Structural Inspection Report

Barns at Corner Farm, Hoxne
Barn A

1.0 Brief

1.01. Superstructures were instructed by J W Havers & Son to undertake a structural inspection at the Corner Farm site with specific regard to the structural stability and integrity of the barns for conversion into residential use via a permitted development route. This report specifically refers to Barn A.

2.0 General Description

2.01. Corner Farm is situated on a country lane on the outskirts of the village of Hoxne, Suffolk. The barns surround the farmhouse to form the farmstead to Corner Farm.

2.02. Barn A is a stand-alone barn to the South of the farmstead positioned just to the West of the B118 Chickering Road.

2.02. The main part of the barn is a small single storey agricultural building approximately 13m long by 8.5m wide. There is a lean-to open bay cart shed addition which has been added in the past to the West side of the barn (this lean-to structure is being removed as part of the conversion works and does not form part of this report).

2.03. The barn is a 3 bay structure with principal steel lattice trusses constructed from a mixture of steel angle and flat steel sections at approx. 4m centres. The roof covering is lightweight cement bound profiled sheeting (this sheeting is likely to contain asbestos). The roof sheeting is supported by timber 50 x 150 timber purlins at roughly 1.2m centres

2.04. The 2 gable walls are constructed full height with 100mm brickwork strengthened with a number of piers. The East side walls is generally clad in corrugated steel above a blockwork plinth wall approx. 1.2m high. The West side has 2 open bays with the middle bay formed of 100mm fullheight brickwork. The principal support to the steel lattice trusses in the side walls is provided by full height isolated brick piers.

2.05. The barn is positioned on relatively flat site. To the South and East of the barn there are a number of mature trees. The nearest tree to the barn is a substantial mature Ash tree within 1m of the North East corner.

2.06. Adjacent to the road along the East side of the barn there is a ditch which is between 2m-3m from external wall of the barn.

3.0 The Inspection

3.01. The survey was undertaken on Tuesday 5th March 2019. The weather was crisp and sunny. The structure was inspected externally from ground level and internally from ground floor level. No destructive investigations or ground investigations took place.

3.02. The external East side wall of the building is clad generally clad in lightweight corrugated steel and the remaining external walls which are masonry gables have a rendered finish.

3.03. The sheeting on the East side tends to span vertically between relatively small timber rails which span between the main piers. The piers are 440mm x 330mm brickwork.

3.04. The brickwork to the gables is stiffened with 215mm x 330mm brick piers at approx. 2m.

3.05. The walls appear to be relatively vertical and free from distortions.

3.06. The roof is constructed from lightweight steel trusses at approx 4m spacings. The roof trusses span 8.5m between the 440mm x 330mm principal piers. The trusses are formed from steel angle top chords and internal struts with flat steel small section bottom chord all bolted/plated connections. The trusses support either 50x150 timber purlins spaced at 1.2m centres. The bottom chord of some of the trusses are distorted probably due to a degree of reversal of loading leading to compression in these elements.

3.07. There are signs of a degree of corrosion on a number of the roof truss members however it appears to currently be limited to just the surface of the sections.

3.08. There is no roof bracing and no wall bracing in the sheet East side wall.

3.09. The ground floor construction is generally a concrete slab. Where visible the slab appears to be relatively level and in fair condition.

4.0 Assessment & Analysis

4.01. The existing structure and foundations appear to be performing adequately and the proposed conversion works will not be detrimental to the existing principal structure. Loadings will remain similar to existing.

4.02. Some localised replacement and strengthening of secondary members will likely be required principally where these have been damaged in the past by the agricultural usage of the structure.

4.03. The overall stability will be enhanced by the introduction of new internal cross walls.

5.0 Exclusions

5.01. During the inspection, the Engineer inspected as much of the building as is practical. Unless stated otherwise in the report fixtures, fittings and finishes were not disturbed and therefore we are unable to confirm that concealed elements are free from defect.

5.02. Unless mentioned in the report the condition of finishes, joinery, and damp proofing was not the subject of the survey and these elements will need to be assessed by the necessary specialists.

5.03. The existing foundations to the building were not exposed. No ground investigations were undertaken during the inspection and therefore any recommendations relating to substructure works will need to be confirmed following the undertaking of an appropriate investigation.

6.0 Conclusions

6.01. The condition of the existing building is fair and it appears to be performing adequately for its current use as an agricultural shed.

6.02. The proposed conversion does not look to significantly change the existing principal structure. Furthermore, loadings will remain similar to the existing.

6.03. It is therefore considered that the structure is suitable for conversion without the need for significant structural remedial works being required.

6.04. It is possible that due to the potential for clay subsoils on site and the presence of significant trees adjacent to the barn that some improvement of footings may be necessary.

6.05. The proposed roof loading is envisaged to be a similar light weight construction which we consider the roof structure could accept. It is therefore considered the principal roof elements will continue to perform adequately in the future. Some assessment and possible improvement of connections will be required.

6.06. The addition of infill structures to form insulated external walls of sheathed timber frame or blockwork will add lateral strength to the structure. The addition of cross walls will provide further additional stiffness to the structure. This means that lateral loads due to wind will adequately be transferred to foundation level.

6.07. We consider the existing foundations are currently adequate to support the existing lightweight roof. Further investigation into soil conditions and existing foundations should however be undertaken to assess whether the adjacent vegetation and the pond/ditch has any influence which may lead to improvement of the existing foundations being required. New foundations will need to be introduced for the infill structure and any proposed first floor structure. A new floor slab will need to be installed as part of the conversion works.

7.0 Recommendations

7.01. The proposed roof covering is envisaged to be a similar light weight construction which the existing roof structure could accept. It is therefore considered the principal roof elements will continue to perform adequately in the future. Some assessment and possible improvement of connections and local repair will be required.

7.02. The lateral strength of the existing structure is limited and additional stability will need to be provided in the form of the infill structure to ensure long term stability of the structure.

7.03. All steel and timber connections will need assessing to ensure they will perform adequately in the long term.

7.04. Due to the possible presence of asbestos and/or asbestos-containing materials (ACM), a refurbishment and demolition (R & D) survey will need to be undertaken prior to any upgrading, demolition or refurbishment of the barn.

8.0 Summary

We consider that the barn is generally in fair condition with principal structural elements performing adequately to be suitable for conversion to a residential dwelling provided the above works are undertaken.

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Signed:

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Chartered Structural Engineer

Signed:

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Appendix A: Inspection Photographs

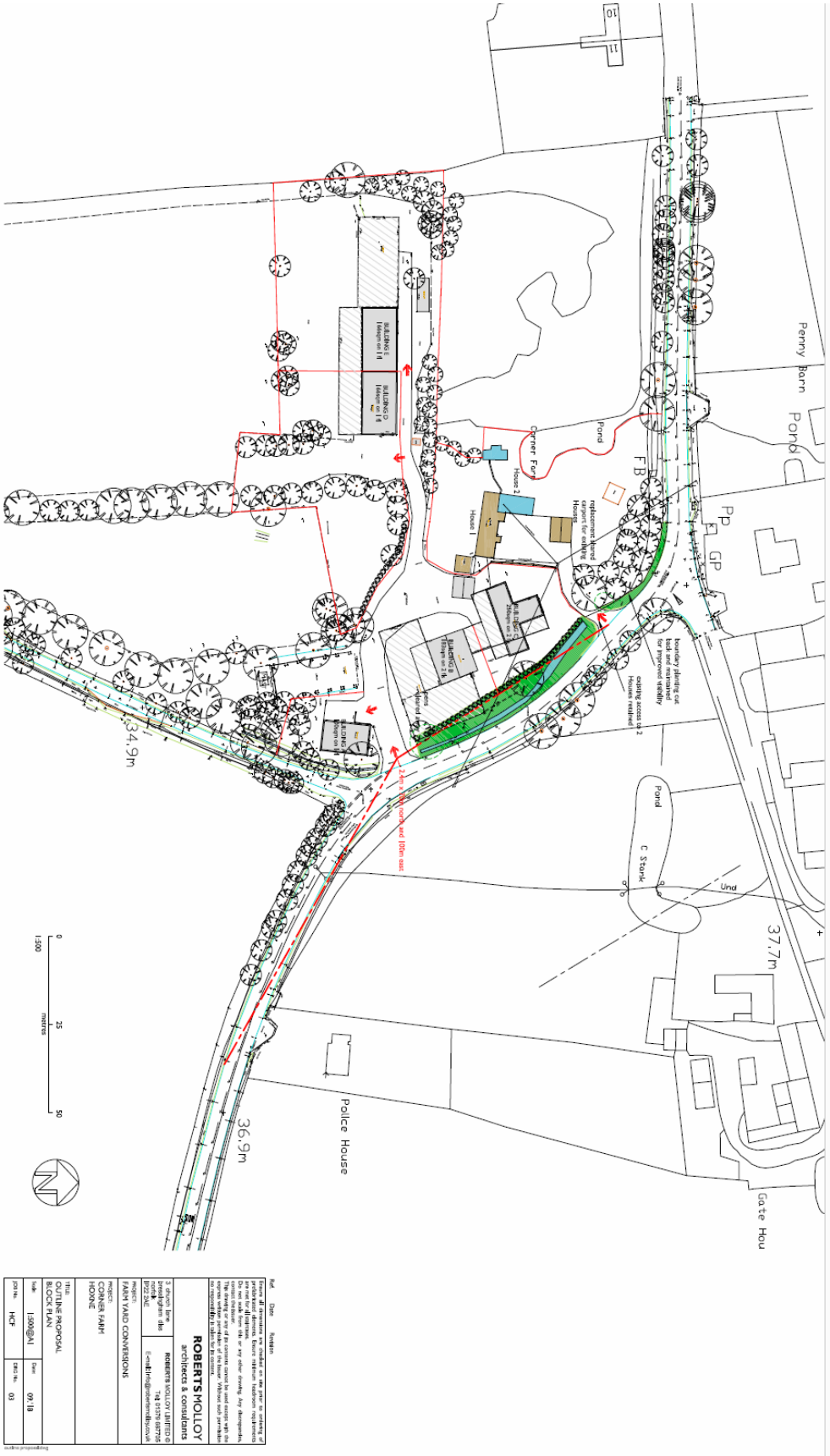
A1.1 North Gable with mature tree to East side

A1.2 Internal view showing roof and north gable

A1.3. Internal view of roof and South gable

A1.4 Internal photo west wall and part roof

Appendix B: Drawing


Penny Barn
Pond
Corner Farm
Pond
House 2
House 1
FB
GP
Pp
Pond
C Stork
Und
34.9m
37.7m
36.9m
Police House
Gate Hou
0
1:300
25
metres
50
ROBERTS MOLLOY
architects & consultants
FARM YARD CONVERSIONS
CORNER FARM
HOXNE
OUTLINE PROPOSAL
BLOCK PLAN
1:300@A1
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