



**HIGHGREEN MANOR
DANISH BARN**

STRUCTURAL INSPECTION REPORT

For

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Highgreen Manor
Tasset, Hexham
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1.0 INTRODUCTION

- 1.1 This report describes the findings of a Structural Inspection of the Danish Barn at Highgreen Manor. The purpose of the inspection is to assess the structural viability of proposed alterations.
- 1.2 At Highgreen the client has been considering the removal of a wall to the Danish Barn in order to improve drainage between the barn and part of the building to the south. Original plans indicate that the barn, as built, was open on the southeast elevation and there are indications that the eaves were supported by four posts, ref Appendix A.
- 1.3 Later alterations have removed the internal dividing wall and infilled the two open panels with stone masonry.
- 1.4 The purpose of this report is to comment on the structural feasibility of removing the infill from the left panel and if necessary reinstating two of the pillars. There is no intention at present to reinstate the internal dividing wall.

2.0 OBJECTIVES

- 2.1 To undertake a Limited Structural Survey of the building sufficient to assess the feasibility of removing the one of the infill panels.
- 2.2 To assess the structural condition of the part of the building affected by the proposal.
- 2.3 To bring to attention key structural issues which may require to be addressed as part of the proposal.
- 2.4 Make recommendations for further investigations or structural repairs if appropriate.
- 2.5 Detailed structural design, drawings and calculations will be prepared at a later stage if the planning application is successful.

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3.0 SCOPE

- 3.1 A non-invasive visual inspection of external elevations, and internal spaces of the parts of the building affected by the proposal.
- 3.2 Provide outline details of structural elements required for the proposal.
- 3.3 No assessment of services or utilities is included.
- 3.4 No samples were taken, and no chemical tests and no asbestos surveys were carried out.
- 3.5 The opinions expressed in this report are based on normal methods of inspection of those parts of the structure visible at the time of the survey. There may be underlying faults in other parts of the fabric of the building which by virtue of the design or form of the construction which have not been discovered and could not be reviewed during normal inspections and which might affect the future life of the building.

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4.0 DESCRIPTION

- 4.1 The earlier farmstead buildings on the site are believed to date from the mid 1800's, ref Ryder Report. Based on these previous reports the Danish Barn is believed to have been added in the 1885 phase of building.
- 4.2 The Danish Barn was originally a two bay single storey barn, open to the south with the two bays divided by an internal masonry wall. The existing construction of the barn comprises stone masonry walls, the elevations being 500 thick and the gables 550 thick. Overall clear height to roof trusses is 4180mm at the west end.
- 4.3 Internal dimensions are approximately 17760 x 5070mm. The south wall has a height of 4030mm topped with a substantial timber wallplate 300 x 150 on which are seated 5 no king post timber roof trusses, photo 3 and 4. The roof covering is of Welsh Slates at approx. 35 deg pitch.
- 4.4 The foundation details are unknown. The barn has a compacted earth floor.
- 4.5 The Danish Barn adjoins an older outbuilding to the west and has further, possibly later additions, on the north and east sides. These other buildings have not been investigated.
- 4.6 The British Geological Survey mapping indicates that the farmstead may be founded on a zone where the bedrock, Tyne Limestone Formation, is close to the surface with only shallow superficial deposits above. No definite conclusion can be drawn from the mapping alone, therefore the foundation details remain unknown.

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5.0 OBSERVATIONS

5.0.1 The inspection was carried out on Thursday 27th February 2020 in dry conditions, following a prolonged period of heavy rain and storms. The architect Liam Newton and the client William Morrison-Bell were present.

5.1 Main Walls

5.1.1 The main walls of the barn were recorded as 500mm thick on the side elevations and 550mm thick at the west gable. The height of the side elevations was approximately 4030mm to the underside of the wall plate (floor level varies).

5.1.2 No significant cracking or evidence of excessive settlement could be seen in the walls.

5.1.3 Where the former internal dividing wall would have been the south end of this remains as a pier 1000mm wide integrated into the rebuilt wall. This corresponds well with the detail indicated in the original plan (Appendix A).

5.2 Roof

5.2.1 It is understood that repairs to the roof were carried out ten years ago. All small number of new timbers are evident however most of the timber structure appears to be original.

5.2.2 The condition of the 300 x 150 wall plate was examined as far as was practical with the access available. In general it appeared to be in fair condition though some localised decay was noted, coincident with locations where rafter repairs had been carried out.

5.2.3 Over the area where it is proposed to remove the south wall, a length of approximately 7850mm, the wall plate appears to be a single timber with no joints evident, photo 4.

5.2.4 The roof covering appears to be in good order, no significant leaks being noted.

6.0 PROPOSED STRUCTURAL ALTERATIONS

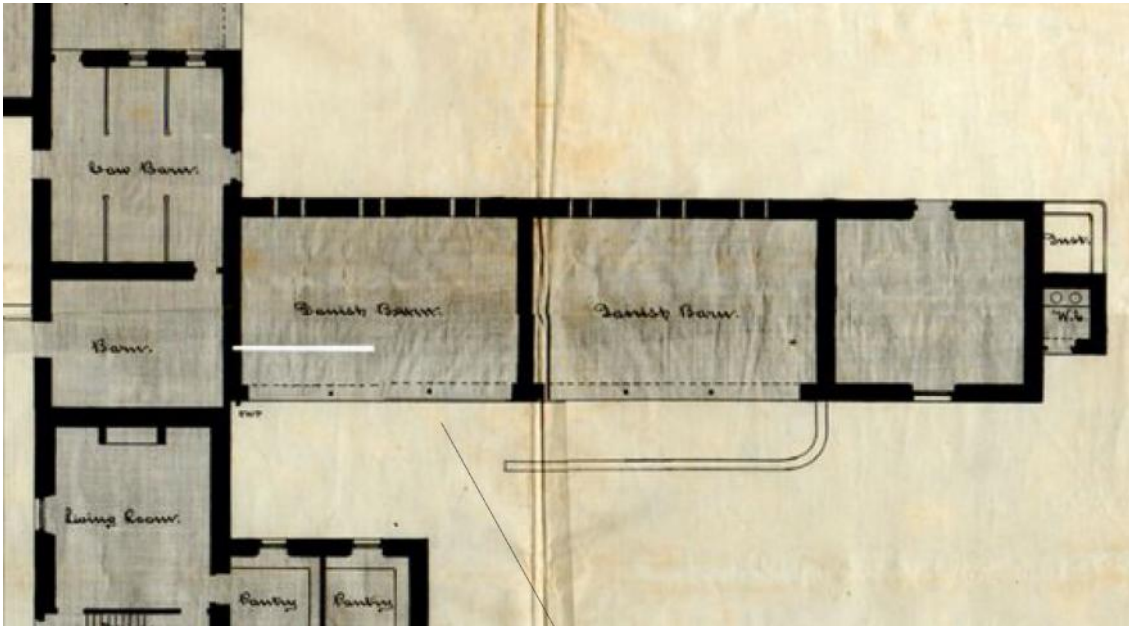
- 6.1 The proposed alterations comprise the removal of approximately 7.85m of the south elevation where it faces the main accommodation building. Two new posts are proposed to be added at the third points of the new span.
- 6.2 In addition, a new valley gutter is to be formed between the barn and the accommodation building to minimise the rainwater falling on the intervening ground. In order to create enough space for the falls in the gutter additional timber packers may be required fitted below the existing 300 x 150 wall plate. This detail is to be developed by the architect.
- 6.3 It is presumed that the existing roof structure, eaves detail and wall plate will be retained as existing.
- 6.4 A single span option has been considered, however this would significantly increase the localised loading on the foundations at each end of the span and may result in increased settlement. With the introduction of the posts the loadings will remain more evenly distributed making increased settlement much less likely.
- 6.5 Since the original scheme incorporated posts it is possible that these were founded on stone plinth bases which may still be present under the existing wall. If they are present then it may be possible to re-use the plinths rather than introduce new concrete foundation pads for the posts.
- 6.6 The original scheme incorporated an internal division wall which would have provided lateral restraint to the elevations. The size of the elevation panels is 17.76 x 4.03m between the gables which is large, therefore the provision of some intermediate lateral support should be considered. This may take the form of suitable short props located under the proposed gutter and fitted between the walls of the accommodation building and the top of the new posts. These may be at varying height to accommodate the fall in the valley gutter.

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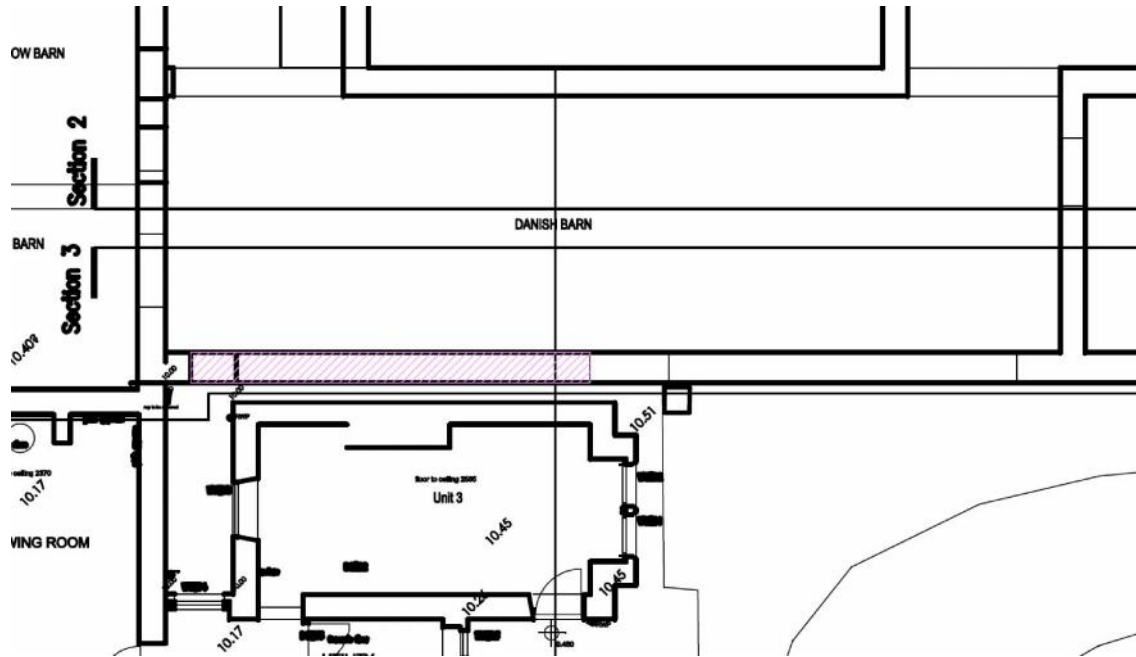
7.0 DISCUSSION AND RECOMMENDATIONS

- 7.1 In order to enable the removal of approximately 7.85m of the existing south wall it is proposed to reinstate the two posts which are indicated on the original plans.
- 7.2 It may be possible to find the new posts on pre-existing stone plinths, if they exist, in which case the location of these will determine the post locations. If existing stone plinths are not discovered under the existing wall then new concrete pad foundations will be required. The size and formation level of new pads will be determined following further excavation.
- 7.3 The new posts maybe steel or possibly oak timbers. Provisional sizes of the steels are circular 180 diameter. Final diameter and thickness will be determined by detailed calculations after the overall arrangement has been confirmed by the architect.
- 7.4 Due to the absence of the original internal cross wall in the Danish Barn it is considered prudent to provide short props between the head of the posts and the adjacent building to restrict any lateral movement. The short prop may be bolted to a channel fixed to the face of the adjacent building, running under the line of the new valley gutter, or alternative detail as proposed by the architect.
- 7.5 The depth to bedrock or suitable formation level is not yet known and must be determined by excavation.
- 7.6 When full access is available the condition of the existing wall plate must be confirmed. This appears to be in fair condition and it is thought likely that no repairs will be required, however this is based on limited access from the north side only. Some minor areas of decay were noted. Renewed timber preservative treatment should be applied when access is available.
- 7.7 Temporary propping of the existing wall plate will be required in order to remove the wall. Details of any temporary works must be determined by the builder.
- 7.8 The work should be undertaken by a suitably qualified builder experienced in work of this type. All critical dimensions should be checked and confirmed by the builder prior to proceeding. If the scheme is subject to Building Regulations approval then this should be obtained prior to proceeding.

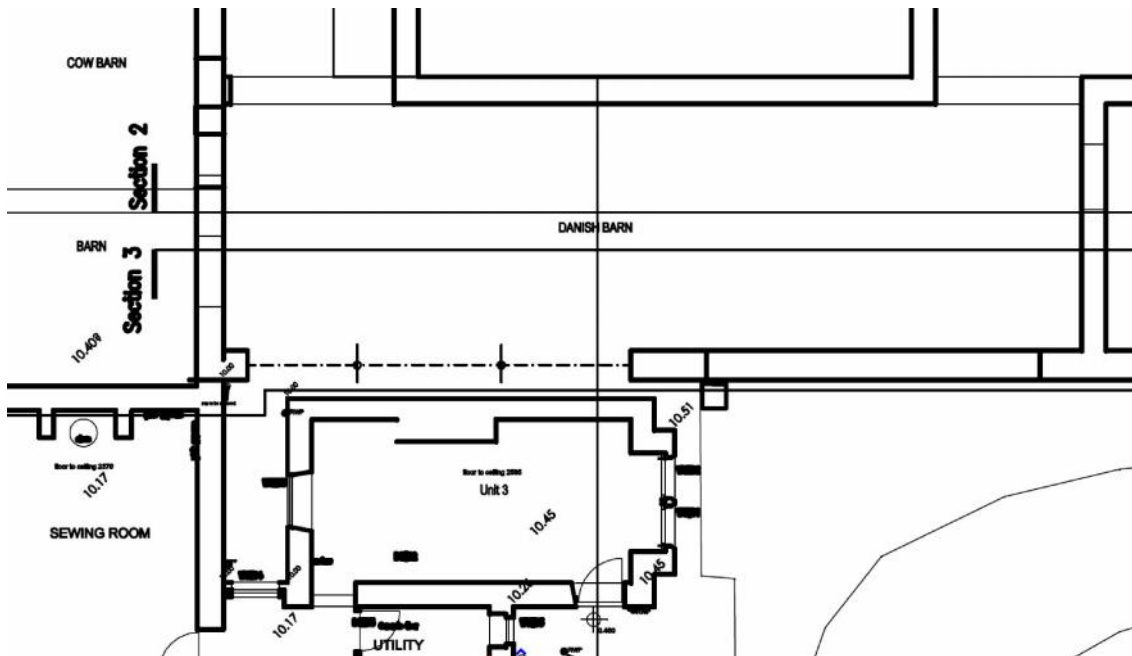
APPENDIX A
SKETCH AND PHOTOGRAPHS



Original Plan (showing posts on south elevation and dividing wall)



Existing Plan (showing wall proposed to be removed)



Proposed Plan (showing proposed new posts)

Sketches extracted from architects proposals



PHOTO 1 – Southeast Elevation (facing west)



PHOTO 2 – Southeast Elevation



PHOTO 3 – Roof Structure



PHOTO 4 – Eaves Detail (300x150 timber wallplate)