

MS07801/DS

Mr D Shankland
Birchgrove Farm House
Birchgrove Road
Horsted Keynes
RH17 7BT

By e-mail

16th February 2026

Dear Mr Shankland,

Structural Appraisal of Proposed Conversion of Barn & out-buildings at Birchgrove Farm, Horsted Keynes

Further to our conversation with your Architect, Robert Vickers at David Jenkins Design regarding the proposed conversion of the above out-buildings to domestic accommodation, please find below a Structural appraisal of the masonry barn building and adjacent attached single storey timber framed out-buildings to be converted, following our site visit on the morning of Wednesday 14th January 2026, also attached are some over marked plans & sections. The weather during the visit was cold and sunny. Report to be read in conjunction with over-marked plan layouts and sections.

Barn complex description

The outbuildings being assessed were located to the north of the main farmhouse at Birchgrove, off Birchgrove Lane, north-east of Horsted Keynes and west of Chelwood Gate. The outbuildings consisted of a main older two storey sandstone barn and an adjoining single storey softwood timber framed store. The two buildings had duo pitch clay tile roofs with gable ends. The single storey timber frame building was to the south-west of the older two storey main barn sharing a gable wall.

The sandstone masonry main Barn building - Existing Structural Condition

The main two storey sandstone built barn was approximately 11m long running approximately south-west to north-east and 4.5m wide with a duo-pitch roof supporting clay tiles over with a slight catslide on the front south west elevation. The walls were exposed

sandstone approximately 350mm thick. There were three first floor window openings of varying sizes on the rear north-west elevation and a first floor external door opening to the north-east gable wall, there also appeared to a door opening on the south-west gable elevation that has been infilled previously. On the ground floor, there were two small window openings on the front south-east elevation and a central door, there was a small window on the rear north-west long elevation and a large double door opening on the gable north-east elevation. The masonry was generally in very good condition with no significant cracking noted, there was some slight cracking on the reveals of the first floor rear window openings, which looked to be link to some slight eaves roof spread and internally there was some slight cracking around the infilled door opening on the first floor south-west gable possibly linked to the old door opening lintel rotting. Lintels to the doors and windows set within the masonry was generally a stone lintel externally and timber lintels to the inside face. The large opening on the ground floor north-east gable appeared to be a full width insitu concrete lintel.

The first floor was formed with 4No. large approximately 180 x 200mm deep oak timber beams spanning across the width of the building at approximately 2m centres supporting 80 x 100mm deep oak joists. The main beams were generally supported on the stone walls with some corbelled brickwork. The beam over the ground floor office area on the south-west end of the barn was support on 175 x 175 timber posts inset from the front and rear wall. Some of the infill floor joists over this area look to have been replaced with softwood. Also, the beam nearest the north-east gable was supported on a brickwork pier on the front of the building and there was a split at the end of the beam over the pier. Generally, the timber first floor joists and beams were in a good condition.

The roof to the main barn was formed with 4 trusses on the same line as the main first floor beams under. With posts set approximately 600mm inside the front wall with the eaves lower on the front elevation than the rear elevation. The roof was generally an oak construction with 100 x 80mm deep rafters at 40-500mm centres from ridge to eaves on the rear of the roof and from ridge to a line of purlins on the post line then from the purlin to the front eaves. The purlins were approximately 170mm wide x 100mm deep set within the rafter line. There was a section of rafters towards the south corner of the building that have been replaced with softwood. The oak rafters of the roof structure were generally bowed and the rear elevation masonry leaned out slight with some cracking to the window reveals indicating slight eaves thrust.

Two trial holes were undertaken around the main barn building to showed the existing foundations. The trial holes along the front and rear of the building showed the wall was

supported on corbelled out sandstone masonry over sandstone subsoil extending approximately 400mm deep.

The floor within masonry barn area was generally thick reconstituted stone tile setts. Within the office area at the south-west end of the barn there appeared to be some timber flooring over the stone setts. The floor condition was generally good were visible but is was slightly uneven presumably due to is historic use and loading.

The adjoining softwood timber store building - Existing Structural Condition

The adjoining single storey softwood timber framed building to the south-west of main sandstone barn was approximately 12.5m long (running south-west to north-east) and 4.5m wide. The roof was a clay tiled duo-pitched roof with gables at the south-west and north-east ends. The roof appeared to have softwood rafters spanning from ridge to eaves but these were hidden above a plasterboard & plastered sloping ceiling. There were timber purlins approximately 75mm x 175mm deep midway up each side of the roof. These were supported on the two internal softwood trusses with braces under to timber posts set within the external walls. The roof was generally in a good condition, there was some slight straight vertical and horizontal cracking noted to the sloping ceiling plasterwork.

The perimeter walls were formed in studwork with plasterboard and plaster lining to the inside face and horizontal timber cladding to the external face. The timber studwork was bearing onto 215mm thick brickwork plinth walls around 350mm above ground floor level. Again, the walls were in a good condition with only some slight vertical cracking noted above window openings and on the south-west gable wall below the purlin bearing. There was a central double door on the front south-east elevation and two large windows. On the rear north-west elevation were 4 smaller windows.

The floor within the timber framed barn appeared to be a concrete slab, it was largely covered with carpets / rugs, so the condition of the slab could not be fully assessed.

A trial holes were undertaken on the front and rear elevations; the rear hole showed a corbelled brickwork footing approximately 550mm deep from ground level and projecting out around 150mm. The front hole was approximately 400mm deep to underside, but did not corbel out. Both footings were bearing onto sandstone subsoil.

Proposed Conversion

The proposed conversion is to retain the walls and roof structure of the two buildings. The existing roof structure to the buildings may need to be strengthened to allow for the increased loading from insulation and plastered finishes, but the general existing condition of the roof is good with the exception of the slight rear eaves thrust noted in the main barn, so only minimal strengthening should be required.

The walls to all areas of the barn complex are generally in a very good condition, some areas will require localised masonry crack repairs and repointing and lintels will need to be replaced where they have rotted.

The subsoil was sandstone as per the trial hole findings, so the existing foundations should not require any extensive underpinning.

As the ground floor to the main stone barn was stone setts, these will probably need to be lifted and replaced with a concrete or limecrete floor slab bearing onto the sandstone subsoil to allow for suitable insulation. The timber frame barn concrete floor slab appears to be a ground bearing insitu concrete slabs, this can be retained were the levels perimeter.

Summary

We consider the existing barn buildings are generally structurally sound and suitable for conversion. The masonry was generally in a good condition with no sign of any significant movement. The roof structure to the two barns are likely to need some strengthening to allow for the additional insulation / plaster board loading but are generally in a reasonable condition. The foundations to the buildings are generally sufficient for the proposed conversion given the sandstone subsoil.

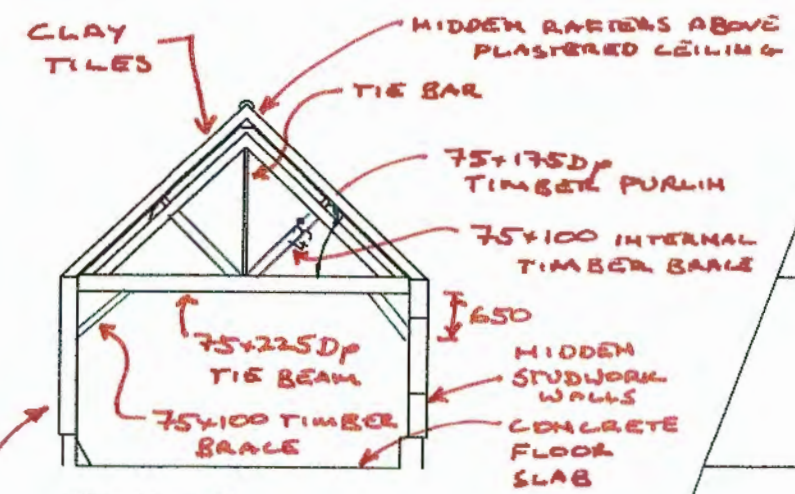
Please do not hesitate to contact us if you have any queries or require any further information.

Yours Sincerely

D C Simmonds MICE CEng BEng (Hons)
Director - McCarey Simmonds Limited



- GENERAL NOTES:
1. ALL DIMENSIONS TO BE CHECKED ON SITE. ALL DETAILS AND DIMENSIONS RELATING TO SUB-CONTRACTORS OR SUPPLIERS MUST BE CHECKED AND AGREED BETWEEN THE SUB-CONTRACTOR OR SUPPLIER AND THE MAIN CONTRACTOR.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL SERVICES AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
 3. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STABILITY OF THE STRUCTURE whilst the works are in progress. ALLOWANCE SHOULD BE MADE TO PROP THE EXISTING STRUCTURE whilst NEW SUPPORT STRUCTURE IS INSTALLED.
 4. HANDING BLOCKS WITH A UNIT WEIGHT OF 20kN OR MORE ARE NOT TO BE USED IN THE CONSTRUCTION OF THIS PROJECT.



Section B

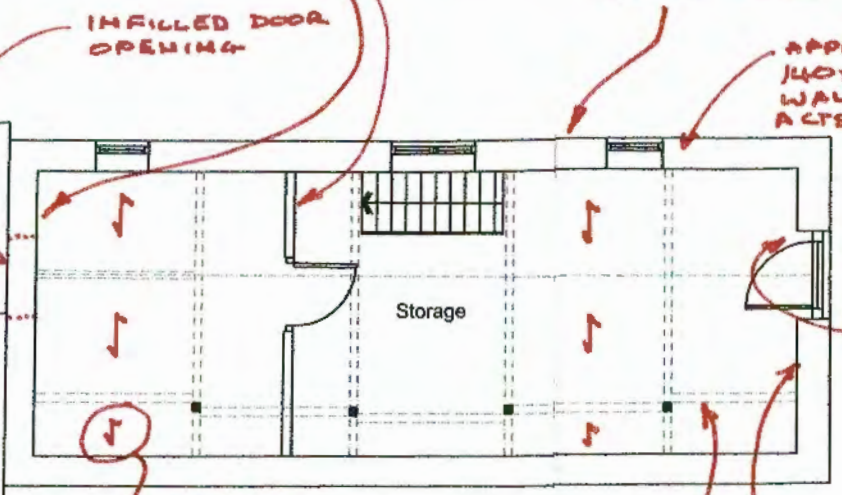
HORIZONTAL TIMBER CHADDING.

ORIGINAL DOOR TIMBER LINTEL ROTTING & CRACK NOTED IN STONEWORK

OAK STUDWORK WALL PANEL

SLIGHT CRACKS TO WINDOW REVEALS & REAR WALL SLIGHTLY LEANING OUT INDICATING EAVES THRUST

NOTE - RAFTERS GENERALLY BOWED

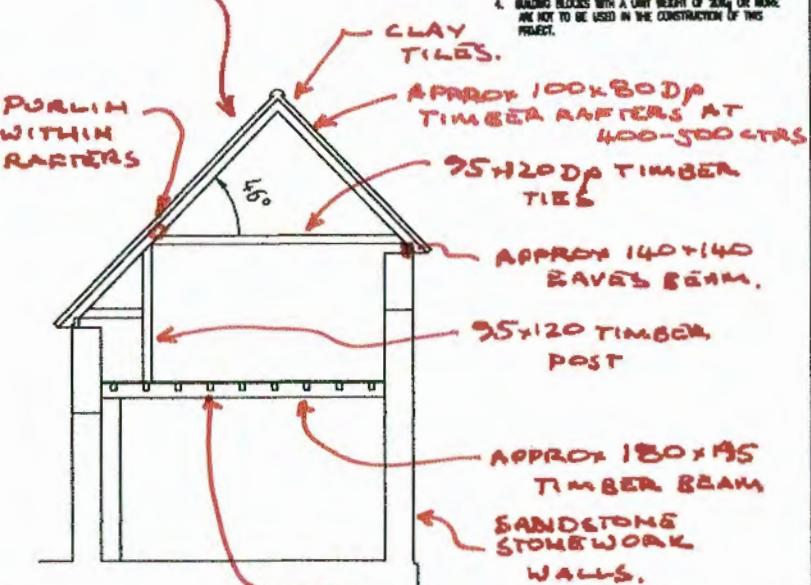


First Floor Plan

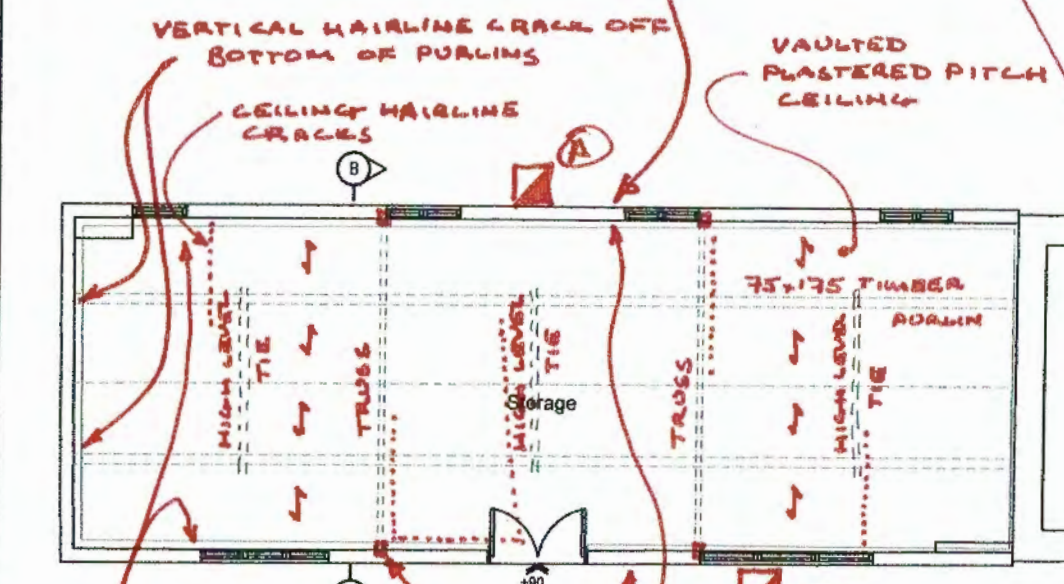
REPLACED SORTWOOD RAFTERS TO THIS BAY.

SOME SORTWOOD 50x100 TIMBERS ALONGSIDE & REPLACING ORIGINAL 80x100 OAK JOISTS IN THIS BAY ONLY.

175x175 TIMBER POSTS



Section A



Ground Floor Plan

OAK FLOOR BEAM WITH 50x100 TIMBERS FIXED TO SIDE TO AID SUPPORT OF FLOOR JOISTS OVER

CORBEL BRICKS SUPPORTING FIRST FLOOR TIMBER BEAMS

STONE SETTS TO GROUND FLOOR

350 WIDE x 160 Dp INSITU CONCRETE LINTEL

BRICKWORK PIER UNDER FLOOR BEAM WITH SPLIT AT END OF BEAM.

STONE OUTER LEAF LINTEL & TIMBER LINTEL TO INNER FACE

- REFERS TO DRAWING NUMBERS SHALL SIGNIFY THE FOLLOWING:-
- P - PRELIMINARY SHALL NOT BE USED FOR CONTRACT OR CONSTRUCTION PURPOSES.
 - T - TENDER CONTAINING INFORMATION FOR PRICING PURPOSES ONLY, NOT FOR CONSTRUCTION.
 - W - WORKING THESE ARE THE ONLY DRAWINGS THAT SHALL BE USED FOR CONTRACT OR CONSTRUCTION PURPOSES.
 - R - RECORD SECOND DRAWING OF THE COMPLETED WORK TO THE BEST OF OUR KNOWLEDGE BASED ON INFORMATION PROVIDED BY THE CONTRACTOR.

REV	DATE	DESCRIPTION	BY
P1	18.2.28	PRELIMINARY ISSUE	DS

McCarey Simmonds
consulting structural and civil engineers

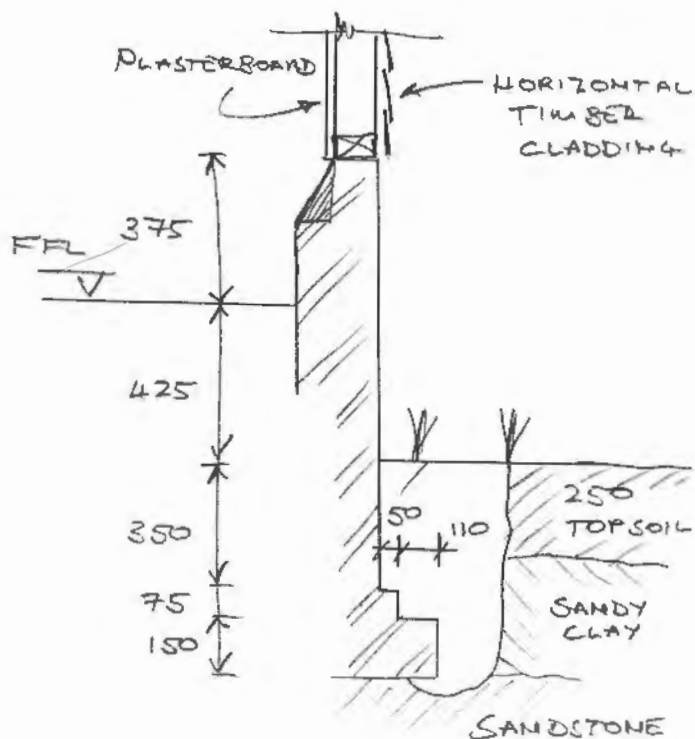
TELEPHONE 01223 800000 - FACSIMILE 01223 800000
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THE BISHOP HOUSE, 94 HIGH STREET, CHICHESTER, WEST SUSSEX BN1 3SD

CLIENT: Mr Shankland
PROJECT: David Jenkins Architects
Barn Conversion
Birchgrove Farm House
Horsted Keynes

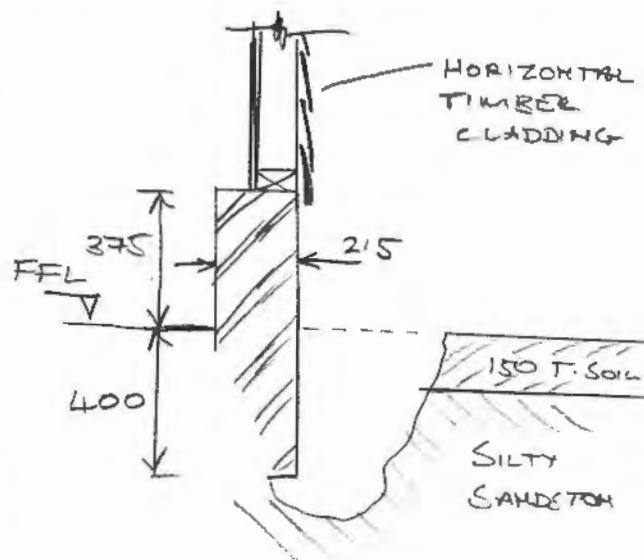
Showing the
Existing Plans and Sections
Showing Structural Site
Notes

DATE	DS	DATE	DS
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PROJECT NO.	MS07801		
REV	P1		

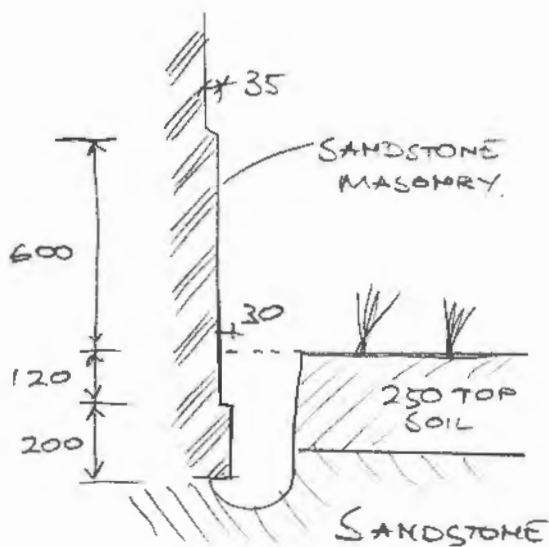
JOB TITLE		DATE	
Barn Conversion, Birchgrove Farm House		Feb. 2026	
ITEM	JOB NO.	SHEET NO	
Trial Hole sections	MS07801		
PREPARED BY		CHECKED BY	
DS			



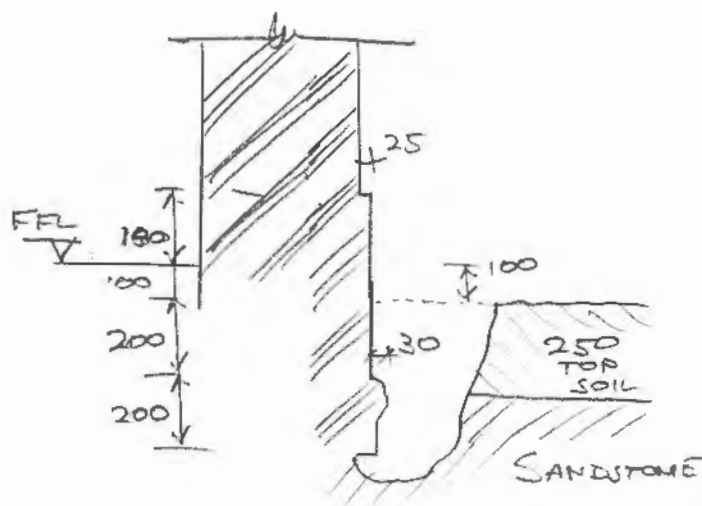
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D