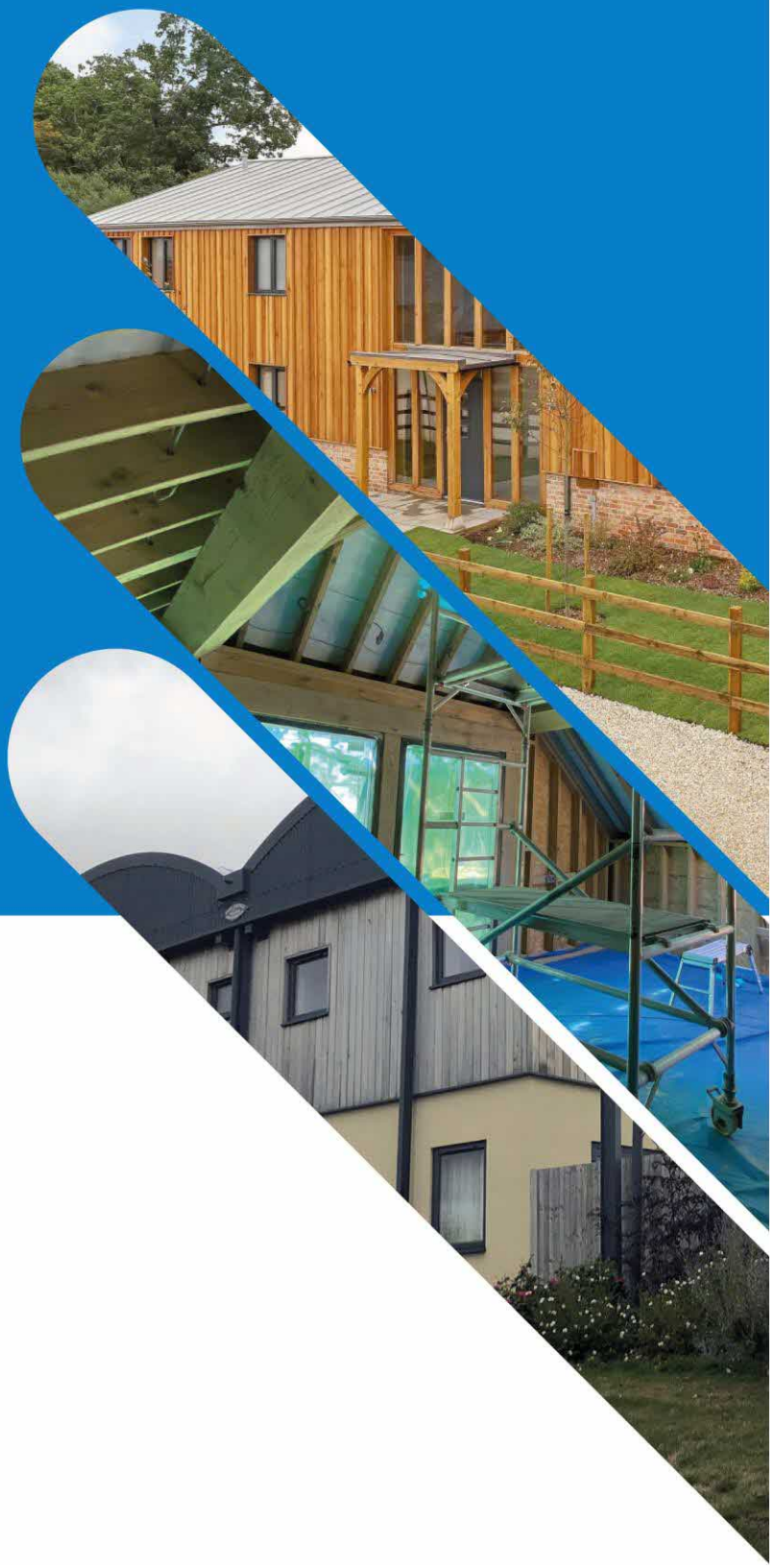
Current Structural Condition Report



Out - Building at Bec House, Monxton, Hampshire.

NIGEL CHALLIS LTD - Consulting Structural and Civil Engineers

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1.0 Introduction

The Bothy, Coach House and Stables at Bec House are 18th and 19th Century buildings all of which have been used historically for agricultural purposes in support of the main house.

An historical analysis of the buildings has been undertaken by the Ridgeway Herita Consultancy in their report 2023-23..

It is proposed to retain and repair the building by converting the Bothy into a guest bedroom and ensuite, the Coach House into a single bedroom annexe to the house, and the Stables to be repaired for storage purposes .

The purpose of this report is to determine the current form and condition of each element of the structure of the buildings, and to assess whether they are capable of conversion to the proposed use, and to record in outline form the structural work required.

The author is a Chartered Structural Engineer with 40 years' experience in design of new, and assessment of historic, building structures, and is a Member of The Institutio Structural Engineers.

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2.0 Instructions

Instructions were received from Ms A Leigh of Fowler Architecture and Planning, and were to carry out a visual structural condition survey of the buildings, and to report upon those matters which might affect the proposed conversion of the building.

3.0 Site Work

A full visual survey of the building was made on the 15th August 2023 and again on the 6th February 2024, when it was noted that deterioration of the Bothy, Coach House and Stables fabric had occurred and advanced at an alarming rate.

The condition of the building was assessed, including roof structure, external walls an ground floor.

Photographic records of the fabric were taken, some of which are included in this repor for reference purposes.

4.0 Disclaimer

This report has been prepared for the benefit of the owners of the building Mr and Mrs Brown, therefore copyright of this report rests with them, and their Agents.

You should also note that this report is a written record of a visual structural inspecti carried out by the author.

This report is not intended to be a fully detailed fabric survey and description property as would be carried out by a Chartered Surveyor which will also include n - structural matters.

This report is also not a valuation survey.

No liability for the contents of this report is conveyed to any third party, and no third party should therefore rely on the contents of this report.

Unless specifically stated otherwise, this report has been carried out visually without the fabric of the building being exposed or opened up.

Where the fabric of the building has been visually examined, no opinion about any hidden or concealed structure or guarantee as to its condition can be given.

When comments are expressed about the external fabric of the building, observation has been carried out from viewing from ground level.

No testing or enquiries as to the presence of or susceptibility to pollution contaminatio radiation, methane, radon and toxic mould, fungus or spore or other hazardous substances has been carried out.

You should also note that liability to you, whether in contract or tort, shall not exceed the amount, if any, recoverable by way of indemnity insurance taken out by us at the time we received instructions from you.

5.0 Findings

5.1 Building

The building is of three sections, a single storey Bothy to the left of the building when viewed from the front, a central former Coach House, and a Stable to the right.

The Bothy and Coach House sections of the building back on to the entrance to the house and the Stables onto the main road through the village.

The building is built of a brick and flint base supporting earth and chalk cob, with a slated roof over the Bothy and thatch to the former Coach House. The Stable rear wall is of part original cob on the road side which has been patched with modern concrete block, the front wall being brick.

General View of Building Range - Front Elevation

Bothy to left, Former Coach House and Stable to the right

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The fabric of the building can be described as follows.

5.2 Roof

5.2.1 Bothy Roof

The pitched roof of the Bothy is of natural slate, supported on timber common rafters, two purlins, a single knee braced timber cross frame and the masonry division wall between at the Coach House junction.

The cross frame within the room shows signs of sagging, probably due to gradual timber decay, and hence dropping of the roof purlins.

The drop of the purlins and gradual removal of support has introduced roof spread ar outward thrusts on the cob walls.

It appears that a tie rod has been installed at some time in the past, above the cross frame to attempt to resist the roof spread.

The roof is in very poor condition, showing signs of slate slippage, roof spread and sagging and severe cracking in the lathe and plaster ceiling internally.

The roof and supporting cross frame, will need stabilisation, repair, re-slating and hip tile re-instatement and new guttering.

The cracking in the ceiling was noted in my recent visit as being worse than in my visit in August 2023 and a further patch of plaster on the drive-way side wall had fallen.

View of Bothy End Wall, Ovens and Cross Frame

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5.2.2 Coach House Roof

The Coach House roof has a thatched covering, and a small window dormer on the front elevation.

It appears that the roof to this building was originally built without the purlins and struts, which are later additions to the structure, and were probably inserted to try and arrest the evident sagging roof.

Additional thatch has been added over the years which can be quite normal of course, and is not usually an issue with a well structured roof carcass.

However, this roof, not being well structured (because of the lack of a horizontal ceiling tie) has resulted in roof spread of quite significant degree – estimated at 150mm in places.

The pitched common rafters forming the original roof structure are supported at the eaves perimeter on the cob walls.

The cob walls extend some 600mm above the ceiling level joists such that there is ceiling tie to the rafters as would be conventional good building practice.

Accordingly the roof is pushing the cob walls outwards at eaves level, causing an outward lean on all walls and cracking.

There is a timber joisted ceiling to the Coach House, this does not connect in any meaningful way to the roof structure, or give any tying action to the pitched common rafters.

The later purlins and strutting have been introduced, as an attempt to strengthen the roof, these are supported on the ceiling structure of beams at the front entrance door, middle and rear.

These have also failed due to the increased load being applied and gradual timber decay and are sagging quite significantly.

As a further quite recent introduction, masonry piers have been built, with steel beai being introduced under these failing timber cross beams.

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View of Internal Roof Structure Looking at Dormer Window

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View of Coach House Roof Structure Looking Towards Bothy – note later purlins and strutting

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View of Coach House Roof Structure Looking Towards Bothy and Rear Elevation – note roof spread at eaves

A central higher section provides greater headroom.

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It would appear that the timber framed wall between the stables and the coach house was once external, being lapped boarded and extending up into the roof space above to the ridge.

Note Boarding on Former Gable Wall Between Coach House and Stable

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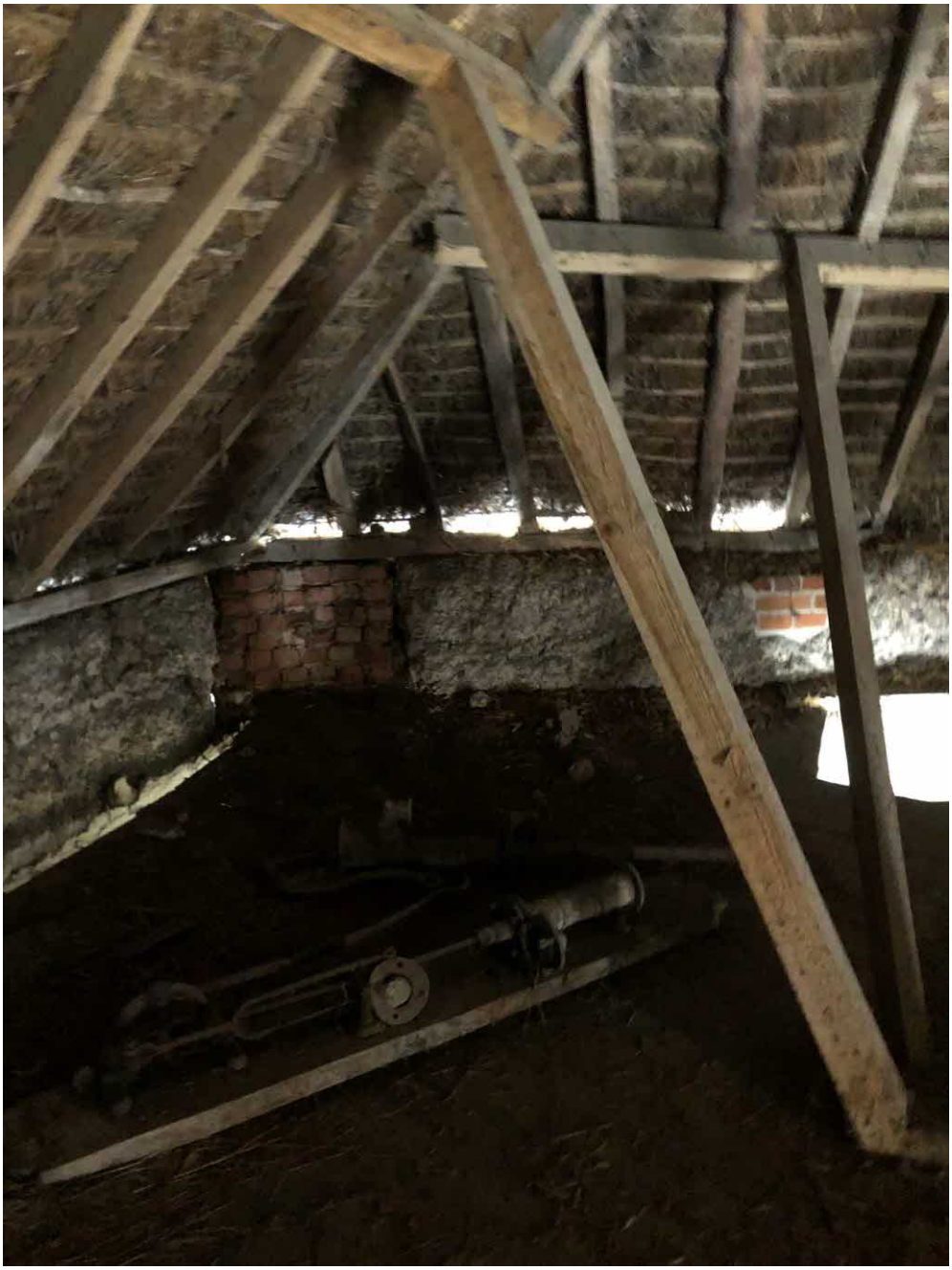
The roof over the stable area of the Coach House is again of common rafters supported on the perimeter cob.

Similarly to the rest of the coach house roof, the ceiling, of timber joists fails to connect or tie the roof in, and considerable roof spread has occurred.

A later ad -hoc system of purlins and struts has again been introduced, all loaded on the central post in the stables below,



Later Strutting and Purlins in the Stable Area of The Coach House Roof – note Outward Leaning Walls

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5.2.3 The Stables Roof

The adjacent stable block which faces the house rear elevation is in very poor condition.

Examination of the structure reveals that the roof structure has spread and has significantly dropped, the ridge board and rafters have detached from each other in places demonstrating roof structure failure and forcing the slate covering to open up permittin rainwater to penetrate the building.

The roof structure is of small quarter timber and half round pole rafters, which have been badly attacked by worm, with a ridge board and later inserted sawn timber purlins near the ridge.

The purlins have badly deflected and are indeed broken in one location.

The roof structure has been recently vertically propped in a number of locations along the ridge line such that the store rooms are now unusable.

The slate roof covering is so badly undulating that it is now beyond patch repair, as slate needs a relatively flat surface on which to be successfully laid and new battens could not take up the form of the curved roof.

View of Stables Yard Side Elevation – Note Failed Roof.

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Stables Roof – Note Broken Purlin and Detached Rafter From Ridge

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5.3 Walls

5.3.1 The Bothy

The walls to the bothy are of a mixture of materials.

Around the entrance door, 440mm brick is apparent. To the left of the entrance there is cob over a brick and flint plinth.

The gable wall with the chimney is of brick and the rear wall is of cob .

There is significant cracking throughout in the walls, predominantly around the solid, heavy brick hearth, where outwards movement in the weaker walls, which have been pushed out by the roof, has resulting in cracking.

The rear wall has been buttressed in the past at the location of the timber cross frame in an attempt to resist the apparent roof thrusts.

This has not been effective and further movement has occurred.

Since my first visit in August 2023, cracking was observed to have become worse in this section of the building when I visited in February 2024.

5.3.2 The Coach House

The division wall between the Coach House and Bothy is of 4 1/2”brick.

The rear driveway side wall is of cob, and due to historic outward thrusts and cracking, the wall has a significant patch of brick.

This has continued to move since this patch repair.

The division wall with the coach house and stable section within is of timber framing.

Brick piers have been introduced here, but are separate from the walls, to carry new steel beams supporting ceiling and roof loads, as mentioned earlier.

All of the walls are significantly leaning outwards to various degrees or another, where historic roof movements have taken place.

Outward thrusts from the roof have been the cause of the leaning, where none of the ceiling is tied in.

The walls to this building need a comprehensive structural eaves beam/plate to tie them in and a new roof structure which has no resulting outwards thrusting.

Only when this is introduced will the walls stand any chance of achieving proper stability.

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External General View of Bothy Rear Wall – Note Historic Buttress and dark rendered Brick Patch

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External General View of Coach House Stable Rear Wall – Note Small Roadside Buttress and Coach House Brick Patch to the right

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Note Outward Lean of Coach House Rear Wall Brick Patch – Very Unstable

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5.3.3 The Stables

The rear wall adjacent to the road is currently a mixture of modern concrete block, original cob and brick where the original cob has been patched over the years and rend externally.

The cross dividing walls between the individual three stables are of timber and are n joined or tied in to the roadside wall.

This failure to restrain the roadside walls by tying in has resulted in outward movement of the wall, caused initially by forces from the spread of the roof outwards and exacerbated by excessive water flow off the roof falling at the foot of the walls softening the ground.

I would go as far to say that given its proximity to the adjacent road, this section of the building is becoming of concern to me with regard to road safety.

The yard side wall is of brick and is also leaning outwards.

General View of Road Side Stable Building – Note Collapsing Roof Structure

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Stables Road Side Wall – Note Modern Concrete Block Replaced Section (Where Original Cob Has Collapsed)

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Stables Road Side Wall - Note Leaning Outwards Cob Wall

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Stables Yard Side Wall – Note Outward Lean and Cracking with return wall (also uneven failed roof structure)

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5.4 Floors

The floor to the whole building, barn and associated store is of brick paving of various forms but generally wholly insitu.

View of Part Bothy Floor

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6.0 Recommendations

The proposals for conversion of the building are shown on Fowler Architecture and Planning Drawing 210136 –151 Ground Floor and 152 First Floor.

The conversion proposals for the building comprise of the construction of an insulated lining inside the existing walls at both floor levels, and insertion of a staircase in the Coach House with new accommodation within the roof space.

This is because the walls and roof of the building are not currently insulated.

Prior to this work however, several areas of the building will require structural stabilisation.

These works primarily relate to stabilisation of the roof structure to prevent any outward thrusts on the walls at eaves level.

This will necessitate a strengthened roof structure of rafters, purlins and frames to span between the walls and laterally restrain them This will also involve support to a new firs floor.

The existing original roof structure rafters can be retained and augmented with additional structure to tie the roof structure in and stabilise it.

Subject to this work being designed and approved, I see no objection to the accommodation being introduced at first floor level above the Coach House..

The roof above the Bothy will require localised strengthening to the timber cross frame, such that the existing rafters and purlins are properly supported, and no further roof spread takes place.

The adjacent Stable block roof will require repair to ensure that the structure is stable and the roadside wall made safe.

The roof requires new rafters to be paired alongside the existing re-aligned rafters and new timber ties to be introduced. This would allow the roof slate covering to be repaired and a gutter introduced to take rainwater away from foundations.

The whole existing ground floor will require to be levelled and brought up to a reasonable level of thermal performance and moisture resistance by overlaying with insulation and tanking.

In my opinion, I consider the following can be safely stated;

1. Conversion of the Bothy, Coach House and Stable buildings can be carried out if the roof of each building is stabilised with a strengthened roof structure and tied into ceilings/floor.

2. The existing walls will require to be tied into the new roof structure so that they are laterally restrained and must be repaired locally retaining as much of the existing fabric as possible.

3. The roof of the roadside stables needs to be repaired as outlined above and the road side wall restrained, with a new eaves gutter to take water away from the

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cob roadside boundary wall.

I must stress that there are parts of the structure of this building which are currently moving, notably the roof of the whole structure and the cob walls locally throughout.

If stabilisation is not carried out very soon, local wall collapse is highly likely to occur.

[redacted]

SIGNED

Date: 14th February 2024

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