



Barn at Montrose, Henton nr Wells, Somerset

Report on the Structural Condition

Project Number:8386

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Content/Quality Assurance

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1.0 Introduction

- 1.1 This report was commissioned by Mr and Mrs Keith Armstrong, the owners of Montrose, who wish to convert the barn into a dwelling. Montrose is a listed building, grade 2. The barn falls within its curtilage. The owners have commissioned Bruce Yoell, Architect, to prepare drawings of the proposed conversion and to submit them to Mendip District Council as part of a Planning and Listed Building Consent application.
- 1.2 The purpose of the report is to describe the current structural condition of the barn and to comment on how the various items of fabric could be incorporated into a new dwelling.
- 1.3 The inspection took place in May 2016. At this stage no trial holes have been undertaken and no other intrusive investigations have taken place.

2.0 Observations

2.1 The barn stands against the western boundary of the site, being built up against the external wall of the neighbouring house. The land slopes gently away to the north. The barn comprises 3 distinct sections. The central, main section, which has an upper storey hay loft, and two adjoining single storey areas which lean against the main section.

2.2 The central section has a single door, flanked by two small windows. These apertures all have oak lintels exposed externally, which are rotten and should be renewed. The internal lintels, of oak, are in reasonable condition and could remain.

The walls are of solid masonry construction, with lias stone in a lime mortar matrix. The walls to this part are plumb and true. Apart from some localised repointing, no significant repairs are required.



2.3 The exception to this is the verge along the top of the north gable, where ivy growth is heavy and may have loosened the masonry. Some local stonework consolidation may be required here,



- 2.4 The upper hay loft floor comprises softwood boarding on small, 110mm deep by 35mm wide elm joists. The elm joists are generally in sound condition but are undersized for domestic use for the clear span involved. A central spine beam, with a single prop have been introduced to prevent deflection of the floor.

It would be better during the conversion to install deeper softwood joist to clear span front to back without need for any intermediate propping. The original elm beams could be retained and "partnered" by the new joists.



- 2.5 The 225mm x 225mm elm beam running parallel to the rear wall has failed due to rot near its north bearing. A rudimentary timber prop has been used to carry the fractured end.

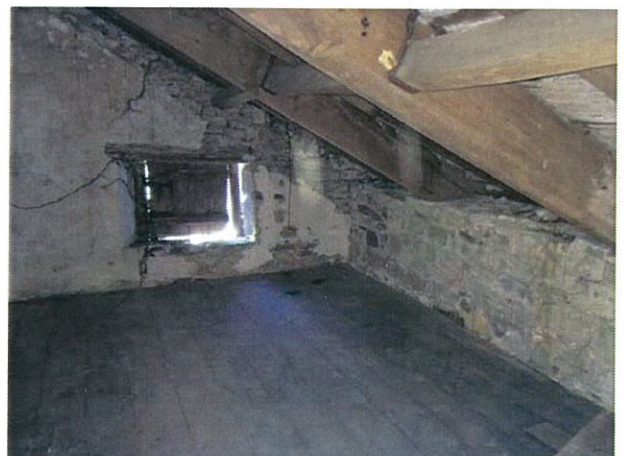
The beam could be retained if required and a stainless steel repair undertaken at the fractured end.



- 2.6 The roof is covered in clay pantiles on a lath and plaster layer, supported by small common rafters (75mm x 50mm). The rafters span onto two lines of purlins which are deflecting. One has become detached from the iron hangers used to carry them on the principal rafters.

The 3 principal rafters are slightly bent, but this distortion probably occurred when they were still green. All the roof is of elm.

Certainly the section size of the principals at 250mm x 75mm should be ample to carry this modest roof.



- 2.7 At the eaves, the rafters are bearing on a small wall plate at the outer edge of the wall. The principal rafters simply bear on top of the masonry.

Given the need to provide insulation, and therefore deeper rafters, it may be sensible to dismantle the roof, using new members generally, but keeping the principal rafters for re-use and to be exposed in the upper storey.

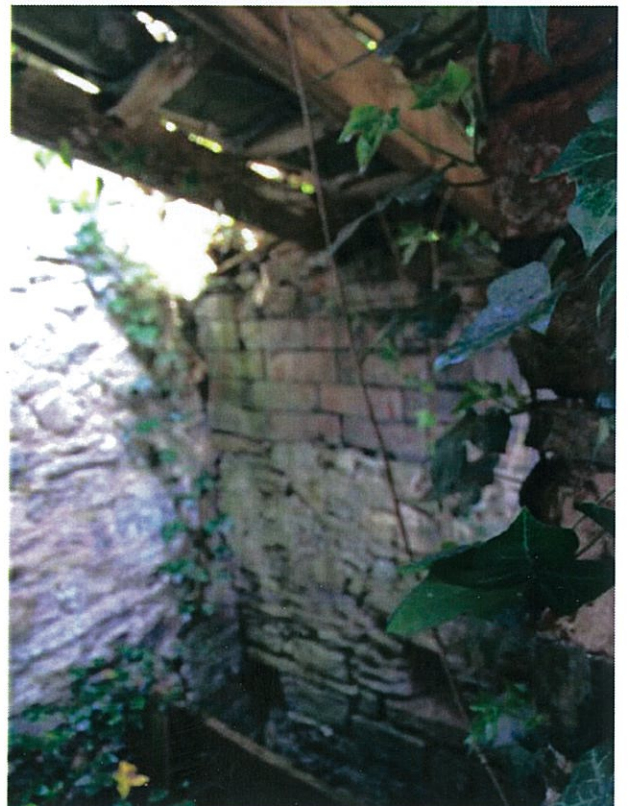


- 2.8 The rear, party wall, is in good condition. The north wall has a straight joint which no doubt marks the extent of an earlier construction.

This joint could be incorporated into the new doorway giving access to the new hall and kitchen.



- 2.9 The small lean to the north has a collapsing roof, and a fractured, insubstantial end wall. It would be best to dismantle the building entirely and construct new build off new foundations.



- 2.10 The southern lean to has a roof covered in triple roman clay tiles, and has solid masonry walls of lias.

It contains a small fireplace with a brick chimney abutting the south gable of the central building.

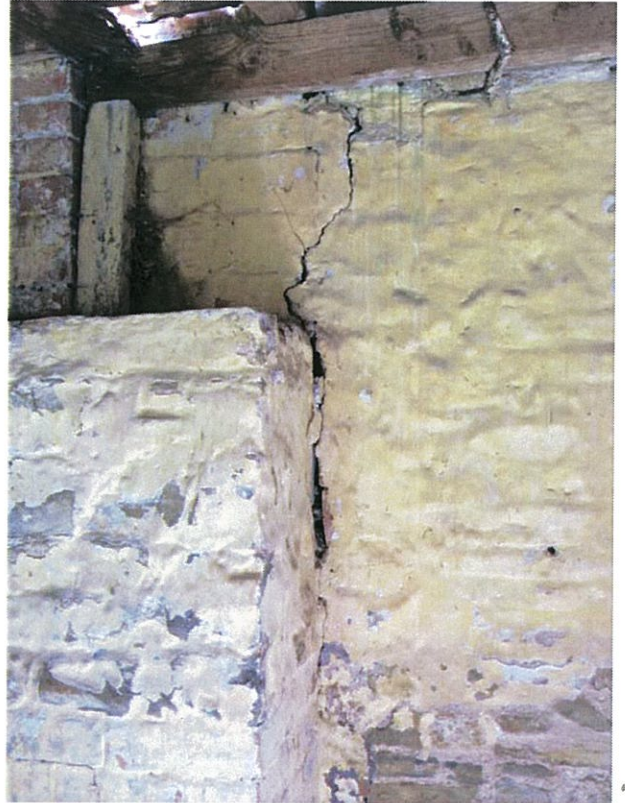


- 2.11 The roof structure comprises a series of 75mm x 75 simple clear spanning rafters. They are in a reasonable condition but the wall plate on the south wall has partly disintegrated due to wet rot, has have the plates which support the top of the rafters each side of the chimney breast.

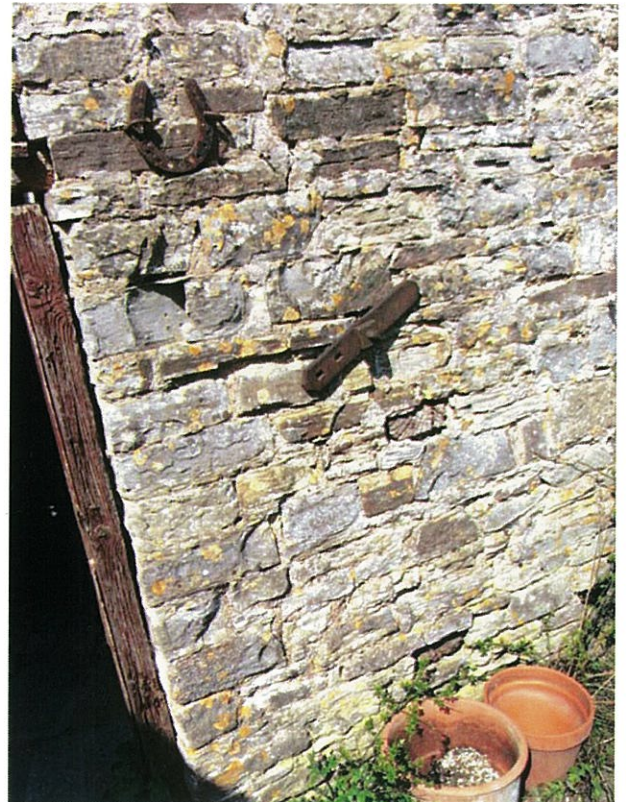
Given the need for insulation in the roof it would be better to provide a new roof structure.



- 2.12 The walls to this lean to are generally plumb and stable. There is a crack in the south wall of the central building which is more visible inside the lean to. This crack should be held together by stainless steel bars glued into the bed joint either side of the movement crack.



- 2.13 There is an iron tie bar visible on the east wall facing the garden. This is related to the old pump inside this wall and is not a structural component.



3.0 Comments and Recommendations

- 3.1 The barn is in a relatively sound structural condition. The majority of the fabric can be reused in the conversion.
- 3.2 There is little evidence of ongoing foundation movement, so general underpinning is unlikely to be required.
- 3.3 All masonry walls are sound and true and can be retained with the exception of the north lean to which should be dismantled and replaced.
- 3.4 The timber upper floor to the central building is undersized for the span involved. The elm beams and joist could be maintained, provided they are supplemented by new softwood members capable of carrying domestic loading.
- 3.5 It will be necessary to provide deeper rafters over the main and south buildings so as to incorporate insulation, but the elm principal rafters could be retained for reuse in the central area. New wall plates should be provided throughout.