WESTFIELD HOUSE FARM

BROCKHOLES LANE

PENISTONE

S36 9ZB

Project No: 14/392

STRUCTURAL INSPECTION

REPORT

KEITH MILLER DESIGN LTD
ROWAN COTTAGE
TOOTHILL LANE
BRIGHOUSE
HD6 3SE

4th July 2014

1. INTRODUCTION.

1.1 BRIEF

Keith Miller Design Ltd were approached by Mr Terry Naylor of Westfield House Farm Brockholes Lane, Penistone S36 9ZB to act as structural engineers to undertake a structural inspection of an existing barn / stable block which forms part of the farm complex part of which is owned by Mr Naylor at Westfield House Farm.

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1.2 SCOPE

It is the intention of Mr Naylor to convert the existing stable block into a habitable dwelling and part of the schedule of works is to build a single storey extension attached to the east side of the existing building. We understand that as part of the planning process, the local planning department have asked for a structural report on the condition of the existing buildings and an indication of the extent of necessary re-building to show the stables can be converted.

This report describes the condition of the buildings, the form of construction and the types and areas of structural defects observed during the walk around inspection. The report discusses the likely causes of these defects, recommends any further investigation required and describes the extent of re-building that is required and any necessary structural remedial works in outline.

The report covers the external and all internal load bearing walls, together with an overview of the roof.

The structural inspection was carried out on Tuesday 27th May 2014. The weather was fine. Our inspection was of a walk-round nature and this report comprises a summary structural appraisal; it does not provide a comprehensive catalogue of structural / or potential structural defects.
We have not inspected the woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

The inspection was limited to an examination of visible and accessible areas of the structure and no invasive exploratory work was undertaken. Those parts of the building which are covered up or otherwise made inaccessible in the normal course of construction, fitting out or occupation have not been inspected, except where noted in the report.

Our appraisal is based solely on visual observations during the walk round inspection. Neither the foundations nor the sub-soil was exposed. No testing has been carried out and we have made no inquiries of Statutory Authorities in connection with Building Regulations or other matters, and no tests or inquiries concerning particular materials have been carried out except where noted.

This report takes into account the particular instructions and requirements of our client and is prepared for the sole use of Mr Terry Naylor. Nothing in this report confers or purports to confer on any third party any benefit or right to enforce any term of this report.

2. GENERAL DESCRIPTION

Westfield House Farm is a collection of farm buildings including some conversions for residential use. It is located South West of Penistone and is within an open area of grazing and arable farmland. Coal Pit Dyke runs through a wooded valley past the eastern side of the farm.

The stable block to be converted is a single storey detached stone building with a pitched roof, hipped at the north end and is used for stabling horses and storage of hay. . A re-roof (approx 15 years ago) has provided interlocking flat concrete tiles and an intact roof felt lining. The walls are comprised of a coursed stone outer skin and a mix of random coursed stone inner skin and blockwork. The walls were re- pointed approx 15 years ago. The rectangular stable block is (approx 15m x 5m wide). The block is partitioned into 5 units of approx 3m x 5m, comprising 2 No units forming the hayloft storage area and 3 No stable units.

3. OBSERVATIONS

3.1 EXTERNAL

3.1.1 NORTH ELEVATION

The northern end of the block has a 150 coursed stone outer and a block inner masonry panel (reasonably plumb) with stone piers (approx 450 x 450) each side of the panel . Viewed from the outside the RHS pier is plumb with a gap of approx 5mm at the joint with the boundary wall. The vertical joint of the RHS pier with the panel is sound with no sign of relative movement. The pointing is intact.

The LHS pier top has moved outwards by approx 10mm and there are loose pieces of masonry which require repair. (the cause may be impact from farm machinery). (photos 1 & 2)

Land adjacent to the North elevation has been excavated and revealed shallow concrete foundations and a padstone beneath the LHS pier. (photo 3)

3.1.2 WEST ELEVATION

The three stables each have access through a stable door. There were isolated stone piers at crosswall locations originally but the external infill wall panels appear to have been constructed at a later date. (photo 4) All the piers and masonry panels are vertical generally (maximum lean = 10mm outwards at eaves level). The LHS units form a barn / hay loft. The inner block wall of the external wall in this hay storage area appears sound but has been laid in a stack pattern as opposed to running bond .
The vertical joints between the piers and the wall panels are sound with no sign of significant movement, the pointing is intact.
The vertical joint between the (buttressing) wall and the retaining wall (South end) is sound with no sign of movement. (photo 5)
Pier 4 (counting from the North end) - masonry is heavily de-laminated.
(photo 6)

3.1.3 EAST ELEVATION

The east elevation has a storage unit adjacent to the stable block which prevents inspection of a large section of wall.
The facing stonework is approx 200mm coursing and has experienced a moderate amount of weathering. It appears that the whole elevation would require re-pointing. (photo 7)
The east wall abuts the north end wall with a pier at the corner joint, which has opened up slightly.

The LHS panel of masonry (approx 5m length) leans outwards approx 40mm . However there is no obvious bulging occurring of the wall or misalignment of the wall coursing in the areas each end of the storage unit.

The north end section of masonry is vertical and the eaves appear straight suggesting the elevation's alignment is reasonable over the majority of its length.

3.1.4 SOUTH ELEVATION

The south end of the stable block abuts a stone faced wall retaining approx 3m of the neighbour's garden. The whole elevation of the retaining wall has been re-pointed , but here do not appear to be any weep pipes, open joints or methods of draining the rear of the retaining wall and releasing the water pressure should any build up occur. However the retaining wall alignment is straight with no bulging or deformation. (photo 8)

The existing stable block's west and east elevations act as buttressing walls to the retaining wall. The proposals indicate a passageway is to be formed adjacent to the wall, removing the buttressing action of the return walls.

.25mm thk stone copings have recently been laid across the top of the parapet section of wall, prior to which the top of the parapet was open.
There is a stepped 45 degree crack (approx 10mm) in the face of the masonry wall above the upper ground level, which may have been caused by impact . It has been observed by Mr Naylor that the stepped crack occurred after a long period of below freezing while the copings were missing which allowed freezing of the cavity fill.

3.1.5 ROOF

The pitched roof has been repaired using roofing felt and flat concrete interlocking tiles approx 15 years ago. The hip and ridge tiles are intact and well pointed, with no sign of undue sagging of the roof profile. The eaves' alignment is good with no significant deviation . (photo 9)

3.2 INTERNAL

3.2.1. ROOF

There are 3 king post trusses supporting the roof over 3 bays of the stable block. Also, a load bearing cross wall and an end gable support the remaining ends of the purlins (2 No up each slope). No additional metal strapping connecting the joints of the king post trusses have needed to be installed

The roof timbers appear to be in good condition. The king post trusses have tight joints, with little staining due to water ingress or signs of decay or overloading and no evidence of spread . The hip beams, purlins and ridge appear suitable. Some rafters were replaced at the time of the recent re-roof, which appears intact.

It would be prudent to appoint a timber specialist to inspect, assess and report on the condition of all timber that is to be retained so that the appropriate treatment for rot and infestation can be implemented.

Detailed inspection would be required to investigate the timber to timber connections and the seating details. This could be done with the benefit of the timber specialist's report whist remedial work to the walls is being undertaken.

(It is likely that the roof structure will be adequate providing the existing tiles can remain and are not substituted by stone slates.)

3.2.2. INTERNAL WALLS

The internal walls are a mix of stone and blockwork and have been painted white. No significant cracking is evident

3.2.3 GROUND FLOOR

The concrete ground floor slopes south to north and has drainage grooves to facilitate cleaning. The floor may over clad paving slabs and is of an undetermined thickness. The cross wall foundations have not been investigated. There is little evidence of any significant settlement but they should be checked for suitability prior to the implementation of the main building works.

4. CONCLUSIONS

4.1.

Whilst there are no indications of significant foundation movement (recent or otherwise), there is a discharge pipe at the north elevation which discharges run-off from the internal ground slab to the ground immediately adjacent to the north elevation wall. (photo 10)

Generally, any such periodic inundation of the ground near to foundations potentially can be a source of movement / subsidence of foundations .We would therefore normally recommend that such drainage and the drainage for surface water run - off be improved to discharge water away from the building , by such as connecting into the public drainage system if possible or if not, by providing a soakaway.

4.2.

The proposed plans create a passageway between the new dwelling cavity wall and the existing retaining wall. The stable block will be providing some buttressing action to the retaining wall at present. A thorough assessment of the capacity of the retaining wall before and after the proposals should be undertaken to ensure the stability of the wall is assured following the removal of the buttressing stable block walls.

(Note : No weep pipes are evident through the retaining wall which would provide drainage from the rear of the wall, and the whole face of the wall has been pointed which leaves no open joints to facilitate rear of wall drainage.)

4.3.

The excavation adjacent to the North Elevation has exposed shallow foundations for the existing external wall. Further investigations are necessary

around the perimeter of the building to determine those sections which may need underpinning .

4.4.

Structurally the roof timbers and cover are in a good state of repair. However a check on the loading capacity of the main roof members will be required should the roof cover be changed to a heavier slate.

4.5.

The outer wall has a stone outer leaf and a mix of block / stone or no inner leaf. The masonry is in reasonable repair but the east elevation would benefit from the construction of an inner block skin which should be tied to the outer leaf using remedial resin type wall ties. The foundation may need underpinning and extending to pick up the additional inner leaf. The inner leaf should be bonded into the cross walls.

The blockwork wall panel in the barn area has coincident vertical & horizontal joints (stack pattern) as opposed to the normal brickwork- running bond. The block panel should be carefully removed and replaced with a normal running bond joint pattern blockwork tied into the existing stone outer leaf with resin remedial block wall ties.

The piers along the Norh and West Elevations should be fixed to the adjacent masonry panel by suitable straps and suitable bonding.

Generally the stable block is in a reasonable state of repair and the building has stood the test of time well. The roof repair carried out approximately 15 years ago appears to have arrested any further movement. The walls are plumb and in line with little evidence of any differential settlement.

Apart from some minor building works and the additional check on the retaining wall (**see $4.2**) the stable block appears suitable to be converted into a domestic property.

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……. Date :

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PHOTOGRAPHS

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Photo 1

Photo 2

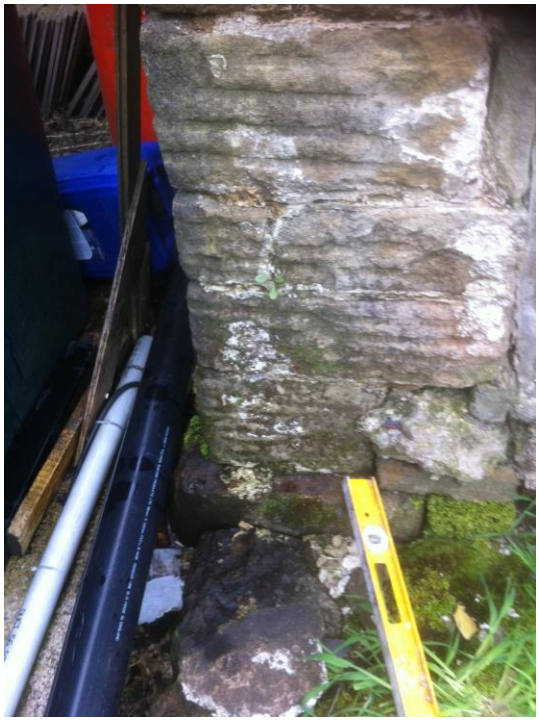

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

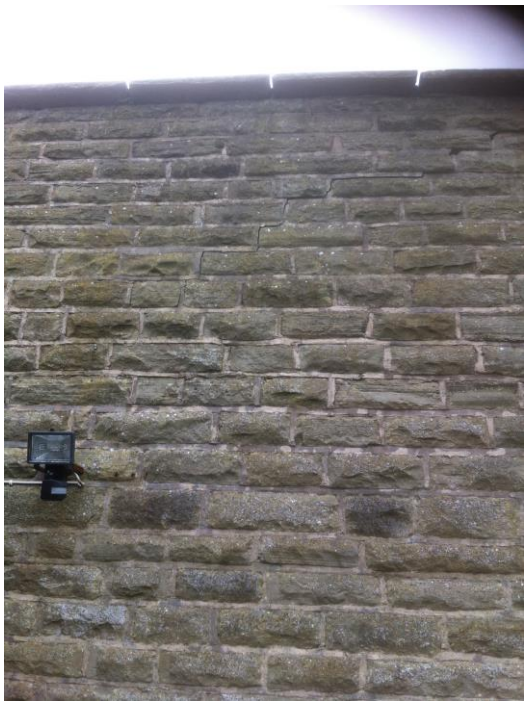

Photo 8

Photo 9

Photo 10