



Diamond Wood & Shaw Limited

Structural Inspection

*Glebe Farm
Sheepy Lane
Orton on the Hill
Leicestershire
CV9 3NJ*

Structural Inspection

Client: **Leicester Diocesan Board of Finance**

Project: **Glebe Farm
Sheepy Lane
Orton on the Hill
Leicestershire
CV9 3NJ**

Project No: **19-15440**

Revision:

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Engineer:



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Diamond Wood and Shaw Limited

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1.0 Introduction

- 1.1 On the instructions of Andrew Granger and Company Limited acting on behalf of the Leicester Diocesan Board of Finance I visited Glebe Farm, Orton on the Hill on 29 May 2019.
- 1.2 The possibility of converting the existing building from agricultural use into a domestic dwelling is being considered in accordance with the Class Q of the Town and Country Planning (General Permitted Development) (England) Order 2015.
- 1.3 The purpose of my visit was to undertake a visual appraisal of the structural form and condition of the existing building to determine if it complies with the requirements.
- 1.4 My inspection was limited to elements of the structure which were visible, exposed or to which access was available.

2.0 Description

2.1 The existing agricultural building comprises four distinct elements, with three extensions to the original which appear to have been constructed at different times:

- An original steel-framed Dutch barn
- A mono-pitched side extension to the Dutch barn
- A single-span, duo-pitched steel portal frame – Portal Frame 1 - spanning the full width of the Dutch barn and side extension
- A single-span, duo-pitched full length steel portal frame extension - Portal Frame 2

The general layout is indicated in Figure 1

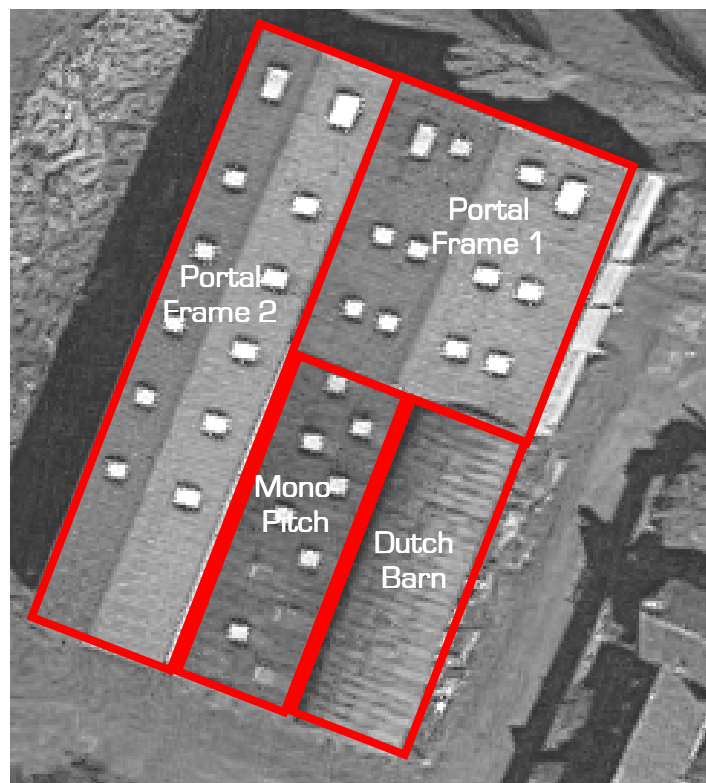


Figure 1

2.2 Dutch Barn

This is approximately 8.0m wide x 17.5m long consisting of 5No. bays and comprising a steel trussed barrel-vaulted roof supported on steel columns and with four predominantly open sides.

The roof is clad in corrugated steel sheeting.

2.3 Mono-pitched Side Extension

This is an approximately 8.0m wide x 17.5m long steel open-sided extension with column spacing to match the Dutch barn and with steel rafters spanning between the original barn and newer, extension columns.

The roof comprises corrugated fibre-cement sheets supported on timber purlins spanning between main rafters.

2.4 Portal Frame 1

This is a more recent, steel portal framed building with a duo-pitched roof approximately 16.0m wide to match the width of the Dutch barn and mono-pitched side extension x 15.0m long and consisting of 3No. bays.

The roof comprises corrugated fibre-cement sheets supported on cold-formed purlins spanning between main frames.

There are two intermediate gable posts to the external, north-facing elevation.

The walls comprise mid-height blockwork above which is corrugated fibre-cement sheets supported on timber rails spanning between main frames and gable posts.

2.5 Portal Frame 2

This appears to be an extension to the western side and full length of the earlier buildings and comprises a steel portal framed building with a duo-pitched roof approximately 9.0m wide x 32.5m long consisting of 8No. bays at spacings to match the earlier buildings.

The roof and walls are of similar construction to Portal Frame 1

2.6 The more recent portal framed structures are provided with haunched eaves and apex connections to provide lateral, in-plane frame stability.

The earlier barn and lean-to structures have simple steelwork connections only.

2.7 Longitudinal stability is provided to the portal frames by a series of diagonal roof bracing and shear wall construction provided by the blockwork.

The earlier structures contain no bracing systems.

3.0 Observations

3.1 Dutch Barn

This is showing evidence of general degradation and rusting of exposed steel sections commensurate with age and exposure conditions.

3.2 Mono-pitched Side Extension

This is showing evidence of general degradation and rusting of exposed steel sections commensurate with age and exposure conditions.

3.3 Portal Frame 1

There was no evidence of structural defect to any of the main steel frame elements.

There were some small areas of surface rusting commensurate with exposure conditions.

3.4 Portal Frame 2

There was no evidence of structural defect to any of the main steel frame elements.

There were some small areas of surface rusting commensurate with exposure conditions.

There was evidence of deflection within some of the timber elements but these all appeared to be within acceptable limits.

3.5 There is no evidence of lateral or longitudinal deflection, deformation, racking or general lack of verticality in either orthogonal direction.

3.6 There is no evidence of settlement associated with foundation movement.

4.0 Conclusions and Recommendations

- 4.1 On the basis of my inspection, I advise that the Dutch barn and mono-pitched side extension are unsuitable for conversion into habitable accommodation.
- 4.2 On the basis of my inspection, there is no evidence of structural defect to steel Portal Frame 1 of the existing agricultural building.
- This is considered to be structurally strong enough to sustain loadings associated with development proposals without the inclusion of significant new structural elements, and to be capable of functioning as a domestic dwelling.
- 4.3 On the basis of my inspection, there is no evidence of structural defect to steel Portal Frame 2 of the existing agricultural building.
- This is considered to be structurally strong enough to sustain loadings associated with development proposals without the inclusion of significant new structural elements, and to be capable of functioning as a domestic dwelling, but only for the length of the three bays alongside Portal Frame 1.
- Removal of the mono-pitched side extension will remove the column support for the remaining length of Portal Frame 2, and so the 5No. bays alongside the Dutch barn and side extension should be demolished as part of any proposals.

- 4.4 The sections of the structure considered to be suitable are indicated on Figure 2

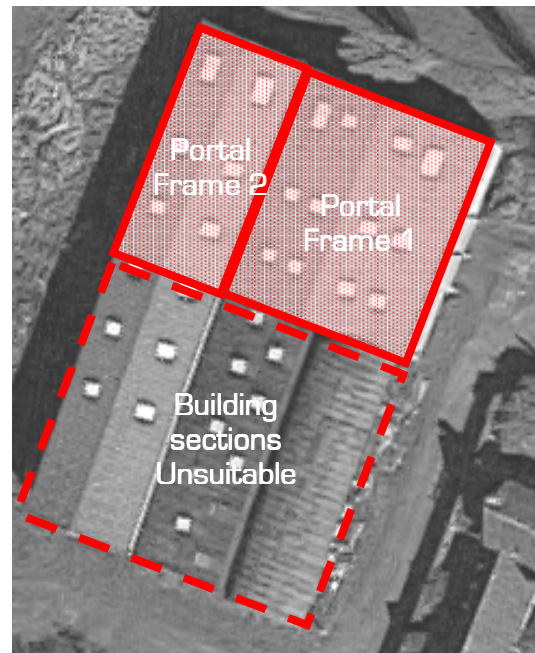


Figure 2

- 4.5 Removal of the unsuitable sections of the overall existing structure will not adversely affect the structural stability or integrity of the remainder.