Derek LOFTY & Associates

Consulting Structural Engineers

Date: 22nd February 2023

Job Number: 13016

Client: SDH Ltd, Mill house, Burnt Pollard Lane, Lightwater, Surrey GU18 5SR

Project: Barn Conversion, Archies Field, Harefield.

Report on the Existing Barn Structure

at

Townsend Farm, Archies Field

Harefield, UB9

1. Introduction

1.1. In accordance with instructions received from SDH Ltd on 10th December 2022, Derek LOFTY & Associates have carried out a Specific Structural Inspection of a barn structure at Archies Field, Harefield UB9. The purpose of this report is to confirm or otherwise report on the structural adequacy of the barn for conversion to habitable use.

1.2. The inspection was carried out on Tuesday 28th February 2023. The weather at time of survey was overcast but bright.

1.3. Comments are generally based on a single visual inspection and notes taken during a walk over survey from ground level. Whilst no intrusive investigation was deemed necessary for this exercise, a trial pit was excavated and an area of the floor slab broken out prior to our visit.

1.4. This report is limited to the structural elements of the property only and no comment is made on any part of the property which is not the subject of this report.

1.5. Where the terms “right hand” or “left hand” are used, they assume that the reader is facing the front or east elevation.

2. Background Information

2.1. The project includes the proposed conversion of a single ancillary barn structure, within the curtilage of Townsend Farm. The barn is generally of traditional construction, currently of agricultural use for the current owners of Townsend Farm.

2.2. The barn subject of this investigation is situated on a mature, level plot, within the Hill End area of the village of Harefield. Harefield is geographically located in the north western corner of Greater London. The site is bounded by open fields to all sides but accessed for the Hill End Lane to the east of the Barn. The barn building is situated not more than 100m from Hill End Land. The and is currently used for storage of agricultural equipment and Straw.

2.3. The geographical location of the barns is : Latitude: 51.614490, Longitude: -0.486725

2.4. The proposals are to convert the barn for habitable use.

2.5. In order to understand the suitability of the existing structures for conversion, a walkover survey was carried out. The purpose of this report is to examine the main structural elements of the barn, commenting on the structural significance and condition together with overall suitability for conversion.

2.6. Refer to the appendix for an ariel view of the barn, Figures A1 and a structural layout A2.

3. The Existing Structures

3.1. The existing barn is an old agricultural building. The existing barn is of timber frame construction and is constructed beneath a series of flat roof joists at approximately 400mm centres. The joists are laid to fall and span from front to back., perpendicular to the long sides of the barn. The flat roof joists are supported on the external walls. Access to the barn is currently via 4 single door apertures on the east facing front elevation.

3.2. Secondary roof noggins span between the roof joists to support the single ply corrugated roof sheets.

3.3. The external walls are similarly constructed in an arrangement of timber studs at approximately 400mm cts. The external walls are clad with timber from eaves to ground level.

3.4. The internal floor of the barn is a concrete ground bearing slab.

3.5. At the time of our inspection a small trial pit had been excavated externally to the back right hand corner of the barn. The building appears to be constructed off a concrete raft foundation

3.6. At the time of our inspection the barn is presented in what is considered to be fair structural condition. The roof remains reasonably true although undulates slightly the roof falls from front to back east to west.

3.7. The external walls are slightly out of vertical alignment and are not particularly true to line. However, the structural integrity remains unaffected.

3.8. The concrete floor slab, although considered substantial, slopes gently by approximately 30mm toward the south and east. The slab otherwise is considered to be in fair structural condition.

4. Ground Conditions

4.1. Geological Maps indicate ground conditions to be Gerrards Cross Gravel - Sand and gravel. Gerrards Cross Gravel is a Sedimentary superficial deposit.

4.2. The underlying bedrock Geology is indicated to be the Lambeth Group - Clay, silt and sand, also a Sedimentary make up of bedrock. No further ground investigation has been carried out at this time; the existing barn building is substantial and although slightly misaligned, is performing adequately for its current purpose.

4.3. Whilst there are a number of mature trees to the west of the barn building. Whilst some trees may be within a range that might influence the foundations, the prevailing Gerrard Cross Gravel ground condition in the area is not that susceptible to volume change or influenced by the presence of trees.

5. Project Summary

5.1. The proposals are to convert the existing barn into habitable accommodation. The development will include the renewal of the external timber cladding with a watertight and thermally efficient wall system.

5.2. Similarly, the existing corrugated sheet roof will be replaced with a similar, thermally efficient light weight roof panel.

5.3. The existing slab can be reused, but levelled with a grout prior to a layer of insulation and screed applied to form a raised ground floor level, approximately 150mm above the external ground level.

5.4. The elevations will be modified to accommodate window and door apertures to suit the proposed conversion. These new apertures will be formed through structural elements of the external building envelope, but such alterations are not of concern for the purpose of this report.

5.5. All the proposals will be of a light weight construction, commensurate with the currently applied loadings.

6. Suitability of Existing Structure for Reuse

6.1. Whilst due to the risk of thermal inefficiency, the existing roof and wall coverings cannot be retained, these are non-structural elements of the building, and therefore are considered irrelevant as part of a structural appraisal.

6.2. The modest site investigation has established the building is constructed off a concrete raft off which the external walls are raised, the raft is formed off an approximate 200mm layer of crushed hardcore. The hardcore appears to be formed on virgin ground. The ground appears reasonably free draining, and the geological maps for the area suggest favourable ground conditions for raft foundations.

6.3. It is considered that the existing external walls could be retained, upgraded to meet modern thermal requirements. The external finishes should be light weight, as prescribed by the architect.

6.4. The existing floor slab is substantial and can be reused; however, should be upgraded with the introduction of a damp proof membrane and the addition of thermal insulation and screed to bring the finished floor level approximately 150mm above external ground level.

7. Conclusion

7.1. Based on the walk over survey, together with the results of the one trial pit, it is considered that the existing building is substantial, structurally sound and can readily be adapted to accommodate the conversion proposals.

7.2. It is considered that the building could be readily converted without major reconstruction or demolition of any of the existing structural elements. However, the building will be subject to significant upgrading as part of the conversion process to habitable accommodation.

8. Disclaimer

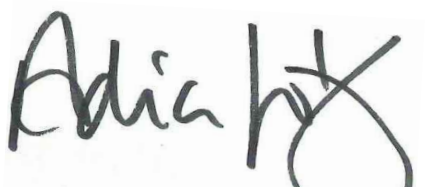
8.1. This report is based on a visual inspection of the property, together with an intrusive investigation of the ground locally. This report is copyright and is restricted to the sole use and benefit of the above named Client and shall not extend to any third party.

8.2. Furthermore, this report shall not be reproduced or copied without prior written permission from Derek Lofty & Associates.

8.3. This report is further restricted to the general stability of the building; no other aspect of the property was inspected and cannot therefore be considered as part of this report.

8.4. This report is only valid for a period of 6 months, after which its accuracy can only be fully relied on following a full re-inspection and revision.

8.5. Finally, we reserve the right to amend our opinions in the event of additional information being made available at some future date.



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Appendix

Photographs Etc.

Figure 1 - Aerial View of Archies Field Barn

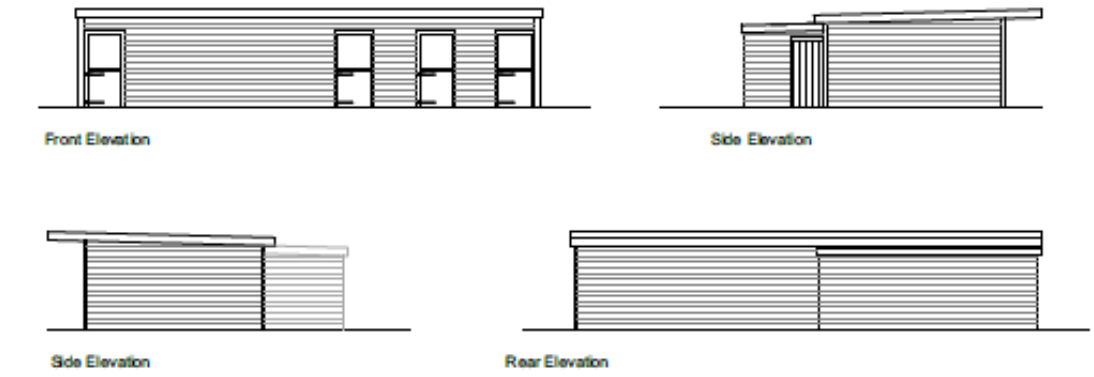

Figure 2 – Barn Layout

Figure 3 - Rear (West) Elevation

Figure 4- Side (North) Elevation

Figure 5 – Side (south) Elevation

Figure 6 – Front (East) Elevation

Figure 7 – Internal Floor Slab/Raft

Figure 8 – Wall/Roof Construction