Reid Jones partnership

Consulting Civil & Structural Engineers

STRUCTURAL INSPECTION

Of

BARN 2, DINKLING GREEN FARM

WHITEWELL ESTATE

For

ANDERTON GABLES

Project No.: 11260				
Issue Date	**Revision**	**Status**	**Issued By**	**Checked By**
29.09.2022	---	First Issue	SJ Reid	E Jones

Reid Jones Partnership Ltd
3 Cross Street
Preston
PR1 3LT

Tel: 01772 498007
Email: enq@reidjonespartnership.co.uk

QMS ISO 9001 : 2015 REGISTERED QUALITY MANAGEMENT

CONTENTS

1.0 INTRODUCTION

Acting on instructions from Ms Holly Durose of Anderton Gables, Reid Jones Partnership carried out a structural inspection of Barn 2 at Dinkling Green Farm, Whitewell.

The building is in a poor state of repair, requiring substantial remedial works. The building is listed and a report on its structural condition and stability is required as part of an application for Listed Building Consent.

Mr John Reid BSc CEng MICE MIStructE of Reid Jones Partnership Ltd carried out the inspection on Monday 26th September 2022. This report details the observations made during the inspection, with recommendations for essential structural repairs required to ensure the ongoing structural stability of the building. Photographs taken during the inspection are included within Appendix A.

The inspection was of a visual nature, and no opening up of the building fabric was carried out.

This report shall be for the sole use of Anderton Gables and their professional advisors and shall not be relied upon by any other party without the full written consent of Reid Jones Partnership Ltd.

2.0 DESCRIPTION

The outbuilding is located close to the main dwelling house Dinkling Green Farm. For orientation purposes, reference will be made to the north, south, east and west sides or faces of the building, with the wall containing the main entrances facing east. When viewing a wall or other structural element from inside or outside the building, reference to left and right relates to the element as viewed.

The building is a mainly single-storey but part two-storey stone-built agricultural building. A datestone above one of the entrance doors bears the inscription '1774' (photos 1& 2). The barn comprises two large storage spaces at upper ground floor on the east side, and a further two smaller storage spaces on the west side. At lower ground floor, due to the sloping ground, there are a further two rooms, the larger of which has been used as a byre for milking cows. No access was available to the smaller room.

The external walls of the building are of solid stone. The roof is of timber rafters, purlins and trusses. The ground floor is of earth, stone slabs or concrete. The loft floor over the lower ground floor byre is timber.

3.0 OBSERVATIONS

Internal - Ground Floor

- The roof structure of the northernmost space on the east of the building was inspected from ground floor level (photos 3 & 4). The rafters, purlins and three queen post timber trusses appear to be original and are badly decayed due to water ingress through holes in the stone slab or slate roof covering. The original rafters are extremely distorted and additional newer rafters have been added to support new timber battens where parts of the roof have been repaired. There are many vertical cracks in the outer walls, the widest being around 50mm in width, located in the north gable (photo 5). The east wall leans outward to an extreme degree at the wagon entrance.
- In the large southern space, there is a similar roof structure, but with two queen-post trusses (photo 6). Newer timber rafters and battens have been installed, but the purlins are original. Some purlins are badly twisted and others decayed due to water ingress. The original bottom tie-beam of the southernmost truss has been replaced with a newer member in sawn timber.

The walls of this space are relatively straight and vertical. There is a vertical crack in the wall near the main entrance of around 20mm in width (photo 7).

- The two smaller spaces to the west have a similar roof structure to the main part of the barn, but mono-pitch. The structural timbers are in a similar poor condition, with one purlin completely fractured due to decay below an area of leaking roof (photo 8).
- There are timber lintels supporting the inner leaf of stone over all door openings. The timber is in reasonable condition, with only minor decay due to insect infestation noted.

Internal – Lower Ground Floor

- The timber loft floor above the byre is in poor condition. Much insect infestation is evident in the floor timbers and the timber stall framing which provides some intermediate support to the main floor beams (photo 9).

External

- On the east wall, the section to the north of the wagon entrance leans outward by around 150mm over the height of a 1200mm spirit level (photo 10). The rest of the wall is reasonably straight and vertical.
- There is a significant inward bulge to the northern part of the west wall (photo 11).
- The wide crack noted on the north wall extends through the wall thickness and is visible from outside (photo 12).
- The south wall is reasonably straight and vertical, without significant structural defects.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The roof timbers have been subject to extensive decay due to water ingress through the defective roof covering. The roof covering should be removed, then the rafters and purlins. After detailed inspection it may be possible to retain and re-use some of these members. One roof truss in the northern space shows signs of serious decay to the bottom tie beam and it might need to be taken down and repaired. The other trusses appeared re-useable, subject to detailed inspection.

The loft floor shows signs of extensive decay and should be replaced. The timber stall dividers could be preservative treated and re-used in a non-structural way if desired.

The west wall of the northern space, to the north of the wagon entrance, is on the point of structural collapse and should be taken down to ground level and re-built, along with part of the north wall. The upper part of the west wall, north of the byre, shows an unacceptable degree of inward bulging. This section should also be re-built.

The remaining walls are reasonably straight and vertical, and require only re-pointing with conservation grade mortar. The wide crack in the dividing wall between the two main spaces should be repaired by stitching with stainless steel helical ties, drilled and epoxy grouted into the stonework.

APPENDIX A

PHOTOGRAPHS

Photo 1 - View of building from south east

Photo 2 – View of building from north west

Photo 3 – Internal view of northern space looking north

Photo 4 – Internal view of northern space looking south

Photo 5 –Vertical crack on north gable wall

Photo 6 – Internal view of southern space looking south

Photo 7 – Fractured purlin

Photo 8 – Vertical crack in wall between northern and southern spaces

Photo 9 – Internal view of timber structure supporting loft floor

Photo 10 – Extreme lean of eastern wall to northern space

Photo 11 – Significant bulging of western wall to northern space

Photo 12 – Vertical crack in northern gable wall