

**P W A / G R O U P**

CONSULTING ENGINEERS

# Fells Farm

# Structural Survey

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Date: 31/03/2025  
Reference: 23375-PWA-ZZ-ZZ-RP-S-3300-A01

**P W A G R O U P . C O . U K**



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Client: Zara Moon Architects  
Project: Fells Farm  
Report: Structural Survey  
Status: Approval  
Reference: 23375-PWA-ZZ-ZZ-RP-S-3300-A01

### Document Production Record

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Approved By	Paul McDonald	

### Document Revision Record

Issue Number	Date	Revision Details
A01	31/03/2025	Initial Issue

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Appendix A - Loading

## 1. Introduction

PWA have been appointed to undertake a structural survey of the existing barn building to Fells Farm

The purpose of the report is to comment on the structural condition of the buildings for their conversion and comment on any structural defects which will need addressing during the course of conversion.

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

Whilst we will use all reasonable skill and care in preparing this report, it should be appreciated that we cannot guarantee that the property will be free from future defects or that existing defects will not suffer further deterioration.

### 1.1. Unexposed Parts

Internal inspection is made within the limits of ready accessibility, and it is not normal practice to expose foundations, encased beams or give detailed inspections to the roof timbers.

### 1.2. Method of Inspection

External and internal inspection of the building has been carried out from ground level. This means that parts of the structure, such as roof timbers could not be inspected in detail, and we cannot confirm that they are free from defect. The inspection has been limited to the accessible areas of the building.

A site inspection was undertaken on 13<sup>th</sup> of March 2025 by Victoria Triay of PWA Group. The weather at the time was cloudy and dry.

### 1.3. 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 content.

## 2. Site Description

### 2.1. Site Location

Fells Farm is located in the Tosside area, off the B6478 running between Tosside and Slaidburn. Access is via a private country lane that finished at the barn. The exact location is grid reference SD756535.



## 2.2. Existing Building

The existing barn is a detached stone building of unknown age. Historical maps were reviewed which indicate the barn was built prior to 1847.

The building is of random stone construction with the roof formed from timber trusses spanning front to back with intermediate purlins and rafters. The foundations of the building were not exposed as part of the visit and, therefore are unknown. Given the age of the building it is expected to be founded on foundation stones.

The main barn is divided into two areas by a full-height stone wall.

One area is double height with a small opening into the adjacent area at a high level.

The other area is divided into a ground-floor space and a first-floor space. Only this area has ground floor hard finishes in the form of cobbled stones.

Externally there is a rear extension with a lean to timber rafter roof, no access was possible during the site visit to this area. There are signs that there used to be an additional side extension that has been removed in the past.

The front and right side of the building has cobbled stone floor. The back and left side of the building is currently grassed area.

## 3. Inspection of the Site

### 3.1. Observations

The existing structure appeared in reasonable condition with no obvious sign of any settlement or structural movement.

The foundations were not exposed during this inspection, so the bearing strata and foundation type are unknown.

The existing stone walls measured 540mm to 570mm in thickness and generally appear in reasonable condition. There are some areas of loose or missing mortar around the external areas of the property and some areas where individual stones were loose as a result of weathering due to the age of the property.



*Figure 1 Missing mortar and loose stone externally*

There appears to have been an extension to the side of the building that has been removed. There are still remnants of the internal rendering and the roof tiles remain embedded in the elevation.



*Figure 2 Removed side extension*

The timber trusses appear to be in a generally good condition with the exception of the area next to the main barn door, in the double height area, which appears weathered due to the barn not being properly sealed and subject to water ingress.



*Figure 3 Weathered timber truss and beam in main entrance*

There are areas of the roof where there appear to be missing tiles, observed only due to light shining through. At the time of our inspection, the weather was overcast, so the roof tile defects may be more extensive than is observed/reported.



*Figure 4 Light shining through roof in areas*

The walls have remnants of rendering/plasterwork throughout most of the internal walls.



*Figure 5 Light shining through roof in areas*

The stability of the structure is achieved with the timber trusses in the roof transferring the lateral loads into the stone walls. There are no clear signs of deflection or failures due to excessive lateral loading.

Openings have been undertaken to the property in the past, forming a larger opening at the rear and the side with a couple of small openings formed at high level. The openings have not been dressed formally to the sides and so is subject to degradation over time if left unattended.



*Figure 6 Past openings*

### 3.2. Recommendations

It is advised that trial holes are undertaken to determine the depth and the extent of the foundations. The lowering of the existing floor levels may be required to ensure the minimum head height is achieved. This may result in underpinning being required which should be designed by a suitably qualified engineer and installed by a competent contractor with appropriate insurance and experience.

Site investigations are required to inform the foundation design. Preliminary load down calculations have been completed assuming the loads as provided in Appendix A show that if foundations were to be designed with the current loading a minimum 1.2m width foundation is required for an assumed soil bearing pressure of 100 kN/m<sup>2</sup>. As no significant movement was noted, the existing foundations are deemed adequate. If additional loading is proposed to the external walls a review is to be undertaken of the existing foundations.

There are areas of the external walls that require re-mortaring due to missing mortar and loose stone. This is likely to be more extensive locally than repointing (which will be required throughout) and localised removal of masonry units should be anticipated.

A full survey of the timber roof should be completed by a timber / damp specialist to ensure no defects have been missed from inspecting the roof from the ground. In particular the weathered timber trusses and timber beams by the barn entrance door should be inspected and may require treatment or repairs subject to the result of the specialist surveys.

The survey should also assess the condition of the timbers with respect to insect infestation as is commonly seen in properties of this type.

The roof tiles will have to be removed to bring the roof to modern standards and properly weatherproofed to ensure no further water damage occurs to the roof structure. The existing tiles could be reused if found in adequate state when removed, with any suitable replacement tiles introduced in line with any planning approval.

Only insulation and finishes will be added internally to the roof structure to make the space habitable. Given the low dead load of these items, the roof structure is therefore considered to be adequate to accommodate this additional loading.

By adding an internal floor in the double-height area, further stability and robustness will be provided to the structure.

The openings require finishing properly along the sides to ensure a straight wall on either side of each one of the openings. The openings will need to be properly sealed to allow for a habitable space in the barn.

Based on our visit the existing building is considered suitable for conversion to residential purposes.

## 4. Conclusions

The barn is in fair structural condition considering the age of the building and is considered suitable for conversion to a residential dwelling from a structural perspective based on the visual inspection undertaken as part of this report.

A schedule of maintenance works would be required to facilitate any conversion as described in the recommendations section.

Design checks and potential further intrusive investigations should be undertaken by the design engineer, should planning be successful, to ensure all risks have been identified. Design work undertaken should mitigate the risks identified in both this report and any subsequent investigations.

Should any defects not noted above present themselves, then a suitably qualified engineer should be notified.

## Appendix A - Loading

End of Report