



Conversion of Outbuilding,
Beech Cottage, Gegin Lane,
Minera, Wrexham

Structural Appraisal Report

July 2020

Executive Summary

The inspection was made at the request of Ms Claire Ellis, the owner of Beech Cottage, who is seeking to convert the outbuilding into a commercial premises. The report has been prepared for submission with the planning application for the proposed conversion.

The inspection was carried out during the morning of Tuesday 14th July 2020.

The overall condition of the outbuilding is considered to be good. The property is robustly constructed and has been maintained to a good standard. The building fabric will require generally cosmetic repairs and refurbishment to ensure long term durability.

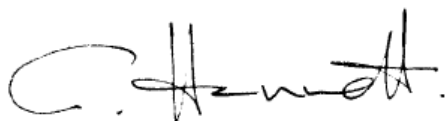
No evidence of distortion or cracking was identified to the external elevations that would be attributable to settlement or foundation inadequacies. Cracking was identified in the left hand side and rear elevations. The cracking in the side elevation appears to delineate the edge of an infilled opening and is not considered to be significant. The cracking in the rear elevation reflects cracking noted internally below the canted purlin bearing. This type of cracking is not uncommon in buildings of this type or age where roof spread and degradation to purlin ends has occurred. The edges of the cracks were weathered which would be indicative of a reasonably longstanding defect. The cracking noted is minor and can be readily repaired by repointing.

Cracking to surfaces identified internally below purlin bearings is generally minor and is considered to have resulted from slight historic roof spread, localised stress concentrations and slight degradation to purlin ends. The cracking under one of the bearings is reflected on the rear elevation externally. Although the cracking is not significant, it would be prudent to include for reinforcing bars locally to stabilise the areas below the bearings. The vertical cracking in the side elevation would appear to indicate the reveal of an infilled opening and is not significant. All cracking can be readily repaired by repointing.

All of the external walls show evidence of rising and penetrating damp internally. No dampness is apparent to the floor slab which would confirm that the damp penetration is fairly minor. A drainage layer will need to be incorporated within the proposed conversion to ensure that internal finishes are unaffected.

The roof over and the floor slab are in good condition and no repairs are considered necessary at this time.

Report Compiled by:



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Introduction

The inspection was made at the request of Ms Claire Ellis, the owner of Beech Cottage, who is seeking to convert the outbuilding into a commercial premises. The report has been prepared for submission with the planning application for the proposed conversion.

The inspection was carried out during the morning of Tuesday 14th July 2020. The weather during our visit was warm with occasional light showers.

The inspection comprised a visual condition survey of the outbuilding within and without making use of a ladder where appropriate. No intrusive investigations or excavations were undertaken at the time.

The outbuilding is a detached single storey store comprising a slated pitched roof of traditional construction supported off solid rubble masonry external walls. External elevations comprise rubble masonry with concrete lintels over openings. The left hand side and rear elevations are partially buried by the adjacent hardstanding area to the front of the main property. The right hand side elevation forms the boundary with Gegin Lane which is at a lower level than the floor within the outbuilding.

The report will seek to confirm the overall condition of the outbuilding and its suitability for conversion into a commercial premises. The report will also make recommendations for remediation and repair if required.

Inspection

Internal Inspection

The interior of the outbuilding comprises a single room finished with a concrete slab floor, lime washed walls and a traditional canted purlin and rafter roof over with a bitumen felt membrane under the slated finishes.

The overall condition of the interior of the outbuilding is considered to be good/fair.

Peeling finishes were noted extending up the walls from floor level by up 1.0m. Coincident damp staining would be indicative of rising damp and damp penetration through walls supporting elevated ground levels. This type of defect is not untypical in rubble masonry walls. No staining was evident to the concrete floor which would indicate that the damp penetration is minor.

A vertical crack was noted extending for full height within the left hand side elevation. The crack was noted as up to 2mm wide and is coincident with cracking noted externally. The cracking would appear to be indicative of an infilled historic opening in the wall.



Damp staining at low level. Vertical crack to left hand side elevation.

Cracking was noted extending down the front and rear elevations from the canted purlin bearings. The cracking was generally up to 2mm wide and is common in buildings of this age and type. The cracking is attributable to slight historic roof spread and stress concentrations and the inherent local weakness in the wall below the canted purlin.

The cracking is minor and is not indicative of movement of the outbuilding.

The walls were noted as slightly uneven but generally plumb and straight.



Cracking extending down from purlin bearing.

The roof over the outbuilding appears to be in generally good condition with no significant defects apparent. The rafters, slated finishes and felt membrane appear to be relatively recent replacements.

Slight worm infestation was noted to the purlins though no section losses were apparent. Damp penetration and slight rot were apparent at all of the purlin ends. No section losses were apparent and all of the timbers were noted as difficult to probe which would suggest that the defect is longstanding and may have been resolved by repairs to the roof in the recent past.

The purlins were noted as slightly bowed down the slope, though this is very minor and is not reflected in the external alignment of the ridge.



Typical view of roof.



Slight rot at purlin end.

The concrete slab floor to the outbuilding is in good condition with no visible defects apparent at the time of inspection. A damp proof membrane was visible around the perimeter of the slab. The slab was noted as generally level though a little uneven in places.

External Inspection

The overall condition of the exterior of the property is considered to be good.

The elevations were noted as generally plumb and straight throughout.

Pointing is cement based and was noted as generally flush with the external face of the masonry. Loose pointing was apparent in several small areas where the original lime mortar pointing is present.

The barge and fascia boards show minor paint losses and slight degradation throughout. One area adjacent to a security camera on the front elevation has been badly affected by rot and would appear to require replacement or repair.

The gutters and downpipe were intact and in reasonably good condition on the left hand side elevation. The downpipe discharges onto the hardstanding immediately adjacent to the elevation. The right hand side elevation is overgrown and it was not possible to confirm if guttering or a downpipe are provided.

A vertical crack extending for full height was noted in the left hand side elevation. The cracking was noted as up to 2mm wide. The edges of the cracking were noted as slightly weathered suggestive of a fairly longstanding defect. The cracking is coincident with similar cracking noted internally. A change in masonry type across the defect would indicate the location of a historical infilled opening.



Vertical crack to left hand side elevation.

Diagonal cracking was noted to the right of the window opening on the rear elevation. The cracking is coincident with the cracking noted internally below the purlin bearing. The cracking was noted as up to 3mm wide. The edges of the cracking were noted as slightly weathered suggestive of a fairly longstanding defect.

As the defect reflects through the full thickness of the wall, it would be prudent to provide reinforcing bars across the cracking internally.



Cracking adjacent to window on rear elevation.

Discussion and Conclusions

The overall condition of the outbuilding is considered to be good. The property is robustly constructed and has been maintained to a good standard. The building fabric will require generally cosmetic repairs and refurbishment to ensure long term durability.

No evidence of distortion or cracking was identified to the external elevations that would be attributable to settlement or foundation inadequacies. Cracking was identified in the left hand side and rear elevations. The cracking in the side elevation appears to delineate the edge of an infilled opening and is not considered to be significant. The cracking in the rear elevation reflects cracking noted internally below the canted purlin bearing. This type of cracking is not uncommon in buildings of this type or age where roof spread and degradation to purlin ends has occurred. The edges of the cracks were weathered which would be indicative of a reasonably longstanding defect. The cracking noted is minor and can be readily repaired by repointing.

Cracking to surfaces identified internally below purlin bearings is generally minor and is considered to have resulted from slight historic roof spread, localised stress concentrations and slight degradation to purlin ends. The cracking under one of the bearings is reflected on the rear elevation externally. Although the cracking is not significant, it would be prudent to include for reinforcing bars locally to stabilise the areas below the bearings. The vertical cracking in the side elevation would appear to indicate the reveal of an infilled opening and is not significant. All cracking can be readily repaired by repointing.

All of the external walls show evidence of rising and penetrating damp internally. No dampness is apparent to the floor slab which would confirm that the damp penetration is fairly minor. A drainage layer will need to be incorporated within the proposed conversion to ensure that internal finishes are unaffected.

The roof over and the floor slab are in good condition and no repairs are considered necessary at this time.

Recommendations

We would recommend that the following works are undertaken as part of the conversion to ensure the long term durability of the property:

- Insert a single stainless steel reinforcing bar across internal cracking extending down from each purlin bearing. Bar should be installed within a 40mm deep saw cut at least 1.0m long. For details of materials and installation refer to attached Helifix data sheet.
- Insert a three stainless steel reinforcing bars at 450mm vertical centres across internal cracking to left hand side elevation. Bars should be installed within a 40mm deep saw cut at least 1.0m long. For details of materials and installation refer to attached Helifix data sheet.
- Repair cracking to external and internal elevations by raking out existing pointing to a minimum depth of 40mm. New pointing shall comprise a 1:1:6 lime:cement:sand mortar packed tight into joints and finished flush with the face of the walls.
- Install proprietary drainage layer extending full height to all internal faces of external walls to control damp penetration. Layer shall be secured to wall in accordance with manufacturer's recommendations.

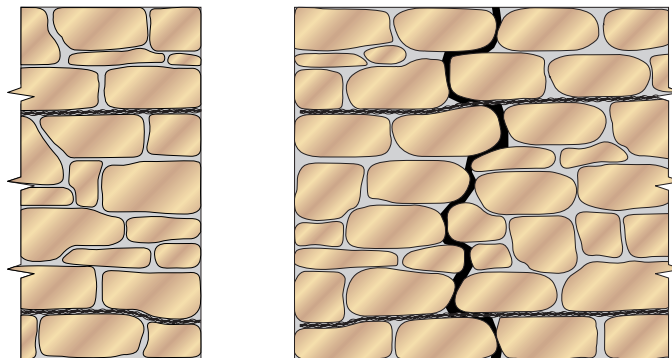
Repair of a Crack Near a Corner in a Stone Wall using HeliBars

CS10

Method Statement

1. Using a twin-bladed, diamond-tipped wall chaser and vacuum attachment, cut slots into the horizontal mortar joints, to the specified depth and at the required vertical spacing. Ensure that **NO** mortar is left attached to the exposed stone surfaces in order to provide a good masonry/grout bond. This operation may require the use of hand tools to remove the mortar due to the random nature of the stone.
2. Remove ALL dust and mortar from the slots and thoroughly flush with water. Where the substrate is very porous or flushing with water is inappropriate, use Helifix WB Primer. Ensure the slot is damp or primed prior to commencing step 4.
3. Mix HeliBond cementitious grout using a power mixer and load into the Helifix Pointing Gun Kit CS.
4. Inject a bead of HeliBond grout, approx. 15mm deep, into the back of the slot.
5. Push the 6mm HeliBar into the grout to obtain good coverage.
6. Inject a second bead of HeliBond grout over the exposed HeliBar and iron it into the slot using a finger trowel. Inject additional HeliBond grout as necessary, leaving 10-15mm for new pointing.
7. Point up the remaining slot with a suitable matching mortar and make good the crack using an appropriate Helifix bonding agent depending on the width of the crack.

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: Hilti DC-SE 20 wall chaser or similar with vacuum attachment.

For mixing HeliBond: 3-jaw-chuck drill with mixing paddle.

For injection of HeliBond into slots: Helifix Pointing Gun Kit CS with mortar nozzle.

For smoothing pointing: Standard finger trowel.

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

SPECIFICATION NOTES

The following criteria are to be used unless specified otherwise:

- A** Depth of slot into the masonry to be 35mm to 40mm.
- 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** Where a crack is less than 300mm from the end of a wall or an opening the HeliBar is to be continued for at least 100mm around the corner and bonded into the adjoining wall.
- F** In hot conditions ensure the masonry is well wetted or primed to prevent premature curing of the HeliBond due to rapid de-watering. Ideally additional wetting of the slot, or priming with Helifix WB primer, should be carried out just prior to injecting the HeliBond grout.
- G** Do not use HeliBond when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed 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.