

TDN STRUCTURAL LTD

STRUCTURAL REPORT
ON
CONVERSION OF
AGRICULTURAL BUILDINGS
AT
ROSECOTE FARM
AISLABY ROAD, EAGLESCLIFFE
STOCKTON ON TEES, TS16 0QR

OCTOBER 2022

1.0 INTRODUCTION

- 1.1 This report has been prepared to accompany a planning application for the conversion of an 2nr agricultural buildings into dwellings at Rosecote Farm, Aislaby Road, Egglescliffe, Stockton on Tees.
- 1.2 The buildings comprise a Dairy Barn and a Dairy Building which are separated by a courtyard.
- 1.3 This report is restricted to the buildings as indicated on the architectural drawings that accompany the planning application and should not be considered as a full structural survey of the adjacent areas.
- 1.4 The purpose of the survey is to review the building structure and comment upon the suitability for conversion into habitable dwellings.
- 1.5 Refer to architectural drawings nr 2294/PL/04 – 2294/PL/09 for existing & proposed floor plans & elevations.
- 1.6 This report includes the visible structural elements only and is not an intrusive survey.
- 1.7 Photographs are included in Appendix A.
- 1.8 The recommendations made in this report conclude that both buildings are suitable for conversion into habitable buildings.

2.0 INSPECTION OF THE DAIRY BARN

- 2.1 An inspection of the building was made on the 16th February 2022 covering both internal and external parts.
- 2.2 The building comprised single span reinforced concrete portal frames with a duo-pitch roof. The frames are at 4.57m centres with a span of 6m. The eaves height measured approx 5.5m and the length of the building approximately 14m. The roof is pitched at 23°.
- 2.3 The building is clad on the north, south and east elevations with horizontal precast concrete planks upto 1.8m above ground floor level. The top of the concrete planks is restrained by a steel angle that is cleated to the columns. The roof and gable eaves are clad with corrugated asbestos cement particle sheeting supported on concrete purlins and siderails.
- 2.4 The concrete rafters are bolted to the concrete columns with the purlins and siderails connected to the frames with steel cleats. The steel cleats appear to be cast into the concrete frames.

2.5 The floor slab comprised a concrete slab of unknown thickness. The concrete columns extend below the concrete slab and are thought to be supported off concrete foundations.

3.0 CONDITION OF THE DAIRY BARN

3.1 The concrete rafters, purlins and siderails are in good condition with no evidence of corrosion or spalling.

3.2 The concrete columns are also in good condition apart from one of the columns which was spalled in areas resulting in exposed reinforcement.

3.3 The concrete slab appeared level with wood float finish and in good condition with no visible cracks.

4.0 RECOMMENDATIONS FOR THE DAIRY BARN

4.1 The defective concrete column noted in item 3.2 will need to be repaired. The repair method involves locally removing concrete to expose clean reinforcement which will be cleaned and coated with a rust inhibitor. A suitable repair mortar such as renderoc will be applied to reform the concrete column profile. Once repaired, the concrete portal frames can remain.

4.2 The corrugated asbestos cement particle sheeting will be removed from the roof and gable elevations. The concrete planks will also be removed from the elevations

4.3 The proposed development comprises new perimeter walls of masonry construction with an insulated cavity. Parts of the elevations are to be clad with cedar cladding. The existing frames will be tied to the internal leaf of the perimeter walls with suitable wall ties. Masonry will be taken up to eaves height and it may be necessary to install a new eaves beam. New openings formed in the walls for glazing and doors may require wind posts and additional steel framing all of which will be designed accordingly. The new walls will provide lateral restraint to the existing concrete frames and provide lateral wind bracing to the building.

4.4 The existing roof purlins will be assessed for re-use and supplemented with timber or steel purlins if required. It may be necessary to install wind bracing to the roof structure.

4.5 A new timber first floor will be supported off the internal leaf of the new perimeter walls and will provide additional lateral strength to the structure via diaphragm action of the floor plate.

- 4.6 As the building has been used for agricultural purposes the floor slab is thought to be suitable for the proposed loading from the dwellings. The floor thickness will need to be verified and levelled by suitable means and insulated.
- 4.7 The foundations were not inspected but thought to be adequate as the proposed imposed loads are not too dissimilar to the existing loads. There will be no change to the wind loads as the proposed building dimensions are the same. The new perimeter walls will be constructed off new strip footings. Excavation for the strip footings will allow the column baseplate to be inspected and strengthened if required.
- 4.8 Whilst the existing structure will require remedial works to repair the concrete column, we consider this proposal to be acceptable as the existing structure can be retained. We would anticipate that the proposed development would extend the life expectancy of the building.
- 4.9 Overall the structure is good condition and is suitable for conversion into habitable dwellings.

5.0 INSPECTION OF THE DIARY BUILDINGS

- 5.1 An inspection of the buildings was made on the 16th February 2022 covering both internal and external parts.
- 5.2 The Diary Buildings comprise 2nr buildings that are separated by a 1.2m corridor. Both buildings adjoin a single lean-to building to the rear. The 2nr buildings each measure 9.7m by 9.6m on plan with 3m to eaves and a 21° duo-pitched roof. The lean-to building measures 23.5m by 4.5m on plan with 2.5m to eaves and a 15° mono pitched roof.
- 5.3 All building elevations comprise 215mm thick solid brickwork walls. Block walls are built internally to form animal pens. The external elevations of the perimeter walls are partly rendered with cement mortar.
- 5.4 The roof of the 2nr buildings consist of corrugated asbestos cement particle sheeting spanning over steel angle purlins at approx 1.3m centres. The purlins span from the gable brickwork to a central steel angle truss which spans between the side walls. The purlins are welded to cleats which in turn are welded to the top of the truss. At the walls the steelwork is strapped to the masonry.

5.5 The roof of the lean-to building consist of corrugated asbestos cement particle sheeting spanning over timber purlins at approx 1.5m centres. The purlins span from the end walls onto internal timber frames at 3-4m centres.

5.6 The floor slab comprised a level concrete slab of unknown thickness.

6.0 CONDITION OF THE DIARY BUILDINGS

6.1 The brickwork walls are weathered but typically in fair condition. There are sections of cement render that have spalled. Cracking to the render is evident where the purlins connect to the walls and to the gable elevations. It is unknown if the cracking extends through the render and into the brickwork. There is no evidence of a damp proof course. All the walls appeared to be plumb with no evidence of movement.

6.2 The steel truss and purlins are in good condition with some surface corrosion.

6.3 The concrete slab appeared level and in good condition with no visible cracks. Areas of the floor slab are covered in vegetation and moss.

6.4 The walls to the lean-to building are weathered but typically in fair condition. The timber rafters and purlins are in poor condition.

7.0 RECOMMENDATIONS FOR THE DIARY BUILDINGS

7.1 The asbestos cement roof cladding will need to be removed. All steelwork should be inspected and any corrosion removed and the surface painted with a rust inhibitor. The steel purlins and truss will need to be checked for the proposed loads and strengthened if required.

7.2 The external walls will remain, and a damp proof layer will be injected into the wall, 150mm above the ground floor level. All cement render will be removed and the walls inspected for migration of cracks. Any cracks will be repaired using helifix bars which are resin anchored into the bed joints across the crack. The walls will be insulated accordingly.

7.3 The lean-to building is to be partly demolished with the central section remaining to link together the 2nr buildings. New walls are required at each end and will tie into the existing walls. The roof cladding and support structure will be replaced with new.

- 7.4 New openings for glazing and doors will be formed in the existing brickwork and strengthened with wind posts / steelwork where required. Removed bricks will be reclaimed and used to infill any existing openings.
- 7.5 As the building has been used for agricultural purposes the floor slab is thought to be suitable for the proposed loading from the dwellings. The floor thickness will need to be verified and levelled by suitable means and insulated.
- 7.6 Whilst the existing structure may require remedial works to repair cracks in the masonry, we consider this proposal to be acceptable as the existing structure can be retained. We would anticipate that the proposed development would extend the life expectancy of the building.
- 7.7 Overall the structure is good condition and is suitable for conversion into habitable dwellings.

8.0 GENERAL

- 8.1 This report is only concerned with the structural aspects of the building such as walls, floor & roof and we have not inspected elements such as doors, windows, and other fittings. Similarly, we have not commented on services such as electricity, plumbing, heating or drainage.
- 8.2 No comment is made in the report as to the presence of mine workings or tunnelling, contamination, pollution, ground gases, underground services, springs, water courses, asbestos and asbestos products.
- 8.3 We trust the above meets your requirements, but should you have any queries, please do not hesitate to contact the writer.

Report prepared by

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on behalf of

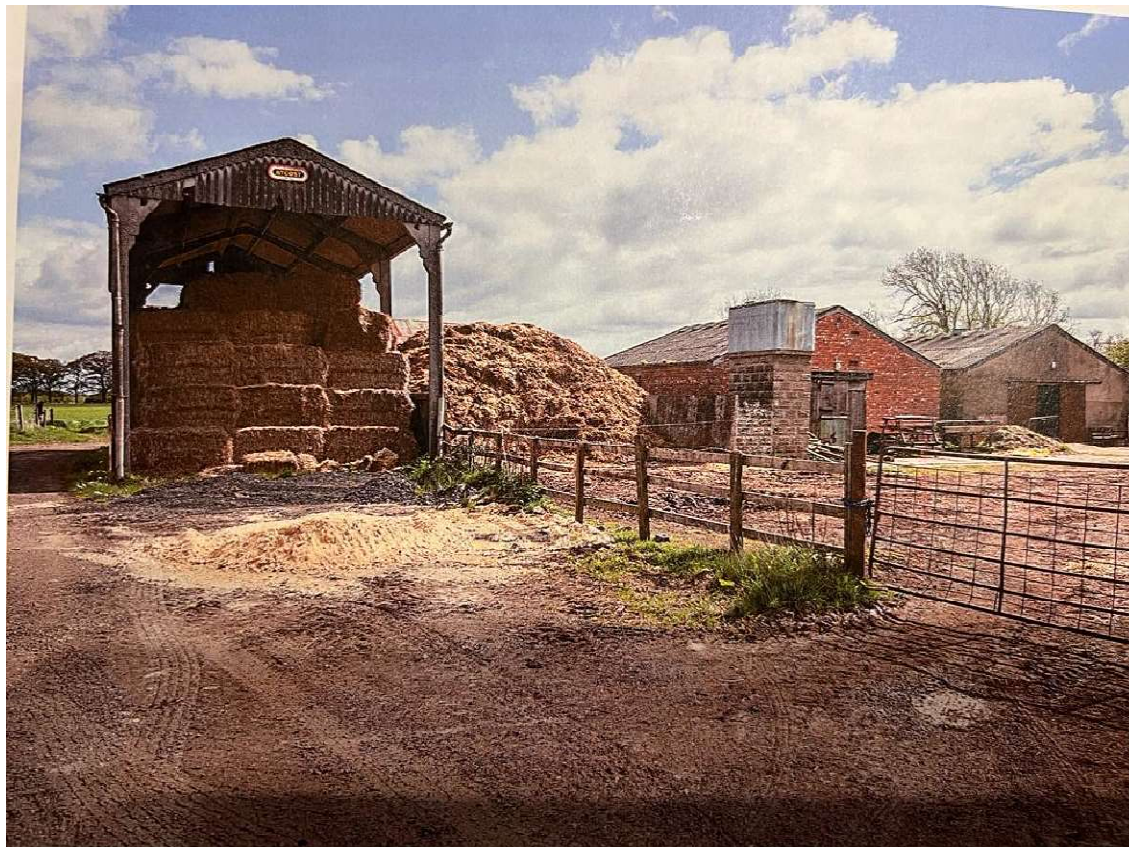
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APPENDIX A

PHOTOGRAPHS



View on Dairy Barn



[View on all Buildings](#)



View on Dairy Buildings