Coc Y North Barn, Coc Y North Lane, Rhiwderin

Structural Inspection Report

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1.0 INTRODUCTION

Steve Morgan Associates Ltd were appointed by Skerryvore Designs to carry out a structural inspection of the barn at Coc Y North Lane, Rhiwderin. The inspection was carried out on 17th October 2023 by Steve Morgan of Steve Morgan Associates Ltd. The weather on the day of the inspection was dry and sunny following periods of heavy rain.

No excavations or opening up of concealed areas were carried out during the inspection but will be recommended if considered necessary. No inspection of electrical or plumbing installations has been carried out within the scope of this report. The survey also excludes any inspection relating to timber rot/infestation or asbestos.

The building is generally a single storey stone built structure with a duo-pitched roof. The original roof has been replaced with modern timber trusses and a steel cladding finish. The building is divided, internally, by a stone wall across the width of the property. There is a double door to the front elevation providing access to the right-hand area. The left-hand area is accessed via a large opening on the rear elevation. A further double door access on the rear elevation gives access to the right-hand area.

2.0 DETAILS OF INSPECTION

2.1 Front elevation

The front elevation contains a double door opening to the left of the elevation. To the right-hand side of the elevation there is evidence of historic repair to the door reveal with brickwork added. The lintel over the opening is timber and is likely to require replacement.

The elevation is partially concealed by vegetation. The vegetation should be treated and removed with any damage to the masonry made good.

There is a small return in the elevation to the left-hand side. It is possible that this may have been due to an historic addition to the original barn. The wall adjacent to the return and adjacent to the left-hand gable has a large crack running from eaves level down to the base of the wall. The crack will require stitching. It would also be prudent to inspect the foundations at the base of the wall at this location as the ground levels appear to have reduced, possible due to erosion/localised settlement of the external ground.

2.2 Left Hand Gable end.

The left-hand gable is of random masonry as the front elevation. There are two window openings in the elevations, one at ground and one at first floor level. The first-floor opening has been blocked up. The windows have brickwork features to the perimeter. It is possible that the first-floor opening was a door opening.

The elevation contains the steel straps used to secure the roof structure. It is anticipated that these will be removed in the proposed scheme and an alternative solution proposed for the strapping.

This elevation again contains a large area of vegetation which should be treated and removed.

Left Hand Gable end (Cont…..)

The left-hand side of the gable has suffered some deterioration with loose and damaged masonry at the return with the rear elevation.

2.3 Rear elevation

The rear elevation contains a large opening to the right of the elevation which extends up to the gable end. A further double door opening is located to the left of the elevation. The lintel over the left-hand opening has deflected significantly and will need to be replaced. There is also some deterioration of the masonry to the left of this opening and some minor repair/rebuilding can be anticipated.

The masonry to the rear elevation is painted with the finish having deteriorated.

2.4 Internal area – left hand side (viewed from front elevation)

The area is open plan with the soffit of the roof trusses exposed. There is evidence of separation between the front elevation and gable walls, however this appears historic. It should be noted that the separation occurs at the location where the external ground levels appear to have eroded.

It is anticipated that timber lintels will require replacement in any proposed redevelopment of the barn.

The floor is covered in debris. Again, it is anticipated that the floor to the barn will be replaced with a concrete slab.

There is evidence of minor damage to the internal wall. Some repair/rebuilding will be required locally.

2.5 Internal Area – right hand side

The doors to the area were locked at the time of the inspection. A limited inspection was available through the door on the front elevation.

The roof finish is as the adjacent room. There is significant debris within the room which will need to be removed to enable a more detailed inspection. There was no obvious evidence of deterioration of the perimeter walls.

2.6 Roof

The original roof has been replaced with timber trusses and a steel cladding finish. It is anticipated that the roof will be replaced in the proposed scheme.

3.0 CONCLUSIONS AND RECOMMENDATIONS.

The following items were considered as requiring further consideration: -

(i) It is anticipated that the existing roof finish will be replaced in the proposed scheme. It is anticipated that the trusses have been designed to accommodate a standard tiled/slate roof finish. The strapping arrangement to the roof will need to be considered and amended with the current arrangement being unsightly.

(ii) The barn will require a new floor slab with the necessary insulation to comply with the current Building regulations. The installation of the new floor slab may require undermining of the base of the wall. Trial pits should be undertaken to establish the level of the base of the wall. The floor slab and insulation can then be designed accordingly.

(iii) It will be necessary to carefully expose the base of the wall to the left-hand gable before the extent of remedial measures can be fully assessed. The ground levels may also need to be built up locally to prevent further deterioration of the wall in this location.

(iv) The existing walls are unlikely to meet the required 'U' values. Any additional wall or improved insulation characteristics of the existing wall should consider the extent of the existing foundations. It is anticipated that the existing foundations will not be wide enough to accommodate an additional blockwork skin.

(v) All lintels are likely to require replacement but, as a minimum, they will need to be checked when fully exposed.

(vi) It would be prudent to carry out a more detailed inspection of the room to the right-hand side of the barn with no access available at the time of the inspection.

(vii) The internal cracks at the junction of the front elevation wall and gable end wall should be trapped/tied in. The repair can comprise galvanised straps at close centres.

CONCLUSIONS AND RECOMMENDATIONS (Cont…..)

(viii) Some minor masonry repairs will be required internally where voids were noted to the main wall.

(ix) Minor rebuilding of the masonry will be required to the rear elevation double doors and to the gable end/rear elevation junction.

(x) All vegetation should be treated and removed. Some repair to the bed joints can be anticipated once the vegetation is removed. The extent of the repointing can only be assessed when the vegetation has been removed.

(xi) The current strapping detail is considered aesthetically unacceptable. The roof design should consider internal straps concealed on any inner skin to the conversion.

(xii) It is probable that some rebuilding/repair/resetting of masonry at eaves level will be required.

(xiii) The crack to the front elevation should be repaired. This can be carried out once the cause of the movement to the front elevation/left hand gable corner has been established. The repair can comprise resetting of masonry across the crack or, potentially, a proprietary crack stitching system.

In addition, the following should be considered during the redevelopment of the property: -

(a) Excavations close to the external walls should be supervised by a suitably qualified Engineer as it has not been established that the external walls have adequate foundations. All new walls, including internal walls will need to be built off suitable foundations based on site conditions. The form and depth the “foundations” to the existing, retained, walls should be investigated to determine their suitability to accommodate the proposed alterations.

(b) Excavations should not be continuous at a lower level than the existing wall as this will affect the stability of the wall.

CONCLUSIONS AND RECOMMENDATIONS (Cont…..)

(c) Any excavations that are carried out for investigations, drainage, incoming and outgoing services must be carried out with due regard to the existing structure. With respect to service trenches, these should be formed at right angles to the walls. Levels of new foundations and floor levels are also to be considered with respect to any existing foundation levels.

(d) The level of the base of the wall should be established prior to commencement of the works.

(e) External ground levels should be maintained to avoid destabilising the external walls.

(f) Rainwater should be discharged positively away from the building to prevent the risk of undermining of the existing foundation. If soakaways are to be used, these should be located at least 5m from the building and at a lower level than the foundations to the building.

(g) All growth adjacent to, and within, the walls is to be removed and roots killed off. Roots are not to be grubbed up to avoid disturbance to foundations.

(h) Internally and externally, the stonework will require careful raking out and re-pointing. There are a number of areas that will require more intensive work. Areas, particularly corners, may require minor reconstruction with stones tied across the cracks or bonding by the insertion of specialist sock anchor ties from the outside.

Subject to the above, it is considered that the property is suitable for conversion.

APPENDIX 1.0

Photographs

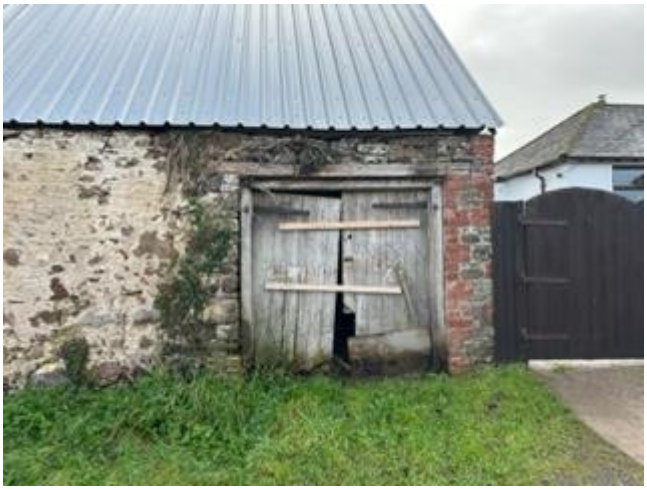

Figure 1
Front (Coc Y North Road) elevation 1 of 5

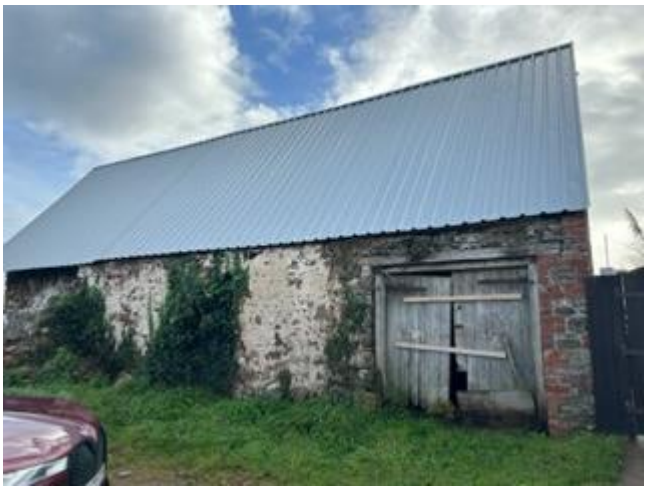

Figure 2
Front (Coc Y North Road) elevation 2 of 5

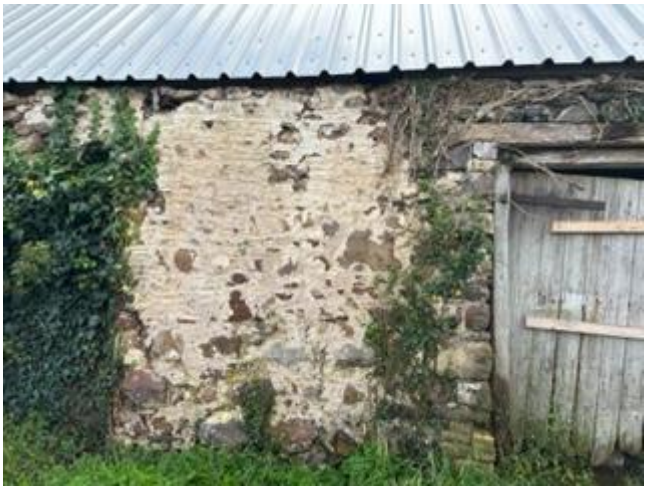

Figure 3
Front (Coc Y North Road) elevation 3 of 5

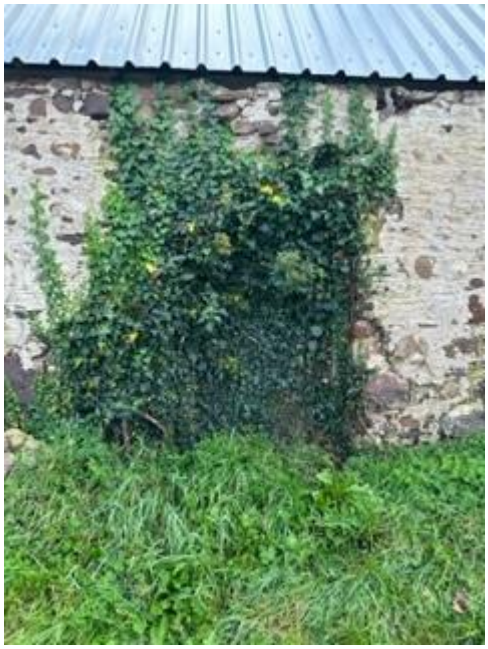

Figure 4
Front (Coc Y North Road) elevation 4 of 5

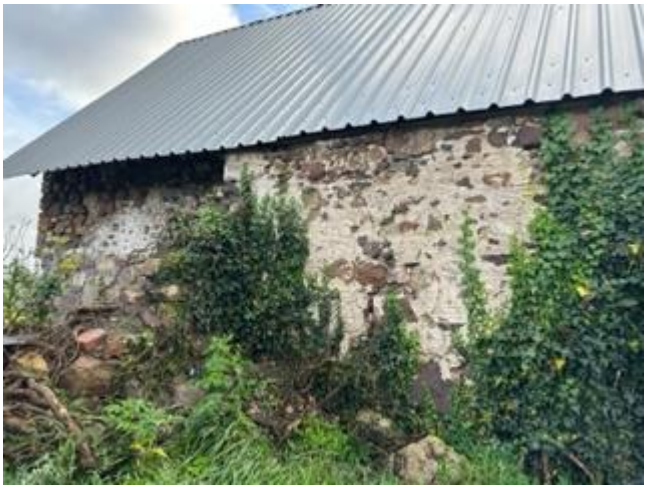

Figure 5
Front (Coc Y North Road) elevation 5 of 5

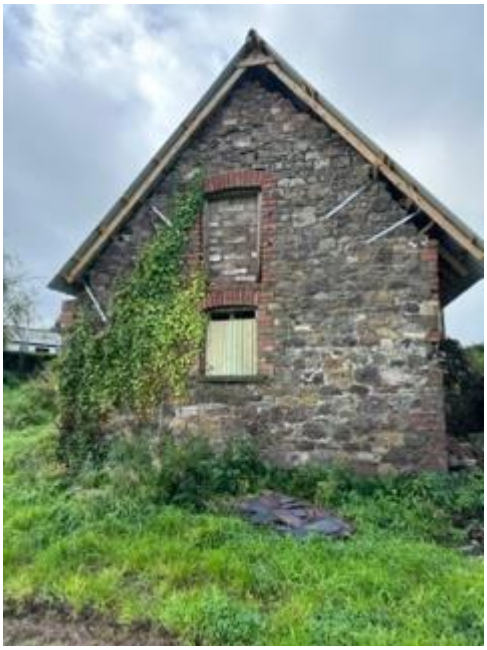

Figure 6
Left hand gable end elevation.

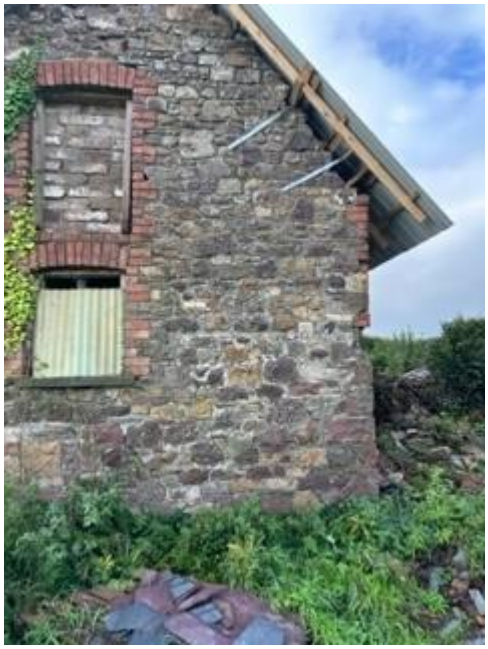

Figure 7
Close up of Figure 6

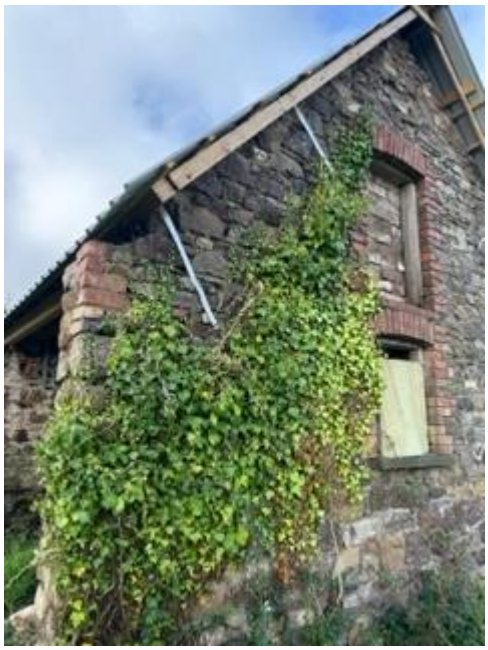

Figure 8
Left hand side of gable end.

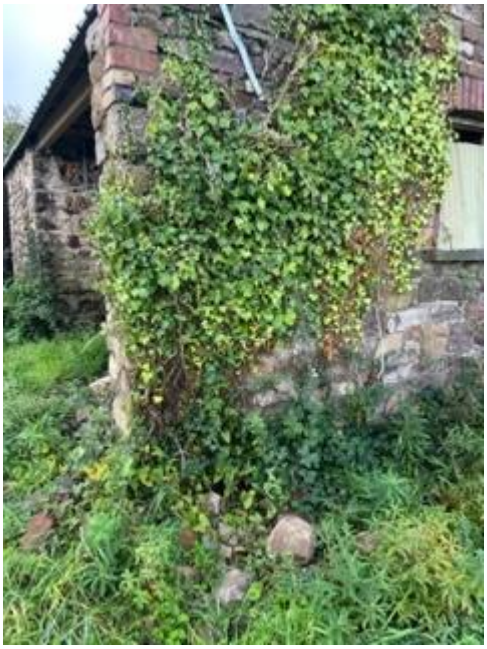

Figure 9
Close up of low-level masonry deterioration

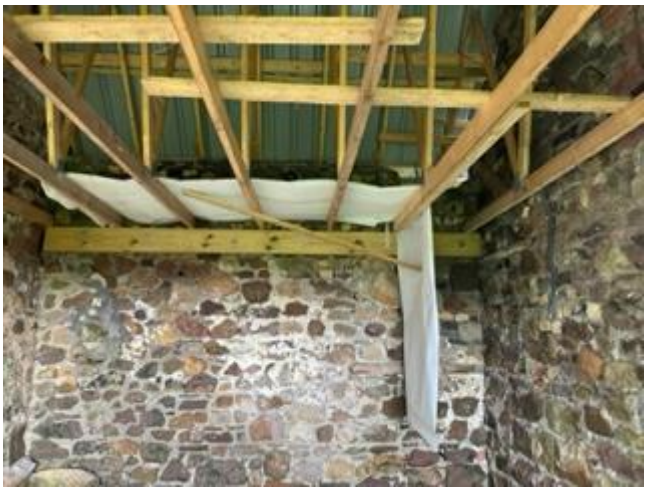

Figure 10
Internal elevation left hand room (from Coc Y North Road)

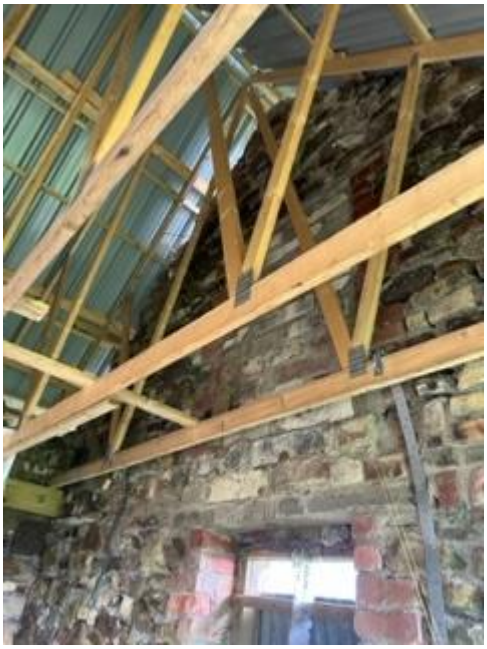

Figure 11
Internal trussed roof

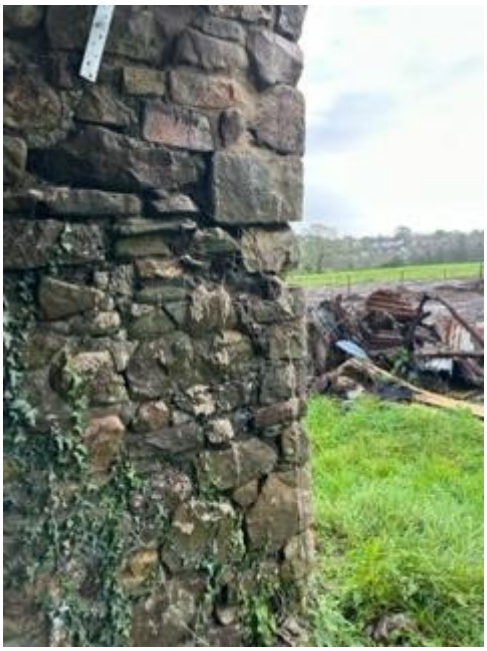

Figure 12
Deterioration to gable end - internally

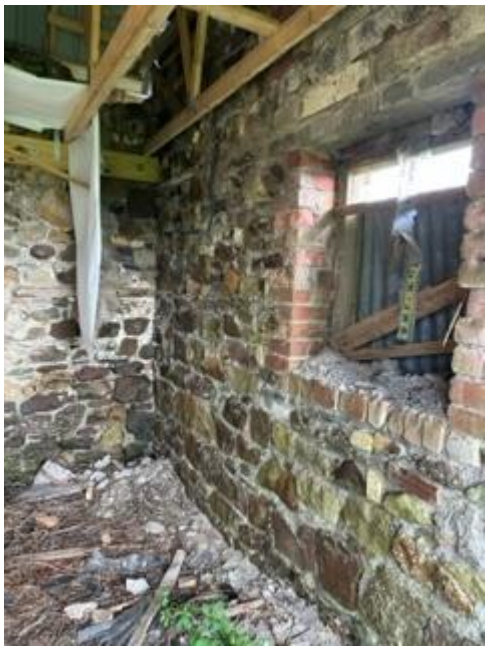

Figure 13
Internal gable end elevation.

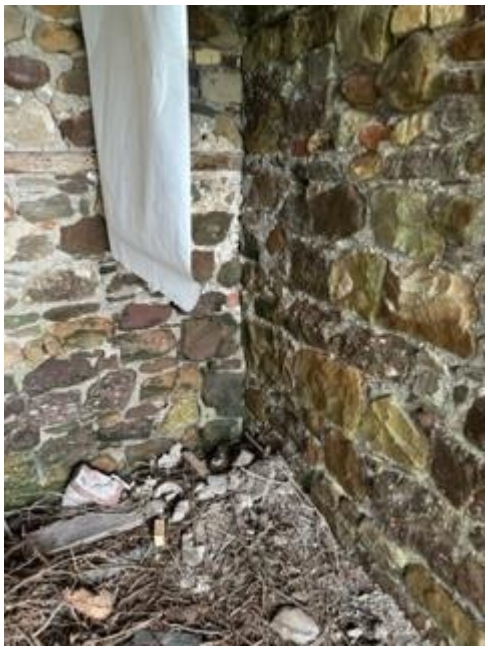

Figure 14
Cracking at junction of gable end and LH gable end elevation

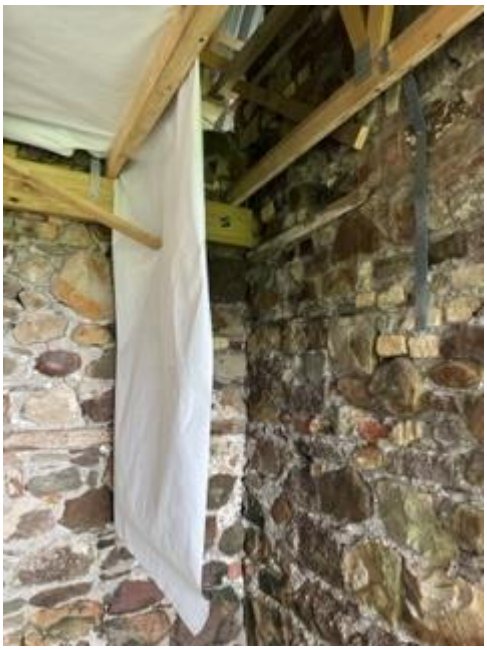

Figure 15
As Figure 14

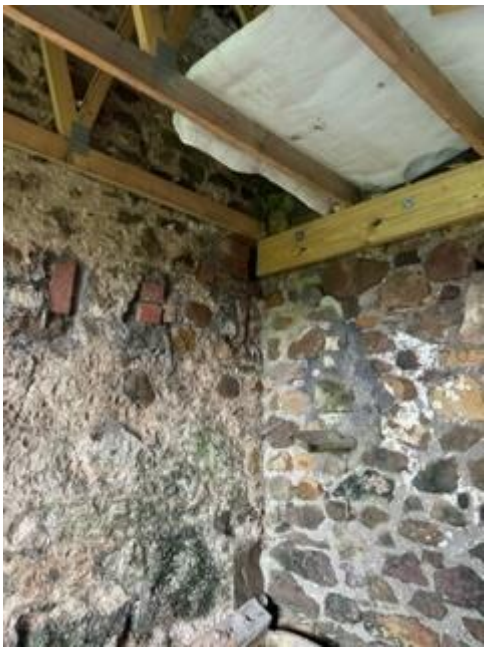

Figure 16
As Figure 14

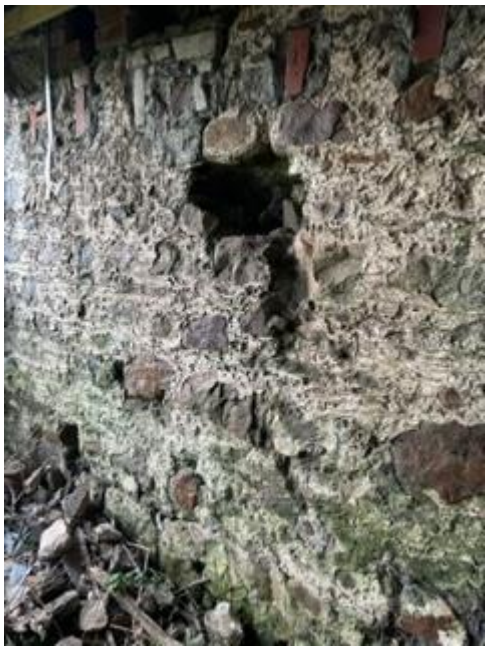

Figure 17
Internal deterioration to internal wall

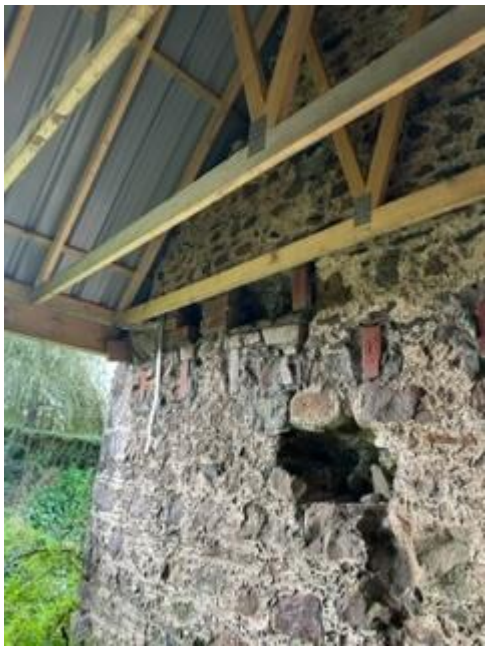

Figure 18
As Figure 17

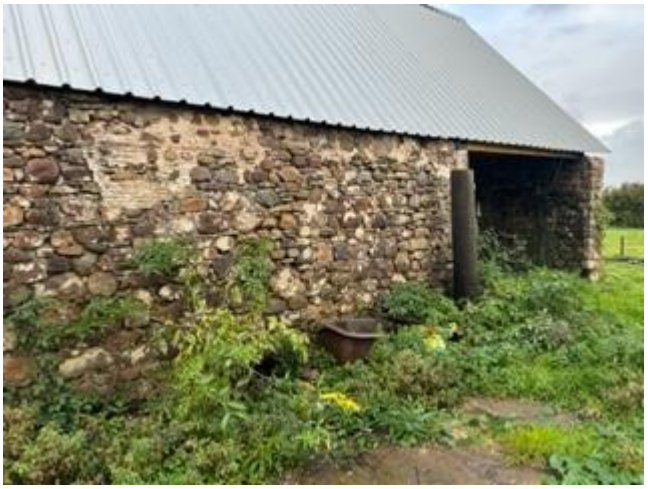

Figure 19
Rear elevation

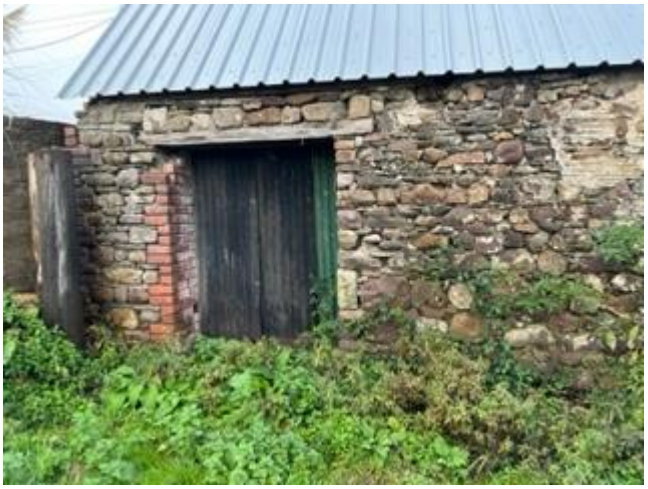

Figure 20
As Figure 19

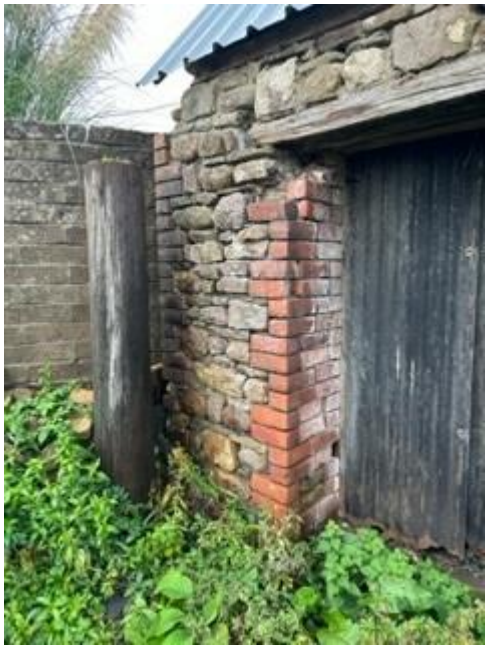

Figure 21
Brickwork reveals to structural opening.

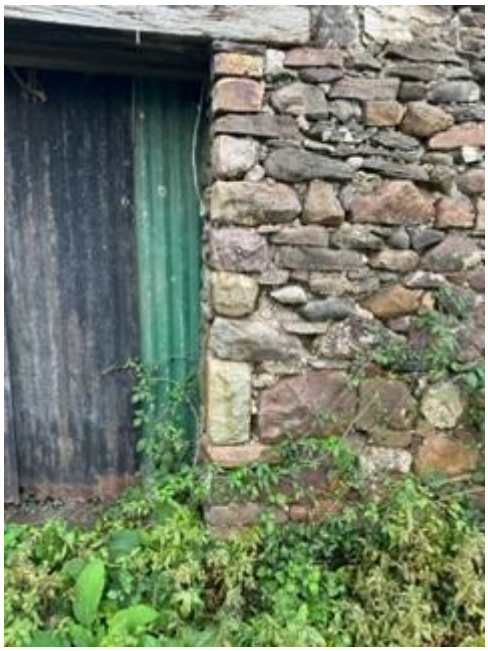

Figure 22
Opposite reveal.

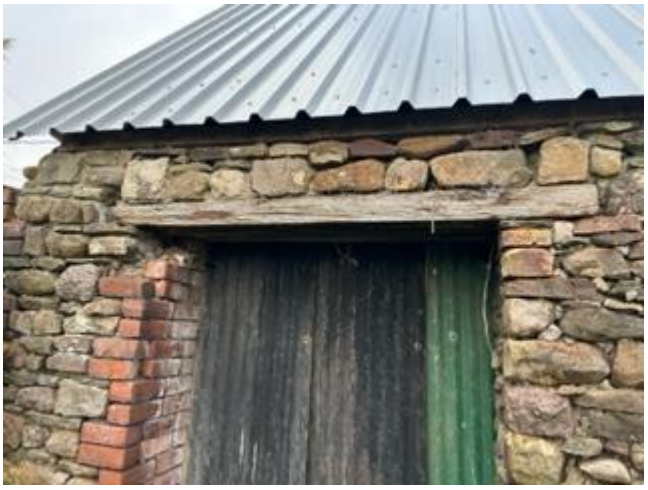

Figure 23
Lintel to structural opening.

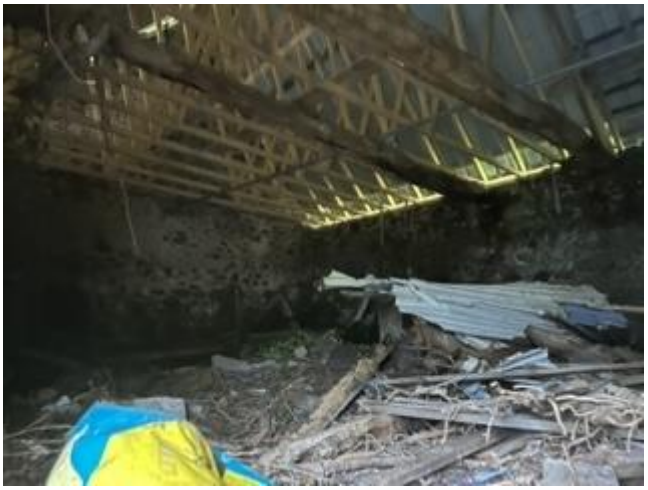

Figure 24
Trussed roof to right hand room.

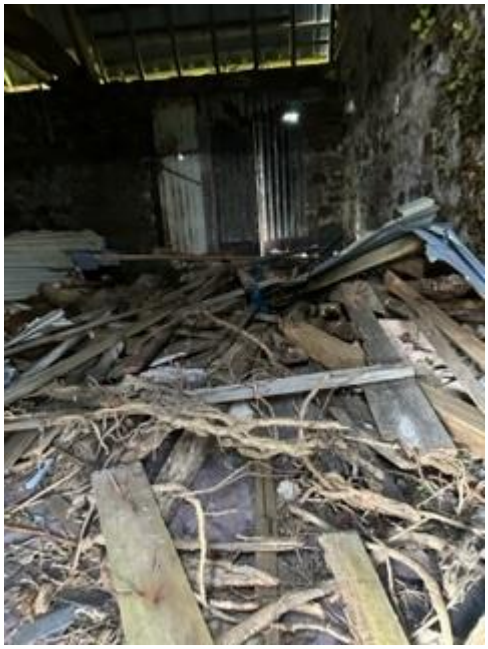

Figure 25
Debris to right hand room.

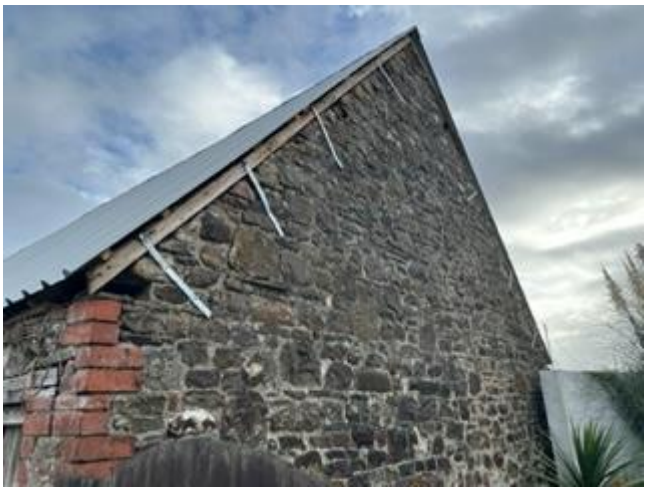

Figure 26
Right hand gable.

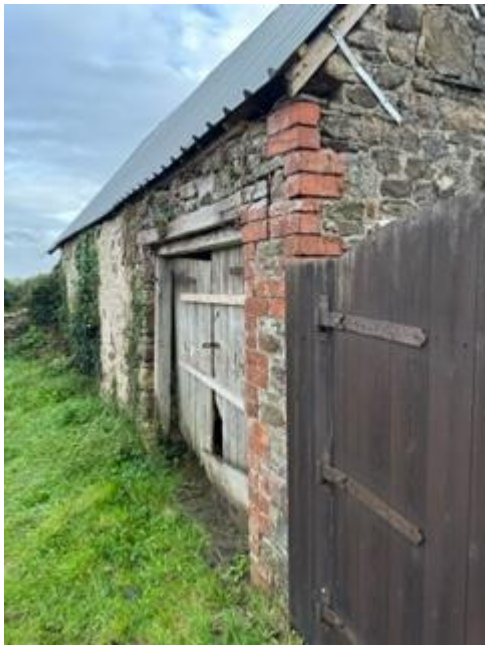

Figure 27
Right hand front elevation junction