AB Design Solutions Ltd
Consulting Structural & Building Engineers

REPORT ON CONDITION OF A TRADITIONAL AGRICULTURAL BUILDING AT CROCKWELL FARM, GT BOURTON

Survey by	Mark Allen BEng(Hons) CEng MIStructE	4th May 2020
Author	Mark Allen BEng(Hons) CEng MIStructE Principal Engineer	June 2020
Reference	AB3522-BLDG 1	Issued 14TH JULY 2020

Green Pastures | Akeley Road | Lillingstone Lovell | Buckingham | MK18 5BF.
T: 01280 860761 | F: 01280 860166
W: www.abdesignsolutions.co.uk | E: info@abdesignsolutions.co.uk
Serving Buckingham, Shipston-On-Stour and Surrounding areas.
Directors: Mark Allen BEng (Hons) CEng MIStructE M: 07767250065 | Matthew Barnes BEng (Hons) MEng M: 07753987347
Company Registration No. 6056872

The Institution of Structural Engineers

REPORT ON CONDITION OF A TRADITIONAL AGRICULTURAL BUILDING AT CROCKWELL FARM, GT BOURTON

CONTENTS

REPORT ON CONDITION OF A TRADITIONAL AGRICULTURAL BUILDING AT CROCKWELL FARM, GT BOURTON

1.0 BRIEF

AB Design Solutions Ltd were asked to inspect and comment on the condition of structural elements and the suitability of a traditional agricultural building to form part of an application of change of use to residential dwelling.

This report is limited to elements of the structure described above only. However, when assessing the defect provided to us in the brief, services, timber decay, damp penetration, contamination and further defects may be referred to, but these are items that require further investigation by others.

This report is solely for the purposes of the client only and is to form part of a planning application to Cherwell District Council

There has been no opening up works involved in this investigation. No drains have been inspected. Hence, parts of the structure that were hidden, covered or otherwise inaccessible have not been inspected. We therefore cannot guarantee that any such parts are free from defect.

A visual inspection has been carried out only.

2.0 GENERAL DESCRIPTION

2.01 Crockwell Farm is a listed property to which there is a main farmhouse, and the building was part of the farmstead and formed part of the farmyard. Building 1, a traditional agricultural building, is situated to the left-hand side of the principle elevation of Crockwell farmhouse.

Crockwell Farm, is situated in the centre of the village, and was listed in 1955, with the Historical England listing Entry Number of 1215873. The Listing is worded as follows:

GV II Farmhouse. Late C17. Ironstone ashlar. Steeply pitched slate roof. Stone-coped gables with moulded kneelers, Brick ridge and end stacks. 3-unit plan, 2 storeys plus attic. 3-window range. Entrance off-centre to left has doorway with a moulded stone basket arched head and C20 door. Hood mould with diamond shaped label stops. Entrance is flanked by 3- and 4-light stone mullions. An 4-light similar window to right. Between the floors on the right is a 2-liqht

stone mullioned stair window. First floor has three 3-light stone mullioned windows. Staircase light in attic floor said to have once been gabled. Right gable has 2-, 3- and 4-light stone mullioned windows with hood mould and label stop. Sundial. Interior said to have stop-chamfered beams, inglenoooks and original staircase. Interior not inspected. (VCH: Oxfordshire: Vol X. p176)

(Copyright acknowledged)

This notes down the important features of Crockwell Farmhouse. Clearly a significant building forming part of the local history of Great Bourton. It lists only the farmhouse, and none of the farm yard buildings. Thus not to say the outbuildings are of no significance, however the important architectural features of Crockwell Farm are in the wording above.

Sadly the farmyard has been under utilised in recent years and had become overgrown parts, but is still in use, if a little under valued, and maintenance has been left to drift, leaving the farmyard to become partially derelict.

As well as building 1 that is included in this report there are other buildings in the farm yard, including a dairy/parlour, circa 1950's and several stone walled buildings.

Much of the yard area, is hard standing beneath, it has become overgrown with grass and other plants.

3.0 Building 1

3.1 General Description

Building 1 is located adjacent to the entrance gate and forms the Western Boundary with the adjacent houses. The building s rear wall forming the boundary is retaining the adjacent houses garden and driveway.

The construction of the building varies, with part stone walls, part open hovel and a brick-built section furthest most from the entrance gateway.

3.11 The Open hovel section

The construction of this building was as described below:-

Roof

The roof is covered with natural slates, on tiling battens and common rafters. There is a purlin at midspan of the rafters. The purlins are supported on cross walls or principle trusses. The trusses have a tie beam with a steel hanger rod from the apex, and are probably Victorian/Edwardian (circa late 19th century), a little later than the main house. There is a large wall plate and or timber eaves beam to open hovel sections.

Walls

The walls are rubble filled stonework with 2 leaves of stone and loose rubble infill. There is a mixture of stones, with some white/grey limestone and some Ironstone.

Floor

The floors are mixed with some compacted limestone hardcore type floors, some clay brick paved, and others have a concrete floor.

Covered yard lean to.

In front of this buiding there is a covered yeard area with a corrugated steel roof. Supported on various timbers, and telgraph poles. It has been constructed in a workman like way, and was probably used for some livestock shelter.

3.2 OBSERVATIONS

3.2.1 This building appears to have been developed and remodelled during its life, with several differing materials and methods of construction typical of different periods in time.

The walls have had some remodelling, with differing types of stonework, and brickwork, indicating various repairs or alterations or extensions.

The roof construction also, appears to be of a later type of construction compared to some of the walls, Indicating various periodic repairs and alterations and replacements. Timber elements in agricultural buildings are vulnerable to decay, and are liekly to have been replaced at some stage in time since the 17th Century.

3.2.2 Roof Defects (Open Hovel Section)

The roof generally appeared to be in good condition. With most timbers showing little sign of any decay. This is a direct result of the roof covering being plain tiles, and in servicable condition. There were a few missing slates, but these were few in number.

The wall plate was largley obscurred to the rear wall, so this could not be inspected. However, the rest of the roof timbers appeared to be in good condition, with few signs of decay, including common rafter, purlins and principle trusses, and eaves beams.

The open hovel section had some eaves beams supported upon timber posts. The bases of these were obscurred by ivy, it is likely that these have suffered some decay at low level.

Largely there are few repairs required to the roof structure. There are some aras where the roof covering has left local holes, and thus afforded some moisture ingress and in turn local decay of timbers. Mainly common raftes. This would equate to effecting less than 5% of rafters.

3.2.3 Wall Defects (Open Hovel Section)

The rear wall of the building is retaining, and is a thick rubble filled wall. There were local areas where the top of the wall was damaged or where the top few courses of stonework had fallen in. this corresponded with areas were there were tiles missing.

There were also areas at low level of the wall that showed signs of dampness and spalling of the face of stonework. This was most likely due to being damp with the combination with frost. There were no obvious large bulges to the wall, and it appeared within servieable limits.

3.2.4 Floors

There was one area of upper floor to this building. The floor boards did appear to have some signs of insect attack. The joists appeared to be in serviceable condition. the floor level was low and headroom was low above and below the floor. Hence we would recommend its removal. The ground floors were a mixture of constructions and would need to be replaced as part of a material change of use to any use other than agriculture, mainly for the exclusion of moisture.

3.2.5 NORTHERN SECTION

This section of the barn has varying constructions with a mixture of stone rubble filled stone walls, and brickwork (one brick thick). There are some tie rods present. This section of the building has an upper floor and is likely to have been used as a hayloft at some stage.

Roof

The roof constuction is similar to the open hovel section with common rafters, purlins, and principle trusses. The principle trusses are similar to the open hovel with a steel strap at the king post position. There was a truss positioned at the hip point. The purlins were supported by cross walls also. The roof timbers to this section appeared to be in good and seviceable condition.

Walls

The walls to this section have had several repairs, and most of the mortar joints are weathered and require repointing.

There was some modern concrete blockwork walls constructed up to above waist height off of the floor. These were for either retaining bulk materials feed, or forming livestock pens.

The gable end has a tie rod running to the southern eaves, with a patress on the gable end. Adjacent to the patress, especially below, there is some bulging to the wall. The upper section of the gable, whilst ironstone faced to the exterior has had some brickwork repairs. This section has other brickwork patch repairs to the stonework. There was some large areas obscurred by ivy. This can also be a catalyst for damage to masonry, with aggressive roots anchoring into mortar joints and holding moisture against the masonry. We would recommend careful removal of climbing plants.

Floors

The ground floor in this section of building is a concrete oversite, at the entrance it had 1962 scribed into it. Indicating a date when it was cast. This floor was in seviceable condition.

3.4 DISCUSSIONS

3.4.1

This group of buildings are interesting and clearly forms part of the history of Crockwell farm, due to their form and the materials they are constructed from. The buildings have areas that are largely free from defect, however, there are several local areas that require repairs and rectification of repairs previously carried out.

This group of buildings take the form of a traditional open hovel with some “stable boxes” at one end near the entrance gate, open hovel as a central section, and an enclosed section at one end, used for storage. But the general collective use appears to have been for the housing of livestock as its latest main use. There is a lean to structure to the front of the barn which is a later workmanlike addition constructed from telegraph poles and corrugated sheeting.

It would be the recommendation of AB Design that this lean to structure is replaced, It is of low historical structural value. Whilst it tells the story of the requirement for fast, cheap animal shelter, it has little architectural value, but does form part of the building cluster. Hence, replacement of this section of building would be the most feasible pracitably and economically.

The original building, as a tradition agricultural building has been left with very little maintenance in recent years. This is likely due to modern farm practices, even with livestock, where mechanisation has been utilised, and traditional buildings such as this are note easily accessed with such mechanisation such as tractors, etc. Hence leaving the building under utilised, and under valued, thus leading to a lack of maintenance in recent years.

Whilst maintenance in recent times was not visible, the building throughout its life has been maintained. Sometimes in a workmanlike way, with such repairs of stone masonry with patches of brickwork, etc.

The roof however, appears to be in good condition, with only a few local areas where there are holes in the covering allowing moisture ingress. This has meant that nearly all of the timbers are in a good serviceable state, and that there would be only a few secondary members to replace such as less than 5% of common rafters. This can be done in a like for like way.

The walls are suffering in some local areas. The gable wall to the Northern most section requires some local patch repairs where bulging. This is a result of some moisture ingress into the centre of the wall, where moisture has ingressed from above.

The rear wall of the hovel section is retaining and is largely damp. This is suffering a little, and if left would deteriorate further. This wall could be asisted by some buttressing walls, or piers. It would also require strategy to relieve water pressure at the back of the wall, and some waterproofing if this building were to be converted to any other use than agriculture. If this is carried out, and there are various techniques including the drainage at the rear of the wall access permitting, or other techniques if not. Strength of the wall could be improved using stitching techniques tyinying both leaves of the retaining wall together. The wall can also be waterproofed internally, with suitable materials, and suitable internal linings, with a clear void between stonework and linings. One repair that would make the biggest imprvement of the dampness of the wall would be to ensure the rainwater goods are effective as run off off the rear slope of the roof can provide a concentrated source of water to the ground behind the retaining wall.

This would be the most involved part of structural repairs of the building as part of any change of use. However, entirely feasible practically and economically as part of this proposal.

3.4.2 CONCLUSIONS

The building has been left to a state whre maintenace is not longer being carried out, and is in need of some repairs. The repairs are to local areas only, and most of the building would remain as part of any change of use.

The fact that the tiled roof covering is largely intact, has meant that the timber work was in a serviceable state of repair. Howevr, there are areas that require repair, mainly the walls. This is largely due to rainwater goods being ineffective, allowing some dampenss of wals at low level, weathering of mortar joints, and weathering of stonework and timber posts at low level.

If left, this build would deteriorate, and would ultimately lead to los of more historical fabric, and more engineered and more involved repairs would be required.

At present repairs would include traditional type mason and carpenter repairs, which will keep the character of the building. This would keep the same load path, with little or no strengthening works required.The only primary member that may require replacement is wall plates. These are horizontally acting beams and would require each length to be intact, hence where defective, the individual wall plate member should be repalced between joints. This will ensure the integrity of the roof.

The change of use is a catalyst for the investment required to carry out the repairs necessary to the building. The repairs necessary are not just required for the change of use, The only upgrade of the building fabric for change of use only would be the upgrade ground floors and waterproofing of the rear wall.

The other structural defects noted all require attention whether the building is converted to another use or not.

These include:

Masonry repairs –	patches at high level, low level in hovel area, bulges to Northern section gable end.
Roof repairs -	Roof covering, re-tiling the roof, stripping of tiles for re-use and top up broken or missing units with a matched tile. Add some restraints to gable verges.
Upper floors-	Removal recommended as boarding suffered insect attack, and joists show signs of dark staining at bearing where built in walls.

Whilst the repairs recommended above are simple and local. It would be uneconomical for agriculture, due to it being more cost effective to use larger buildings with no obstructions for modern farm machinery.

Thus a change of use is the most feasible way forward to ensure necessary investment to carry out repairs, and ensure the long term future of the building. This is a traditional agricultural building immediately adjacent to Crockwell Farmhouse. The building is in a near serviceable condition and comprises of a lot of historical fabric and form that would be of benefit to Crockwell Farmhouse Farmyard to be retained, albeit with an alternative use, that ensures that it is valued, and thus maintained, and in turn has a long term future.

4.0 PHOTOGRAPHS

Open hovel, lean to and Northern section to right

2 Storey Northern section

Northern Elevation showing neighbouring driveway and retaining nature of rear wall

Typical Principle truss and purlin arrangement in hovel

Northern section of the buiding with block walls to waist height.

Rear wall of hovel, Some dampness visible from floor to approx mid height

Northern section with mixture of brickwork and stonework. Tie rod and patress visible at eaves

Open lean to recommended to be demolished

Mixture of stone and brick gable to Northern section