

**BUILDING FABRIC ANALYSIS TO ACCOMPANY
STRUCTURAL SURVEY OF OUTBUILDING**

**AT CHURCH HILL FARM, CRAGG LANE,
BLACKWELL, ALFRETON, DERBYSHIRE DE55 5HZ**



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GENERAL

This is a one and a half storey building attached to one end of the main farmhouse at an irregular angle. It is orientated approximately South-East\North-West.

There are three door openings and a small grill at ground level on the northern side; with one window to the ground and one window to the first floor on the western elevation. On the eastern elevation there is one door and window to the first floor; a flight of external steps leads to this door; under the steps is a covered opening on the ground floor which leads to the door into the farmhouse.

The outbuilding has been altered and repaired over its lifetime. The majority of the building appears to be nineteenth century.

MATERIALS

Walls Red stock brick to the South-East, North-East and lower section of the North-West elevation; and the higher section of the North-West elevation is now hidden by render over red brick. There is coursed rubble and uncoursed stone to the lower section of the South-West elevation; with render to the upper sections of the North-West and South-West elevations

Roof Welsh slate, with stone ridge tiles

Lintels Mixture of stone and brick. There are header bricks as a soldier course with no arch to the northern and eastern elevations; with arched lintels (probably brick under the render) to the western elevation

Cills Stone lintel cills to the windows on the western elevation. There is no cill to the window in the eastern elevation

Ground floor Setts, worn by use

First Floor Timber (structurally unstable)

External steps Stone treads on a brick support

Windows and doors Timber (incomplete in parts with missing glazing)

Rainwater goods Upvc in black – there is only a gutter to the northern elevation; with a gutter and downpipe to the southern elevation

Handrail and balusters to the steps Metalwork, painted

STRUCTURE

Walls Loadbearing brickwork walls.

The brickwork lintels over the two doors in the north elevation has been rebuilt in the past with new timber lintels. It is assumed the original brick lintels failed.

The external wall comprises 225m brickwork generally. The brick bonding is very erratic or non-existent. Header bricks appear to have been inserted occasionally but there is no regular pattern.

Roof Raised tie trusses, purlins and rafters in timber.



View into the first floor
'attic' room from the
entrance door

First Floor The floors are timber boards supported on floor joists which in turn are either supported by the internal or external walls or by a timber beam.

Stone steps There is a flight of stone steps giving access to the first floor on the eastern elevation. The large stone steps are supported on two walls; these walls are only one brick thick and they are independent of the building structure. There have been alterations to the most easterly of these brick walls – the southern end adjacent to the covered entrance to the farmhouse appears to have been rebuilt.

There is a metal balustrade of a handrails supported on widely spaced balusters. This was originally supported by the balusters being leaded into the stone steps.

CONDITION - STRUCTURE

External Wall The northern wall has extensive bulging, mainly at first floor level as confirmed in the structural report. This is due to the lack of ties between the floor and wall in combination with the lack of bonding and buttressing from internal cross walls and the weakening effect of the three door openings.



View from the North-West
showing bulges and waves
in the wall

In addition, the structural engineer confirms that roof spread has contributed to the serious bowing of the wall. The type of roof trusses is those which exert pressure on what has become an unrestrained wall. The extent of this movement is best indicated by showing the large gap (140mm) which has opened up between floor and wall.

The bulging along the wall is in the form of a wave, not a single bulge.

A large steel tie on the north elevation with a long vertical has been inserted to try and tie the northern and southern walls in an attempt to prevent further movement.



Photo on the left - View of the building from the North

Photos below – gap between wall and internal wall showing the extent of the movement



Roof

There are many slipped and missing slates to the roof which has allowed water ingress into the interior which has caused extensive rot to the roof structure and to the floor structure below. This deterioration is likely to have occurred decades ago in order to result in the failure that is present today.



The section of the truss where it meets the external wall showing damage from water ingress which has destroyed the end of the truss where it should bear onto the wall

There are two trusses. The southern truss has a significant failure to the Principal rafter. This will have contributed to the failure of the North-East wall. There is a valley gutter at the junction of roof and the adjacent wall of the two-storey previous extension to the farmhouse. This appears to have failed (a shrub can be seen growing out of the end and there is extensive damp on the adjacent wall).

The amount of damp penetration in the adjacent farmhouse indicates that this failure is likely to have occurred decades ago.

Due to the very poor condition of the floor, it was not safe to gain access to investigate the condition of the rafters and wall plate but the ingress of water along the South-West wall would probably have resulted in extensive damage to the wallplate and rafters.

This elevation is joined to the side elevation of the two-storey previous extension to the farmhouse. If this were to be removed then the support currently provided to the outbuilding by this adjacent structure could realistically result in the catastrophic collapse of the outbuilding.

Lintels

The soldier course lintels where the bricks have been laid flat to the window and door to the eastern elevation the lintels have failed and are now only partially supported by the window and door frames.



The stone lintel to the one door has severely eroded and is in poor condition. The photograph above also indicates an anomaly in the brickwork at the bottom left-hand corner of the door opening. The brickwork over the door opening at the western end of the northern elevation has sunk; presumably when the original lintel failed.

First Floor

The boards and rafters have suffered from extensive rot due to water ingress, particularly at the northern end of the building.



Photographs showing holes in the floor due to rot and mould and rot to the timber joists and main beam

External Steps The brick wall supporting the flight of steps has tipped away from the gable and there is now a gap between gable and steps which widens to around 100mm at its maximum near the top of the steps.



The photo on the left shows the unevenness of the steps and how most of the balusters have lost their connection to the stone steps

The photo on the right is a general picture of the steps



Failure of the internal support to the stone slab which forms the top landing



Poor quality brickwork

CONDITION - FABRIC

External wall Large proportion of the bricks are extensively eroded. Particularly on the eastern elevation from ground level to just below door head height; the wall supporting the stone flight of steps and occasional sections and individual bricks on the northern elevation.

The mortar holding the brickwork together has eroded; in many cases it has eroded too far back into the wall (at least 50mm). As such the brickwork is beyond being in a position where repair by repointing could be feasible.



Badly eroded brickwork on the South East wall. This also shows them deeply eroded mortar



Stonework on the South West wall. Poor section to the top left behind the holly

It appears the entire northern wall was originally rendered. Where the render has been hacked off some of the bricks have lost some or all of their face and many are chipped. The render is a very hard cement-based render which is an inappropriate older style of render used. It would not be possible to remove this type of render without resulting in further extensive and irreparable damage to brick and stonework.



The North-West wall

- Lintels** The large stone lintel to the northern elevation is in very poor condition. It appears to have been quarried from very soft stone and has eroded back over its entire surface.
- Windows** The frames have significant areas of rot and decay; particularly at ground floor level with much of the glazing either missing or in disrepair. They would have to be completely replaced if the building was retained.
- Doors** At ground floor level the stable type doors are either missing or are in poor condition with only small parts remaining. The frames have significant areas of rot and decay; particularly at ground floor level. The first-floor door at the top of the stairs has remained in reasonable repair.

CONCLUSIONS

The failure of the attic truss and the lack of tie between North-East wall and floor have caused the most significant failure of the building which is the bulging and waves of the North-East wall. This has now gone so far out of plumb that it would require the whole wall to be demolished and rebuilt.

The overall poor condition of the entire fabric; including the failure of the mortar and the erosion of large areas of brickwork would also lead to extensive areas of the other elevations that would require complete rebuilding.

The failure of the raised tie truss could be locally repaired but the roof has lost its profile and would have to be completely replaced to suit a new line of wallplate and external wall.

All lintels to the South-East and North-East elevations require replacing/rebuilding and additional building work to provide support by inserting some proprietary steel lintels.

The building would need an entirely new first floor structure due to the extensive rot in the timbers.

The steps would have to be completely rebuilt due to the tipping away from the gable. The loss of 'seating' to the stone steps, the failure of the support to the landing slab and the poor brickwork would require extensive work even if the steps were not rebuilt.

The structural state of the elevation joined to the side elevation of the two-storey previous extension to the farmhouse cannot be externally inspected; plus, due to the structural condition of the floor the wallplate could not be inspected from above. The adjacent two-storey previous extension to the farmhouse provides external support to this side of the outbuilding. If this were to be removed then the support currently provided to the outbuilding by this adjacent structure could realistically result in the catastrophic collapse of the outbuilding.

All-in-all the fabric condition of the outbuilding means that it could not reasonably or realistically be retained. The works required to retain the outbuilding would be so extensive as to amount to the complete demolition of the fabric and the building of a new replacement outbuilding.