



Structural Engineering Inspection Report

On

Barns A and B at

Glasspool Farm

Port lane

Risely

RG7 1RU

for

Wroxton Ltd

Project No. 11325

July 2024

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Revision	Date	Description	Prepared	Approved
Issue 1	31 July '24	First issue	Jonathan Wilde	Peter Evans



1.0 INTRODUCTION

Gurney Consulting Engineers was commissioned by Tony White of White Planning on behalf of Wroxton Ltd via an email dated 8 July 2024 to undertake a structural inspection and report on two existing agricultural barns at Glasspool Farm, Risely RG71RU.

The inspection was to assess the ability of the structures to be converted to two No terrace blocks of five No. habitable dwelling houses each.

The inspection was undertaken on 17 July and the weather was hot and dry.

2.0 INSPECTION

BUILDING A

Barn referenced as 'building A' by Architect Imageon Designs Ltd measures approximately 63m length x 9.55m width. The primary structure is timber framed. Refer Appendix I for location and photos.

The roof comprises corrugated sheet cladding spanning between timber purlins which in turn are supported by timber trusses with raised collar ties which are supported by timber columns of 'telegraph pole' construction with the base of the columns which are fixed to sockets in the ground slab / foundations. The frames are at approximately 5.0m centres.

Fixity of the columns within the ground provides vertical cantilever action which provides the lateral stability to the structure in both directions.

The walls of the barn are clad in timber clad supported by timber studs off blockwork walls to approximately 2.0m height.

The age of the structure is not known but it is assumed that the building was built circa 1970's. It is understood that the building was previously used as a cow shed.

BUILDING B

Barn referenced as 'building B' by Architect Imageon Designs Ltd measures approximately 64m length x 10.65m width. The primary structure is timber framed supported on load bearing masonry perimeter walls. Refer Appendix I for location and photos.

The roof comprises corrugated sheet cladding spanning between timber purlins which in turn are supported by timber trusses with raised collar ties which are supported by timber columns along the external elevations. The columns are supported by blockwork walls of approximately 2.0m height. The block walls are constructed from 200 mm thick hollow blocks off a concrete plinth of approximately 500 mm height and with additional external stiffening piers to the North and South elevations. Additional timbers fixed between the timber columns and walls below provide some continuity and base fixity of the timber columns to the top of the piers walls.



Additional stability is considered to be provided by diaphragm or plate action of the roof structure which transfers lateral loads to the front and internal walls of the barn. The timber frames are at approximately 5.0m centres.

The walls of the barn are clad in timber sheet material supported by timber studs off the blockwork walls from approximately 2.0m height.

The age of the structure is not known but it is assumed that the building was built circa 1970's. It is understood that the building was previously used as a cow shed.

3.0 DISCUSSION

BUILDING A

The primary timber elements appear generally to be in good condition, although there are some localized timbers on the external elevations which have suffered from timber decay due to being exposed to the elements over a period of time and will require removal and replacing as appropriate.

Timber purlins span between the trusses supporting the roof cladding. These appear to be in a reasonable condition.

Timber trusses span between the external columns and double cantilever timber beams along the centre of the building which are supported by an internal line of timber columns. These timbers appear to be in reasonable condition.

It is assumed the columns are fixed into concrete sockets within the ground forming pad foundations. The timber columns appear to be in good condition where visible, although no opening investigation has been undertaken to check the condition of the bases of the columns which are buried in the ground / concrete.

No intrusive investigations were undertaken and the construction of the foundations was not determined. From a visual inspection there is no sign of any obvious settlement or movement of the structure suggesting the foundations and underlying founding strata are adequate to support the existing applied loads.

There are no signs of any significant settlement of the building and hence it appears the foundations are adequate for the loads applied.

The cladding to the roof is in reasonable condition for its age but it is likely that the roof will require replacement with lightweight metal cladding to ensure watertightness and thermal performance.

The cladding to the walls is in dilapidated condition and will require replacement with new weather cladding to ensure watertightness and thermal performance, as well as incorporation



of new window and door openings. The primary support structure would typically be retained including the part height concrete block walls.

These elements do not form part of the primary structure as they do not provide overall support or stability.

In order to convert the building to a block of terraced dwelling house it would be necessary to significantly upgrade the thermal and water resisting performance of the walls, roof and slab even after they were restored to their original condition.

Part of the building is to be demolished in order to comply with the proposed layout. This will not adversely affect the stability of the building.

Floors will require raising in order to provide an internal floor level which is commensurate with internal inhabited rooms, which may be achieved with local reconstruction and / or relevelling with raised floors incorporating insulation and water resistance.

BUILDING B

The primary timber elements appear generally to be in good condition, although there are some localized timbers on the external elevations which have suffered from timber decay due to being exposed to the elements over a period of time and will require removal and replacing as appropriate.

A number of the vertical timber restraint ties which restrain the timber columns have been removed and will require replacing.

Timber purlins span between the trusses supporting the roof cladding. These appear to be in a reasonable condition.

The timber trusses appear in reasonable condition.

No intrusive investigations were undertaken and the construction of the foundations was not determined. From a visual inspection there is no sign of any obvious settlement or movement of the structure suggesting the foundations and underlying founding strata are adequate to support the existing applied loads.

There are no signs of any significant settlement of the building and hence it appears the foundations are adequate for the loads applied.

The cladding to the roof and walls, is in dilapidated condition, particularly the walls, and it would be necessary to repair these elements to return the building to its original function. It is likely that the roof will require replacement with lightweight metal cladding to ensure watertightness and thermal performance.

The primary support structure would typically be retained including the part height concrete block walls, allowing for the introduction of door openings, with the timber cladding being replaced to allow installation of windows and doors.



These elements do not form part of the primary structure as they do not provide overall support or stability.

Part of the building is to be demolished in order to comply with the proposed layout. This will not adversely affect the stability of the building.

Floors will require raising in order to provide an internal floor level which is commensurate with internal inhabited rooms, which may be achieved with local reconstruction and / or levelling with raised floors incorporating insulation and water resistance.

4.0 CONCLUSION

It will, in our opinion, be feasible to convert the existing barns into dwelling houses without wholesale reconstruction of the primary structural frames.

The walls, roof and ground floor slabs will require significant upgrading to achieve the necessary thermal and watertight envelope to meet modern Building Regulations and the introduction of door and window openings.



APPENDIX I
BUILDINGS A and B



Photo 1: proposed site plan

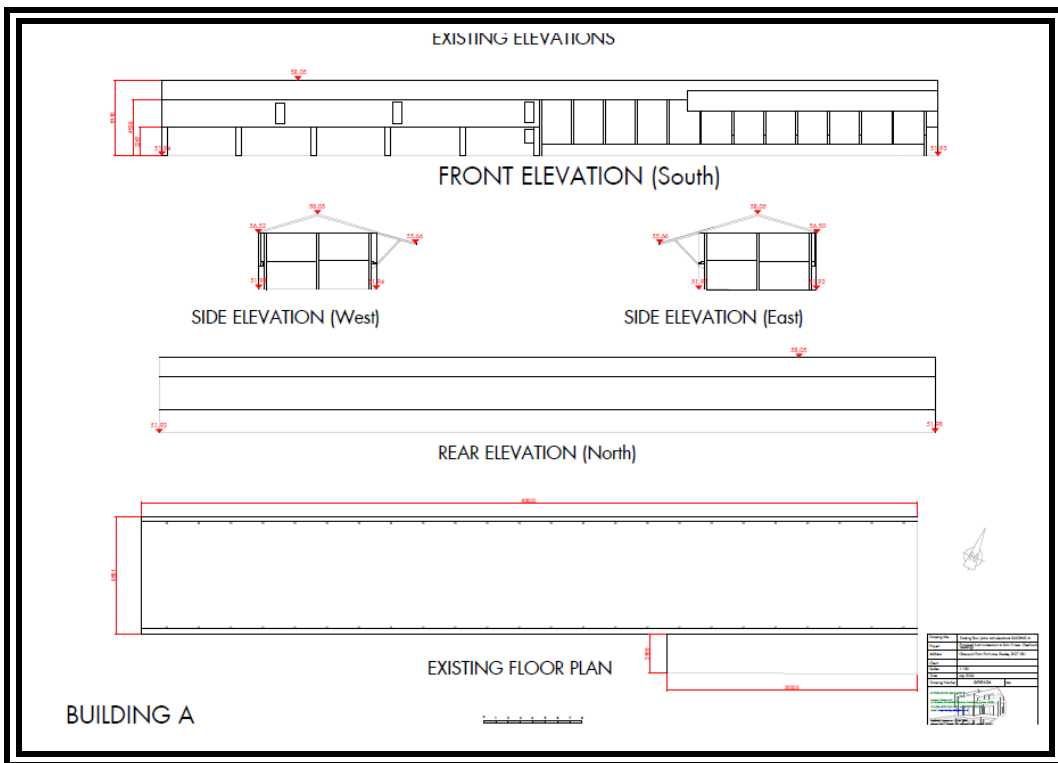


Photo 2: Building A – extg

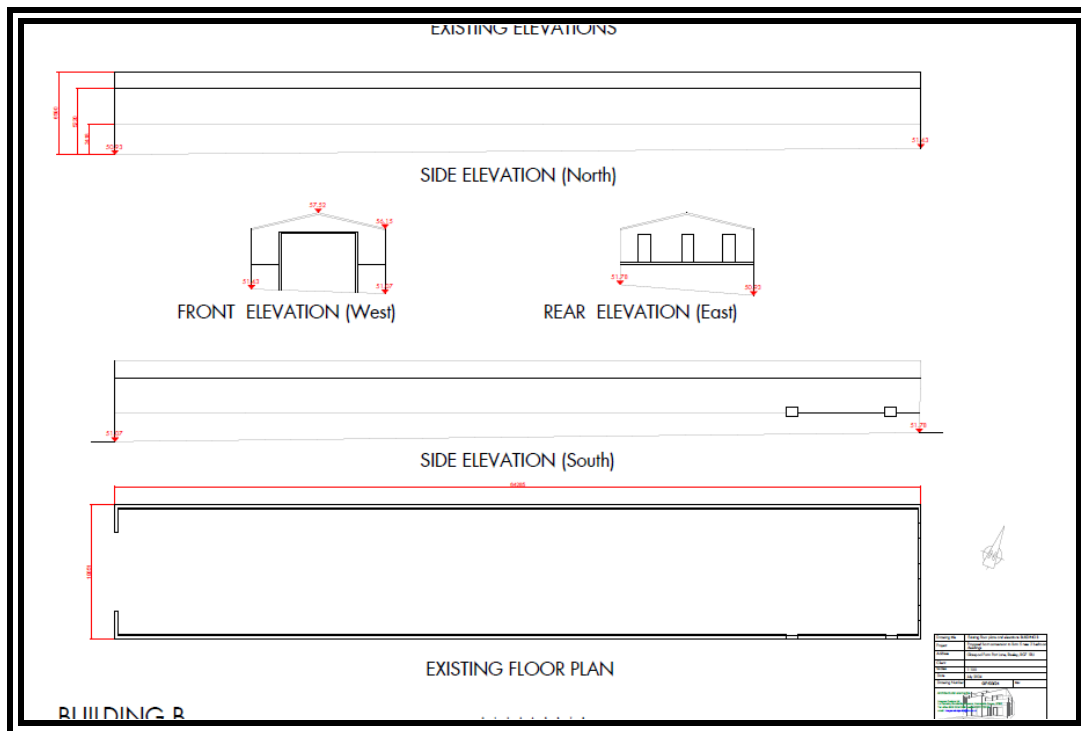


Photo 3: Building B – extg



Photo 4: Building A: North side elevation



Photo 5: Building A: South side elevation



Photo 6: Building A: South side elevation



Photo 7: Building A : internal view



Photo 8: Building B: North side elevation



Photo 9: Building B South elevation



Photo 10: Building B Front elevation



Photo 11: Building B: Rear elevation



Photo 12: Building B Internal view front section



Photo 13: Building B Internal view central section



Photo 14: Building B: Internal view rear section