

STRUCTURAL APPRAISAL REPORT

On

The Suitability of an Existing Agricultural Building for Conversion to a Domestic Dwelling

at

**Oaksey Court,
Oaksey, Wiltshire.**

on behalf of

Mr M Woodhouse



Project Ref: 2252

(Revision A)

REPORT DETAILS

TITLE: Structural Appraisal Report on an Existing Agricultural Building for Conversion to a Domestic Dwelling

LOCATION: Oaksey Court, Oaksey, Wiltshire. SN16 9TF

CLIENT: Mr M Woodhouse

PROJECT REF: 2252

AUTHOR: Andrew Winterbotham
(Director & Structural Engineer)

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Issue 1	5 th May 2023	First Issue
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1. INTRODUCTION

- 1.1. A Winterbotham Ltd have been appointed by Mr M Woodhouse (the client) to undertake a structural appraisal of an agricultural building at Oaksey Court, Oaksey, Wiltshire.
- 1.2. The appraisal is required to determine if the barn is structurally capable of conversion to a Domestic Dwelling.
- 1.3. The inspection was undertaken on 28th March 2023. The weather was showery.
- 1.4. The inspection was undertaken internally from the ground floor and externally from ground level.
- 1.5. This report has been prepared on behalf of and for the exclusive use of A Winterbotham Ltd.'s client and is subject to and issued in connection with the provisions of the agreement between A Winterbotham Ltd and its client. A Winterbotham Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

2. DESCRIPTION

- 2.1. The building is located within the grounds of Oaksey Court in Oaksey.
- 2.2. The building comprises two attached buildings. The main building is single storey, comprising a cut timber roof of jack rafters supported on timber purlins and timber trusses. The trusses have a raised collar at the lower purlin location.
- 2.3. The trusses are supported on the load bearing external walls. The external walls are solid stone. A block wall incorporating block piers has been constructed against the inner face of the rear wall. The piers support the trusses. The floor comprises generally stone cobbles, with a concrete slab to the end room.
- 2.4. The smaller building comprises jack rafters supported on timber purlins. The roof timbers are support on load bearing brick walls. The underside of the rafters has a timber board finish. The floor comprises stone cobbles.
- 2.5. The foundations were not exposed and therefore not inspected.
- 2.6. Refer to figure 1 and photographs 1, 2 and 3 below.

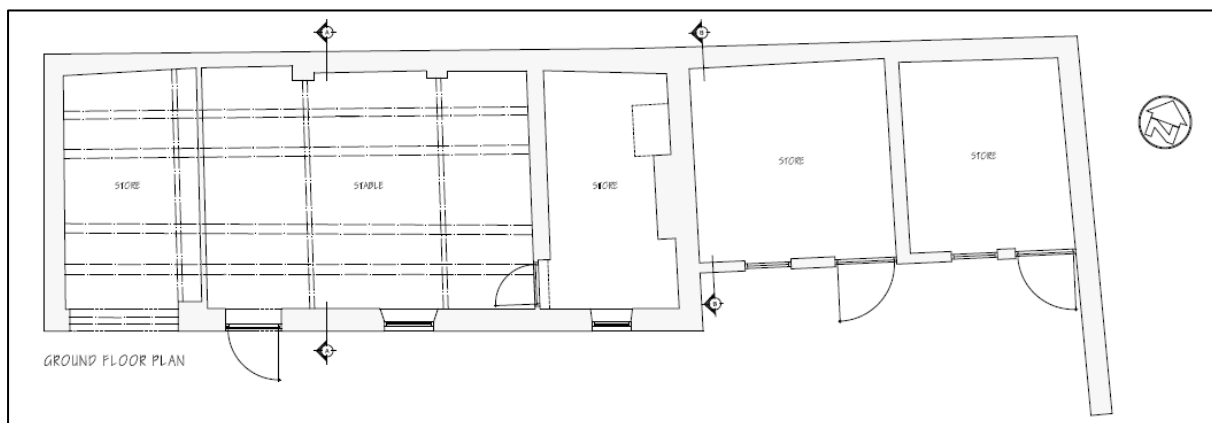


Figure 1: Existing Plan (Clark & Maslin drawing)



Photograph 1: Front elevation



Photograph 2: Side elevation



Photograph 3: Rear elevation

3. PROPOSAL

- 3.1. It is proposed to convert the building for domestic use.
- 3.2. New ground bearing concrete floor slabs will be required throughout the buildings.
- 3.3. Refer to figure 2 below.

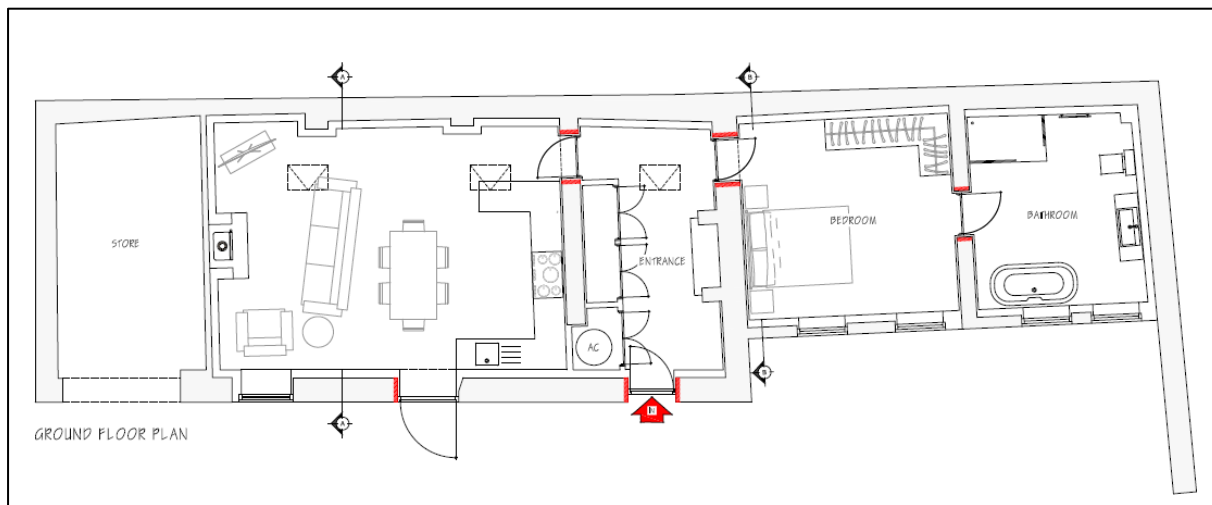


Figure 2: Proposed plan

4. OBSERVATIONS

- 4.1. The internal face of the west gable wall requires re-pointing. Refer to photograph 4 below.



Photograph 4: Wall requires re-pointing

- 4.2. The bearing of one truss has been compromised due to movement of the front & rear walls. The top of the wall appears to have been pushed outwards by the roof. The rafter members of the truss bows. The lower purlin has moved off its bearing at the truss. New rafters and packing to the purlins has been undertaken on the rear section of the roof. Refer to photograph 5 below.



Photograph 5: Movement to the truss

- 4.3. The end truss to the main building has been strengthened with additional timber members and is supported with acro props. New rafters and packing to the purlins has been undertaken on the rear section of the roof. Refer to photograph 6 below.



Photograph 6: Movement to the truss

- 4.4. The end truss bears onto the front wall adjacent to a window. The lintel to the window is rotten. The masonry below the truss has moved, compromising the truss bearing. Refer to photograph 7 below.



Photograph 7: Deterioration on timber lintel and masonry wall

- 4.5. Gaps were observed between the internal wall and the front and rear walls. The gap with the rear wall has been cemented. Refer to photograph 8 and 9 below.



Photograph 8: Gaps between the internal and front & rear walls



Photograph 9: Gap between the internal and front & rear walls

4.6. The front and rear walls lean outwards. Refer to photograph 10 below.



Photograph 10: Lean to rear wall

5. DISCUSSION

- 5.1. Overall, the external walls are in a structurally satisfactory condition. The re-pointing will maintain the structural integrity of the walls. The lean to the front and rear walls is not structurally excessive. The conversion works will provide stability to the walls.
- 5.2. The ground floor slab will need to be designed to accommodate the depth of the existing foundations should they be found to be of a shallow depth.
- 5.3. The existing timber roof structure will require strengthening or re-newing, to allow removal of the horizontal tie member. The strengthening will negate any further roof spread. The purlin to truss connection will need to be enhanced where the purlin support has been reduced.
- 5.4. The internal walls will require tying the external walls to maintain the stability of the building.

6. RECOMMENDATIONS

- 6.1. The walls require re-pointing at various locations. Local re-building of the wall is required below the truss adjacent to the external window,
- 6.2. The trusses will require strengthening with steel plates or angles bolted either side of the rafter members or re-newing incorporating horizontal tie members at eaves level.
- 6.3. The purlins require a suitable bracket to be fabricated to provide a connection back to the truss.
- 6.4. The internal and external walls can be tied together using a suitable crack repair technique. Refer to appendix C for a typical specification.
- 6.5. The rotten timber lintels need replacing, ideally with new concrete lintels.

7. CONCLUSIONS

- 7.1. The building is capable of conversion without the need for major reconstruction.
- 7.2. The renovation will have no detrimental effect on the stability or integrity of the building, so long as the items in the recommendations of this report are undertaken.

Inspection carried out by, and report prepared by:

A Winterbotham Ltd



Andrew Winterbotham

Director & Structural Engineer

APPENDIX A - REFERENCES

BRE Digest 251; Assessment of Damage to Low-Rise Buildings: *Building Research Establishment*

BRE Digest 366; Structural Appraisal of Existing Buildings for Change of Use: *Building Research Establishment*

Guide to Surveys and Inspections of Buildings and Similar Structure: *The Institution of Structural Engineers*

Appraisal of Existing Structure (Third Edition): *The Institution of Structural Engineers*

APPENDIX B - SCOPE OF INSPECTION

The structural inspection of the building did not include:

The disruptive exploratory opening of finishes or fabric nor have the foundations inspected during this survey.

Any dimensional surveys or sizing of structural elements.

Inspections of hand railing, balustrades and any architectural metalwork or glasswork, architectural finishes, wall claddings and proprietary ceilings.

Testing and the measurement of deterioration caused by dampness, rot and infestation to structural timber requiring the involvement of a specialist have been excluded.

The condition of damp proof courses/membranes together with the testing for dampness in masonry has been excluded.

We have excluded from the inspection the condition of roof finishes but if any leaks are identified within the building fabric that could affect the structural integrity of the building these will be reported.

We have excluded the identification of asbestos or asbestos containing materials (ACM's) which would be the responsibility of others.

We have not included for the design and preparation of engineering details associated with any remedial proposals. We assume cost estimated or quantity surveying duties associated with the remedial works will be undertaken by others.



APPENDIX C – MASONRY REPAIRS

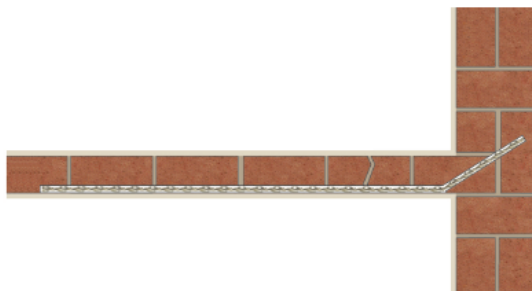
RW03

Reconnecting a Cracked Internal Wall to an External Solid Wall using HeliBars

METHOD STATEMENT

1. Using a twin-bladed, diamond-tipped wall chaser and vacuum attachment followed by a hand or power chisel, cut slots into the horizontal mortar joints, to the specified depth and at the required vertical spacing. Use a power/hand chisel to continue slots up to the internal corner. Ensure that **NO** mortar is left attached to the exposed brick surfaces in order to provide a good masonry/grout bond.
2. Where the slot ends at an internal corner drill a clearance hole into the adjoining wall as shown. (14mm if using HeliBond grout – recommended; 10mm if using PolyPlus resin)
3. Remove ALL dust and mortar from the slots and holes and thoroughly flush with water. Where the substrate is very porous or flushing with water is inappropriate, use HeliPrimer WB. Ensure the slots and holes are damp or primed prior to commencing steps 6 and 7.
4. Cut the 6mm HeliBar to the required length and bend the end to fit to the full depth of the hole, then remove.
5. Mix HeliBond cementitious grout using a power mixer and load into the Helifix Pointing Gun CS.
6. Fill the hole with HeliBond grout using the pinning nozzle (PolyPlus resin may be used if preferred).
7. Inject a bead of HeliBond grout, approx. 15mm deep, into the back of the slot using the mortar nozzle.
8. Push the HeliBar into the grout to obtain good coverage.
9. Inject a second bead of HeliBond grout over the exposed HeliBar and iron it into the slot using a finger trowel. Inject additional HeliBond as necessary, leaving 10-15mm for new pointing.
10. Point up or fill the remaining slot, make good the crack and leave ready for any decoration.
11. Clean tools with clean, fresh water.

N.B. Pointing may be carried out as soon as is convenient after the HeliBond has started to gel.



RECOMMENDED TOOLING

For cutting slots up to 40mm deep	Twin bladed cutter with vacuum attachment
To achieve final depth of slot beyond 40mm	Hand or power chisel
For drilling	SDS rotary hammer drill 650/700w
For mixing HeliBond	3-jaw-chuck drill with mixing paddle
For injection of HeliBond into slots	Helifix Pointing Gun CS with mortar nozzle
For injection of HeliBond into holes	Helifix Pointing Gun CS with pinning nozzle
For smoothing pointing	Standard finger trowel

Specification Notes

The following criteria are to be used unless specified otherwise:

- A. Depth of slot into the masonry to be 25 to 35mm **plus the thickness of any plaster.**
- B. Height of slot to be equal to full mortar joint height, with a minimum of 8mm. For thin mortar joint specifications refer to the Helifix Technical Dept.
- C. HeliBar to be long enough to extend a minimum of 500mm either side of the crack or 500mm beyond the outer cracks if two or more adjacent cracks are being stitched using one rod.
- D. Normal vertical spacing is 450mm.
- E. In hot conditions ensure the masonry is well wetted or primed to prevent premature drying of the HeliBond due to rapid de-watering. Ideally additional wetting of the slot, or priming with HeliPrimer WB, should be carried out just prior to injecting the HeliBond grout.
- F. Do not use HeliBond grout when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed with HeliPrimer WB prior to injection of the HeliBond grout.

The above specification notes are for general guidance only and Helifix reserves the right to amend details/notes as necessary.

GENERAL NOTES

If your application differs from this repair detail or you require specific advice on your particular project, call the Helifix Technical Sales Team on **020 8735 5222**. Our Technical Department can provide you with a full support service including:

- Advice, assistance and recommendations on all structural repair matters
- Devising and preparing complete repair proposals for specific situations
- An insurance-backed warranty via our Approved Installers scheme