



Eurlng **Allan Pearce** *BscEng ACGI CEng MICE MStructE*

Consulting Civil and Structural Engineer

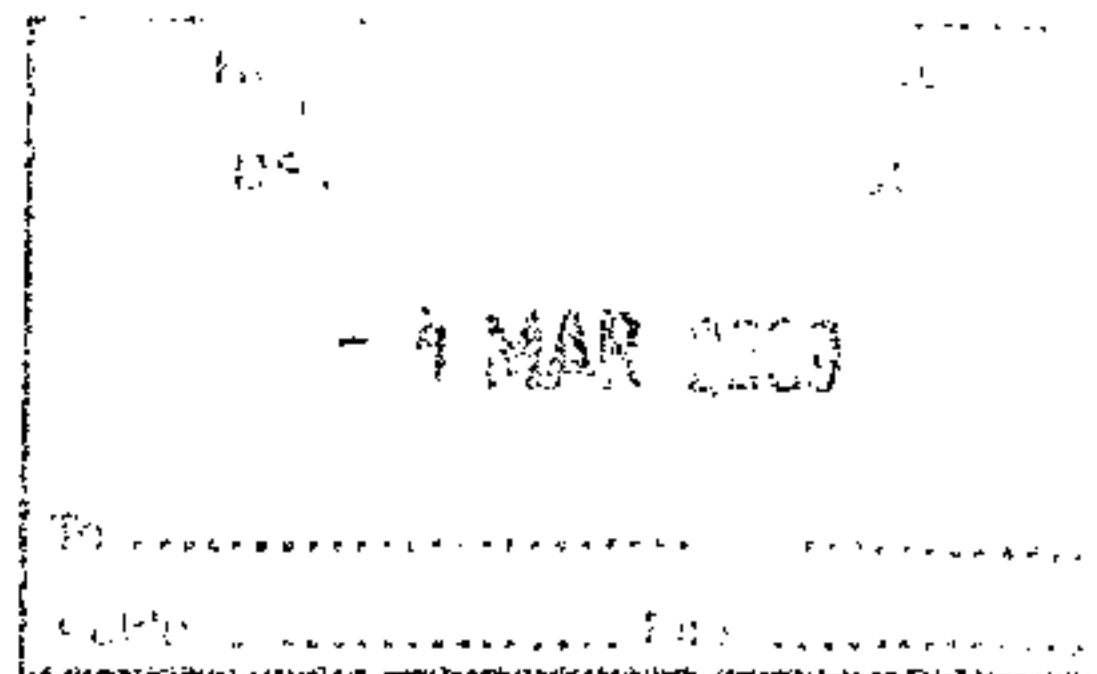
Your ref:

My ref:

ACP/08191

20 February 2009

John Hall
New Bungalow
Nunnington
Hereford HR1 3NJ



Dear John

Barns 1 and 2 at Lower House, Hillhampton, Ocle Pychard, Hereford

Thank you for your instructions, given on behalf of Mr C Simcock, for me to inspect and report upon the structure of the barn at Lower House, Hillhampton. I gather that it is intended to convert the barn into a pair of holiday cottages and that a structural appraisal is required as part of the Planning approval process. As you are aware, I inspected the structure on 17 February 2009. I have pleasure in reporting as follows:-

The inspection was limited to the visible load bearing elements of its structure: no attempt was made to open up the building fabric and therefore no comment is made on the condition of unseen elements except by inference from observations. I have not inspected woodwork or other parts of the structure that are covered or inaccessible and I am therefore unable to report that any such part of the property is free from defect.

I have received a copy of your drawings which show the proposed conversion of the barn: I have also prepared a sketch plan to show the orientation and to identify the elements as assumed for the purposes of this report.

1.0 GENERAL DESCRIPTION

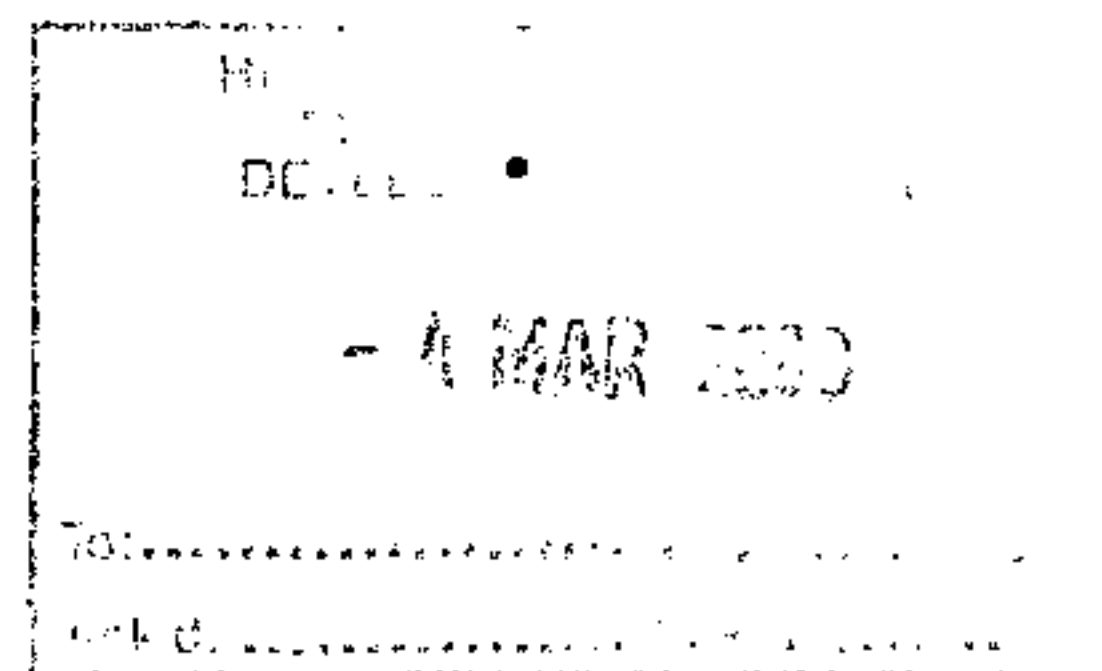
- 1.1 The structure consists of linear range of timber framed agricultural barns, byres etc. the long axis of which runs roughly east to west. The range has grown from an original three-bay barn, with extensions having been added both to the east (a single storey lean-to) and the west (a further 4 bays plus another lean-to). For the purposes

Lower Hazle Farmhouse, Durlow, Tarrington, Hereford HR1 4JQ

Telephone / fax 01531 670766 email - allan.pearce@a4u.com

of this report, the range of buildings is considered as four elements - see Sk 1 attached:-

- A The east end lean-to.
- B The original three bay barn.
- C The added four bay barn.
- D The west end lean-to



- 1.2 The structure generally consists of traditional timber framing (roughly square-panelled post and beam construction) with some of the original wattle or wattle-and-daub infill remaining. It appears that the structure was originally founded on stonework plinth walls, but many of these have been replaced by brickwork. The timber framing has also been altered in various ways in the past, described in more detail below. The roofs are generally slated, but the east end lean-to has double roman pantiles and part of barn B has been re-roofed using corrugated steel sheeting.
- 1.3 The site of the barn and its immediate surrounds is reasonably level, but the terrain falls away to the north, where there are various retaining walls. I gather that the steel framed structures to the north are to be removed. Various self-sown trees (mainly Elders) grow near to and in some cases within the barn – it is assumed that all of these will be removed.

2.0 OBSERVATIONS

2.1 East lean-to (A)

- 2.1.1 The structure is not well connected to the main barn – the principal rafter at the front merely leans against the wall-plate and the rafters do not bear on the main frame, an ad hoc purlin and strut having been added.
- 2.1.2 The purlins and some of the rafters have suffered decay and the rafters bow noticeably with deflection.
- 2.1.3 The internal principal rafter does not bear on the outer frame and has been stabilised by an added prop and wrought iron ties.
- 2.1.4 The external frame on the east side is in reasonably good condition, but the south side frame timber is severely decayed and one of the studs has failed completely.

2.1.5 The plinth stonework is dilapidated and the sections of brickwork are poor and displaced.

2.2 Barn B

2.2.1 *East gable (A-B):* The plinth and lower part of the frame was hidden by sheeting. The timber framing visible above that level appeared to be in reasonably good condition.

The original timber floor structure to the granary is also without significant defect.

2.2.2 *Frame B1:* No significant defect was observed.

2.2.3 *Frame B2:* There has been decay of the principal rafter on the north side at the purlin positions, but this may not be structurally significant: otherwise the truss appeared to be serviceable and is well braced. A welded steel truss has been added to support the relatively modern mezzanine floor -- it is assumed that this will be removed during the course of the conversion and replaced by a more suitable beam or load-bearing wall.

2.2.4 *West gable (B-C):* The lower part of the original framing has been removed and replaced by brickwork. The lower course of brickwork have deteriorated severely due to dampness and frost (and possibly chemical attack from salt or urine). The timber frame above the brickwork appeared to be without defect.

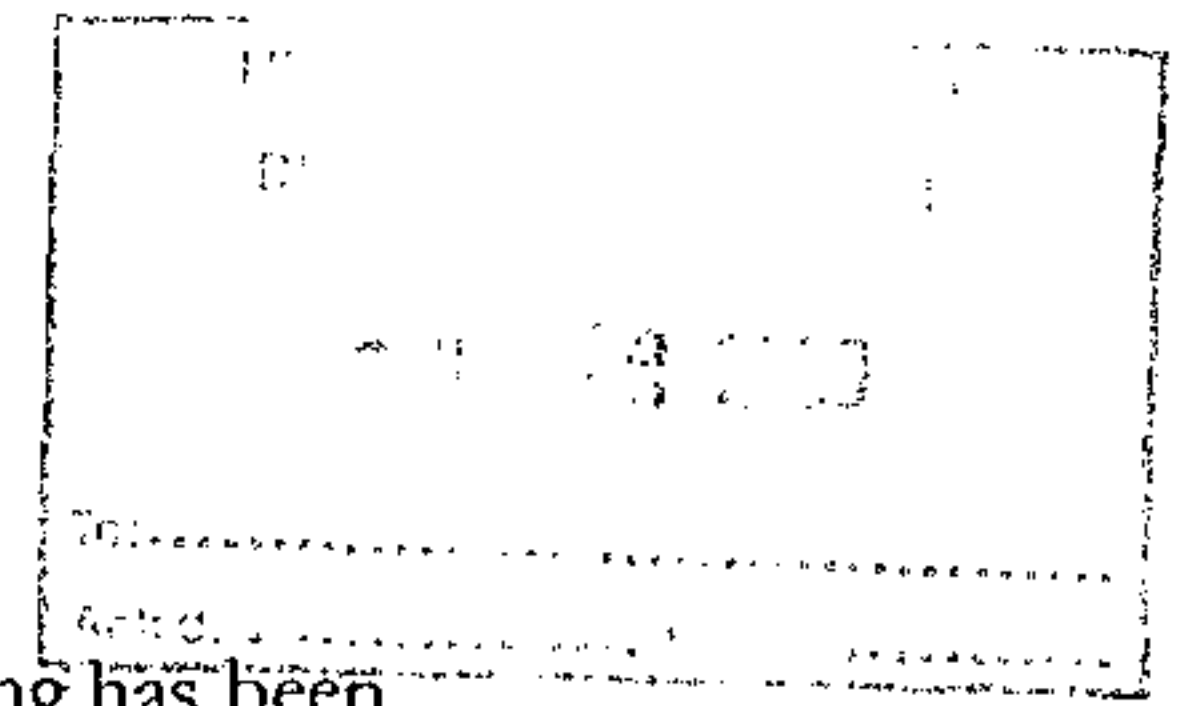
2.2.5 *South side frame:* The plinth between Gable A-B and B1 is mixed brick and stonework, all in very poor condition with loose masonry. The sill-plate and the feet of the studs and posts are decayed. The framing above has superficial weathering damage but is generally sound, save for some localised decay of the wall-plate.

Between frames B1 and gable B-C, There is a brick plinth, which has suffered some subsidence and weathering damage: in places the brickwork could be moved and rocked easily by hand. Much of the lower portion of the original framing has been removed and replaced by lighter timber studs. The timber sill-plate is again decayed and post B2 has dropped significantly, causing failure of the mid-rail joint. The wall-plate is also decayed in places.

2.2.6 *North side frame:* Gable A-B to B1 -- The stone plinth is dilapidated and the timber sill decayed. One stud is missing and part of the corner post has been cut away presumably to form a door opening.

Between B1 and B2, all of the lower part of the original frame is missing. The base of post B2 is rotten.

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There is a poor brick plinth between B2 and gable B-C: the framing has been amended and parts of the wall-plate have decayed.

- 2.2.7 *Roof structure:* The roof structure was not inspected from close quarters, but many rafters and purlins show signs of decay.

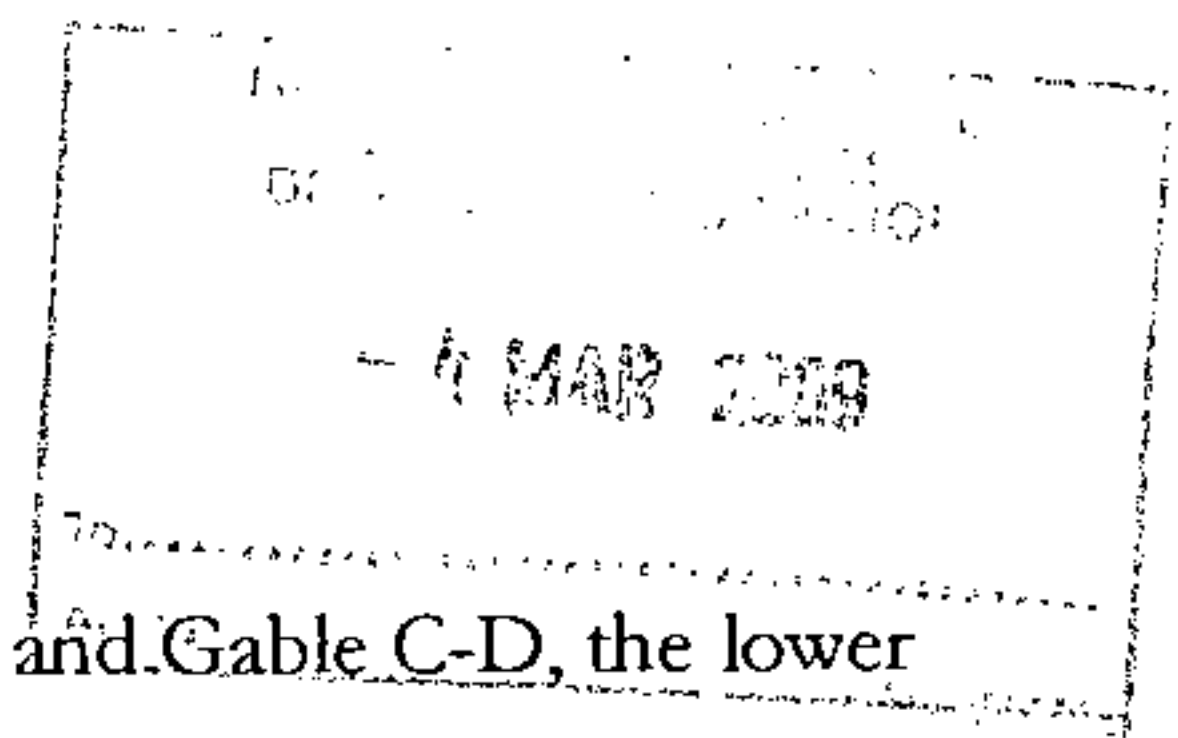
2.3 Barn C

- 2.3.1 *Frame C1:* The roof truss is generally sound, but there has been some superficial decay of the principal rafter on the south side and the tie-beam near the eaves. The braces are poor pieces of timber (i.e. unsquared timber with much insect infested sapwood) but apparently remain effective.
- 2.3.2 *Frame C2:* This frame sits on a low brick plinth and is boarded on the west side. Where the timber framing was visible, there was no defect apparent.
- 2.3.3 *Frame C3:* The lowest part of the principal rafter on the north side has rotted away completely. There was also decay evident on the south side of both the principal rafter and tie-beam. There is a beam at 1st floor level: the tenon into the post on the south side has failed and a wrought iron strap added.
- 2.3.4 *West gable (C-D):* The remnants of the original stone plinth are dilapidated and ad hoc plinths of brickwork have been added: there is no timber sill in these locations. The framing timber above is generally sound, but an added ledger piece has decayed and there is also decay of the principal rafter/tie-beam junction on the north side.
- 2.3.5 *South side frame:* As with barn B, the brick plinth is poor and the timber sill-plate decayed: the lower part of the frame has been altered to softwood studs and the upper part of the frame is distorted. There are two areas of severe decay to the wall-plate. Between C2 and C3, there is no plinth and the lower part of the frame is missing altogether. The post of C3 has dropped and its jowl is split. The wall-plate has decay in two areas.

Between C3 and gable C-D, the frame leans outwards noticeably. The stone plinth is dilapidated and the sill decayed and displaced. Two of the lower rails are missing and the remaining rails and wall-plate are decayed.

- 2.3.6 *North side frame:* There is an intermittent brick plinth wall, parts of which are failing, with loose and missing bricks. Little of the original framing remains i.e. the posts and

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wall-plate, the latter being frequently decayed. Between C3 and Gable C-D, the lower part of the frame is merely roundwood poles clad in boarding.

2.3.6 *Roof structure:* as barn B.

2.4 **West lean-to (D)**

2.4.1 This structure (as lean-to A) is poorly connected to the main barn – the rafters in the northern half are unsupported and the principal rafter on the north and south sides are not connected to the gable frame.

2.4.2 The original studs of the south side frame are missing. The frame on the west side are intact but the bases of the studs and the timber sill-plate are severely decayed. The plinth is very poor, consisting merely of loose stones, many of which are displaced.

3.0 DISCUSSION/RECOMMENDATIONS

3.1 Those original stone plinth walls that remain are dilapidated and are unsuitable for the converted barn. In addition, parts of the replacement brickwork walls have suffered subsidence and deteriorated in various ways: no trial pits have been excavated, but it may be deduced that the foundations to these walls are shallow by present day standards and these too are unlikely to be suitable as foundations for the converted structure. I therefore recommend that allowance be made for replacing all the plinth walls on new foundations: This may be achieved by:-

- removing the existing cladding, boarding and sheeting and all other extraneous items
- supporting the timber framing temporarily on a grillage of scaffolding (which will also allow the frame to be jacked up and re-levelled if necessary and re-aligned)
- removing the existing plinth walls (setting aside any stone and bricks suitable for re-use), excavating to the required depth and constructing new strip footings.
- where necessary a new oak sill-plate may be inserted, jointed into the feet of the existing posts and studs, and temporarily supported in place while the new plinth walls are built up and pinned up beneath it.

3.2 The various parts of the existing framing that are missing may be reinstated, presumably in similar form to the original, and those parts of the existing framing that

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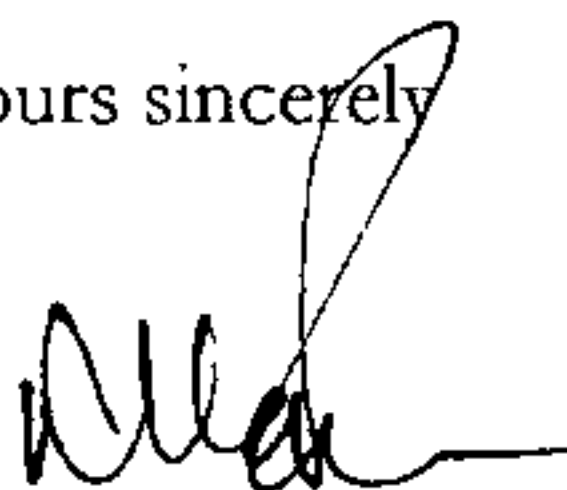
have decayed should be repaired locally using traditional carpentry methods i.e. by suitably jointing new pieces of timber into the existing members. It is recommended that all joints be checked and re-pegged as necessary.

- 3.3 The two lean-to's are both poorly connected to the main barn. Assuming that the rafters are to be replaced, improved tying could be achieved by coach-screwing a new wall-plate to the main gable frames and fixing the new rafters to these: the principal rafters should be restrained by adding steel straps or cleat, again coach-screwed to the existing framing.
- 3.4 As noted above the roof structure was not inspected at close quarters, but many of the rafters and some of the purlins showed signs of decay. It is assumed that all the rafters will be renewed as part of the conversion works and that the purlins will be appraised in more detail when suitable access is available: some replacement purlins may be required or alternatively, moderately affected purlins may be stiffened by the addition of steel angle or timber splices. The roof is well braced and the bracing should be retained to provide stability to the converted structure.

In conclusion, I consider that the structure is suitable for the proposed conversion, subject to appropriate in-situ repair works in line with the recommendations made above.

I trust that you will find these comments and recommendations to be clear, but please do not hesitate to let me know if you have any queries or require any further information or advice. Please find enclosed my fee account for services to date.

Yours sincerely



Allan Pearce

