

# IGN Structures

## Barn Survey & Structural Assessment

Endon Bank Farm, Church Lane, Endon

**Date:** October 2023

**Issue:** 1st

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**Prepared by:** I Gorton

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## DOCUMENT CONTROL

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## 1.0 Introduction

- 1.1 IGN Structures received instructed to undertake a visual inspection of a barn at Endon Bank Farm, Church Lane, Endon. It is proposed that the existing structure be renovated for conversion into residential use. We are instructed to report upon the structural condition of the barn and advise upon its suitability for conversion to residential use.

The survey was carried out on the 8<sup>th</sup> October 2023 and comprised a visual, non-intrusive inspection.

- 1.2 We have not inspected woodwork or any other areas of the structure that are covered, unexposed or otherwise inaccessible. We are therefore unable to confirm that any such areas of the building are free from defect. Given the nature of the structure, however, this has not precluded a comprehensive assessment of its structural condition and suitability for conversion. It is important to note that this report does not constitute a comprehensive Building Survey, neither does it constitute a full Structural Survey. This is a report generated from a visual inspection of the premises in response to a specific matter for consideration and no invasive investigations or opening up has been undertaken nor is deemed necessary.
- 1.3 All quoted dimensions and sections sizes are approximate unless specifically noted and should not be relied upon.

## 2.0 Site Location

2.1 The barn is located at Endon Bank Farm, Church Lane, Endon (as shown below).



### 3.0 Description

- 3.1 The barn under consideration is a long stone / masonry structure comprising load bearing walls supporting a timber first floor and a timber pitched roof. To the rear is a series of lean-to structures formed in both steel and timber.
- 3.2 The building has a width of around 6.5m, a length of around 45m and is approximately 4m high to eaves level and 6.3m high to ridge level.
- 3.3 The barn roof is tile clad and supported via timber rafters at regular centres. The span of these timber rafters are broken by timber purlins. The timber purlins are supported via loadbearing cross walls and a series of internal timber Kingpost trusses.
- 3.4 The perimeter walls to the barn are formed via +400mm thick stone walls and 225mm (9") brickwork.
- 3.5 Internally the cross walls are a mixture of stone and brickwork. These cross walls act as a buttress to the flank perimeter walls and support the timber roof purlins.
- 3.6 The floor of the barn is formed with a ground bearing concrete slab.
- 3.7 The building is provided with eaves level plastic rainwater guttering together with corresponding downpipes.
- 3.8 The foundations are likely to comprise shallow mass concrete strip footings which, given the age of the building are likely to bear at a depth of around 450mm below the existing ground level.
- 3.9 Photographs of the barn and its surroundings are included as Appendix A.

### 4.0 Observations

- 4.1 The barn was assessed in sections as noted below.



- 4.2 The barn is in a generally fair state of repair but does exhibit some issues requiring maintenance.
- 4.3 The roof presents satisfactory alignment though some localised distortion to the ridge tiles were noted.

- 4.4 The timber kingpost system appeared to be in a satisfactory condition and no major structural distress was noted.
- 4.5 Some movement was noted to the corner of the Southern Gable end wall (Section A). Where vertical cracks had formed externally and internally. Foundations in this area should be exposed and allowance should be made for localised underpinning / rebuilding this section of wall. This work is required irrespective of any conversion works to maintain the building in a serviceable condition.
- 4.6 First floor timber joists showed signs of sagging / bowing, and these should be replaced with a suitable first floor structure to meet the current building regulation requirements. These works are required irrespective of any conversion works as to maintain the building in a serviceable condition.
- 4.7 Timber lintel failure was noted at first floor between Sections B & C, where cracks had formed in the stone cross wall. Lintel should be replaced, and stone cross wall made good.
- 4.8 The rainwater goods are generally in a poor condition to the rear flank wall with many sections of guttering either missing or significantly distorted, rendering them ineffective. The rainwater goods ideally require replacement in their entirety.
- 4.9 Generally external walls to the rear flank wall of the barn had been exposed to a degree of weathering over time, resulting in a loss of mortar and foliage growth. Removal of foliage growth and raking out and repointing joints will assist in restoring integrity. This work is required irrespective of any conversion works to maintain the building in a serviceable condition.
- 4.10 Some bowing was noted to the rear flank wall. Once the lean-to structures are removed this elevation should be reviewed in its entirety. Allowance should be made for rebuilding sections of this elevation and ensuring that the wall is suitably restrained by the first floor. This work is required irrespective of any conversion works to maintain the building in a serviceable condition.
- 4.11 The floor slab presents in a generally good condition, being robustly formed and free from significant cracking or hollowing soundings.

## **5.0 Conclusion**

- 5.1 On the basis of our inspection, we are satisfied that the barn represents a viable proposition for conversion to residential use without the need for structural intervention.
- 5.2 The floor slab appears in a sound condition and will be subject to a significant reduction in imposed load within a residential dwelling. The existing floor slab should therefore be suitable to form a sound base from which to raise partitions and install insulation and floor finishes appropriate to a domestic floor.
- 5.3 The existing foundations appear generally suitable to sustain the loadings currently imposed by the structure, with no significant evidence to suggest widespread settlement.
- 5.4 The proposals to convert the building to habitable use will involve the addition of little appreciable additional load and there is, as a consequence, no reason to believe the foundation system should not continue to perform in an acceptable manner.
- 5.5 The existing roof structure is generally performing satisfactorily, and with some strengthening / remedial work should perform in an acceptable manner.
- 5.6 In summary, the overall condition of the barn structure, together with its overall performance to date, lead us to believe there is no substantive reason why it cannot be successfully

converted to residential use without recourse to structural intervention, other than that which would be required to maintain the integrity of the structure in its current form.

- 5.7 With this in mind, we consider the existing building described herein is in principle structurally strong enough to sustain the loadings from the building operations reasonably necessary to facilitate its conversion to residential use.

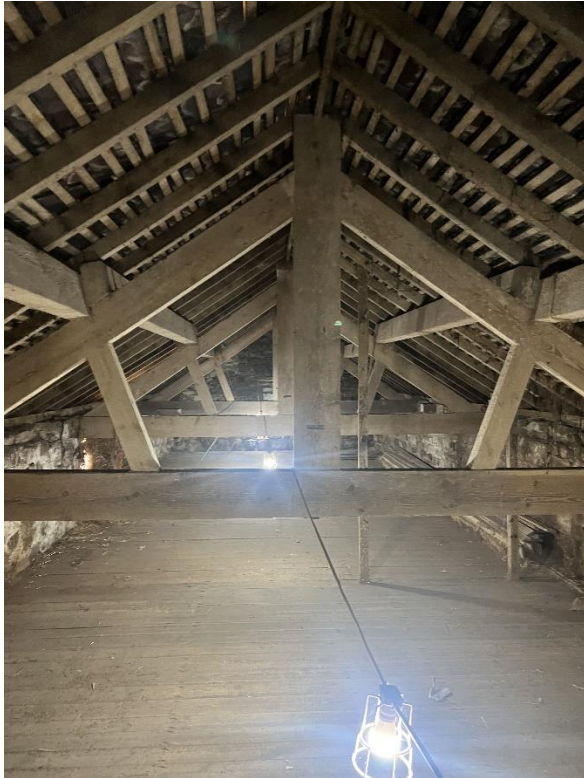
Appendix A



Movement to Southern gable end wall



Movement to Southern gable end wall



Timber Kingpost Truss



Lintel Failure Sections B & C



Foliage / Rainwater goods rear flank wall.