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**STRUCTURAL ASSESSMENT
OF
BARN AT SINGLES CROSS FARM
KNOCKHOLT
KENT**

CLIENT: MR AND MRS ELLIOTT

AGENT: ROBINSON ESCOTT PLANNING LLP

DATE: FEBRUARY 2019



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BARN AT SINGLES CROSS FARM

1.0 BRIEF

We have been requested by the Client to carry out a structural appraisal of the existing building so as to establish its potential for conversion into a domestic dwelling. This report is primarily intended for ancillary information to be read in conjunction with the planning documents and does not constitute a full summary for Building Regulation purposes.

2.0 EXPERIENCE

Trevor Cossey has over 40 years of experience as a structural engineer and has carried out structural assessments and surveys of both new and historic buildings throughout the South East. Throughout his career he has concentrated on work associated with building conversions and upgrades and brings a sympathetic approach to his work with older structures. Trevor's qualifications are as follows: BSC (Hons) C Eng, MIStructE.

3.0 DESCRIPTION

The barns is a modern concrete-framed structure by Tylers. The frames are on a 4.5 metre grid with a maximum clear span of 9.0 metres. There is a block wall to the rear of the building and the roof is clad in corrugated fibre cement sheets on purlins. With reference to the geological map for the local area ground conditions should be favourable comprising clay to depth.

4.0 FINDINGS

For ease of reference each item of the building will be considered in turn and salient points noted in relation to condition and possible need for repair.



4.1. ROOFS

The roof is of corrugated fibre cement sheets carried by precast purlins on a 1200-1500 grid which in turn span onto the main frames. The condition of the sheeting and purlins is considered good with little structural attention required.

4.2 REAR WALL

The frame provides the main structural support carrying the 200mm thick block infill panels, which are in good order. Taking into account the panel sizes, from check calculations the blocks are adequate for the applied loads and may be retained for reuse. There are some minor historic shrinkage cracks within the masonry which are of no structural interest and may be repaired using metal 'Heli-bars' to suit.

4.3 MAIN FRAMES

The main building is formed from precast concrete portal frames and a 4500mm grid. The columns are 250mm x 150mm with moment connections at the haunch, the main rafters being of a typical tapered section. From historic load/span tables the frames are of a size and spacing commensurate with the applied loads. In any proposed conversion works there is normally a slight increase in loading to the roof but fortunately the figure originally used for snow load has been reduced from 0.75 KN/m² to 0.6 KN/m² which covers any nominal increase. The precast concrete main frames are in good order and require no structural attention.

4.4 GROUND FLOOR SLAB

There is a substantial concrete slab over the complete area of the retained building approximately 150mm thick and may be reused in any conversion works.



4.5 FOUNDATIONS

A single trial hole was inspected and the column foundations appear to be of a traditional 1.0 metre cube of concrete which is structurally adequate for the applied loads. It is not considered that any upgrading works will be necessary in the future.

4.6 PROPOSED MEZZANINE FLOOR

From the architectural plans it is proposed to install a lightweight mezzanine floor comprising of timber joists, steel beams all carried by discreet box section columns. The structure can be made fully independent from the existing structure and the new columns carried off the existing slab. However, some attachment to the existing structure could be achieved if required from a planning point of view. The existing columns, both internal and external have adequate capacity to accommodate additional load.

5.0 METHOD STATEMENT

In any proposed conversion it is anticipated that a suitably experienced contractor who has prior experience of similar conversions is engaged. The method statement will be produced by the contractor, but approved by all interested parties. The fundamental approach to a project of this nature is to ensure the temporary and long term stability of the buildings while the work is underway. The need for temporary supports, suitable sequences of work, and consideration of the existing building elements is paramount. The project will be a team effort to achieve a successful outcome and the present involved parties are suitably qualified to achieve this end.

6.0 CONCLUSIONS AND RECOMMENDATIONS

As previously stated, the purpose of this report was to establish whether the existing building could be converted for domestic use and qualify such conclusions with details of general repair. From our observations we are of the opinion that the proposed conversion is a viable undertaking and that the building is sound and



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not in need of major reconstruction. It can remain standing as existing throughout the construction process. The drawings produced to date, including the existing and proposed layouts can be considered as a logical and sympathetic use of a redundant farm building without involving any major or substantial reconstruction works. As with any scheme of this nature certain elements of the work will be required to meet the building regulation requirements, but these will be primarily concerned with finishes and insulations. The primary structure of the building may be retained without any upgrading.

Trevor Cossey BSc (Hons) C Eng. MIStructE