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**Structural Engineers Report**

**BACK MOSS FARM BARN**

**BACK MOSS LANE**

**BURSCOUGH**

**L40 4BD**

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Prepared by

Jeremy W Fisher Bsc(Eng). C.Eng. MICE

For

Ms Holly Chen

**Ref: 2009/4742 - 30<sup>th</sup> September 2020**

**REPORT ON BACK MOSS FARM BARN, BURSCOUGH**  
**INSPECTED ON 30<sup>th</sup> September 2020**

**1.0 Introduction**

- 1.1 On the instructions of Ms Holly Chen, the current owner of the above property, an investigation was carried out into the structural condition of the agricultural barn that occupies part of the site. This report does not comprise a 'Full Structural' or any other form of survey as would be carried out by a Building Surveyor but is a limited specialist report concerned only with the specific items referred to herein, the objective being to identify whether any significant structural movement has occurred or is likely to occur in the foreseeable future and its general suitability for refurbishment.
  
- 1.2 The investigation comprised a visual inspection of the interior and exterior of the property, the latter viewed from ground level. We did not inspect woodwork or other parts of the structure that were covered, unexposed or inaccessible and therefore are unable to state that any such part of the property is free from defect.
  
- 1.3 At the time of our inspection the property was unoccupied but partially in use for storage which restricted extensive examination in all areas. We did not inspect any services, drainage, outbuildings nor any other aspect of the site. The weather was overcast but dry at the time of our inspection.
  
- 1.4 Measurements of slopes, crack widths and so on were taken over existing finishes and decorations. They are approximate and refer only to the particular area where the measurement was taken. They are intended only to give a general guide as to the extent and direction of distortion.

## 2.0 General

- 2.1 The property was a detached agricultural barn with accommodation on two floors. The property was constructed in solid clay brickwork under a pitched roof, covered in part slate part stone slabs.
- 2.2 We were not advised as to the exact date of construction of the property but reference to old Ordnance Survey maps revealed the farmhouse and what appeared to be a smaller building in the location of the barn in the earliest available edition dated 1848 but in the subsequent edition dated 1893 the barn appeared to be in its current form suggesting that the barn in its current form is in excess of 130 years old and based on a building at least 40 years older.
- 2.3 The property was situated within a predominantly rural area surrounded by farm land with a small number of isolated farm houses.
- 2.4 The site was level over the depth of the building.
- 2.5 The Geological Survey Drift Map indicates that the property is located in an area of Shirdley Hill Sand subsoil.

## 3.0 Description of Damage - External

- 3.1 **Front Elevation** - The front elevation was in solid brickwork throughout and was in three sections. The left hand portion was slightly taller and set slightly forward of the remainder and contained a pedestrian door at the right hand corner and a central window to the first floor with a concrete lintel over. The central portion contained two pairs of double doors plus two windows to the first floor. The right hand portion was slightly lower than the adjoining and had a wide opening up to first floor level on the left plus a single ground floor window to the right though this appeared to be within an in-filled former opening similar to the other. There were two windows to the first floor.

Checking with a spirit level within reach of ground level

revealed the wall face to be somewhat uneven but overall approximately vertical within normal building tolerances.

The ground floor window sill was level.

The brickwork was dilapidated but basically complete for the most part. On the left hand portion there was an old, irregular vertical crack near the top left hand corner and areas of eroded pointing. On the centre portion there were old type steel 'RSJ' sections over the double door openings and over the left hand doors there were traces of old shallow brick arches. On the right hand portion there was an old timber lintel over the open doorway and which continued over the adjoining infilled area. Generally the brickwork was somewhat dilapidated with areas of eroded pointing but all the damage appeared to be of some age and overall no recent significant cracking damage was observed.

The roofs to each of the three portions were at slightly different levels. The centre portion was covered in stone slabs but the other two were covered in slate. All three sections were uneven but basically complete.

- 3.2 Left Hand Side Elevation** – This comprised the end gable wall to the left hand portion of the property and was in solid brickwork throughout. There were central doorways and two windows to each of ground and first floor levels.

Checking with a spirit level within reach of ground level revealed the wall face to be slightly uneven but approximately vertical overall.

The ground floor window sills were level.

The brickwork was somewhat dilapidated with areas of loose and eroded pointing throughout and traces of past patch repairs but all the damage appeared to be of some age such that overall no recent significant cracking damage was observed.

- 3.3 Right Hand Side Elevation** – This primarily comprised the end gable wall to the right hand portion of the property but above and to the left and set back some way were short sections of the left hand element. The main gable had a band of rubble stonework at low level but solid clay brickwork for the most part with a single, central window to the first floor. The exposed area of the left hand portion was in solid brickwork.

Checking with a spirit level within reach of ground level revealed the wall face to be uneven but approximately vertical overall.

The brickwork was somewhat dilapidated with areas of loose and eroded pointing throughout. There were lines of old stepped but predominately vertical cracking and traces of past patch repairs but all the damage appeared to be of some age such that overall no recent significant cracking damage was observed.

**3.4 Rear Elevation** - The rear elevation was in solid brickwork for the most part and was in three sections. The right hand portion (when viewed from the rear but corresponding with the left hand portion of the front elevation) was slightly taller and contained a single ground floor window near the junction with the centre portion and a central window to the first floor with a concrete lintel over. The central portion contained a single ground floor window on the left and what appeared to be an infilled former doorway on the right. The left hand portion was slightly lower than the adjoining and comprised rubble stonework at low level but solid brickwork above with two windows to the first floor.

Checking with a spirit level within reach of ground level revealed the wall face to be somewhat uneven but overall approximately vertical within normal building tolerances for the most part but just to the left of the central ground floor window the wall leaned out by up to 10-12mm per metre.

The ground floor window sills were level.

The brickwork was dilapidated but basically complete for the most part. On the right hand portion there was an old, irregular vertical crack extending down from the bottom right hand corner of the first floor and then continued down the line of what appeared to be an infill to a former doorway. On the centre portion there was diagonal cracking extending away from a built in older steel beam and also a vertical crack to the left of the ground floor window which appeared to follow the line of an infill. On the left hand portion there was a very old vertical crack extending down from the left hand first floor window sill. Generally the brickwork was somewhat dilapidated with areas of eroded pointing but all the damage appeared to be of some age and overall no recent significant cracking damage was observed.

The roofs to each of the three portions were at slightly different levels. The centre portion was covered in stone slabs but the

other two were covered in slate. All three sections were uneven but basically complete though the left hand portion contained a number of loose and slipped slates.

#### 4.0 **Description of Damage - Internal**

- 4.1 **Ground Floor** - The ground floor accommodation had been in use as storage and much of the area was occupied by stored goods and equipment such that inspection was limited. The three portions noted from the exterior varied in their detail and usage.

The left hand end portion appeared to have been in use as a stable though now contained stored goods. The floor was uneven and a mixture of cobbles and concrete though the unevenness appeared to be of long standing. The walls were whitewashed brick and somewhat uneven. On the rear wall there was an old vertical crack extending down from the bearing of one of two steel beams supporting the first floor but the damage appeared to be of long standing and overall no recent significant cracking damage was observed. The overlying first floor comprised 7x3 inch joists spanning between side walls and two 10x6 inch steel 'I' sections.

The centre portion of the building was divided in two by a solid brick wall running front to rear. The left hand half appeared to have been in use as a workshop, the right hand half being full of stored goods. The visible areas of the floor were concrete in the workshop and brick pavers in the store area. The latter was somewhat uneven though this appeared to be of longstanding. The front wall was dominated by two wide openings with double doors. The left hand opening was supported by two small 'RSJ' sections, the right hand by an RSJ to the outer half and a timber beam to the inner face. The internal faces of the walls were somewhat dilapidated and on the right hand side wall there was a patch where the inner bricks were missing but all the damage appeared to be of long standing such that overall no recent significant cracking damage was observed. The overlying first floor was formed from irregular and variable timber joists spanning from side to side. In the right hand half these were supported midspan by a small steel 'RSJ' section with some surface corrosion.

The right hand portion comprised an open store room which was filled with goods and very limited access was possible. Very little of the floor was visible but this appeared to have an uneven

cobbled surface. The visible areas of the internal walls were somewhat dilapidated but no recent significant damage was observed. The overlying first floor comprised 7x3 inch timber joists spanning from side to side onto a large timber beam running front to rear. At the left hand side was a timber stair giving access to the first floor.

#### **4.2 First Floor** - The first floor accommodation comprised three open storerooms, one within each portion of the building.

The flooring was of timber construction throughout. The flooring was checked with a spirit level in several locations and was found to be slightly uneven in places but this was to no consistent pattern such that overall the floor was generally level throughout.

The window sills were level.

The internal surfaces of the main external walls were checked with a spirit level where possible and the front wall was found to lean out slightly in the left hand corner and rather further in the right hand building but this appeared to be a longstanding condition and elsewhere the walls were somewhat uneven and dilapidated but approximately vertical overall.

The room within the left hand portion was taller than the others and there were signs that this had previously had a second floor or possibly roof void with a central dividing wall running front to rear supported off a steel beam at eaves level within which was a wide opening supported by another steel beam at high level. Where the eaves beam met the front and rear walls there was slight old cracking in the brickwork extending from the beam bearings. The eaves level beam also supported smaller transverse beams though no flooring as such. The wall dividing this from the central portion had been built on top of the stone tiling to the lower level roof.

The room within the central portion was lower in height and subdivided by a king post truss running front to rear in the centre at eaves level.

The room within the right hand portion was also crossed by a timber truss but the centre part of this had been cut away at some stage in the past and propped off the beam at floor level and by diagonal braces to the sides

Generally the whole area was dilapidated but all the visible damage appeared to be of long standing and in many cases related to the expansion of metal beams set into the brickwork rather than significant movement of the structure as a whole and overall no recent significant cracking damage was observed.

- 4.3 Roof Framing** – The roof framing comprised traditional loose timberwork throughout based on slope rafters supported by various forms and sizes of timber purlins. Some of these were rather irregular but overall the framing appeared to be essentially complete as originally constructed apart from the altered truss noted above. One part of the central portion had sarking sheeting above the rafters but for the most the slate and stone tiling was exposed. There were no obvious significant gaps through the covering.

## **5.0 Conclusions and Recommendations**

Our inspection revealed this building to be generally dilapidated both inside and out being of some age and having been used as outhouse/stable/storeroom throughout its life. However the absolute degree of distortion was considered to be relatively minor and all appeared to be of long standing. For the most part the external walls were approximately vertical and the first floor and the window sills to both the ground and first floors were generally level. There was some small scale cracking to the external walls but this all appeared to be of some age and many examples appeared to be the result of the expansion of embedded metalwork or slight shrinkage separation between original brickwork and later infills rather than significant movement in the structure as a whole. Overall therefore whilst the property is slightly distorted and in need of considerable overhaul we found no evidence of recent or continuing movement and saw no grounds for concern over the long term stability of the structure as a whole.

We understand that it has been proposed that the building could be redeveloped for residential use and whilst the floor and roof structures may require adjustment and possible strengthening to suit a revised internal layout the basic structure appears to be quite adequate to accommodate this.

In summary, therefore, the property was found to be slightly distorted and generally dilapidated and as such is likely to



require extensive refurbishment. However the available evidence suggested that the basic structure was fundamentally stable in its current form. Therefore we saw no reason why the property should not be capable of relatively straight forward repair provided sufficient funds are available and once this has been completed it should remain serviceable for the foreseeable future assuming it continues to be maintained on a regular basis, and no additional outside influences come to bear.

**Jeremy W Fisher BSc (Eng.) C.Eng. MICE**

**N.B.** This report was required by Ms H. Chen, the current owner of the above property. It may be viewed by his bank, building society or other professional advisors but must be returned to Ms Chen. No other person may receive a copy of this report without first obtaining our permission in writing.