

STRUCTURAL APPRAISAL REPORT

Existing Barn;-
Rear of 60 & 61 South Drove,
Lutton Marsh,
Spalding,
Lincolnshire.
PE12 9NT.



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Property;-	Existing Barn;- Rear of 60 & 61 South Drove, Lutton Marsh, Spalding, Lincolnshire. PE12 9NT.	Instructed;- Feb 2024 Survey & Report by;- JC Consultancy Limited Mar 2024
Client:-	Mr L Burton 24a New Road Sutton Bridge Spalding Lincolnshire PE12 9RA c/o Seven 22 Architecture Ltd	Checked by;- J. Ellington BSc. CEng MStructE, FRSA, MIOd Authorised By;- J. Hicks BEng(Hons) MSc. PgDipCHE., MIOd
Reference:-	JC/24/01/7441	Issued:- Apr 2024

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1.0 BRIEF

- 1.1** JC Consultancy Limited was requested by Mr L Burton, to assess and comment on the structural condition of an existing barn that is located adjacent to the rear of 60 & 61 South Drove, Lutton Marsh, Spalding, Lincolnshire. PE12 9NT.

2.0 INTRODUCTION & SCOPE

- 2.1** The building is located in a rural countryside location, North-East of the village of Lutton in Lincolnshire. The barn is accessible off the highway known as South Drove.
- 2.2** The client has instructed a structural appraisal report is to be carried out in order to assess possible options for future development, change of use and conversion. The enquiry was received from the client's agent, Seven 22 Architecture Ltd in January 2024. The instruction to carry out the structural appraisal was provided by the clients' agent via email correspondence dated 1st February 2024.
- 2.3** This report is to be regarded as confidential to the party to whom it is addressed, and it is intended for the use of that party only. No responsibility will be accepted to any other party in respect of its contents in whole or in part. Prior to the report or any part of it being reproduced or referred to in any documents, our written approval as to its form and content must first be obtained.
- 2.4** JC Consultancy Limited visited the property on 7th March 2024, in order to carry out a structural appraisal survey.
- 2.5** The weather conditions at the time of the visit was overcast but dry.
- 2.6** The purpose of this report is limited to an opinion on the structural condition of the building. We have only reported upon those structural defects that materially affect the stability of the building and provided that these defects are reasonably detectable at the time of our inspection. 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 buildings will be free from future defects or that existing ones will not suffer from further deterioration. This report is limited to commenting on elements of the structural fabric only. No further assessment will be made to elements elsewhere in the property. Comments will relate to structural condition and performance of elements only.
- 2.7** This report does not contain observations, comments or recommendations to any non-structural items including, but not limited to drainage, electrical, heating and plumbing services, timber work and any decorative finishes / plasters.

- 2.8 Decay associated to damp, fungal attack, insect infestation or contamination (including the presence of asbestos materials or similar) is outside the scope of our appointment or report. Any reference to decay associated to damp, fungal attack, insect infestation or contamination to either structural or non-structural items are observations only. As such we recommend that further advice is sought from specialists in the fields of damp, fungal attack, insect infestation or contamination in order to guarantee peace of mind from these potential defects.
- 2.9 The inspection was of a visual nature only. There has been no opening up works involved in this investigation.
- 2.10 Any part of the structures that were hidden, covered or otherwise inaccessible, have not been inspected or commented upon. We therefore cannot guarantee that any such parts are free from defect. Some areas of the barn could only partially be inspected due to risk / safety.
- 2.11 The performance of the existing ground strata, general ground conditions and foundations may be referred to within this report; however, the ground conditions and foundations have not been fully inspected or investigated as part of this survey. Therefore, comments made will be based on analysis sought from indicative desktop sources including but not limited to the 'British Geological Society'. These sources generally provide sound interpretation, however local anomalies can occur, and as such we cannot guarantee their accuracy.
- 2.12 The observations and defects noted within this report should not be read as a comprehensive inventory of each and every single item witnessed during our survey. Instead the records should be taken as an indication of the condition of the outbuildings in general and should demonstrate the likely defects that may be present elsewhere in areas of the fabric that have not been surveyed or recorded.

3.0 GENERAL DESCRIPTION

- 3.1 The property is accessed off South Drove via a private driveway, and is located on a large, predominantly level site, behind a pair of residential properties numbered 60 and 61 South Drove. The property under consideration consists primarily of a two storey, rectangular shaped, traditional constructed barn arrangement that has been complimented with later additions consisting of mono - pitched style, steel and timber portal framed structures forming the layout that can be seen today. Further clarification of the general description can be seen from the photographs within Section 6.0 of this report.
- 3.2 The building is understood to have been formerly used as general agricultural storage, with some agricultural livestock kept within part of the later additions.
- 3.3 The original construction date of the property is unknown, but it has been progressively added to and adapted over its lifetime. The original buildings are likely to be mid-19th Century, complimented with the additions during the early 20th Century. To the best of our understanding and belief the property is not Listed.
- 3.4 The construction of the buildings vary throughout, but generally consist of the following ; -

Roofs

Slate roof coverings over timber hand cut, duo-pitched roofs of rafters, purlins and collars to the traditionally constructed barns. Profiled roof sheet coverings over timber purlins to the later mono-pitched portal frame elements.

Walls

Predominantly solid wall construction throughout of varying thickness (215 / 330 / 440mm) consisting of clay masonry units laid in soft mortars to the traditionally constructed barns. A combination of profiled sheeting, solid masonry and concrete blockwork form the walls to the later steel and timber portal frame elements.

First Floor

A first floor is present to the two storey, traditionally constructed element and consists of the remains of timber floor boards over timber floor joists spanning between the flanking masonry walls.

Ground Floors

Ground floors consists of cast concrete floor slabs of unknown specification. There is a change in level of floor slabs between the elements, accessed via a small cast concrete ramp.

Foundations

Foundations were not deemed to be required to be exposed for inspection, but are likely to consist of a combination of shallow corbelled masonry foundation system bearing onto the ground strata below to the earlier elements, and cast concrete foundations to the later framed elements.

- 3.5 Published Geological records show the building to be within an area where the soil sequence consists of a solid formation of Ampthill Clay Formation (Mudstone) at depth overlain by a considerable thickness of Tidal Flat Deposits (Clays & Silts).

4.0 OBSERVATIONS & DISCUSSIONS.

- 4.1 Due to its exposure and recent lack of maintenance, there has been some deterioration and partial collapse of the roof structure over a section of the traditionally constructed 19th Century element, however the supporting walls appear to have been robust against this action and remain structurally sound.

- 4.2 The basic, rectangular shape and solid wall construction of the traditionally constructed elements, some of which are in excess of 300mm in thickness, results in it being a reasonably robust structure which can be seen to have performed well under loading during its lifetime.

Other than the localised area of collapsed roof structure, no immediate structural intervention is deemed required to the building at this stage in order to prepare the structure for accommodating any conversion scheme. Elsewhere the later portal framed additions incorporate bracing and shear wall construction in parts which have provided and continue to provide the framed elements with its overall structural stability.

- 4.3 The building has suffered from a degree of minor movement in various locations, however there was no evidence that this is particularly related to foundation movement. A reasonable amount of foundation movement could be expected for this geographical area, however considering the age of the building, observed movement was reasonably low. Any movement observed appears to be result from the combination of defective roof structure, localised areas of fatigued masonry fabric together with the continued wetting and general exposure that comes from agricultural activities and keeping agriculture livestock.

The existing foundations will be shallow, but typical of this style and age of building. However, with no evidence of significant vertical movement noted in its present form, and additional loading within any proposals being considered likely to be minimal in the form of residential type loadings compared to former agricultural style loadings, we see no reason at the time of writing why the building will be subject to any long-term progressive movement that will cause building instability in the future as a result of a proposed conversion.

- 4.4 As discussed there has been partial collapse of the traditionally constructed roof structure, which has occurred presumably because of continued wetting / decay following exposure to the elements. However, the remainder of the roof structures to the 19th Century elements that remain in-situ, and have been protected via a weathertight roof finish, are in a robust condition and are not displaying any signs of excessive fatigue other than localised areas of decay. Taking into account that the roof structures are already accommodating significant dead load from a slate roof finish, there is the potential for existing roof structures to be retained in a potential conversion subject to investigation of the extent of decay within the timbers and consideration of any finalised loading criteria imposed.

- 4.5 The roof structures of the mono pitched frames are of simple construction consisting of timber purlins supporting profiled sheeting. These roofs are not displaying any signs of excessive deflection or distortion and the portal frame elements will continue to provide suitable support for any new roof sheeting that is considered as part of a potential conversion. Adaptation of purlins will likely be required subject to chosen roof system.
- 4.6 The area of existing first floor structure could not be inspected in full during our visit, due to aforementioned collapsed roof, however it is clear that the floor timbers have been subject to exposure with wetting and decay visible throughout. Whilst obviously currently defective, the historic presence of the first floor has been advantageous to the supporting walls as it enhances their lateral performance. A replacement first floor will likely be required due to the decayed timbers present, however such replacement is considered beneficial as it will continue to provide lateral performance of the masonry walls in a similar manner to which has been provided through its lifetime.
- 4.7 The original and varied wall construction throughout the range of barns appear in reasonable condition for construction of this age. A large proportion of original fabric has benefited from being protected from weathering and general fatigue by the addition and subsequent protection of the adjoining 20th Century structures. These areas of walls appear dry and in a sound condition, with little in the way of significant defects noted.

Those panels that are exposed externally are displaying defects that are typical in agricultural barns, with a number of localised fractures, areas of fatigued and defaced brick units and signs of general weathering. Internally, some of the walls have been subjected to damp and weathering, predominantly at lower levels, but their condition is consistent with the general exposure that comes from agricultural activities and keeping agriculture livestock.

There may be the requirement or preference to replace some of the panels within the later additions, some of which have been constructed in later blockwork infill arrangement. However each panel can be assessed individually to determine its suitability to remain, or the extent of repair required.

However taking into account the large area of original wall fabric present within the range of barns, much of which is displaying little signs of significant defect, it is envisaged that a large amount of the original wall fabric can be retained within any conversion process.

- 4.8 Ground floors consist of concrete ground bearing slabs of unknown specification but appear reasonably modern when comparing the overall age of the building. In their current arrangement the ground floor slabs appear to have been adequately serviceable to accommodate and distribute loadings from agricultural type use. Proposed loadings from a change of use to residential will be significantly less onerous than that previously applied. Therefore, we envisage that the existing floor slab can be retained, and supplemented with damp proof systems, screeds, insulations and finishes as deemed required.

Should current ground floor levels need to be increased to accommodate flood risk requirements, then this could be achieved via a number of methods. Consideration could be made for the installation of a suspended floor system off plinth walls for instance, or alternatively additional floor build up using infill slabs could be adopted. Either way, it is envisaged the existing concrete slabs can be utilised as part of the final floor system.

5.0 CONCLUSIONS.

- 5.1 In general, the existing buildings that form the range of barns are in a reasonable structural condition considering their age and previous use. The building is long-standing and there was no evidence that the building is currently accommodating any significant structural defects that compromises its overall structural stability as a whole. Given the large footprint and extent of original fabric on display, the proportion requiring strengthening adaptation and repair as part of a conversion process is likely to be far less onerous than those experienced in previous conversions of traditionally constructed agricultural barns that we have provided guidance on.
- 5.2 In conclusion, having considered the existing structural arrangement, we are satisfied that the existing building is deemed structurally stable and appears capable of conversion without the need for significant extension, alteration or rebuilding of elements.
- 5.3 Whilst reference to damp is outside the scope of this report it can be seen that the structure has suffered from a degree of water penetration over the years.
As such it is essential that advice and any required treatment from specialists in the field of damp and decay should be carried out in conjunction with the conversion, in order to ensure that damp and timber decay are not trapped within the fabric post completion.

Finally, we confirm that this report is for advice and guidance only, and that consideration of any conversion proposals should be done only following liaison with the Architect, and guidance / Approval from the Local Authority Planning Department.

JC Consultancy Limited

Consulting Structural & Civil Engineers

Apr 2024

6.0 PHOTOGRAPHS



Photograph # 1



Photograph # 2



Photograph # 3
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Photograph # 4



Photograph # 5



Photograph # 6



Photograph # 7



Photograph # 8



Photograph # 9



Photograph # 10



Photograph # 11



Photograph # 12



Photograph # 13



Photograph # 14



Photograph # 15



Photograph # 16



Photograph # 17



Photograph # 18

*****END OF REPORT*****