



2 The Boulevard, City West One Office Park, Gelderd Road, Leeds, LS12 6NY
01622 608810

Policyholder: [REDACTED]

Subject Property Address:

15 Mallard Way
NORTHWOOD
Middlesex
HA6 2GG

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: 03/10/2018

Our Ref: 6757279

INTRODUCTION

The technical aspects of this claim are being overseen by our Building Consultant, Michael Robinson BSc(Hons) MRICS Cert CII, in accordance with our project managed service.

The claim is concerned with damage to the ground floor maisonette and to a front bin store projection. All references to the property are as observed facing the front of the building.

DESCRIPTION OF BUILDING AND SITE

The subject property is a ground floor maisonette which is positioned to the right hand end of a two storey block containing eight units. We understand the development was constructed in around 1978 and the property is of traditional construction with cavity brick walls under a pitched tiled roof. The property is located within a small residential development on a plot which is generally level. However the ground to the property to the right is at a lower level.

The leasehold interest in the maisonette is owned by [REDACTED] who purchased the property in 2006. The Freehold interest is owned by [REDACTED] with [REDACTED] acting as Managing Agents.

There has been a history of subsidence to the property and a previous claim was submitted in 2009. Investigations were undertaken and superstructure repairs and decorations were carried out in 2013.

SIGNIFICANT VEGETATION

There are trees within influencing distance of the property. Of particular note is a large Cypress which is positioned to the front right of the property adjacent to the site boundary of Mallard Way and the development to the right. The tree is approximately 20m high and at a distance of 10.3m. The tree is considered to be the subject of a Tree Preservation Order. In addition there are two Third Party owned deciduous trees to the right which are approximately 8.0m high and at a distance of 3.5m from the right hand flank wall.

DISCOVERY AND NOTIFICATION

Circumstances of Discovery	As outlined above earlier subsidence repairs were undertaken in 2013 with the works incorporating repairs and decorations within the subject flat. From our discussions with the leaseholder we understand that additional cracking has developed gradually since the completion of the earlier repairs. Localised cracking developed within the kitchen and cosmetic repairs were carried out in around January 2017.
----------------------------	--

Additional cracking subsequently developed within the kitchen and lounge and in February 2018 [REDACTED] referred matters to the Managing Agents.

Claim notification	Insurers were notified on 19/03/2018.
--------------------	---------------------------------------

REPORTS BY OTHERS

None in respect of the current damage.

NATURE AND EXTENT OF DAMAGE

Description and Mechanism	The main area of damage is to the internal walls to the central part of the ground floor maisonette. There is cracking to the internal wall between the lounge and rear right hand kitchen and adjacent utility room. There is cracking to the walls and to the wall/ceiling juncture. There is cracking within the hallway and to the internal bathroom. The pattern of cracking is indicative of downward movement to the ground bearing floor slab to the central part of the property with resultant movement to the internal walls. There is no significant cracking to the main external walls and no reported damage to the first floor maisonette. Towards the front of the property there is cracking to the binstore store projection with a stepped diagonal crack which extends across from the lintel to the porch area and at the juncture between the flank wall and the front elevation. Such damage is indicative of downward and rotational movement to the front section of the binstore.
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	Damage is considered to have developed gradually over the last few years.

SITE INVESTIGATION

In order to determine the cause of movement localised site investigations were instructed with the works involving the excavation of an internal trial hole and accompanying borehole within the lounge, together with the excavation of a trial hole adjacent to the front binstore and an additional trial hole to the front elevation of the main building. Works were undertaken by CET Safehouse Ltd and for precise details please refer to the attached Factual Report of Investigations.

Trial Hole 1

The internal trial hole to the front wall of the lounge revealed a 140mm thick unreinforced concrete floor slab bearing upon a 420mm layer of loose reject stones with sand. Beneath this level the subsoil was a stiff silty CLAY with silt and fine sand and gravel. The excavation was extended to a depth of 2.7m with use of a hand auger but it was not possible for the borehole to penetrate below this level as the subsoil was too stiff/hard.

In-situ soil testing was undertaken and the shear vane readings taken within the clay subsoil were consistently high to very high. Laboratory testing has shown the clay to be of high to extremely high plasticity indicating the subsoil is highly susceptible to volumetric changes due to variations in moisture content. Based upon the results of the soil suction testing and analysis of the moisture contents and soil properties, the clay was considered to be desiccated.

Roots were noted within the borehole to a depth of 1.5m and analysis showed the roots to be from Prunus (blackthorn, cherry, laurel, peach, plum).

Trial Hole 2

The second trial hole was excavated to the front elevation of the main building and this exposed a concrete foundation to a depth of 1.2m bearing upon a stiff silty CLAY. A mechanical augered borehole was sunk to a depth of 4.2m and a stiff to very stiff silty sandy CLAY was observed.

The shear vane readings were again high to very high and the clay was of high plasticity and considered to be desiccated.

Roots were noted at the underside of the foundations and within the borehole to a depth of 3.2m. Roots were analysed and found to originate from Cupressaceae (Cypress, cedar) and Populus or Salix (poplars or willows).

Trial Hole 3

The final trial hole was excavated to the front right corner of the binstore projection and a concrete foundation to a depth of 1.15m was revealed bearing upon a stiff silty CLAY. A 6.0m borehole was sunk and a stiff to very stiff silty CLAY was observed.

The shear vane readings were again high to very high and the clay was of high plasticity.

Roots were noted at the underside of the foundations and within the borehole to a depth of 3.5m. Roots from several species were identified including Euonymus (shrubs), Prunus (blackthorn, cherry, laurel, peach, plum), Cupressaceae (Cypress, cedar) and Populus or Salix (poplars or willows).

A CCTV drainage survey was undertaken of the internal drainage runs which discharge into the rear manhole and no significant defects were identified.

During the course of the previous claim site investigations were also undertaken with the initial investigations being carried out by CET in July 2009. More extensive investigations were subsequently undertaken by K F Geotechnical in September 2010 under the direction of Alexander Associates.

MONITORING

Crack width and level monitoring

A programme of crack width and level monitoring has been instructed and readings are to be taken at approximate eight week intervals. The level monitoring exercise incorporates the external walls to the building including the front binstore projection. As part of the site investigations a deep datum was installed. We will report again once additional readings have been taken.

Floor contour survey

In view of the nature of movement to the internal floors within the maisonette a floor contour survey was also commissioned. This shows a variation in levels of up to 27mm across the ground floor with an apparent drop to the floor to the front right of the lounge, to the front of the kitchen and within the bathroom.

For precise details please refer to the report from CET.

Brick course distortion survey

A brick course distortion survey was also carried out which recorded a variation in levels in the order of 6mm around the perimeter of the main building. However the survey was extended to include the front binstore and this shows a drop in levels in the order of 26mm with downward and rotational movement to the front right corner.

For precise details please refer to the report from CET.

CAUSE OF DAMAGE

Based on the information detailed above, we are of the opinion that damage has occurred due to clay shrinkage subsidence exacerbated by the moisture demands of adjacent vegetation.

This view is based on the fact that the underlying subsoil is a highly shrinkable clay with roots present at the underside of the foundations and within the borehole. 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.

There are trees within influencing distance of the property and it is likely that the large Cypress to the front of the property and the deciduous trees sited on Third Party land to the right are of influence. Whilst roots from Populus or Salix (poplars or willows) were retrieved from the front boreholes the starch content of the samples was negative. It is therefore unlikely that the Willow tree to the front of the development is of influence.

The localised drainage survey did not identify any significant defects and as such we do not consider the damage to be related to an escape of water from drains.

MITIGATION

We consider the damage will not progress if appropriate measures are taken to remove the cause. In this instance it is likely that adjacent vegetation is contributing toward the cause of damage.

It is proposed that an independent Arboricultural report now be commissioned in respect of vegetation within rooting distance of the area of damage. Matters have therefore been referred to the Mitigation Centre of Oriel Services Ltd who will co-ordinate the appointment of OCA UK Ltd Arboricultural Consultants. Further recommendations will be made once the report has been received from OCA UK Ltd which will include a programme of recommended tree works.

If it is considered that vegetation under the control of a Third Party tree owner is of influence then Oriel Mitigation Centre will pursue mitigation measures with the neighbours. In addition consideration will also be given to the need for an application to be made to the Local Authority in respect of the large Cypress which we understand is the subject of a Tree Preservation Order.

In the meantime the crack width and level monitoring exercises will also continue.

HEAVE ASSESSMENT

We do not consider that the removal of the adjacent vegetation will result in an unacceptable risk of heave to the subject property. A heave calculation has been undertaken in respect of Borehole 1 as this had recorded the highest soil suction readings. A potential heave in the order of 32mm could theoretically occur but given the results of the floor contour survey with a variation in the order of 28mm we would consider the heave potential to equate to more general ground recovery rather than it being true heave.

REPAIR RECOMMENDATIONS

A detailed scope of repairs will be finalised once mitigation measures have been secured and upon conclusion of the monitoring.

If the required programme of tree management can be secured then it is likely that superstructure repairs and decorations will be required with costs in the order of £18,000.

However if the required mitigation works are not undertaken then it may be necessary to consider foundation stabilisation works most probably involving a piled raft, in addition to structural crack repair and redecoration needed to repair the damage. Such a foundation scheme may also need to be extended to incorporate the neighbouring property. The works would also render the properties uninhabitable. The total cost of this option is estimated at £120,000.

PROJECT TEAM DETAILS

Michael Robinson BSc(Hons) MRICS Cert CII - *Building Consultant Specialist Subsidence Team*

Jake Anderton - *Claims Technician Specialist Subsidence Team*

Direct dial: 01622608831

E-mail: Jake.Anderton@CL-UK.com