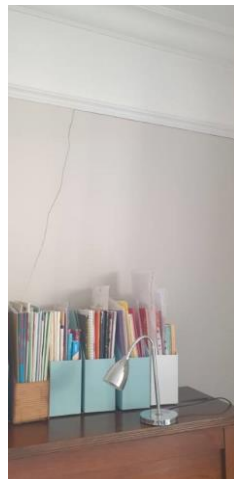




SUBSIDENCE ENGINEER'S REPORT

Client Name	Pen Underwriting - Direct
Reference	VOL/31813
Name of Insured	Mrs Rosemary Lipscomb
Policy Number	AFFST010103
Risk Address	Tushingham Cottage, Edison Road, London, N8 8AE



GHG Reference	L/2022/72979/S
Date of Report	12 October 2022

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1. Introduction

We have been asked by Interested Underwriters per Pen Underwriting - Direct to inspect the subject property, Tushingham Cottage, Edison Road, London, N8 8AE which is the property of Mrs Rosemary Lipscomb, and comment upon cracking that has been noted internally and externally to the front of the property.

Our site visit took place on 06 September 2022 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 risk address on this occasion is a three storey, semi-detached house which appears to have been constructed in circa 1908.

The walls are of load bearing brick construction beneath a pitched and tile covered roof.

The windows are of timber construction and the property is maintained to a very good standard.

To the rear of the property is a single storey extension which was added by a previous owner.

The risk address is on a site which slopes slightly right to left and is amongst properties of similar design and construction.

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.

3. The Site

The property stands in a mature residential area on the outskirts of Crouch End and amongst properties of a similar style and vintage.

The immediate site is sloping slightly left to right and the area comes under the control of the Borough of Haringey.

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 is generally the responsibility of your Policyholder. The most significant items of vegetation on this occasion are the wisteria which stands adjacent to the front right hand corner of the property and has a height of approximately 3m and stands adjacent to the front elevation of the building.

There are also a row of trees running along the right and boundary of the front elevation with the nearest birch being approximately 1.7m from the right hand corner of the property and stands 9m high.

We have discussed with the Policyholder that it will be necessary for vegetation reduction and/or removal measures and we will confirm these on receipt of the site investigation results to determine whether the wisteria or the birches are the dominant cause or if both are implicated.

3.2 Geology

From our investigations on site we have confirmed that the subsoil in the area is 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 1908 and it has been owned by Mrs Rosemary Lipscomb since August 2017.

Damage was first noted by the Policyholder in early summer 2022.

5. Damage

5.1 Description of Damage

The damage to this property which forms the subject of this claim relates to external cracking to the front bay and front elevation of the main house.

Internally crack damage consistent with subsidence movement was noted to the front lounge and the front bedroom of the property.

We would suggest that the extent of damage falls within Category 2 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. 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 showing a view of the circa 2-3mm horizontal crack noted to the front right hand corner of the property.



PHOTOGRAPH E2:

This photograph shows a view of the circa 1mm diagonal crack to the front elevation of the front bay which continues onto the windowsill.



PHOTOGRAPH E3:

This photograph a view of the circa 1mm vertical crack at the junction of the right hand stone mullion and junction with the front elevation.



PHOTOGRAPH E4:

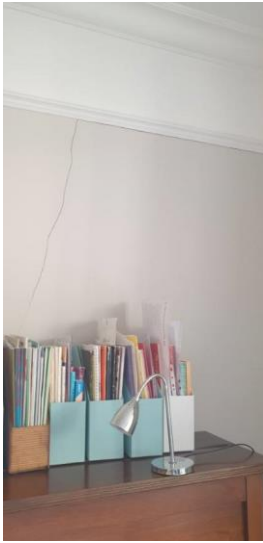
This photograph shows a view of a slight vertical crack at the junction of the front stone lintel and left hand lintel to the bay window.



PHOTOGRAPH E5:

This photograph shows a view of a slight stepped diagonal crack running from the left hand side of the first floor windowsill extending down to the bay window flashing.

5.3 Internally



PHOTOGRAPH I1:

This photograph shows a view of a diagonal tapering crack up to approximately 1mm in width to the right hand elevation of the front lounge.



PHOTOGRAPH I2:

This photograph shows a view of the diagonal cracking up to 1mm in width to the front elevation of the lounge to the right hand side of the front bay window.



PHOTOGRAPH I3:

This photograph shows a view of the 1-2mm horizontal crack to the front elevation which commences on the right hand corner of the front bay and runs across to the right corner of the front elevation.



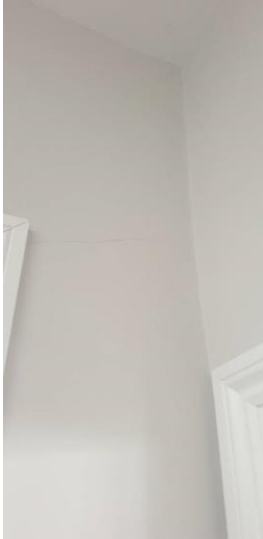
PHOTOGRAPH I4:

This photograph shows a view of vertical crack at the junction of the front elevation of the front bay with the movement causing the separation of the sills and window frames immediately above the cracking.



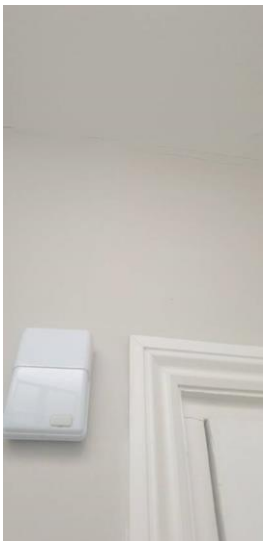
PHOTOGRAPH I5:

This photograph shows a view of the circa 67mm essentially vertical tapering crack at the front elevation of the bay located behind the radiator.



PHOTOGRAPH I6:

This photograph shows a view of the minor cracking radiating from the top right hand corner of the right hand lobby door within the hallway.



PHOTOGRAPH I7:

This photograph shows a view of the minor cracking radiating from the top left hand corner of the right hand lobby door within the hallway.



PHOTOGRAPH I8

This photograph shows a view of the circa 1mm diagonal crack beneath the front windowsill which extends down to skirting level.



PHOTOGRAPH I5:

This photograph shows a view of the diagonal crack which radiates from the left hand reveal of the front elevation window descending down to skirting level within the front bedroom.

6. Investigations

A single/number of trial pit(s) and borehole(s) was/were excavated at the property which revealed the depth of foundation and sub soil beneath.

A CCTV survey of the drains was not undertaken on this occasion.

6.1 Drains

No CCTV survey of the drainage was undertaken on this occasion because high moisture levels were not apparent in the sub soil

6.2 Trial Hole(s)

Trial hole number one was excavated at the front right hand corner of the property and revealed that the foundations in this location were a brick corbel foundation with an overall founding depth of approximately 450mm below ground level. The soil immediately beneath the foundations was seen to be a Dry brown clay with infill material which was dry at the time of our inspection.

Roots of up to 3 mm were located in the soil beneath the foundations in trial hole 01.

6.3 Borehole(s)

Borehole 01 was sunk through the base of trial hole 01 and to an overall depth of 1450mm below ground level.

Due to The soil located in the borehole was firm silty clay made ground which appeared to be dry at the time of our inspection.

The borehole was stopped at 1450mm below ground level due to the auger being unable to penetrate the subsoil.

A total of two number soil samples have been retrieved from this borehole and sent to the laboratory for analysis.

A number of root samples were located in the soil samples taken from this borehole and have been sent to the laboratory for analysis.

7. Soil Properties

The retrieved soil samples have been tested by an independent testing laboratory and this has revealed that they have what are known as Intermediate plasticity index properties.¹

As an example, in the sample taken from Borehole number 1 at 0.5m below ground level the liquid limit is shown to be 45%, the plastic limit is 22% and the plasticity index (which is the difference between the two) is 23%.

Reference was made in our initial Report to the recent drought summers and there is little doubt that this would have had an influence

¹Table 1, Chapter 4.2, Para 2.3 of N.H.B.C. Standards, 1986.

8. Moisture Content

Using criteria put forward by Driscoll² it is suggested that clay soils are desiccated if the moisture content is less than 40% of the liquid limit. In addition he suggested for certain clays only that a further indicator of desiccation exists if the moisture content is less than 2% above the plastic limit.

The latter method is rarely used, however, as it applies to certain clays only and also the method of determining the plastic limit is less reliable than the method of determining the liquid limit.

In this case the lowest moisture content is seen to be 24.4% in the sample taken from Borehole number 1 at a depth of 0.5m below ground level.

This is clearly not less than 40% of the liquid limit (45% x 40%) being (18%) which suggests that the soil in this area is not desiccated

² Driscoll (1983) "The Influence of Vegetation on the Swelling & Shrinking of Clay Soils in Britain". Geotechnique. Vol. 33.

9. Root Identification

At the time of excavating the trial pits and boreholes a number of root samples were taken for identification analysis. These have been sent to an appropriate specialist and we have now received the results which indicate that the roots belong to the Wisteria and Birches which have been referred to previously.

Root Number	Borehole	Depth	Root Type
1	1	To 1m	Leguminosae spp.
2	1	To 1m	Betula spp.

Leguminosae spp. include laburnum, Robinia (false acacia or locust), broom, the pagoda tree and the climber wisteria.

Betula spp. are birches.

10. Discussion

1. From the physical evidence obtained at the time of our visit to the property and the combined investigation results which we have now received we are strongly of the opinion that the damage to this property results from desiccation of the clay sub soil during the dry weather.
2. We believe that the soil exhibits sufficiently high index properties to confirm that it will be moisture dependent, that there is a moisture deficiency as shown by the various tests referred to in the Report and further that roots from adjacent vegetation were located within the samples.
3. In view of these results we are satisfied that the damage has occurred as a result of clay shrinkage subsidence, which has been brought on by a combination of the moisture demands of the vegetation to the front of the property and the drier summer months.

11. Recommendations

1. We believe that the appropriate remedial action on this occasion is to arrange for the Wisteria and the nearest Birch to the front of the property to be removed and for the soil to be allowed to rehydrate.
2. It will now be necessary to remove the vegetation at the earliest possible time.
3. We will continue to monitor the property on a regular basis to establish whether any significant recovery occurs particularly once the cause has been dealt with and to determine whether the property stabilises.

Ian McKenna BSc (Hons) MRICS MCIOB Dip CII

For GHG Solutions Limited

Email: response@ghgsolutions.co.uk

- Enc.**
1. Soil Results, including Graphs
 2. Tree Root Identification Results
 3. Site Plan

Copy to: Mrs Rosemary Lipscomb