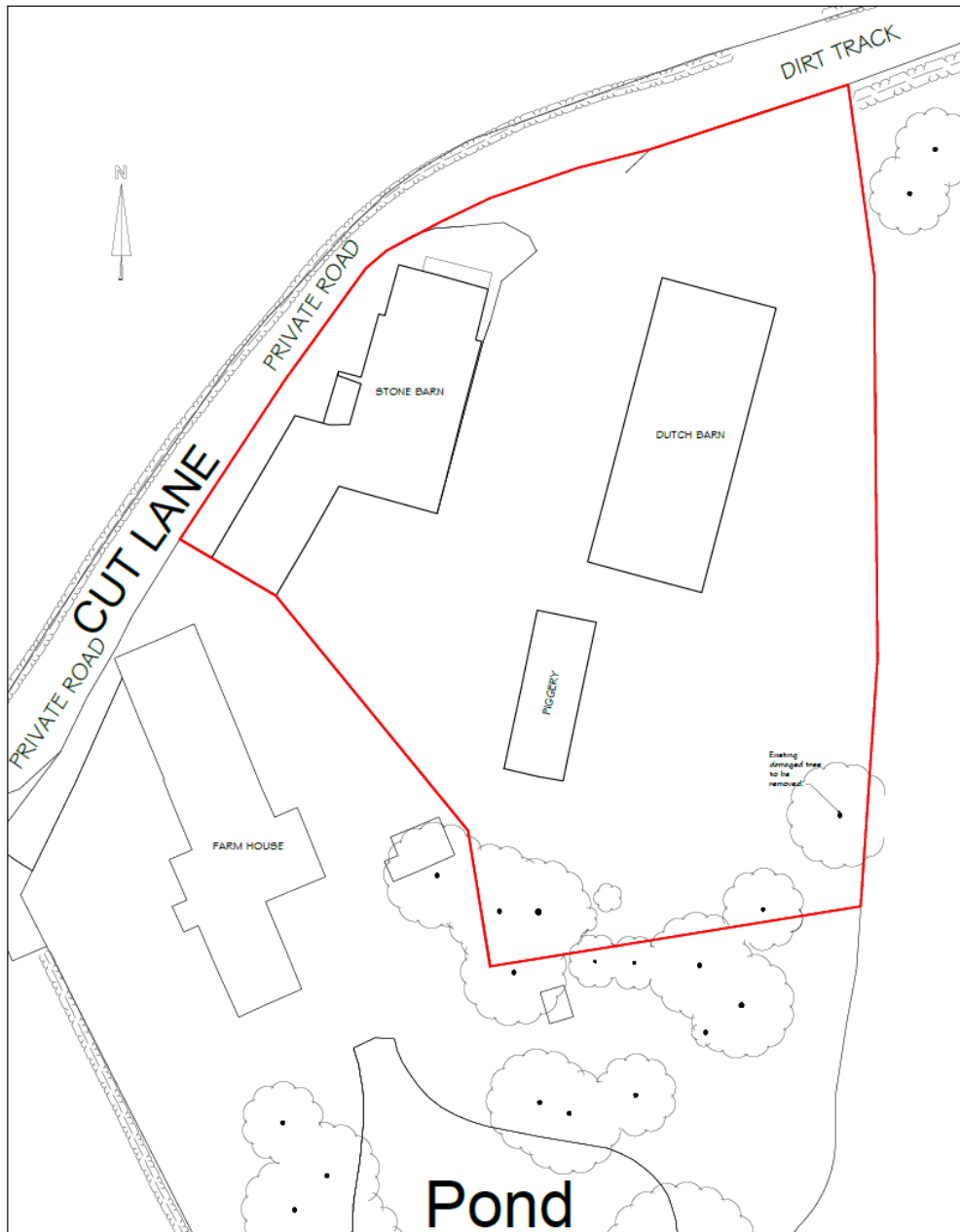


EXISTING DUTCH & STONE BARN & PIGGERY, FORMER COACH ROAD FARM, CUT LANE, KNOWSLEY, L33 3AQ

STRUCTURAL APPRAISAL OF EXISTING BARN & PIGGERY FOR CONVERSION TO LIVING ACCOMMODATION



Prepared by:
Brian N. Robinson IEng, AMIStructE Structural Engineer
21 Farm Close
Southport
Lancashire
PR9 7QB

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1.0 Introduction

1.1 Instructions

Brian N Robinson was instructed by the client Mark Groves of Ormskirk Skip & Recycling Limited to undertake a structural appraisal of the existing structures to the existing barns and piggery at the former Coach Road Farm.

Brian N Robinson is the author of this report and is a qualified structural engineer and member of the Institute of Structural Engineers (registration number 064458126) and has over 40 years of post-qualification experience.

The purpose of this survey is to provide a structural report in support of the application for conversion of the 2 barns to living accommodation and the piggery to a garden building.

The survey is required to demonstrate compliance with saved Policy G6 of the Knowsley Replacement Unitary Development Plan, which relates to the conversion or change of use of existing buildings in the Green Belt. The Policy states that proposals for the conversion or change of use of existing buildings in the Green Belt will be permitted provided (amongst other matters) the building is of permanent and substantial construction and major reconstruction would not be necessary to accommodate the proposed development. The explanation notes for the Policy (paragraph 9.34) states that applicants will be required to submit a full structural survey with applications to demonstrate that substantial reconstruction is not needed.

1.2 Limitations of survey and exclusions

This report has been produced for the sole benefit, use and information of the client to support a future planning application. Limitations of the survey are as follows:

- The survey was entirely visual and within the site area
- The visual survey was carried out from ground level
- Trial holes were dug to expose the existing foundations

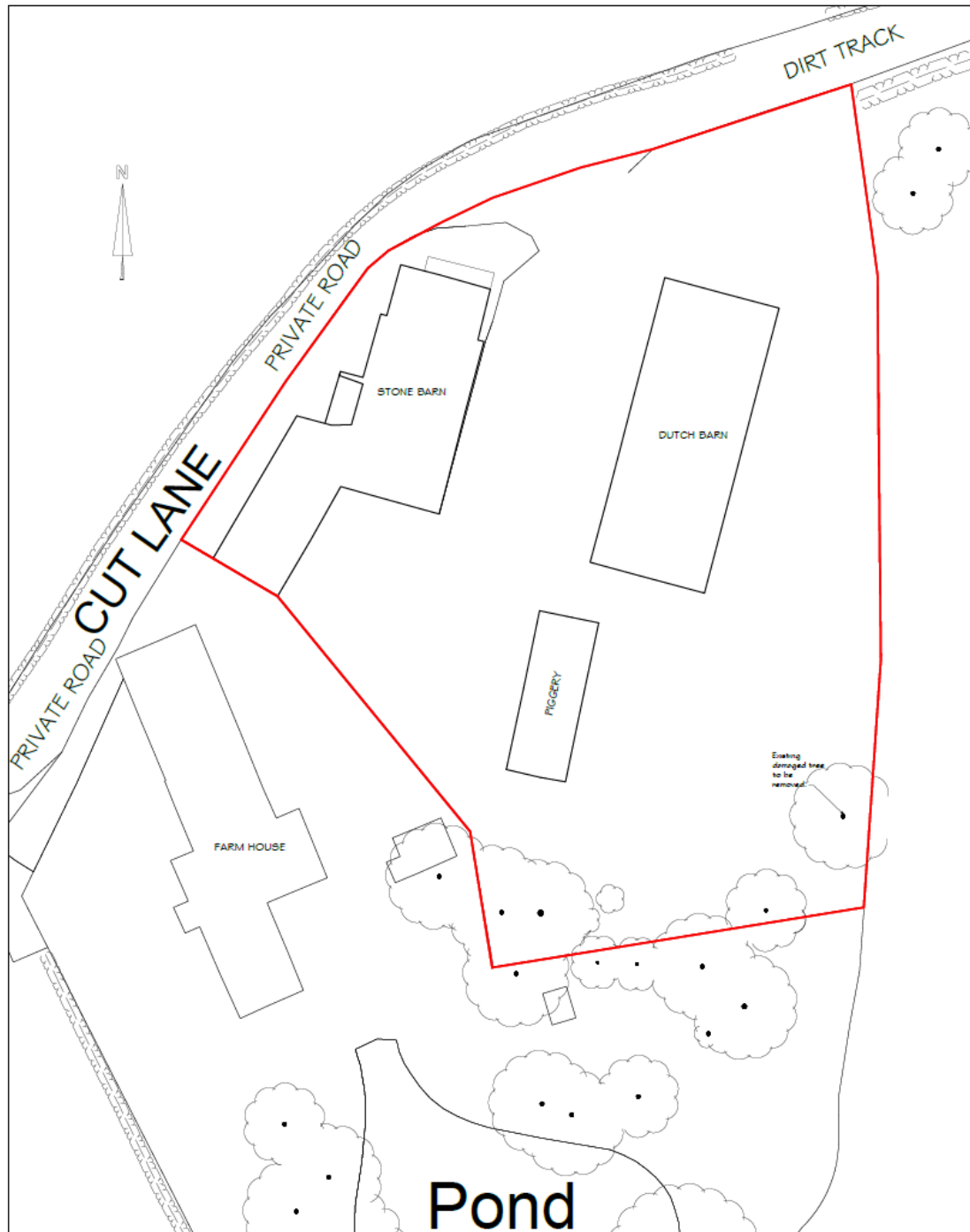
1.3 Site Visit

The site visit was conducted on a dry day, 24th February 2022, to complete the visual structural survey. This written report has been compiled to provide conclusions and recommendations to the client in support of a planning application, informed by the following works:

- Non-intrusive visual surveying on site

1.4 Area of Survey

The survey was conducted at ground level of the 3 buildings shown on the site plan below



1.5 Background

The client has owned the site since 2021 with the existing farmhouse sold as a separate entity.

The original part of the stone barn was built in 1759 as can be seen from the date stone in the photograph below with the rendered brick annexe being constructed at a later date but prior to 1840 as shown in the Heritage Statement map review.



The piggery would appear to have been built at the same time as the farmhouse with the Dutch Barn being constructed within the mid-20th Century.

2.0 Structural Appraisal

2.1 General Structural Form

2.1.1 Original Stone Barn



The barn has been standing since 1759 and overall there is little sign of any differential settlement or deflection'

The walls are constructed of stone ranging in thickness from 350mm to 400mm thick.

The foundations are of stone thickened out below ground level.

The roof is constructed entirely of exposed timber members with a slate roof.



There is a King Post Truss Rafter in the centre of the main barn area.

The ground floors are of concrete which may overlay the original floors, with the upper floors being constructed of open timber flooring.

There are signs of woodwork attack to some of the timbers and further investigations and repairs would be required.

2.1.2 Later Extension to Stone Barn



Built later prior to 1840 the extension shows some signs of movement and settlement, in particular the side elevation to Cut Lane is bowing outwards and requires to be rebuilt

The walls are constructed of 350mm thick brickwork rendered on the outside with a sand/cement render.

The roof is constructed entirely of exposed timber members with a slate roof.

There is a King Post Trusse Rafter in the centre of the stable area.

The first floors where present are constructed from timber.

The ground floors are of concrete which may overlay the original floors, with the upper floors being constructed of open timber flooring.

There are signs of woodwork attack to some of the timbers and further investigations and repairs would be required.

The present structure is suitable for conversion to two storey residential use. The building is considered structurally stable and capable of being converted and the extent of works will clearly comprise retention of the main building structural elements, walls and roof, with replacement of the slate roof covering to enable the insertion of insulation. This would not amount to a re-build.

2.1.3 Dutch Barn



The building would appear to have been constructed within the mid-20th century and overall there are no signs of settlement or movement.

The sides of the building are constructed of blockwork at ground level and a slatted timber downstand from the roof at the upper level.

There is a concrete slab of unknown thickness covering approximately 2/5ths of the ground with the remainder being compacted ground.

The roof is supported off 14No. 178 x 102 x 19kg universal beams, as columns, set in concrete around the external at an average of 4.6m centres. The beams show signs of rust due to lack of maintenance and would need to be treated and repainted

The roof is constructed of timber trusses with timber purlins and corrugated cement sheeting over.

From the ground there are no visual signs of woodworm attack to the timber trusses.

The corrugated roof sheets would appear to be of asbestos/cement and would require removal in a controlled manner(e.g. wetting down and 'Double Bagging') and taken to an appropriate waste disposal site.

The slab, steel structural frame and roof structure are considered to be permanent and substantial construction and sufficiently substantial for conversion to support a two-storey dwelling. The external cladding and roof covering will require replacement as part of the conversion works. This would not amount to a re-build.

2.1.4 Piggery



The building appears to have been built at the same time as the farmhouse and has been used as both a piggery and a garage for farm vehicles.

Overall there is little or no sign of movement or settlement, the brickwork being in good condition considering it's age.

The walls are constructed of 235mm thick brickwork built off brick thickened out foundations.

The roof is a slate roof on timber t & g boards on timber purlins supported at the open end on steel posts.

The floor is a concrete slab of unknown thickness and shows no sign of damp or cracking.

2.2 Suitability for conversion to proposed new use

2.2.1 Original Stone Barn

The existing loading on the walls is over that required for domestic dwellings and the building appears not to have moved significantly during its lifetime.

The structure is capable of carrying the extra loadings from the proposed insulation layer above the existing roof, and loadings from the additional floor.

The existing roof timbers will require further investigation as to the extent of any damage caused by wood worm attack, and any necessary repairs be carried out.

Any new internal structural walls should be built off new foundations.

2.2.2 Later Extension to Stone Barn

Approximately 1/3rd of the existing side elevation wall to Cut Lane has bowed outward and needs to be taken down, the foundations investigated and repaired as necessary, then the wall rebuilt and tied into the remaining structure.

Apart from the above the existing structure is capable of carrying the extra loading from the proposed insulation layer.

The loadings from new floors will replace the loadings from any existing floor removed.

Again the existing roof timbers will require further investigation as to the extent of any damage caused by wood worm attack, and any necessary repairs be carried out.

2.1.3 Dutch Barn

The existing structural elements are to be retained and form part of the new structure for the new building.

The existing timber roof trusses & purlins will be retained and form part of the new roof structure.

The steel columns will form part of the overall wall structure and remain to support the existing roof trusses.

The remainder of the structure of the proposed building will be formed from the new brick cavity and internal solid walls built off new foundations

2.1.4 Piggery

The overall structure of this building is suitable for the proposed use of a garden room and outside toilet/shower.

The roof may require support from new rafters between the existing purlins to support any insulation layer proposed.

2.3 Discussion and conclusion

The key question is whether or not the existing structures are capable of conversion to the proposed residential use without major or complete reconstruction.

Areas of new flooring to the Stone Barn generally replace existing floor loadings, and the walls are capable of taking the relatively light loads from the new insulation layer.

The Later extension to the Stone Barn again will be capable of carrying the loads from the insulation layer after necessary repairs and rebuilding to the side elevation have been completed, with the floor loads replacing existing.

Both sections will require further investigation into the extent of woodworm attack and any necessary repairs carried out.

The existing structure to the Dutch Barn will be retained as the principal structure and is capable of carrying the loads placed upon the columns and roof timbers. The existing steel columns require treatment and repainting.

The Dutch Barn is considered structurally stable and capable of being converted. The steel trusses and posts of the building frame are considered to be permanent and sufficiently substantial for conversion. The extent of works will clearly comprise retention of the main building elements including the steel frame, blockwork walls, and roof structure, with replacement of roof sheeting and erection of a new outer brick wall and openings. This would not amount to a re-build.

The Piggery is to be a garden room / home office and overall is capable of carry the extra loadings proposed. The roof may require extra support to carry the insulation layer proposed and is dependant upon the amount of insulation proposed.

Should this project proceed, the next stage would be to compile a schedule of works, method statement and health & safety documents required under the CDM regulations to ensure the works can be undertaken in a safe and efficient manner.



Brian N Robinson
IEng, AMIStructE Structural Engineer