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Mr A Galvin
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RE/KB/01/30570

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COPY

Dear Mr Galvin

Conversion of Outbuildings – Hazelwall House

Acting on your instructions through Anthony Short and Partners I visited the property on 14 November. It is understood that you hope to convert the former bakery/dairy into a holiday cottage and the adjacent two storey range (formerly pig sties and first floor stores, with attached garage) to two further such cottages.

My instructions are to advise upon the matters of condition of main walls and particularly the front wall of the bakery/dairy and rear wall of the larger range. I have not attempted to prepare detailed designs or schedules of repair, nor to list the many and obvious matters of necessary maintenance and repair or refurbishment of the structural shell, as these are large in number and individually limited in scope. I would at this stage point out that if work proceeds a Building Regulations application will be needed and that in the case of conversion of buildings from agricultural use full compliance with Part A (Structure) is required.

A) The Bakery/Dairy

The building is of two storeys, each of a single cell approximately 4.8m x 4.0m internally. The walls are of one brick (225mm) thick. The first floor is of timber, supported on a central spine beam. The roof is of tiles on timber rafters and purlins. One may guess that the building is of 18th or early 19th century origin, but has been subject to adaptation. Internally a brick arch contains an oven and supports a substantial chimney, now cut off below roof level. Alongside this was a similar arch and hearth, long ago partly removed.

The walls are generally weathered and in need of external repointing. On the rear elevation a number of individual bricks, not exceeding $2m^2$ in area are badly weathered and should be replaced.

There are generalised distortions in brickwork, but, without going into speculation as to all causes in such a small building the following can be identified as needing action.

The front wall contains a door and two windows set one above the other. There has clearly been historical settlement of the right hand side of the frontage. Whilst commonly such problems will be ancient in origin, and likely to have long ago been substantially complete, the general condition of the building prevents this conclusion from being certain. It is therefore recommended that the front wall be underpinned down to good ground at a depth of not less than 800mm over the length between the left hand side of the windows in the right hand corner.

The lintel over the ground floor window, obviously a later insertion, is of inadequately slender timber. Effectively it has failed leading to cracking of the panel between upper and lower windows. Given that both windows will need to be replaced the lintel should be cut out and replaced with an adequate member and the panel of brickwork above reconstructed.

The door had a shallow brick arch head (as may also have had the original windows). This has failed due to differential settlement movements. Above it a system of cracking runs upwards towards the right hand eaves corner, and to a lesser degree also towards the windows. Where cracking is more than about 8mm wide brickwork should be cut out and rebonded. Where it is less, repointing will be acceptable, but with acceptance that as the building 'breathes' naturally minor recurrence of cracking may be unavoidable.

All of the foregoing represent significant repair. From a strictly engineering viewpoint, and also from that of cost the simple and preferable solution might be to take down and reconstruct the whole frontage from the left hand side of the windows to the right hand corner, all built of simple new strip footings. However this does mean taking down areas of wall in this area which could potentially remain undisturbed – around 50% to 60% in total.

It becomes a matter of consideration (this being a structure within the curtilage of a Listed building) as to which course of action is most appropriate.

The rear elevation has a bow outwards, of the order of 50mm at its worst. The upper five courses below the eaves corbelling have been rebuilt to a straight line. It is also noted that the first floor beam has pattresses on its ends so that it acts as a restraining tie. These repairs are clearly of great age, and may acceptably remain without further major intervention.

However their cause will have been that the rear wall has been pushed outwards, by spread of the roof structure, which has a clear downward bow in its ridge line. The roof structure is without ties through ceiling joists or a ridge purlin so that horizontal thrusts are developed at eaves level and unrestrained through ties. It is recommended that either a horizontal ceiling by installed at first floor level so that ceiling joists may act as ties between each pair of rafters, or that a ridge purlin be installed. Depending upon architectural treatment this could be a 250 x 150mm minimum oak timber, or a 178 x 102 steel beam.

Finally it was noted that the timber beam supporting the first floor was originally of oak and about 200 x 200mm in effective cross section. Due to insect attack and other intervention perhaps half of its effective width is now lost. The strength of ancient hardwood is never easily assessed, but it would seem difficult clearly to conclude that the beam retains sufficient strength. It would perhaps be prudent to replace it with a new 200 x 200mm oak beam which will be adequate, refitting pattresses.

B) <u>The Pig Sties Etc</u>

This range clearly has a complex history, probably taking its present form in the mid 19th century, but incorporating various older elements. The central and left hand parts (as viewed from the yard frontage) are a series of ground floor cells, apparently pig sties as they contain the external swill-chutes to internal troughs, with storage over at first floor. In front of these the roof line continues downwards to form a covered access way. The right hand side is a garage, and seems never to have had a first floor.

In general the structural condition of the building is sound and apparently, from inspection suitable for conversion. However the following is noted :-

The rear wall originally retained a bank of natural ground, being rock weathered to have a considerable clay content, to a height of around a metre. You have now excavated this out to form an area whose bottom is a little below internal ground floor level. This has exposed the form of construction. As viewed from the rear the wall is in its left hand side of more recent date than the right hand side and has foundations of as yet unexplored depth. The right hand side is, as seen externally, of earlier date. Towards the right hand end its foundations are some way above the internal floor level, on bricks laid dry and standing upon the natural weathered rock.

However in this area (the left hand two cells as viewed from the yard) further exploratory excavation has taken place. It can be seen that the rear wall in this area is two bricks (450mm) thick. Internally the wall sits on a masonry foundation below the level of founding of the external parts of the wall, and there is discovered an old brick paved floor below the level at which the foundation steps out. From this it can be concluded that the inner parts of the rear wall were constructed after the outer parts and against them. There will be a need to construct a new insulated ground floor internally, and also perhaps to lower this a little to give greater head room at ground floor level.

It is unclear what the best way forward is, particularly in that there are as yet no clear architectural proposals. However, the following may reasonably apply :-

i) Where in the right hand side (as seen from the rear) the external and older parts of the back wall are now set on ground above the level of excavation they are (and that is the outer parts only) to be reconstructed in the lower parts on new foundations of suitable depth, with the dry brick areas removed. This can be done whilst suitable pins and props are in place.

ii) It is necessary to seek appropriate compromise between the costs of restoring a redundant building to beneficial use, and those of making the building reasonably proof against any reasonably conceivable risk of foundation movement due to

shrinkability of clayey soil below foundations. It can be seen that soil is to some extent clayey and will be subject to seasonal movement, or on initial exposure through a dry Summer. We take the view that this will be that foundations should not be less than 700mm below external levels nor 500mm below internal floor level. This is a reasonable compromise in all the circumstances if not ideal. Pending further physical investigation the extent to which the rear wall needs to be underpinned is unclear, and this has perhaps to await further investigation and preparation of detailed drawings.

iii) As with the Bakery/Dairy roof structures, although otherwise adequate, lack either ridge purlin or tie through upper ceiling joists. One or other is to be provided.

Yours sincerely

Copy: Mr M Parsons