

**STRUCTURAL APPRAISAL  
PROPOSED CONVERSION  
OF BARN AT  
LAND EAST OF MYRTWYDD  
DINAS CROSS  
PEMBROKESHIRE  
SA42 0UR  
RCA REF: 21130**

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Date: Sept. 2021

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## **1.0            INTRODUCTION**

This structural appraisal has been undertaken by Roger Casey Associates, Units 10 & 11, Merlin's Court, Winch Lane, Haverfordwest, SA61 1SB acting on instructions received from RLH Consulting – acting on behalf of Wales & West Housing.

Our appraisal is based on an inspection of the property and contains our considered opinion as to the way the property, or parts of it, have responded to the conditions to which it has been subjected up to the present time.

We made a purely visual inspection only and, as such, we have not inspected woodwork or any other parts of the structure that are covered, unexposed or not readily accessible, and are therefore unable to report that any such part of the buildings are free from defect.

We did not undertake any excavation work to examine ground conditions or foundations generally, test any drains, electricity, gas, or any other services. Neither did we consult with the statutory authorities.

All references to locations at the barn are made as it is viewed when standing viewing the front, north-east facing elevation, of the building – the elevation with the main entrance door.

## **2.0            SCOPE OF WORK**

We understand that the Wales & West Housing are considering submitting an application to seek planning permission to undertake renovation of the building to allow conversion to provide residential accommodation.

Our remit is to undertake a structural inspection of the building and subsequently prepare a report summarising our observations, conclusions and recommendations.

A structural engineer's report is required to accompany the planning application. The purpose of the report is to outline the current structural condition of the building and comment on the suitability of the walls to the building for the proposed works and provide an outline of any remedial work required.

This appraisal provides an overview of the structural condition of the walls to the building and, although a number of recommendations are made, this report should not be considered as a detailed schedule of visible defects and repair.

### **3.0            GENERAL**

The barn comprises of a detached single storey building located in a field on the boundary with a dwelling known as Myrtwydd and close to the frontage with the site with the A487.

The barn has in the past been used for agricultural purposes but it is no longer needed for this use.

Based on the form of construction the barn is likely to be in excess of 100 years old.

The plot on which the building is constructed is reasonably level.

The building is rectangular on plan. Attached to the left and right are a small outbuilding and lean-to structure respectively. These are of poor construction, and it is assumed these will be removed and hence are not considered further in this appraisal.

Internally the building is open apart from a timber dividing wall - no masonry or load-bearing internal walls are in place.

The form of construction of the building is summarised as follows:

Roof – the roof to the building comprises of a pitched roof with profiled sheet cladding. This is supported on timber purlins that in turn are supported on the left and right gable walls with intermediate support provided by 'A' frame type raised tie trusses that are supported on the front and rear walls.

External walls – the perimeter walls to the building are constructed of random stone masonry typically 500 to 600 mm thick.

Internal walls – no masonry internal walls are present.

Ground floor – a concrete ground bearing slab is present.

## **4.0            OBSERVATIONS**

We summarise below our observations relating to structural and associated matters based on our inspection to date.

### **4.1            External Observations**

On plan the building is a detached rectangular shaped structure.

The ridge line extends left to right of the building between gable walls.

External ground levels are at a similar level to the internal floor level.

No gutters were in place at the time of our inspection.

Visual sighting of the front wall suggests that it is reasonably plumb.

To the rear elevation there is an outward lean in the wall.

There is a vegetation growth over the rear wall – the roots are embedded in the joints in the stonework. Based on the size of some roots it is considered likely that dense vegetation has been established over the wall in the past.

Also to the rear elevation we noted that the timber wallplate was overhanging the top of the wall. It is not clear whether it was built in this way or movement has occurred.

To the left gable elevation small trees and shrubs are present – some are located close to the wall and roots may have spread toward and under the wall.

Also to the right gable wall vegetation is established on/in the wall and roof. Timber roof support beams to the lean-to are bedded in the gable wall.

Timber lintels are present over the door and window openings in the front elevation.

### **4.2            Internal Observations**

To the rear right corner a vertical crack was noted between the rear wall and right gable wall. The crack appears consistent with an outward lean of the rear wall.

A water tank is supported at high level by the rear and right gable walls – it is not clear whether the weight applied by the water tank has

#### **4.0            OBSERVATIONS (Continued)**

contributed to the movement.

Timber lintels over the door and window openings are visible internally.

A slight crack is present at high level where the left gable wall meets the front elevation wall.

A vertical crack is present below cill level of the left hand window in the front elevation. This appears old and no crack was noted above the window head.



## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

The following conclusions and recommendations are made based on our inspection of the property and our observations to date as summarised above.

The remedial work outlined below is not presented in a particular order and the contractor will need to assess the appropriate order to undertake works in conjunction with the architect's scheme drawings. Where deemed necessary provide appropriate temporary support to ensure continued stability of the walls that are to be retained and to provide a safe working environment. It may be necessary to undertake some works in stages so that the extent of work occurring at any one time is not such as to impair the overall stability.

### **Walls**

We are of the opinion that the majority of the front elevation and both gable walls to the building can be retained and used in the renovation and conversion to residential use subject to carefully undertaking the remedial works outlined below

With regard the rear elevation wall we consider it likely that, in order to ensure the long-term stability of this wall, it is likely the majority of the wall will need to be largely taken down and rebuilt. Once remedial works to address the presence of vegetation in the wall combined with the outward lean it is considered likely that the structural integrity of the wall will be found to have been adversely affected. On that basis we recommend that consideration be given to this wall being carefully taken down. If this is found to be the case then the replacement wall will need to be constructed on new foundations and the rebuilt masonry bonded and tied to the existing to maintain the stability of all walls.

With regard the remaining walls we consider that where necessary internal and external faces of the walls should have their joints raked out, stonework made good and be repointed. The re-pointing should be undertaken using a lime-based mortar. Additionally, any cement based repair mortar which has been used previously should be carefully raked out and repointed with a lime-based mortar.

The trees and bushes adjacent the left gable should be carefully removed and any remaining roots treated.

### **Lintels**

The existing timber lintels should be carefully removed and replaced with suitable concrete lintels.

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**5.0                    CONCLUSIONS AND RECOMMENDATIONS (Continued)**

**Roof**

A new roof structure will be required. This should be designed and detailed so as not to impose lateral forces on the walls. Lateral and vertical restraint straps should be provided as per current Building Regulation requirements.

New rainwater gutters and downpipes should be provided to the eaves. The downpipes to discharge to a suitably designed and installed below ground drainage system leading to a soakaway or suitable point of discharge. Soakaways should be located at least 5.0m away from any building.

**Ground Floor**

We assume that a new ground floor construction will be provided. This will need to meet current Building Regulation requirements. The depth of excavation for the new floor construction may extend below the formation of the stone walls. If so, care will be required to avoid undermining and instability of the walls – it may be necessary to undertake the excavation and rebuilding works in stages.



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