GADSDEN CONSULTING

STRUCTURAL INSPECTION REPORT

LOCATION: MILL FARM BARNS, THE GREEN, MILLOM, CUMBRIA, LA18 5HL

CLIENT: MVC DESIGN LTD

JOB No: 25184

Gadsden Consulting, Unit 20, Meetings Industrial Estate, Park Road, Barrow-in-Furness, Cumbria. LA14 4TL

Rev	Description	Issued By	Reviewed By	Date
00	First Issue	MG	RG	15/05/2025

This report has been prepared for the sole benefit, use and information for the client. The liability of M&P Gadsden Consulting Engineers Ltd trading as Gadsden Consulting with respect to the information contained will not extend to any third party.

Author	Signature
Mike Gadsden BSc(Hons), MSc, CEng, MICE, CBuildE, MCABE Managing Director	

Reviewed	Signature
Richard Gadsden BSc(Hons), MCIHT, GMICE Director	

Contents

Photographic Log

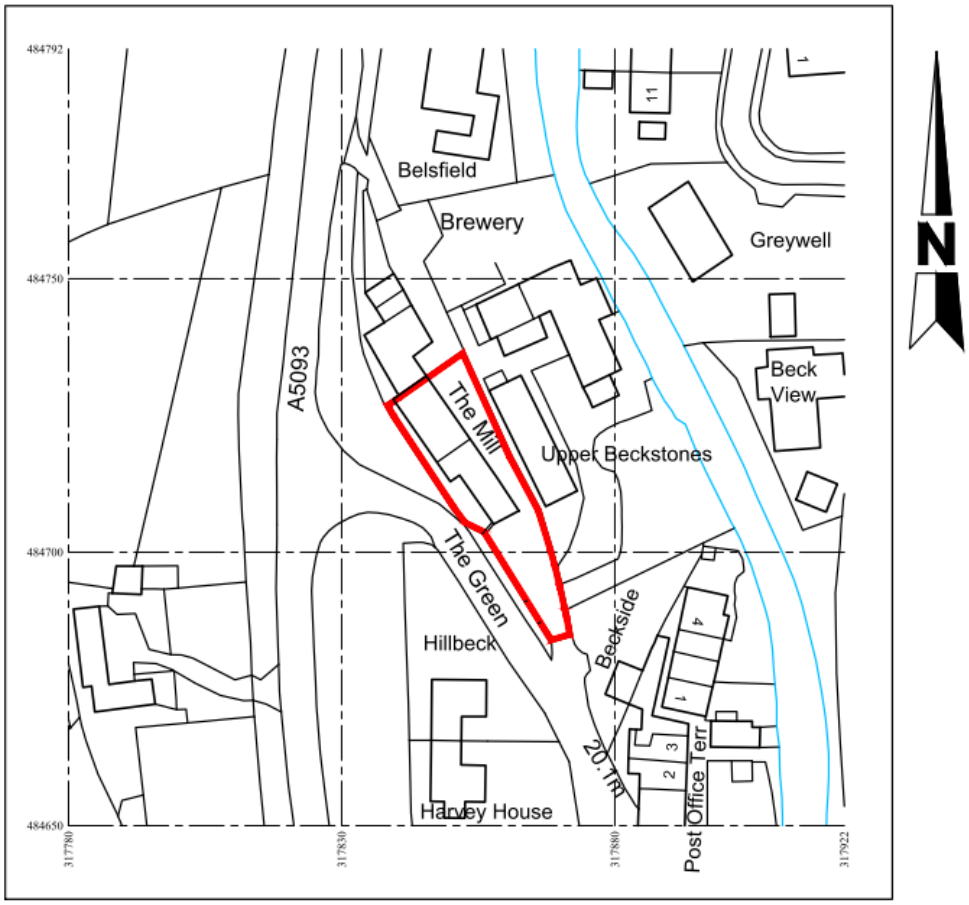
1. Introduction

Gadsden Consulting were appointed by MVC Design Ltd to undertake a structural inspection of Mill Farm Barns, The Green, Millom, Cumbria, LA18 5HL.

Mill Farm Barns is made up of attached barns located in the rural village of the Green near Millom, Cumbria. They comprise of three barns, attached to what we assume will have been the original farmhouse to the north.

The purpose of this report is to comment upon the structural integrity of the main barn and piggery with a view to its conversion into residential use. As with all conversions of this nature, renovation and reconstruction works will be required internally. The essence however is principally for the appearance of the building itself to be relatively unaffected.

Figure 1 - Location Plan



The barns are constructed from locally sourced stone in random rubble courses. The ground floor is concrete where a floor exists, and parts contain a timber first floor. The roof structure is of traditional purlin and rafter construction with intermediate trusses present. The roof is finished in a lightweight cement fibre tile. There will be no formal concrete foundations, they will be large foundation stones.

Figure 2 – Existing Ground Floor Plan

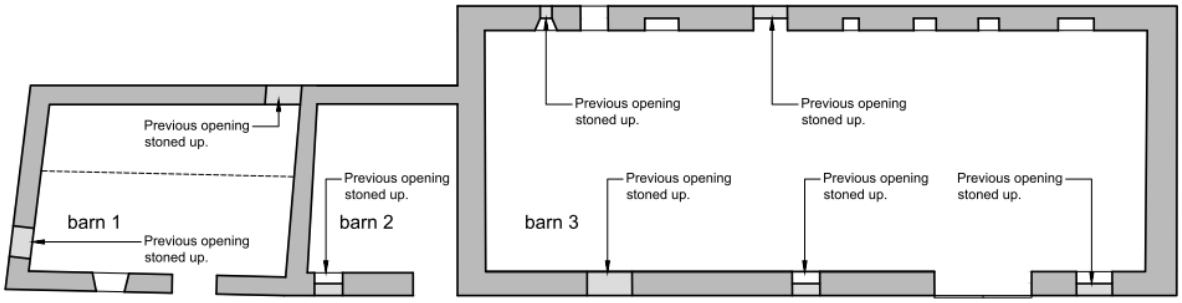
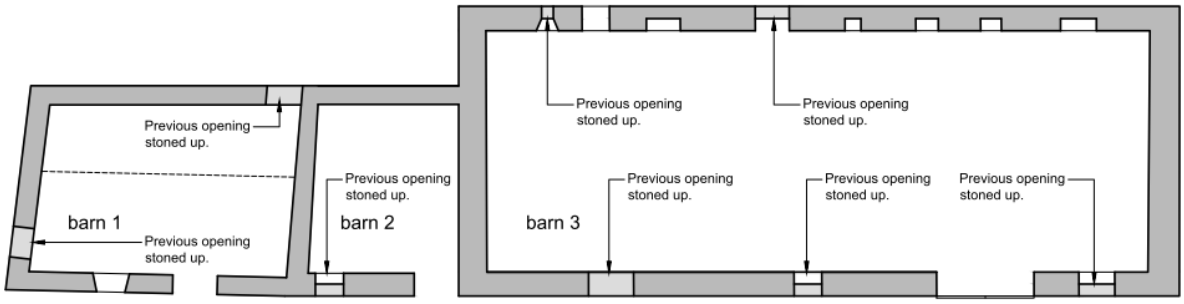


Figure 3 – Existing First Floor Plan



Our inspection was based on one visual, non-intrusive inspection. We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

An inspection of the barns was undertaken on Wednesday 7th May 2025.

2. Inspection

2.1 Internally

2.1.1 Barn 1

Barn 1 is located at the southern end and contains a timber first floor. The roof structure consists of an intermediate triangular timber truss with two side purlins each side and a ridge. It has been re-roofed historically with a membrane installed over the rafters. The timber generally appears to be in reasonable condition with no obvious water ingress present.

There is a mixture of timber and stone lintels about openings. The walls are generally straight and true with limited signs of lateral movement. There is some loose stone present towards the peaks of the gable ends. There is render present in part containing several cracks and the lime mortar is old and has deteriorated generally.

Photo 1 - Gable End and Roof of Barn 1

2.1.2 Barn 2

Barn 2 was not accessible at ground floor level but ladder access to the first-floor hay barn was available. The roof was again traditional with purlins spanning between gable walls. It had also been re-roofed. The timber generally appears to be in reasonable condition with no obvious water ingress present.

The first floor had severely deflected and needs to be removed during any conversion works

Photo 2 - Roof and Western Wall of Barn 2

2.1.3 Barn 3

Large single storey open barn containing 5 intermediate triangular trusses with two side purlins each side. It has again been re-roofed. The timber generally appears to be in reasonable condition with no obvious water ingress present.

Photo 3 - roof of Barn 3

It appears that conversion works have previously commenced with new lintels installed internally. The gable end to the north has in part been rebuilt in blockwork and the ground floor has been removed and reduced in level. Some of the reduced level excavations are now lower than the foundation stones but at this stage hasn't resulted in any substantial undermining.

Photo 4 - Barn 3 - Lintels Installed Internally

Photo 5 - Barn 3 - Excavations Below Foundation Stones

The gable end adjacent to barn 2 to the south previously had a first floor which has now been removed. Where the joists were removed from the wall there is loose stonework and there are several vertical cracks in the wall generally. The mortar to this elevation is original and has deteriorated. The external walls do not appear to be suffering from excessive lateral movement.

Photo 6 - Barn 3 - Southern Gable Wall

2.2 Externally

2.2.1 West Elevation

Barn 3 has had some repairs undertaken to the render around the northern corner. The render is old and contains several full height vertical racks. There are also missing patches of render exposing the stone behind. The lintel on the only opening has no bearing and needs to be replaced. The elevation is suffering from some minor lateral movement. The roof line is relatively straight with no obvious undulation present.

Photo 7 - West Elevation - Lintel Bearing

The roof line to Barns 1 and 2 is undulating. There is a section of wall where the outer leaf of stone has collapsed onto the footpath below. The remainder of the elevation doesn't appear to be suffering from overt lateral movement.

Photo 8 - Barn 1 & 2 - Collapsed Wall

2.2.2 South Elevation

The south elevation of barn 1 is in reasonable condition with the wall relatively straight and true with no signs ongoing settlement or severe lateral movement.

The gable end of barn 3 where visible contains several vertical and diagonal cracks at high level.

Photo 9 - South Elevation of Barn 3

2.2.3 East Elevation

Barns 1 and 2 are suffering from some minor lateral movement particularly at high level and there is some minor movement in the stone above old timber lintels.

Photo 10 - East Elevation of Barn 2 - Movement Above Lintel

Barn 3 contains some minor movement/cracking in and around the mortar beds and the stone quoins of the southern corner. The wall has suffered from lateral movement with a distinct lean on this wall which would need to be tied back during any conversion works.

Photo 11 - east Elevation of Barn 3 - Lateral Movement

3. Discussion & Recommendations

As with any building of this age and construction built originally for agricultural use there will be a need for substantial works to bring it up to habitable standards for human occupancy. Primarily, this will entail significant internal alteration to meet current building regulation standards which will include new floors and walls.

The key question is whether the existing superstructure of the remaining barns can be kept with only limited alteration and repair. The four main potential failure mechanisms are settlement, lateral movement, constructional defects and perishment to the fabric.

We found no evidence of any ongoing settlement to the barns.

The defects noted are consistent with minor lateral movement, perishment and constructional defects which you would expect given the age of the barn.

The structural defects requiring repair/strengthening are as follows: -

1. The barns should be cleared of any vegetation and repointed internally and externally (re-rendered where applicable) in accordance with a relevant specification. It may be that a lime-based mortar is more appropriate. Minor cracking, as noted, to be stitched using Helifix or similar proprietary helical bars.
2. Timber lintels, because of damp, being undersized, creep etc over many years have deteriorated and should be replaced generally with PCC lintels where hidden and decorative lintels when seen in keeping with the existing barns.
3. The main roof may need to be strengthened subject to layout and specification.
4. Remaining existing timber should be inspected for rot and infestation by a timber specialist and appropriate treatment undertaken.
5. The internal gable wall to the south of Barn 3 is to be demolished in part based on the proposed layout. The remainder of this wall will need to be rebuilt in part to achieve the proposed layout removing many of the defects noted here. The remaining stone will need to be repointed and stitched using Helifix or similar proprietary helical bars. An internal goal post arrangement may be required to restrain the corner.
6. The external collapsed section of wall to the west elevation of barns 1/2 will need to be rebuilt.
7. The property is generally suffering from minor lateral movement, and the walls will therefore need to be tied to the proposed first floors and at roof level to provide adequate lateral restraint.
8. Barn 3 where previous floor level has been reduced should have the new floor installed as soon as possible to avoid potential undermining and slippage of the walls.
9. All walls undermined during the works (provision of new ground floors, lowering ground levels etc) shall be underpinned.

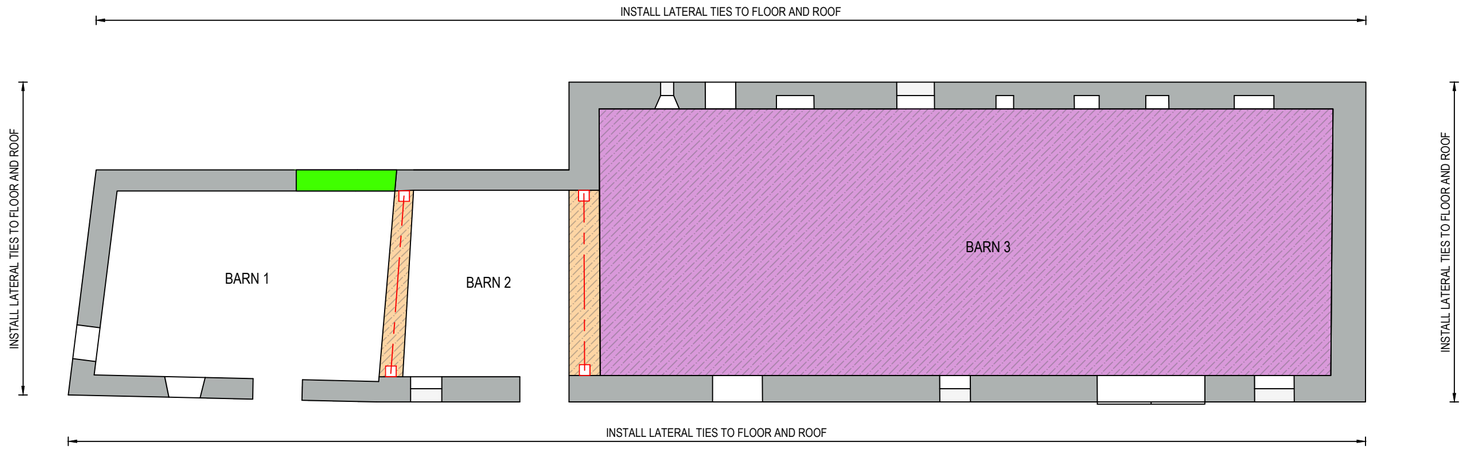
Appendix A contains marked up plans of the rebuild works required.

4. Conclusions

The barns are generally in good condition requiring minimal structural intervention to enable its conversion into dwellings. The stone walls are in good condition having suffered from only minor lateral movement. There are repairs and rebuild works required to make them structurally sound, but these works are limited.

In conclusion, it is our professional opinion that with the architectural measures proposed and the works recommended in this report that the superstructure to the buildings proposed to be maintained can be kept substantially in their current form.

Appendix A - Plans Outlining Proposed Rebuild Works



EXISTING GROUND FLOOR PLAN

KEY

- DEMOLISH
- REBUILD
- FLOOR LEVEL REDUCED
- GOAL POST

GENERAL NOTES

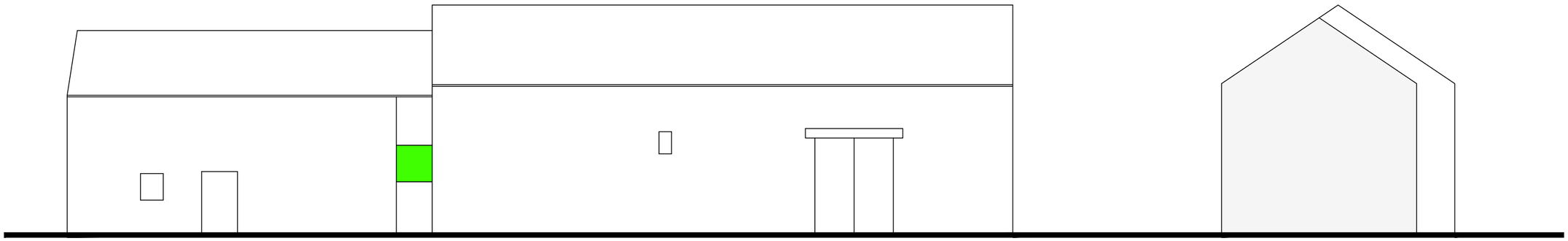
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.

2. ALL RELEVANT DIMENSIONS TO BE OBTAINED/CHECKED AGAINST ARCHITECT'S DRAWINGS AND BY SITE MEASUREMENT PRIOR TO THE COMMENCEMENT OF WORKS.

3. DO NOT SCALE FROM THIS DRAWING.

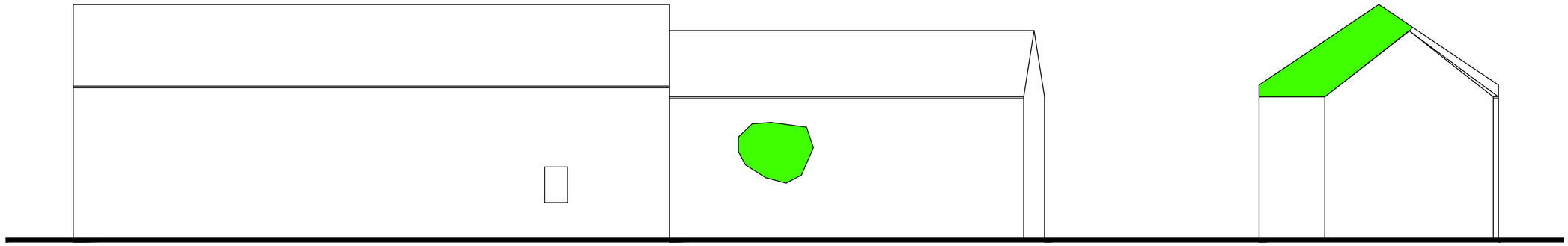
4. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION OF ALL UNDERGROUND SERVICES THAT MAY EXIST AND TO DIVERT THEM IF NECESSARY PRIOR TO THE COMMENCEMENT OF THE WORKS.

5. ALL STRUCTURAL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH THE DETAILS GIVEN BY THE ENGINEER. THE ENGINEER IS TO BE ADVISED OF ANY SIGNIFICANT VARIATION PRIOR TO IT'S IMPLEMENTATION.



EXISTING FRONT ELEVATION

EXISTING SIDE ELEVATION



EXISTING REAR ELEVATION

EXISTING SIDE ELEVATION

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	15/05/2025	PRELIMINARY - ISSUE	MG	MG	MG

DRAWING STATUS:
PRELIMINARY

CLIENT:
MVC DESIGN LTD

ARCHITECT:
MVC DESIGN LTD

PROJECT:
MILL FARM BARNS, THE GREEN, MILLOM, CUMBRIA

TITLE:
AREA REQUIRING REBUILD

STATUS:	PROJECT No.	ORIGINATOR	PHASE	LEVEL	TYPE	ROLE	DRAWING No.	REV:
S2	25184	- GAD -	00	- 00 -	DR	- S -	0201	P01

SCALE @ A2	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
1:100	MG	AA	MG	MG	MAY 25

GADSDEN CONSULTING
info@gadsdens.co.uk 01229 813333 www.gadsdens.co.uk