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April 2023

STRUCTURAL REPORT

On

**STRUCTURAL SUITABILITY FOR CONTINUED USE
AS A RESIDENTIAL HOUSE**

At

**SUNNYSIDE FARM
CAMBROSE
TR16 4HT**

For

MR & MRS AINSWORTH



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1.0 Instructions and Limitations

- 1.1** Instructions were received from you requesting a visual structural inspection of the property. The purpose of the survey is to inspect the building and to advise upon it's structural suitability for continued use as a residential house.
- 1.2** Initially, our survey was to be visual only, without damage. Our report is limited to the inspection of visible elements of structure only. No inspections have been made of woodwork, damp proof membranes or other parts of the structure which were covered, unexposed or inaccessible and we are therefore unable to report that such part is free from defect.
- 1.3** This report is prepared for the information, and use of Mr & Mrs Ainsworth, any liability of Ian Harban Consulting Engineers to any third party, whether in contract or in tort, is specifically excluded. Any third party finding themselves in possession of this report may not rely upon it without first obtaining the written authority of Ian Harban Consulting Engineers.
- 1.4** RHS refers to the right hand side of the building when viewed from the front.
- 1.5** LHS refers to the left hand side of the building when viewed from the front.

2.0 Description and History

- 2.1** The property is a traditional two-storey rectangular cottage with a single-store shed to the left-hand side.
- 2.2** It is understood that you purchased the property approximately two years ago and moved in for occupation one year later. During that time, I understand that it has become apparent to you that there are certain inherent and significant shortcomings within the property that have led to your proposal to take down and reconstruct.

3.0 Inspection

3.1 First inspection was made by I G Harban on 18 April 2023.

3.2 All rooms were visited and walls inspected from ground level externally.

4.0 Observations

4.1 Roofs

- 4.1.1** The roof is of traditional construction with a slate covering and timber structure below.
- 4.1.2** When viewed externally, it is apparent that the roof line is not straight and deflection of the timber roof structure has occurred in the past.
- 4.1.3** Internally, minor cracking was observed between the ceiling finishes as the junction with the walls.

4.2 Walls

- 4.2.1** The walls are of traditional solid stone construction, which comprises of two skins of stone occasionally tied together, usually with a very weak mortar, sometimes almost entirely consisting of soil rather than having any lime or cement content.
- 4.2.2** It was apparent that a large section, around 50% of the rear wall, had been rebuilt in the past and I understand that this outer skin of stone collapsed with no warning prior to your ownership.
- 4.2.3** Internal finishes around the property close to ground level are noticeable damp with flaking paint and delamination.
- 4.2.4** It was noted that the paint colour to the kitchen walls was yellowing and you have advised that a particular wall was painted in white paint only several weeks previously.
- 4.2.5** I also understand that on a number of occasions you have encountered running water within the electrical service outlets within the walls and that this has caused electrical malfunction within the property.

4.3 Floors

- 4.3.1** It was not possible to inspect the seating of the first-floor timber joists in the external walls. However, given the extent of noticeable damp in the internal walls, it is almost inevitable that the joist ends embedded in the external walls will have some level of decay.
- 4.3.2** The ground floor is also likely to have a little or no damp proof, radon nor insulation present.

4.4 Foundations

- 4.4.1** The foundations of the property were not inspected but there was no evidence to suggest a shortcoming that would lead to differential movement within the foundations.

5.0 Discussion

- 5.1** On cursory initial inspection the property appears to be quite common and similar to other stone traditional cottages of this type. However, inspection and consideration to a more detailed level does identify a number of significant shortcomings and risk factors associated with the building. It is clear that the walls are significantly more porous than those that might normally be expected to be encountered in this type of building. This is leading to ongoing and structurally significant deterioration of the building fabric both in terms of embedded timber within the walls and the long-term stability of the walls themselves.
- 5.2** The property is painted externally and as such it is not possible to establish the precise construction nature of the walls. However, the texture of the external appearance suggests that there are stone lumps almost certainly granite with a bedding. In this case, it appears likely that the bedding material is closer akin to earth than a cementitious lime-based mortar. High levels of moisture within the wall constructed in this fashion can lead to gross structural deficiency, as was encountered when the rear wall collapsed without warning.
- 5.3** Not only are the high levels of moisture causing deterioration to the building fabric but also inducing a high level risk factor in relation to water penetrating electrical sockets and light switches services.
- 5.4** We are therefore left with a building highly compromised, both in respect of long-term structural viability, high levels of damp and moisture within the building, causing further problems to embedded structural timber and associated issues with unacceptably high frequency of replastering and decoration being required and risk associated with moisture and free water within electrical services.
- 5.5** It is said that treatment of damp in walls can sometimes be cured through the application of waterproof coatings to outside face. However, in historic buildings, this does not usually remedy the problem as damp still pervades upwards through walls which inherently have no damp proof course. In addition, injected damp proof courses have a poor record in traditional solid stone and earth walls.

6.0 Conclusions

- 6.1** The levels of moisture penetrating the walls are at an unacceptable level and are likely to lead to gross structural delamination of the external skin of stone, ongoing unacceptably high frequency of interior replastering and decoration, unacceptably high risk factors associated with the electrical installation, unacceptably high risks associated with decay to embedded structural timber and ongoing health risks to the occupants.
- 6.2** In considering the works that would be necessary to address these issues, which would include but are not limited to; stripping of roof slates to expose truss and rafter feet on top of the walls and address and repair or replace defective timber, removal of first-floor to allow joists to be reinserted into waterproof pockets, sequential deconstruction and reconstruction of the stone walls to allow the insertion of a damp proof course and for the reconstruction to include a lime-based mortar, removal of the ground floor to insert a radon barrier and damp proof membrane and all associated external and internal finishes and decoration, it is clear that little, if any, of the existing property would remain unaltered.
- 6.3** Given the extent of such works, it is likely that building control would require the reconstruction to be in accordance with the current building regulations. This would require significant deviation from the original construction methods as it would be necessary to incorporate insulation, gas and damp proof membranes, current airtightness and ventilation requirements, along with associated electrical and heating improvements.
- 6.4** In my experience, the cost of these works would exceed by some significant margin the cost of demolition, (retaining as much reusable stone as possible) and reconstruction. Such works would also enable the property to be reconstructed incorporating current or better thermal insulation requirements in accordance with the building regulations.

APPENDIX A

Photographs



PHOTOGRAPH 1



PHOTOGRAPH 2



PHOTOGRAPH 3



PHOTOGRAPH 4



PHOTOGRAPH 5



PHOTOGRAPH 6



PHOTOGRAPH 7



PHOTOGRAPH 8



PHOTOGRAPH 9



PHOTOGRAPH 10