

### Introduction:

This report has been prepared following a recent site visit to inspect an existing stone barn and to assess its structural condition and its suitability for redevelopment by conversion into a dwelling without the need for extensive demolition or reconstruction for the purposes of a planning application.

The site is located off Mortimer Road to the west of Cubley and access is via a country lane. It is part of a former smallholding which also includes a Grade II Listed Farmhouse and a number of small outbuildings which do not form part of this assessment. Both the farmhouse, which has been previously used as a dwelling, and the barn are currently unoccupied.



Fig 01. Barn South Elevation.



Fig 02. Barn North Elevation

### The Barn:

The barn is orientated on an east/west axis and comprises three elements, a central rectangular two storey barn of 7No bays subdivided by 6No timber trusses; a two-storey addition to the west and a single storey addition to the east, both of similar age to the central barn.

The site slopes from west to east and part of the rear north wall and the west gable retain ground levels up to a maximum of 1.0 meters.

Two thirds of the central two storey stone barn include a milking parlour with a concrete floor and a hay loft above constructed originally of timber beams supporting stone flags at first floor level. The timber beams have deteriorated over time and steel beams have been added to help support the weight of the stone flags at first floor level. The remaining third of the main barn as no first floor and is open from ground floor level to the roof trusses.



Fig 03. Milking parlour and first floor steel and timber beams supporting stone flags.

The majority of the window openings are located on the sheltered south elevation and include a large barn door giving access to what may have been a stone flag threshing floor. Most of the window openings have stone lintels externally which are in good condition, and timber lintels internally, some of which will need to be replaced due to rot.

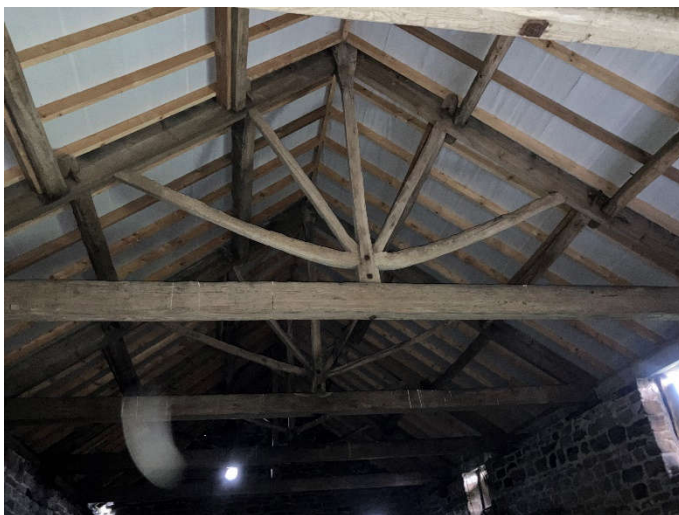


Fig 04. Trusses over main barn.

The original roof covering has previously been replaced with concrete tiles, breather felt and modern timber rafters over the original timber purlins and roof trusses. Some of the original timber purlins have been strengthened by adding now timber purlins along-side (as can be seen in Fig 04.) but generally the original roof timbers appear to be in good condition.



The two-storey addition to the west of the main barn is a single bay with a timber first floor which has partially collapsed and timber purlins spanning between the principal walls supporting the roof. There is no internal stair to the first floor however there is an external stone stair to the west gable with a door giving access to a small hay loft.



Fig 05. Small addition to west of main barn; note straight joint to reveal of door opening. Construction techniques suggest it was erected soon after completion of the main barn.



Fig 06. Stone steps and access to first floor hay loft in west gable.



Fig 07. Partial collapse of timber first floor and temporary support posts.

To the east of the central barn is a single storey dual pitch addition of similar age to the original barn. The plans show a number of adaptations since its construction including the installation of an internal wall and some timber stalls. There is a large opening in the east elevation with a timber lintel that has deteriorated and created some instability in the east gable requiring partial re-build of the gable wall above the opening.



Fig 08. Single storey addition to main central barn.



Fig 09. Internal view of single storey addition to main barn.

### **Structural Inspection:**

The inspection was of a visual, non-intrusive nature, and hence we cannot confirm that any areas which were concealed or inaccessible are free from defect. The inspection revealed the following salient items:

- External timber lintels and a number of internal timber lintels show signs of deterioration and possible historic beetle infestation, and will need to be replaced.
- Primary trusses and purlins to the barn have minor historic 'timber shakes' throughout, however no evidence of loss of integrity or capacity was evident.
- Stone walling throughout the primary barn is regularly coursed and pointed and in good condition. Other than a small area of stone work in the single storey east gable which generally dry wall laid, with some areas having been pointed historically and more recent. Walling is well constructed and plumb with no evidence of displacement vertically or horizontally.



### Discussion:

The condition of the masonry to the primary barn and additions is in very good condition considering their age and exposure.

Masonry walling throughout the buildings is well constructed and free from significant defects.

The roof having been re-laid in the past, is watertight and although there is some general aging of the principal timber roofing elements with timber shakes noted throughout, is not considered overly detrimental to the integrity of the structure as these appear to be surface defects only, exhibiting most likely during the timbers initial drying process.

The first floors are in need of replacement due to deterioration of timber beams supporting heavy stone flags.

### Proposed Redevelopment:

The barn is to be converted into a single habitable residence. To suit current Building Regulations a number of enhancements will be required for both thermal and weather proofing characteristics. Inevitably, the weight of such enhancements, particularly on the roof, will be greater than the current build-up and hence some strengthening of the roof structure may be required. It is not considered, however, that wholesale replacement of the roof structures will be required to the barn or the additions.

Insulated ground-bearing concrete floor slabs will be required throughout the complex to provide thermal improvements to meet the current Building Regulations. These could be constructed over the current slabs (where present); however, we would anticipate the most appropriate method would be to replace the existing floors.

With the above in mind, we can confirm that we see no reason why, with a series of general maintenance repairs and minor enhancements, the building could not continue to be used for ancillary storage, or form part of an application for residential re-use and conversion subject to design detailing, such as enhancements of the building fabric for the improvement of both thermal and weather-proofing characteristics.

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