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**VISUAL STRUCTURAL INSPECTION
OF THE
BARN BUILDING
ADJACENT TO
BARWICKSTEAD
BECKERMET
CUMBRIA**



FOR

MR H TYSON

Reference - WDS/05/6503/REP01

Date - 13/07/2020

WDS/05/6503/REP01

1.0 BRIEF

- 1.1** WDS Limited were instructed by Mr Tyson to carry out a structural inspection of the Barn Buildings adjacent to Barwickstead, Beckermeth. The purpose of the inspection was to verify whether the existing barn building is structurally adequate to convert into a dwelling. The survey was limited to a visual, non disruptive inspection of the buildings where access allowed.
- 1.2** The barn comprises a three storey detached barn which is formed in random stone and brick masonry. The barns lower storey rear wall retains the higher rear ground level, similar to that of a banked barn. To the rear of the barn are two extensions which are of the same construction as the main barn and were probably part of the original build.
- 1.3** The original building is well over 100 years old. The barn is disused other than for storage at this time.
- 1.4** The inspection was carried out on the 8th July 2020. On the day of the inspection the weather was overcast but dry.
- 1.5** It should be noted that there may be faults with the building which are masked or hidden by finishes that are not normally identified during a non disruptive inspection.
- 1.6** The foundations to the buildings were not exposed at the time of this inspection therefore no comment can be made as to their condition at this time.
- 1.7** For the purposes of this report all locations will be referenced as if looking at the front elevation of the barn, that is the elevation which faces the main road.

2.0 OBSERVATIONS

- 2.1** The walls to the barn are in a good structural condition, being generally plumb and robust. There is some historic cracking to the rear ground floor wall in addition to some cracking to the right hand gable at the rear eaves level. As noted the cracking is historic and not due to any recent structural movement. There are other minor cracks to the property however these are not structurally significant.
- 2.2** There are timber lintels and inserts throughout the building which need removed/replaced. Furthermore we understand that the timber floor joists will be replaced as part of the conversions scheme, therefore no further comment will be made in this report concerning their condition.
- 2.3** The roof structure, if to be retained, will need inspected by a timber specialist to check for infestation/rot. The purlins are undersized to modern design standards and will need replaced or strengthened as part of the conversion works. The trusses should be adequate if clear of infestation with minimal strengthening works but will need treated.
- 2.4** The foundations to the property were not exposed during this inspection however considering the former use of the building we see no issue with the existing wall and foundation structures supporting the loading associated with a domestic property. We would however recommend that trial holes are excavated at two diagonal corners of the barn to expose the depth of the footing. This is required to ensure that the floor slab specification can be provided such that undermining of the walls is prevented during construction.

3.0 DISCUSSION/RECOMMENDATIONS

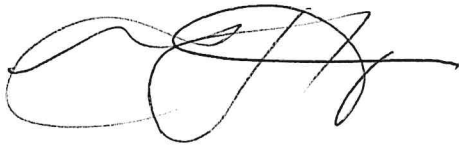
- 3.1** The main barn walls are in need of refurbishment such as pointing and the internal face would benefit from a layer of lime plaster or similar to bond the masonry. The cracking noted to the rear wall and right hand gable need tied using the Helifix Ltd's crack stitching system. Generally we envisage no more than 5% of the existing masonry walls needing rebuilt. The provision of a new first floor should offer enhanced lateral restraint to the barn walls.
- 3.2** The roof structure, if to be retained, will need inspected by a timber specialist to check for infestation and rot and treated accordingly. It is likely that only the main trusses will be structurally suitable to be retained as the rafters and purlins are not in accordance with current standards. Alternatively, the purlins can be strengthened to suit, this will allow the roof elements to be retained if their condition is approved by a timber specialist.

- 3.3** We recommend that a trial hole is excavated at each internal corner of the barn to expose the base level of the main walls such that the ground floor slab and insulation detail can be specified to ensure that undermining of the wall does not occur during construction. Furthermore it would be useful to excavate a trial hole to the outside face of the rear wall to expose the condition of the masonry which acts as a retaining wall and allow an inspection prior to carrying out the conversion works.

4.0 CONCLUSION

- 4.1** The barn building is generally in an adequate structural condition with some localised re-building (less than 5% of the existing wall areas) and general refurbishment of the masonry walls necessary. It is our opinion that following the completion of the remedial works outlined above the barn will be structurally suitable to be converted into a domestic property. The conversion of the property into a dwelling will remedy all current faults and strengthen the building thus securing its long-term retention as a heritage asset.

For and on behalf of WDS Limited

A handwritten signature in black ink, appearing to be 'Tom Short', written over a light blue horizontal line.

Tom Short BEng (Hons) CEng MICE