

Engineers Report

Risk Address 16 Green Spring Avenue
Birdwell
Barnsley
S70 5RW

360 Reference LIV-SN-23-006594
Claim Reference 100-50-225844
Policyholder Mr R Flavell

Date Notified 14/03/2023
Date Instructed 14/03/2022
Report Date 17/03/2023



Description of premises

The risk address is a detached, 3-bedroom bungalow, built in traditional cavity wall construction, clad in brickwork, surmounted by a pitched and hipped tiled roof. The ground floor construction detail is believed to be of solid ground bearing concrete.

There is a detached precast concrete garage to the rear of the property.

The original construction of the property is circa 1960's, with the Policyholder purchasing the property in 1981. We understand that no major alterations have been undertaken during the course of the Policyholder's occupation.

The property is situated on a site which is slightly raised, with no unusually adverse features. The property is located on a main road, as part of a mediumly-sized residential housing estate, within the Barnsley suburb of Birdwell.

Discovery of Damage

The Policyholder advises that the damage was first noted at the end of February 2023. Upon inspecting the rear garage, it was found to have a hole in the roof structure, as well as gaps to the walls and cracking to the floor.

As a result of their concern, the Policyholder decided to submit a claim for potential subsidence under their Home Insurance Policy for consideration and assistance.

A site visit was undertaken by an in-house technician, with our Engineer discussing the subsequent findings with the Policyholder.

Focus of Damage and Report

This document discusses the damage noted during the course of our review. All comments and references to the building are made by looking at the property from the front. We have noted the following areas of potential concern:



Internal Damage

Garage

There is a 10-15mm crack to the mid-left-hand section of the garage floor slab, running from side-to-side. This cracking appears to be historic. The extent of this cracking could not be fully determined, due to the contents of the garage internally.

There is a diagonal 5-6mm crack across the rear left-hand section of the floor slab. This cracking appears to be historic.

One of the asbestos roof sheets within the middle section of the garage has collapsed.

External Damage

Garage

Front elevation

There is a tapering 5-50mm gap between the middle concrete post and the adjoining left-hand concrete panel, noted to the front elevation of the structure.

There is a tapering 5-25mm gap between the left-hand concrete post and the adjoining right-hand concrete panel, noted to the front elevation of the structure.

There is a 10-12mm crack through the garage floor slab, which is evidenced externally at the front of the structure. This cracking appears to be historic.

Rear elevation

There is a tapering 5-10mm gap between the middle concrete post and the adjoining left-hand concrete panel, noted to the rear elevation of the structure.

Left-hand boundary wall

There is vertical and horizontal 2-3mm cracking to the middle of the left-hand boundary wall, which loose stonework evident.

Rear driveway

The rear section of the rear driveway has dropped and caused significant cracking, up to 25mm. This cracking and distortion appear to be historic.



Cracking at the right-hand
junction of the rear extension



Cracking at the right-hand
junction of the rear extension



Historic cracking to garage floor
slab



Missing asbestos roof sheet to
middle of the garage



General view of the rear
elevation of the garage



Proximity of vegetation to the
rear in relation to the garage

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 localised damage to the property falls into Category 3 "Moderate".

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

Non-Subsidence Related Damage

No other damage was noted during the course of our inspection.

Evidence of external influences

Trees.

There are multiple pieces of vegetation to the rear of the site, of many differing species, within the grounds of the Local Authority.

In order to confirm which of these vegetation is likely to have had an adverse effect on the ground beneath the foundation of the garage, the advice of a professional arboriculturist will be sought.

Drains.

There is no apparent underground drainage within the vicinity of the damage, and as such, we do not believe the drainage to be a contributory factor in the causation of the damage on this occasion.

Site Geology and ground conditions

Indicative Site Geology and Soils Data for: 16 Green Spring Avenue, Birdwell, Barnsley, S70 5RW

No of SI's within 14.6km from address on identical lithology. (See comments)	6
Closest - Furthest distance of a site investigation from the address (km).	4 - 14.6
Total number of boreholes.	8
Percentage of site investigations where root samples were taken.	33%
Percentage of site investigations where drainage was recorded.	0%
Number of samples tested at greater than 0.5m depth.	18
BRE Digest 240. "Volume change potential" from Av. Modified Plasticity Index (I _p) of 32%.	Medium

Previous Soils Data nr = Non recorded	Depth m.	M.C. (%)	L.L. (%)	P.I. (%)	P.L. (%)	425um (%)	Suction kPa	Oed Strain
Sample population	18	17	11	11	11	13	16	1
~ Minimum (Av - 1 StdDev)	0.7	16	39	19	18	84	7	0.0040
~ Maximum (Av + 1 StdDev)	2.1	28	67	41	28	100	920	0.0040
Average	1.2	22	53	30	23	93	271	0.0040
General soils description	Firm/Stiff brown/grey CLAY with some silt / fine-medium gravel / sand							
BGS 1:50 000 maps as a: Bedrock Geology	1:50 000 scale bedrock geology description: Pennine Middle Coal Measures Formation - Sandstone. Sedimentary Bedrock formed in the Carboniferous period. Local environment previously dominated by swamps, estuaries and deltas. Setting: Swamps, estuaries and deltas with rivers. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).							
BGS 1km Hex. Superficial Deposit Depth Data Mean Depth = 0m Max Depth = 0m Coverage = 0% The BGS only record superficial deposits greater than 1m in depth.	1:50 000 scale superficial geology description: None recorded.							
BGS 1:50,000 Artificial Ground	Non recorded							

BGS "GeoSure" 5km Hexagonal Hazard Ratings	
Shrink/Swell	Low
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	Low
Mining (not coal) 1km hx grid	Localised small scale mining may have occurred in the area.

Government Coal Authority Data (<25m = found within 25m)	Reporting area/ Surface Resource Area/ Abandoned Mines Catalogue. No-12461
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Comments: The location is in a very low SI density area. The six SIs reported above are on exactly the same Bedrock Geology with no overlying Superficial deposits. Please note above that two Atterberg tests were undertaken and proved "Non-plastic".

Summary and Conclusions

All the indications from the evidence obtained suggest that the damage to the garage results from subsidence of the site upon which the property stands. Live roots in firm active clays have led to cyclical shrinkage and expansion below the foundation of the building, which together have led to consequent building movement and damage.

This influence and movement is consistent season upon season, as the clay continues to change volume in the presence of the trees identified, thus the problem continues. Only when the cause of the movement is removed will the ground return to its equilibrium, allowing for stability to return, and to enable the repair works to the property to be undertaken.

As a result of which, a valid claim is accepted under the subsidence Peril of the Policy, subject to the applicable Policy excess, which is the Policyholder's contribution towards the claim.

In this particular instance, it is believed that the close proximity vegetation, consisting specifically of the Local Authority owned vegetation to the rear of the garage, are likely to be the significant factor in the foundation movement which has occurred to the building.

To abate any further foundation movement from occurring and provide long-term stability for the building, it is recommended that some of the close proximity vegetation is removed. The advice of a professional arboriculturist will be sought, to confirm, in their opinion, which of the vegetation in question requires removing.

Given that the causative trees are owned by a Local Authority, a certain level of evidence is required in order to prove to them that their vegetation is having an adverse influence on the property, as well as increasing the prospects of a recovery in due course. This will include an intrusive ground investigation externally within the vicinity of the damage, as well as a crack and level monitoring exercise to accurately reflect the ongoing movement patterns of the property. In addition,

Once the causative vegetation is removed, after a few months, the ground beneath the building will form a new equilibrium, causing the building to stabilise. Once this has been confirmed, the necessary remedial repair works can be implemented to the structure.

Next Steps

- Undertake ground investigation.
- Commence with level monitoring exercise.
- Appoint arboriculturist upon receipt of ground investigation.
- Pursue Local Authority to instigate vegetation removal.
- Upon completion of vegetation removal, continue with monitoring to confirm stability of the building.
- Obtain agreement from Policyholder for the attached schedule of works.
- Appoint a contractor and arrange suitable start date for the repair works to commence.
- Upon completion of the works issue the certificate of structural adequacy and close files.