# HBL ASSOCIATES LTD.

# STRUCTURAL REPORT

# For

# Pheasants Clough

# Upper Hulme

# Nr Leek

# Staffordshire

# ST13 8UB



## On Behalf Of

Mr B Goodwin
Pheasants Clough
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## Revision Schedule

| Rev | Date | Details | Prepared By | Reviewed By | Approved By |
|---|---|---|---|---|---|
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# 1. Introduction.

# 2. External Inspection

2.1. Staffordshire Blue clay tiles on timber batons supported on timber rafters in the conventional manner. 2 no. purlins are present on each roof slope (4 no. in total) to shorten the rafter spans overall.

2.2. The external stonework is of considerable thickness and is formally coursed with larger stone quoins to each corner. 3 formal door openings are present on the field side elevation i.e. to the south west with a further door opening at high level, and a smaller ground floor opening is present on the back or North East elevation. It was noted that 4 no. tie bars are present, running across the width of the barn, with traditional pattress plates to the two central ties on the front elevation and with 'S' shaped, flat, wrought iron pattress to the remaining two tie bar ends on this elevation, and to all four tie bar ends on the North East elevation.

2.3. The tie bars appear to have been provided to arrest early outward movement to the eaves and whilst this movement appears to have stopped the original stonework can be seen to project out at the eaves by some 25-30mm.

2.4. Elsewhere externally the stonework appears to be in reasonable condition and free from any large scale structural movement other than some isolated cracking that could be associated with the original eaves movement at each corner. It was noted that this cracking was also mirrored on the internal corners within the barn.

# 3. Internal Inspection

3.1. It was noted that the purlin runs were supported at two positions by substantial queen post trusses, at approximately 4.2 – 4.5m centres. The trusses appeared to be in reasonable condition apart from the rear bearing to the left most truss which showed signs of shake damage and also showed evidence of an historic strap repair. Other than this isolated issue, the remainder o the trusses appeared to be in good condition and largely free from any visible signs of rot or insect infestation.





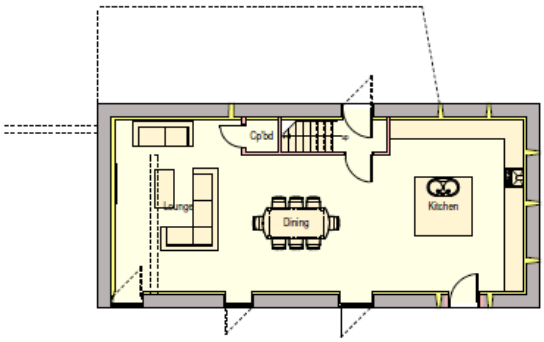
3.2. Much of the sand-cement bodging to the back of the tiles in-between the softwood batons was in place, which would suggest that the roof structure is quite robust and has not flexed enough to loosen this infill. A timber wall plate was visible but due to access issues could not be inspected at close quarters, it can be seen however that the roof has not shifted in any way and as such we would expect this wall plate to be in adequate condition.

3.3. The 4 no. tie bars visible externally run at a height approximately 1m down from the underside of the bottom boom of the roof trusses i.e. 3.5m above ground floor level. If the conversion works go ahead, these tie bars will compromise the first floor layout and as such will need to be repositioned at either a higher or lower level.

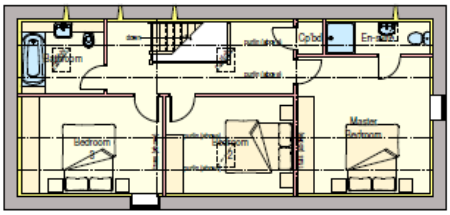
3.4. The floor construction was not recorded, but we would expect that a new insulated floor slab will be required and that as such the existing floor construction is not relevant.

# 4. Recommendations

4.1. We understand that it is the clients intention to convert the barn into residential accommodation, and that this conversion will take the form of an open plan ground floor area together with a full footprint first floor with the stairs to access this first floor positioned on the rear wall.

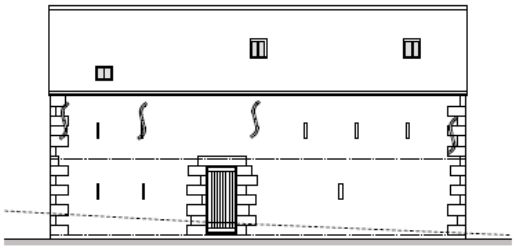



Ground Floor Plan

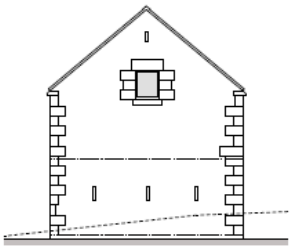



First Floor Plan

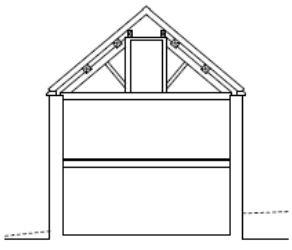
4.2. The conversion works will also require the provision of 4 no. roof lights, 3 on the rear elevation and one central to the front elevation with the remainder of the door and window openings being re-used and re-glazed.



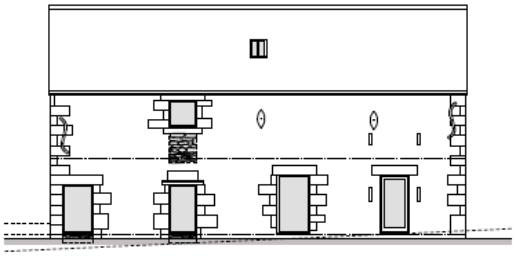
North-East Elevation



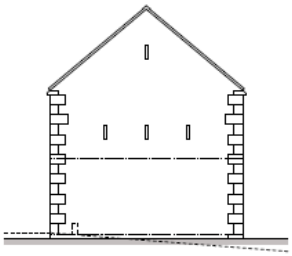
South-East Elevation



Typical Section



South-West Elevation



North-West Elevation

4.3. The proposed works will necessitate the repositioning of the 4 no. existing structural ties, and at this stage we would suggest that restraint can be introduced at 1st floor level using the first floor joists, and that the ties can be repositioned at a higher level such that they run within the ceiling void at first floor, thereby allowing the full footprint of the first floor to be utilised.

4.4. The displaced stonework will need to be taken out and re-bedded where it has become displaced by lateral movement prior to the introduction of the ties and we would take this opportunity to introduce either expanded metal ties or corner bat straps to provide restraint at the corners to restrict any further movement.

4.5. The only structural repair required to the timberwork would be the remedial works to the rear end of the left most truss and this will require either a fresh piece of oak splicing onto the side of the affected timber for the first one metre of its length or alternatively the affected end of the bottom boom could be cropped and cut away which would allow a new piece of oak to be spliced in to the existing in line. Obviously this second option will look a lot cleaner aesthetically but will require considerably more propping and support work at the time of construction.

4.6. There are a number of further items that will impact upon the barn during the proposed conversion works, and whilst these are not structural in nature we would list these as follows:

4.6.1. Insulation will be required to the floor slab, and as the nature and extent of the existing floor is not proven it would be prudent to allow at this stage for a 150mm concrete floor reinforced with A252 or A393 mesh, and topped with insulation and a 75mm screed. If the existing floor slab can be proven to be intact then it may be possible to omit the new slab and simply apply the insulation and the screed on top of the existing floor.

4.6.2. All new doors and windows that will be required within the existing openings will need to be double glazed and presumably timber framed in order that some continuity of construction can be maintained as we assume that green belt planning conditions will apply in this case.

4.6.3. The existing roof whilst robust enough to not require any structural repairs, will undoubtedly require the addition of insulation and plaster board to the back of the existing rafters to create a vaulted ceiling to the first floor rooms.

4.6.4. The existing foundations have not been proven, and whilst the general topography of the area would suggest that the barn is founded on or near bedrock, care will need to be taken should any excavations be carried out either internally or externally as this may expose these foundations.

# 5. Conclusions

5.1. The existing stone structure appears to be more than adequate for conversion to residential use provided that one or two minor repairs are carried out, principally the positioning of the existing tie bars and minor localised repairs to the high level stonework and to the affected ends of one of the primary roof support trusses. Other than these repairs there is no need for any large scale demolition required for the conversion works to take place.

5.2. We would strongly recommend that all of the exposed timbers are pressure treated to protect against rot and beetle infestation which should prolong the lifespan of the original timbers considerably.

# 6. Standard Limitations

6.1. During our inspection of the premises as presently existing, which will normally be carried out in a single visit, we shall check all visible exposed and accessible elements of construction in order to identify defects and shortcomings which are likely to adversely affect the use of the property or give rise to expenditure in the future.

6.2. We shall consider the condition and durability of the building fabric in relation to the type and age of the property, the need for repairs or special maintenance and, where appropriate, comment on the suitability of the structure for its proposed use.

6.3. We shall, where possible, lift loose laid floor coverings and inspect cellars and roof voids where appropriate, but we shall not empty the contents of any fitted cupboards, move heavy furniture or lift carpets or floorboards and our report will specifically exclude all covered, and unexposed or inaccessible areas and buried elements of construction such as foundations and built-in steels and timbers.

6.4. Apart from any balconies and roofs to which external access may be available, our external inspection will be carried out from the ground level. Our report will include a summary of our findings in respect of any outhouses, boundary walls etc. which will be inspected briefly during our visit.

6.5. In accordance with our professional indemnity insurance cover we have to state that "we have not inspected woodwork or other parts of the structure which are covered unexposed or inaccessible and we are therefore, unable to report any such part of the property is free from defect".

6.6. We will not arrange for exposure works to be carried out to the superstructure or below ground, or carry out tests for high alumina cement concrete, calcium chloride, asbestos or the use of woodwool slabs as permanent shuttering, but where appropriate, will seek further instructions for these to be carried out for an additional charge.

6.7. With regard to service installations, incoming mains, waste and drains, we shall report on any matters which come to light during our inspection as requiring further investigation by specialists, but we shall not arrange for tests to be carried out unless specifically instructed beforehand.

6.8. Although where appropriate, we will be happy to examine any lease or title documents, planning or any consents or fire certificates which are made available prior to our inspection, we shall assume in such cases that solicitors will be advising in detail upon these matters and that they will also check on the responsibility for the maintenance of all boundaries and rights of way and the existence of any easements or necessary rights of light, drainage etc.

6.9. We require to be informed, prior to the undertaking of any excavation or boring work, of the positions of any underground services or plant beneath the site.

6.10. Whilst reasonable care will be taken during the execution of field work we cannot accept liability, either direct or consequential, for the damage to any service not clearly identified to us.