Diamond Wood & Shaw Limited

Consulting Engineers

Structural Inspection
Building 4

Client:	*Root 2 Lean Limited*
Project:	*Red House Farm* *39 Main Road* *Ratcliffe Culey* *Atherstone* *CV9 3NY*
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1.0 Introduction

1.1 Further to instructions, I visited Red House Farm, Ratcliffe Culey on 10 July 2024 in order to undertake a visual structural inspection of an existing agricultural building.

1.2 My brief was to undertake a visual structural appraisal to determine the condition of the existing buildings and to form an opinion on their suitability for future conversion for residential use in accordance with the Class Q of the Town and Country Planning (General Permitted Development) (England) Order 2015.

1.3 My inspection was limited to elements of the structure which were visible, exposed or to which access was available.

2.0 Description

2.1 Building 4 is located towards the centre of the farm complex between two further, newer buildings and a temporary accommodation unit. [Figure 1]

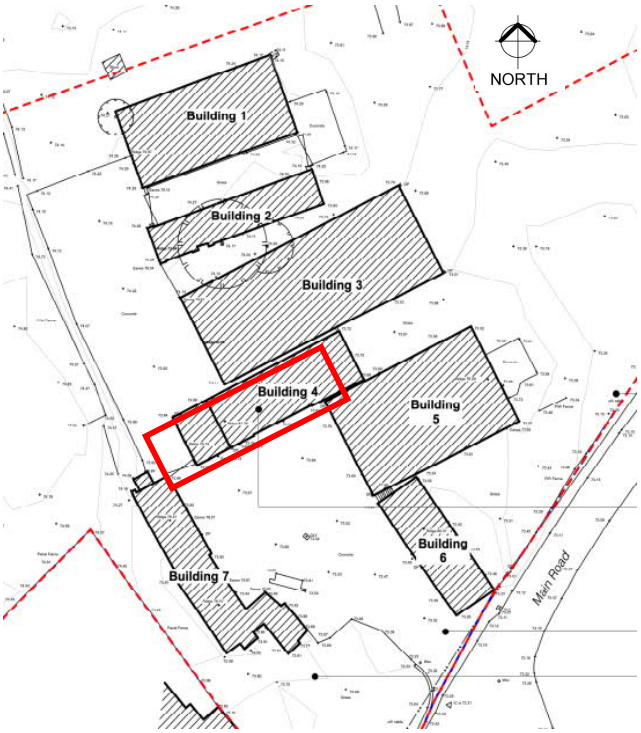

Figure 1

2.2 Building 4 is approximately 6m wide x 16m long divided into three bays, and comprises a two-storey height barn constructed with solid 9", (230mm), thick brickwork walls supporting a duo-pitched roof.

There is a 6m wide x 4m long single-storey addition to the western end of similar construction.

2.3 The roofs have a concrete pantile covering supported on timber battens and rafters supported by a single row of purlins to each roof slope spanning onto internal cross walls and timber trusses. The purlins and trusses are of substantial cross section.

Cross walls extend to eaves level to support purlins and timber lintels / tie members, and contain a large central opening to provide a clear open length.

2.4 There is a single large opening to both side elevations, although the rear elevation is largely obscured by the adjacent building

2.5 The ground floor comprises a combination of cast *in situ* concrete ground bearing slab and brickwork.

3.0 Observations

3.1 The barn appears to be in good condition relative to age and exposure conditions.

3.2 Where visible, the majority of the roof appears to be intact with only occasional loose tiles, and the slopes remain plane and the ridge line level.

3.3 The visible roof timbers and timber lintels over door openings appeared to be free of rotting or noticeable defect or deflection.

3.4 The exposed brickwork appears to be largely free of defect, with only localised areas of spalling due to frost-damage and with some eroded mortar joints due to weathering and water run-off.

3.5 The triangular section of gable wall to the western gable end of the single-storey section comprises 4½“ (114 mm), thick brickwork above eaves level

4.0 Discussion and Conclusions

4.1 It is proposed to convert the existing barn into residential accommodation utilising the primary structural elements. No new structural elements are required.

4.2 The roof timbers appeared to be sound and may be re-used, subject to close inspection by a specialist and treated with preservative against rot and infestation to ensure the long-term integrity.

4.3 It is likely that the roof tiles will be removed to allow a felt membrane to be included before being replaced.

4.4 A new internal first floor is proposed to each end bay, and the existing walls and associated foundations are considered to be suitable to sustain this additional loading.
There is no evidence of any loss of vertical alignment of the external walls, but the inclusion of a first floor will enhance the lateral stability by creating a horizontal diaphragm.

4.5 The general brickwork superstructure remains in a good to reasonable condition.
Some re-pointing will be required together with replacemnt of occasional bricks where the thickness has been significantly reduced by spalling.
A new inner leaf will be required to the existing half-brick thick, single-storey gable wall.

4.6 There is no evidence of defect associated with foundation movement.

4.7 The masonry barn structure is considered to be structurally suitable and sufficiently robust and strong enough, subject to building operations reasonably necessary, for conversion from use as an agricultural building to a use as a domestic dwelling.