation results, I am totally satisfied that the removal of vegetation at the front and rear of the property would prevent further seasonal movement , and that the risk due to climatic conditions alone would be minute.

It is the case that Cunningham Lindsey previously elected to underpin the rear elevation of the property rather than to continue to pursue removal of adjacent trees. However, these works were installed, and anti-heave measures were incorporated in the design. At that time, the depth of the underpinning was designed to reflect the likely extent of root penetration, and was extended under the BCO guidance to deal with root activity discovered on site. Clearly since that time the Poplar roots have grown deeper in search of additional water. I do not accept that there is now a significant risk of heave if the Poplars were removed, as there is not a high degree of deep seated desiccation beneath the foundation – the severely desiccated clay is at a higher level. Comparison of the site investigations from before the underpinning with those in November 2013, shows the significant difference in the moisture contents and stiffness of the soils – I note particularly that the hand-augers in 2004 could not penetrate beyond 2.7 m but in 2013 reached 5 m. I therefore conclude that removal of the Poplars would prevent further seasonal movements within the 1 m or so depth of currently affected subsoil beneath the foundations, and enable the traditional underpinning to function as designed. Likewise, the investigations at the front do not indicate significant desiccation when compared with the results from the trial pits at the rear in 2004, and I therefore conclude that there is no significant deep seated desiccation that will result in years of slow gradual heave.

In conclusion, I am satisfied that the strategy of removing the Poplar and Lime trees from the rear and front respectively will stabilise the building with little risk of heave damage. I believe this is supported by the results of the site investigations and monitoring, which has indicated re-hydration of the subsoils without significant movement of the building. Our recommendation is that we proceed to seek approval for removal of the protected Poplar trees and the Lime tree in the street.

Our recent inspection has also revealed that the rear sycamore tree to the rear garden area has a large cavity in it and there is a question regarding the general safety of this tree. We would recommend that this tree be removed on safety grounds.

If trees are not removed then costs associated with piled raft stabilisation would fall in the sum of £600,000. If trees are removed present superstructure strengthening costs would fall in the sum of £30,000. We confirm that approximately £270,000 has been spent on this claim to date.

RECOMMENDATIONS

My recommendation is that arborists should be appointed to liaise with the local authority with a view to arranging the removal of offending trees, if this is found to be possible. Once vegetation has been removed the cause will be removed and repairs can proceed.

For Cunningham Lindsey

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