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VISUAL STRUCTURAL INSPECTION

OF THE

BARNS ADJACENT TO MOWBRAY FARM FRIZINGTON CUMBRIA

FOR

RC CIVILS

Reference - WDS/05/9202/REP01

Date - 25/04/2025

1.0 BRIEF

1.1 WDS Limited were instructed by R C Civils to carry out a structural inspection of the Barns Adjacent to Mowbray Farm, Frzington. The purpose of the inspection was to verify whether the existing structures are generally adequate to convert into a dwelling. The survey was limited to a visual, non disruptive inspection of the buildings.

1.2 There are six barns adjacent to the farmhouse, see attached sketch 01 in the Appendix for the plan layout. Barns 1 and 5 comprise cladded steel framed portal structures (see photographs 01 -04 attached), barn 4 comprises a block built single storey structure with a cladded steel trusseD roof structure(see photographs 05 & 06 attached), barn 6 comprises a single and two storey attached building (see photograph 07 & 08) constructed from a combination of rubble filled random stone, clay brick and concrete block masonry walls which support a traditional timber truss and purlin roof. Barns 2 and 3 are to be demolished and have therefore not been inspected or considered in this survey.

1.3 The barn 6 is in excess of 100 years old, barns 1, 4 and 5 are more modern having been built in the past 40 years.

1.4 The inspection was carried out on the 9th April 2025. 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 buildings which are masked or hidden by finishes that are not normally identified during a non disruptive inspection.

1.6 The foundations to the properties 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 the properties will be orientated as if looking at the front elevation. Barn 6 front elevation will be considered that which faces towards the main road.

2.0 OBSERVATIONS

2.1 Barn 1 and 5 steel frames have some surface rust throughout however this has not compromised the structural integrity of the buildings. The frames appear structurally suitable and do not show any signs of distress or excessive deflection that would affect its conversion. The proposed conversion works will be sympathetic to the existing structure and will not apply any additional loading to the existing frames.

2.2 Barn 4 rear wall is cracked (see photograph 09 attached). The cracking is consistent with structural movement of the foundations. It appears that the building has been built on raised ground, the ground may have settled towards the rear extent. The steel roof trusses are excessively rusted and the purlins are structurally inadequate when considering a insulated boarded roof structure; the roof will need replaced as part of any conversion scheme.

2.3 Barn 6 is generally in poor condition due to a lack of maintenance. The walls have numerous cracks and there a numerous rotten/woodworm infested inset timber lintels. The walls to the single storey extent are out of plumb especially to the front and left hand flank walls. There is evidence of separation cracking to the two storey extent gable wall although this appears due to historic movement. The roof structure to the single storey extent is in a poor condition and needs removed; the roof to the two storey extent is in a better condition and could be retained with some strengthening works. See photographs 10-11 attached.

2.4 The foundations to the barns were not exposed during this inspection however considering the use of the building we see no issue with the existing wall and foundation structures supporting the loading associated with a domestic property.

3.0 DISCUSSION/RECOMMENDATIONS

3.1 Barn 1 and 5 are structurally adequate in their current form and it is proposed to convert the buildings sympathetically to the existing structures. We propose a new masonry and timber framed structure is built internally around the frame to allow the frame to be retained whilst relieving loading off the steel frame and thus not compromising the existing barn structure. The steel frame will need cleaned down and painted with a rust inhibiting paint.

3.2 Barn 4 needs the rear wall underpinned and the cracking to the rear gable masonry wall tied. Depending on the foundation extent it may be more cost effective to rebuild the rear wall off a new foundation. The roof structure will need replaced as part of any conversion scheme. With the works noted completed the building will be suitable to be retained as part of a conversion scheme.

3.3 Barn 6 is in need of extensive remedial works as part of any conversion scheme these include:-

- The roof structures, 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. Depending on the findings of the timber specialist the purlins may be strengthened, this will need checked by a structural Engineer as part of the building design phase

- The masonry corners to the rear two storey extent need retied as part of any conversion scheme. There are numerous areas of loose masonry which will need rebuilt/pointed. In addition, there are numerous masonry cracks which will need re-tied as part of the general building refurbishment works. The bowed walls may need some rebuild however we see this as less than 20 percent of the overall building wall extent.

- The timber lintels and inserts throughout the building will need replaced with precast concrete or steel sections to suit spans and loadings.

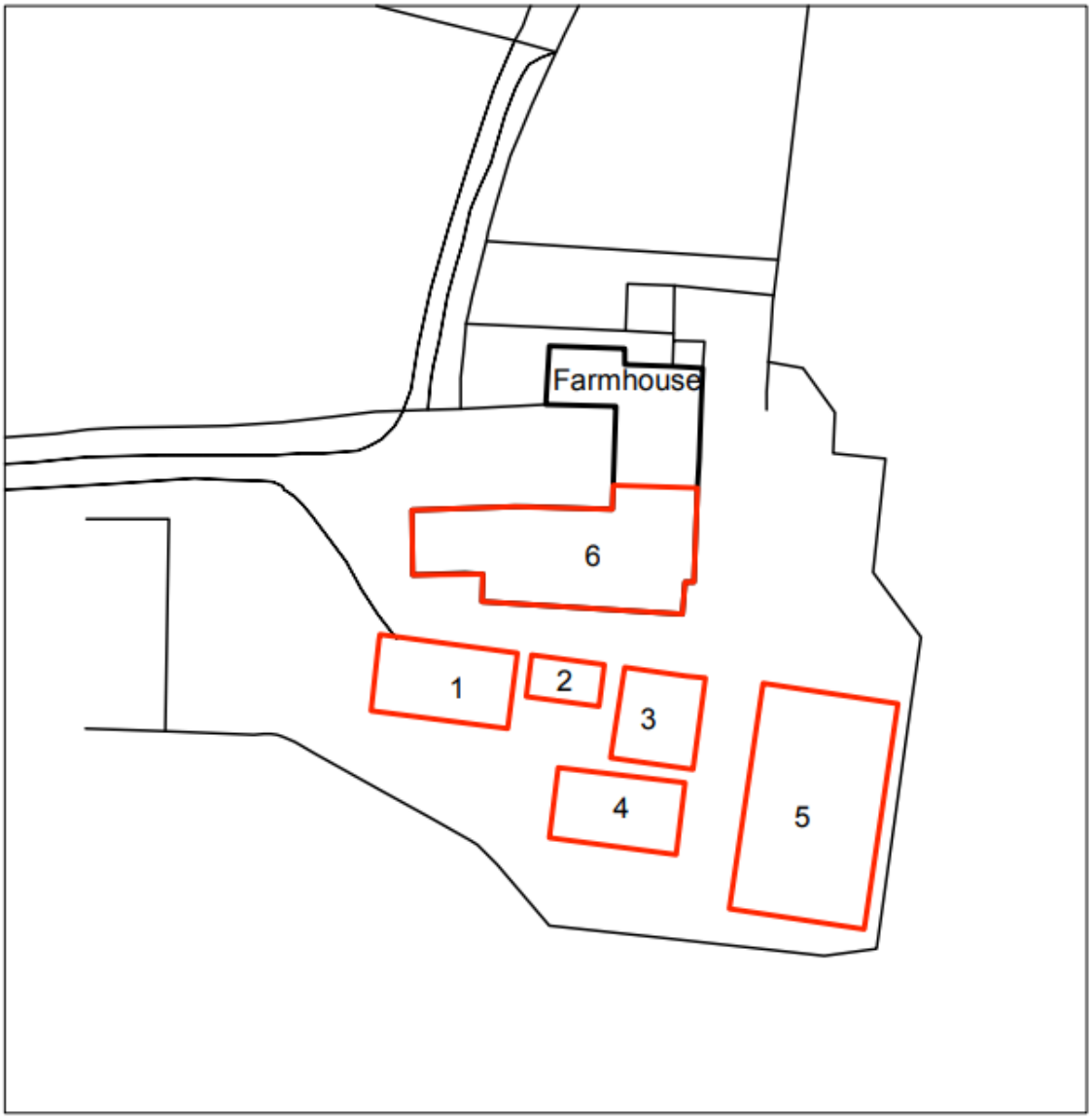
- We recommend that a trial hole is excavated at each corner of the barns to expose the base level of the wall such that the ground floor slab and insulation detail can be specified to ensure that undermining of the wall does not occur during construction.

4.0 CONCLUSION

4.1 The barns are generally in an adequate structural condition with some re-building (less than 20% 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 barns will be structurally suitable to be converted into domestic properties. 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

Tom Short BEng (Hons) CEng MICE



SISKETCH 01 SITE PLAN

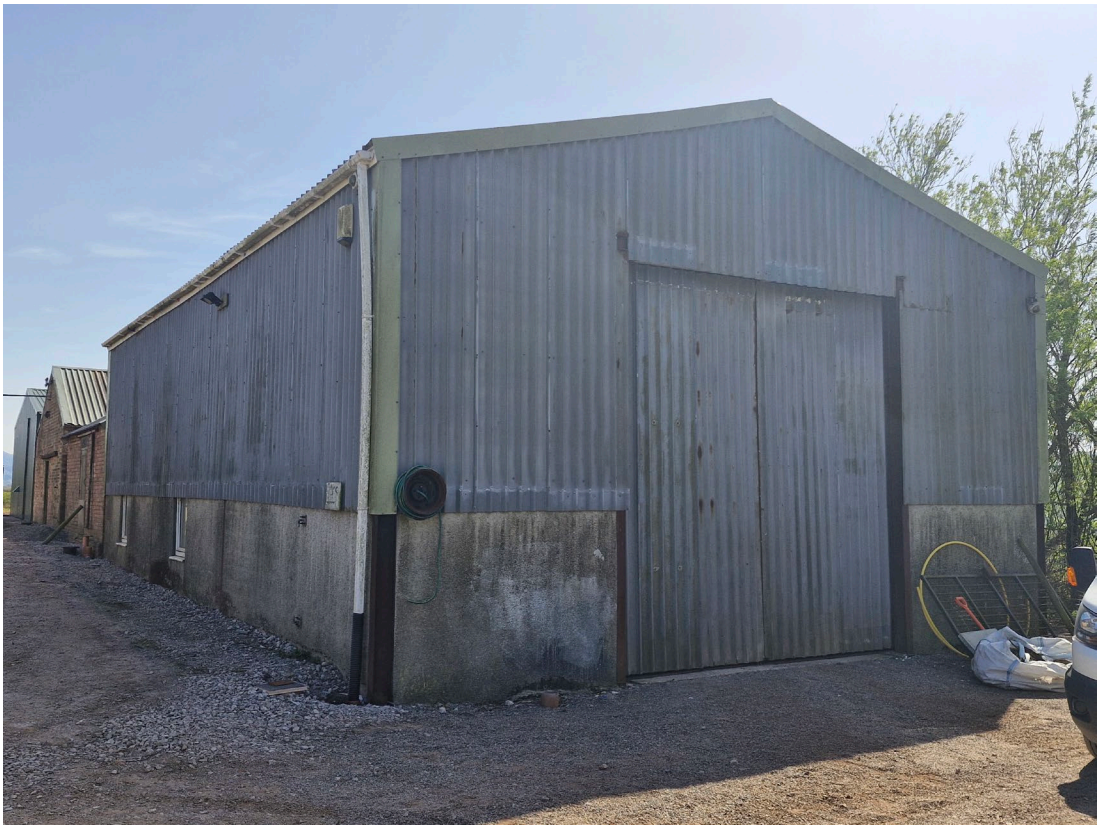


PHOTO 01 VIEW ON BARN 1 FRONT ELEVATION

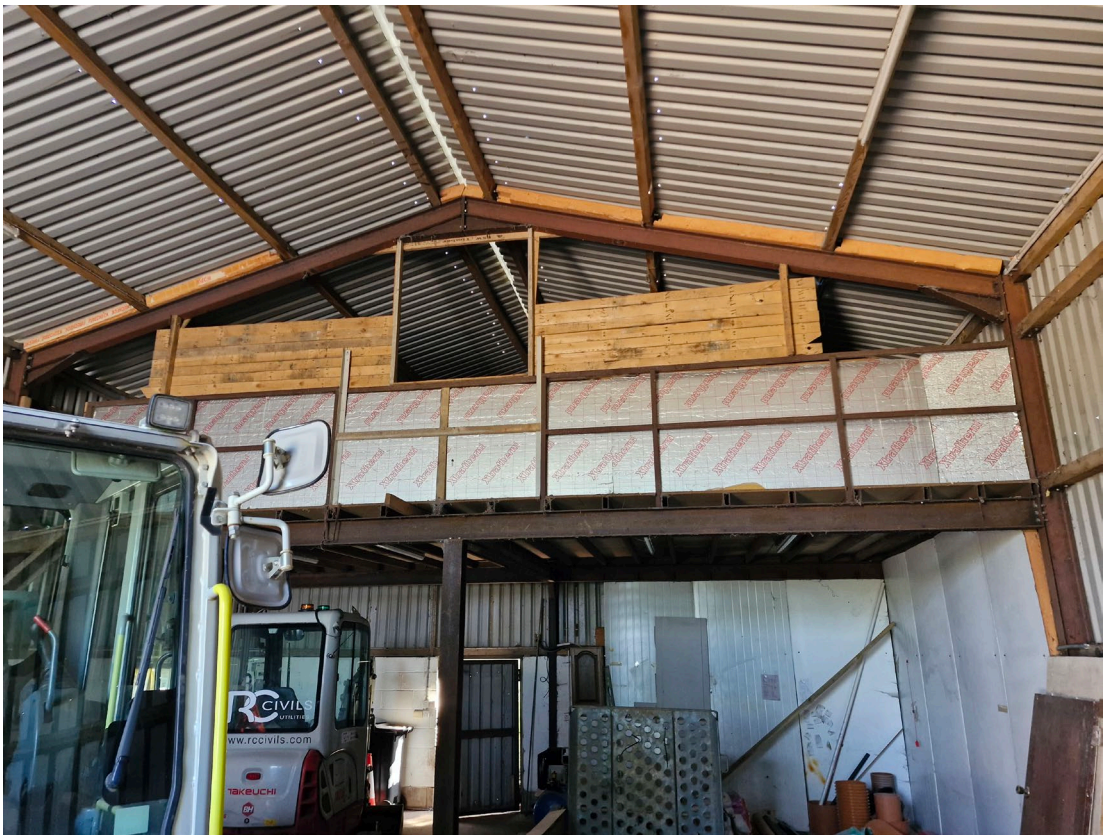


PHOTO 02 INTERNAL VIEW BARN 1

PHOTO 03 BARN 5 FRONT ELEVATION

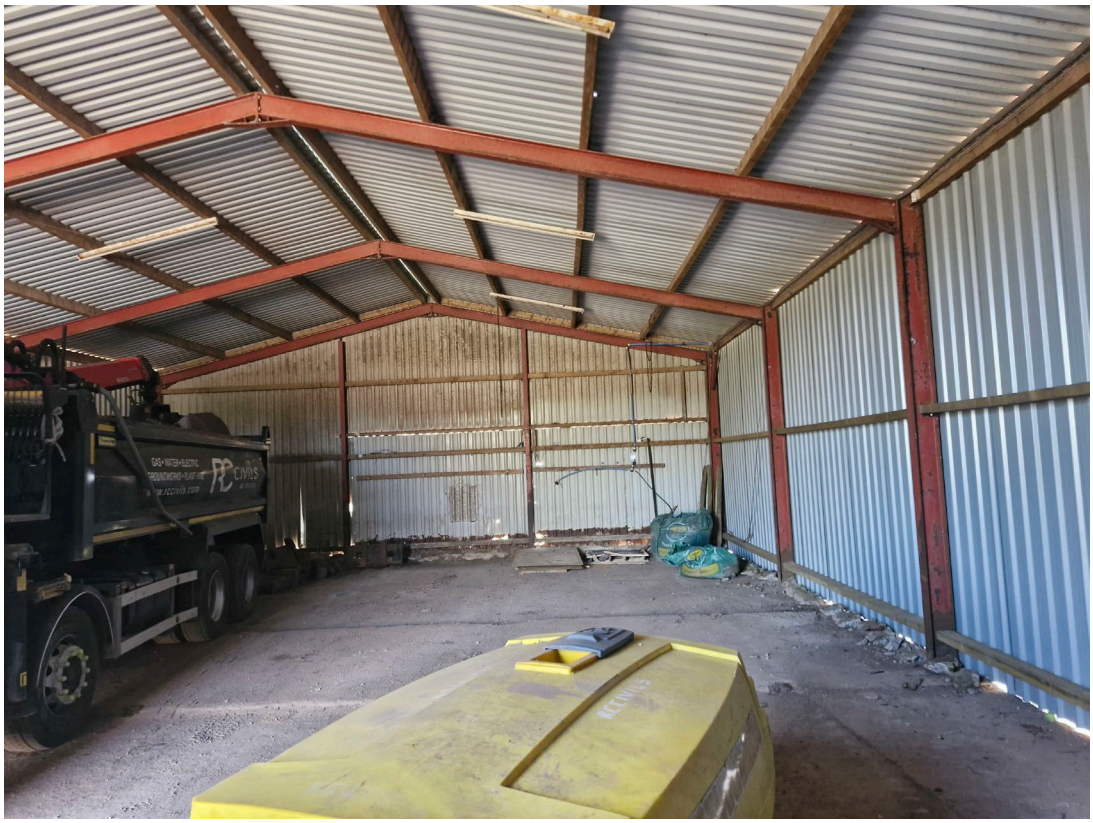


PHOTO 04 BARN 5 INTERNAL VIEW

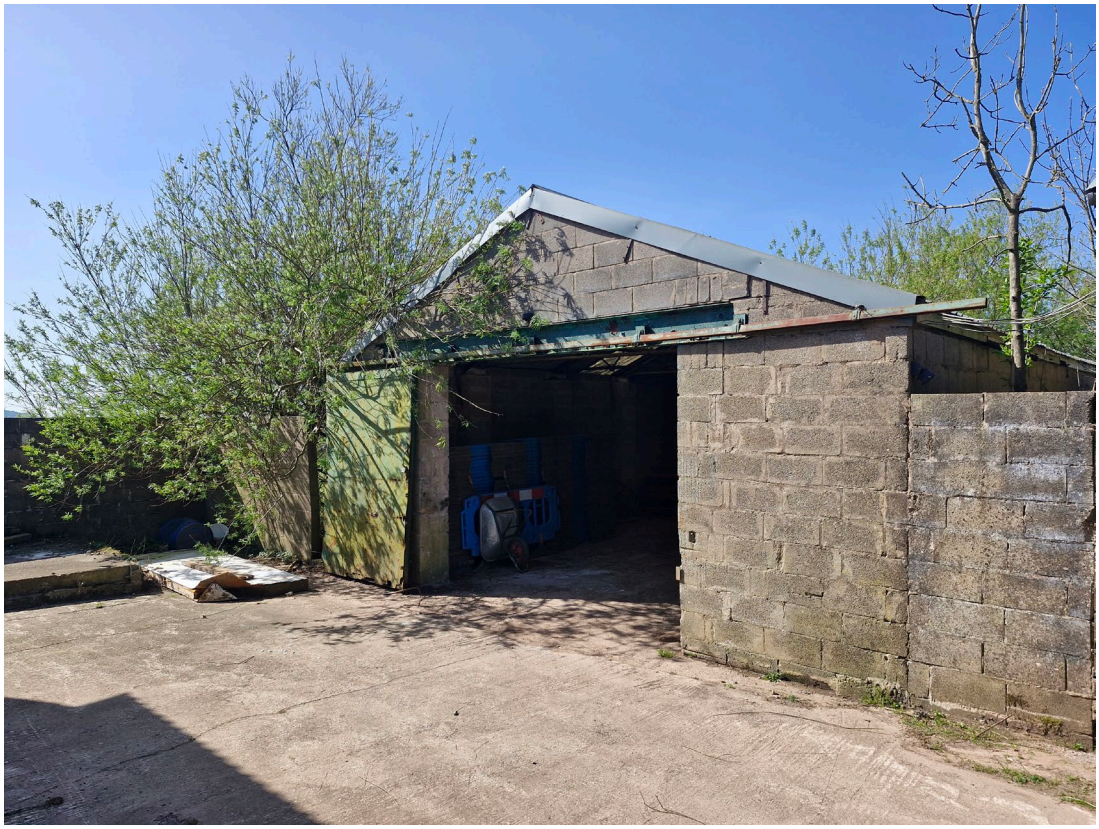


PHOTO 05 BUILDING 4 FRONT ELEVATION

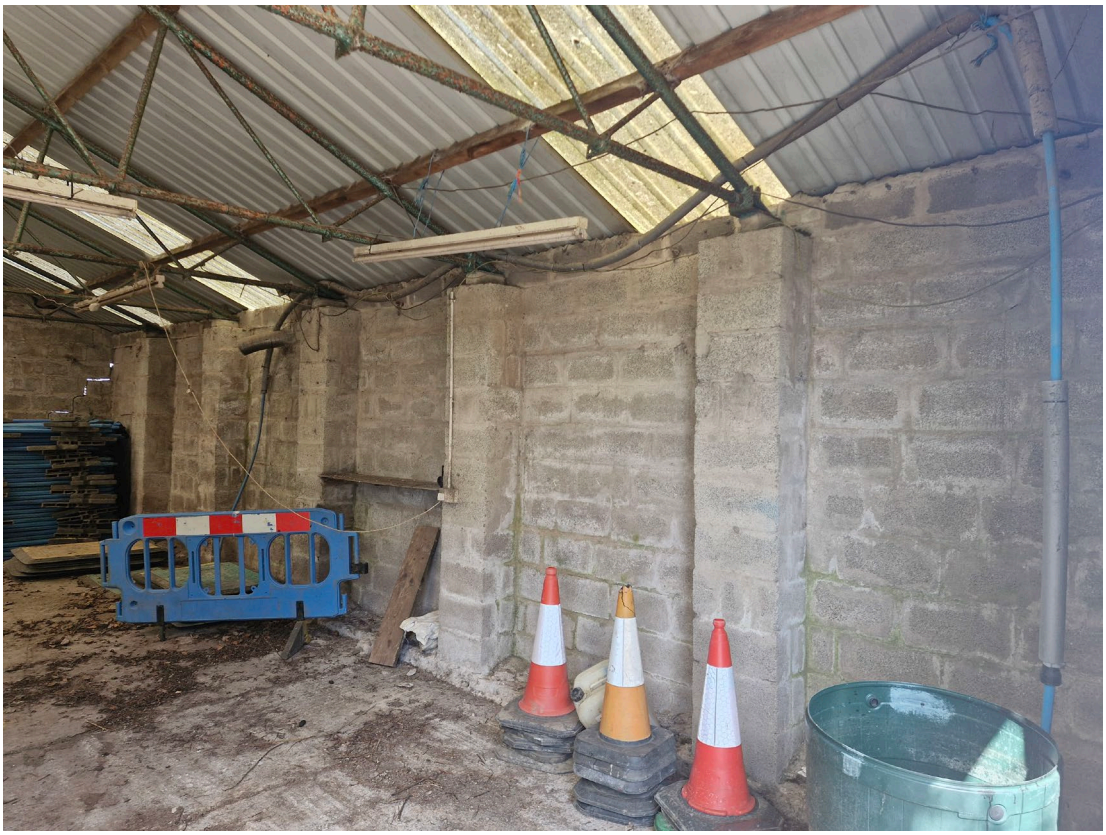


PHOTO 06 BARN 4 INTERNAL VIEW

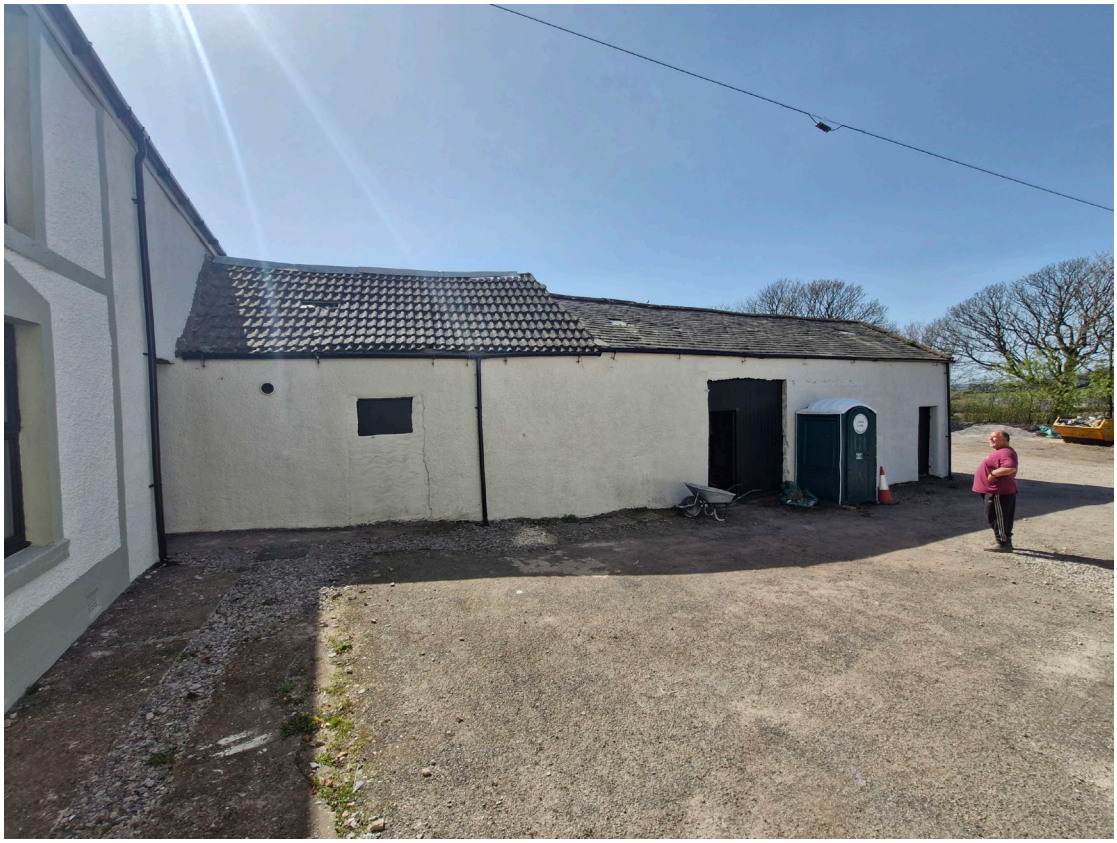


PHOTO 07 BARN 6 FRONT SINGLE STOREY EXTENT

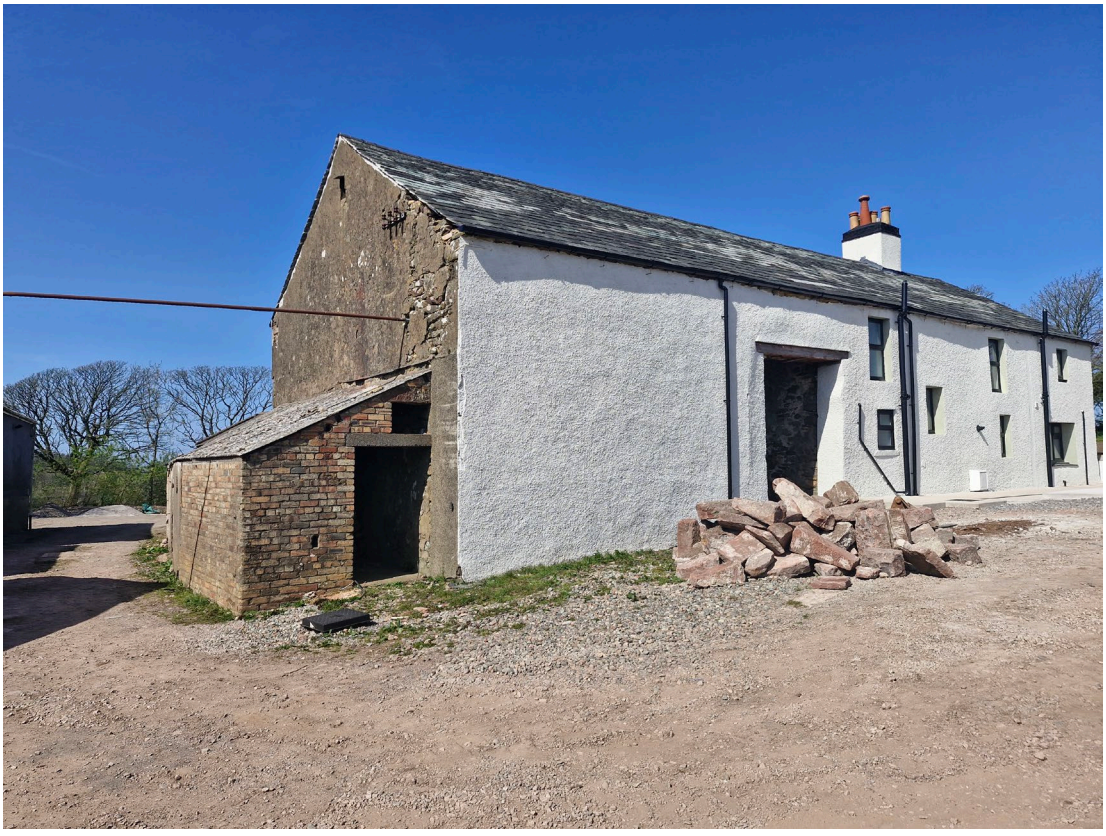


PHOTO 08 BARN 6 REAR ELEVATION

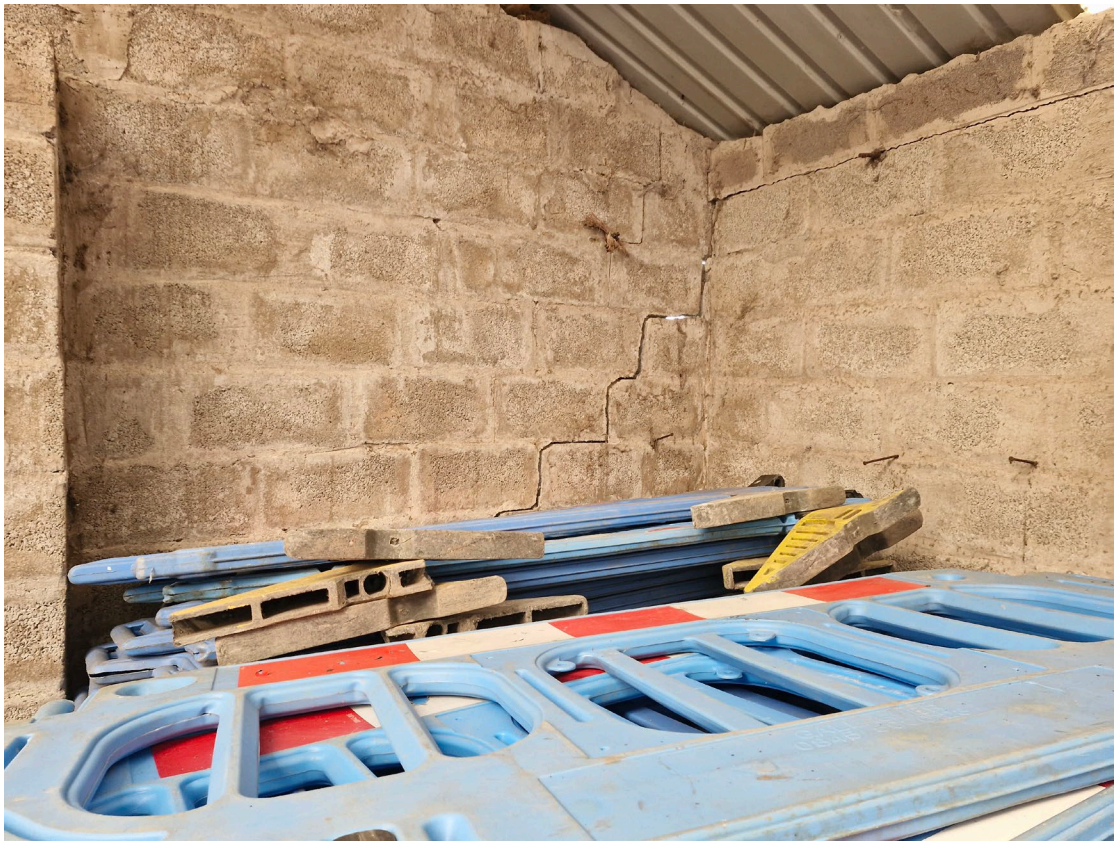


PHOTO 09 CRACKING TO REAR WALL BARN 4

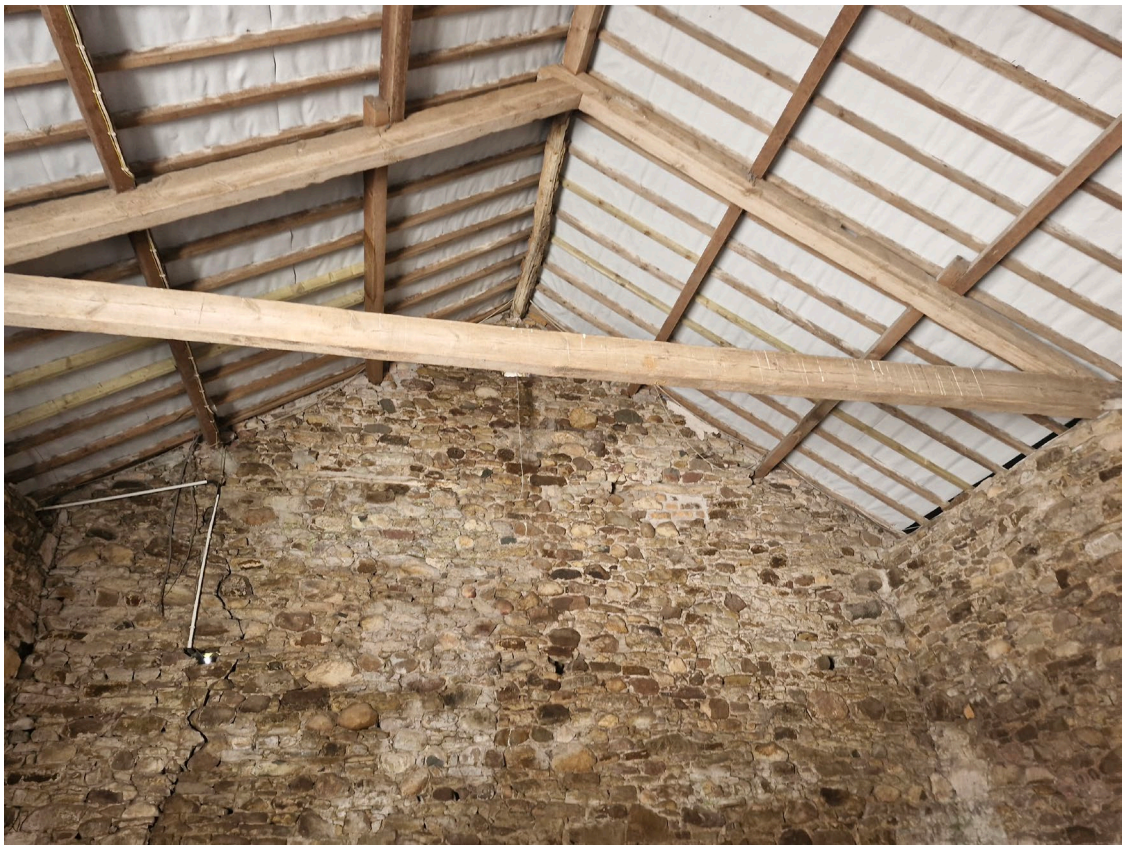


PHOTO 10 BARN 6 INTENRAL VIEW TWO STOREY EXTENT

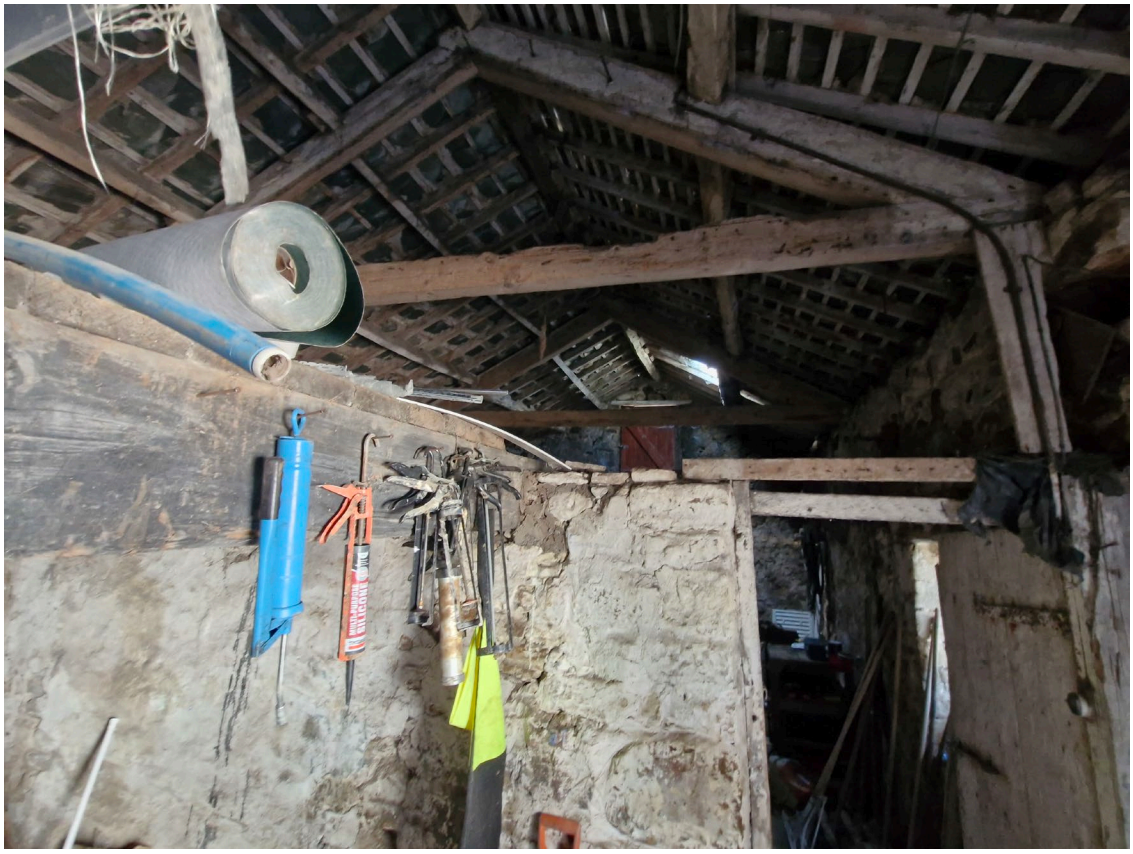


PHOTO 11 BARN 6 SINGLE STOREY ROOF STRUCTURE