SHIELDS WILSON
e: info@shieldswilson.co.uk t: 01775 729252
STRUCTURAL AND CIVIL ENGINEERING

PRELIMINARY STRUCTURAL REPORT

UPON

AGRICULTURAL BARNS

CARTERS FARM, OXCROFT BANK

SHEPEAU STOW, LINCS.

PE12 9NS

PROJECT No: SW 22-144

DOCUMENT REF: SW 22-144-REP-02 rev A



G R MERCHANT Ltd

CONTENTS

1. INTRODUCTION 2
2. PROPERTY LOCATION & DESCRIPTION 3
3. OBSERVATIONS 4
3.1. Ground Conditions 4
3.2. Structure 4
4. Proposed Structure Conversion 6
5. CONCLUSIONS & RECCOMENDATIONS 7
APPENDIX A 8
APPENDIX B 10
APPENDIX C 19

© Shields Wilson Limited.

1. INTRODUCTION

Acting upon the instruction of G R Merchant Ltd., we attended the site in February 2022, to undertake visual inspections of the structure.

The object of this report is to comment upon the current structural condition and viability for conversion to domestic accommodation. It confines itself to the Basic Structural Fabric and is not intended to comment upon non-structural items.

During the course of the survey and in preparation of this report no cladding, internal features or items were moved, therefore we cannot comment upon the condition of areas which were covered or inaccessible.

Comments relating to Ground Conditions are based upon our previous experience in the Fenland area, and publicly available British Geological Society records.

This report has been prepared for the named client above and should not be relied upon by any other parties, expect the client and their specialist third party advisors, without the express written permission of Shields Wilson Limited.

© Shields Wilson Limited.

2. PROPERTY LOCATION & DESCRIPTION

The site sits to the East of Oxcroft Bank, Shepeau Stow, Lincolnshire. The barns sit to the South of the existing Dwelling and collection of agricultural structures known as Carters Farm Leamlands Farm, Leamland Lane, Lutton Marsh PE12 9NS.

Site location plan, GR Merchant drawing 3911-21/01 is contained within Appendix A.



The building is an agricultural barn and has been used for storage purposes.

The timber structure of the barn is split into 3 distinct sections each with their own structural form. The arrangements of the forms are illustrated on GR Merchant drawing 3911-21/06 contained within Appendix A.

The structure of the barn is formed in a typical English Brothers style frame arrangement with a high collar trussed rafter arrangement on columns at approximately 4.5-5m c/c, often seen in the South Lincolnshire, North Cambridgeshire Fens area.

It is formed with a timber structure with a trussed rafter and posts being utilised to support vertical roof loads to ground.
The walls take the form of a vertically spanning single skin corrugated galvanised sheet. The roof sheeting is an asbestos cement profiled sheet cladding on timber purlins.

The barn has a concrete ground bearing floor slab.

© Shields Wilson Limited.

3. OBSERVATIONS

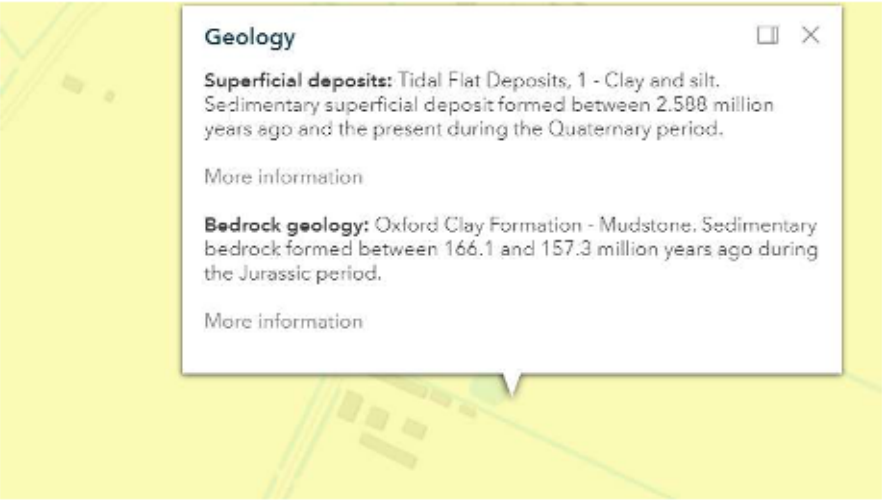
A visual inspection of the building was undertaken, our observations are described below.

The form of the barn is illustrated on GR Merchant drawing 3911-21/06, a copy of which is located within Appendix A.

There is a general photographic record of our survey contained in Appendix B.

3.1. Ground Conditions

Publicly available British Geological Society maps and borehole records indicate the site to be underlain with Tidal flat deposits of Clay and Silt tidal flat deposits over the Clay Formations.



No specific site investigations were undertaken.

From our previous experience of English Brothers barns we would anticipate a foundation being present in the form of a concrete column surround.

The likely underlying ground conditions are natural silts and are likely to provide relatively low bearing capacities but are anticipated to be reasonable for a shallow foundation either in the form of wide strips or a raft slab.

New masonry walls would require new suitably designed strip foundations to found onto to avoid unacceptably large settlements.

3.2. Structure

The style of structure can be seen forming a number of agricultural barns across the surrounding Fenland area. They are lightweight structures intended as storage buildings and for agricultural use.

The single skin metal wall cladding is generally in good condition with some surface corrosion and surface staining generally to most of the sheets.

© Shields Wilson Limited.

The asbestos cement cladding is generally in good condition as are the gutters which are also thought to be asbestos.

The roof Truss and frame structure of the barn show no signs of distress, excessive deflections or any movements. It demonstrates that it is adequately performing for it current purpose.

Generally the condition of the timber frame is good, with no visible degradation to the structural elements. There are isolated members which may have suffered minor deterioration.

The ground floor structure of the barn appears to be a general purpose concrete slab, which is generally in average condition and is showing no signs that it has suffered any significant cracking, movement or differential settlement.

© Shields Wilson Limited.

4. Proposed Structure Conversion

The proposed conversion involves the replacement of the roof and wall cladding, with similar new materials.

The proposed plan arrangement is shown on GR Merchant drawing 3911-21/09 contained in Appendix C.

The existing timber frame construction is likely to require some stiffening to be suitable for use to domestic purposes to building regulations. However, the proposed layout and arrangements can be configured in such a way to provide the load bearing capacity and structural stability required for the proposed conversion to meet current design standards.

The proposed roof cladding is of a lighter weight form than the existing asbestos cladding and as such this should limit any structural works required to provide additional capacity to the roof.

The new external walls will be designed as load bearing should this be necessary and new internal partitions could be constructed in a load bearing stud designed as a racking panel to then provide additional load bearing capacity for the roof as well as additional lateral stability for the whole structure.

The new load bearing external walls should be built up to the underside of the wall plates for the roof members and trusses at new load bearing lines and should be packed tight, to ensure load transfer. This will ensure roof loads are supported by the new structure and new foundations.

The Eastern Gable elevation is proposed to be semi glazed. This is likely to require the introduction of some additional framing members to assist the existing frame in supporting the bi-fold door loads and providing stability to the frames.

The barns existing foundations are unknown and as such prior to construction they should be exposed and should underpinning be required this should be designed by a suitably qualified engineer.

The existing Ground bearing floor slab construction will need to be determined prior to detailed design of the proposed conversion but may provide suitable in form to accommodate loads from new external and internal stud walls.

© Shields Wilson Limited.

5. CONCLUSIONS & RECCOMENDATIONS

Generally, the condition of the structural elements is good for a building of this type and age.

The proposed conversion layout and style will provide methods for incorporating additional load bearing and stability and as such will ensure that the proposed conversion can accommodate domestic loads in accordance with the modern building regulations.

As part of the detailed construction design for the proposed project a structural design package will be required to be undertaken by a suitably qualified engineer.

By implementing the recommendations contained in the report above, the property should provide suitable domestic accommodation for years to come.

For and on behalf of **SHIELDS WILSON LIMITED**

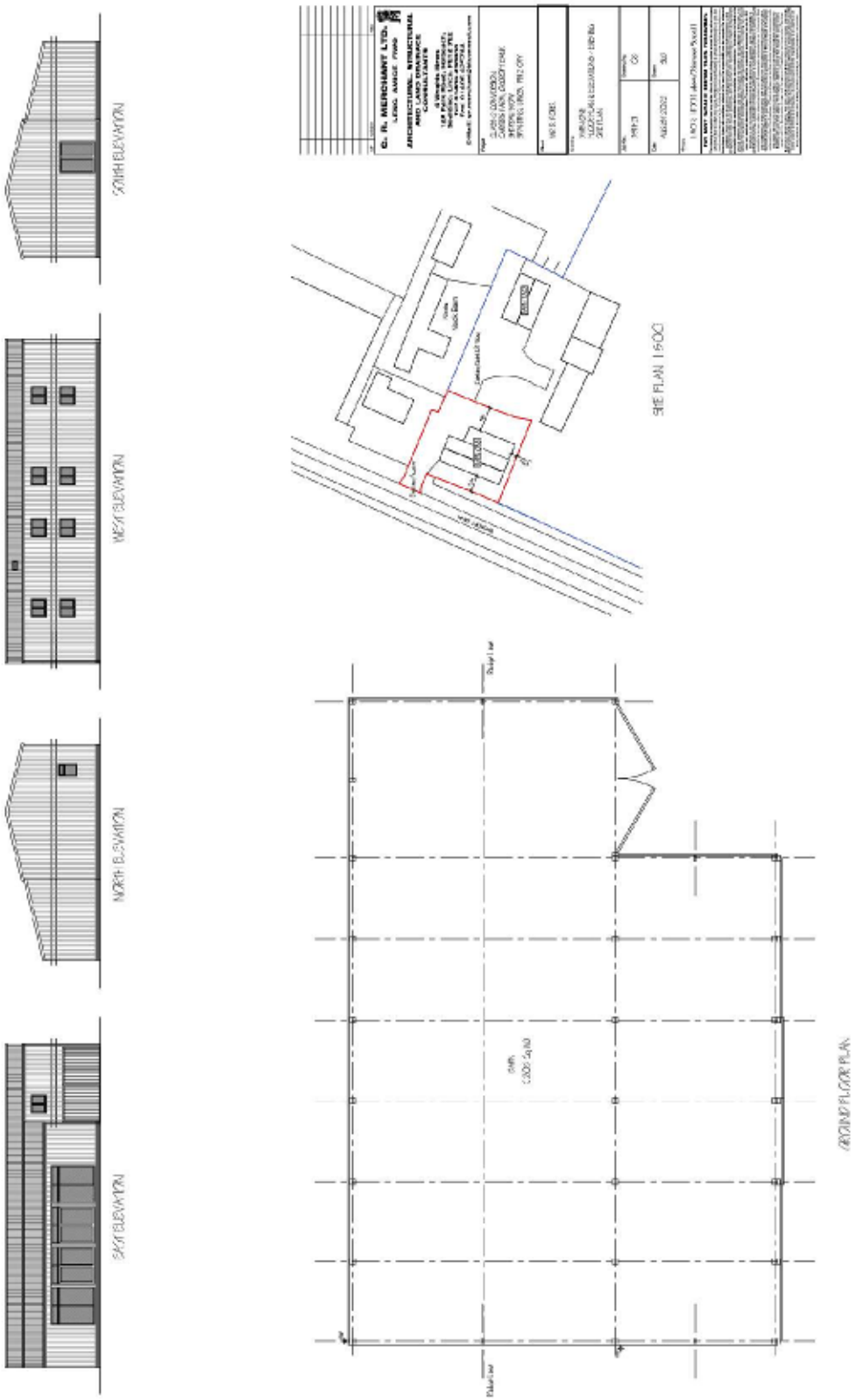
A Wilson CEng MIStructE **January 2023**

.

© Shields Wilson Limited.

APPENDIX A

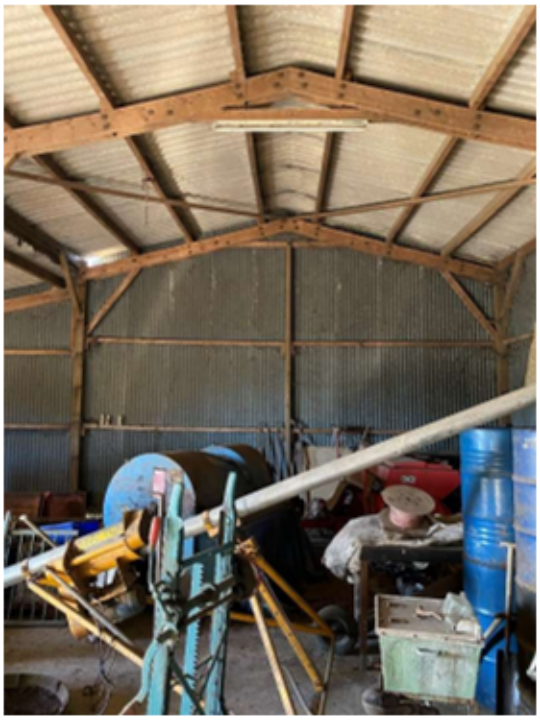
© Shields Wilson Limited.



© Shields Wilson Limited.

APPENDIX B

© Shields Wilson Limited.



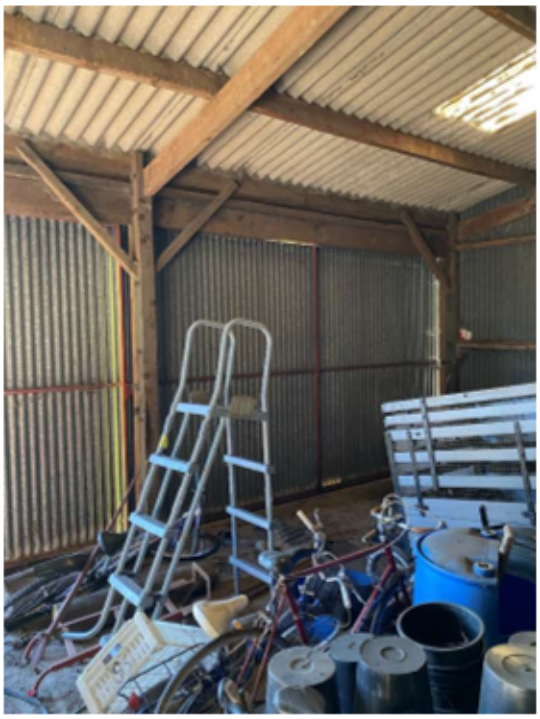


© Shields Wilson Limited.





© Shields Wilson Limited.





© Shields Wilson Limited.





© Shields Wilson Limited.





© Shields Wilson Limited.



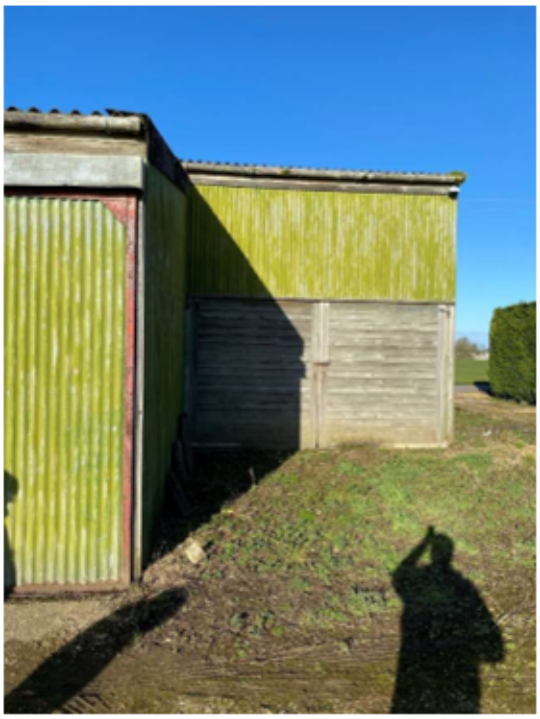


© Shields Wilson Limited.





© Shields Wilson Limited.

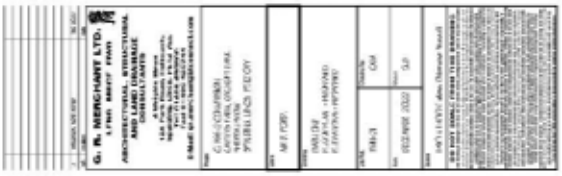




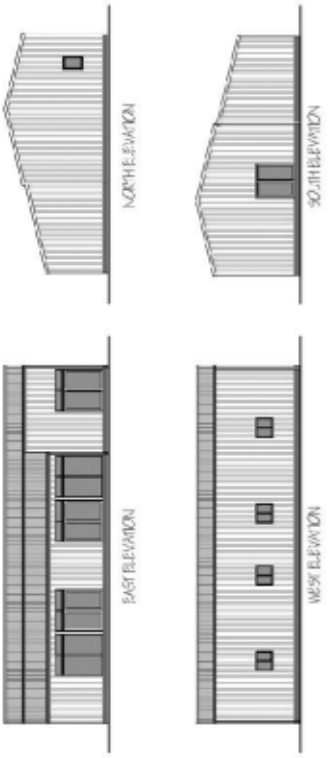
© Shields Wilson Limited.

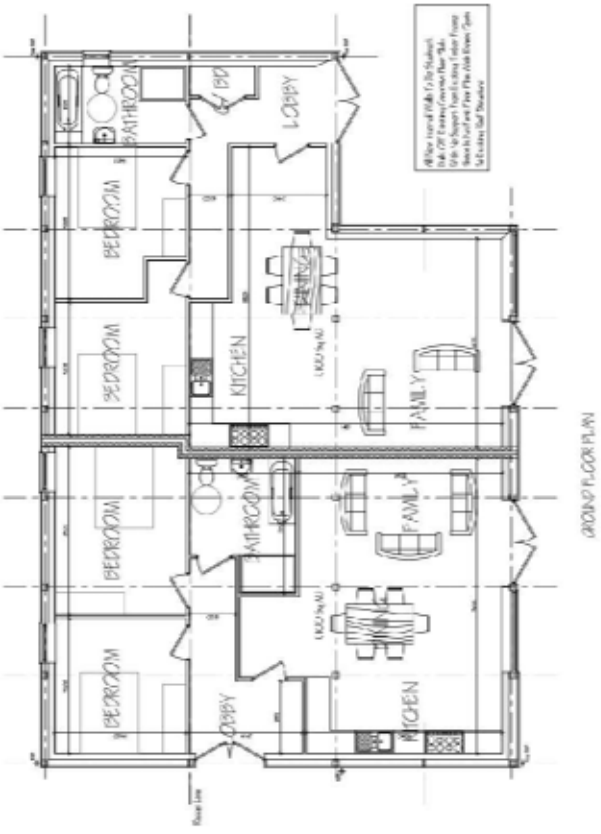
APPENDIX C

© Shields Wilson Limited.









© Shields Wilson Limited.