Existing Structure

Purlins - Significantly under-sized by current standards, will deflect heavily under code defined snow loading. Will need to be replaced during conversion works, use 178x102x19 UB

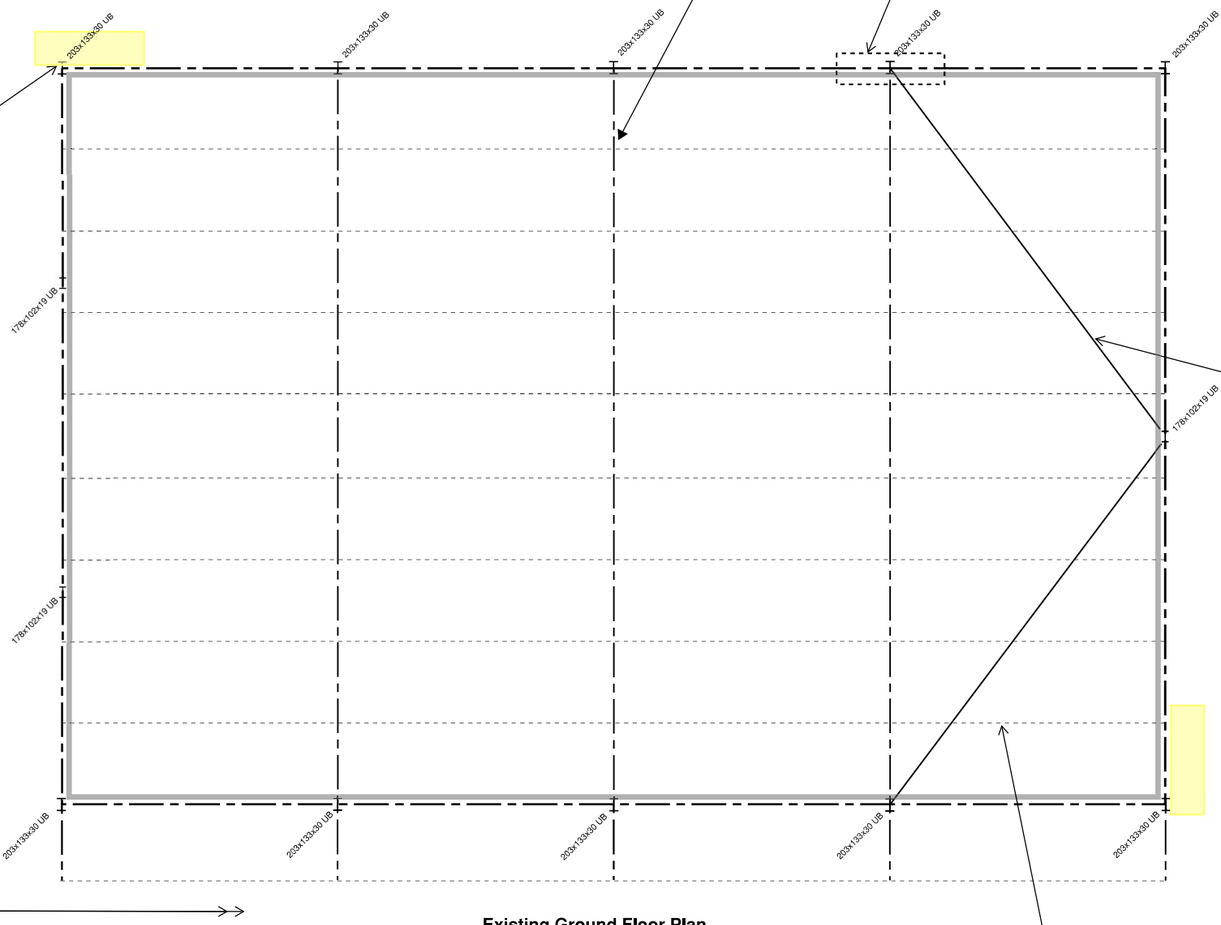
Frame - Significantly under-sized by current standards, particularly the rafter sections. Frame likely to deflect heavily under both lateral wind loading and vertical snow loading. Deflections unacceptable once sensitive finishes introduced due to conversion to domestic use.

Typical - Longitudinal stability currently provided by lightweight steel bracing. Inadequate for conversion; detail elevations in such a way as to provide frame stiffness.

Portal frame rafters 203x133x25 UB

215mm Concrete hollow block walls at low level with timber framing/cladding over. Walls appear to be free from movement and cracking suggesting foundations are performing satisfactorily. If re-using walls, head will need restraint

General - Where column bases are visible they appear to be lightly corroded, delamination not yet evident. Expose bases and protect steelwork.



89dia CHS steel roof bracing. Proposed for removal, replace with roof plane bracing (see below left)

100 brick 60 cavity 100 block cavity wall construction at low level with timber framing/cladding over. Walls appear to be free from movement and cracking suggesting foundations are performing satisfactorily. If re-using walls, head will need restraint

Existing Ground Floor Plan

Purlins 75mm wd x 175mm dp timber, approximate position shown

Trial Pits

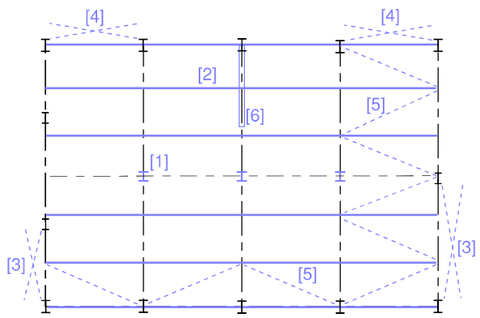
Columns appear to founded on pad foundations approx 700-800mm square at 1m depth.

Strip foundations to walls appear to be founded at approx 650-700mm deep, possibly 600mm width (typically 200mm projection).

Founding conditions - firm clay.

Re-use of existing foundations possible, as long as proposed new first floor loading is well distributed between new ground floor walls and existing structure

Options for Frame Strengthening



1. Additional columns under frame apex [1]. Unlikey to fit in with proposed layout
2. Undersized purlins to be replaced with steel beam sections [2]
3. Add gable end bracing (or appropriately designed infill walls) [3]
4. Add long elevation bracing (or appropriately designed infill walls) [4]
5. Add roof bracing [5]
6. Utilise new internal partitioning to add building stiffness [6]

NOTES

1. This drawing is copyright and may not be reproduced without the permission of Mann Williams.
2. All drawings are to be read in conjunction with the project specification with all works carried out in accordance with the latest British Standards and codes of practice.
3. Any ambiguities or discrepancies between this drawing and any other information given elsewhere must be reported to Mann Williams for clarification before work proceeds.
4. All dimensions to be checked on site and any discrepancies reported to the engineer before work commences.
5. Only figured or calculated dimensions should be used and no drawing , in any format should be scaled.

This structural assessment is based on observations made from ground level internally and externally. Site visit made on 6 September 2023.

REV	DESCRIPTION	BY	DATE
P1	Preliminary	LR	3.10.23

P=PRELIMINARY T=TENDER CONSTRUCTION

PROJECT
Evergreen Barn

Cheltenham

TITLE
Structural Assessment

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DRAWN	CHKD	SIZE	SCALE	DATE
LR	NL	A3	1:50	Sept 23

STATUS
Preliminary

PROJECT	DRAWING	REV
12084	02	P1