



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



Subject Property Address:

13 Weech Road  
London  
NW6 1DL

**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: 08/02/2024





## INTRODUCTION

This report has been prepared by Richard Wainwright BSc (Hons) MRPSA BDMA, and is being investigated in accordance with our Project Managed Service.

Unless stated otherwise all directions are referred to as looking towards the front door from the outside the property.

## DESCRIPTION OF BUILDING

The subject property is End terrace house in a suburban location on a plot that is level.

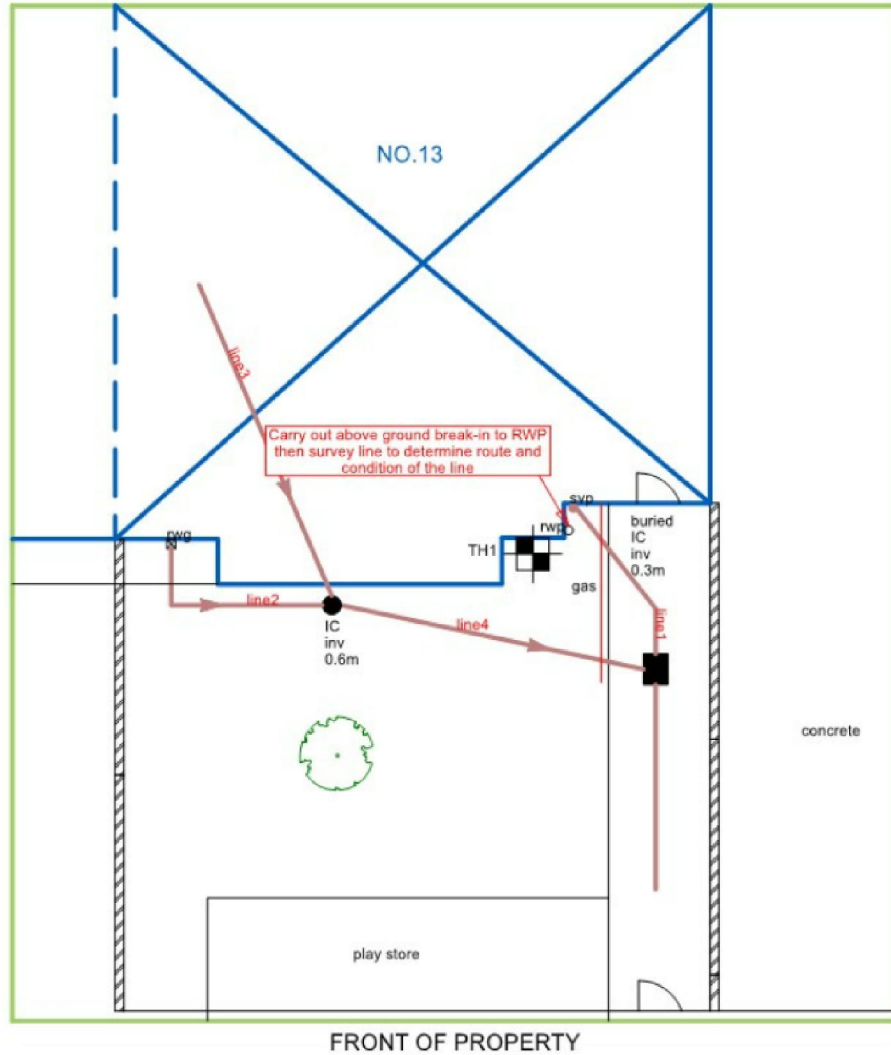
There is a single storey extension to the rear.

The overall layout is recorded on our site plan below.





The general layout of the site is shown on our sketch plan below.



There are trees within influencing distance of the property.  
The drainage system is a combined system which is shown on the plan.



#### CIRCUMSTANCES OF DISCOVERY OF DAMAGE

The policyholders and homeowners [REDACTED], first discovered the damage in October 2017 and the property has suffered from ongoing movement.

The policyholder noticed some cracks at the front of the property and initially sought advice from a Building Surveyor. The policyholder then notified insurers.

#### NATURE AND EXTENT OF DAMAGE

##### Description and Mechanism

The main area of damage is to the front section of the property and takes the form of tapered diagonal external and internal cracks.

The pattern of damage indicates a mechanism of downwards movement to the front right hand side of the property towards the Ash tree.

##### 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

We consider that the damage occurred in 2017 has been ongoing since. The movement is of a cyclical nature with cracks opening in the summer and closing in the winter.

#### SITE INVESTIGATIONS

A site investigation was carried out by Auger Ltd on 21st August 2020 to confirm the cause of damage.

A trial pit with a borehole was excavated to the front right hand side and revealed a concrete strip footing at a depth of 800mm below external ground level bearing on to a 500mm thick band of brown fine to coarse gravelly silty clay. Below this was found to be bands of brown fine gravelly silty clay, brown fine to medium gravelly silty clay, brown fine gravelly silty clay & brown fine to medium gravelly silty clay and the borehole was terminated at a depth of 3.2m below ground level in this material.

Root samples were taken from the hole from depths of 0.8m and 1.3m and examined in the laboratory under a microscope. Generally the roots were found to originate from the family Fraxinus (Ash Tree). This tree situated in the grounds of Weech Hall, Fortune Green Road, London, NW6 1DJ and is on a commercial third party land located to the front right hand side of the property. The tree is subject to a Tree Preservation Order.

The drains were initially checked on 22<sup>nd</sup> January 2018 and several significant structural defects were highlighted and subsequently repaired accordingly.

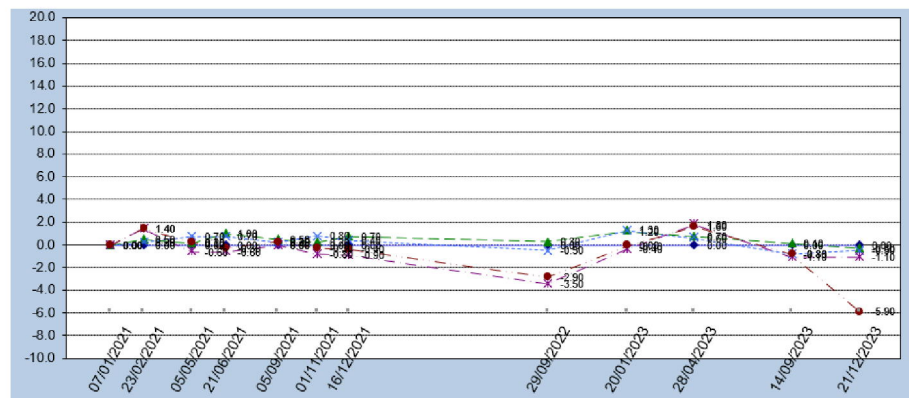
A CCTV survey was undertaken to the drainage system and no defects were identified however a further drainage investigation work was carried out on 12<sup>th</sup> May 2023 which identified multiple structural defects to the drain lines which was allowing an escape of water to both the front and rear elevations. The drains have since been repaired and the drainage system is now free from defects.

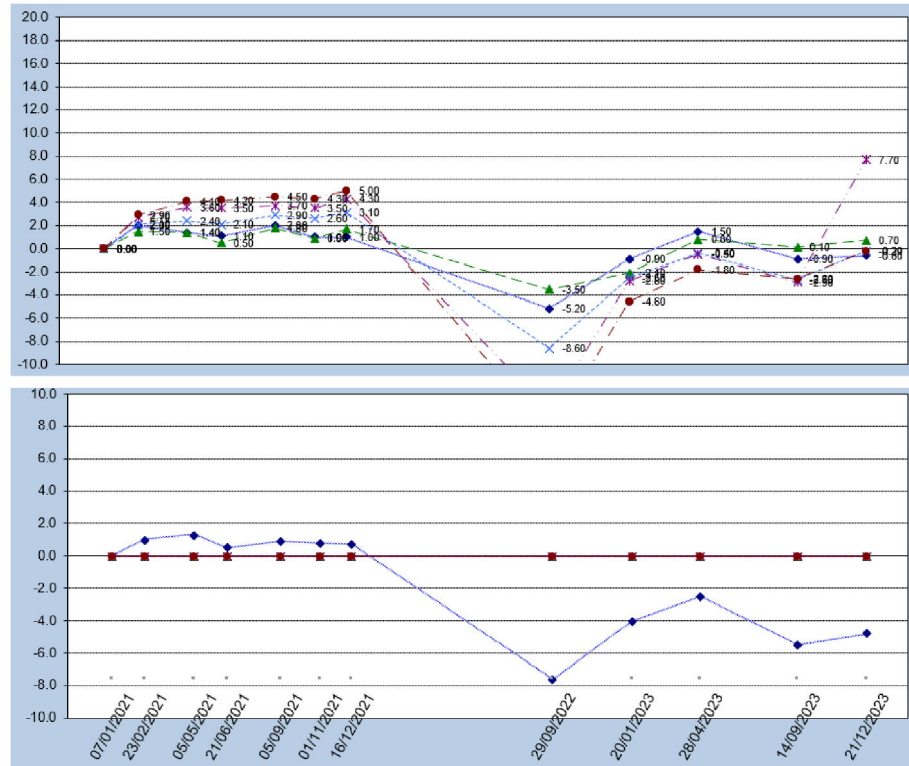
The results of the ground investigation indicates that the property has been built with concrete foundations resting on shrinkable clay containing tree roots and defective drainage.

#### MONITORING

Level monitoring has been underway since 7 January 2021 and will be concluded in February 2024. The level monitoring was carried out around the property and shows cyclical pattern of downwards movement during the drier summer months when the trees are in leaf and subsequent upward movement during the wetter winter months when the trees have dropped leaf and are dormant. This pattern of movement is consistent with clay shrinkage subsidence. The maximum movement was noted at the front right hand quoin and indicates downward movement of 16.00mm during the summer 2022.

It's worth noting that a combination of drainage repairs being completed, the policyholder carrying out his own privately undertaken ground stabilisation works and above average rainfall in the summer 2023 has influenced the level readings during this period. It is anticipated that movement would have been more severe during a hot summer drought.





#### CAUSE OF DAMAGE

Taking an overview of all the site investigation and monitoring results referred to above, it is my opinion that the cause of damage results from clay shrinkage subsidence brought about by the action of roots from the commercial third party Ash tree located at the public footpath to the front/grounds of the commercial premises adjacent to the risk premises, Weech Hall, Fortune Green Road, London, NW6 1DJ to the right hand side of the property.

I base this view on the fact that the foundations of the property in the area of damage have been built at a relatively shallow 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 an analysis of the site investigation results indicates that the soil has been affected by shrinkage. Tree roots are present in the clay subsoil beneath the foundations. In this case, I am satisfied that the damage has therefore been caused by clay shrinkage subsidence following moisture extraction by the Ash tree.

There are no other influencing factors as the drain defects have been rectified. The Arboricultural Assessment Report prepared on 22<sup>nd</sup> June 2023 has made no further vegetation management recommendations to address the current subsidence issue.

I am satisfied that there is no factor, other than the Ash tree, that is causing the damage.

#### RECOMMENDATIONS

We consider the damage will not progress if appropriate measures are taken to remove the cause. In this instance the vegetation located on commercial third party land is contributing toward the cause of damage. We recommend that the Ash tree growing to the front right hand side of the property is removed.

We have already repaired the defective drainage system.

It is fully anticipated that stability will return after removal of the tree and as such we shall proceed to repair immediately the mitigation is completed.

#### HEAVE ASSESSMENT

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

The site investigation has been undertaken during the summer months with desiccation suggested by the Shear vane/suction/moisture content readings at the front right hand side of the property. The amount of desiccation is minor and, in my opinion, represents purely seasonal desiccation rather than a persistent soil moisture deficit. I have carried out a heave assessment in accordance with BRE Digest 412. I believe this to equate to ground recovery of the subsidence that has taken place this summer, rather than being true heave, and consequently I am not of the opinion that long term heave will result should the Ash tree be removed.

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 Ash Tree removal described above is undertaken at the appropriate time.

#### REPAIRS

If the Ash tree is removed then I consider that works including structural crack repair and redecoration at an approximate cost of [REDACTED] will be appropriate in order to repair the damage in this case.

If the Ash tree is not removed then it may be necessary to consider underpinning of the foundations of the property in the area of damage, in addition to structural crack repair and redecoration needed to repair the damage. The total cost of this option is estimated [REDACTED]

Richard Wainwright BSc (Hons) MRPSA BDMA  
*Building Consultant*

Sharon Carr Cert CII  
*Claims Technician*