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**STRUCTURAL APPRAISAL REPORT,
Brick Workshop Building at
132 Cock Bank Whittlesey Peterborough Cambridgeshire**



Property:-	Workshop Building:- 132 Cock Bank Whittlesey Peterborough Cambridgeshire PE7 2HN	Instructed:- Oct 2021 Surveyed:- Nov 2021
Client:-	Mr R Dempsey 122 Duncombe's Road Turves Peterborough Cambridgeshire PE7 2DS	Survey & Report by:- John Ellington BSc. CEng M.I.Struct E,
Reference:-	ES7301B/21/pae	Report Issued:- Nov 2021

**BRICK WORKSHOP BUILDING
132 COCK BANK
WHITTLESSEY
PETERBOROUGH
CAMBRIDGESHIRE**

STRUCTURAL APPRAISAL RPORT,

Ref:- ES7301B/21

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1.0 BRIEF

1.0 Ellfield (Structural) Limited were requested by Mr M Bacon of Fenland Architectural Design on behalf of Mr Robert Dempsey of 122 Duncombe's Road Turves Peterborough Cambridgeshire to inspect and report on the structural condition of the brick workshop part of a range of buildings at 132 Cock Bank Whittlesey Peterborough Cambridgeshire.

2.0 INTRODUCTION AND SCOPE

2.1 The building is located in a rural area south-east of the town of Whittlesey near Peterborough in Cambridgeshire.

2.2 The report is required to support a planning application for change of use to a dwelling.

2.3 Ellfield (Structural) Limited visited the property on 2nd November 2021, to carry out a visual structural condition survey of the building.

2.4 Weather conditions during the site visit were sunny and mild for the time of year.

2.5 The report is defined as a Structural Appraisal Report and is based on visual observations and notes taken on site and verified by photographs and should be construed as a comment upon the overall structural condition of the building, the quality of its structure and not an inventory of every single defect.

2.6 It was not possible to inspect parts of the structure which were covered, unexposed, or otherwise inaccessible, but the report does relate to all parts of the structure which were reasonably accessible. There has been no opening up works involved in the investigation and finishes have not been removed. We therefore cannot guarantee that any such parts are free from defect.

2.7 The purpose of this report is limited to an opinion of the structural condition of the building. We have only reported upon those structural defects that materially affect the stability of the building and provided that these defects

are reasonably detectable at the time of our inspection. Whilst we have used all reasonable skill and care in preparing this report it should be appreciated that we cannot offer any guarantee that the building will be free from future defects or that existing ones will not suffer from further deterioration.

2.8 The external and internal fabric where accessible were examined for signs of distress, usually indicated by cracking due to either differential movement of the fabric, weathering effects due to temperature or moisture changes, timber decay due to water ingress or insect infestation or a combination of them all. The observations and defects noted in order to prepare this report should not be considered as a comprehensive inventory of each and every single item witnessed during our survey. Instead the observations have been taken as an indication of the condition of the structure in general and should demonstrate the likely defects that may be present elsewhere in areas of the fabric that have not been surveyed or recorded.

2.9 The report does not contain observations, comments or recommendations to any non-structural items including, but not limited to drainage, electrical installations.

2.10 Decay associated to damp, fungal attack, insect infestation or contamination is outside the scope of our appointment or reports. Any reference to decay associated to damp, fungal attack, insect infestation or contamination to either structural or non-structural items are observations only. As such we recommend that further advice is sought from specialists in the fields of damp, fungal attack, insect infestation or contamination in order to guarantee peace of mind from these potential defects.

2.11 The performance of foundations referred to within this report, are based on a single trial hole excavation, and as such we cannot guarantee that the foundation system is free from defects throughout.

2.12 The performance of the existing below ground soil strata referred to within this report; is based on a single trial hole excavation and compared with desktop sources including but not limited to the 'British Geological Society' (BGS). These sources generally provide sound interpretation, however local anomalies can occur, and as such we cannot guarantee their accuracy.

2.13 This report is to be regarded as confidential to the party to whom it is addressed and it is intended for the use of that party or his agent only. No responsibility will be accepted to any other party in respect of its contents in whole or in part. Prior to the report or any part of it being reproduced or referred to in any documents, our written approval as to the form and content must first be obtained.

3.0 GENERAL DESCRIPTION OF THE SITE AND BUILDING

- 3.1 The building is a small single storey, traditionally constructed, rectangular shaped farm building situated on a level site in a rural area east of Whittlesey in Cambridgeshire. The building is close to the Whittlesey Dike drainage dyke.
- 3.2 The building has been formerly used as a workshop building.
- 3.3 The original construction date of the building is unknown, but it is likely to be late C19 – early C20. The building is understood to be generally in its original format.
- 3.4 The general construction of the building under consideration consists of; -

Roof

Corrugated asbestos cement sheeting supported on a series of steel trusses supported on the external walls with purlins running longitudinally to support the roof sheeting.

External Walls

Solid fully bonded 230 thick walls with stiffening piers at roof positions

Ground Floor

Solid 200mm thick raft type flat foundation slab construction with a sub-base of consolidated brick hardcore beneath. This was confirmed via a trial hole along the external flanking walls.

- 3.5 Published Geological records show the building to be within an area where the soil sequence consists of a solid formation of Oxford Clay formation at depth overlain by superficial drift deposits of Barroway Drove Beds of clays and silts (known as Tidal Flat Deposits).
- 3.6 There are no mature trees in close proximity to the building.

4.0 OBSERVATIONS AND COMMENTS

- 4.1 The geological map shows the sequence of stratum in this area to be predominantly tidal flat deposits of clays and silts known as Barroway Drove Beds(BDB) overlying a solid formation of Oxford Clay. The Barroway Drove Beds can be variable in consistency due to the nature of deposition.. Historically the BDB are known to provide a reasonably good foundation bearing strata with bearing pressures in the order of 75kN/m².
- 4.2 The condition of the workshop building showed a number of vertical cracks along the main longitudinal load bearing walls at pier positions and on the end gable wall fronting Cock Bank. These cracks are likely to have manifested due to distortion of the building caused by flexing of the foundation slab.
- 4.3 The solid ground bearing foundation slab has a high length to width ratio and is relatively thin so is deemed to induce some flexure in the building causing angular distortion and hence causing the cracking to the brittle side wall structure.
- 4.4 Notwithstanding the above it was noted that there were no signs of cracking to the slab so again we can only presume there would have been some flexing over the lifespan of the building due to consolidation settlements of the underlying sub-base after construction.
- 4.5 It was noted that there are no movement joints incorporated in the long walls which is a normal requirement in long walls of this nature.
- 4.6 The roof structure showed no signs of any significant distress so is considered to have been fit for purpose over its life span.

5.0 DESK STUDY AND CONCLUSIONS

5.1 The proposals for the conversion of the building calls for removing the roof structure to increase the height of the ridge and consequently increasing the pitch of the roof sufficient to incorporate an additional first floor structure and to divide the building into two semi-detached dwellings..

5.2 To achieve this we have evaluated the current load carrying capacity of the raft type foundation slab and the underlying load bearing sub-base strata by comparing the current applied loading with the proposed additional loading.

5.3 Our evaluation of the current loading equates to a ground bearing pressure in the order of 14.5kN/m^2 . This allows for an heavier than normal imposed load of 5kN/m^2

Our evaluation of the proposed loading to include a first floor structure equates to a ground bearing pressure in the order of 16.0kN/m^2 . This slight increase is due to a heavier roof structure, the first floor structure and internal stud walls but offset by the reduction in domestic imposed loading.

No current testing has been carried out on the underlying sub-base strata but from previous usage we consider that the ground bearing capacity of the sub-base would be in the order of 25kN/m^2 and therefore is within acceptable limits.

5.4 Notwithstanding the above we must emphasise that in order to achieve these values it is essential to reinstate the integrity of building by repairing the cracking identified with a 'helifix' system of crack stitching and to tie the additional first floor structure and new roof structure to the external walls. We also recommend that some movement joints should be installed along the flanking walls. In the design procedure consideration should be given to cutting the slab at the party wall position so that each building is free to 'float' and in doing so it will effectively stiffen the raft

5.5 We conclude that the above evaluation shows that the raft foundation slab is satisfactory to support the additional loading from the proposed building conversion.

Ellfield (Structural) Limited



Mr J Ellington B Sc., C.Eng., M.I.Struct.E., FRSA.

APPENDIX A – PHOTOGRAPHS



PHOTO No. 1 – FRONT ELEVATION



PHOTO No. 2 – NORTH WEST ELEVATION



PHOTO No. 3 – PART SOUTH-EAST ELEVATION



PHOTO No. 4 – VERTICAL CRACK IN NORTH GABLE



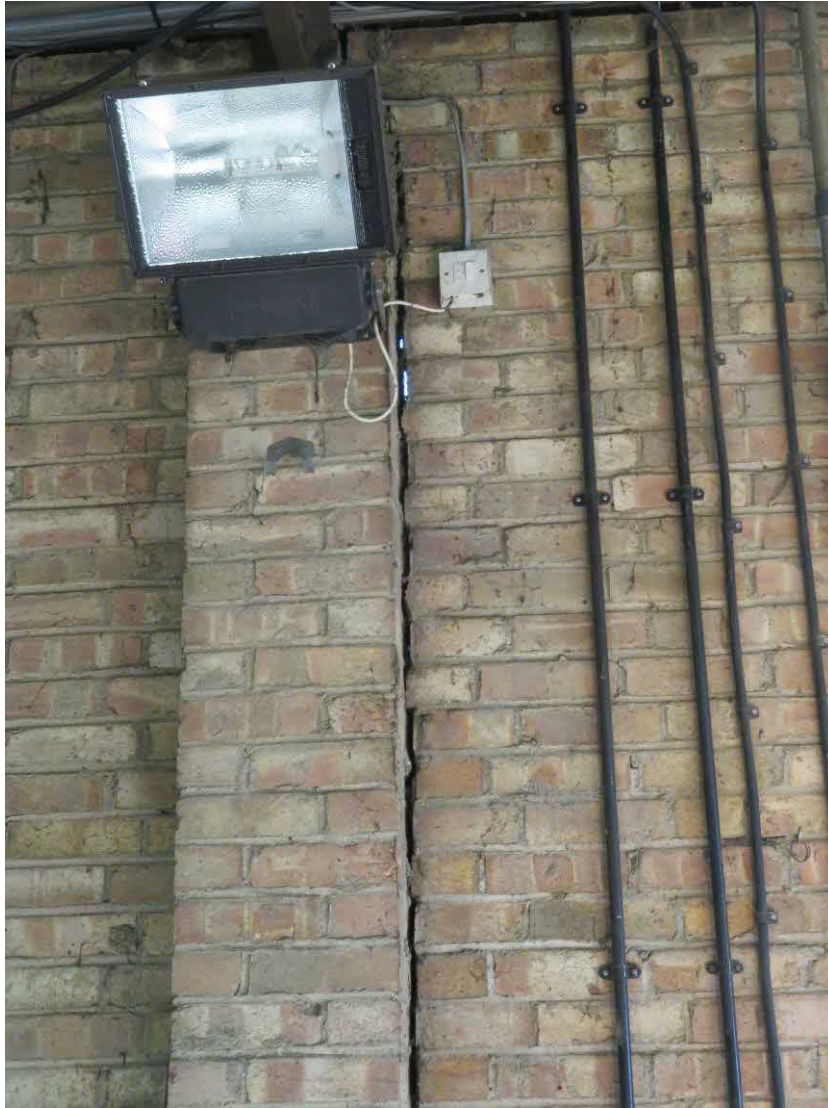
**PHOTO No. 5 – INTERNAL ROOF TRUSS ARRANGEMENT
WITH SUPPORTING PIERS**



PHOTO No. 6 – VERTICAL CRACK ON EAST ELEVATION



PHOTO No. 7 – VERTICAL CRACK AT FILLED IN DOOR OPENING



**PHOTO No. 8 – VERTICAL CRACK ADJACENT TO PIER
REFLECTING CRACK ON EAST ELEVATION**



**PHOTO No. 9 – VERTICAL CRACK ADJACENT TO PIER
FILLED WITH FOAM FILLER**



PHOTO No. 10 – TRIAL HOLE EXPOSING CONCRETE RAFT SLAB AND SUB-BASE



PHOTO No. 11 – TRIAL HOLE EXPOSING CONCRETE RAFT SLAB AND SUB-BASE