# ALAN BAXTER PARTNERSHIPLLP

Consulting Structural Engineer



JF/L469-002

Mr T. La Dell Tom La Dell Landscape Architecture Stocks Studio Grafty Green MAIDSTONE ME17 2AP

14<sup>th</sup> May 2024

Dear Mr La Dell

#### <u>RE: THE BARN, FORMER NURSERY SITE, STAPLEHURST ROAD, MARDEN,</u> <u>TONBRIDGE TN12 9BS - STRUCTURAL REPORT FOLLOWING INSPECTION OF</u> <u>BUILDING</u>

 It is proposed to convert a former agricultural storage barn to residential use. A site inspection was carried out on the 18<sup>th</sup> May 2023 to consider the structural suitability for conversion.

## Description

- 2) The Barn is located to the north of Staplehurst Road and is accessed from an unmetalled road that runs to the front of the barn. The road provides access to other agricultural buildings and a residential property.
- 3) The building comprises pre-cast concrete posts with duo-pitched steel lattice trusses over, concrete blockwork external walls between the posts and a fibre cement clad roof over. There are 4 No. intermediate trusses with frames to each gable end and purlins spanning between the trusses.
- 4) The barn appears to have been built with pad and perimeter foundations with a ground-bearing slab cast internally. The building was most recently used for the storage of agricultural supplies and is currently in limited use. The barn was measured externally as 5.8m wide and 23m long, 3.75m to eaves level and 5.0m to the underside of the ridge internally.

## Cont'd

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- 5) The front of the barn faces west on to the gravel access road. The barn is fully open internally with no walls or divisions. There is a pair or sliding door approx. centrally to the west elevation with windows to west and east elevations.
- 6) Access to the southern and eastern elevation was not possible externally due to the presence of hedging and dense shrubs. The interior of the barn was inspected in detail throughout. There is a small storage unit placed the north end of the building, which will not be part of the development we are advised.
- 7) The ridge line of the pitched roof runs in a north-south direction with a 23 degrees pitch. The walls are finished externally with a parge or skim render coat where the blockwork coursing is still visible.

## Observations

- 8) The British Geological Survey map sheet 288 covering the area shows the site to be underlain by Weald Clay with 2<sup>nd</sup> terrace river gravels found to the west of the site. The Weald Clay is a good founding subsoil but which can be greatly affected by moisture changes due to tree root extraction which can cause large changes in volume and hence movement of a building's foundations. Trial hole investigations of the building foundations will confirm their depth and the supporting subsoil beneath.
- 9) The Barn is situated to the west side of the former nursey site, approx. 75m metres from Staplehurst Road and is set adjacent to the rear gardens of Nursery Cottages, to the east side of the access road. The building was found within a plot containing other barns and storage buildings.
- 10) The plot falls slightly to the north east with ground levels generally level around the building. The barn is some 75m north of Staplehurst Road with other related agricultural storage buildings located nearby to the south east and north east.
- 11) The building was seen to be in generally good condition with flat even walls and straight, level roof and eaves lines. The barn appears to have been constructed in the 1950's or possibly slightly earlier and used for low level storage. The primary concrete structural posts were seen to be in fair condition with some small areas of spalling and section loss where reinforcement could be seen. The damage appeared to be isolated to the posts adjacent to the doorway and may have been caused by vehicle impacts some time ago.
- 12) The fibre cement roof sheets appeared to be weathered with some lichen growth to the external surface but otherwise was found to be complete and weather-tight. Some minor cracking was noted to the blockwork wall but was thought to be due to thermal movement. The steel roof trusses were observed to have some surface rusting but no extensive or damaging corrosion was viewed to the truss members or bolts.

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- 13) A concrete floor slab extends to the full area of the barn internally and was found to be in good condition with limited cracking and no significant falls measured. Externally, the rainwater downpipes were noted to be damaged and/or missing and discharging directly on to the ground adjacent to the barn. No mains water or foul drainage was found serving the barn. Three-phase mains electricity was noted but not currently connected.
- 14) As noted above, the plot boundary appears to be at the unmade road which runs to the front of The Barn, over which we understand the owners has full rights of access. The plot extends north, east, and south from the barn itself. The road provides private access to a domestic property and a barn 50m or so to the north and is not a public footpath or bridleway.

#### **Conclusions and Recommendations**

- 15) We consider The Barn to be in fair condition and was found to be structurally robust and permanent. We consider that the building appears suitable for conversion to residential use. However, as is always the case, some minor works will be required to convert it into a habitable building. An outline of the likely works and the reasons for them are given below.
- 16) Some minor work may be required to increase the structural capacity of the roof, to support the additional weight of required insulation and internal finishes. We suggest that the internal lining walls and any cross-walls could be employed to provide necessary support without replacement or major works to the existing roof structure.
- 17) Damp and weather-proofing details will need to be provided to make a compliant habitable space. Trial holes will be required to expose the slab edge or foundations and supporting subsoil. Depending on the result of the investigations, the external walls may need additional foundations to support the external walls, but bearing in mind the previous use of the building it is considered likely that the existing ground floor slab will be suitable to support internal walls and structure.
- 18) The existing floor slab appears to be suitable for continued use with the application of insulation and finishes over, as required to comply with insulation requirements. Local repair to the concrete columns, where they have been damaged, should be made using proprietary concrete repair products to ensure their integrity and continued ability to support the roof structure.

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19) The Hibbett case made it clear that a building for conversion has to be structurally capable of conversion. In conclusion, we as Consulting Structural Engineers can state that we consider The Barn to be structurally suitable for conversion to residential use. It is found to be sound and stable, with no obvious structural barriers to prevent the conversion of this building to a dwelling under Class Q of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended).

Yours sincerely

Junh MW Felley.

JAMES FOLLEY FOR ALAN BAXTER PARTNERSHIP



View of front of The Barn from south west



View on north end of building showing gable end and storage unit



View inside of barn looking south, showing walls, posts and steel roof trusses



View inside of barn close-up showing roof truss bearing on concrete posts



View on rainwater pipe shoe at front right corner showing missing downpipe and pipe was discharging on to the ground



Internal view at high level showing concrete eaves beam and wall reducing in thickness at underside of window level



View of concrete post next to doorway showing damage with reinforcement exposed