

BUILDING INSPECTION REPORT
CONVERSION ASSESMENT

In respect of

North East Barn
Wycongill Farm
Holden Road
Bolton-by-Bowland
Lancashire
BB7 4LZ

Prepared for and on behalf of

Leeming Bros.
Wycongill Farmhouse
Holden Road
Bolton-by-Bowland
Lancashire
BB7 4LZ

Our Ref : LEE/01

Date July 2011

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Contents

Section	Title	Page No.
A	Instructions & Introduction	2
B	Executive Summery	4
C	Condition Survey & Proposals	
	3.0 External Condition	
	3.1 Foundations	5
	3.2 External Walls	8
	3.3 Structural openings	10
	3.4 Roofs	14
	3.5 Chimneys	16
	4.0 Internal Condition	
	4.1 Walls	17
	4.2 Floors	17
	5.0 Services	
	5.1 Water & Electricity Installations	19

Section A

Instructions & Introduction

1.0 Instructions

In accordance with the clients verbal instructions we have undertaken a building inspection to the barn adjacent Wycongill Farm in order to advise of its suitability for conversion to a dwelling

The purpose of this report is to highlight the defects and shortcomings which may affect its ability to perform its current function. Where defects exist, remedies will be explored to ensure the life of the property. The report will also provide detailed information as to how the building can be suitably converted while causing minimal interference to the existing structure.

The following report is intended for use by the client and the local authority, any other use of this document is strictly prohibited without the written consent of the author. The advice and opinions within this report are based upon the evidence available at the time of the survey. Reedley Town Planning takes no responsibility for the consequences of failure to act upon specific and reasonable advice contained within this document.

In accordance with your instruction, no specialist engineering inspections have been commissioned in respect of the service installation, nor has any excavation or opening up of works occurred to ascertain detailed information about makeup of the existing foundations or modern alterations within the property.

Our inspection was undertaken by Richard Jameson BSc (Hons) in Building Surveying on Thursday 9th July 2011. The weather conditions at the time of the inspection were mild and cloudy with light winds.

1.1 Introduction

Wycongill farm is a mixture of traditional vernacular buildings and modern agricultural structures situated to the North West of the small hamlet of Holden. The report focuses on the barn only and no inspection has been undertaken of any of the surrounding properties. The main structure of the barn is 2 storeys in height at the eaves with a single storey extension to the rear. The building is constructed of solid load bearing masonry walls constructed using local stone up to full height. The building has a timber framed pitch roof which is finished with fibre cement sheeting. The internal accommodation within the barn consists of the following:-

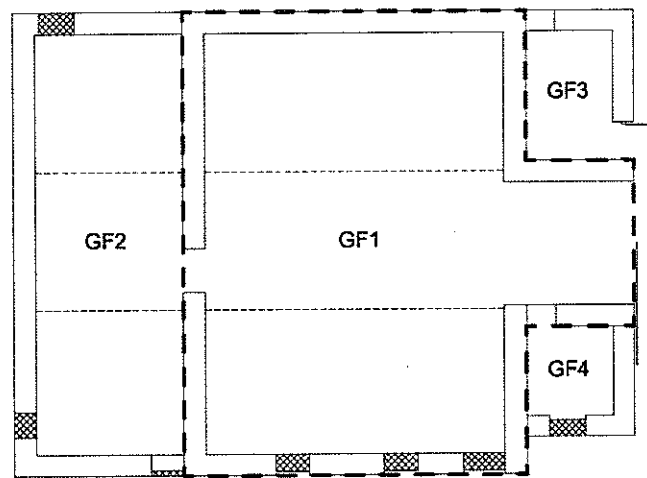
1.2 Accommodation

Ground Floor

GF 1 –	7610 x 10650	/	25' x 34'11"
GF 2 –	3765 x 10650	/	12'4" x 34'11"
GF 3 –	2230 x 3280	/	7'4" x 10'9"
GF 4 –	2230 x 2280	/	7'4" x 7'6"

First Floor

N/A



Ground Floor

-- Original built form

Section B

Executive Summary

- 2.1 Our inspection raised a number of issues with regards to the property, many of which need to be resolved before the property is actively used for any purpose.
- 2.2 The majority of the building is structurally of a serviceable standard with no signs of foundation movement visible and it is thought that they are performing as intended. The exception to this focuses around the North East corner where there are signs of significant settlement thought to be caused by the compaction of ground by farm machinery. Due to the amount of movement it is our professional opinion that the section of wall be removed and rebuilt at the earliest opportunity to prevent sudden failure. It is also advised that no further access to the rear of the property by heavy machinery down of the property be allowed so further deterioration does not occur. It should be noted that this work would be required even if the build was to be brought back into its previous use, a use which clearly is unsustainable.
- 2.3 The openings to the external walls are generally sound yet are a mixture of natural stone and concrete. It is our opinion that the latter has questionable structural integrity and also detracts massively from the vernacular style of structure. In order to bring the property back into the condition it deserves the concrete lintels and surrounds are to be broken out and the reform with stone heads and cills.
- 2.4 Whilst the roof is structurally sound the fibre cement sheeting detracts substantially from the vernacular architecture within the farmstead. The replacement with a blue slate roof covering will drastically improve its aesthetics, whilst matching adjacent properties.
- 2.5 At present the windows and doors have all been removed or are in a severe state of disrepair and all require replacement.
- 2.6 The electrical installation within the property should be assessed before use as there are bare wires to fittings and the general quality of the install is poor.

Section C

Condition Survey & Proposals

3.0 External Condition

3.1 Foundations

3.1.1 Existing

At the time of the survey the foundations were not exposed therefore it is impossible to assess their makeup and structural integrity completely. It is however possible to assess their performance in their current use. It is my opinion from the visual inspection undertaken that the majority of the building shows no signs of foundation movement. The only exception being a large crack which has formed on the North elevation where the main building adjoins to the lean-to, (this can be clearly seen in photo 1) and the associated lean to the North East of the rear elevation. The defect is thought to have occurred due to differential movement in the ground around the North East corner. It is thought that this has occurred due to the ground surrounding the corner being compressed by the substantial loads imposed by modern agricultural machinery. Whilst it has been noted that no other signs of movement were visible at the time of inspection should signs of movement and foundation failure become more apparent once the works commence a visual inspection below ground should be carried out. This should be undertaken by digging trial holes at intervals along the wall adjacent to the suspected position of the failure, with the findings of any investigation recorded.

Visible signs of horizontal cracking
consistent with foundation failure.

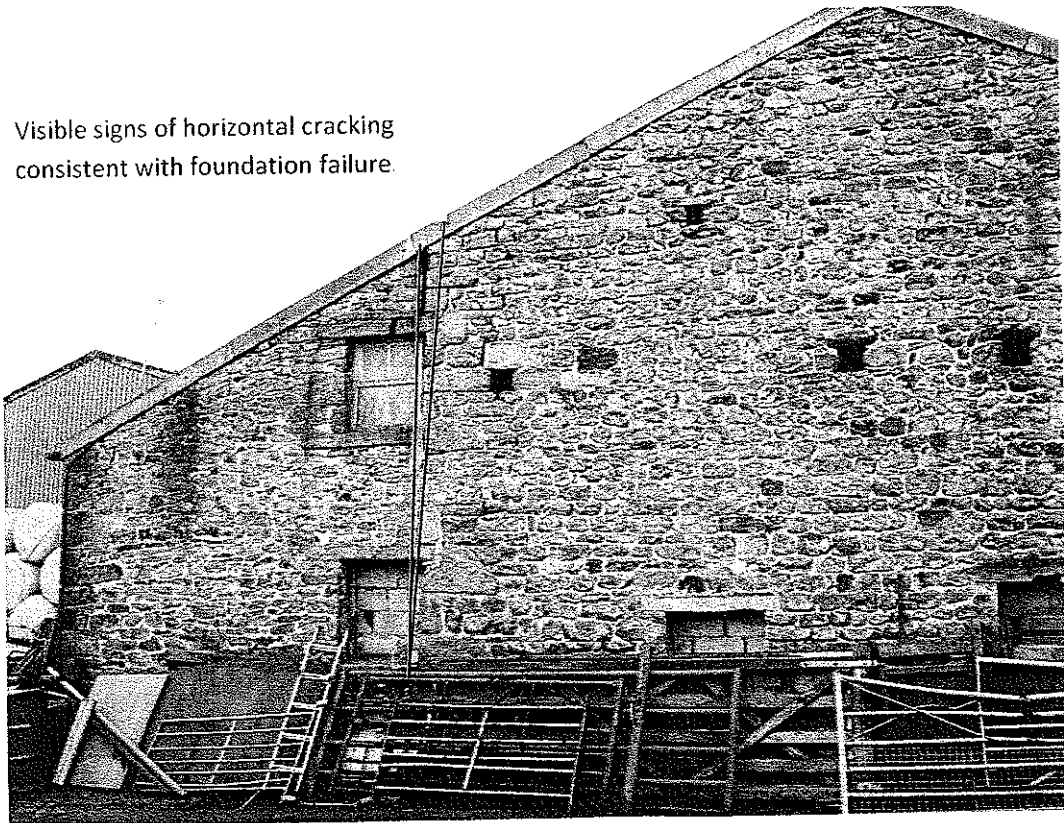


Photo 1 : Signs of differential ground movement

3 1 2 Proposed

Due to the unknown bearing capacity of the existing foundation and the likelihood of an increase in the loading which could result in its failure, it is proposed that a reinforced raft foundation be used in conjunction with a structural inner leaf, the loads from the development can be evenly transferred over the internal floor area. See Figure A

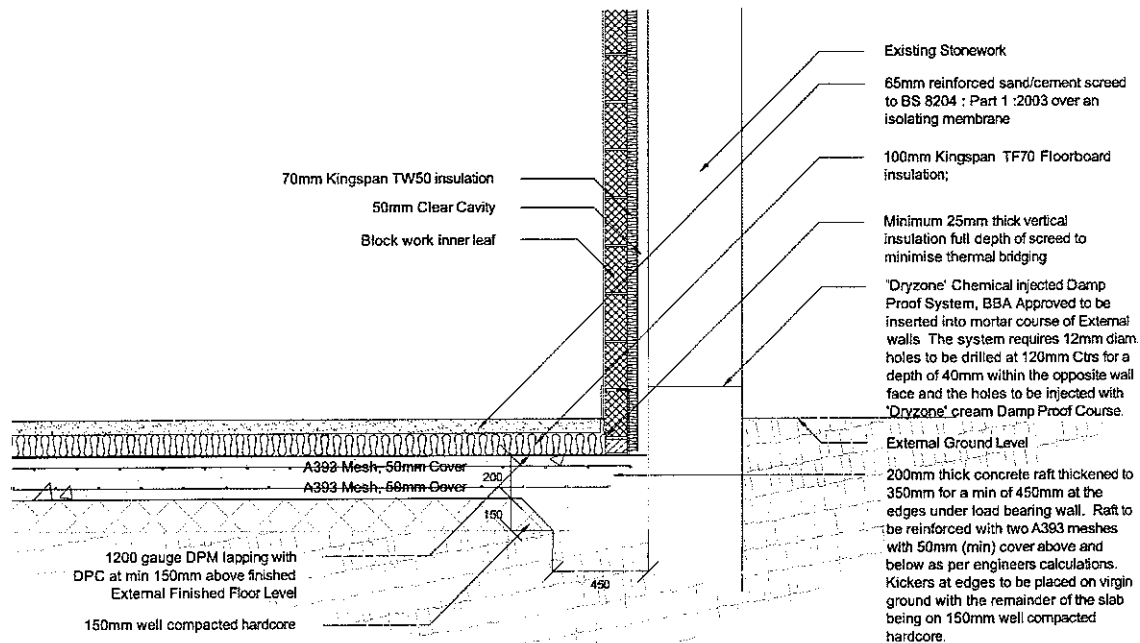


Figure A : Raft / Floor Intersection

In the area that is showing signs of foundation failure it is proposed that the most suitable course of action would be partial demolition and rebuild of the area as indicated in Figure B. The rebuilt section is to be constructed on a new strip foundation tied into the proposed reinforced raft as shown in Figure C. This treatment in combination with the future prevention of heavy plant movement around the side of the property will restore structural integrity and reduce the likelihood of future defects arising from foundation defects

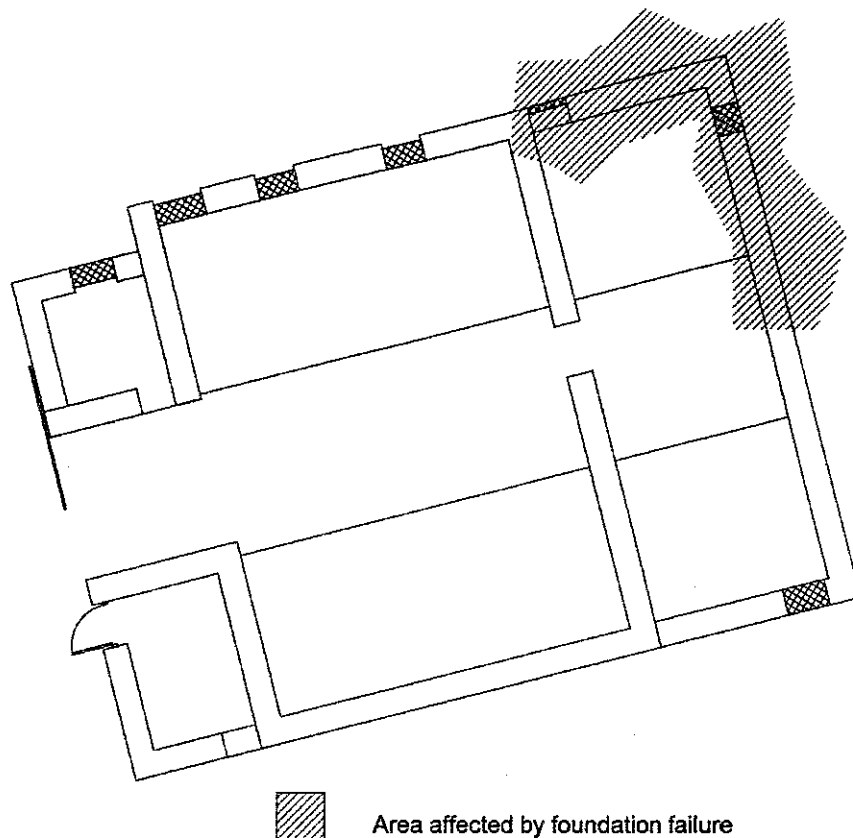


Figure B : Area of foundation failure

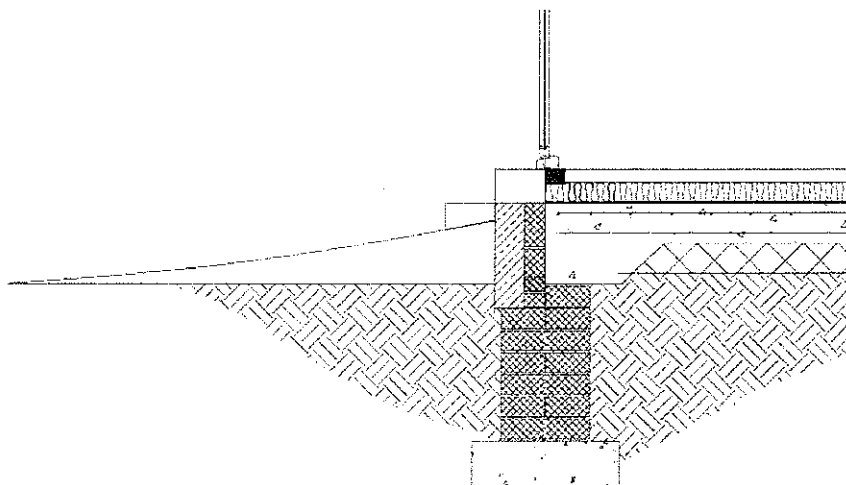


Figure C : Raft / Floor Intersection (New build)

In the event that the depth of the existing foundations is inadequate to undertake the aforementioned method of a raft foundation underpinning will be required. This should be undertaken using the mass concrete method as prescribed in the BRE Digest 352 as shown in Figure D

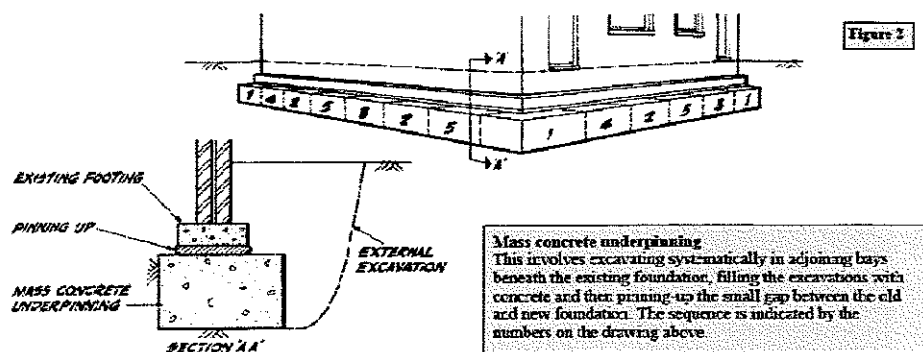


Figure D : Underpinning

3.2 External Walls

3.2.1 Existing

Generally the existing walls of the property are 500mm thick and are constructed of semi coursed natural stone. Structurally the majority of the walls appear to be in sound condition with few visible signs of bulging or leaning. The building would benefit greatly from re-pointing throughout as there are large areas which have been heavily weathered and received little maintenance over the years.

There is evidence of foundation movement to the North East corner of the property which has in turn created defects to sections of the North and East walls. The evidence of this defect is clearly visible and can be seen in Photo 1. The nature of the movement and the widening of the horizontal joints is consistent with that of vertical settlement implies foundation failure. The cracked lintel is thought to be due to the excessive movement and not lintel failure from overloading. It is also evident that the walls converging in the North East corner are leaning outwards by over 25mm which is seen as dangerous. This is seen to be in connection with the foundation failure and based on structural grounds alone it would be recommended that this section of wall is rebuilt with a new suitable foundation.



Photo 2 : Signs of differential ground movement / lintel failure

3.2.2 Proposed

New Wall - The proposed design requires the rebuilding of a section of the East and North wall new wall. This new wall it to be faced with the stone from the previous wall tied to backing blockwork, to comply with the current building regulations the wall will also be constructed with a 120mm partially insulated cavity and inner leaf of blockwork (Figure 3)

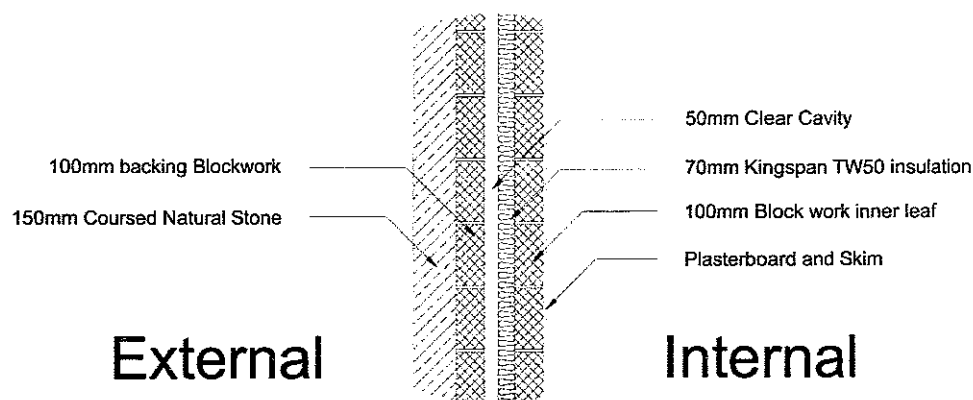


Figure C : New Wall Construction

Existing Walls - In order to comply with current building regulations part L2b it is proposed that an inner leaf be constructed with a 120mm cavity with 70mm Kingspan TW50. This new wall construction will not only improve energy efficiency but will also provide structural relief from the new first floor and roof structure and their associated load. The addition of a cavity will also reduce moisture transfer between the leaves. By transferring the loading to this new inner leaf it will

drastically reduce the likelihood of bulging, leans and cracks which are associated with the increase of loads to the existing external leaf

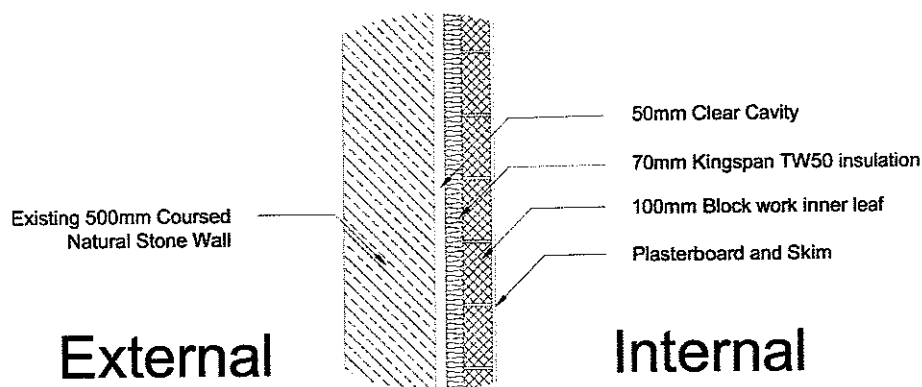


Figure D : New Inner Leaf to Existing Wall

The new leaf is to be tied to the existing by drilling an 8mm diameter hole horizontally into existing outer leaf, this should be undertaken ensuring the position the hole is aligned with the bed joint of the new blockwork inner leaf. A nylon plug should then be inserted and the screw-in wall tie with neoprene 'o' ring is then to be installed. The wall tie is then to be built over in blockwork ensuring the lateral support to the external leaf to reduce the probability of bulging, leans and cracks.

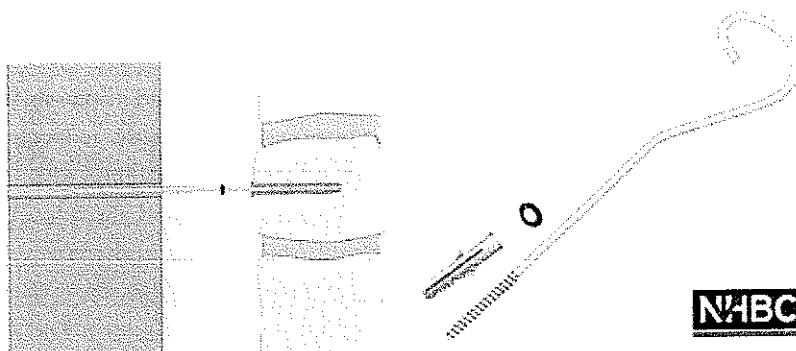


Figure E : Staifix Cavity Starter Tie

Total Wall Area of Property – (measured externally) – 55.6mtrs
 Total Wall Area to be demolished / rebuilt – 18.3mtrs max
 Percentage of Demolition – 32.9% max

3.3 Structural Openings

3.3.1 Existing

All of the windows and the majority of the doors have been blocked up with block work. Those which remain are of a timber construction and are in a poor state of repair.

The front (West) elevation consists of one central barn opening with a timber lintel. The traditional doors have previously been removed and replaced with a galvanized steel sliding door which while

practical and maintenance free it does detract from the aesthetic appearance of the traditional structure. To the right hand side is a timber pedestrian door which is in a poor state of repair and shows signs of advanced decay to the lower sections. It is our opinion that the openings appear to be structurally sound and cause no concern.



Photo 3 – Existing West Elevation

The side (North) elevation has two windows and a pedestrian door opening to the ground floor of the main building, all of which are blocked and two smaller windows in the lean-to towards the rear of the property. The pedestrian opening to the barn is thought to be original to the property and is formed with natural stone heads and jamb stones and of which are in good condition, the windows however are a more modern addition or are enlargements of previous openings. The windows have been formed using crude cast in-situ heads, jambs and sills and are out of keeping with the style of the property it is also dubious as to their structural ability as the heads appear to have limited end bearing capacity. It is our opinion that however the building is intended to be used these windows required reforming to provide adequate structural support to the built elements above. The windows within the lean-to vertically aligned over each other with the lower of the two being at ground floor level and being blocked up. The second window opening is showing signs for concern due to the foundation failure as previously described in 3.1.1. Due to this movement the lintel above the window has cracked and what little support there is, is provided by the rotten timber window frame below.

**** It is recommended that remedial work is undertaken immediately to prevent danger to the occupants and visitors of the surrounding properties ****



Photo 4 – Existing North Elevation

The East elevation of the lean-to has seen little adaptation from its historic form. There is only one opening in this elevation which is at a low level toward the North East corner, as like many of the other openings in the building this has been blocked up internally.



Photo 5 – Existing East Elevation (Lean-to)

The south elevation of the property has few openings with a pedestrian door (blocked up) to the South East corner of the lean-to and a single high level window to South West of the main building which is temporally boarded over internally.



Photo 6 – Existing South Elevation

3.3.2 Proposed

The proposed scheme will require new windows throughout due to the state of the property and the thermal requirements set out in the Building Regulation 2010 Part LA2. The replacement windows should be timber side hung casements with double or triple glazing and the doors should be vertical timber plank doors similar to photo 7

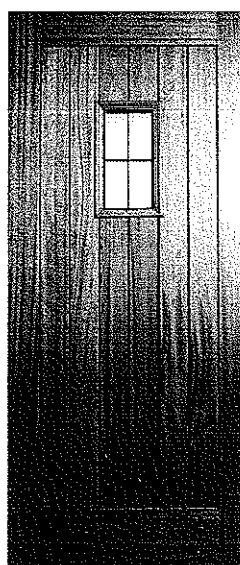


Photo 7 – Hillingdon – Kershaws doors

The structural works to the front (West) elevation will require the insertion of three new windows providing natural light to the lounge, bedroom 3 and bedroom 4. The design of the openings are such as to create the minimal impact on the building and its setting and improve the aesthetics of the property. The barn and pedestrian openings are to remain as existing and be fitted out with timber framed glazing system.

To the side (North) elevation of the main building it is proposed that the existing window openings at ground floor level are to be broken out with jamb stones to form the returns to the sides. The concrete heads and cills are also to be replaced with stone alternatives to be in keeping with the rest of the property. At first floor level it is proposed that a new window be formed to the master bedroom, the detailing of which is to be the same as the windows at ground floor level. As the North wall of the lean-to requires rebuilding it is proposed the two new windows are to be formed to mimic the ones which they replace in size, style and location.

The East elevation of the lean-to is to be rebuilt under this scheme due to subsidence, it is intended that when the elevation is rebuilt that a pedestrian door to the utility room and a window serving the dining room are formed. The style, size and materials used are to be the same as those on the North elevation to provide consistency.

The works to the South elevation include the removal of the high window from the southerly side of the building and the raising of the head to the existing doorway from the northerly side. The proposal also includes the formation of three new windows (two at ground floor / one at first floor). All windows are to be formed with stonework to jambs and natural stone heads and cills.

3.4 Roofs

3.4.1 Existing

The roof over the property consists of a timber framed structure, cement sheet covering and sheet steel detailing to ridge and eaves.

With regard to the condition of the covering over the property, it is our view that the general condition is poor and requires an overhaul. Upon an internal inspection it appears the roof covering is performing its duty and keeping the internals dry as there are no signs of water penetration visible. We also noted that the majority of the traditional roof structure has been replaced with only one of the original trusses remaining.



Photo 8 – Traditional roof truss



Photo 9 – Replacement Truss

3 4 2 Proposed

Due to the structure of the roof and its inability to be modified to cope with the structural loadings of an in keeping roof covering the roof structure is to be replaced with softwood trusses at 600ctrs. This is them to have a breathable membrane applied with battens and counter battens above The roof covering is to be in blue slate to match adjacent properties. In order to comply with the requirements set out in Part L1b of the Building Regulation 2010 it is propose that the roof is to be insulated at ceiling level with 400mm Knauf loft Insulation. (See Figure E)

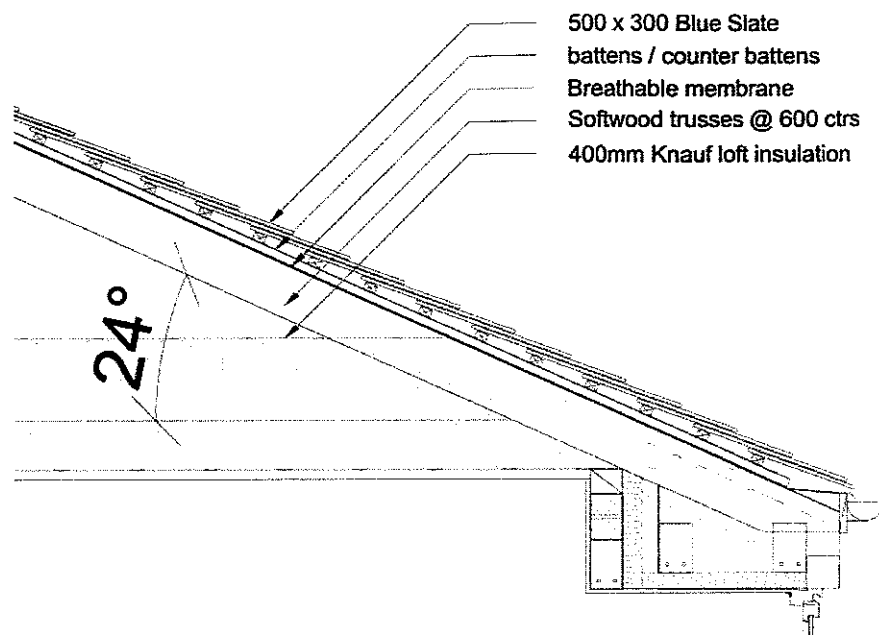


Figure E : Proposed roof construction

3.5 Chimneys

3.5.1 Existing

The existing property does not have any chimneys present

3.5.2 Proposed

Any additional chimneys will be designed to cause minimal impact on the appearance by constructing the flue from black vitreous stove pipes with a suitable cowl. Where the system penetrates the roof surface a traditional lead flashing manufactured to the required diameter is to be used

4.0 Internal Condition

4.1 Walls

4.1.1 Existing

Upon an internal inspection to the internal faces of the external walls it is apparent that there are no signs of water penetration or rising damp in the lower sections of the walls

4.1.2 Proposed

As previously prescribed in section 2.3.2 it is proposed that a cavity is to be formed with the addition of a new inner leaf to the external walls. This will act as the main form of support to the new floors and the existing roof structure. The addition of an insulated cavity wall construction will also reduce the likelihood of condensation forming in the future by preventing thermal bridging for the external leaf. By doing this moisture in the air will be less likely to reaching its dew point and form condensation. The new inner leaf will also have a damp proof course (DPC) which is to be lapped with the damp proof membrane (DPM) of the raft foundation to create a continuous barrier against rising damp.

The historic internal load bearing walls which separate various living areas will also require protecting from rising damp and therefore should be tanked to a height of 1.2mtrs ensuring the DPM overlaps for a continuous barrier or a physical barrier should be installed at ground level which would allow the natural stone to be on display as a feature.

The proposed walls within the property are to be constructed of either plastered medium density blockwork or softwood timbers studwork and finished to both faces with 12.5mm plasterboard as indicated on the drawing. The studwork partitions are also to be insulated with a minimum of 35mm thickness of Rockwool Acoustic slab so as to comply with the requirements set out in Part E of the Building Regulations Amended 2004.

4.2 Floors

4.2.1 Existing

The ground floor is constructed from a sloping concrete slab which is thought to be bedded directly onto the ground. The concrete is generally in good condition.

In its current form there is no first floor construction to assess.

4.2.2 Proposed

At ground floor level the concrete slab is to be broken up and the ground is to be excavated under the guidance of the designer or a structural engineer so as not to undermine the shallow foundations of the existing walls. Once at a suitable level a hardcore base is to be laid with a sand blinding for which the concrete raft is to rest on. The raft is to be poured and reinforced to the engineer's specification and be fitted with the DPM above the slab. The floor would then be insulated to comply with part L1b of the Building Regulations and finished with 65mm sand/cement screed.

At first floor level softwood joists are to be installed spanning between the newly constructed inner leaf and intermediate load bearing walls so as not to increase the loading to the existing

structure The floor is to be finished with 18mm floorboard above and 12 5mm plasterboard below. The void between the joists is to be insulated with a minimum of 100mm thickness of Rockwool Acoustic slab so as to comply with the requirements set out in Part E of the Building Regulations Amended 2004

5.0 Services

5.1 Water & Electrical Installations

5.1.1 Existing

Upon inspection it was evident that there is a cold water supply that runs to build from the main farm house and also an electrical supply for the lighting

Whilst we have not been instructed to carry out a mechanical and electrical inspection we would point out that the installation has been carried out in a 'DIY' fashion and there are a number of areas where wiring is exposed. We strongly urge you to ensure that a full inspection be undertaken by a competent and qualified electrician and that all the circuits are isolated.

5.1.2 Proposed

All Electrical work is required to meet the requirements of Building Regulations Part P. This must be designed, installed, tested and inspected by a person competent (NICEIC registered). Prior to completion the council should be satisfied that Part 'P' has been complied with. This may require an appropriate BS 7671 Electrical Installation Certificate to be issued for the work.