

BRETT DESIGN

Consulting Engineers

4 Maiden Way, Hadleigh, Suffolk IP7 5EH
01473 822047 / 822227
e: info@brettdesignpartnership.co.uk
www.brettdesignpartnership.co.uk

PARTNERSHIP

REPORT ON THE PROPOSED CONVERSION OF
OUTBUILDING & CARTLODGE
AT
DILLACKS FARM
ASSINGTON, SUFFOLK



Our ref: TCK/11323/REPORT/ R1.0
Date: 4th October 2023

1. Scope & Limitations of Work

- 1.1. Brett Design Partnership Limited were instructed to undertake a walkover visual structural inspection of the existing outbuilding & cartlodge located at Dillacks Farm, Colchester Road, Assington, Suffolk and to prepare a report of our findings to supplement a planning application for its conversion into domestic use. In preparing our report reference has been made to the architectural plans developed to date by Optimum Architecture Ltd.
- 1.2. Our inspection and this report are limited to the visual inspection carried out on the 22nd August 2023. We note we have not carried out a full building survey and this report is therefore not intended to address any other aspects of the building defects and/or damage of a non-structural nature such as wet or dry rot that would form part of a building surveyor's report or a damp and timber specialist survey report.
- 1.3. At the time of our inspection no breaking-out or opening-up of the fabric was undertaken and no part of the outbuilding that was inaccessible or that was covered or otherwise concealed was inspected. Absence of a report on any such part is not to be taken that it is free from defect.
- 1.4. It should be noted that we have not undertaken a Phase 1 Geotechnical and Geo-environmental Assessment (Desk Study) to identify the history, flood risk and hazards including possible sources of contamination on the site.

2. Description of Site and Building

- 2.1. The outbuilding & cartlodge (log store) are located to the rear of the main house approximately 40m due south from the main A134 Colchester to Sudbury Road. The land immediately surrounding the front of the outbuilding (west) is generally flat and primarily consists of garden lawn. To the rear of the outbuilding (east) the lawn slopes toward a pond located adjacent the southern end of the outbuilding.
- 2.2. The outbuilding is generally "L-shaped" on plan with the longest length (north-south) approximately 18.0m and the return length (west-east) approximately 11.0m. The outbuilding is approximately 4.0m wide. The building is divided into three distinct areas. These include the open fronted covered patio at the northern end, the enclosed workshop / store area, with the open fronted cartlodge (covered log store) at the southern end. Reference can be made to existing survey plans for further details.

- 2.3. The external walls to the outbuilding comprise solid 225mm (9") brickwork construction supporting a traditional timber roof construction. It was noted on the gables the wall reduces to a single skin (103mm) outer leaf to the triangular section above plate level.
- 2.4. The roof finishes generally comprise corrugated sheeting to the front elevation to both the workshop and cartlodge. However, on the rear elevation clay plain tiles are present to the workshop. Slates are present to the covered patio roof.
- 2.5. The roof framing generally comprises the original oak (?) rafters generally 75 x 100mm (variable in size) at varying centres - 400 to 600mm. Several of the original rafters have been strengthened by the addition of softwood rafters (50 x 100) placed adjacent to them. The rafters are supported mid-length by similar sized timber purlins which in turn are supported by principal (collared) frames. The timber wall plate measured 170 x 125mm deep with intermittent ties between opposite plates. No ceiling joists are present within the workshop.
- 2.6. The ceiling over the store area appears to comprise a mixture of both original oak(?) and more recent softwood rafters 100 x 75mm deep joists. The ceiling joists are supported by the external wall and internal stud wall that separates the store and workshop areas. The internal wall has a 125 x 125mm oak header beam supported on studs. This internal wall appears to be original construction.
- 2.7. The floor to the store comprises stone pavements, whereas the main workshop has a screeded floor finish. The cartlodge (log store) is unpaved.
- 2.8. The existing foundations are unknown. The floor to the store/ workshop was measure approximately 200mm above external ground level.

3. Geology

- 3.1. With reference to the British Geological Survey mapping data the site appears to be underlain by superficial deposits of Lowestoft Formation – Diamicton (formerly known as Lowestoft Boulder Clay) with a Chalk bedrock. The Lowestoft Formation forms an extensive sheet of chalky till, together with outwash sands and gravels, silts, and clays. No trial pits were undertaken to confirm the type of foundation, profile, depth, and subsoils upon which they bear.

4. Findings of the Inspection – Defect Summary

4.1. Roof

- 4.1.1. The roof to the main workshop / store has "racked" with the triangular section of masonry gable wall that separates the workshop from the log store leaning into the workshop. An arrangement of timber beams and posts have been introduced within the workshop at this end to prop the leaning wall.
- 4.1.2. Similarly, at the opposite north gable (store end) the triangular section of wall is leaning outward. When viewed internally, the rafters therefore skew in the direction of the north gable elevation.
- 4.1.3. These above defects are also apparent to the southern gable wall and rafters to the log store which is not unexpected when noting the purlins are built into the leaning gable wall of the workshop.
- 4.1.4. The original rafters (oak?) within the workshop /store have been strengthened in several locations by the addition of more recent softwood rafters placed adjacent the existing. The condition of purlins is variable with some appearing to be distorted and sagging.

4.2. External Solid 9" brickwork wall

- 4.2.1. Generally, when viewed externally the solid masonry wall (rear elevation) appears to be in a good condition and structurally robust with isolated areas of spalled brickwork and some localised areas of mortar loss readily apparent. However, at the junction with the north gable wall there is a diagonal crack and part separation of the gable wall with the rear elevation. The likely cause of this is most probably due to the outward rotation of the gable wall as identified above.
- 4.2.2. When viewed externally the external rear masonry wall appears to slightly out of plumb vertically which would indicate a degree of roof spread has occurred. Furthermore, there appears to be some bulging along the length of the wall.
- 4.2.3. On the front elevation there is a section of spalled masonry near eaves level at the junction between the workshop gable wall and open log store.
- 4.2.4. There is diagonal cracking above each end of the brick arch lintel over the north gable elevation entrance door to the storeroom which is indicative of the lintel dropping slightly

with the brick arch probably being prevented from further movement by the wooden door framing.

4.2.5. It was not possible to inspect the condition of the external walls in detail internally due to the numerous workbenches, shelves and tools covering their surface. However, it was noted the section of wall between the store and covered patio areas has several bricks missing.

4.3. Ceiling above Storeroom & Internal Stud Wall

4.3.1. Where the lath and plaster ceiling had deteriorated it was evident some of the original joists had decayed. The stud wall appeared generally in a good condition. In our opinion, the stud wall and header beam appeared to be of original construction.

4.4. Floor to store & workshop

4.4.1. The floor to the storeroom and part of the workshop comprises stone paviours which whilst in some locations undulate underfoot appeared generally in a fair condition. A section of the paviours had been removed in the storeroom.

4.4.2. The remaining section of the workshop floor has a screed finish which appeared to be in a good condition.

4.5. Covered Patio

4.5.1. The covered patio area was not inspected in detail as it is understood there are no proposals to alter this part of the outbuilding. However, from a cursory inspection there was some cracking to the rear wall at the junction to the storeroom.

5. Conclusions and Recommendations for Conversion

5.1. From the limits of our inspection, we consider the external walls of the outbuilding to be generally in a fair condition and the building affords a suitable envelope for conversion. In particular, the architectural proposals prepared to date generally involve remodelling of internal partition walls with no significant structural alteration works considered necessary to the external walls except for a partial rebuilding of the triangular section of the gable walls to improve their verticality.

5.2. Furthermore, future detailed building regulations designs may be able to offer the opportunity to provide further structural support as a benefit to the existing structure. For instance, the proposal to introduce partition walls to form bedrooms could be utilised to enhance the overall building stability against wind loading.

- 5.3. The condition of the existing roof framing members is variable, and it is clear the roof has “racked” significantly likely as a result of wind suction on the single skin triangular section of gable wall together with inadequate tying / bracing to the roof structure.
- 5.4. We recommend the triangular section of gable wall above plate level be rebuilt to improve its verticality to both the workshop / store and cartlodge. A timber stud wall could be built above the existing timber eaves plate to strengthen the current single outer leaf construction.
- 5.5. The structural form of the roof (not triangulated by ceiling joists) means the building has relied upon the wall plate spanning between tie beams to resist the horizontal thrust from the rafter feet. There is evidence that a degree of roof spread has occurred and this together with the racking that has occurred means the existing roof structure is not functioning adequately and requires strengthening.
- 5.6. We therefore recommend the existing roof is strengthened by the introduction of a structural ridge beam or purlins to provide vertical support to the rafters to prevent further roof spread occurring. The span and size of a ridge beam or purlins could be minimised by providing support via posts hidden in the new internal partition walls. The introduction of a structural ridge beam or purlins will also offer the opportunity for the existing skewed rafters to be realigned.
- 5.7. Generally, we recommend all areas of spalled brickwork are replaced and areas subject to mortar loss repaired with a lime mortar.
- 5.8. In our opinion, the diagonal crack noted to the external wall at the northeast gable is likely to be indicative of the gable wall leaning or rotating as opposed to a localised foundation issue. We would however recommend this area be partially rebuilt or repaired using a heli-bar stitch repair to ensure walls are adequately tied. Similarly, we would recommend a heli bar stitch repair to the arch lintel on the north gable wall.
- 5.9. Finally, whilst from the limits of our inspection there did not appear to be any signs of significant foundation movement to the external walls and noting from the preliminary architectural proposals the walls are likely to be subject to loading not to dissimilar to what they have sustained to date, we would however recommend trial pits are excavated to the perimeter of the outbuilding to confirm the type, profile and depth of the existing foundations and subsoil upon which they bear.

5.10. For instance, if foundations are found to be shallow and bearing into clay subsoil then there is a potential risk the walls and or floor slabs may be subject to seasonal movement as the moisture content in the clay changes. The risk of potential movement may be exacerbated by the presence of nearby vegetation and / or trees. Similarly, if existing foundations are found to be less than 450mm depth then there is a risk they would be frost susceptible.

Report prepared by:

A handwritten signature in blue ink, appearing to be 'TK', with a stylized flourish at the end.

Tim King EurIng BEng (Hons) CEng MStructE MICE
Chartered Structural Engineer
On behalf of Brett Design Partnership Limited

APPENDICES

Photographs



P1 – General view of front elevation to cart lodge and workshop.



P2 – General view of rear elevation of cart lodge (corrugated roof) and workshop (tiled roof).



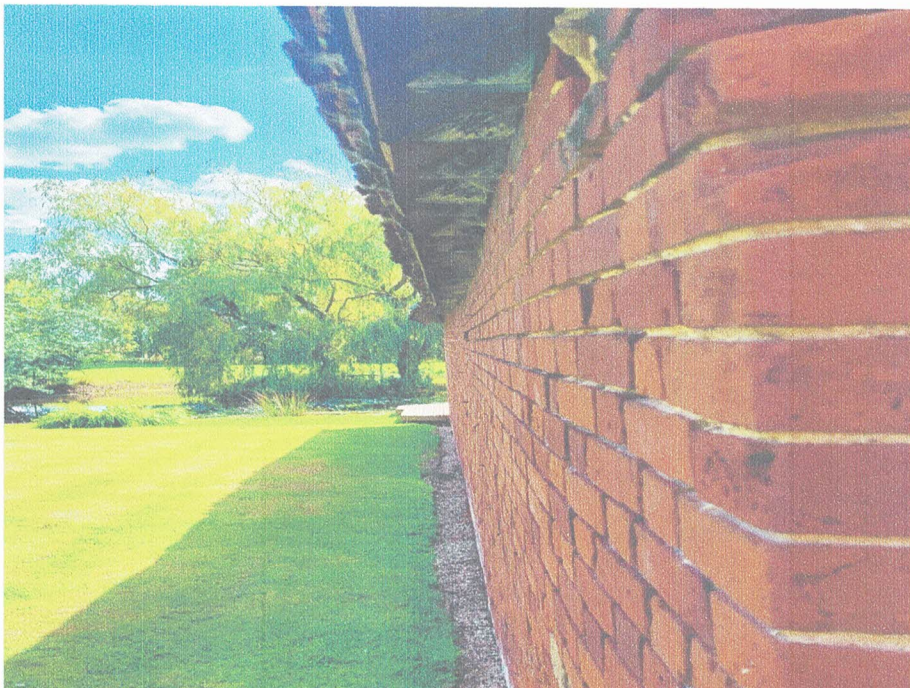
P3 – Propping to leaning (inward) south gable between workshop and cart lodge.



P4 – Skewed rafters to cart lodge due to racking and leaning gable wall of workshop.



P5 –Crack to flank wall and leaning (outward) north gable wall to storeroom.



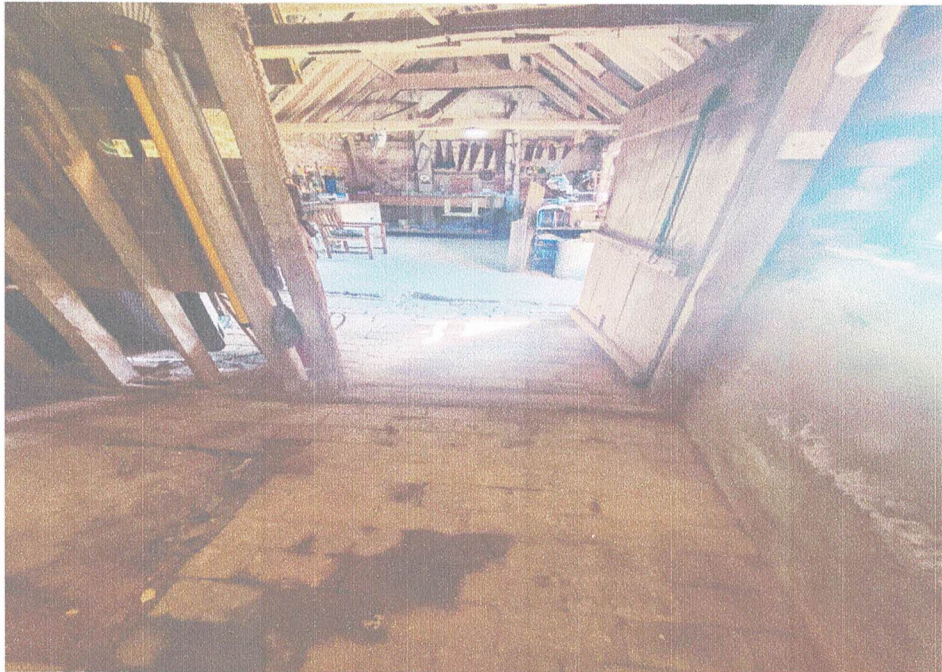
P6 – Leaning / Bulging rear wall.



P7- Brick loss storeroom wall adjoining covered patio area.



P8 – Decay to timber ceiling joist over storeroom.



P9 – Floor to storeroom with screeded workshop floor beyond.