

GHG

Claim and
Risk Solutions

SUBSIDENCE ENGINEER'S AND ANALYSIS OF SITE INVESTIGATION DATA REPORT

| | |
|------------------------|---------------------------------------|
| Client Name | Pen Underwriting - Direct |
| Reference | VOL/33639 |
| Name of Insured | |
| Policy Number | E21/PN006507Z |
| Risk Address | 2 Northborough Road, London, SW16 4AX |



| | |
|-----------------------|----------------------------|
| GHG Reference | L/2022/76092/S/SRW/LLB/jlm |
| Date of Report | 03 August 2023 |

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1. Introduction

We have been asked by Interested Underwriters per Pen Underwriting - Direct to inspect the subject property, 2 Northborough Road, London, SW16 4AX which is the property of . The property has suffered from two areas of subsidence movement, zone 1 at the front of the property and zone 2 the rear projection where this adjoins the main house.

Our site visit took place on 20 February 2023 and weather conditions were fine.

Site investigations were undertaken on 15 June 2023 and weather conditions were dry.

This Report has been prepared on the instruction of Interested Underwriters per Pen Underwriting - Direct for their sole use in connection with a notification of a Claim under their Insurance Policy. Our comments are based on limited observations of the nature and suspected cause of the damage notified but we have not widened our brief to consider other structural matters.

Our Report does not consider questions of timber or damp, service installations or the general condition of the property. We have not inspected woodwork or other parts of the structure, which are covered, unexposed or inaccessible. We are therefore unable to report that any such part of the property is free from defect.

Comments on the causation of damage are based only on the limited investigations, which have been carried out at this stage and would be subject to review in the light of further information being made available at a later date.

This Report should not be used in the same way as a Pre-Purchase Report. It is limited to the damage, which forms the subject of a Claim made by the Policyholder against Interested Underwriters per Pen Underwriting - Direct.

2. The Property

Please note that all left-hand and right-hand directions within this Report are as though you are facing the front elevation of the property from the road.

A photograph of the front elevation of the property is shown on the cover of this Report.

The property is an end of terrace house comprising three bedrooms, two-storeys and it appears to have been constructed in the 1920s.

3. The Site

The property stands in a mature residential area on the outskirts of Streatham/Croydon and amongst properties of a similar style and vintage.

The immediate site is flat, and the area comes under the control of Croydon Council.

We are not aware of any unusual features of the immediate site.

3.1 Vegetation

The vegetation which is considered most likely to be involved in this matter is shown on the attached sketch plan. The vegetation at the rear is the responsibility of your Policyholder.

There is also vegetation at the front of the property under the ownership of Croydon Council which we consider is implicated in causing damage to the front bay (zone 1).

The most significant item of vegetation affecting the front of the property is considered to be the tree which stands approximately 3 metres from the front of the property, has a height of approximately 5 metres and a diameter at breast height of approximately 200mm.

The most significant items of vegetation at the rear of the property is a tree closest to the property on the party wall line.

We are aware of the presence of a clay subsoil. As such, any vegetation around the property should be maintained at a size which will reduce the likelihood of it causing damage to the property by moisture extraction.

3.2 Geology

From our investigations we have confirmed the subsoil to be a brown silty Clay.

Soils with a clay content will generally have a propensity to shrink and swell with changes in moisture content. That is to say that as the clay is dried its volume will reduce and this can allow downward movement, or subsidence, of the foundations of properties.

The amount of shrinkage and swelling which takes place can vary quite dramatically between different types of soil and can only be quantified by soil testing techniques.

4. History

The property was constructed in approximately the 1920s and it has been owned by since approximately 1999.

Damage was first noted by the Policyholder in September 2022.

On this occasion we have not been able to inspect pre-purchase survey report as your Policyholder was unable to locate this prior to our visit. Due to the length of time the Policyholder has owned the property (24 years), we do not feel there would be any value in obtaining a copy of the pre-purchase report for Underwriters' consideration on this occasion.

5. Damage

5.1 Description of Damage

The damage to this property which forms the subject of this claim relates to crack damage to the front (zone 1) with a separate area of movement to the rear of the property (zone 2).

The width of crack damage observed is between 1-2mm and we would suggest the extent of damage falls within Category 2 (slight) according to BRE Digest 251 Assessment of Damage to Low Rise Buildings (August 1990).

| <u>Category</u> | <u>Definition</u> | <u>Crack Width</u> |
|-----------------|-------------------|--------------------|
| 0 | Negligible | Less than 0.1mm |
| 1 | Very slight | Up to 1mm |
| 2 | Slight | Up to 5mm |
| 3 | Moderate | 5mm to 15mm |
| 4 | Severe | 15mm to 25mm |
| 5 | Very Severe | Greater than 25mm |

We would ask you to appreciate that on this occasion we are dealing with a property which is as a result of its age and history of its construction/use it is showing signs of historic distortion and cracking on the rear elevation has been made good previously. We do not believe these are as a result of current subsidence and these have been largely excluded from the description of damage below.

5.2 Externally



PHOTOGRAPH E1:

This photograph shows a general overview of the front elevation with the street tree in the foreground close to the party wall line of Nos 2 and 4 and is situated approximately 3 metres from the front elevation of the building.



PHOTOGRAPH E2:

This photograph shows cracking in the render/Tyrolean rendering to the front elevation with the crack extending above into the windowsill.



PHOTOGRAPH E3:

This photograph shows a view of the cracked windowsill on the front elevation.



PHOTOGRAPH E4:

This photograph shows cracking above the ground floor windows to the stone lintel.



PHOTOGRAPH E5:

This photograph shows a further view of the crack in the stone lintel above the ground floor windows.



PHOTOGRAPH E6:

This photograph shows a crack through the covered section of the rendering extending down through the lintel above the ground floor windows.



PHOTOGRAPH E7:

This photograph shows a side on view of the street trees.



PHOTOGRAPH E8:

This photograph shows a view down the left-hand flank wall of the building. Note it appears the painted section at the rear of the flank wall was previously a lean-to which has now been removed.



PHOTOGRAPH E9:

This photograph shows a metal drain cover over the gully on the front of the flank elevation.



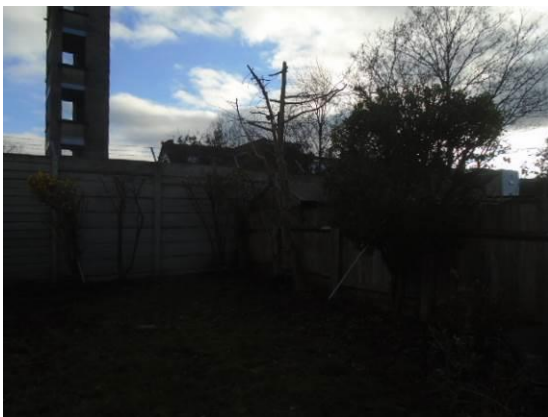
PHOTOGRAPH E10:

This photograph shows an overview of the flank elevation looking back towards the road.



PHOTOGRAPH E11:

This photograph shows a view of the internal corner between the rear wall of the main house and the flank wall of the rear projection, all pebbledash rendered.



PHOTOGRAPH E12:

This photograph attempts to show a view of the vegetation in the rear garden which should be reduced.



PHOTOGRAPH E13:

This photograph shows a general overview of the rear wall of the rear projection painted render.



PHOTOGRAPH E14:

This photograph shows a re-opening of some crack damage above the ground floor rear door on the rear wall of the rear projection. Please note where filler repairs have been carried out previously to this crack.



PHOTOGRAPH E15:

This photograph shows high level cracking above the first-floor window on the rear wall of the rear projection which appears to have opened up.



PHOTOGRAPH E16:

This photograph shows a closer view of the crack above the rear door of the rear projection where previous filler repairs can clearly be seen.



PHOTOGRAPH E17:

This photograph shows a general overview of the manhole situated close to the corner of the flank wall of the rear projection and the rear wall of the main house.



PHOTOGRAPH E18:

This photograph shows an upwards view of the internal corner between the rear wall of the main house and the flank wall of the rear projection. Crack damage is disguised by the soil pipe running up in the corner of this location.



PHOTOGRAPH E19:

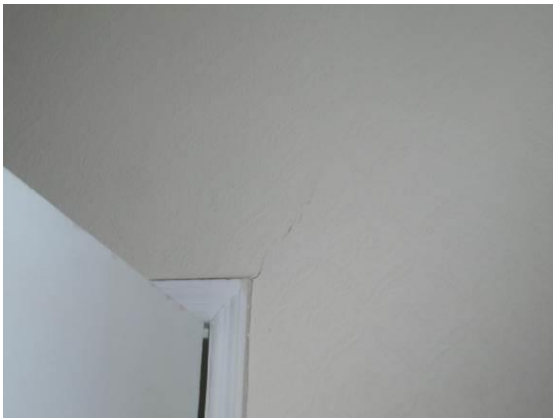
This photograph shows the monitor station to the crack on the front bay window.

5.3 Internally



PHOTOGRAPH I01:

This photograph shows a general overview of the ground floor front reception room.



PHOTOGRAPH I02:

This photograph shows cracking above the door to the ground floor front reception room, suggesting that the front of the property has moved forward.



PHOTOGRAPH I03:

This photograph shows cracking in the ceiling across the bay in the ground floor front reception room.



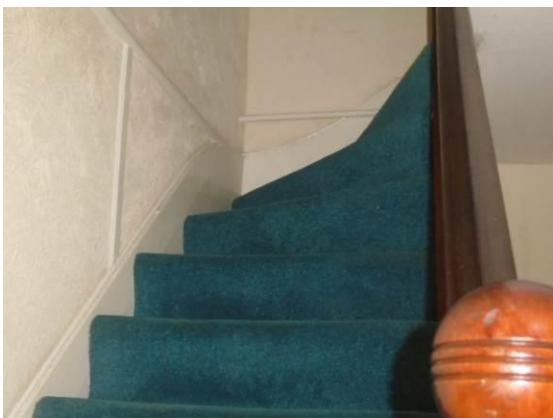
PHOTOGRAPH I04:

This photograph shows rucking of wallpaper to the junction of the wall/ceiling also within the ground floor front reception room.



PHOTOGRAPH I05:

This photograph shows a general overview of the ground floor hall looking down towards the rear of the property.



PHOTOGRAPH I06:

This photograph shows a general view looking up the stairs towards the first floor.



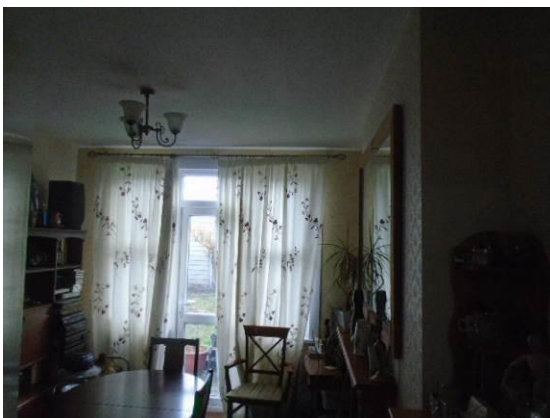
PHOTOGRAPH I07:

This photograph shows an overview of the kitchen situated to the rear part of the main house at ground floor level.



PHOTOGRAPH I08:

This photograph shows some minor crack damage above the kitchen units and local opening of the crack at the wall/ceiling junction within the kitchen area.



PHOTOGRAPH I09:

This photograph shows an overview of the rear dining room.



PHOTOGRAPH I10:

This photograph shows a view of the dining room looking back towards the hall. No obvious signs of any subsidence damage were noted in this room.



PHOTOGRAPH I11:

This photograph shows the crack damage to the wall covering on the party wall of the hall, stairs and landing with monitor studs affixed. Crack width is 2mm maximum at this point.



PHOTOGRAPH I12:

This photograph shows a general overview of the first-floor front bedroom looking back towards the landing.



PHOTOGRAPH I13:

This photograph shows a diagonal crack below the window board towards the wardrobes on the front left-hand side of the first-floor bedroom.



PHOTOGRAPH I14:

This photograph shows a general overview of the middle bedroom at first floor level.



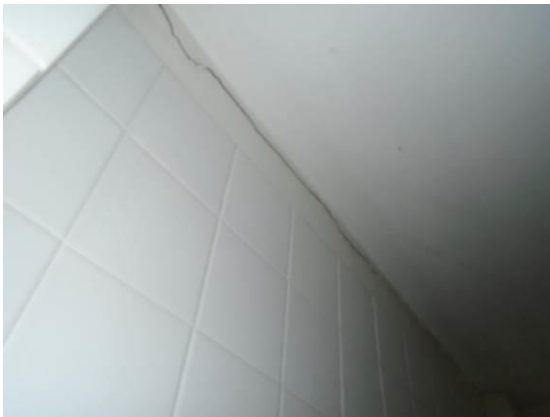
PHOTOGRAPH I15:

This photograph shows a general overview of the middle bedroom with feature wallpaper looking back towards the landing and the partition with the front bedroom.



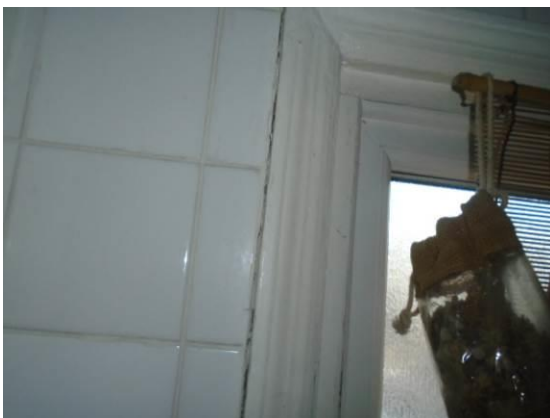
PHOTOGRAPH I16:

This photograph shows a general overview of the first-floor bathroom situated within the rear projection.



PHOTOGRAPH I17:

This photograph shows separation of the ceiling/tile junction within the bathroom. Note this cracking appears to be fresh.



PHOTOGRAPH I18:

This photograph shows opening of joint between the window architrave and the tiles situated on the left-hand wall of the rear projection internally within the bathroom.



PHOTOGRAPH I19:

This photograph shows opening of grout joints between the tiles within the bathroom adjacent to the bath and the toilet cistern.



PHOTOGRAPH I20:

This photograph shows a general view into the rear bedroom of the rear projection.



PHOTOGRAPH I21:

This photograph shows a view looking back into the rear bedroom of the rear projection taken with back to the window.

6. Investigations

Trialpits and boreholes were excavated at the property which revealed the depth of foundation and sub soil beneath.

A CCTV Survey of the drains was also undertaken where accessible.

6.1 Drains

A CCTV survey was undertaken to the rear and left-hand side of the property.

Some minor defects were noted within the drainage system, but these did consist of structural cracking and misplaced joints and a defective gully.

Whilst these are not considered to be implicated in the cause of the movement to either part of the property, the defects to the rear, which are the responsibility of the homeowner have been recommended for repair by the drainage contractor.

Similar repairs have also been recommended by the drainage contractor to the left-hand run 03 which is a shared Local-Authority drainage run.

6.2 Trialholes

Trialhole 01 was excavated at the front of the property to the right-hand side of the bay-window structure and revealed that the foundations in this location were concrete with an overall founding depth of 700mm below ground level. The soil immediately beneath the foundations was seen to be a very stiff brown silty clay which was dry at the time of our inspection.

Roots of up to 1mm were in the soil beneath the foundations and have been tested for identification.

Trialhole 02 was excavated at the rear of the property and revealed that the foundations in this location were concrete with an overall founding depth of 850mm below ground level. The soil immediately beneath the foundations was seen to be a firm brown silty clay which was dry at the time of our inspection.

Roots of up to 1mm were in the soil beneath the foundations in trialhole 02.

6.3 Boreholes

Borehole 01 was sunk through the base of trialhole 01 and to an overall depth of 3000mm below ground level.

The soil located in the borehole was a very stiff brown silty clay which appeared to be dry at the time of our inspection.

Soil samples were sent to the laboratory which have been received back following analysis.

Roots were retrieved below foundation level within this borehole down to 2m below ground level.

Borehole 02 was sunk through the base of trialhole 02 and to an overall depth of 3000mm below ground level.

The soil located in the borehole was a firm brown silty clay which increased with stiffness with depth and became very stiff at 2.5m below ground level.

Soil samples were retrieved from this borehole and the results have now been received back from the laboratory.

Root samples were found within the soil samples taken from this borehole down to a depth of 2300mm below ground level.

A control borehole 03 was sunk to the left-hand side of the property down to a depth of 3000mm below ground level.

The soil within this control borehole was a brown silty clay which was stiff and increased in stiffness with depth becoming very stiff at 2500mm below ground level.

There were no roots evidenced within the control borehole soil samples.

6.4 Soil Testing

The purpose of the testing on this occasion is to try to determine some of the physical characteristics of the soil which will include, amongst other tests, the clay content and plasticity index of the soil, and if appropriate the extent of any desiccation. This test gives an indication of the likely degree by which the soil will shrink and swell with changes in moisture content, and the extent of any deficiencies.

6.5 Root Analysis

Root samples have been tested. In the front trialpit/borehole, the roots were found to emanate from a broadleaf species but were too juvenile for positive identification.

Within the rear trialpit/borehole 02, the roots at both underside and down to 2.3m below ground level were confirmed as emanating from an *Aesculus* (horse chestnut tree).

6.6 Ground Water

None observed.

7. Discussion

We are dealing with a property of approximately 103 years' vintage which has been owned by the current owner for approximately 24 years.

Damage to the front bay-window structure is indicative of Subsidence-related movement, with a downwards direction towards the right-hand side of the bay-window structure.

Damage to the rear outrigger, particularly with cracking to the right-hand party wall junction with the main house structure may be indicative of Subsidence-related movement, but the direction of this movement is currently unclear.

Crack width and level monitoring has been installed and this will show which areas of the property will be subject to any ground-related movement and further readings will be required to confirm.

In relation to the ground investigations that have been carried out, these have confirmed a highly shrinkable clay subsoil and particularly at the front of the property, the soil below foundations level was found to be in a significantly desiccated condition where root activity was present.

In the rear investigations undertaken, whilst desiccation was confirmed, this was to a lesser extent, and at this point tree root activity was also confirmed.

Given the findings of the site investigations and the nature and time of the damage, we consider that the most likely cause to both areas to be due to some slight shrinkage of the clay substrata during the recent dry weather conditions during the summer of 2022 aggravated by moisture extraction from the ground by nearby vegetation.

8. Recommendations

In most cases of clay-shrinkage Subsidence, it is possible to stabilise the foundations by dealing with the cause and in this case, we consider that vegetation management will be required, but with the roots within the investigations being too juvenile for positive identification, an arborist's report would be recommended on this occasion.

It is likely that vegetation/tree removal would be recommended and with the heave potential calculation showing there to be minimal risk of any ground heave, any mitigation measures are likely to lead to closure of the cracking and stability returning to both areas of the property.

Upon stability being confirmed within the monitoring, we would then be able to make recommendations for appropriate repairs.

Lance La-Band BSc MRICS

(On Behalf of Stephen Williams ACIOB Cert CILA)

For GHG Solutions Limited

Email: response@ghgsolutions.co.uk

Enc. Site Sketch
GHG Heave Potential Calculation

CC.