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**STRUCTURAL ASSESSMENT  
OF  
THE BARN AT  
TERRY'S LODGE FARM  
TERRY'S LODGE ROAD  
KENT TN15 7ED**

**CLIENT: DHA PLANNING**

**DATE: JULY 2021**



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## **TERRY'S LODGE 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 unit. This report is primarily intended for ancillary information, to be read in conjunction with the Planning Application and does not constitute a full summary for Building Regulation approval.

### **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. MStructE.

### **3.0 DESCRIPTION**

The building is a single-storey, steel-framed enclosure under a pitched, sheeted roof. The frames are on a 6.2 metre grid and clear span 7.5 metres with an eaves height of 4.3 metres. There is a concrete slab throughout and linked to the main barn is a brick enclosure under a mono-pitched roof. With reference to the geological map for the local area, ground conditions should be favourable comprising clay head over chalk.

### **4.0 FINDINGS**

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



#### 4.1 MAIN BARN

##### 4.1.1 ROOF

The roof comprises 150mm deep galvanised 'Z' purlins at approximately 1500mm centres clear-spanning 6100mm between portal frames. From a structural load/span tables these sections are adequate for the existing and proposed loads. The corrugated fibre cement sheeting is in good order and may be retained or clad over.

##### 4.1.2 SIDE WALLS

The frame provides the main structural support with metal angle cladding rails spanning between the frames supporting vertical timber cladding. This installation is in good order and requires little attention.

##### 4.1.3 MAIN FRAMES

The portal frames on grids 1-3 and A-C inclusive, comprise 178 x 102 UB19 steel columns and rafters all at 6.2 metre centres. At eaves level haunches are provided with restraining bolts. The columns are bolted down to concrete pad foundations. The condition of the steelwork is generally sound and from check calculations the member sizes appear adequate for the current and proposed loadings. Wind bracing is provided within the roof plan and side walls for longitudinal stability and by frame action for transverse stiffness. In any conversion works it would be prudent to shot-blast the steelwork and repaint together with some local repairs at ground level to the columns.

##### 4.1.4 GROUND FLOOR SLAB

There is a substantial concrete raft foundation comprising a 150mm reinforced concrete slab with assumed edge thickenings and internal stiffening beams. From our assessment we are satisfied that this form of support would also be suitable for re-use in any conversion.



#### 4.3 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.

#### 4.2 LINK BUILDING

##### 4.2.1 ROOF

The roof has a sheeted, mono-pitch installation with 75mm x 50mm purlins at close centres and primary beams on grids 2, 3, and 4 clear-spanning 3.7 metres across the building. The timberwork and sheeting are in need of some minor repair and from check calculations the primary beams require some strengthening works.

##### 4.2.2 EXTERNAL WORKS

The masonry walls are of a substantial thickness comprising a mixture of ragstone/brick rendered internally and externally (450mm overall). The structural condition is considered satisfactory, but in any conversion works upgrading of the finishes will be required.

##### 4.2.3 GROUND FLOOR SLAB

There is a concrete slab in position which could be reutilised or overcast to suit.

##### 4.2.4 FOUNDATIONS

From a single trial hole the building appears to have traditional brick spread footings some 450mm below ground level into the sub-strata. The building has stood for many years without issue and, therefore, the existing foundation arrangement is considered adequate.



#### 5.0 **PROPOSED NEW OPENINGS**

With reference to the architect's plans there are proposals to form new openings within the external elevations of the building. Their distribution is sympathetic with the existing primary columns and they can be simply formed by carefully removing the existing cladding and rails and then installing some new vertical steel columns and cross beams to frame the openings which, in turn, will support adjacent cladding areas.

#### 6.0 **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.

#### 6.0 **MEHTOD 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.



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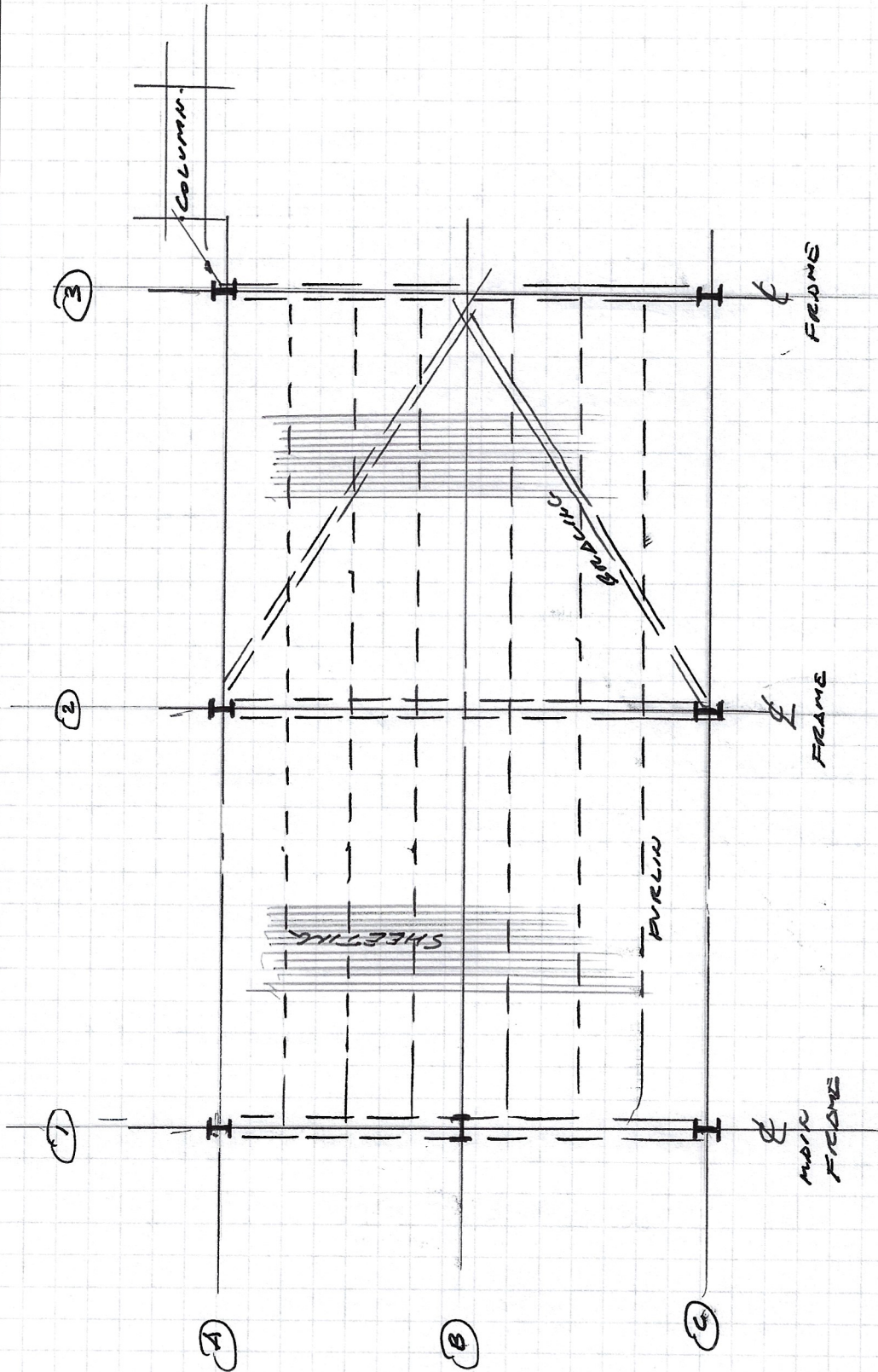
## 7.0 CONCLUSIONS AND RECOMMENDATIONS

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 not in need of major reconstruction. The Building 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 construction works. As with any scheme of this nature certain elements of work will be required to meet the building regulation requirements but these will be primarily concerned with finishes and insulation. The primary structure of the building may be retained without any upgrading.

**Trevor Cossey BSc (Hons) C Eng. MIStructE**



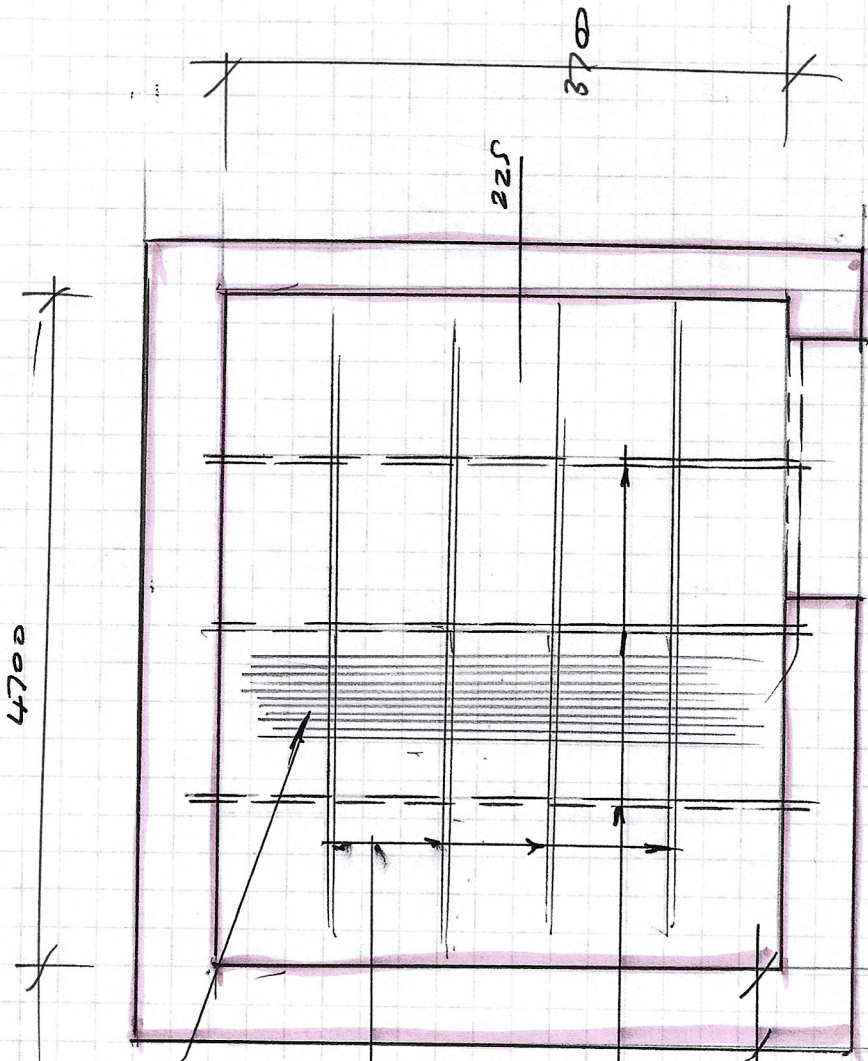
TERRY'S LODGE FARM



MAIN BARN



TERREY'S LODGE FARM



SHEATHING

PURLINS

MAIN BEAMS

MASONRY  
WALLS

LIXIE BUILDING