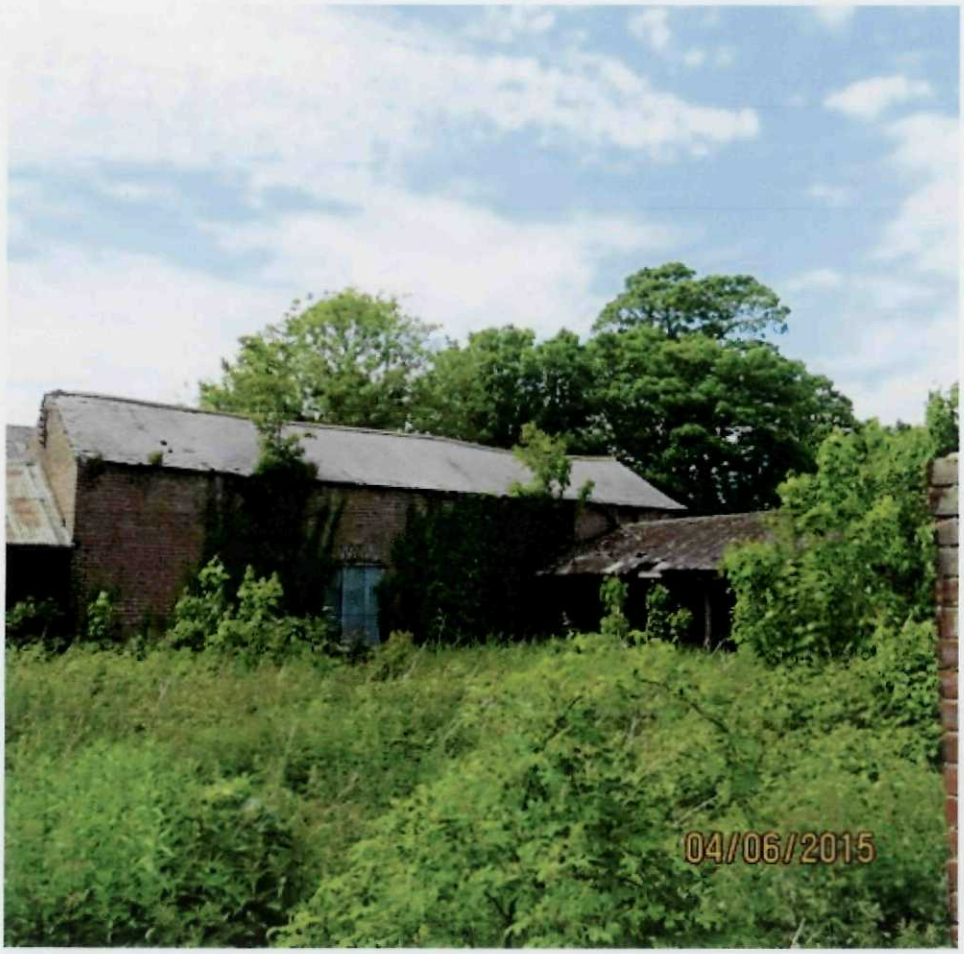
Brierley & Co
Consulting Structural Engineers

20 Stocks Hill Castor
Peterborough PE5 7AZ

Tel 01733 380758



Report on Limited Visual Structural Inspection of detached two storey and single storey red brick barns at Primrose Farm, Maisdyke Lane Fleet, Holbeach Spalding, PE12 8NH

date: 04 June 2015
our reference: 15.26.006
our client: Mrs S Smith

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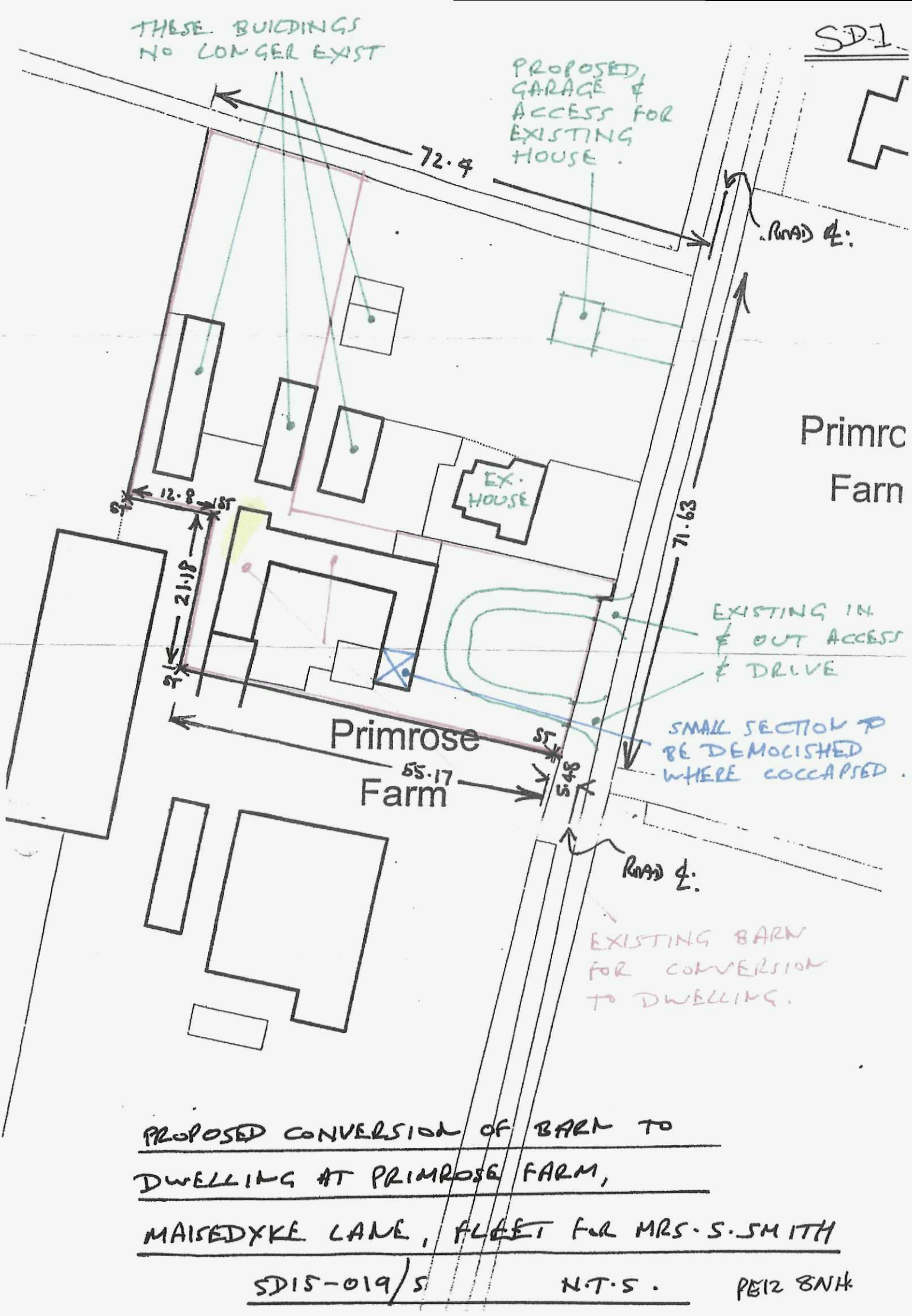
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References:-

(i) British Geological Survey Sheet 144, 1:50,000 Series, Solid & Drift Geology Edition

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PROPOSED CONVERSION OF BARN TO DWELLING AT PRIMROSE FARM, MAISEDYKE LANE, FLEET FOR MRS. S. SMITH

SD15-019/5 N.T.S. PE12 8NH

Brierley & Co
Consulting Structural Engineers
20 Stocks Hill
Castor
Peterborough
PE5 7AZ

Instructions

We were instructed by Mrs S Smith, the owner of Primrose Farm, Maisdyke Lane, Fleet, Holbeach, Spalding, PE12 8NH, to carry out a limited visual structural inspection of detached two storey and single storey red brick built barns and to report upon the structural condition as regards the potential to be converted to domestic use.

Our instructions were specific to look at the property from the point of view of structural stability and not to go into detail over parts which may have deteriorated over time because of the need for maintenance but to limit our views entirely upon the potential for the property to be converted, without a great deal of structural work, to domestic habitation.

We carried out our limited visual structural inspection in accordance with these instructions as we state in Appendix A to this report and have not attempted to carry out a full structural inspection of the property because that would have involved excavating holes in the ground and making holes in the fabric of the structure which at the time was not called for. Please see Limitations of Inspection Schedule in Appendix A to this report.

The instructions refer to a term that is used by Chartered Structural Engineers to differentiate between their type of survey and that of a Chartered Surveyor. As Appendix A to this report states there are limitations to what we can do inside a property. We cannot make holes in the walls or lift floorboards, etc. in a property that is occupied. However, we always make our best efforts to observe carefully and inspect where we

can all items that relate to the structural strength and stability of the property.

This report has been prepared and issued specifically for the benefit of the addressee, Mrs S Smith, for the purposes of submitting a Planning Application for a change of use to Domestic Accommodation and is personal to her. This report is non-assignable and no liability will be extended to any third party for the whole or any part of its contents.

Ground Conditions

Primrose Farm is shown on the British Geological Survey Sheet 144, 1:50,000 Series, Solid & Drift Geology Edition, as standing in an area to the south-east of Holbeach where the ground conditions are recorded to be Terrington Beds over Ampthill clay.

Essentially the ground, Terrington Beds, is a layer of about 3.5m thick of reddish brown sands, silts and silty clays which were laid down when The Wash flooded into this part of the country over two thousand years ago. In most conditions the sands, silts and clay tend to be horizontally laminated and dried out by the action of man draining the Fens up to two thousand five hundred years ago. Some parts of this area were also drained by the Romans.

This ground material has proved itself to be quite adequate upon which to support the foundations of masonry constructed properties provided that consideration was given to the loadings and local soft spots in the ground

that could occur. Old properties generally tend to have brick corbelled foundations and in some cases those brick corbels could bear upon timbers.

In the case of farm buildings such as a brick built barn it was likely that the foundations would only be one or two bricks width of corbelling going down to a comparatively shallow depth which could be affected by moisture content changes as the seasons have their effects on the ground. With the partial clay content in the ground conditions consideration should have been given to the drying effects of tree roots and shrubs upon these ground conditions but generally there was no consideration given to that at the time these properties were built.

Any future building on this site should take into account the low to medium shrinkability of the site as regards the placing of trees and shrubs on any new landscaping.

The exact ground conditions on any particular site can only be verified by trial pit investigations, which is not included in these instructions.

Limited Visual Structural Inspection of the Barns

We carried out our limited visual structural inspection on the afternoon of Thursday 04 June 2015 when the weather was dry with some good sunshine.

The barns in question are probably over one hundred and eighty years old and consist of buildings that in our opinion form a typical farmyard with what were originally pitched slated roofs covering the single storey parts which continue round to the west where they were re-roofed some time ago

using corrugated galvanised steel sheets and later corrugated asbestos cement sheeting.

External inspection of the two storey barn

Towards the rear of the site there is a two storey barn with Welsh slate covered pitched roof on solid 9inch brick walls. At the south end of the two storey barn there is a corrugated galvanised steel roof on timber structure, obviously a later addition.



Roof and ridgeline of two storey barn

Obviously the substantial part of the property to be proposed to convert to domestic accommodation is the two storey barn to the rear of the site with its ridge running north-south, and to the southern half the ridge line is satisfactory but to the north there is a severe dip in the roof, indicating that some part of the timber structure below has failed.

Front Elevation of two storey barn (facing east)

Because of the state of overgrowth in the farmyard access was very difficult but we looked at the front elevation as we will define it facing east to the

best of our abilities. The ground was not only covered with an overgrowth of brambles, nettles, saplings and other plants, but hidden hazards such as lumps of concrete and old roof sheeting which prevented us gaining proper access to the front to view this building.

This front elevation contains a doorway approximately 1.4m wide which is now blocked off with corrugated steel sheeting over which there is a brick arch which is intact. The remainder of the brickwork on this elevation appeared to be intact although a lot of it was covered with climbing ivy which should be removed because it grows into the mortar courses and can cause brickwork to deteriorate rapidly.

From standing in front of the single storey barns we could see across the farmyard to above the arch doorway on the front (east facing) elevation of the two storey barn that there was stepped diagonal cracking running down from eaves level to the arch over the doorway.



That is not at all unusual in brick buildings of this type standing on the Fenland ground conditions such as is found in this area of silty clayey material. Because the crack is wider at the bottom than the top it suggests

that there has been some settlement of the brickwork on its foundations. The cracking appears to be in the order of only 10-12mm wide in the bed joints. It is not serious and can be put right at renovation time by crack stitching or inserting some stainless steel reinforcement to hold the brickwork together.

Also, from standing across the farmyard we could see the east facing wall of the two storey barn above the single storey cart shed part where there were two openings and the lintels over those openings, which were timber, appear to have failed but these again can be put right in a fairly straightforward manner when renovating the building.

South Gable Wall of two storey barn

The south gable wall of the two storey barn appeared to be intact when viewed from ground level and the corrugated galvanised steel shelter built on the end will be left out of our comments because it is obviously of flimsy construction and we presume would be removed.



West facing Wall of two storey barn

Looking at the west facing wall of the two storey barn there is evidence of movement in the west wall at first floor level caused by substantial tree growth protruding through the wall which has disturbed the brickwork although brickwork lower down is generally intact with only a limited amount of cracking of a diagonal pattern at the south-west corner.



Moving along this west facing wall to the 1.2m wide doorway with a timber door, the arch brickwork above appeared to be intact with perhaps some limited movement showing at about 700mm above the arch but covered with the growth with some type of creeper rather than ivy.



Continuing along this west elevation to where there are two openings for carts the whole structure in the area has suffered movement because of long-term inadequacy or breakdown of the timber of the lintels over the openings for the carts and settlement of the wall foundations. This in turn has led to the roof above sagging and it is obvious to all who look at this building that this part will need to be rebuilt.

North Elevation of two storey barn

This north elevation was in general good order as regards the remaining brickwork. It appears that the gable infill at roof level has fallen out due to lack of restraint and that is something that can be rebuilt with comparative ease.

There was some cracking on the west corner of this north gable wall associated with the sag of the lintels over the openings on that west gable wall. Some attempt to tie it together had been made because there was a patress plate to be seen but that was now redundant because of the movement in the walls.



The overall impression of this two storey barn, from across the farmyard, is that it is still in a reasonable state of stability and its potential for redevelopment is good.

Internal inspection of the two storey barn

Walls

We went into the two storey high barn to find that the southern part - perhaps two-thirds of its length - was open to roof level and that allowed us to see that on the inside of the wall cracking over the arch to the doorway on the east wall had been pointed up in a fairly strong cement mortar some years ago. This acts as a Tell-Tale to suggest that there is no continuing movement immediately above the arch but at higher level there may be some movement that needs to be addressed at renovation time.

On the west wall above the doorway where on the outside the arch appeared to be intact, we could see from the inside that there has been significant movement of that part of the wall and the arch will need to be propped back into place and the brickwork made good and some stainless steel reinforcement at 450mm vertical centres above it.

Looking at the walls of the two storey barn from inside the building, in this southern part on the east and south walls the brickwork was generally intact. On the west wall because of the intrusion of tree or substantial ivy stem growth the brickwork has been destroyed and will need rebuilding from ground level upwards up to the eaves.



Roof structure and timber first floor

When viewed from ground level the timber roof structure appeared to be in reasonable order but will need some strengthening to withstand modern roof loadings including ceilings and insulation, etc.

There is a timber first floor over the two cart sheds on the northern end of the building and there has been a local collapse of the roof structure in this part because the lintel over failed but the original roof is still in place and could be propped back up without any tremendous work and then it needs to be upgraded to modern standards as mentioned elsewhere in this report.

From what we could see of the underside of the first floor of the two storey barn the timber joists were remarkably intact but will of course require, if retained, to be treated against worm intrusion, etc. It is quite possible that these joists could be retained to provide the support to a first floor subject to proper treatment for preservation.

Single Storey Barns

Continuing along this north elevation of the single storey barns with corrugated asbestos cement covered roofs and in parts corrugated galvanised steel roofs, the roofline was generally satisfactory. We went into part of this building which was the three bay cart shed and the timber roof truss was in remarkable state of preservation with some wet damage to the west end but the rest relatively intact.





It would be comparatively simple to upgrade this roof to modern domestic roof requirements. Going through an opening where the timber lintel had collapsed into what we would call a 'tack room', the brickwork there of a 9inch internal wall had moved due to some erosion of foundations from rainwater but that is a relatively simple matter to put right when converting a barn.

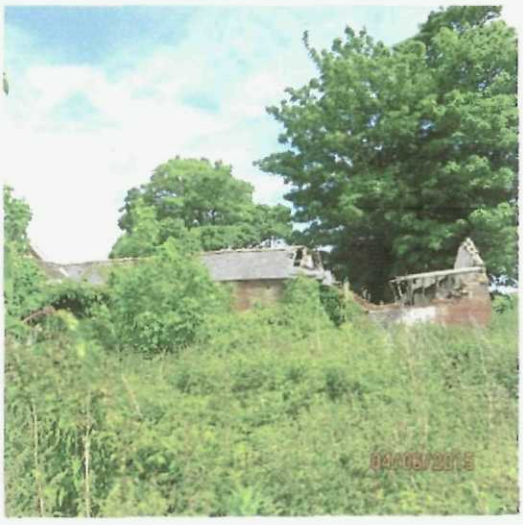
From the position of the doorway into the cart shed on this north facing wall of the single storey barn towards the front the brickwork appeared to be in a reasonable order and the walls to a good line and level with no unacceptable distortion.

Continuing on this single storey barn on the east elevation the brickwork



had been pointed up from time to time but it stood to a reasonable line and level and does not need to be rebuilt and the same comment applies to the next part of the building with a personnel door access, window and what may have been a garage. The brickwork here was of a newer type laid to a different coursing, a type of English Bond but three courses apart, and this appeared to be in good order from the point of view of conversion to domestic accommodation after carrying out a good deal of renovation work. We just note here that the south end of this barn had collapsed as noted on the Plan.

The remainder of these single storey farmyard buildings that we could see from in the farmyard showed their age - with particularly on the front part which runs north-south and is still slate covered - the ridge shows dips indicating movement of the timber structure but what we could see of the brickwork, which was albeit limited, appeared to be to a reasonable line and level.



At the east end of this single storey barn there is a section of building which it is indicated on the Plan as going to be demolished because it is collapsing now.

Summary

The two storey barn and the single storey buildings forming the farmyard at Primrose Farm are substantially intact and, despite some of the rather spectacular deterioration of parts of the structure, in our opinion they are a suitable complex of buildings to consider for renovation and conversion to domestic use so far as their structure is concerned.

It is obvious to all who look at the buildings where the damage of collapsed lintels and growth intrusion through the walls is to be seen.

Elsewhere there is evidence of some movement of the structure of a wall causing diagonal cracking in the brickwork but that is not unusual in any masonry constructed building in the Fens where the soils at the time these

barns were built were comparatively soft and foundations quite narrow compared with modern foundation depths which are taken down to firmer strata. In fact there is very little evidence of substantial foundation movement in the barns which leads us to suggest that the walls do not need to be considered to need underpinning or any particular upgrade of the foundations. Obviously when new construction has to go in to replace brickwork which has deteriorated beyond repair, then that must be carried out to modern standards of construction.

Generally the roof structure appeared to us to be remarkably intact for the age of the property but it is quite likely that in order to comply with modern requirements and for economy that the whole roof structure should be removed and replaced with a modern timber structure so as to incorporate all insulation and weather resistance requirements.

V. T. Brierley

V T Brierley
CEng FIStructE

Please sign and return to Brierley & Co

RECEIVED - 9 JUN 2015

Brierley & Co
Consulting Structural Engineers

20 Stocks Hill Castor
Peterborough PE5 7AZ

APPENDIX A

Limitations of Inspection Schedule

Date: 03 June 2015
Client: Mrs S Smith
Job Number: 15.26.004

Work to be undertaken: Limited Visual Structural Inspection of the existing barn (as shown on Status Design drawing No.SD15-019/5) at Primrose Farm, Maisdyke Lane, Fleet, Holbeach, Spalding, PE12 8NH, in order to determine whether the building is capable of conversion to a dwelling without significant rebuilding.

The inspection of the premises will be carried out on a single visit for the fee of £540.00 (no VAT) as agreed via Mr B Gilham of Status Design.

The purpose of this report is to provide an opinion on the condition of the structure of the property as regards conversion to domestic use and is subject to the under-noted conditions.

General

We shall only report upon those structural defects that may materially affect the stability of the property provided that these defects are reasonably detectable at the time of our inspection. Whilst we will use all reasonable skill and care in preparing this report, it should be appreciated that we can not offer any guarantee that the property will be free from future defects or that existing ones will not suffer from further deterioration.

The report is confined to a limited inspection of the structural elements of the property only. Therefore, the report excludes any inspection or comment on electrical or mechanical installations, decorative conditions, damp proofing, non-structural timber fixings, fittings, mouldings, coverings and all other non-structural matters.

Roof Structures

Where inspection of the roof void forms part of our instructions we will do that **providing there is safe access, minimal insulation and minimal obstructions**, and we are able to comment on this part of the structure. However, it should be noted that roofs and roof timbers can be subject to deterioration due to water absorption, wet rot and insect infestation, etc. and it would be necessary for you to make specific arrangements for the inspection of this area if you require confirmation about the condition of the timber work.

Unexposed Parts

Internal inspection is made within the limits of ready accessibility and it is not normal practice to lift floor coverings or floor boards, remove panels or plaster, or move heavier items of furniture. Consequently, we have not been able to inspect woodwork or any 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. Such unexposed parts may contain problems and you would need to make special arrangements for these areas to be investigated (where practically possible) if you require confirmation about their condition.

Foul & Surface Water Drains

Our inspection will be limited to the raising of visible inspection covers where possible. The drains have not been water tested or subjected to television inspection unless specifically requested.

Non-Assignable

This report has been prepared and issued specifically for the benefit of the addressee and no responsibility will be extended to any third party for the whole or any part of its contents.

Statutory Requirements

Enquiries with local or statutory authorities have not been carried out. Whilst attention may be drawn to any apparent breaches or statutory requirements relative to the building or site, the absence of any such comment does not imply compliance with such requirements.

Method of Inspection

External inspection of the building will be carried out from ground level by visual sighting. This method means that parts of the structure may be incapable of inspection and we can not confirm that they are free from defect. Special arrangements (where practicably possible) would need to be made before inspection of these areas could take place.

Contamination

The property and site have not been tested for any form of contamination, pollution or any other environmental impairment and we are unable to make any comment in this regard. However, such matters are an important consideration and may well affect the value of the property/site and any prospects for future development. Specific environmental audits can be arranged with appropriate specialists in this field.

Asbestos

We have not been retained to provide advice on asbestos or asbestos containing materials. Specialist advice in this field should be obtained from an appropriate expert firm.

The Disability Discrimination Act 1995

The full implications of the requirements of Part M of the Building Regulations as they relate to The Disability Discrimination Act 1995 have not been considered in the preparation of this report.

Other Structures and Site Ground Surfaces

We exclude from our limited inspection garden walls and retaining walls, detached garages, timber and brick outbuildings not forming part of the main structure, and paved ground surfaces.

for and on behalf of Brierley & Co.

V. T. Brierley

V T Brierley
CEng FIStructE

I accept the above limitations and fees
(Mrs S Smith)

(Signature) S. A. Smith (please print name) S.A. SMITH

Dated 6th June 2015