

Firs Farm, Copthorne Common, Crawley – Barn 3

By CAD Engineering Solutions

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1.0 – General Notes

CES have the following responsibilities on this project:

- Visual inspection of the existing barn structure and evaluation of the possibility to convert the barn into residential dwelling.

1.1 – Introduction

CAD Engineering Solutions were appointed by Gemma Smith to undertake a non-intrusive structural assessment survey of the existing barns at Firs Farm, Copthorne Common, Crawley. This report specifically assesses the feasibility of converting the barn into residential dwelling.



Figure 1; Photographs of the exterior of barn

This report has been compiled following a site visit to Firs Farm, Copthorne Common, Crawley. The inspection was non-intrusive and limited to a photographic walk of all areas with measurements recorded solely for survey purposes. While writing this report, there is no evidence of any historic structural drawings and calculations that could indicate the design philosophy of the building.

2.0 – Observations

2.1 – Existing Structure

The existing barn consists of two parts. One-part features 100 mm thick masonry block walls with a concrete ground floor and roof timber rafters (125x47) covered with asbestos sheets.



Figure 2; Photographs of showing the interior of the barn with roof rafters and asbestos sheets

The other part of the barn is constructed with 100 mm thick masonry walls. The roof features a timber truss roof, and the ground floor is a concrete ground-bearing slab. The 100 mm thick masonry block wall is reinforced with masonry piers spaced approximately 3 m apart. The height to the building eaves is around 3.3 m, and the height to the roof ridge is around 4.5 m from ground floor level. The roof comprises timber trusses with timber members measuring 100x47 mm. The roof trusses span approximately 6.5 m, and timber purlins are also 100x47mm spaced at 1 m intervals.



Figure 3; Photographs of showing the interior of the barn



Figure 4; Photographs of showing the masonry piers with reinforcing piers

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Figure 5; Photographs of showing the timber truss roof

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3.0 – Conclusions and Recommendations

3.1 – Conclusions

After the site visit and visual observations, it is evident that the barn is a masonry structure with a timber roof and a ground-bearing concrete slab. We can confirm that this barn can be converted into a residential dwelling unit with some improvements to the existing building.

For the section of the barn with asbestos roofing, the existing roof rafters are in good condition and capable of supporting additional loads from the residential dwelling roof. The asbestos needs to be replaced with residential roof covering material. The existing masonry wall can be improved by adding another 100 mm thick wall with a cavity between the existing wall and the new wall to create a cavity wall. The ground-bearing slab is in solid condition and can be utilized for the converted residential dwelling.

For the other part of the barn with timber trusses, the existing roof can be improved by adding a new timber truss next to the existing one to support the load from the residential dwelling roof. The existing masonry wall can also be improved by adding another 100 mm thick wall with a cavity between the existing wall and the new wall to create a cavity wall. All the new loading from the new timber trusses can be transferred to the new masonry wall on new foundations. In this part as well, the ground-bearing slab is in solid condition and can be utilized for the converted residential dwelling.

Since the existing barn structure shows no signs of subsidence, indicating that the current foundations are adequate for the existing loadings, we can safely keep the existing structure and foundations without adding further loadings on them.

With the above-mentioned structural alterations and improvements, we can confirm that this barn can be successfully converted into a residential dwelling

3.2 – Recommendations

Following the visual assessment at the site, we can confirm that this barn can be successfully converted into residential dwelling with some improvements to the existing structure.

- In case of any further clarification, please contact:

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