

12MAY22

K C & D A Hughes
Clare's Barn Farm
Twycross
Warwickshire
CV9 3PG

Dear Sirs,

Report on visual structural survey of barn

Survey date: 09 May 2022

1.0 Introduction

1.1 The purpose of the survey was to visually assess the condition of an existing barn, and comment on feasibility for conversion to a dwelling in support of an application for development. Five trial pits were seen as part of this work.

1.2 Reference is made to the limitations of this report in Appendix A. This report is not to be relied upon by any 3rd party, without the express permission of the author.

1.3 Reference is made to Elegance Architecture and Design Ltd's drawings of the scheme for the existing layout and elevations of the building.

2.0 General description of building

2.1 The barn comprises three distinct structural elements: the main two-storey central barn, believed to be of the original construction; a single-storey mono-pitched extension to the front (east-facing) elevation; and an open barn formed with plywood timber roof beams to the rear (west-facing) elevation. The latter element is not being considered as part of the proposed application, and will not generally be considered within this report.

2.2 The proposed buildings to be converted are formed with solid masonry external and internal walls. These walls support either mono- or duo-pitched roofs formed with timber supporting structures. The ground floors are of brick construction onto top soil, where exposed.

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2.3 A hay loft is present at the north end of the main barn, but this is limited to a small area.

3.0 Observations and comments

3.1 With the exception of a small area within the main barn, all of the walls have been formed with 9" solid brickwork in predominantly stretcher bond, with some headers seen. The piers forming the front elevation are generally 2.0 x 1.5 bricks in section, as seen on the right of the general view in photograph 3.1.



3.1

3.2 Overall stability of the fully-roofed barn would be achieved by a relatively large number of substantial internal walls, forming a rigid box in conjunction with the external walls. Some further tying of the walls and/or localised re-building may be recommended as part of any refurbishment work to further improve this structural integrity.

3.3 The walls generally were found to be largely plumb and free from significant visible defects, but the following localised issues were noted:

3.3.1 Timber lintels have been used for some of the openings, and are either missing or are in a poor condition. The timber lintel over the dividing wall in the front lean-to section is an example where the lintel is sagging, and the brickwork over has cracked as a result of this sag. See adjacent photograph (3.2).



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3.3.2 There is evidence of frost damage to the brickwork in some areas, and this is most pronounced in the room next to the south-facing side elevation. Photograph 3.3 is an internal view, and photograph 3.4 is an external view of the same wall.

Frost damage normally occurs at the base and head of walls exposed to wetting and frost action, and it is possible that the bricks used on this part of the barn were reclaimed from another building, and re-used here, with the least affected facings used externally.

Although there are other areas of frost damage, these are much more localised, as the bricks generally are in good condition. Some re-building will be required to replace this section of the barn to achieve structural integrity.



3.3



3.4

3.3.3 The mono-pitched section at the south-east corner (at the right of the above image) has moved relative to the main barn, with a crack seen at the junction, together with dipping of the brick coursing and further associated cracking. This may be due to settlement, and some local re-building may be needed here. The opposite (north-east) junction of this lean-to section with the main barn has been formed with toothed bricks, and there is very little evidence of movement in this location.

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3.3.4 Arched lintels have been used for some of the openings, and a few of these are in a poor condition with sagging brickwork and cracking over. See adjacent photograph (3.5) for a typical example.

Localised rebuilding or repair will be required to these elements.



3.5

3.4 The height to the timber wall plate is around 4.0m on the main barn. These wall panels are relatively slender by current standards due to this height, and are working at a reduced factor of safety. The use of either wind posts or internal buttressing may be required to achieve Building Regulations part A compliance. This issue could also be addressed with the addition of a new first floor, reducing the effective slenderness.

3.5 Five trial pits were dug to expose the external and internal wall foundations. The general foundation used is a 1.5 brick wide stepped brick foundation, typically at around 350-400mm below ground level and although these foundations are typical of structures of this type and age, they are shallow by current standards. The foundations are supported on a red-brown, sandy clay soil, which is thought to be weathered Gunthorpe member Siltstone based on information held by British Geological Survey. No standing water was seen in the excavations. More specific observations relating to the ground are as follows:

3.5.1 Trial pit 01 (external wall, SE corner) contained roots in addition to some very stiff grey bands in the clay soil. It is understood that some small shrubs etc were cleared from around the building prior to the inspection, but at the time of the survey no significant trees were noted.

3.5.2 Although the foundations are relatively shallow and narrow by current standards, there is very little general evidence of cracking or similar defects due to foundation movement. This is thought to be

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due to the strength of the ground (weathered Siltstone) and absence of significant trees in the vicinity of the building.

3.5.3 Trial pit 04 was dug at the junction of an internal and external wall, and can be seen in photograph 3.6. The external wall foundation (rear of image) can be seen, but there does not appear to be an internal wall foundation (right of image). Note also the brick flooring.



3.6

3.5.4 The rainwater goods are either absent or currently discharge onto ground next to the building, and this has the potential to cause foundation problems due to softening of the soil or removal of fines.

3.6 It was not possible to assess the condition of the main barn roof timbers due to access and the height of the roof, but the two purlins on each slope appear to be around 10"x 4" timber sections supporting a profiled sheeting-clad roof. The roof slopes appears to be plane when viewed from the outside, with only limited sagging noted.

3.7 The roof of the mono-pitched roof section has also been formed with timber purlins, and the condition of these members is generally good. It is understood that the whole roof structure was renewed under the current ownership of the farm.

3.8 Some localised strengthening may be required to support the likely increase in permanent load, necessary to achieve thermal performance for use as a dwelling. The adjacent photograph 3.7 shows the general roof structure of the main barn, with a typical example of the sound construction of the internal walls.

Note the re-built triangular brick section, presumably added when the roof was renewed.



3.7

3.9 A retaining wall is present on the east side of the property. The purpose of this wall is to support the adjacent farm track, which is around 1.0m above the level of the barn. This wall is of solid brickwork construction and is in very poor condition. This wall (on the left of the image 3.8) will require re-building.

Note the good condition of the barn walls generally.



3.8

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3.10 A solid brick wall is present on the west side of the building, forming part of the open barn. This wall is generally in good condition (see photograph 3.9), but the foundations were not exposed.



3.9

3.11 No drawings for the outline proposals for conversion have been produced at this time, but the impact of these proposals has been considered in view of the current condition of the barn, based on a general conversation with the Architect. None of the proposals are considered likely to significantly reduce the structural integrity of the barn. Where large openings may to be formed, e.g., on the west elevation potentially, a steel frame will be required on new foundations. In some instances the proposed alterations will improve the integrity of the existing barn. For example, the introduction of a first floor.

3.12 As all of the external walls are solid masonry, it will be necessary for the wall thickness to be increased by the addition of a new inner leaf, or timber frame to improve thermal performance for use as a dwelling to meet current standards.

3.13 The existing foundations are of limited width and depth, and are thought to be suitable for the continued support of the existing brickwork walls only. Any additional load (new walls, new floors and roofs, new inner leaf etc) will require additional support on new foundations. This may be in the form of a new concrete raft internally, for example, but this would subject to detailed design.

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4.0 Conclusions

4.1 The existing barn is of typical masonry construction for its use as an agricultural building, and is considered to be of generally sound and permanent construction.

4.2 The condition of the majority of the building is acceptable, and it is considered sufficient for retention and possible conversion for use as a dwelling, within the limitations of this visual inspection and the comments noted herein.

4.3 As part of any conversion work it is normal for local repairs, repointing and replacement of damaged masonry, tying of the structure etc. to be carried out. Some strengthening of the roof structures would also be required to support increased permanent loads with the replacement of roof coverings, addition of insulation etc.

Yours faithfully,



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Encs: Appendix A : terms and conditions

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L T SIMPSON - STANDARD TERMS AND CONDITIONS FOR STRUCTURAL INSPECTIONS

GENERAL

The report is to be read in conjunction with these standard terms and conditions which are deemed to apply unless specifically noted to the contrary. Unless stated otherwise the estimated/quoted price covers the cost of travelling to and from site to carry out the requested inspection of the noted building(s) / defect(s); the inspection itself and the preparation of a written report providing observations, conclusions and recommendations (as appropriate). The format and content of this report is governed by copyright laws and must not be reproduced without permission. Any drawings or calculations contained within the report are also copyright, and are not to be used by anyone other than the client and any approving authority without express written consent.

TERMS OF REFERENCE

Except where varied by the foregoing, these services are offered on the basis of English law and the ACE Agreement 1, 2009 edition. This commission will be carried out for the client as stated and under the terms of reference as noted. The resulting information must not be used in any way by any third party (even where a contract term expressly confers or purports to confer a benefit on a third party). Liability for such misuse will not be accepted. No collateral warranties will be undertaken. Adjudication awards may be challenged as allowed under the Government fall-back scheme. Any adjudicator's decision is to be made on the basis of the facts of the Law. No agreement will be made to adjudicators' decisions made on purely commercial grounds. The report does not provide a warranty or guarantee regarding structural adequacy and condition of the building(s), but provides only a considered opinion based on a limited visual inspection.

EXPLANATION OF INTRODUCTION

The descriptions of the location, apparent construction, topography, soil types as stated in the Introduction are only intended to provide general, non-specific, background information.

SCOPE OF INSPECTION

Inspections are limited to the specific areas/defects asked to be investigated. Other areas of the property / building / premises are not inspected unless specifically requested. Unless instructed otherwise the survey consists of a visual inspection from ground level of accessible areas of walls and floors in the vicinity of the specified item(s) / area(s) / building(s). Where applicable, areas of roofs are viewed, where visible, from ground level also. It is normal practice to check floors, walls, lintels and window sills with a spirit level, where considered appropriate. Unless specifically requested otherwise, furnishings and finishes are not disturbed; inspections of roof spaces are not undertaken; investigations of dampness, timber decay or infestation are not made; foundations are not exposed to view; drains are not checked; hidden voids or cavities are not inspected; surveys are not made to detect the presence of metal ties in walls; detailed tree surveys are not undertaken; checks of electricity, gas supply and fittings, plumbing, heating are not carried out; surveys are not made to check for the presence of asbestos; assessments of fire protection are not made; checks for the presence of, or potential presence of, landfill gases are not undertaken; flood levels and the risk of flooding are not assessed. No advice, etc., in relation to asbestos or toxic moulds, is given directly or by implication and the services exclude any liability in any way for asbestos or toxic moulds. No assessment of the presence of Radon has been carried out. Radon is a naturally occurring, colourless, odourless radioactive gas present in the air which can be present at relatively high levels in certain parts of the country, notably in parts of Devon, Cornwall, Somerset, Derbyshire, Northamptonshire and Leicestershire. Further advice can be obtained from the National Radiological Protection Board.

NOTES ON OBSERVATIONS

Several observations are made during the inspections. The most significant ones are listed in the report. Unless noted otherwise, any references to "right" or "left" refers to the side as viewed from the front of the property. Where reference is made to walls, etc., being plumb or floors, etc., being level, due allowance has been made for normal construction tolerances.

BASIS OF DISCUSSION

The discussion given in the report is based on the observations noted during inspection, and previous experience with this type of building / property / defect. It should be noted that recent decorations do sometimes mask signs of movement such as cracking and that areas not inspected may contain deficiencies.

EXPLANATION OF THE SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The conclusions are summarised from the discussion which should be read in conjunction with this section. The recommendations given are based on the limited investigation as detailed elsewhere in the report. Estimated costs exclude VAT and are given as approximate guides only. They are based on similar work recently carried out but actual costs could vary dramatically from those provided for a whole range of reasons. Reputable builders or a firm of Quantity Surveyors should be contacted if more accurate costs are needed. It should be noted that during the execution of remedial works, further work necessitating additional expense may be found when finishes etc. are disturbed. On the current evidence it appears likely that the work listed in the recommendations will need to be carried out, but where tests / investigations have been suggested these may be needed before the extent of remedial work can be verified. The section identifies in general terms only the recommended work that needs to be undertaken. The recommendations should not be construed as forming a schedule of work as consideration must be given to actual materials being used and safe methods of work being adopted before construction proceeds.

FEE CHARGES AND PAYMENT TERMS

- a. For schemes where a quotation has been given, a lump sum (as quoted) will be charged for carrying out the specified work. Should additional work be required (i.e. significant changes to the brief after considerable work has been undertaken) then the additional work would be charged on a time basis, with expenses charged as incurred.
- b. The stated price/rates are exclusive of VAT and fees become payable before release of the report unless otherwise agreed. Payment may be made at the time of inspection, or when the report has been prepared. The report will be released as soon as payment is received.
- c. For schemes where an estimate has been given, fees will be charged on a time basis with expenses charged as incurred.
- d. The quotation / estimate is exclusive of VAT and fees become payable net on a monthly basis with settlement due within 30 days of the date of the invoice. Interest on overdue balances will be charged at 1.5% per month. The quotation / estimate shown is subject to acceptance within 60 days of an offer. The price may be subject to some increase after this period of time.

CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS: 2015

The Construction (Design and Management) Regulations: 2015 place statutory duties upon clients, client's agents (where appointed), designers and contractors regarding health and safety on most construction related projects. Further advice is given in HSE publication Managing health and safety in construction - Construction (Design and Management) Regulations 2015. Unless specified in writing to the contrary, it is assumed that for this scheme, the duties of a normal designer only will be undertaken. The role of principal designer will not be undertaken unless specifically appointed.