

Engineers Report

Risk Address 38 Beech Mast
Gravesend
Kent
DA13 0SX

360 Reference DLG-SN-21-003579
Insurer Reference 080336373
Policy Holder Mr Carleton

Date Notified 20.09.2021
Date Instructed 30.09.2021
Report Date 12.10.2021



Description of Premises

The risk address is a mid terraced house with three bedrooms over two storeys which was built in 1975. The property has been constructed with cavity brick and block walls supporting a pitched timber roof structure with tiled covering, whilst the ground floor is solid concrete and the first floor is suspended timber with joists and floorboards. There is a single storey porch to the front which was originally a canopy but has since been converted into a porch. The porch has been constructed with cavity brick walls supporting a flat timber roof structure with felt covering, whilst internally the ground floor is solid concrete.

The property is situated on a level and is located within a residential area of similar type properties, with no apparent adverse site features. The combined drainage system is found to the rear.

There is a large conifer tree to the front of the porch which is owned by Mr Carleton and which we consider is within influencing distance of the property.

The property is owned and occupied by Mr & Mrs Carleton and their two children, and has been since 2009.

There is a mortgage on the property with Nationwide and the property is owned as part of a shared ownership scheme with Moat Housing.

Discovery of Damage

We spoke to Mrs Carelton who advised that the external and internal cracks to the porch only became apparent in mid September 2021.

Focus of Damage and Report

This document addresses damage notified to insurers to the front porch. All directions are stated when viewing the property from the front.



External damage to front porch

Left hand elevation

To the left hand elevation of the porch there is a 3mm wide separation gap to the left hand side of the door at the joint between the porch and the front elevation of the house where the porch has rotated away.

Internal damage to front porch

There is a 3mm wide vertical separation gap between the entrance door frame and the front elevation of the main house, whilst there is also localised 3mm wide cracking to the ceiling in the same area.



Picture 1: Left side of porch



Picture 2: Inside of porch



Picture 3: Cracking inside porch



Picture 4: Movement gap in porch

Non-Subsidence Related Damage

There is no other damage of significance elsewhere within the property.

Classification of Damage

It is common practice to categorise the damage in accordance with B.R.E. Digest 251 "Assessment of Damage in Low-Rise Buildings". In this case, the damage falls into Category 2 "Moderate" as there is cracking up to approximately 3mm wide.

Category	Crack Width	Degree of Damage
0	Hairline cracks of less than 0.1 mm	Negligible
1	Typical crack widths are 0.1 to 1mm.	Very slight
2	Typical crack widths are 1 to 5mm.	Slight
3	Typical crack widths are 5 to 15mm, or several of, say, 3 mm.	Moderate
4	Typical crack widths are 15 to 25mm, but also depends on number of cracks.	Severe
5	Typical crack widths are greater than 25mm but depends on number of cracks.	Very Severe

Site Geology and Ground Conditions

The geological data indicates the ground to be firm clay with gravel, sand, silt and chalk.

Indicative Site Geology and Soils Data for: 38 Beech Mast, Gravesend, Kent, DA13 0SX

No of SI's within 1.7km from address on identical lithology. (See comments)	3
Closest - Furthest distance of a site investigation from the address (km).	0.24 - 1.7
Total number of boreholes.	5
Percentage of site investigations where root samples were taken.	100%
Percentage of site investigations where drainage was recorded.	33%
Number of samples tested at greater than 0.5m depth.	16
BRE Digest 240. "Volume change potential" from Av. Modified Plasticity Index (I _p) of 27%.	Medium

Previous Soils Data nr = Non recorded	Depth m.	M.C. (%)	L.L. (%)	P.I. (%)	P.L. (%)	425um (%)	Suction kPa	Oed Strain
Sample population	16	16	5	5	5	5	12	3
~ Minimum (Av - 1 StdDiv)	0.6	19	42	23	19	93	7	0.0020
~ Maximum (Av + 1 StdDiv)	2.5	35	54	33	20	98	289	0.0020
Average	1.4	27	48	28	20	95	80	0.0020
General soils description	Firm/Soft dark brown/grey CLAY with some fine-medium gravel / sand / silt / chalk							
BGS 1:50 000 maps as a: Superficial Deposit	1:50 000 scale bedrock geology description: Lewes Nodular Chalk Formation - Chalk. Sedimentary Bedrock formed in the Cretaceous period. Local environment previously dominated by warm chalk seas. Setting: Warm chalk seas with accumulations of skeletal remains of microscopic coccoliths. These sedimentary rocks are shallow-marine in origin. They are biogenic and detrital, generally comprising carbonate material (coccoliths), forming distinctive beds of chalk.							
BGS 1km Hexagonal Superficial Deposit Depth Data	1:50 000 scale superficial geology description: Clay-With-Flints Formation - Clay, Silt, Sand And Gravel. Superficial Deposits formed in the Quaternary period. Local environment previously dominated by weathering processes (U). Setting: Weathering processes (U) with deposits derived by dissolution of Chalk below and removal of Palaeogene bedrock above. These sedimentary deposits are subaerial and pedogenic in origin. They are detrital, comprising coarse- to fine- grained materials, weathered to form layers of accumulated material.							
Mean Depth = 1m								
Max Depth = 9m								
Coverage = 40%								
Note: The BGS only record superficial deposits greater than 1m in depth								
BGS 1:50,000 Artificial Ground	Non recorded							

BGS "GeoSure" 5km Hexagonal Hazard Ratings	
Shrink/Swell	Moderate with areas of localised significant rating.
Collapsible Deposits	Low
Compressible Ground	Low with areas of localised significant rating.
Landslides	Low with areas of localised significant rating.
Running Sand	Low
Soluble Rocks	Significant
Mining (not incl coal) 1km hex g	No record of activity.

Government Coal Authority Data (<25m = found within 25m)	No data recorded for this location.
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Comments: The location is in a very low/low SI density area. The three SIs reported above are on exactly the same Superficial deposit. The superficial deposit is relatively shallow with an average depth of ≈1m and a maximum depth of ≈9m. The underlying bedrock has an Av. Modified Plasticity Index (I_p) of 24% - Medium volume change potential.

Evidence of External Influences

Trees

There is a large conifer tree to the front of the porch which is within influencing distance of the damage. The roots from this tree may have influenced building movement particularly during dry weather spells.

Drains

The main property is served by a combined domestic drainage system which is located predominantly to the rear. There are no known problems with the drainage system.

Summary and Conclusions

The pattern and orientation of damage noted to the front porch is indicative of localised subsidence. A valid claim is therefore accepted for the damage to the property, subject to the subsidence policy excess of £1000.

The cause of the localised subsidence affecting the porch appears to be related to clay shrinkage influenced by the roots from the nearby conifer tree, which has resulted in the porch structure rotating away from the main building.

In order to mitigate further subsidence damage occurring, it will be necessary to remove the cause of the problem, which in this case will be to remove the nearby conifer tree.

Following completion of the mitigation works as described above, and a period to allow the ground to stabilise, the necessary repairs to the property can proceed. A repair schedule will be drawn up and agreed in due course.

Next Steps

A valid claim arises under the terms of the insurance policy, subject to the applicable excess of £1000, for the localised subsidence damage to the front porch.

The key steps required to progress the claim are as follows:

- Contact policyholder and arrange for site investigations to be undertaken at a suitable date. These will include a trial hole excavation to the front of the porch.
- Recommend that tree removal works are undertaken.
- Following completion of the above mitigation measures, allow the ground to stabilise before proceeding with repairs to the property.

Provided that the tree management works are achieved, it is anticipated that the ground will recover, with localised remedial works being required externally and internally to the porch. A repair schedule has been drawn up, although this will be finalised following completion of any mitigation measures, as applicable.

Jonathan Doyle
360Globalnet Subsidence Team