

Our Ref: 215/23/GJW

21 October 2015

Higher Ash Farm
Hawkshaw Lane
Hawkshaw
Bury
BL8 4LB

For the attention of Mr & Mrs F Shipley

Re: Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

1.0 Introduction

- 1.1 We have been commissioned by Mr and Mrs Shipley to undertake a non-intrusive visual structural condition survey for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw and provide a report of the survey findings which is to be used in support of a planning application to convert the Barn into a residential property.
- 1.2 The Barn is a substantial stonework structure with a natural slate roof. It is situated to the Southern boundary of Higher Ash Farm which is purely a residential property. The Barn itself is presently used as a workshop and store for a variety of vehicles, plant and tools.
- 1.3 The Barn has a ground floor and roof plan area of approximately 220m² and a first floor plan area of approximately 130m². The elevations have an area of approximately 350m².
- 1.4 The Barn can be effectively split into three areas for ease of reference within the report, all of which are attached to each other;
- 1.5 Northern open fronted structure.
- 1.6 Western two-storey barn.
- 1.7 Eastern single-storey barn.
- 1.8 The report should be read in conjunction with the photographic schedule and corresponding photograph location plan.

2.0 Survey Findings

2.1 Northern open fronted structure;

- 2.2 This structure is approximately 8.0 metres long and 6.0 metres wide. The East elevation of this structure is largely open at ground floor level with the exception of a central substantial masonry pier as identified by photograph referenced 1. The masonry pier supports exposed steel beams which are in good condition and the upper floor structure, a rendered masonry wall and roof structure.
- 2.3 The external masonry walls generally appear to be in sound condition and of reasonable alignment expected for a property of this style and age. The East elevation comprises of rendered blockwork which appears to be a more recent modification and all of which is sound construction. The West elevation which adjoins the Western two-storey barn comprises of substantial coursed stonework which appears to be sound construction that is only in need of re-pointing in localised areas. The North elevation is covered with plant growth which restricted inspection of the substantial coursed stonework – refer to photograph referenced 2. It is likely

that the plant growth will in time, if it has not already, have a detrimental effect upon the masonry, particularly the mortar joints. Although this is unlikely to have any significant structural implications it will result in the requirement to fully re-point the mortar joints to this elevation. It is recommended that this plant growth is removed.

- 2.4 The first floor structure comprises of timber floor boards supported off sawn timber floor joists bearing onto the gable walls – refer to photograph referenced 3 – and a sawn timber beam at mid-span. The structural timber floor members exhibit evidence of biological attack and minor deflections are noted. It would therefore not be appropriate to include this within the conversion.
- 2.5 The roof finishes are natural slate over and sarking felt. The structure comprises of a timber king post truss at mid-span which supports sawn timber purlins and in turn rafters, all of which appear to be reasonably sized and in sound condition except for the following;
- 2.6 The mid-slope purlin to the East elevation has failed and is currently propped to maintain the integrity of the roof – refer to photograph referenced 4. This purlin will need replacing in full.
- 2.7 The timber rafter bearings to the East elevation are inadequate and consideration should be given to either improving the bearing of the existing rafters or replacing the rafters to this slope to ensure a full bearing is achieved – refer to photograph referenced 5.
- 2.8 This structure is served by a rainwater gutter and downpipe to the East elevation, however, there are no rainwater goods to the West elevation.
- 2.9 **Western two-storey barn.**
- 2.10 This structure is an approximately 13.0 metres long and 8.0 metres wide enclosed structure.
- 2.11 The substantial stonework walls are generally in sound condition and of reasonable alignment expected for a property of this style and age, although an internal inspection at ground floor level was limited due to the presence of a plaster covering. The exception to this are the following notable areas;
 - a. There is a crack and evidence of outward movement to the South-East corner of this structure that has likely been caused over a period of time due to rainwater run-off concentrated at this location and a lack of positive surface water drainage outlet to discharge to – refer to photographs referenced 6 and 7. This corner will require localised underpinning, tying back into the adjacent gable and side walls, the reintroduction of rainwater goods and a ground level surface water outlet in order to remediate this area. This repair equates to approximately 6.0m².
 - b. Generally, there does not appear to be sufficient bond between the stonework to tie the side walls to the gable walls. It would be advisable to introduce some form of remedial wall ties in order to provide this. This repair equates to approximately 8.5m².
 - c. There is an amount of localised cracking internally at the bearing of the trusses and these require a nominal repair – refer to photograph referenced 8. This repair equates to approximately 6.0m².
 - d. The South elevation;
 - i. The central opening to the elevation at ground floor level needs rebuilding at the reveals and the removal of the existing lintel – refer to photograph referenced 9 – and installation of a new suitably sized lintel, the total area of which is approximately 2.0m².
 - ii. At first floor level the opening has been infilled with dry jointed blocks – refer to photograph referenced 10. These are unstable and should be removed and re-built in bonded stonework, the total area of which is approximately 1.5m².

- e. Re-pointing is recommended to all elevations.
- 2.12 The first floor structure comprises of timber floor boards supported on sawn timber floor joists which bear onto the side walls and sawn timber beams which are supported on sawn timber posts off the ground floor slab. The timber finishes and structural timber floor members exhibit evidence of biological attack – refer to photograph referenced 11 – and significant permanent deflections with further unacceptable levels of deflection during service. This is primarily due to the structural members being undersized for span and loads they are supporting, the inconsistent lines of structural support and also lack of structural supported noted in some areas; primarily around the openings for staircase – refer to photograph referenced 12. This area is generally unsafe and has been removed from service. It would therefore not be appropriate to incorporate the floor construction within the conversion.
- 2.13 The roof coverings comprise of natural slate over a sarking felt which is torn in a few areas and will therefore require replacing – refer to photograph referenced 13. The roof structure comprises of timber king post trusses at quarter and mid-point of the structure and these in turn support sawn timber purlins and sawn timber rafters. Generally the structural timber members are in good condition with the exception of the following areas;
- a. The junction between roofs of the Western and Eastern barns is subject to rainwater ingress which has resulted in wet rot of the rafters, purlin and truss in this area – refer to photograph referenced 14. It will be necessary to repair the roof coverings in order to the let these timbers dry out and further determine whether or not the structural integrity has be compromised. In this area the truss bearing is also poorly constructed and is unlikely to have adequate wall ties between what are apparently two walls constructed at different times.
 - b. Truss bearings generally do not appear to include waterproofing which would be advisable should a re-roof be required.
 - c. The purlins do exhibit signs of some deflection, however, this is not particularly evident when viewed from the exterior therefore the replacement would only require reviewing as part of the conversion works.
 - d. Rafters generally do not appear to be fixed to the wall plate at the eaves therefore skew nail fixings throughout would be recommended. The rafter bearing at timber lintel locations also requires attention where the bearing detail is inadequate – refer to photograph referenced 15.
- 2.14 This structure is not served by any rainwater goods.
- 2.15 Eastern single-storey barn.**
- 2.16 This structure is approximately 12.0 metres long and 6.0 metres wide broadening to 9.0 metres wide at the gable end.
- 2.17 The substantial stonework walls are in good condition and of reasonable alignment expected for a property of this style and age. However, there are exceptions in the following areas;
- a. The steel lintels to the South elevation are showing initial signs of corrosion, although they are without significant section size loss and are therefore currently stable – refer to photographs referenced 16 and 17. These should be replaced with an appropriately sized and specified lintel for an external environment and this will require approximately 4.0m² of rebuilding.
 - b. The three infilled openings to the East elevation require the lintels replacing should they be opened up as part of the conversion works and this will require approximately 3.0m² of rebuilding.

- c. The timber lintel is decaying and its bearings are damaged to the North elevation and need replacing – refer to photograph referenced 18. This will result in approximately 3.0m² of rebuilding work.
 - d. Generally, there is localised cracking evident at the bearings of most structural timbers and these require a nominal repair. These repairs equate to approximately 8.0m².
 - e. Re-pointing is recommended to the South and East elevations.
- 2.18 The roof finishes comprise of natural slate over a sarking felt. The structure consists of two hewn timber king post trusses at approximately third points which in turn support hewn timber purlins and a combination of hewn and sawn timber rafters, the latter of which point to more recent modifications to the roof.
- 2.19 The roof structure shows significant deflection to the natural slate roof finishes when viewed externally, particularly towards the East elevation. The truss closest to the Western barn does not currently show signs of significant deflection although it is noted there is evidence of rot, presumably through rainwater ingress. The second truss is in far worse condition with obvious failure of the internal truss members and joints and evidence of rot. This has caused it to deflect significantly and is only prevented from complete failure by the presence of a prop at mid-span and a brickwork pier added to one end bearing – refer to photograph referenced 19.
- 2.20 It would be recommended that this roof structure is removed in its entirety and replaced with new trusses, purlins and rafters which are suitable sized and specified for their spans.
- 2.21 This structure is partially served by a rainwater gutter to the North elevation but this is missing a downpipe and positive outlet. There are no rainwater goods to the remaining elevations.

3.0 External area

- 3.1 The external levels around the perimeter of the building are generally acceptable. It is noted that the external levels to the North and East elevations of the Eastern single-storey barn are somewhat higher than the current finished floor level. It is recommended that the external levels are reduced or tanking introduced to the external walls as part of the conversion works.

4.0 Conclusions and Recommendations

- 4.1 The shell of the barn appears to largely be structurally sound and is suitable for conversion subject to the following remedial work being undertaken;
- 4.2 The substantial stonework walls are generally in sound condition and of reasonable alignment expected for a property of this style and age with the exception of the following areas;
- 4.3 Remedial repairs are required to the following;
- a. Western two-storey barn;
 - i. South-East corner of this structure which has moved outwards.
 - ii. Generally the side and gable walls which do not appear to be tied together.
 - iii. At all the truss bearings where cracking is evident.
 - b. Eastern single-storey barn internal bearings to most structural members.
 - c. This equates to approximately 28.5m² which is approximately 8% of the total elevational area.

- 4.4 Rebuilding work is required to the following areas;
- a. Western two-storey barn;
 - i. To the South elevation central opening at ground floor level which needs rebuilding at the reveals and the replacement of the existing lintel.
 - ii. To the South elevation at first floor level where the opening has been infilled with dry jointed blocks.
 - b. Eastern single-storey barn;
 - i. To the South elevation where the existing lintels are showing signs of corrosion and will require replacing.
 - ii. To the East elevation where the lintels to the infilled openings require replacing.
 - iii. To the North elevation where the existing lintel requires replacing.
 - c. To the head of the walls to receive new roof construction to regulate to a level.
 - d. This equates to approximately 23.5m² which is approximately 7% of the total elevational area.
- 4.5 It is recommended that approximately 80% of the total area of stonework elevations will require re-pointing. In the interest of aesthetics it is therefore concluded that all stonework should be re-pointed.
- 4.6 The first floor construction in its entirety is unsuitable for use as part of any conversion from a structural point of view and should be removed. The reintroduction of a first floor structure may be impeded by the requirement for a usable headroom and the presence of the king post trusses.
- 4.7 The roof construction appears to be in varying conditions;
- e. The Northern open fronted structure roof requires remedial work to the purlins and rafters of one of the roof slopes therefore an approximate 50% total re-roof is required.
 - f. The Western two-storey barn roof requires repairs to the sarking felt, therefore it is recommended that the natural slate and sarking felt are stripped off with the sarking felt replaced with new and the slate re-used. Whilst the finishes are removed, remedial work should be undertaken to;
 - i. The wet rot to the truss, purlin and rafters at the junction between the Western and Eastern barns where water ingress has occurred.
 - ii. All of the truss end bearings into the stonework where waterproofing is required.
 - iii. The rafter bearings onto the wall plate at the eaves where skew nail fixings are required.
 - g. The Eastern single-storey barn roof is in a state of disrepair and should be removed and replaced in its entirety.
 - h. It is approximated that 95.0m² of roof area will require replacing in its entirety which is approximately 43% of the total roof area.
- 4.8 Rainwater gutters and downpipes served by a positive outlet to a surface water drainage system should be reintroduced.

- 4.9 Consideration should be given to reducing the external levels or tanking the external walls to the North and East elevations of the Eastern single storey barn which are somewhat higher than the current finished floor level.

5.0 Limitations

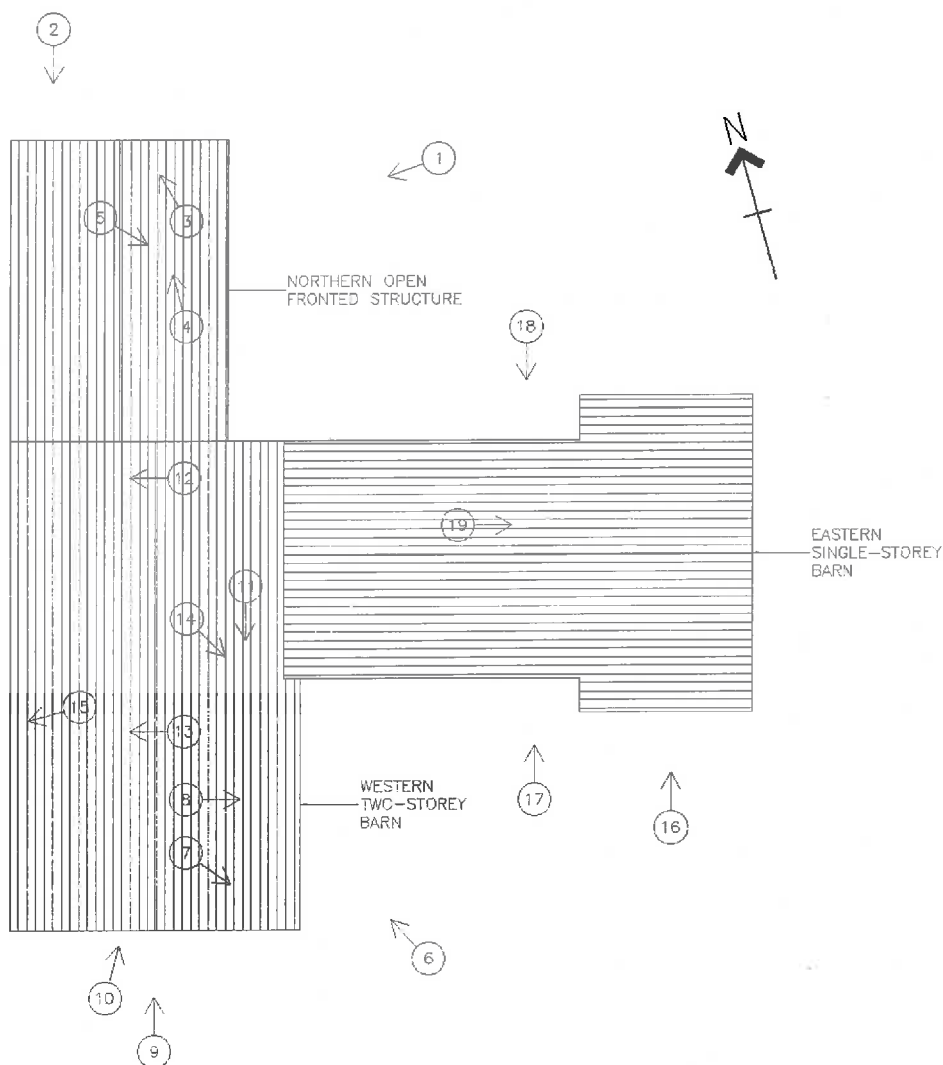
- 5.1 The following limitations of our survey should be noted;
- 5.2 The survey undertaken was a visual non-intrusive survey that did not inspect inaccessible areas.
- 5.3 The foundations and bearing stratum have not been exposed or inspected. The barn shows no signs of significant settlement and as part of this report it is assumed during the conversion the existing structure will not carry any additional load with a load bearing raft slab or strip foundations, subject to determined ground conditions, introduced to support any new structure.
- 5.4 The ground floor slab construction has not been exposed or inspected as it is anticipated that the ground floor slab will be removed in its entirety in order to allow the introduction of a level and compliant insulated floor construction as part of the conversion works.
- 5.5 Structural member sizes have not been checked for adequacy or compliance with codes of practice.
- 5.6 Items not considered part of a structural condition survey have been omitted, including but not limited to, the damp proof course, windows and doors and above and below ground services.

We trust we have interpreted the brief correctly and this information is sufficient for your immediate requirements. Should you require any further assistance on this matter or have any queries relating to the foregoing please do not hesitate to contact the writer.

Yours sincerely



G Wilkinson
Sleater & Watson LLP



Photograph Location Plan

215/23 – Photograph Schedule for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

Photograph Reference	Photograph	Comments
1		Northern open fronted structure – East elevation.
2		Northern open fronted structure – North elevation.
3		Northern open fronted structure – first floor joist bearing at gable wall.
4		Northern open fronted structure – defective timber purlin propped at mid-span.

215/23 – Photograph Schedule for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

Photograph Reference	Photograph	Comments
5		Northern open fronted structure – inadequate timber rafter bearings.
6		Western two-storey barn – South-East corner – external view.
7		Western two-storey barn – South-East corner – internal view.
8		Western two-storey barn – cracking in stonework at truss end bearing.

215/23 – Photograph Schedule for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

Photograph Reference	Photograph	Comments
9		Western two-storey barn – South elevation.
10		Western two-storey barn – South elevation, dry jointed stacked blocks.
11		Western two-storey barn – timber floor subject to biological attack.
12		Western two-storey barn – inadequate floor support around staircase.

215/23 – Photograph Schedule for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

Photograph Reference	Photograph	Comments
13		Western two-storey barn – sarking felt torn.
14		Western two-storey barn – rainwater ingress at truss bearing.
15		Western two-storey barn – inadequate timber rafter bearings.
16		Eastern single-storey barn – corroding lintel.

215/23 – Photograph Schedule for the Barn at Higher Ash Farm, Hawkshaw Lane, Hawkshaw.

Photograph Reference	Photograph	Comments
17		Eastern single-storey barn – corroding lintel.
18		Eastern single-storey barn – decaying lintel.
19		Eastern single-storey barn – structural failure of timber king post truss.

