

Adrian Tudor

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and Civil Engineer

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STRUCTURAL APPRAISAL AND REPORT ON
DETACHED BARN 1 AT BROOKSIDE FARM, MAIN ROAD,
PONTESFORD, SHREWSBURY SY5 0UA

Job Number: 21/120
Date: 20th October 2021

1.0 CLIENT

- 1.1 The appraisal and report were commissioned by Mr S Holyhead of 30 Wray Drive, Pontesbury, Shrewsbury SY5 0FF.
- 1.2 The report was required to comment on the general structural condition of the property, prior to proposed conversion to habitable accommodation.
- 1.3 Prior to my site visit on 13th October 2021 existing and proposed layouts prepared by Roger Parry & Associates were viewed under Planning Application 15/01726/Full.

This report should be read in conjunction with the drawings, as required.

2.0 OBJECT OF REPORT

- 2.1 To comment on the factors noted in 1.2 and 1.3 above.
- 2.2 To determine if there is any structurally significant movement affecting the property.
- 2.3 To assess the effect of any movement noted on the structural stability of the property.
- 2.4 To consider the suitability for conversion to habitable accommodation without the need for significant re-building.
- 2.5 To propose any further investigation or remedial works required.
- 2.6 The extent of this report is limited to the factors noted under 1.2 and 1.3 above.

Inspection has been confined to those elements visible internally and externally to the naked eye.
- 2.7 All other aspects of the property are specifically excluded from the scope of this report.

2.8 I have not inspected woodwork, or other parts of the structure which are covered, unexposed or inaccessible and I am therefore unable to report that any such part of the property is free from defect.

3.0 DESCRIPTION

3.1 The property was a detached barn with the front elevation to the drive facing approximately North West.

3.2 Elevations were predominantly brickwork, with some sheeting and the main pitched roofs were sheeted/slatted, as noted.

3.3 Internal accommodation was essentially divided into bays, being Cow Barns 1-4, tool shed and dairy at ground floor level.

The areas noted as lean-to cart shed, storage shed, chicken shed and pen area are all being demolished, so no comment is made on these elements.

3.4 For reference purposes, existing ground and first floor plans are attached to this report as SK1 and SK2 respectively.

3.5 My site visit was carried out on 13th October 2021, at which time the weather was dry, mild and overcast.

4.0 INSPECTION

4.1 External Inspection

4.1.1 Front Elevation (North West)

The roof covering to Cow Barn 4 comprised corrugated metal sheeting and the roof line was acceptably true and even. To the same section of barn, the upper section of the elevation was also clad in sheeting and to the Northern end there was a section of decayed timber bedded in the wall.

The triangular section of brick wall above the dairy roof line leaned outwards.



The lower section of wall to Cow Barn 4, adjacent to the ground, was showing signs of damp and weathering, with some perished bricks, but overall was considered to be in reasonable structural condition.

A straight joint in brickwork was visible above the right hand edge of the dairy door opening and it appeared that the arched opening had been partially infilled to accommodate the current door and window arrangement.

The upper section of gable to Hay Loft 1 was seen to be in relatively sound condition.

The gable to the tool shed and store had been repointed and there were weathered and perished bricks.

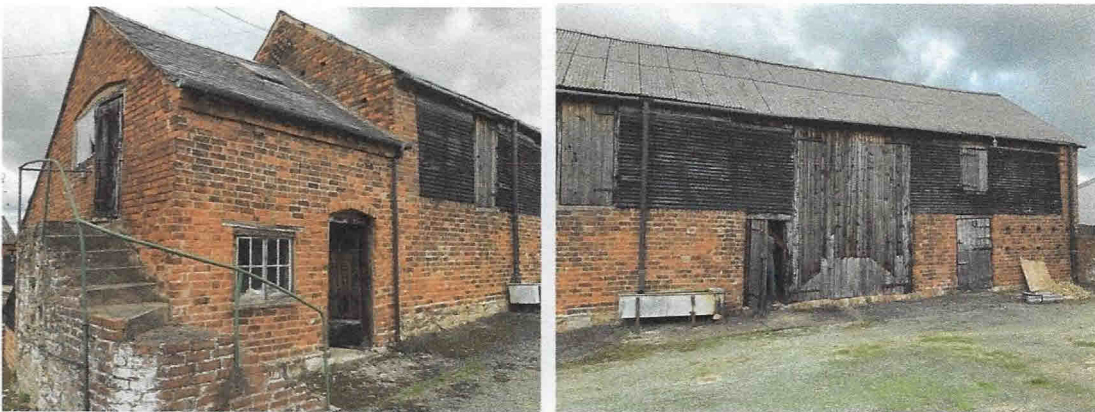
4.1.2 Side Elevation (South West)

The roof covering to the tool shed/store was slate and there were undulations to the roof line, with a dip towards the eaves, indicating deflection of the supporting structure.

The timber lintel over the tool shed window opening sloped.

The main roof (over Cow Barns 1-3) was covered with some form of corrugated sheeting and the roof line undulated along its length, again suggesting deflection of the supporting structure.

The main elevation to the Barn was clad with metal sheeting above first floor level, with brickwork below. Whilst the brickwork was seen to be in relatively good condition, it leaned outwards below the sheeting line, likely to be due to roof spread and associated movement of the upper framing. This will need to be considered further.



4.1.3 Rear Elevation (South East)

The apex of the gable to Cow Barn 3 was clad with timber and at both eaves positions, the ends of the wallplates were visible, with an adjacent area of weathered/cracked bricks, possibly due to water discharge.

Brickwork below the hatch opening to Hay Loft 2 was weathered, with open joints, although the remainder of the elevation was generally sound, including the stone band at low level.

The roof to Cow Barn 4 was covered with corrugated metal sheets and the roof line was acceptably true and even.

The elevation to Cow Barn 4 was viewed from within the outbuildings to be demolished – see 3.3.

The elevation was predominantly brickwork, with embedded timber posts. The right hand post was showing signs of decay at the top and will require attention or replacement.

Low level stonework was random and will require attention.



4.1.4 Side Elevation (North East)

The roof covering to Cow Barns 1-3 comprised slates – different to the sheet covering to the opposite pitch (see 4.1.2). Undulations were noted along the length, with a noticeable sag at the intersection with Cow Barn 4 roof.

The lower section of wall to Cow Barn 3 bulged outwards significantly adjacent to the South Eastern gable and localised rebuilding will be required.



Brickwork to Cow Barn 4 gable apex was fractured above the hatch doors, indicating lack of adequate lintel support and this section will need to be carefully taken down and rebuilt.

Purlin ends were visible to the same gable and the remainder of the elevation was considered to be in acceptably sound structural condition.

The slated roof line and brickwork to the dairy were seen to be in reasonable structural condition.



4.2 Internal Inspection

4.2.1 Ground Floor

a) Cow Barn 4

This bay was essentially full height, with a temporary first floor deck/storage area constructed from timber in the South Western section of the bay. The deck was propped off the floor slab and should be removed during the proposed works.

The roof carcass comprised rafters on one purlin per pitch, which in turn spanned between gables and two intermediate timber trusses.

Purlins and trusses appeared to be in relatively good condition, with no excessive deflection or distress visible.

A tie bar was present to the South Western end, at wallplate level, coinciding with the area of distorted brickwork by the dairy, as noted in 4.1.1. This localised area of wall will require rebuilding during the works.

The front wall above the brickwork line was timber framed and displaying signs of movement and distortion, probably due to roof spread. Rebuilding/replacement of framing is likely to be required.

Timber posts were present in the rear wall, below the truss positions – as noted in 4.1.3, some decay was noted at the top of a post, which will require further consideration.

The floor slab comprised concrete.

b) Dairy

The ceiling was lined and the floor slab was concrete.

c) Tool Shed

The first floor deck above was supported on two timber beams, which although appeared sound were displaying longitudinal splits.

Walls were acceptably sound and the floor slab was concrete.

d) Cow Barns 1, 2 and 3

The front wall brickwork leaned outwards, as noted in 4.1.2 and floor slabs were concrete. Inspection was limited due to the volume of stored materials.

Adjacent to the South Western personnel door opening to Cow Barn 3, a trial pit had been excavated on my prior recommendation, to expose the existing foundation detail and nature of near-surface soils.

The pit revealed that the wall extended down with no spread, to approximately 400mm below external ground level, bearing in to stiff yellow/grey/brown clay.



4.2.2 First Floor

a) Cow Barn 4

Not applicable.

b) Store

No access possible as the external door was locked.

c) Hay Loft 1

The first floor deck was not accessed for safety reasons, but was particularly low to the ground and will not be suitable for re-use.

A tie bar was present to the North Western end, at wallplate level.

d) Hay Loft 2

Access was not gained as the deck comprised tree sections and noted as dangerous.

A tie bar was present at wallplate level.

e) Hay Loft 1/Void/Hay Loft 2 - General

The roof carcass comprised rafters on one purlin per pitch, spanning between gables and two intermediate timber trusses.

Purlins appeared to be in reasonable condition, but will require checking/strengthening, as appropriate.

Trusses appeared relatively sound.

Walls were timber framed above brickwork/first floor level and there was evidence of distortion and roof spread, which although not excessive will require addressing during the works. Rebuilding/replacement of framing is likely to be required.

5.0 CONCLUSIONS

5.1 Whilst the property overall was considered to be in reasonable structural condition, there was evidence that the roof carcass had flattened and spread under load, transmitting lateral forces to the external elevations, resulting in the damage and distortion observed.

The complete lack of ties at wallplate level would also tend to exacerbate the situation.

5.2 It is understood that rafters will be replaced during the proposed works, to accommodate insulation. Purlins will need to be checked mathematically and strengthened as required, to control deflection and associated lateral spread, particularly taking in to account that roof coverings are likely to be heavier than existing.

- 5.3 First floor decks, where applicable, were not providing effective restraint to the external walls.
- 5.4 In general it is considered likely that existing first floor decks will be removed, although the first floor over the tool shed warrants further inspection.
- 5.5 Localised areas of distorted masonry, as noted in the relevant sections of this report will require rebuilding to ensure long-term stability.
- 5.6 It is considered likely that the observed superstructure damage has been visible for a considerable period of time and although I noted no evidence of recent movement, the possibility that further damage may occur cannot be discounted.
- 5.7 Whilst I noted no significant evidence of foundation subsidence or settlement, it should be noted that minor overall or seasonal movements may be occurring without being detected. For an agricultural building this would be considered acceptable. However, habitable accommodation with brittle finishes is much more sensitive to such movement, evidence of which would be considered unacceptable.

The foundation detail exposed in the trial pit adjacent to Cow Barn 3 was considered to be reasonable for the type of building, but will require enhancing as part of the conversion to habitable accommodation.

- 5.8 The observed damage had not adversely affected the overall stability of the building.
- 5.9 The building was considered suitable for conversion without the need for significant rebuilding.

6.0 RECOMMENDATIONS

- 6.1 Allow for strengthening existing purlin sections, or introducing new members, to ensure that vertical loads are adequately supported and that the aspect of lateral spread is addressed and controlled to within acceptable limits for habitable accommodation.
- 6.2 Provide new first floor decks, as required. Should existing members be retained, they will need to be design checked for suitability. Similarly, where floor beams are exposed, they should be checked for charring, in accordance with the Building Regulations and British Standards.
- 6.3 Strap roof and first floor to external walls.
- 6.4 Carefully take down distorted areas of masonry and rebuild using materials to match existing.
- 6.5 Carefully cut out damaged or fractured masonry and replace/repair as necessary, using materials to match existing.
- 6.6 Strap internal/external wall junctions.

- 6.7 Install suitably designed lintels over structural openings. Timber lintels to the external wall face will not be acceptable and should be removed. Designed steel beams will be required where it is proposed to remove walls.
- 6.8 Excavate further trial pits to establish foundation details and depths throughout and carry out remedial works as deemed appropriate. Should depths and conditions permit, it may be feasible to provide a thickened edge to a new concrete floor slab, connected to existing walls using drilled and resin grouted dowels, thus providing a monolithic slab/wall diaphragm.
- Alternatively, if levels/conditions do not permit this, underpinning will be required.
- 6.9 Provide new ground floor slab and damp proofing.

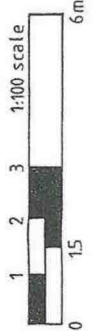


A. J. TUDOR
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21/120/SK1.



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| Residential - Agricultural - Commercial | |
| Job | Proposed Barn Conversion |
| Title | Ground Floor Plan as Existing (Barn 1) |
| Location | Brookside Farm, Main Road, Pontesbury, SY5 0UA |
| Client | Mr B Tipton & Mrs M Doncaster |
| Scale | 1:100 @ A3 |
| Drawing No. | 928/14/04 |
| Drawn by | TJ |
| Date | August 2014 |
| HOGSTOW HALL, MINSTERLEY SHREWSBURY, SHROPSHIRE SY5 0HZ Tel: 01743 791336 Fax: 01743 792770 email: mail@rogerparry.net Web address: www.rogerparry.net <small>Roger Parry & Partners Ltd, 54 High Street, Shrewsbury, Shropshire, SY1 1AA Registered in England No. 02052997. VAT No. 919 542 822 A member of the RIBA Chartered Institute of Architectural Technicians</small> | |

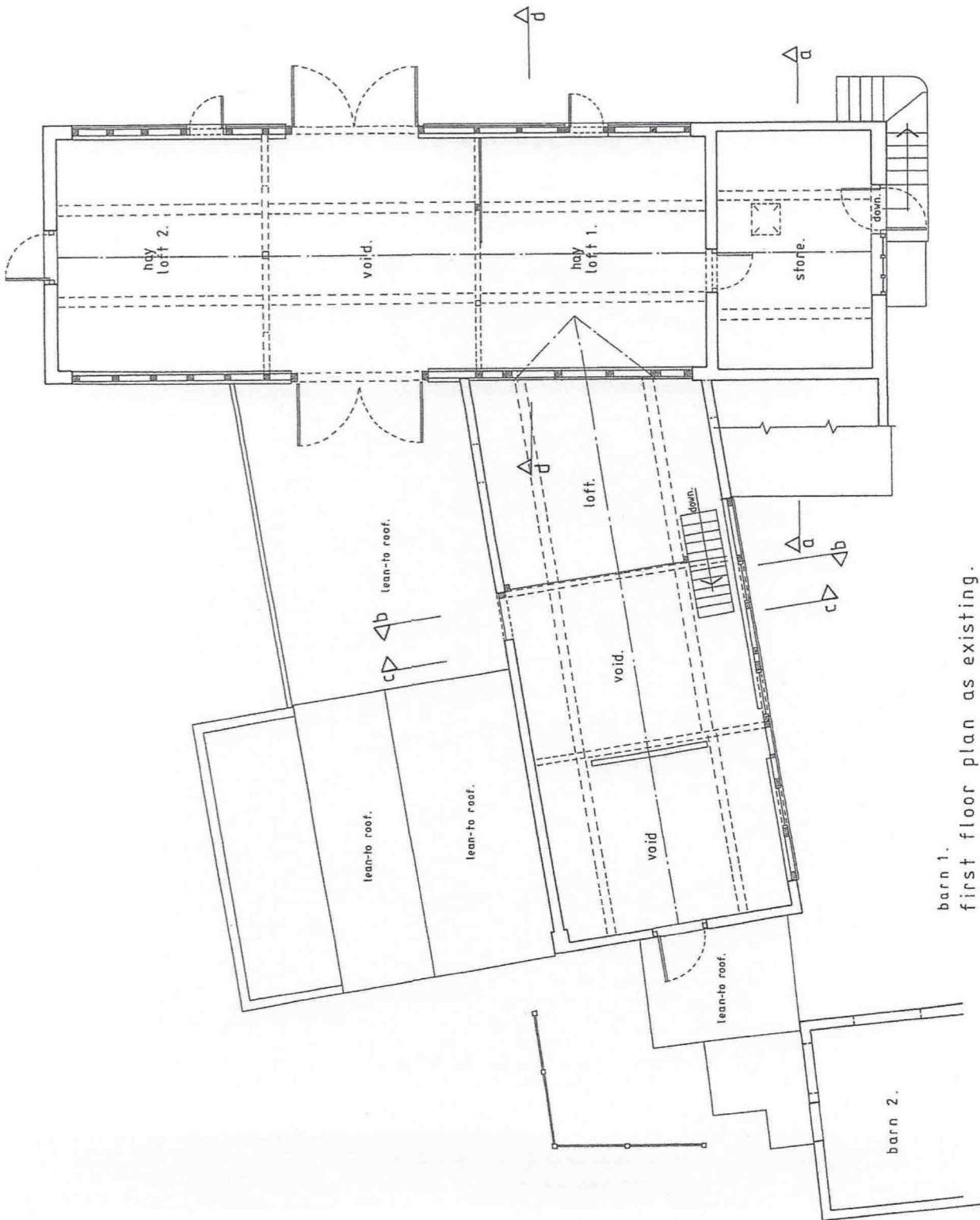


barn 1.
ground floor plan as existing

21/120/SK2.



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| Job | Residential - Agricultural - Commercial | | |
| Title | Proposed Barn Conversion | | |
| Location | First Floor Plan as Existing (Barn 1) | | |
| Client | Brookside Farm, Main Road, Pontesbury, SY5 0UA | | |
| Scales | Mr B Tipton & Mrs M Doncaster | | |
| Drawing No. | 1:100 @ A3 | Rev | |
| Drawn by | TJ | Date | August 2014 |
| HOGSTON HALL, MINSTERLEY SHREWSBURY, SHROPSHIRE, SY5 0HZ Tel: 01743 791336 Fax: 01743 792770 email: mail@rogerparry.net Web address: www.rogerparry.net <small>Roger Parry & Partners 112, Powhatan Way, Shrewsbury, Shropshire, SY3 1RZ Registered in England No. 03222293 A full list of our services is available on the above website.</small> | | | |



barn 1.
first floor plan as existing.

