



JAC Structural Engineering

# STRUCTURAL INSPECTION REPORT

CONVERSION OF EXISTING STONE OUTBUILDING

BIRCH COTTAGE, BROCKWEIR

CLIENT:	JOE PAWSON
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## 1.0 INTRODUCTION

### 1.1 BRIEF

To undertake an inspection of the redundant barn, adjacent to Birch Cottage, in Brockweir, NP16 7NU.

The inspection was carried out in order to;

- Assess the condition of the barn with regard to its potential for conversion into a holiday let property.
- Assess the amount of work needed to the structural envelope prior to carrying out the proposed conversion works.

This report will accompany a planning application on behalf of the owner, who is seeking Planning Consent for the conversion from the Forest of Dean District Council.

The inspection of the property was carried out on Monday 23<sup>rd</sup> September 2019 by Richard Jackson, Director of JAC Structural Engineering Ltd.

The weather was overcast and wet during the time of the inspection.

### 1.2 REPORT LIMITATIONS

This report is issued with the following limitations regarding its use;

- It is used solely for use in determining the Planning Application deposited with the Local Authority,
- The survey is undertaken on behalf of the named client only and the report should not be shown to any other person other than the professional advisor of the client without the written consent of JAC Structural Engineering Ltd. All statements and expressions of opinion contained in the report are provided on the strict understanding that they are for the benefit of the named client only. JAC Structural Engineering Ltd accept no liability in contract or tort to any other person other than the client.
- JAC Structural Engineering Ltd have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible, and so we are not able to comment that any such part of the property is free from defect.
- JAC Structural Engineering Ltd has not made any formal enquiries of the Local Authority or other bodies in connection with the rating, environmental, planning, mining or other matters nor have JAC Structural Engineering Ltd checked responsibility for maintenance of boundaries, rights of way or the existence of any easements or wayleaves. These are matters that should be pursued by a solicitor.
- In the unlikely event that any dispute arises out of the content of this report you must notify JAC Structural Engineering Ltd of any problem before any repair or remedial works



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are carried out by or on your behalf and allow JAC Structural Engineering Ltd an opportunity, on reasonable notice, to inspect/view the property.

- The survey is limited in its scope to the envelope of the building and has not investigated past uses of the site or any site history. A limited ground investigation has been undertaken in which trial pits have been dug to provide a view of the ground conditions and existing foundations. No quantitative strength testing of the soil has been undertaken (such as a shear vane test).



## 2.0 EXISTING STRUCTURE

### 2.1 BUILDING DESCRIPTION

The barn is a single storey, stone structure, approximately 13m long x 5m wide.

The barn is situated to the north west of Birch Cottage and is bounded on the west side of the building by a public highway.

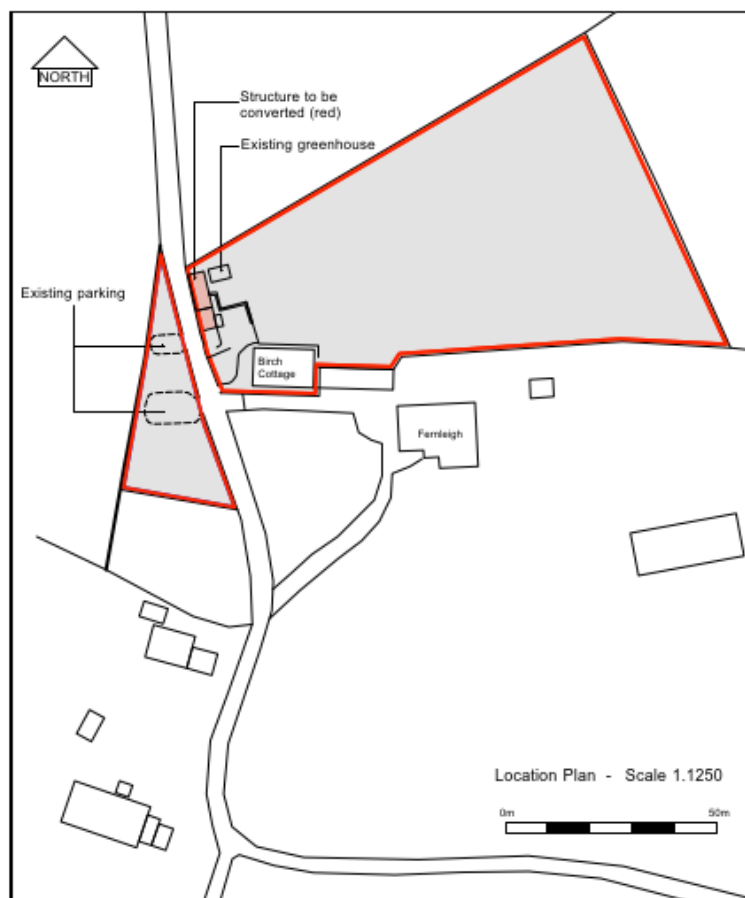


Figure 1- Site Location Plan (extract from 'Proposed Plans' drawing)

The barn is constructed from traditional stone walls, most of which remain plumb and without significant cracking or deterioration. No damp proof course was observed at the base of the stone walls.

A small section to the south of the existing building retains a corrugated iron roof supported on timbers. The rest of the building has no roof. There is evidence that a mezzanine floor once existed towards the southern end of the barn, however this floor has since been removed.



*Figure 2- Barn south elevation*



*Figure 3- Barn north-west elevations*



## 2.1 GROUND CONDITIONS AND EXISTING FOUNDATIONS

Trial pits were excavated at several locations around the perimeter of the barn to assess the soil conditions and determine the depth of the existing foundations.

The trial pits found that the walls continued below ground level and are bearing directly onto very large stones / bedrock. All 5 trial pits found bedrock or very large stones to be present approximately 200 – 300mm below the existing ground level. The top 200 – 300mm of soil is primarily organic topsoil type material.

The internal ground floor structure is compromised in part from large flagstones, with soil in some areas.



*Figure 4- Trial Pit showing large stone footings*



*Figure 5- Additional trial pit showing large stone footings*

## 2.2 CONDITION OF STRUCTURE

The existing stone walls and foundations were found to be in reasonable condition for a structure of this type, with movement and cracking in the stone walls observed as relatively minor. It is expected that typical masonry repairs will be carried out, such as repointing and the installation of 'helibars', as required to stabilise any cracks.

The walls were found to be plumb with no visible 'splaying' or leaning of the walls. This defect is often encountered once a roof truss has failed and exerts a lateral load at the head of a wall. The reintroduction of a roof structure, constructed from timber trusses or rafters supported using a ridge beam, will assist in stabilising the walls, providing lateral restraint and additional compressive load preventing tension cracks opening in the walls.

The current condition of the stone walls speaks to the suitability of the existing foundations.

The ground floor of the property will be excavated as required to remove organic topsoil, prior to an insulated ground bearing slab being installed. It is not anticipated that any excavation at the ground floor level will extend below the existing footings. Undermining the existing stone foundations is therefor not considered to be a risk and underpinning not required.





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The existing roof and any remaining timbers, lintels included, should be stripped out and replaced as necessary to suit the proposed building. No inspection of these items was made.



### 3.0 SUMMARY AND RECOMMENDATIONS

The existing structure presents a good opportunity to convert and preserve a traditional stone outbuilding for re-use as a small holiday let / dwelling.

The structural inspection concluded that;

- The existing walls are in reasonable condition and can be adopted for the proposed structure.
- The foundations observed were of reasonable size and stability for a structure of this nature. As such, no works are deemed necessary to the building foundations.

The following works are to be undertaken as part of the proposed scheme to improve the integrity of the structure;

- A liquid injected Damp Proof Course should be installed to comply with Building Regulations and prevent water rising up the external walls.
- An insulated, ground bearing reinforced concrete slab with waterproofing membrane lapped up the stone walls will provide the ground floor structure suitable for a dwelling.
- Localised, sympathetic repairs to the existing stonework would provide a satisfactory supporting structure for a converted barn. Masonry repairs such as repointing and the installation of 'helibars' will be carried out as required. Traditional lime/sand mortar should be used for repointing works.
- All existing timber lintels and windows will be replaced to suit the proposed scheme.
- Reinstatement of the roof, either by traditional timber roof truss and purlin, or a steel ridge beam and timber rafters, will stabilise the walls and provide lateral restraint to the structure. The rafters will be supported on a traditional timber wall plate, strapped at max. 2m centres using 'Simpson Strong Ties' or similar to prevent uplift.



## 4.0 TERMS, CONDITIONS AND LIMITATIONS OF REPORT

### 1. GENERAL

This report is confined to an inspection of the structural elements of the property only. Therefore, the report excludes any inspection or comment on electrical and mechanical installations, decorative conditions, damp proofing, non-structural timber fixtures, fittings, mouldings, coverings, windows, finishes, etc., and all other non-structural matters.

The purpose of this report is limited to an opinion on the structural condition of the property. We shall only report upon those structural defects that may materially affect the stability of the property and provided that these defects are reasonably detectable at the time of our inspection. Whilst we will use all reasonable skill and care in preparing this report, it should be appreciated that we cannot offer any guarantee that the property will be free from future defects or that existing ones will not suffer from further deterioration.

### 2. ROOF STRUCTURES

It should be noted that roofs and roof timbers can be subject to deterioration and it would be necessary for you to make specific arrangements for the inspection of this area if you require confirmation about the condition.

### 3. UNEXPOSED PARTS

Internal inspection is made within the limits of ready accessibility and it is not normal practice to lift floor coverings or floor boards, remove panels or plaster, or move heavier items of furniture. Consequently, we have not been able to inspect woodwork or any 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. Such unexposed parts may contain problems and you would need to make special arrangements for these areas to be investigated (where practicably possible) if you require confirmation about their condition.

### 4. FOUNDATIONS

Where trial holes are excavated as part of a structural report, the condition of the footing and the founding soil relates only to the point of excavation and does not necessarily guarantee a continuation of the same conditions throughout the non-inspected areas of the structure. Whilst such trial pits will usually provide a reasonable indication as to the general state of the foundations and ground conditions, these cannot be determined with complete certainty. However, more detailed investigations could be carried out if we are so instructed.

### 5. MONITORING

Where the stability of a structure has been confirmed as a result of a series of monitoring readings during a given period of time, this does not guarantee the future stability of the structure beyond the monitoring period.

### 6. DISCLOSURE TO A THIRD PARTY

This report may not be relied upon by a third party for any purpose without the written consent of this practice. Furthermore, this report has been prepared and issued specifically for the benefit of the addressee and no responsibility will be extended to any third party for the whole or any part of its contents.

### 7. METHANE/RADON

Testing for or enquiry about possible Methane presence from geological or organic sources, or the presence of or susceptibility to Radon Gas, have not been carried out as part of the structural report. Whilst the presence of such gases in harmful amounts is not a common occurrence, you should consider whether you wish such a test to be carried out since this may well affect the future value of the property/site and any prospects for future development.

### 8. STATUTORY REQUIREMENTS

Enquiries with local or statutory authorities have not been carried out. Whilst attention may be drawn to any apparent breaches of statutory requirements relative to the building or site, the absence of any such comment does not imply compliance with such requirements.

### 9. METHOD OF INSPECTION

External inspection of the building has been carried out from ground level by visual and optical sighting. This method means that parts of the structure may be incapable of inspection and we cannot confirm that they are free from defect. Special arrangements (where practicably possible) would need to be made before inspection of these areas could take place.

### 10. CONTAMINATION

The property and site have not been tested for any form of contamination, pollution or any other environmental impairment and we are unable to make any comment in this regard. However, such matters are an important consideration and may well affect the value of the property/site and any prospects for future development. Specific environmental audits can be arranged with appropriate specialists in this field.

### 11. TREES AND SHRUBS

Where there are trees and shrubs in close proximity to the property then there may be a risk of possible subsidence problems in the future and advice should be sought from an Arboricultural Association approved Tree Surgeon on the need for tree and shrub reduction or removal.