

Tudeley Brook Stables, Crittenden Road, Matfield, Kent.

Structural Inspection Report



Reference: 23-0532

Revision: Revision A

Date: 30th November 2023

DRAINAGE

- Drainage Strategies
- S104 Drainage Design
- SUDS
- Flood Risk Assessments
- CSH SUR1

HIGHWAYS

- Transportation Assessments
- S38/278 Highway Design
- Junction Modelling
- Traffic & Parking Surveys
- Remedial Assessments

STRUCTURAL ENGINEERING

- All Structural Design
- Temporary Works
- Specialist Foundations
- Multi Storey & Basements
- RC Detailing

SPECIALIST SERVICES

- Site Assessments
- CDM 2015 Support
- TEKLA - Steelwork
Fabrication drawings
- Expert Witness

Document Control Sheet

Issue	Status	Prepared / Revised by	Verified By	Date
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Please note that this report is not a full Structural, Building, or Valuation Survey but is confined to the matters described therein. It does not include any mechanical, heating or electrical systems, external surfaces or landscaping features, nor any fixtures, fittings or sanitary ware.

We have not inspected woodwork or any parts of the structure which are covered, inaccessible or otherwise unexposed and we are therefore unable to report whether any such part of the property is free from defect.

1.0 Introduction

BdR was commissioned by John Bullock Design to undertake a structural appraisal of Tudeley Brook Stable, Crittenden Road, Matfield, to determine its suitability, from a structural view point, for conversion into a residential property. This report is primarily intended for ancillary information, to be read in conjunction with the Full Planning Permission Application and does not constitute a full summary for Building Regulation approval.

The Survey was carried out on 17th November 2023..

2.0 Description

The main building is rectangular in size and measures approximately 28 meters long by 14 meters wide. To the southern end is a smaller timber frame addition. The construction of the building is seven precast concrete portal frames, forming six bays. There are external walls to the north and south gables ends and to the end bays, the internal bays being open to the stables boxes.

The building was erected in the 1990's where it was used as a stables, but appears to have been unused for a number of years.

The proposed works include the removal of the southern end smaller timber frame addition, which is not included in this report and the northern end frame and bay to reduce the footprint of the building.

The local geology is Head material, a mixture of clay, sand, silts and gravel.

3.0 Observations

3.1. Roof

The roof covering of the building is fibre cement sheets (probably containing asbestos) on concrete or timber purlins. There are translucent plastic panels forming rooflights to the building. The majority of the sheeting is intact, though there are localized areas (the north east corner) where the sheets are broken and openings have formed, though this bay is to be removed. Elsewhere, there are signs of pin holes and slightly larger holes within the roof covering. Fibre cement roof sheets have a finite life span and the building would benefit with a replacement roof covering such as an insulated metal sheeting.

The roof sheets were originally supported on precast concrete purlins, which are typical of concrete framed farm buildings. A number of these have been replaced in the two bays at the southern end, probably due to corrosion issues, as some of the concrete purlins within the centre bay have signs of corrosion and will need localized treatment to prevent it getting worse.

3.2 Walls

The walls to the south elevation consists of timber posts, either side of the main opening. From the posts to the external walls, run timber cladding rails supporting fibre cement sheeting.

To the north elevation, the wall is timber frame, with timber weatherboarding

To the west elevation, the concrete columns are clad in brickwork, presumably as this was the main entrance to the stable block. The southern end bay is clad in fibre sheets on timber cladding rails.

The east elevation to the two southern end bays has a low level block wall, with timber cladding rails above supporting fibre cement sheeting. Some of the sheeting has become dislodged.

The areas of brickwork are suitable for reuse, timber cladding and rails may need to be strengthened where rot, though the proposed scheme is for new cladding to the building.

Areas of fibre cement cladding will need to be replaced with new cladding.

3.3 Internal

Internally the building consists of six precast concrete portal frames. The frames are in a structurally sound condition but have local areas of surface corrosion, due to accidental damage and then exposure to the elements. These areas of corrosion will require remedial works but at present do not reduce the strength of the frames.

At present the internal layout is a number of self supporting timber framed horse boxes to the centre and northern end, with an open plan space to the southern end. It is proposed to reconfigure the internal layout of the building.

The floor slab is concrete and has some fractures within it and will ideally to be broken out and replaced to comply with building regulations. Alternatively it may be salvaged and utilized as hardcore under a proposed new waterproof slab.

3.4 Foundations

There are no signs of foundation movement to the building and with no significant change to the loadings or external conditions, then no underpinning to any of the foundations is anticipated.

3.5 Flood Risk

The existing building lies within Flood Zone 3 with a flood level of 35.25m AOD for the 1% AEP with a 35% allowance for climate change. At present the existing slab level is 34.41m and therefore the property is at risk of flooding. To prevent this from occurring, the new floor slab could incorporate an integral external wall, all constructed in waterproof reinforced concrete which would form part of the external cladding of the property (see sketches 23/0532/SK01 and SK02). Demountable Environment Agency approved flood resilient doors and gates can be accommodated for the doors and larger openings, these would be attached to the slab/walls.

Horizontal water pressure would therefore be transferred to the walls and slab, which are designed to withstand the flood loading pressure for a height of 35.25m and not to the existing concrete frames, which would be independent of any flood loadings.

The layout of the property would ensure that sleeping accommodation was at a raised level of at least 35.85m. All services into and out of the property would need to be flood resistant and suitably sealed.

Due to the slope of the ground, which continues to fall away to the north of the site, any probably flooding will be of a short term occurrence and the proposed design would ensure that the property does not suffer from flood damage.

4.0 Method Statement

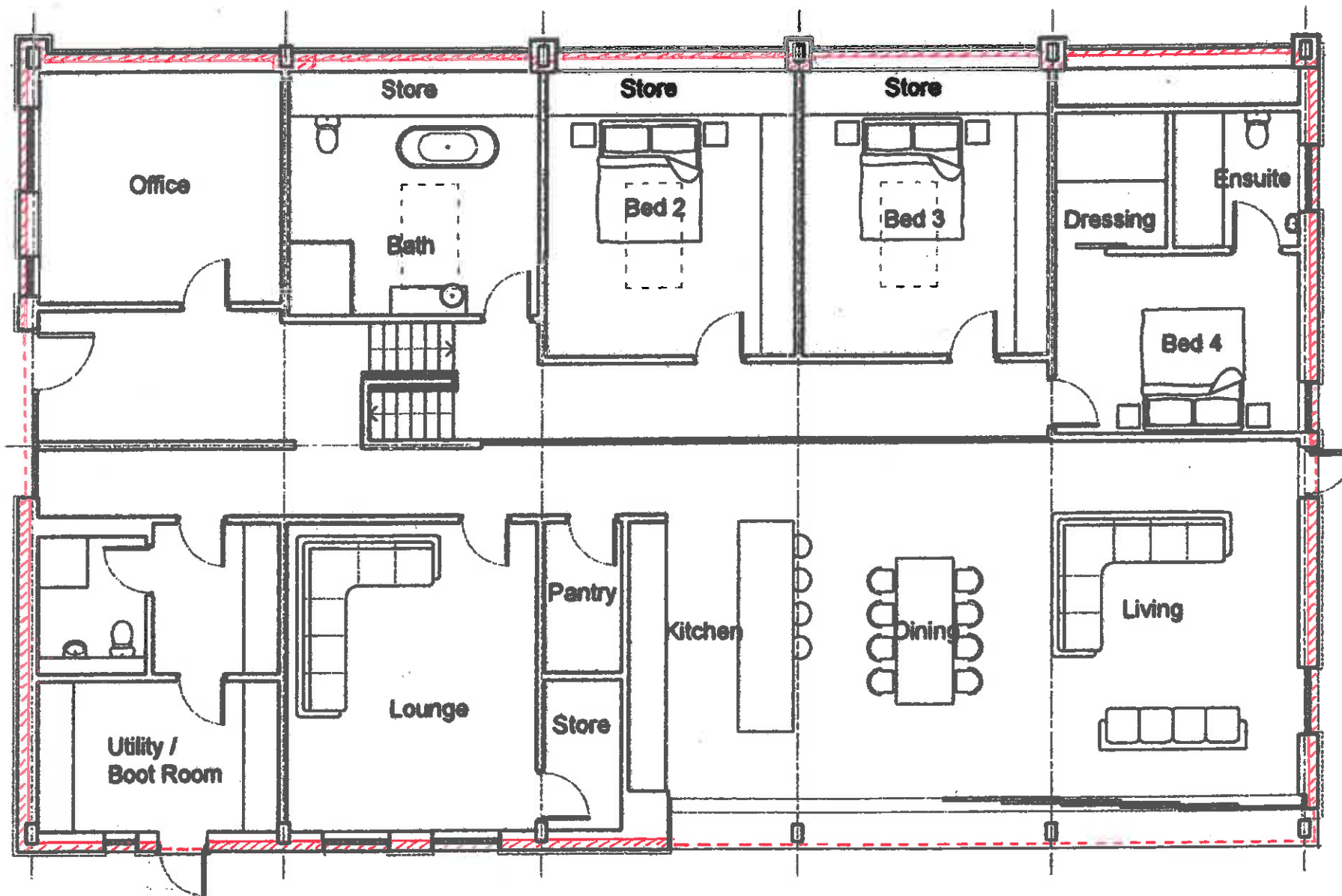
In any proposed conversion it is anticipated that a suitably experienced contractor who has a prior experience of similar conversions is engaged. The method statement will be produced by the contractor, but approved by all interested parties. The fundamental approach to a project of this nature is to ensure the temporary and long term stability of the building while the work is underway. The need for temporary supports, suitable sequences of work, and consideration of the existing building elements is paramount. The project will be a team effort to achieve a successful outcome and the present involved parties are suitably qualified to achieve this end.

5.0 Conclusion and Recommendations

As previously stated, the purpose of this report was to establish whether the existing buildings could be converted for domestic use and qualify such conclusions with details of general repair. From our observations we are of the opinion that the proposed conversion is a viable undertaking and that the buildings are sound and not in need of major reconstruction.

The need to produce a flood resilient property can be carried out without structural alterations to the main fabric of the building and can be sympathetically incorporated within the building envelope. The drawings produced to date, including the existing and proposed layouts can be considered as a logical and sympathetic use of the buildings.

Shaun Best B.Eng. C.Eng MStructE.



Proposed Ground Floor Plan

KEY

- - - - - Demountable Flood Gate
- ////// Low Level Waterproof Wall

Project: TUDELEY BROOK STABLES CRITTENDEN ROAD MATFIELD		
Part of Calcs: EXTERNAL WALL - PROPOSED.	Job Ref: 23-0532	
Calcs by: SMB	Checked by:	Date: NOV 2023.
		Sheet No: SK02

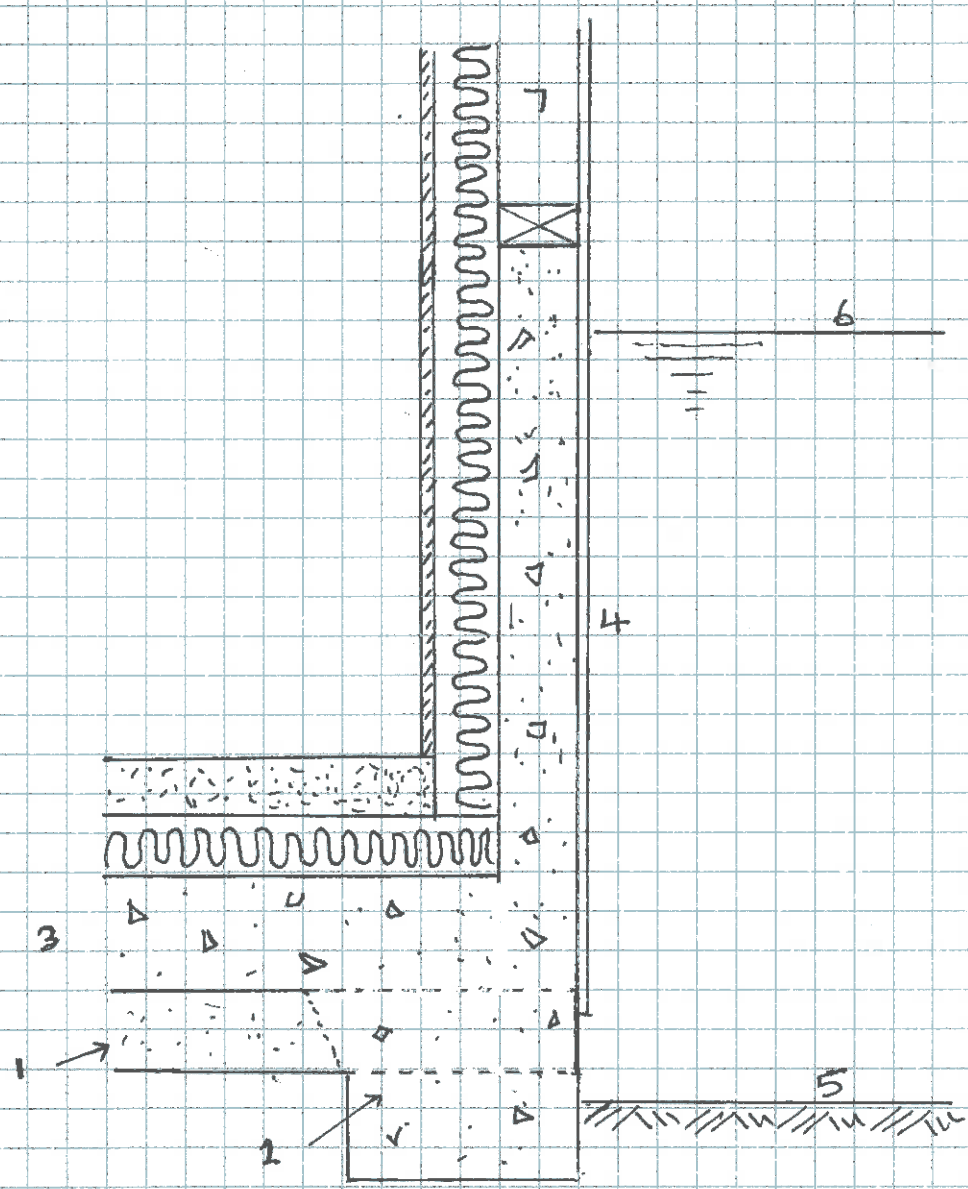
Ref:	Calculations	Output
		
1	Existing concrete slab reused as oversite.	
2	New RC key	
3	New waterproof concrete slab and wall.	
4	External cladding	
5	Existing ground level	
6	1% AEP + 35% CC	
7	Timber frame external wall.	



Photo 1 – South Elevation.



Photo 2 – North Elevation.



Photo 3 – West Elevation.



Photo 4 – West Elevations Structure.



Photo 5 – East Elevation – southern end.



Photo 6 – East Elevation – northern end.



Photo 7 – East Elevation Structure.



Photo 8 – Southern wall - internal.



Photo 9 – Roof - internal.