w www.jcconsultancyltd.com
e info@jcconsultancyltd.com

Boston Office: 01205 317540
Morgan House, Gilbert Drive,
Boston, Lincolnshire, PE21 7TQ

j c consultancy ltd
consulting structural & civil engineers

STRUCTURAL APPRAISAL REPORT

Existing Barn;-
Rear of 210 New Road,
Sutton Bridge,
Spalding,
Lincolnshire.
PE12 9QE.



Copyright: JC Consultancy Ltd (2024)

Property;-	**Existing Barn;-** Rear of 210 New Road, Sutton Bridge, Spalding, Lincolnshire. PE12 9QE.	**Instructed**;- Mar 2024 **Survey & Report by**;- JC Consultancy Limited Apr 2024
Client:-	**S.E.King Building Contractors Ltd** Orchard House, 107 New Road Sutton Bridge Spalding Lincolnshire PE12 9QA	**Checked by**;- J. Ellington BSc. CEng MIStructE, FRSA, MIoD **Authorised By;-** J. Hicks BEng(Hons) MSc. PgDipCHE.,MIoD
Reference:-	JC/24/03/7510	**Issued**:- May 2024

Directors
J L Hicks BEng(Hons) MSc. PgDipCHE.,MIoD
J C Ellington BSc. CEng MIStructE FRSA MIoD

J C Consultancy is a trading style of **J C Consultancy Limited**
Registered in England 05973101
Registered Office 75 High Street Boston Lincolnshire. PE21 8SX
VAT Reg. No. 895 1511 07

The Institution of Structural Engineers

STRUCTURAL APPRAISAL REPORT,

Existing Barn;-
Rear of 210 New Road,
Sutton Bridge,
Spalding,
Lincolnshire.
PE12 9QE.

Our Ref;- JC/24/03/7510

CONTENTS

1.0 BRIEF

2.0 INTRODUCTION & SCOPE

3.0 GENERAL DESCRIPTION

4.0 OBSERVATIONS AND DISCUSSIONS

5.0 CONCLUSIONS

6.0 PHOTOGRAPHS

1.0 BRIEF

1.1 JC Consultancy Limited was requested by S.E.King Building Contractors Ltd, to assess and comment on the structural condition of an existing barn that is located to the rear of 210 New Road, Sutton Bridge, Spalding, Lincolnshire. PE12 9QE.

2.0 INTRODUCTION & SCOPE

2.1 The building is located in a rural countryside location, North of the village of Sutton Bridge in Lincolnshire. The barn is accessible off the highway known as New Road.

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 in March 2024. The instruction to carry out the structural appraisal was provided by the client on the 7th March 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 9th April 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.

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 barn is accessed off New Road via a driveway, and is located on a large, predominantly level site, behind a pair of residential properties. The original construction date of the barn is unknown, but it has been progressively added to and adapted over its lifetime. To the best of our understanding and belief the property is not Listed.

For the purposes of this report, the barn can be described as being in three main elements.

1) The original element is a single storey barn of concrete wall construction, currently supporting a timber flat roof. This was a common post war method of barn construction adopted within smallholdings in this area of South Lincolnshire. At some point, the second element, a timber framed barn was erected adjacent to and over the top of this original barn, forming the arrangement that can be seen today. When viewed externally, the majority of the fabric of this original concrete barn is hidden and is now only visible from within the main barn. Some elements of the concrete wall construction remain exposed on the West facing and South facing gable elevations.

2) As stated, this second element, the main barn, was erected adjacent to and over the top of the original concrete element. This main barn is constructed predominantly of timber and is formed using four, equally spaced, full height timber frames, each consisting of spaced timber rafters, timber support columns, timber eaves braces and timber apex ties. The duo-pitched roof continues over the original single storey element as a mono-pitch arrangement.

3) Finally, a third element, detached from the main barn, forms a small, single storey store. This element is located to the North of the main barn, is square in shape, has two elevations of part height masonry, complimented with timber rail and post walls, supporting a duo-pitched, timber roof structure.

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 smallholding use and agricultural storage. It is possible that some agricultural livestock may have been kept within at some point during the lifetime of the building.

3.3 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 The original single storey element, being constructed of concrete wall construction, and adopting a basic, rectangular shape with cross walls resulting in a cellular type arrangement, is an extremely robust structure, which can be seen to have performed well under loading during its lifetime.

The later, full height timber frame addition that now forms the footprint to the majority of the barn, incorporates a series of timber frames, each consisting of spaced timber rafters, timber support columns, timber eaves braces and timber apex ties. Diagonal timber roof bracings, timber purlins and timber rails complete the arrangement. The timber frames can be seen to have performed well, with little distortion or lateral deflection noted. The arrangement incorporates bracing elements in both directions which have provided and will continue to provide the framed elements with their overall structural stability. Areas of wall cladding including a shiplap style boarding over timber framed studded panels provide further diaphragm action against racking on two of the elevations.

The third element, consisting of a single storey building acting as a small Store, which is located to the North of the main barn has two elevations of part height masonry, complimented with timber rail and post walls, supporting a timber duo-pitched roof structure. The timber rails are clad with a profiled sheeting.

4.2 As with all buildings of this type and age it will have suffered from a degree of vertical movement, however there was no evidence that this is particularly related to foundation or ground movement. Minor cracking was noted to the solid wall elements in localised locations, and one of the timber support posts on the East facing elevation of the main barn has dropped.

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 a combination of fatigued / aged materials, isolated areas of decay to timber, together with the general exposure that comes from agricultural activities and keeping agriculture livestock.

The existing foundations will be shallow, but will be 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.

4.3 The roof (now acting as ceiling) of the original concrete walled element is of timber construction consisting of timber joists spanning between timber beams. The timbers are in a good condition and has benefited from being protected from weathering and general fatigue by the addition and subsequent protection of the over roofing of the later main barn.

The roof of the main barn is of simple construction consisting of timber purlins supporting a profiled roof sheeting. These roofs are not displaying any signs of excessive deflection or distortion and the main timber 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.

The roof of the small Store, which is located to the North of the main barn is again of simple construction, consisting of some timber A frame trusses supporting timber purlins. It is envisaged that the roof to this small Store area will need replacement as part of any potential conversion.

4.4 The concrete wall construction of the original single storey element appears in reasonable condition for construction of this age. Similarly to the roof / ceiling, a large proportion of original fabric has benefited from being protected from exposure, weathering and general fatigue by the over roofing of the later main barn. In general, the concrete walls appear dry and in a sound condition, with little in the way of significant defects noted.

The walls to the main, timber barn vary in construction. The North and East facing elevations consist of profiled sheeting over timber rails, whereas the South facing gable that accommodates the large sliding door has shiplap style boarding over timber framed studded panels. All of the cladding is in a reasonable condition for a building of this age and has protected the main structural elements from excessive weathering over its lifetime. It is likely that the cladding will be replaced as part of any conversion and adaptation of rails and cladding support can be implemented to suit the chosen system.

The masonry walls of the small Store, which is located to the North of the main barn are overgrown with ivy and vegetation on external elevations, and some original fabric appears to have been lost, however from internal observations the elements of masonry wall that remain are of solid construction, with little in the way of significant defects noted. There may be the requirement or preference to replace or add to some of the masonry panels within this area, however each panel can be assessed individually to determine its suitability to remain, or the extent of repair required.

4.5 Ground floors within the main barn consist of concrete ground bearing slabs of unknown specification but appear reasonably modern when comparing the overall age of the building. A concrete floor slab is also present in the original concrete barn, albeit at a lower level to that of the main barn.

In their current arrangement the ground floor slabs observed 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 slab can be utilised as part of the final floor system.

5.0 CONCLUSIONS.

5.1 In general, the main existing building, which consists of an original concrete wall barn construction and a later timber framed barn, is considered to be in a reasonable structural condition considering its 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.

5.2 The construction of the barn is basic; however, its primary structural elements provide it with sufficient robustness that it can be seen to have accommodated and safely distributed applied loadings during its lifetime without suffering from any undue distortion.
Given the simplicity of the existing structure, the proportion requiring strengthening adaptation and repair as part of a conversion process is likely to be far less onerous than those experienced in successful conversions of timber constructed agricultural barns that we have provided guidance on in the past.

5.3 In conclusion, having considered the existing structural arrangement, we are satisfied that the main existing building is deemed structurally stable and appears capable of conversion without the need for significant extension, alteration or rebuilding of elements.

5.4 The small Store, which is located to the North of the main barn will likely require a degree of intervention and alteration should it be included within a conversion.

5.5 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

May 2024

6.0 PHOTOGRAPHS



Photograph # 1



Photograph # 2



Photograph # 3

(



Photograph # 4



Photograph # 5



Photograph # 6



Photograph # 7



Photograph # 8



Photograph # 9



Photograph # 10



Photograph # 11



Photograph # 12

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