



**REPORT ON THE
CONDITION OF STRUCTURE
OF**

**HOW GREEN BARN
SHILOH ROAD,
NEW MILLS
SK22 4QR**

FOR

**MR P ARDERN
HOW GREEN FARM,
SHILOH ROAD,
NEW MILLS
HIGH PEAK
SK22 4QR**

GMN222/GPH/NOVEMBER 2023



1.0 BRIEF

- 1.1 This report was commissioned by Mr P Ardern, to assist with a Planning Application for re-development of an agricultural building, converting it to habitable usage.
- 1.2 The brief for this report was to carry out a thorough examination of the building, to assess the condition of the structure, and advise our opinion on the feasibility of its conversion to domestic usage. We measured the existing structure so that we could make a detailed assessment of its structural adequacy for the proposed use by checking structural strength, to augment the visual appraisal.
- 1.3 This report is for the use of Mr Ardern and his advisors in this matter. The report can be released to those concerned with the vetting of building permissions but shall not be released to any other party, for any other use, without the express permission of Hughes Consulting. No other party may rely on this report, which does not confer nor purport to confer any third-party rights or benefits.



2.1 **General**

We inspected the building on 1st November 2023, when the weather was showery but dry and bright at the time of inspection. The survey comprised a visual examination, augmented by measurement of the primary and secondary structural members for subsequent structural analysis.

It is judged that enough information has been gathered for us to report conclusively. Record photographs of condition where taken.

- 2.2 We have been supplied with copy of the proposal drawings, which show the intension to convert the whole of the building whilst retaining the essential aesthetic appearance and layout.

3.0 **LAYOUT**

3.1 **Building**

The building is rectangular four bay steel portal framed building, frames at 4.6 metre centres, which is clad with profiled metal sheeting in front of part height blockwork – around 2.2 metres high – between main frame stanchions and gable posts, which frame tall sliding doorways at each end of the building. The roof also has a profiled sheet cladding cover, matching the walls. The sheeting is attached to pressed metal Z purlins and rails fixed to the steel framing. The ground floor is an oversite concrete slab, which has evidently been well constructed.



4.0 CONSTRUCTION

The building is a low pitch steel portal frame, comprising steel I profile sections with bolted haunch connections at eaves and apex, enclosed by profiled metal sheeting. There is 140 mm thick blockwork between main frame stanchions and gable posts built off the concrete floor slab which, together with partition walls, encloses stalls for horse stabling – which is the building's present use. The roof and wall cladding are fixed to Z section pressed metal purlins and rails which attach to the steel framing. There are two equally sized sliding doors at each end framed by gable posts and head beam at the centre of each gable wall. The framing is braced at both ends by circular hollow steel sections. The ground floor is formed by a ground bearing concrete slab, which has evidently been very well constructed incorporating well-formed construction / movement joints, so it is very probably reinforced with steel mesh. The frame columns appear to be founded on it well constructed concrete pad bases.

5.0 PROPOSALS

We have been supplied with the Architectural drawings showing detailed proposals at this point. The conversion scheme will utilise the whole of the existing footprint and structure, with no new structural elements required.

Internally, the building would be subdivided by new self-supporting partitioning. The walls, floors and roof will have lightweight, non-structural insulation added internally.

Externally, the roof and wall cladding will be retained, or replaced with similar sheeting of the same appearance and new flush fitting windows and doors will be formed, which can be fixed to a modification of the existing purlin and rail supports.



6.0 **OBSERVATIONS**

6.1 Condition

The condition of the existing structure, floors and superstructure, is very good. There is no evidence of any settlement or distortion, nor any significant weathering or deterioration of the existing elements.

6.2 Structural Adequacy

6.2.1 Existing building

Based on on-site measure of the structural elements, including primary connections, we have carried out analysis of the primary and secondary structural elements, which all satisfy strength requirements to the relevant current design codes for habitable usage. We have included the calculation sheets within appendices, covering analysis of the steel framing, including connections, purlins, masonry walls and the foundations, based on assumption of modest sizing and normal ground conditions for the area, based on BGS records.

The existing steel frame design will satisfy all current design codes and regulations for use as a domestic dwelling.



6.2.2 Proposed Alterations

The building will be subdivided internally to create the various rooms, using new self-supporting partitioning.

Modern lightweight insulation will need to be added to the floor, walls, and roof to ensure compliance with the relevant Building Regulations, for the essential comfort of occupants and to meet the requirements for a modern home.

There may be some modification of the existing external envelope (walls) to accommodate new windows and doors, and insulated timber cladding. The existing framing will be utilised for that purpose. The existing roof will be retained.

The ground slab has been proof load tested to a much higher level of loading intensity than that from domestic usage, by agricultural usage over several years. It has withstood that load testing without any evident distortion or distress. It is evidently a robust structural floor which is fit for purpose. The building insulation levels and services will be upgraded to comply with current standards.

The column foundations have been checked based on an assumed, modest sizing and the BGS data on the prevailing ground conditions (sandstone) and are very satisfactory on that basis.



7.0 **DISCUSSION**

The building is in very good condition. There are no evident defects of structure or fabric.

The BGS records show that the prevailing soils are Sandstone (perhaps weathered at the surface). There are no drift soil records, so sandstone will be close to the ground surface.

Detailed assessment of structural strength shows that this is satisfactory. The new internal non-structural dividing walls for the proposed alterations are for partitioning of room spaces only.

8.0 **CONCLUSION**

- 8.1 It is considered that it is entirely feasible from a structural viewpoint to convert the building to domestic usage.
- 8.2 Alterations can be carried out without jeopardising the structural stability of the building.



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APPENDICES

CALCULATIONS COVERING DESIGN CHECKS ON THE EXISTING
STRUCTURE