ANDREW MARCHAM & Co.
Chartered Structural Engineers

Our Ref:- 21/398/AWM/kb
Date:- 16th August 2021

Mr M Jaffer
Green Hill Farm
Dymock
GL18 2AD

Dear Mr Jaffer,

Re:- Redundant Barn at Green Hill Farm, GL18 2AD

I refer to instructions conveyed in connection with your application to the Local Authority for Planning Consent to convert the above building to residential use and in this respect, a report of my findings and recommendations is as follows:-

Preamble The subject building basically comprises a single storey redundant agricultural building comprising a central steel portal frame with timber lean-to sections on each side. The property occupies a relatively level plot with vehicular access off the main road.

The object of my involvement is to provide an independent appraisal as to the structural feasibility of converting the building to the proposed usage. The scope of this report therefore is confined to structure only and must not be construed as a comprehensive survey including the condition of other unrelated items.

My appraisal took the form of an internal and external visual inspection carried out during dry sunny weather conditions on the 16th August 2021. At this stage, trial pits have not been excavated to expose foundations although from my knowledge of the local geology, subsoil conditions beneath the site will comprise a red clay underlain at shallow depth by Marl or Sandstone rock.

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Redundant Barn at Green Hill Farm, GL18 2AD

Inspection Notes

An external inspection was carried out around the perimeter of the building and for the purposes of this report, any notes made are with the walls described handed facing the front open entrance elevation. Notes made on a particular wall however, are described handed facing the elevation in question.

The building basically comprises a single storey semi open-plan building some 20.0m in length and approximately 16.0m in width including the timber lean-to sections on each side of the main portal frames. Height to low eaves of the portal frame is approximately 4.5m and the height to the ridge is approximately 6.0m. Low eaves height to the timber framed lean-to sections is approximately 2.5m.

The portal framed part of the building comprises five equally spaced bays including the gable ends at front and rear. The columns comprise 203 x 102 x 23kgUB sections with similar size rafters with rigid connections at the eaves and ridge. The portal frames are all in good order and whilst some minor corrosion can be seen, this does not adversely affect overall structural stability.

The lean-to timber framed sections on each side of the main portal frame are formed with 200mm deep x 100mm wide rafters spanning side to side with support off the external concrete block wall on one side and by an eaves beam attached to the portal columns on the other side. All such timbers are in good order with no deflection, rot or other such defect present.

The external roof covering comprises corrugated metal sheets supported by a combination of timber purlins and steel purlins. The roof as a whole is structurally sound and currently wind and weather proof.

Side wall cladding is a combination of concrete blockwork and plywood sheets. Such cladding is arranged to ensure adequate ventilation as was required by the original agricultural use of the building.

Lateral stability to the building as a whole in the side to side direction is via the steel portal frames and lateral stability in the longitudinal direction is by means of knee braces on each side of the portal columns connected to the eaves beams enhanced by the roof and side wall cladding. In this respect, the building is in good vertical and horizontal alignment with no evidence of deflection.

Structural Stability

The building as a whole is clearly structurally sound with no evidence to indicate any lateral, vertical or foundation related movement in the main supporting framework.

The steel frame would have been designed in accordance with BS5502 and this specified roof loads at 80% of the prevailing loading code of BS6399:Part1:1984. The specified roof imposed load (with access for cleaning and repair only) was 0.75kn/m^2. The current loading standard which would apply for the converted building is BS6399: Part 3 and this specifies an imposed roof load of 0.60kn/m^2.

Current imposed snow loading for the converted building assuming BS6399: Part3 - Sb = 0.5kn/m^2. Altitude = 50m therefore So = 0.43kn/m^2. With shape code U1 = 0.8 such that actual design snow load for this building under current British Standards would equate to 0.344kn/m^2.

From the above it can be seen that 80% of the original design imposed load is 0.60kn/m^2 which meets current requirements of BS6399 and that design load for imposed snow load at 0.344kn/m^2 is less than 0.60kn/m^2.

To summarise, the structure of the building is capable of supporting imposed wind and snow loads based on the current requirements of BS6399 which would satisfy Building Regulations for the converted building.

Conversion Proposals

I have not had sight of any Architectural drawings to indicate the precise conversion proposals for the building.

I understand however that it is intended to convert the existing building to residential use and in this respect, the existing structural framework can be over-clad to provide the necessary insulation requirements as given under current Building Regulations.

Concluding Remarks

A visual inspection indicates that the building as a whole is structurally sound and apart from ventilation requirements, currently wind and weather proof. In particular, there is no evidence to indicate any deterioration to individual structural elements or any foundation related problems.

Design calculations confirm that the steel frame is capable of supporting imposed and wind loads required by BS6399 without need of any additional support. The converted building therefore would comply with "Part A" of the Building Regulations insofar as structural stability is concerned.

This report is for your private and confidential use together with any other party directly involved in the Planning Application. The report therefore must not be used or relied upon by any other third party without prior written consent from Andrew Marcham & Co.

I trust the above is self explanatory and sufficient to the purpose for which the report was commissioned however please do not hesitate to contact me without delay should any clarification be required.

Yours Sincerely,

Andrew Marcham
C.Eng.M.I.Struct.E.

Appendix A

Contents:-
Record Photographs

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