Eastwood
CONSULTING ENGINEERS

Change of Use Feasibility Report

SITE NAME: **LOWER EASTFIELD FARM, THURGOLAND**

PREPARED FOR: **MR P. MILLER**

DATE: **19.03.2025**

Eastwood
CONSULTING ENGINEERS

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LOWER EASTFIELD FARM

FOR

MR P. MILLER

49556 ***19.03.2025***

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Job No.	:	49556
Report Status	:	FINAL
Document Date	:	19.03.2025
Approved	:	CATopliss

Catherine Topliss

Director

Contents

1.0 INSTRUCTION

As requested by Mr P. Miller, Eastwood Consulting Engineers attended site at Lower Eastfield Farm, Thurgoland on 18.02.2025 to conduct a structural condition survey and assessment of an existing agricultural building on the property.

2.0 SCOPE

This report has been produced following a visual non-intrusive inspection of the structure at the aforementioned premises.

The engineer acknowledges the co-operation of the property owners in allowing access to the property, at the agreed time and their assistance in the clarification of points raised during on-site discussions.

3.0 INTRODUCTION

The purpose of this structural conditions survey is to assess whether the existing structure of the agricultural building is capable of conversion from its current use to two adjoining residential properties.

Emailed and verbal instructions were received via the property owner to carry out a survey of the site and report in the findings.

4.0 GENERAL DESCRIPTION

The building is a typical, single-storey, agricultural shed that is relatively open on four sides and with a shallow duo-pitched roof. It is now predominantly used for storage. The steel portal frames that form the walls and roof, are not concealed and therefore were able to be inspected on the visit. With the exception of the foundations, which were visible in places but their extents are unknown. Access to all the structural elements of the building was limited, meaning that not all measurements could be taken. In some areas there is half height blockwork infill between frame up rights. There is also some timber cladding on three of the four sides, and corrugated asbestos cement sheets on the gable ends.

The property is constructed as follows:

Main walls:	Uprights of steel portal frames infilled with core filled blockwork walls to half height. Vertical timber planks clad on both gable ends and one eaves wall. Corrugated asbestos cement sheets on both gable ends.

Roof:	Duo-pitched roof with gradient of no more than 15°. Roof coverings were of corrugated asbestos cement sheets.
Floors:	Details of the shed floor makeup were unattainable, assumed to be earth strata.

5.0 CONDITION SURVEY

The single storey agricultural shed is representative of the type of farm building commonly found in the UK. The shed appears to have been built in the last 20 years and is of modern construction techniques.

The engineer inspected the building and noted the following (please see Appendix A for all corresponding images to elements inspected on the day of the survey):-

5.1 Elements

Roof structure:	The roof consists of undisturbed corrugated asbestos cement sheeting, supported off timber purlins that span between the steel portal frames. The purlins are secured by cleats welded to the steel rafters. No evidence of deterioration of the roof sheeting or purlins was observed.
Downpipes and gutters:	Downpipes and guttering also appear to be asbestos cement. It wasn't raining on the day of the inspection so function could not be assessed. However, the guttering and downpipe were present on one of the eaves elevations (North West), but was not on the opposite elevation (South East). Half of the guttering has come away at some point in time.
Main Walls:	The walls are formed of core filled blockwork, timber cladding and corrugated asbestos cement sheets. The blockwork to the gables and South East elevations is generally in a good condition. The walls show some weathering and slight discoloration but overall appear structurally sound. The blockwork in the North West facing elevation was previously earth retaining, however, the earth has since been removed leaving the wall to appear more weathered than the other elevations due to prolonged exposure to moisture. Each blockwork wall panel on this elevation has a buttressing masonry column positioned in the centre. The footings are visible on this part of the wall which also show signs of decay. It is also possible to see that some of the wall is founded on rock. The vertical timber planks are weathered grey from

prolonged exposure to the elements, however they appear sound and in a reasonable condition.

The corrugated asbestos cement sheet walls on both gable ends are generally in sound condition, with most of the sheets remaining intact and securely fixed. However, there are visible signs of weathering and deterioration across the surface, such as slight fading , minor surface cracking, and some discoloration, likely due to prolonged exposure to the elements. A few of the individual sheets have developed cracks, but these are limited and do not appear to compromise the overall integrity of the structure.

Steel portal frames:

The steel portal frames comprising the agricultural building or shed are in overall good condition, with the structural elements showing no signs of significant deterioration. The vertical members are 203x133 Universal Beams (UBs), and the rafters are 254x102 UBs, set at a 15-degree gradient. The frames are spaced at 4.56-meter centres, and the eaves and ridge areas feature haunches that help resist the moment forces, with each haunch secured by four bolt fixings.

The structural integrity of the steelwork remains sound, with no evidence of section loss or a reduction in strength. The coating finishes have, however, experienced significant weathering due to exposure to environmental elements. Despite this degradation of the coatings, the structural integrity of the steelwork is not thought to have been compromised.

The degraded finishes should be addressed to prevent further deterioration. This involves cleaning the surface to remove any dirt, rust, or contaminants, followed by reapplication of protective coatings to restore the steel's resistance to corrosion and extend the service life of the frame.

Foundations:

Whilst the extents of the foundations are unknown, there were some pad footings that were visible above ground level on the South East elevation. Foundation heights above ground level varies, however it was possible to determine that the pads were 800mm square with the posts embedded into the concrete. Although there is some minor deterioration to the outer faces of the pad footings, due to its exposure, this is not considered to be of structural detriment.

6.0 SUMMARY

Having inspected the agricultural building, and considered the information currently available we have the following conclusions.

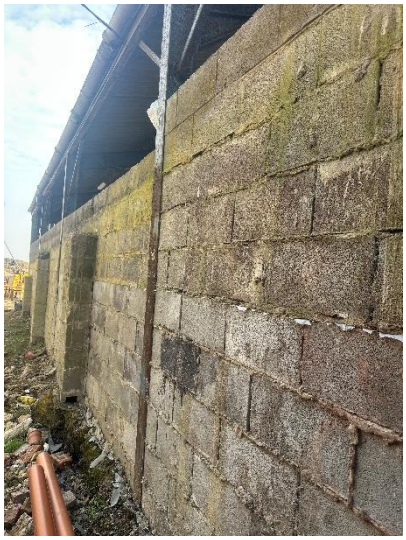
The structure to the existing agricultural building is suitable for conversion into two adjoining residential properties, with several important considerations:

1. **Roof Structure:** The current roof comprises corrugated concrete fibre sheeting supported by timber purlins. Any new roof materials must match the weight of the existing materials as closely as possible. If the proposed materials are heavier, additional checks on the existing steel portal frames will be necessary, and strengthening works may be required.
2. **External Walls:** The proposed external walls are assumed to consist of timber cladding, insulation, and a blockwork inner leaf. The blockwork inner leaf will provide adequate support for the new mezzanine floor structure.
3. **Party Wall:** A new blockwork party wall is needed between the two properties, this too will also provide support for the mezzanine floor.
4. **Foundations:** New strip foundations are required for both the external walls and the internal party wall. The existing footings must be exposed and inspected before construction begins.
5. **Glazing and Openings:** Any new glazing and opening units must be carefully assessed for their impact on the existing structure. Additional steelwork may be needed to accommodate these modifications.
6. **Steelwork Condition:** While the steel portal frames are structurally sound, their surfaces show significant signs of degradation. It is recommended that the steel surfaces be retreated as part of the refurbishment process.

These points outline the key conditions for converting the existing agricultural building into residential properties, ensuring the structural integrity and compliance with the new design requirements.

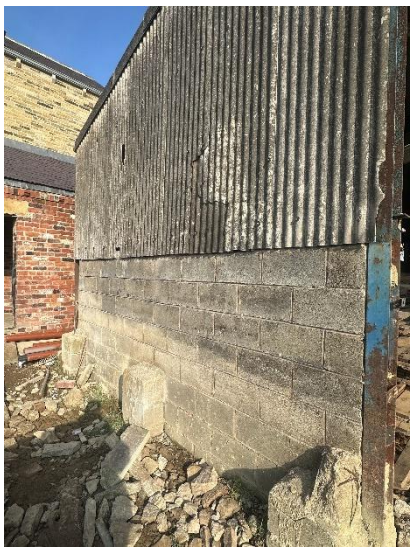
APPENDICES

North West Elevation

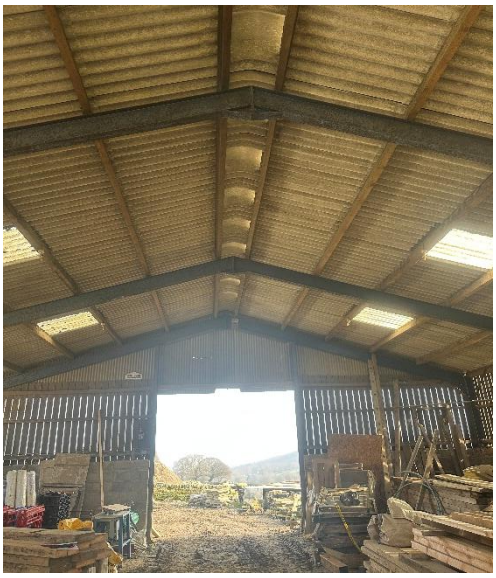


North East Elevation

South East Elevation



South West Elevation



Internal view of NW Direction

Portal Frame

Portal Frame

Portal Frame

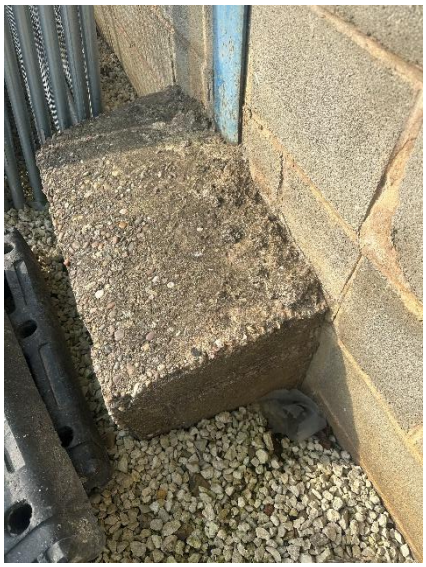
Portal Frame – Eaves Haunch 1

Portal Frame – Eaves Haunch 2

Portal Frame - Ridge Haunch 1

Portal Frame - Ridge Haunch

South West Elevation – Pad Footing 1



South West Elevation – Pad Footing 2

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