

Barn, Sheephouse Cottage– Structural Appraisal

Project No: 2909

Date: Nov 2024



STRUCTURAL APPRAISAL REPORT BARN CONVERSION

**Sheephouse Cottage,
Cheddleton Road,
Leekbrook,
Leek,
ST13 7DP**

for

Mr R Hine



REPlan and Design Ltd

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1.0 INTRODUCTION

REPlan and Design Ltd were asked to visit the barn at Sheephouse Cottage, to assess the suitability of converting the barns into a dwelling.

This report is to assess the current structural condition of the barn and the suitability to convert.

Inspection carried out March 2024.

Included in Appendix A of the report are REPlan and Design's Standard Scope and Limitations of Survey.

Included in Appendix B of the report are annotated relevant photographs taken at the time of the inspection.



Image 1 – Google Maps (Location)

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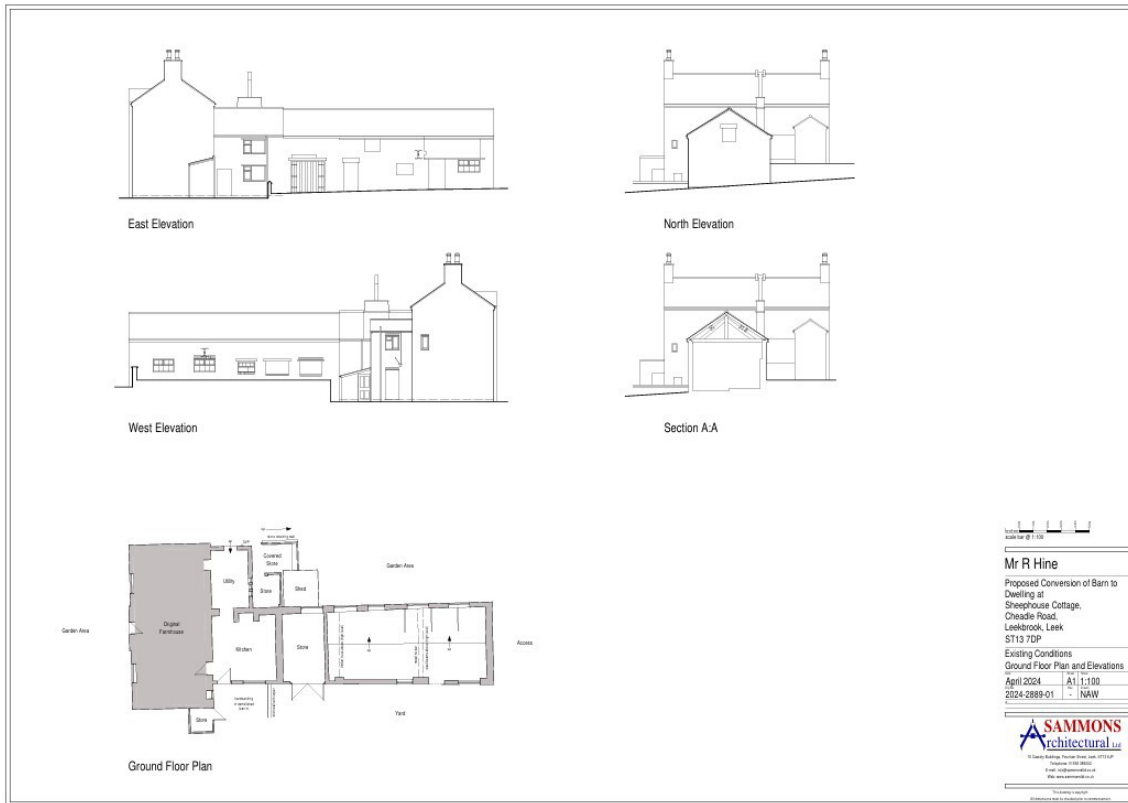


Image 2: Existing Building (Sammons Architectural Ltd)



Image 3 : Proposed (Sammons Architectural Ltd)

2.0 BRIEF DESCRIPTION OF THE PROPERTY

Barn

The existing barn is an mainly an open plan store area which is attached to the main farmhouse. The barn has a duo pitched tiled roof and masonry walls. The barn is one open plan room apart from where an internal blockwork has been built with a timber joist ceiling, creating a separate storeroom and storage area over. The walls are a mixture of stone and brickwork with the roof constructed with timber rafters, purlins and a timber king post truss and steel beam / blockwork intermediate supports to the purlins.

Foundations to the barn were not exposed but believed to be stonework onto natural ground.

The land to the north, east and south of the barn is relatively flat, as is the land to the west but this area of land is approximately 1.5m's higher and has a retaining structure along the sides. The western wall of the barn is acting as a retaining wall and built from stone (as seen internally) below ground level.

3.0 OBSERVATIONS

External: Eastern Wall

The eastern wall is a mixture of stonework and brickwork that has been changed and repaired on different occasions over many years. The corner appears to be the original keystones full height with a small section of stonework remaining over a bricked-up doorway.

The corner stones are in good condition but the stones over the door are heavily weathered. The remainder of the masonry is 3 different types of brickwork in different bonds. In some areas the outside skin is in a stretcher bond and in other areas an English garden wall bond has been used. The masonry appears to be 3 bricks thick (without a cavity) in all areas. A number of vertical cracks are present in the brickwork particularly where different sections of walls meet but haven't been bonded or tied.

No openings are present at high level.

A double door is present into the separate store area + 1 door and 2 windows present to the main store area. One other door has been bricked up.

2 steel beams span over the door and window closest to the gable end with a timber face over.

A steel plate and rod is present on the wall at mid-height and approx. mid length of the store, which has been installed post construction to prevent movement and tie the two longitudinal

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walls

together.

A tiled roof is present which can be seen to dip along the ridge towards the centre.

External Northern Gable Side Wall

The gable is constructed full height in stonework (approx. 450mm wide). The wall is in relatively good condition for the bottom 2/3 height but the top 1/3 is bowing inwards where it appears the purlins sit, and are pulling on the wall, as the roof starts to sag.

A high-level window has been bricked up, no other openings are present.

External Western Wall

The ground to the western elevation is approximately 1.5m's higher than the eastern with the northern wall of the barn acting as a retaining wall. Below ground and the 1st 200mm above ground level is built from (assumed) 450mm wide stone. Above this is brickwork, 2 different bricks / style are used. The left side (gable side) has a stretcher bond and the right side using an English garden wall bond. A straight joint is present between the wall types.

4 windows are present, 2 in each wall type.

A steel plate and rod is present over the 2nd window, which has been installed post construction to prevent movement and tie the longitudinal walls together.

The top section of wall appears to be pushing outwards and a difference of 50mm is viable at the top of the wall where the 2 different brick types meet.

A tiled roof is present which can be seen to dip along the ridge towards the centre.

Internal

The different wall types are visible on the inside, with the gable being stonework, the eastern wall being a mixture of different types of brickwork and the western wall being stonework at low level with a mixture of brick and blockwork present over up to where the roofline meets.

The roof is constructed with timber rafters spanning from the eastern / western wall up to a ridge board. A mid- span timber purlin is present either side of the slope split into 3 sections. The 1st purlin runs from the gable stone wall to a 440x225mm block pillar built off 2 steel beams spanning between the eastern and western wall at eaves height. The 2nd length of purlin is the longest and spans from the block pillar onto a king post timber truss. The 3rd span is from the king post truss to the gable wall of the main farmhouse.

The middle purlins in particular appear to be over spanning resulting in the roof dropping and pushing out on the longitudinal walls.

The steel beams supporting the block pillar / purlins are in a good condition but have

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surface corrosion.

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The timber king post truss has also deformed and the section properties at the bearings and also where the purlins are supported would need checking / strengthening.

A block wall has been constructed internally up to a height approx. 2.4ms giving a separate internal store area with a timber joisted ceiling.

A concrete slab is present to the barn area which has been formed at two different heights.

General Comments

The barn in its current condition is structurally sound but will need some modernising in the future to ensure it doesn't worsen. The priority would be to give added support to the roof by introducing a second line of steels / blockwork or truss to reduce the span of the middle purlins and also strapping the roof to the walls which will help prevent any further movement.

The walls, although a mixture of materials and construction types are structurally okay but will be improved with added support to the roof (mentioned above)

The concrete slab, which is not an integral part of the structure, would not meet modern standards, this would require insulation and a dpm. This individual element will need to be taken out or upgraded.

Foundations were not exposed, but the barn wasn't showing signs of any ground movement / foundation problems.

4.0 CONCLUSIONS

The barn is of a suitable condition for conversion and would give the ideal time to undertake improvements and modifications to satisfy current building regulations standards.

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APPENDIX A**REPlanAndDesign STANDARD SCOPE AND LIMITATIONS OF SURVEY****SCOPE AND LIMITATIONS OF SURVEY**

This report has been prepared to provide guidance on the structural elements to the property only.

The report is based on a visual inspection of those areas of the property that were readily accessible at the time of the inspection. As such, comments cannot be made on those parts of the building that were inaccessible or hidden from view.

The report does not provide a checklist for improvements that might be desirable.

We have not inspected parts of the structure which were unexposed or inaccessible. We are therefore unable to report that such parts of the property are free from defect.

This report is for the private and confidential use of the client for whom it is prepared.

Project Title	Sheephouse Cottage	Project Ref.	2909-001
Report Prepared by			
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APPENDIX B

PHOTOGRAPHS



Photo 1– Eastern Elevation



Photo 2– Northern Gable wall

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Photo 3– Western elevation

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Photo 4 & 5– Internal