

SUBSIDENCE ENGINEER'S REPORT

Client Name	Admiral
Reference	HH 1114078893
Name of Insured	Mr Andrew Ardron
Policy Number	P65885561
Risk Address	6 Butterleys, Dodworth, Barnsley, S75 3TD



GHG Reference	L/2020/62058/S/DC/jlm
Date of Report	30 September 2020

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1. Introduction

We have been asked by Interested Underwriters per Admiral to inspect the subject property, 6 Butterleys, Dodworth, Barnsley, S75 3TD which is the property of Mr Andrew Ardron, and comment upon alleged subsidence damage to the rear left-hand corner of the building.

Our site visit took place on 23 September 2020 and weather conditions were wet.

This Report has been prepared on the instruction of Interested Underwriters per Admiral 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 Admiral.

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 two-storey detached house which appears to have been constructed in the late 1980s.

The walls are of load-bearing brick and block cavity construction with internal dot and dab plasterboard finishes beneath a pitched concrete-tile-covered roof.

The windows are of uPVC double-glazed construction and the property is maintained to a high standard.

To the right-hand side of the property there is an attached single garage which has been extended both forwards and backwards, with the original roofline being raised, and this projects beyond the main building at the rear.

Attached to the left-hand side of the garage at the rear, there is an entrance porch extension which opens through into the main kitchen and, to the rear left-hand corner of the main building, there is a single-storey garden-store extension; all these works added by the Policyholder.

3. The Site

The property stands on a residential estate on the edge of Dodworth near Barnsley and amongst properties of a similar style and vintage.

The immediate site slopes steeply down from right to left and the area comes under the control of Barnsley Metropolitan Borough Council.

We are not aware of any unusual features of the immediate site, though it is noted that the area is one of historic mining activities, though we believe mining searches at purchase revealed no significant risk of future mining activities.

3.1 Vegetation

The vegetation around the property is shown on the attached sketch plan. The items of vegetation which are most likely to be involved in this matter are located in an area which appears to come under the control of the left-hand neighbouring landowner.

The most significant items of vegetation on this occasion are a group of three deciduous trees, including a rowan, which are estimated to be around 8m high with diameters ranging from around 150mm to 350mm and the closet being approximately 5m from the left-hand corner of the building.

3.2 Geology

From our investigations on site we have confirmed that the subsoil in the area is a slightly sandy, slightly gravelly 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 purchased by Mr Ardron around 1990/91 and it is understood a valuation survey only was undertaken for mortgage purposes. The property at that time was likely to be under a 10-year warranty and, whilst the policyholder was unable to provide us with a copy of the pre-purchase valuation survey report, we consider it highly unlikely that the report would be of any value in our consideration of this matter.

Since purchase, the Policyholder has undertaken a number of improvements and extensions to the property. The original single garage has been extended at the front and the rear and as a result the original roofline has been raised. At the same time, a small conservatory/porch was added to the rear centre of the building. This was later enlarged / re-built as an extension with a mono-pitched roof with roof lights and patio doors in the rear elevation to allow for opening-up of the space into the kitchen area.

All the above works were undertaken around 15 years ago and approximately 20 years ago a small single-storey extension was added at the rear left-hand corner of the building to provide a garden storeroom. This structure is in matching facing brick with a pitched and tiled roof to match the main building.

In addition to the above, the original windows to the property have been replaced in uPVC double-glazed units in two phases and all facias etc have also been replaced with uPVC items. No other significant structural alterations have been made to the property, apart from removal of an internal non-loadbearing partition wall which previously formed a downstairs WC between the front and rear reception rooms. The rear wall was removed to enlarge the lounge and double-door access was installed through to the dining room at the front. These works were undertaken at the time that the utility and WC extension was added at the rear of the garage.

Mr Ardron advised that towards the end of 2019 he noted some fine cracking to the plasterboard finish within the kitchen area adjacent to the door into the hallway at the front of the room. He was not overly concerned regarding this minor cracking and undertook some minor filling. However, around the end of August 2020, he noticed crinkling of wallpaper finishes in the corner of the chimneybreast in the rear sitting room which extended up to cracking of the coving. Approximately a week later whilst out in the rear garden he noticed a large high-level diagonal crack on the brickwork extending down from the rear left-hand corner towards the centre of the building, and at around that time his son advised him of cracking in the corner of his bedroom, again around the rear left-hand corner of the building.

Upon discovery of these additional cracks, the Policyholder duly contacted Insurers to submit the claim.

5. Damage

5.1 Description of Damage

The damage to this property which forms the subject of this claim relates to internal and external cracking around the rear left-hand corner of the main building up to a maximum estimated width of approximately 10mm.

We would suggest that the extent of damage falls within Category 2-3 (slight to moderate) 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

Externally



This photograph shows a general view of high-level stepped cracking on the left-hand-flank wall of the main building running up to the rear corner.

Front Elevation

The front elevation of the property is in cavity brick and blockwork construction beneath a pitched and concrete-tile-covered roof. To the left-hand side there is a gable ended forwards projection, with feature windows which are in uPVC double-glazed construction, the central window having a brick arch over, and headers to all first-floor windows have feature brick headers. At ground floor there is a full width projection with mono-pitched and tiled roof and centrally a further gable-ended porch extends slightly forward with an inset door and sidelight arrangement. Again, windows throughout are uPVC double-glazed construction as are all facias and barge boards. To the right-hand side there is an attached single-width garage with pitched and tiled roof to match the main house.

On this elevation, we noted no crack damage that would indicate subsidence of the foundations.

Right-Hand Elevation

The right-hand elevation of the property is gable ended, as is the flank wall of the attached garage which is in matching brick construction. On the main two-storey gable there is a single window opening with contrasting brick soldier course header and whilst our inspection was limited, no crack damage was noted that would indicate subsidence of the foundations.

The flank wall of the garage has areas of contrasting brickwork confirming that it has been extended towards the front and to rear, and as a result, the roofline has been raised. There is some weathered cracking around the junction of the forwards extension and the original wall which would suggest there may have been slight differential settlement between the original and the newer extension. There is also some fine cracking towards the rear junction of the original garage and extension though not as significant as to the front. Again, cracks appeared weathered and are likely to be an indication of some slight differential settlement following construction of the extension rather than due to active subsidence movement.

Left-Hand Elevation

The left-hand elevation of the property is again gable ended and there is a single window opening at low level into what was previously a down-stairs WC. To the rear of the elevation there is a single-storey garden-store extension which is built in matching bricks with a pitched and tiled roof similar to the main dwelling.

On this elevation, we noted a diagonal crack at high level, this commences at approximately 500mm from the roofline at the rear corner running down towards the front to beneath the flashings to the garden-store extension. To the front of the extension there appears to be some slight disturbance along the damp-proof course level on the main gable and some vertical cracking down from an airbrick situated approximately 1.5m from the front corners. The diagonal nature of the cracking, which opens to high level, estimated to be up to 10mm in width, suggests rotational movement of the rear left-hand corner of the main building. No significant cracking was noted to the garden-store room, apart from some slight cracking of the front junction with the main gable wall and some minor distortion of the rear door frame at low level.

Rear Elevation

The rear elevation of the property is again in cavity facing brick and block construction with pitched and concrete-tiled roof. Windows are in uPVC double-glazed construction which have brick soldier course headers in contrasting bricks, at first floor level. At the left-hand side, there is a bay projection with mono-pitched roof and this attaches to the centre porch extension which projects beyond the bay and has a set of uPVC double-glazed patio doors in the rear elevation. At the right-hand side, there is a WC and utility room extensions which projects from the rear of the original garage.

On this elevation, we noted that the high-level diagonal cracking from the gable wall turns around the corner and steps up towards the eaves, then runs across horizontally to the head of the left-hand bedroom window.

Some fine separation cracking was noted at the left-hand junction of the bay with the main building, but no other cracking was noted on the elevation. The cracking present would suggest rotational subsidence of the rear left-hand corner of the main two-storey house.

Internally



This photograph shows vertical cracking to the rear of the doorway into the hallway from the kitchen extending into the ceiling.

Ground-Floor Level

Front Entrance Hall

The front entrance porch opens into the main hallway which runs towards the rear with the staircase rising at the right-hand side. Finishes are in vinyl paper to the walls with emulsion-painted plaster to the ceiling which has a coving surround. There is a door opening to the front right-hand side into an office, with doors at the mid-left into the front dining room, at the rear-left into the lounge and, at the rear right, into the kitchen.

In this room, we noted no crack damage that would indicate subsidence of the foundations.

Dining Room

This is to the front left-hand side of the property and we noted emulsion-painted plaster wall and ceiling finishes with coving surround. There is a small rectangular bay projection at the front, and, in this room, we noted only some fine cracking over the right-hand head of the bay on the plasterboard joint where the wall has been dot and dab dry lined.

No crack damage was noted that would indicate subsidence of the foundations.

Study

This is to the front right-hand side and, in this room, we noted emulsion-painted textured paper to the walls and emulsion-painted plaster to the ceiling with a coving surround.

No crack damage was noted that would indicate subsidence of the foundations.

Sitting Room

The sitting room is to the rear left-hand side of the building and has a small rectangular bay projection in the rear elevation wall and a small window opening at the front left-hand side where a previous stud partition wall was removed to enlarge the room, this have been a downstairs WC. There is a set of French doors through into the front dining-room area.

In this room, the wall finishes are in patterned paper with emulsioned textured paper to the ceiling which has a coving surround. There is a shallow chimneybreast projection in the left-hand-flank wall with an inset gas fire and it appears that there is a flue set within the cavity-wall construction.

To the front corner of the chimneybreast projection, there is rippling of the paper finishes which increases at high level where there is opening of the coving joints of around 3mm at ceiling level. There was also some minor cracking extending into the ceiling. There was also some separation cracking along the ceiling/coving junction around the rear left-hand corner, the damage would be commensurate with the rotational subsidence movement towards the rear left-hand corner of the building.

At the front of the room, on the line of the previously removed partition wall, there is some ceiling cracking which shows evidence of previous filling, likely due to disturbance caused by removal of the wall rather than subsidence of the foundations. It was also noted that, in the right-hand corner of the bay projection, there was crinkling of the paper finish where the bay return wall meets the main two-storey wall of the building. This appears to be opening at high level with no evidence of cracking beneath the windowsill; it is likely there has been some initial differential settlement of the bay or the porch extension.

Kitchen

The kitchen is to the rear right-hand side of the original building. In this room we noted emulsion-painted plaster wall and ceiling finishes. The rear wall of the main building has been opened-up into the rear porch extension area and there is a range of wall and floor fitted units to the right-hand side with ceramic-tile splashback between.

In this room, we noted some vertical cracking opening slightly to high level, to the front left-hand side on the partition wall with the lounge. The cracking is just to the rear of the door frame and appears to run round the end of an embedded lintel with cracking

extending into the coving and across the ceiling which then splits and runs towards the rear, again likely on a board joint which tapers out towards the right-hand side. This crack was previously filled at the end of 2019 by the Policyholder and has opened again by around 1mm and suggests some pulling towards the rear of the building.

At the opening through into the porch, there is some cracking on the right-hand reveal, most likely on the line of the cavity closer and some fine cracking at high level around the embedded lintel at the right-hand side. Again, these cracks would suggest some rotational movement towards the rear left-hand side of the building.

Rear Porch/Kitchen Extension

This area is through a large opening in the original rear elevation wall and the ceiling slopes to the roof line with two number Velux windows and there are patio doors to the rear and a side window at the left. The finishes are in emulsion-painted plaster to walls and ceiling.

At the left-hand side, there is some cracking around the front head of the side window running up towards the ceiling and to the head of the embedded lintel over the opening into the kitchen on the main rear elevation wall, all cracking is around 0.5mm in width and of no structural significance, though this may have opened due to stresses caused by rotational movement towards the left-hand side.

Garage and Extension

At the right-hand side of the porch area there is an opening into a small lobby with doors into the WC to the rear, the utility room to the rear right-hand side and to the front into the garage. The finishes are in emulsion-painted plaster to walls and ceilings throughout the rear extension and no crack damage was noted that would indicate subsidence of the foundations.

The garage is in single-skin brick construction with internal brick or blockwork piers and, as previously indicated, this has been extended towards the front where the original brickwork piers are still present.

There was some slight cracking around the right-hand pier where the front extension meets the original building, and this would suggest some slight differential settlement of the front extension following construction. No crack damage was noted on the left-hand side which is the right-hand-flank wall of the main building.

We are satisfied there is no evidence of ongoing subsidence of the foundations within the garage.

First-Floor Level

Landing

The landing is to the centre of the property and has matching vinyl wallpaper with emulsion-painted plaster to the ceiling and coving surround.

No crack damage was noted that would indicate subsidence of the foundations.

Bedroom 01

Bedroom 01 is to the front left-hand side of the property and in this room, we noted a mixture of emulsion-painted lining paper and patterned paper to the walls with emulsified textured coating to the ceiling which has a coving surround.

To the right-hand side of the room there is an en-suite shower room which has full ceramic tiling to the walls and PVC boarding to the ceiling.

To this area, we only noted slight vertical cracking to board joints over the en-suite door, likely due to thermal shrinkage or deflection, with no damage that would indicate subsidence of the foundations.

Bedroom 02

Bedroom 02 is to the rear left-hand side of the property and in this room, we noted emulsion-painted plaster finish to the walls with emulsioned textured coating to the ceiling which has a coving surround.

In this room, we noted some fine vertical cracking to the centre of the left-hand-flank wall which opens slightly to high level and some vertical cracking to the rear left-hand corner. It was noted that there is no chimneybreast projection at this level and the flue to the gas fire is obviously embedded within the cavity.

The separation cracking to the rear left-hand corner appears to be around 5mm in width at maximum tapering to around 2 mm at skirting board level and, at high level, extends along the rear wall/ceiling junction for a short distance. This cracking is commensurate with the rotational subsidence movement to the rear left-hand corner of the building.

Bedroom 03

Bedroom 03 is to the rear centre of the property and in this room, we noted emulsion-painted plaster wall finishes above waist height with patterned paper below with emulsion-painted textured coating to the ceiling, which has a coving surround.

In this room, we noted minor fine cracking on the plasterboard joint towards the front left-hand side of the room likely due to thermal shrinkage but no damage that would indicate subsidence of the foundations.

Bedroom 04

Bedroom 04 is to the rear right-hand corner and again has emulsion-painted plaster wall finishes with emulsioned textured coating to the ceiling and a coving surround.

No crack damage was noted that would indicate subsidence of the foundations.

Family Bathroom

This is to the centre right-hand side, with a ceramic-tiled finish to the walls to full height with uPVC planking to the ceiling.

Vertical cracks were noted to the grouting either side of the head of the window opening in the right-hand-flank wall which are wider at the bottom and taper closed to ceiling level suggesting some disturbance to the lintel or inadequate support. The cracking would appear to be longstanding and does not suggest subsidence of the foundations.

6. Investigations

A single trialpit and borehole were excavated at the property which revealed the depth of foundation and subsoil beneath the rear left-hand corner of the main building and the attached single-storey garden store.

A visual inspection of adjacent drainage was carried out using a CCTV camera, though no recordings were considered necessary on this occasion.

6.1 Drains

A visual inspection of adjacent drainage around the rear left-hand corner revealed the presence of a shared public stormwater drain running across the rear elevation of the property with a connection from the rear left-hand corner of the main building. All pipework was in uPVC construction and our inspections revealed no evidence of any defects likely to be allowing water to escape into the surrounding subsoils.

6.2 Trialholes

Trialhole 01 was excavated at the rear left-hand corner of the main building at the junction with the attached single-storey garden store extension. The excavation was taken at a point which was slightly above the adjacent paving level on the first step up to the main patio area around the central porch and the general garden area. The excavation revealed that both foundations have been formed at a depth of approximately 300mm below the lowest patio level at the left-hand side. The soil immediately beneath the foundations was seen to be a stiff, slightly sandy, slightly gravelly clay which was dry at the time of our inspection.

Roots of up to around 2mm in diameter were located in the soil beneath the foundations in trialhole 01.

6.3 Boreholes

Borehole 01 was sunk through the base of trialhole 01 and to an overall depth of 1.1m below ground level.

The soil located in the borehole was a stiff, slightly sandy, slightly gravelly clay which appeared to be dry at the time of our inspection.

The borehole was stopped at 1.1m below ground level as no further penetration was possible with the hand-auger equipment available at the time.

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.

6.4 Soil Testing

A total of two number samples of the subsoil have been taken and sent to the laboratory for analysis. On receipt of this data we will advise further.

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

A number of root samples found beneath foundation level in borehole 01 have been retrieved and submitted to a specialist laboratory in order to determine what species of tree they emanate from.

6.6 Ground Water

None observed.

7. Discussion

As previously noted, the property has been owned and occupied by the Policyholder since around 1990/91. The Policyholder has only been aware of damage since late 2019 when some minor damage was noted within the kitchen area, though he did not become concerned until quite significant crack damage was noted around the end of August 2020.

From the appearance of the external cracking, we believe the cracking may have been developing over a longer period of time but, due to its location in an area not likely to be viewed on a regular basis, and also in view of the fact that the brickwork is of a very rough textured finish, we are not surprised that discovery of the cracking was not noted previously until such time as internal cracking developed.

The pattern of cracking is consistent with rotational downward movement of the rear left-hand corner of the main building and our site investigations have identified shallow concrete foundations bearing onto predominantly clay subsoils. It is noted that the site slopes down steeply from right to left and that there is a retaining wall along the left-hand boundary with the neighbour which retains approximately 900mm of the site relative to the adjacent site. However, our site investigations did indicate that the building has been founded on natural soils rather than made ground, though the lowering of levels at the left-hand side of the site has left the main house foundation at a relatively shallow level. The single-storey extension is likely to have been constructed on a flat concrete-raft founded at the same level as the underside of the main building which is at a depth of only around 300mm below the lowest paving level at the rear left-hand corner of the extension. Root activity has been observed beneath the foundation level and soil conditions were found to be stiff and dry at the time of our investigation.

The indications are, therefore, that damage has been caused by clay-shrinkage subsidence exacerbated by the extraction of moisture by roots from adjacent vegetation and trees.

8. Recommendations

Whilst we await the results of the laboratory testing of soil and root samples, we consider it likely that the main drying influence on the subsoils are the trees growing on the adjacent left-hand neighbour's property despite the fact that these are at a lower level than the site itself. The Policyholder's vegetation around this area comprises of Ivy and climbing shrubs such as Clematis and we consider the main stems of this vegetation to be too remote from the building to be influencing the subsoils beneath the foundations.

In the circumstances, as adjacent trees may be implicated, it may be necessary to obtain an arboricultural assessment report to support any approach to the adjacent neighbour, though we will review the evidence provided by the soil and root testing before doing so.

Subject to appropriate vegetation management measures being undertaken, we would hope that robust superstructure repairs only will be necessary to restore the structural integrity to the building. However, given the shallowness of the foundations, if evidence from our investigations is considered to be insufficient to support a request for vegetation removal, it may be necessary to undertake some localised underpinning of the foundations.

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For THE GRAHAM HIGH GROUP LIMITED

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Enc: Site Sketch
 Trialpit Sketch
 Photograph Pages

Copy to: Mr Ardron