

Cooper Associates

Consulting Structural Engineers



CA7317.02

14 August 2025

4 Edward Square
London N1 0SP
Tel: 020 7606 0192
post@engcooper.com
www.engcooper.com

The Barns, Pound Farm, Wiltshire, SN15 3RG.

Purpose of the Report

Cooper Associates have been instructed to carry out an initial feasibility into converting the dilapidated Barns at Pound Farm, SN15 3RG into residential accommodation. An initial Architectural layout proposal has been included at the end of this report, scheduled as barns 3,4, 5, & 6. This report is only an initial appraisal, and it should not be considered as a detailed structural report.

Introduction

The single properties surround a small courtyard and are constructed with brickwork walls of varying quality. They have been made good in the past with patch brickwork repairs or using a more modern blockwork infill. The blockwork infill to barn 3 (photo 6) forms separating walls which support the roof purlins. These blockwork loadbearing walls indicates that this unit is more recent or that it has been substantially rebuilt. The condition of the brickwork suggests that these repairs have been carried out at different times.

Condition of the structure

The roofs:

Lintels over the doors and windows are built in timber. The majority are immediately below the roof construction and so are not carrying brickwork. Some of these eave's timbers are in poor condition. They will need to be separately appraised for rot and for their use in supporting strengthened and upgraded roof structures.

The roof areas comprise corrugated sheets supported by timber purlins and in barn 4, these are supported by large timber roof trusses. The exception is barn 3 which has clay roof tiles. Some of the roof areas have partly collapsed although this mainly applies to the heavier clay tiled roof.

The majority of the flat or single pitched roofs support only corrugated roofing on relatively light timber purlins. We anticipate that all these roof coverings will need to be removed and

Cooper Associates Structural Engineers Limited

Directors: Eur Ing **M C Cooper** BSc CEng MICE MStructE – **A M Watt-Cooper** BSc. - Associate: Eur Ing **D Dorosinski** BEng MSc CEng MStructE
Registered Office : 51 Clarendon Road, Watford, Herts WD17 1HP Registered as a Limited Company in England and Wales Number 7186495

be replaced with a modern construction. Before removing the corrugated roofing – the materials should be checked for asbestos – unless a survey report is already available for these roof finishes.

A structural survey of the roof to barn 3 will be required to see if the roof structure can be retained without strengthening. As it carries heavier roof tiles, it's possible that it can be retained with hopefully only limited local strengthening.

Barn 4 has a central ridge with parallel purlins all of which are supported on existing timber trusses. We will need to analyse the construction to see if the existing timber trusses have the capacity to support a modern roof construction. It's very unlikely that these trusses originally supported just the existing corrugated roofing and so it is possible that the trusses can be retained without strengthening..

The walls and foundations:

The walls are largely vertical although some local areas of brickwork are defective and will need part rebuilding. Deep repointing in a lime mortar will be required over most of the surfaces together with the stitching in of brickwork where this is missing. In some cases, the brickwork at the base of the walls has crumbled due to damp problems. These areas will need to be picked out and be rebuilt, while addressing the future DPC requirements.

There are no substantial signs of subsidence. The ground in the area is reported to be *OXFORD CLAY FORMATION – MUDSTONE* which is unlikely to have a high plasticity. There are no large trees close to the property that might result in subsidence because of the clay ground. Given these circumstances, we would not normally expect to underpin the foundations even though they are very likely to be shallow. Trial holes will be excavated, and the matter will be discussed with the Building Control Officer for the project.

Where they exist, the existing more recent concrete floors appear to be in a relatively good condition. A damp proof membrane and insulation will need to be introduced into the construction finishes. Some steps in the floor levels may mean that the floor levels do not work for the new refurbishment and so localised replacement may be required.

Conclusion

The purpose of this report is to establish in structural terms whether the conversion into a usable property is feasible without significant modification or demolition. We consider that the walls in general can be retained subject to localised repairs and repointing. The existing timber lintels are likely to have to be removed and be replaced a part of rebuilding most of the roof areas. All the roof coverings and purlins will need to be removed and be replaced except provisionally for the roof trusses in barn 4 and the roof construction for the tiled roof to barn 3.

A modern DPC will be required over the floors and to the walls. Presumably insulation will be installed against the external walls and within the roof construction as part of the conversion works.

We recommend building most of the internal works in blockwork, off the ground slab and tied to the walls with Ancon wall extenders or similar. This will improve the stability of the structure, given the age of the external walls.

Works to the foundations are dependent on the opinion of the building control officer for the project and their acceptance or not of historically (we assume) shallow foundation on what will be repurposed buildings.

Report by

Eur Ing **M C Cooper** BSc CEng MICE MIStructE
Cooper Associates.



Photo 1: View into the courtyard



Photo 2: Barn 6



Photo 3: Barn 3 (view from the top of the page)



Photo 4: Barn 4 looking toward 3



Photo 5: Barn 4 looking towards 3



Photo 6:
Looking into
barn 5



Outline schedule of work for each barn:

Barn 3

Check the quality of the existing concrete floor – by trial holes and retain or replace as agreed with the Structural Engineer.

Any new concrete floor to be 150 mesh reinforced concrete on DPM on 150 sand blinded granular hardcore. Install further DPM and insulate over.

Retain wall structures. Rake out and repoint brickwork walls with deep lime mortar. Inspect blockwork for any necessary repairs and allow to lime render the retained existing blockwork.

Construct new blockwork walls internally and tie to existing masonry.

Retain roof frame structure.

Replace damaged rafters and make good any displaced supporting structure. Inspection to confirm quantity on site.

Install new roof insulation and roof coverings including replacing the existing roof tiles and sarking felt.

Barn 4

Retain concrete floor but extend it as necessary (see LH photo 5), install DPM and insulate over.

Retain wall structures. Rake out and repoint brickwork walls with deep lime mortar. Inspect blockwork for any necessary repairs and allow to lime render the retained existing blockwork.

Construct new blockwork walls internally and tie to existing masonry.

Retain roof truss structure but strip away the corrugated roof covering (check for asbestos).

Allow for the timber trusses to be checked by structural engineer if the new roof covering is any heavier.

Strengthen trusses if required and add new insulated roof decking.

Barn 5

Check the quality of the existing concrete floor – by trial holes and retain or replace as agreed with the Structural Engineer.

Any new concrete floor to be 150 mesh reinforced concrete on DPM on 150 sand blinded granular hardcore. Install DPM and insulate over.

Retain external wall structures. Allow to upgrade 100 thick walls to an acceptable grade for a external wall – cladding as required.

Rake out and repoint brickwork walls with deep lime mortar. Inspect blockwork for any necessary repairs and allow to lime render the retained existing blockwork where appropriate.

Take down the existing shallow pitched roof structure and replace with an insulated roof to the same fall.

Construct new blockwork walls internally and tie to existing masonry.

Barn 6

Check the quality of the existing concrete floor – by trial holes and retain or replace as agreed with the Structural Engineer.

Any new concrete floor to be 150 mesh reinforced concrete on DPM on 150 sand blinded granular hardcore. Install DPM and insulate over.

Retain wall structures. Allow to upgrade 100 thick walls to an acceptable grade for a external wall – cladding as required.

Rake out and repoint brickwork walls with deep lime mortar. Inspect blockwork for any necessary repairs and allow to lime render the retained existing blockwork where appropriate.

Construct new blockwork walls internally and tie to existing masonry.

Take down the existing single pitched roof structure and replace with an insulated roof to the same fall.