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STRUCTURAL APPRAISAL OF REDUNDANT BARN

AT

PREISTHOOD

PREISTWOOD ROAD

MEOPHAM

KENT

CLIENT: Mr & Mrs Davey Brown

PROJECT No. 4614

DATE: August 2021

1.0 BRIEF

We have been instructed by Mr & Mrs Davey Brown to carry out a structural appraisal of a redundant barn to assess the potential for conversion into residential. This report is only concerned with the structures, stability, condition and suitability to carry the current and new loadings.

This structural report is for ancillary information, to be read in conjunction with the Planning Application and does not constitute a full summary for Building Regulations Approval.

It should be noted that the survey comprised a visual inspection only and no opening up works were carried out. No testing of materials for strength or condition were carried out.

For the purpose of this report the barn has been split into three sections. These will be referred to Section A, Section B and Section C. Refer to the plan in appendix A for the location of each section.

2.0 SECTION A DESCRIPTION

Section A is a lean-to attached to the main barn constructed of a partially rendered blockwork single skin wall with timber rafters and profiled roof sheeting. The existing rafters are at approximately 900mm centres. The block wall appears to be constructed on an insitu slab.

We list below the salient points of each primary structural item;

2.1 Roof

The existing roof is clad in a profiled roof sheet. The roof appears to have suffered with water damage and the wall bearer on gridline 2 has failed. Subsequently the rafters have dropped / failed (Plate 1). The proposal is to remove the roof cladding and replaced with a tiled roof. The current rafters will need to be upgraded to suit the new roof structure and the wall bearer on gridline 2 will need to be replaced and the rafters re-supported.

2.2 Walls

The wall to gridline 1 is a single skin block wall with historic render evident in places and a major vertical crack was evident in the blockwork wall. This has a horizontal step of approximately 25mm (plate 1). The blockwork wall will need to be replaced / repaired. The footing for this wall will need to be investigated further to determine the repair works required.

2.3 Ground Floor

Due to the failed roof, it was not possible to inspect the ground floor. It is assumed this is a concrete oversite slab.

3.0 SECTION B DESCRIPTION

Section B forms the main section of the barn and is constructed of a profiled roof sheet supported on timber trusses and purlins, in turn supported on brickwork piers. Between the piers is a single skin of brickwork.

We list below the salient points of each primary structural item;

3.1 Roof

The existing roof is clad in a profiled roof sheet, this is damaged and has extensive foliage coverage. The cladding is supported on timber purlins at approximately 600mm centres. The purlins span between 5 timber trusses at approximately 2.2m centres (plate 2). The truss on gridline 4 has suffered severe damage and will need to be replaced (plate 3). The proposal is to remove the roof cladding and replaced with a profiled steel cladding system. The existing structure will need to be reviewed for the new roof loadings. The purlins and trusses will need to be analysed for the loadings and strengthened if necessary.

3.2 Walls

The gable wall to gridline 2 is of timber frame construction above a single brick wall approximately 2.0m high. The timber frame does not have any cladding and various members require repair work or replacing.

The wall to gridline A is of single brick construction with brick piers at approximately 2.2m centres, between gridlines 2 – 4 the wall is 450mm below wallplate level. Above this level are timber framed windows to the wallplate level. The wallplate and cill plate are showing signs of rot and will need to be repaired / replaced in places (plate 4). Minor cracking was noted between grids 6 & 7. This would benefit from tying back together with stainless steel heli-bars concealed within the bed-joints.

The wall to gridline 8 is of timber frame construction, this will require strengthening and repair works.

The wall to gridline C is of single brick construction with brick piers at approximately 2.2m centres, this wall is rendered externally. Between gridlines 2 – 4 & 5 – 7 previous openings appear to have been infilled with blockwork. The wall between gridlines 5 – 7 is 450mm below wallplate level, above this level are timber framed windows to the wallplate level. A vertical crack is located adjacent to grid reference C2 this will need to be repaired or rebuilt (plate 5). The footing in this area will need to be investigated to determine the repair works required.

3.3 Ground Floor

The floor to this section is of concrete constructed in sections and generally appeared in good order.

4.0 SECTION C DESCRIPTION

Section C is constructed from concrete posts with concrete panels between on gridlines B & C and Gridline 9 being timber frame. Gridline 8 is open to the timber frame from the main barn. The roof is constructed of a profiled roof sheets supported on a timber deck with timber joists at approximately 600mm centres.

We list below the salient points of each primary structural item;

4.1 Roof

The existing roof is clad in a profiled roof sheet, it has extensive foliage coverage. The cladding is supported on what appears to be a timber deck on timber flat roof joists at approximately 600mm centres. The existing structure will need to be reviewed for the new roof loadings.

4.2 Walls

The walls on gridlines B and C are constructed from concrete posts at 700mm centres with concrete panels which are internally rendered (plate 6).

The wall to gridline 9 is of timber frame construction, this will require strengthening and repair works.

Gridline 8 is open to the gable timber frame of section B.

4.3 Ground Floor

The floor to this section was not accessible however we would assume this to be an oversite concrete slab.

5.0 CONCLUSIONS AND RECOMMENDATIONS

As previously stated, the purpose of this report is to establish whether the existing barn can be converted for residential use and to clarify such conclusions with details for general repair. From our observations, we are of the opinion that the barn is in a condition to be able to be converted following the remedial works mentioned in this report. For ease of reference, we list below a schedule of the principle items regarding each section;

Section A.

- i. Roof cladding to be removed and replaced with a tiled roof. Strengthening works will be required to the existing roof structure.
- ii. Wall to gridline 1 will need to be replaced / repaired.
- iii. Trial holes will be required to determine the damage to the footings adjacent the damaged wall on gridline 1.
- iv. Subject to levels, it is assumed that the existing slab will be retained (subject to trial cores), with insulation, DPM and screed added on top.
- v. Carry out an asbestos survey prior to commencement of any works, including demolition works.
- vi. Provide new rainwater and foul water discharge systems.

Section B.

- i. Roof cladding to be removed and replaced with a tiled roof.
- ii. Strengthening works will be required to the existing roof structure. In the order of strengthen purlins, strengthen timber trusses / replace damaged truss.
- iii. Timber frame to Gridline 2 to be repaired / strengthened to allow for cladding.
- iv. timber frame to Gridline 8 to be repaired / strengthened.
- v. Carry out timber preservation work by a specialist company.
- vi. Minor cracking was noted on gridline A between grids 6 & 7. This would benefit from tying back together with stainless steel heli-bars concealed within the bed-joints.
- vii. Wall to grid reference C2 to be repaired / rebuilt.
- viii. Trial holes will be required to determine the damage to the footings adjacent the damaged wall.
- ix. Subject to levels, it is assumed that the existing slab will be retained (subject to trial cores), with insulation, DPM and screed added on top.
- x. Investigate the existing foundations through trial holes.
- xi. Carry out an asbestos survey prior to commencement of any works, including demolition works.
- xii. Provide new rainwater and foul water discharge systems.

Section C.

- i. Roof cladding to be removed and replaced with a suitable flat roof covering.
- ii. Strengthening works will be required to the existing roof structure.
- iii. Carry out strengthening works to the timber framed wall on gridline 9
- iv. Carry out timber preservation work by a specialist company.
- v. Subject to levels, it is assumed that the existing slab will be retained (subject to trial cores), with insulation, DPM and screed added on top.
- vi. Investigate the existing foundations through trial holes.
- vii. Carry out an asbestos survey prior to commencement of any works, including demolition works.
- viii. Provide new rainwater and foul water discharge systems.

Mr P Brown

BENG (Hons) CEng MStructE

Appendix A – Indicative Layout Plan



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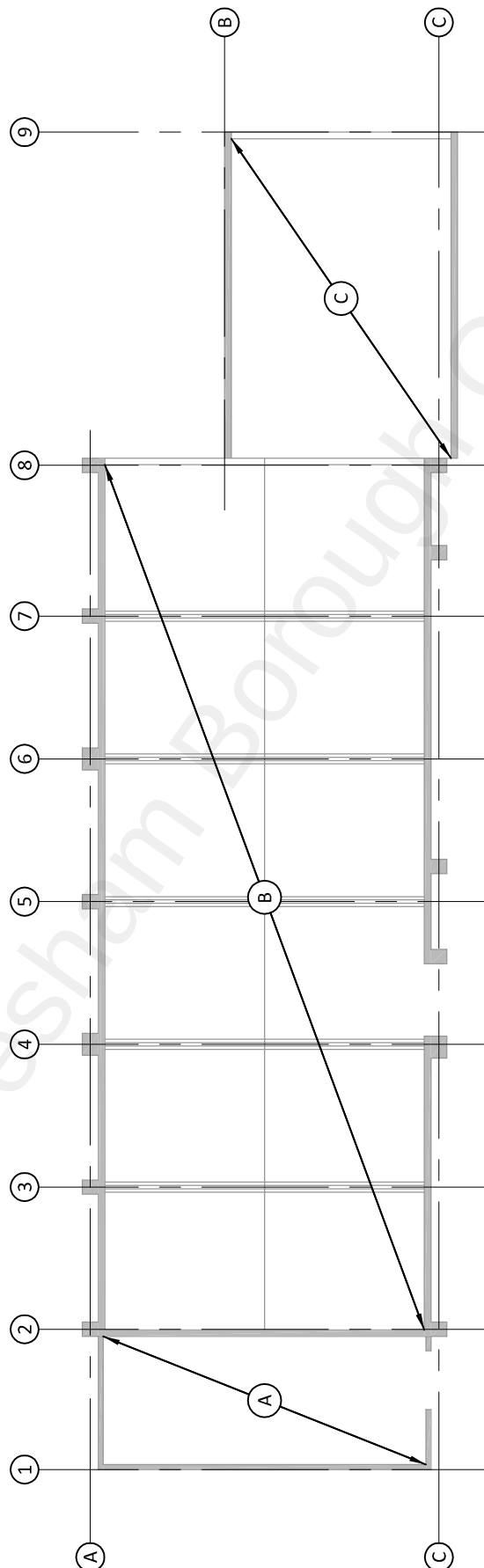
Project:
**PREISTHOOD
MEOPHAM**

By:
P. Brown

Date:
Aug 2021

Job No:
4614

Drawing No:
Figure 1



EXISTING BARN PLAN

Appendix B – Photographs

Gravesham Borough Council



Plate 1 – Section A Wall to Gridline 1



Plate 2 – Section B Roof construction



Plate 3 – Section B Truss damage on Gridline 4



Plate 4 – Section B Gridline A Wallplate



Plate 5 – Section B Grid Reference C2 cracking



Plate 6 – Section C concrete panels