



Our Ref: PM/5646

25th March 2024

Liz Cruttenden
Old Tong Farm
Tong Road
Brenchley
Kent
TN12 7HT

Dear Liz,

RE: RECONSTRUCTED OUTBUILDING, OLD TONG FARM, TONG ROAD, BRENCHLEY

We write with reference to our recent site visit to the above property.

The purpose of the visit was to inspect the structural framework of the existing outbuilding to determine its suitability for re-use. We have undertaken preliminary calculations on the timber member sizes to assist in this process.

This letter report should be read in conjunction with Anthony Hicks method statement report MS-25Q-01, dated March 2024.

The outbuilding is detached and comprises a pitched gabled roof with clasp purlins (see plate 1 at the rear of this letter report). The rafters are approximately 80x90mm deep at 450mm centres that span from the eaves plate to a thin ridge board and are supported along their length by 130mm wide x 110mm deep purlins. The purlins are generally supported by horizontal collars on the main frame locations, although no collar is present to truss 4 (refer Anthony Hicks drawings for grid references). Diagonal bracing timbers were present to the underside of the rafters.

The collars are mortised and tenoned into the principal rafters and the rafters are placed alongside the three principal tie beams as opposed to being mortised and tenoned into the top of the ties. A positive connection is required between these two elements, so all principal rafters should be bolted to the tie beams with 2No. M12 diameter bolts. The tie beams are approximately 145mm wide x 175mm deep and are supported by principal posts (sizes varies - 150x130-150mm). The base of these posts could not be seen and appear to be set into the concrete substructure and are likely to be decayed. Modern softwood knee braces have been added and these have been bolted to the side of the tie beams and posts (see plate 2).

Our preliminary calculations indicate that the existing rafters, purlins, collars, eaves plates and the internal tie beams are all adequate so we are of the opinion that all of these elements can be retained. The lack of collar on truss 4 can be rectified by installing a

replacement horizontal collar or by two vertical posts onto the tie beam below. Minor movement was noted to the connections between the tie beams and eaves plate and the existing straps are minimal, so we would recommend that these joints are supplemented with more substantial traditional steel twisted blacksmiths straps (60x10mm thick x min 750mm long).

The tie beam to the south elevation external wall is decayed and fractured, so will need replacing in its entirety with an oak beam with size to match the existing. The tie beam to the north elevation is only present for a very short length and appears to have been cut out to allow for the up and over garage doors. This will need to be rectified by splicing in a new oak tie beam to the existing sections.

As noted in Anthony Hicks method statement, the barn has severely racked towards the east (see plate 3) and is currently reliant on an adjacent outbuilding to prevent collapse. Our preliminary calculations suggests that the existing posts and knee braces are well undersized with calculated deflections in the excess of 50mm.

As a result, we feel that the posts and knee braces require replacement with more substantial sizes. These have been calculated as 200mm x 175mm posts that are jowelled to 200mm square above the level of the knee brace. The knee braces should be a minimum of 70x120mm and should be connected to the post and tie beams with mortise and tenon joints with 2No. stainless dowels per tenon. The knee braces will also need to be lower to ensure they are effective (900mm below the tie beam).

No soleplates are present and, where exposed, the studs were found to be softwood and of poor quality, so allowance should be made to replace these with oak members.

To enable the removal of the existing diagonal roof bracing and to prevent additional unsightly roof bracing being added, we would recommend that the roof is lined with 12mm thick class 2 plywood. To prevent the walls from racking in the transverse direction, we would recommend that the walls are also lined with 12mm thick class 2 ply.

In summary, we feel that the roof structure, supporting eaves plates and ties beams are all in reasonable condition and can be fully retained subject to the minor strengthening works mentioned above. However the vast majority of the walls as well as the principal posts will require replacement with more substantial sections as described above.

We trust the above is adequate for your purposes, but please let me know should you have any queries or questions.

Yours sincerely

A solid black rectangular box used to redact the signature of Paul Molineux.

PAUL MOLINEUX



Plate 1 – Internal View of Roof Structure



Plate 2 – Modern Softwood Knee Brace



Plate 3 – South Elevation Showing Degree of Racking