Stable Building

Sherfield Manor

Structural Inspection Report

Project Number: 02908

28 April 2023

Revision P1

31 The Square,

Winchester,

Hampshire

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-	Issued for Comment	28/04/23
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1 INTRODUCTION

1.1 Rebuilding and refurbishment works are proposed to two single storey outbuildings just north of the main house at Sherfield Manor, Pound Lane, Sherfield English, Romsey, Hampshire, SO51 6FJ.

1.2 The building closest to the house is to be demolished and rebuilt on a similar footprint slightly further to the west. This is to have a flat roofed curved link built between it and the stable building, which is proposed to be converted.

1.3 This report covers structural inspection of the stable building, carried out on 14th March 2023. Marbas were appointed to inspect the existing structure and determine its suitability for conversion and advise of repairs where required.

Figure 1 - Location Plan showing main house and outbuildings to the north

1.4 The site slopes significantly from east to west, with the buildings and main positioned towards the top of the slope.

1.5 The outbuildings are accessed through a gateway in a brick wall off the main gravelled drive, down to a small paved courtyard.

2 INSPECTION

Exterior

2.1 The stable building is rectangular on plan with a gabled corrugated metal sheet roof and black-stained horizontal weatherboarded walls. There are three door openings on the south elevation and a glazed window to each gable. A lean-to log store is built against the north elevation.

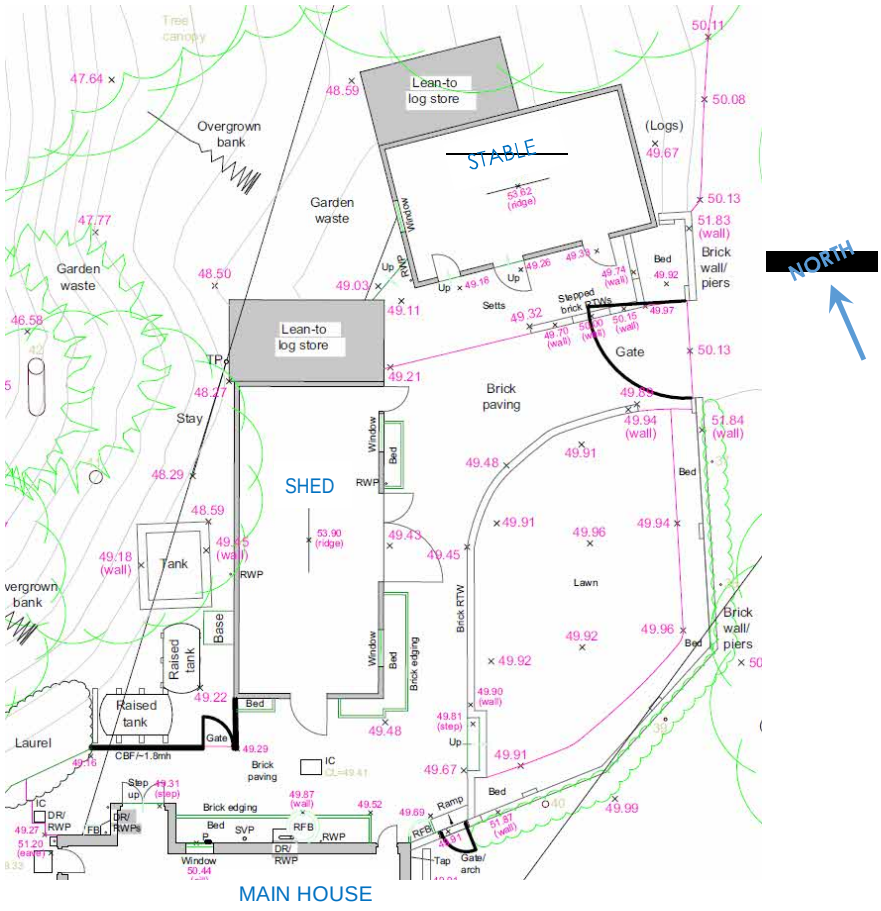

Figure 2 - Extract from topographic survey showing outbuildings, with approximate north indicated

2.2 As the site is sloping, the ground level around the perimeter of the building varies by about three quarters of a metre. In general, the ground is higher to the north and east and lower to the south and west. The ground is broadly level with the internal floor level along the south elevation.

Figure 3 - South elevation of Stable with other shed to left hand side

Figure 4 - West elevation of stable with lean to log store to left hand side

West Elevation

2.3 The cladding to the west elevation is in poor condition with a number of weatherboards. A felt membrane is visible behind the boards and is ripped in places. The left-hand pane in the window is broken allowing ingress of water.

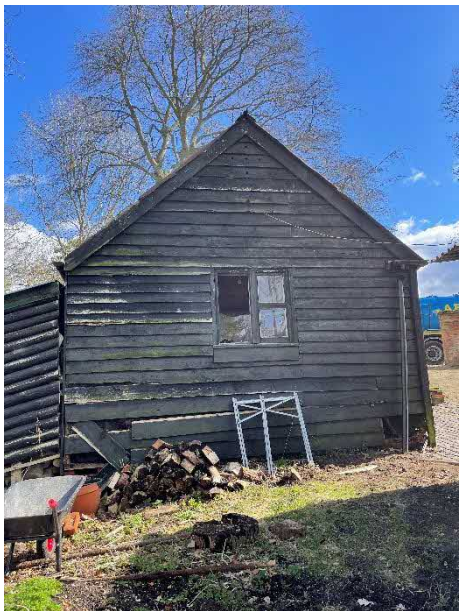

Figure 5 – West gable

Figure 6 - Ripped felt membrane behind loose weatherboarding, decay to timber sole plate

2.4 A trial hole was dug at the south end of the west elevation to expose the foundation details. This was found to consist of a 300mm thick concrete floor slab, with 150mm of the slab above ground level. Below the slab is made-ground of sandy soil and brick fragments. Natural ground is at some depth below. The concrete contains large round pebble aggregate, with rough faces to the exposed sides. There is a single brick course laid over the slab and a soft wood timber sole plate above this. There is no damp proof course within the wall build up.

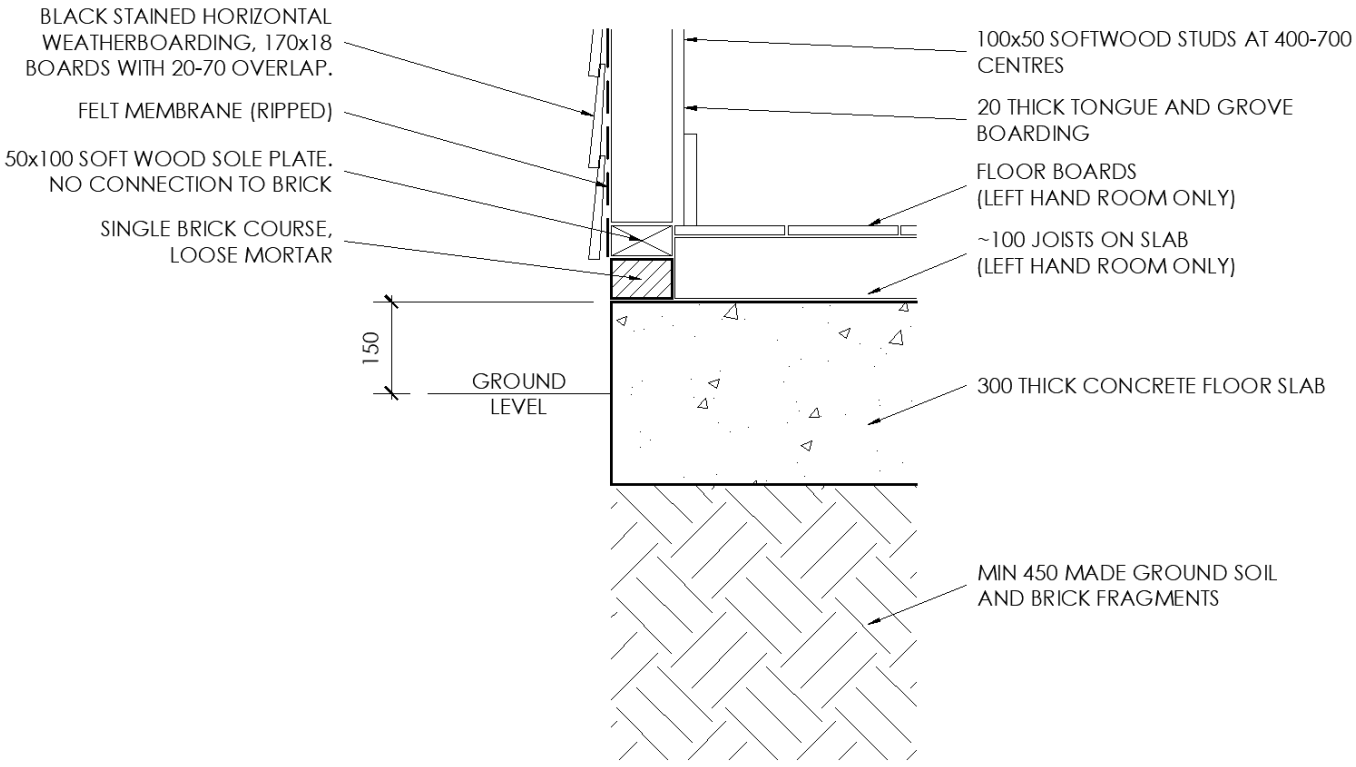

Figure 7 - West gable trial hole information

2.5 Also at the south corner, there is an area or cladding missing where a loose rain water pipe discharges straight onto the ground. The timber sole plate is exposed and is in an advanced state of decay (Figure 9).

Figure 8 – Trial hole showing concrete floor slab o made ground/soil

Figure 9 – South corner of west gable missing weatherboarding and loose rain water down p

2.6 At the north end of the west elevation, as the external ground level drops away, the full thickness of the floor slab is exposed above ground level. There is a crack 500mm back from the corner and the slab has dropped. Some remedial work has been done at some point in the

past to level the wall here by packing ply wood between the slab and brick course, which is loose with no mortar remaining. The timber is now in an advanced state of decay.

Figure 10 - North end of west gable, crack in sl 500mm from end loose bricks

Figure 11 - Felt membrane ripped and sole pla decayed. Loose bricks with ply packing

2.7 Looking through the dislodged brick course, floor boards can be seen to be supported on timber joists laid directly onto the slab. These are both damp and signs of decay are evident.

Figure 12 – Joists beneath floor boards. Damp and rot visible to boards and joists

Figure 13 – Lean-to log store to north elevation

2.8 A lean-to log store is built against the north elevation. Looking from the west elevation it appears to be following the sloping contours of the site but may have moved away from the building.

North Elevation

2.9 The North elevation is half hidden by the lean-to log store.

Figure 14 – Joists beneath floor boards. Damp and rot visible to boards and joists

Figure 15 – Lean-to wood store to north elevati

2.10 The lower right-hand corner of roof sheeting is missing, revealing what appears to be a ripped membrane beneath.

2.11 There is a half round plastic gutter fixed to the eaves and this is sagging significantly above the log store. There appears to be an outlet about half way along crudely discharging onto the edge of the log store roof.

2.12 The external ground level rises from west to east, with the ground covered in a thick layer of leaf litter. Beneath the leaves the ground is noticeably higher at the east end such that the weatherboarding is acting as a retaining wall. The lower part of the wall is damp and unable to dry out effectively.

East Elevation

2.13 The east gable elevation is in a poor state of repair with many loose and missing weatherboards.

Figure 16 – East elevation

Figure 17 – Lean-to wood store to north elevati

2.14 The natural ground level is higher on this side of the building with the adjacent drive about 800mm above the Stable's internal floor level. The ground likely originally sloped down between the two but the ground against the building has gradually become infilled with leaf litter raising the ground level over the years such that the weatherboarding is retaining the external ground. From scraping away the soil in front of the cladding this appears to be a depth of around 600mm.

Figure 18 – More modern courtyard brickwork retaining wa adjacent to SE corner

Figure 19 - Rotten boards at low level behind leaf litter and so

Figure 20 – Loose boards around window, with lower glazing slipped down

2.15 Through the gaps in the weatherboarding the softwood studs could be measured as 100x50 and spaced between 400-720mm apart. One diagonal brace was noted at low level. There is no membrane at this end of the building.

2.16 The condition of the studs is poor with evidence of beetle attack to the internal boards, studs and weatherboarding. It is unclear if this is historic or ongoing but as the timber is in a damp environment it is susceptible to ongoing decay.

Figure 21 – Exposed stud with beetle attack in east elevation

Figure 22 – Diagonal brace

Figure 23 – Ivy growing agains internal boards and leaf litte at base of cavity

2.17 Ivy can be seen growing against the internal boards and leaves have blown into gaps in the cladding and have filled the base of the cavity.

South Elevation

2.18 The south elevation contains three doors opening onto the paved courtyard.

Figure 24 – East elevation

Figure 25 – Lean-to wood store to north elevation

2.19 The roof appears in reasonable condition, with an area of sheeting on the lower east corner having been replaced at some point in the past.

2.20 The weatherboarding is generally in fair condition, with only a few loose boards, notably at low level at the far ends and mid-level between doors one and two.

Figure 26 – Decayed sole plate at west end

Figure 27 – Missing bottom board and decay studs to right of east door

2.21 At both ends the sole plates have become exposed and are significantly decayed.

Figure 28 – Third door brick threshold with stable cobble tiles internally and courtyard paving externally

Figure 29 – Loose board between doors, no membrane

Interior

2.22 The stable building has an internal partition wall a quarter of the way along its length, splitting the interior into two distinct spaces. The west room is accessed from the left-hand door, and appears to be a narrow store room. The east room is split into two halves by a traditional stable partition, with each space accessed from its own external door.

Store Room

2.23 The store room is lined with horizontal butt and bead panelling. This extends to the ceiling which is part vaulted with a small area of flat ceiling approximately a third of the width of the room.

Figure 30 – View of west gable window

Figure 31 – View to north wall, note temporary ply repair at top of wall

Figure 32 – View to south wall.

2.24 As noted externally, the north west corner is missing a roof sheet and this has led to ingress of water and decay of the timber wall and roof structure. A ply board has been fixed to the remaining structure to offer some protection from the elements.

2.25 The top of the wall was found to consist of a single 100x50 soft wood wall plate, with 80x50 rafters over. These appear to be at 380-400mm centres. Looking at the eaves detail it appears that the rafter feet are likely finished with mainly a seat cut with only a minimal (10mm) bird's-mouth. This will provide limited resistance to the rafter feet sliding outwards over the wall plate.

Figure 33 – North west corner, timber decay due to hole i roof

Figure 34 – Boards above rafters visible

Figure 35 – Opening up abov door to confirm wall plate details

2.26 Opening up above the door confirmed this detail and also found that the rafters had a layer woolly fibre insulation between them and a top layer of softwood boards above them and beneath the metal roofing sheets.

Figure 36 – Opening up above door

Figure 37 – Roof insulation and upper boards visible, beetle attack to inner boards

2.27 On close inspection the internal panelling boards were noted as being affected by beetle attack.

2.28 The floor consists of a small concrete slab at the threshold, with timber floor boards beyond. These are supported on timber joists over the slab as noted above.

Stable

2.29 The east room is also clad in butt and bead softwood panelling. At lower level this is vertical, but changes to horizontal further up. There is a high-level window at the east end.

Figure 38 – View of east gable

Figure 39 – View west to store partition, with traditional stable partition in foreground.

2.30 There are two timber ties at eaves level to tie the wall plates together across the room. These are at a spacing of 6ft, and at third points in this room so effectively at quarter points along the building length.

Figure 40 – View of south wall

Figure 41 – View of north wall

2.31 There are areas of water ingress and signs of timber decay, notably in the north east corner, and also where the flat ceiling meets the skilling about halfway along the room.

2.32 At low level a plywood board has been added to the east, and part of the north wall. This coincides with the high ground levels externally and it is thought likely that the original cladding behind the ply will be affected by water ingress and decay. There is also slight bowing of the walls in these locations likely due to the wall effectively retaining the ground outside.

Figure 42 – Ingress of water and timber decay north east corner eaves level

Figure 43 – Ceiling vent, water damage to rig hand side

2.33 The floor consists of traditional stable cobble tiles, laid over the concrete slab. There is a central dish gulley to assist with washing down the space. An outlet was not visible but was presumably covered by the stored contents.

Figure 44 – Low level ply boarding to east elevation where ground is high externally

Figure 45 – Beetle attack to timber panelling

3 CONCLUSION

3.1 It is proposed to convert the existing building for domestic use. This would involve renewal of the external and internal finishes and upgrading of the thermal performance. This would rely on a satisfactory superstructure and foundations capable of supporting the proposed dead load of new materials and imposed loads of the intended use.

3.2 The present construction is consistent with its age, with no outstanding historic features or elements.

3.3 The structure itself in terms of timber member sizes and arrangement, appears reasonable for the intended conversion. However, the rafters would likely need to be increased in depth to support modern roof finishes and additional bracing would be required within the walls.

3.4 At the time of inspection, the condition of the building was found to be poor. There are loose and missing weatherboards to all elevations which has allowed ingress of water and the onset of timber decay to the structure. A missing roof panel in the north west corner has led to further weakening of the structure.

3.5 There is evidence of beetle attack to the inner panelling, structural studwork and roof member and also to the external cladding. The extent of this highlights the need for wholesale intervention due to the precariousness of the existing structure.

3.6 Relatively high external ground levels have caused the bottom of the walls to be sitting in a permanently damp environment leading to decay of the timber sole plates.

3.7 The walls are built off a single brick course and timber sole plate, with no evidence of a damp proof course. Therefore, ongoing decay to the sole plates is inevitable. Ideally a DPC should be installed 150mm above external ground level. With the external ground levels and slab thickness as they are, a DPC would need to be introduced between brick course and sole plate and the ground level reduced to 75mm below top of slab level around the building perimeter. However, this would reduce the foundation depth, risking undermining of the floor slab.

3.8 A building should have foundations suitable for the local ground conditions and as a minimum, extend below the actions of frost (450mm below ground). The floor slab was found to be of agricultural quality, consisting of large rounded pebbles and poor grading of aggregate. Further it was seen to be cracked in the north west corner confirming its poor integrity and lack of support from the ground below. The floor slab measures 300mm thick.

3.9 Considering the local ground and existing slab conditions it is concluded that an underpinning solution would not be appropriate for the building as the slab would remain ground bearing and subject to ongoing ground movement.

3.10 The condition of the timber superstructure is poor, with well-established decay throughout. If converted, it is likely that the sole plates would all need to be replaced, deeper rafters installed, and the wall studs partnered or replaced along with installation of additional bracing betwee studs.

3.11 Considering the poor condition of the timber structure, poor detailing of the base of the walls, and inadequate foundation, it is determined that the existing building would not be suitable for conversion. Further, with lack of historic timbers or details, it is considered that rebuilding would be the most appropriate solution.