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Green Barn, Old Farm,  
Mousley End, Hatton,  
Warwickshire. CV35 7JQ.

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## Limited Structural Report

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Mr Amandeep Singh

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Issue Date: 14 December 2020

Ref: 20135

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## Brief

The inspection and therefore this report has been prepared for the sole benefit, use, and information for the named client. The information contained in the report will not extend to any third party.

This report does not constitute a House Buyers Report, Valuation or Schedule of Refurbishment, and the lack of specific reference to any particular structural elements, material or type of construction does not imply compliance with the current British Standards, Codes of Practice, or Building Regulations. Local Authority searches have not been made.

To visually inspect property and comment on structural integrity, to offer general comments and recommendations and provide a written report.

We have not inspected woodwork or any other parts of the structure that are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect or has not suffered chemical attack. We have not inspected for elements of asbestos during our survey.

The survey has excluded an inspection of the electrical and mechanical installations, and all other non-structural matters.

External inspection of the building has been carried out from ground level. Inspection was by visual sighting and without special access arrangements we cannot confirm that obscured parts are free from defect.

We have not carried out any searches in relation to mining or mineral extraction.

The property and site have not been tested for any form of contamination, pollution or any other environmental impairment (methane, radon, asbestos, etc) and we are unable to make any comment in this regard.

Whilst we have used all reasonable skill and care in preparing this report, it should be appreciated that we cannot offer any guarantee that the property will be free from future defects or that existing ones will not suffer from future deterioration.

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**F.A.O. Ms Vicki Potter**

[vicki@crossandcraig.co.uk](mailto:vicki@crossandcraig.co.uk)

14 December 2020

Dear Vicki,

**RE: Green Barn, Old Farm, Mousley End, Hatton, Warwickshire. CV35 7JQ.**

## 1.0 Introduction

- 1.1 At the request Ms Vicki Potter of Cross and Craig Associates Ltd, on behalf of Mr Amandeep Singh, we attended the above property on Wednesday 25<sup>th</sup> November 2020, to conduct a visual, non-intrusive, limited structural survey to the existing 'Green Barn'
- 1.2 At the time of the survey, the weather was very wet and overcast.
- 1.3 The property is a single storey barn.
- 1.4 It is considered the barn was constructed circa 1960's.
- 1.5 The client requested a survey to be conducted to assess the condition of the barn as a whole, with a view to convert the structure into a single storey, habitable dwelling.
- 1.6 Please note, the report will only assess what could be physically observed.
- 1.7 Photographs of importance and relevance are appended to this report.

## 2.0 Observations – EXTERNAL

- 2.1 The external skin of the structure is clad with black cedar, vertical timber battens.
- 2.2 The original guttering remains insitu on one side only. There are two levels of guttering present on the side nearest the road; one at eaves level and at the original door height. There is no guttering present on the elevation nearest the dwelling.
- 2.3 The roof is clad with corrugated asbestos sheeting, with skylights located on each roof pitch, arranged in a symmetrical pattern.
- 2.4 Due to the position of the barn, a section of the barn lies across the boundary of the adjacent neighbour and was inaccessible.
- 2.5 External finished levels are level with the existing internal slab level.

## 3.0 Observations – INTERNAL

- 3.1 There is no lateral bracing present. Although there is a wind girder present within the first bay, located at the front of the barn, no bracing is present to enable the lateral forces to be transferred down to the foundations. *Lateral bracing can be generated by introducing members within a bay of the frame as cross bracing where the members act only in tension, a single diagonal member where the member is subjected to both tension and compressive forces or by portal bracing.*
- 3.2 There is some severe degradation to the steel at the base of a corner column. A substantial amount of the web is to the column. The column is located on the elevation nearest the road.
- 3.3 There is clear evidence of recent remedial works in the form of replacement bolts at several connections between the sheeting rails and columns.
- 3.4 The columns located either side of the doorway are built directly off the slab.
- 3.5 The steelwork at the head of the double doors are deformed.
- 3.6 Some of the original sheeting rails have been replaced with timber sections; the sections have been positioned where the original rails would have been originally constructed/located.

- 3.7 On the far side of the barn, there is a horizontal member located at approximately 2250mm from slab level. This member runs along the length of the one side of the structure only. It was not clear if any bracing members had been removed local to the connection to the columns.
- 3.8 There is a difference of levels to the far side of the slab. What is assumed to be the original foundation is positioned slightly higher than the level of the ground slab. It is considered the foundation is part of the original construction and the infilling slab may have settled over time.
- 3.9 There are voids present to the concrete slab. It is unclear what depth the slab has been constructed with and if any reinforcement is present.
- 3.10 A large proportion of the steelwork displays surface rust; some extreme cases are located sporadically around the barn. The internal environment would be subject to very cold and damp conditions; no form of heating is present. The barn is reasonably well ventilated.
- 3.11 Some of the steelwork located on the side nearest the dwelling has been painted with an assumed red oxide paint. It is considered this may have been exposed at some point in the past.
- 3.12 A 215mm thick hollow blockwork wall is present to the rear of the barn and extend around the one side up to the original doors; these doors could not be surveyed due to their location local to the boundary with the adjacent neighbour. It is unclear the reason for this wall. It is unclear if the ground levels are higher on the adjacent land resulting in a retained condition. No reinforcement or concrete were recorded in the voids to the hollow blockwork wall.

## 4.0 Conclusions

- 4.1 It is unclear the original use of the barn, although it could have been used to house cattle and/or for general agricultural use.
- 4.2 The barn is structurally unstable as no lateral bracing is provide in the plane of the barn.
- 4.3 The condition of the slab has deteriorated in a couple of locations, with deep voids and it would appear the slab has also dropped, relative to other adjacent concrete foundations.

It is unclear what depth the slab has been constructed with and if any reinforcement is present. It is considered this slab has cast to enable the barn to be used for a storage area.

- 4.4 The corrugated asbestos sheeting has the potential to degrade and delaminate/break away over time, resulting in dangerous and contaminating spores circulating with the environment.
- 4.5 The cedar over cladding will be adding additional loading to the frame as a whole and will induce additional deflections under dead loading.
- 4.6 The columns located either side of the doorway are considered not part of the original construction as they have been built off the concrete slab; all other columns have been constructed off a foundation as their assumed baseplates could not be observed.
- 4.7 Some of the steelwork connections have been replaced due to steelwork corrosion; the steelwork may not have been provided with adequate paint protection to survive 60 years, if any at all.
- 4.8 Although the steelwork is very rusty, the moment connections to both the columns and ridge appear to be firmly insitu and operating as originally intended. Please note, that any additional loadings that are to be applied to the building and frame as a whole will need considered and the structure will need to be analysed to understand the behaviour of the frame when these forces are applied.
- 4.9 The deformation at the head of the double doors could be attributable to impact damage from a high sided vehicle.

## 5.0 Recommendations

- 5.1 Introduce longitudinal lateral bracing to frame to enable lateral forces to be transferred down to the foundations in the temporary conditions. This bracing will also be satisfactory for the permanent case. Introducing blockwork walls in the plane of the building, which are to be 'tied' to the existing columns, will also add lateral resistance to the building.
- 5.2 Remove the timber sheeting rails and replace with the original steel sections/rails.
- 5.3 Cut out the delaminated section of steelwork to the corner columns and weld a section to reinstate the area – at present this member has reduced/little resistance to shear.

- 5.4 Clean off the rust to the steelwork and assess its condition, then paint the steelwork with a protective corrosive resistance paint. *Specification to be provided when works are to commence.*
- 5.5 Due to the age and deflection induced to the steel frame, it is recommended that any internal walls, both load bearing and stud are to be located in front of existing columns to provide additional lateral restraint to reduce excessive deflection/movement and cracking to the internal, brittle finishes.
- 5.6 Break out the existing slab and reinstate with fully designed ground bearing slab with the appropriate joints and insulation. Please note that any excavations are done with care and that all existing foundations are exposed to understand existing formation levels. If the excavations and the earth removal to facilitate the slab construction are lower than the existing foundations, consideration must be given to underpinning the existing foundations to prevent future, instability issues.
- 5.7 Ensure that all surface water local to the base of the walls and hardstanding areas, discharges into an ACO drain/gulley.
- 5.8 Employ a strict regime of general on-going maintenance to the structure.

We trust the above is satisfactory for your immediate requirements; however, should you have any queries or require any further information, please do not hesitate to contact the above office.

Yours sincerely



**PAUL SILVESTER**

Encls.



## 6.0 Appendix A: Photographs



Photograph 1: Front/Side elevation (nearest dwelling).



Photograph 2: Front/Side elevation (nearest road).



Photograph 3: Wind girder present in first bay.



Photograph 4: Deformed/distorted steelwork over head of doors.



Photograph 5: Columns adjacent door built directly off slab.



Photograph 6: Delaminated corner column – part of web is missing



Photograph 7: Delaminated corner column – close up of Photograph: 6.



Photograph 8: Partial internal view of barn - nearest road.



Photograph 9: Partial internal view of barn - nearest road.



Photograph 10: Partial internal view of barn - nearest road.





Photograph 11: Steel rail replaced with timber sections.



Photograph 12: New bolts at rail/column connection.



Photograph 13: New bolts at rail/column connection.



Photograph 14: Partial internal view of barn – nearest dwelling.



Photograph 15: 215mm thick Hollow blockwork wall to rear and side of barn.



Photograph 16: 215mm thick Hollow blockwork wall to rear and side of barn.



Photograph 17: Difference in levels between assumed original foundations and ground slab.



Photograph 18: Voids to ground slab.