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**VISUAL STRUCTURAL INSPECTION
OF
HAY BARN & BYRE ADJACENT TO
NEWHOUSE FARM
DRIGG
SEASCALE**



**FOR
AVISON YOUNG**

Reference - WDS/05/6942/REP 02

Date - 31/03/2021

1.0 BRIEF

- 1.1** WDS Limited were instructed by Avison Young to carry out a structural inspection of the Hay Barn and attached byre adjacent to New House Farm, Drigg. The inspection comprises a non-disruptive visual inspection of the property where access allowed.
- 1.2** The property comprises a two storey detached barn constructed from rubble filled random stone masonry walls which supports a traditional timber purlin and truss roof. Off the left hand gable is a monopitch lean-to building which forms the byre extent. Off the right hand gable is a framed cladded structure.
- 1.3** The property is well over 100 years old.
- 1.4** The inspection was carried out on the 26th March 2021. On the day of the inspection the weather was clear and 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 visual inspection.
- 1.6** For the purposes of this report the barn elevation which faces the farm house will be considered its front elevation.

2.0 OBSERVATIONS

- 2.1** There is a significant outward bow in the rear wall of the barn at the right hand half of the elevation. The movement has caused separation cracking between the rear wall and internal cross wall. In addition the roof king post trusses have shunted which has pulled the front wall out of plumb. The front and rear walls of the barn are over 200mm out of plumb. Furthermore there is a separation crack to the right hand gable at approximately eaves level towards its rear extent. It is likely that the rear wall of the barn has rotated possibly due to inadequate foundations with the movement causing the cracking noted above. Vertical props have been fitted to the King Post Roof Trusses at the wall supports to both the front and rear sides of the building. It appears that the timber props have been bolted to the adjacent masonry walls possibly to enhance lateral stability. The bolts fixing the timber props to the walls appear to be merely fixed into the inner extent of the masonry which raises concerns over their effectiveness in terms of providing lateral restraint to the barn walls. Photographs 01, 02 and 03 in the Appendix show views on the walls and the propping.

- 2.2** The roof to the main barn structure appears generally adequate however the purlins have suffered creep. The first floor structure to the left hand extent of the building appears sub standard and access should be prohibited.
- 2.3** The Byre off the left hand gable is in a similar condition to the main barn. There is a large separation crack to the rear elevation where the byre meets the main barn; the byre wall has moved outwards and separated from the adjacent barn rear wall. The walls are not suitably tied in.
- 2.4** The lean-to off the left hand portion of the front elevation has suffered structural movement, cracking is apparent adjacent to the access door at the top of the stone access steps. The stone access steps are unsafe and very slippery, the handrail is not to any standard and appears loose. We suggest the steps were not used as they are a safety hazard. Photograph 04 in the Appendix shows a typical view on the steps and cracking noted.
- 2.5** Generally the masonry walls to the building are heavily weathered and need repointing. The framed cladded building off the right hand gable is structurally inadequate and needs removed.

3.0 DISCUSSION/RECOMMENDATIONS

- 3.1** It is our opinion that the walls to the barn are at risk of collapse. The insertion of the timber props to the roof trusses bolted to the barn walls do offer some limited lateral restraint however with the extent to which the walls are out of plumb we are concerned that the works are insufficient and rely in part on the bolted fixing into the inner face of the barn wall. If the barn is to be retained then we recommend that the front and rear barn walls taken down and are rebuilt plumb and fully tied into the internal and gable walls. The roof structure can be retained and reused. It would be prudent to prevent access into the barn the adjacent external areas until the remedial measures noted above are completed. It will probably prove more cost effective to demolish the barn and byre and rebuild a new modern structure more suited to modern farming.

For and on behalf of WDS Limited

Tom Short BEng (Hons) CEng MICE



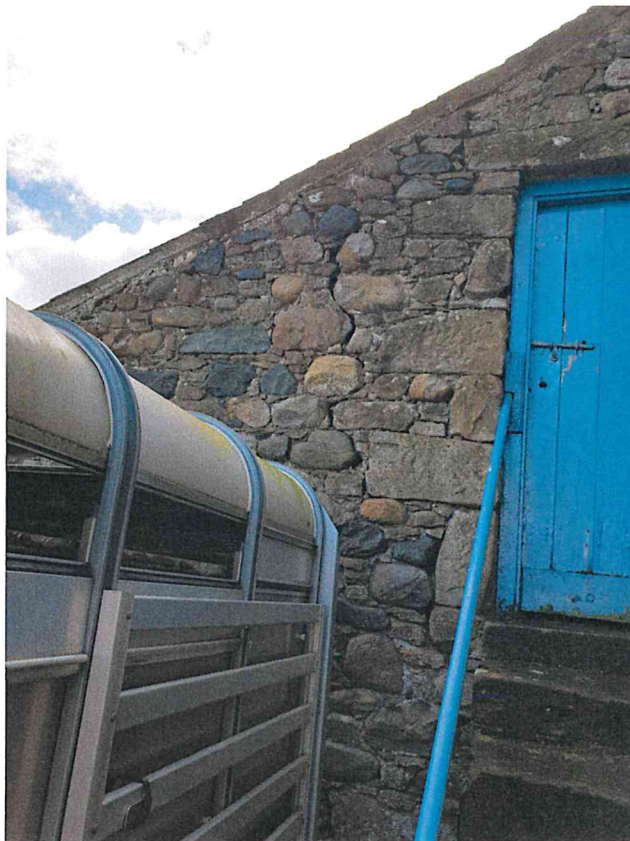
PHOTOGRAPH 01 VIEW ON REAR ELEVATION



PHOTOGRAPH 02 VIEW ON INNER FACE OF FRONT WALL



PHOTOGRAPH 03 VIEW ON INTERNAL FACE OF REAR WALL



PHOTOGRAPH 04 VIEW ON FRONT LEAN TO CRACKING AND STEPS