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Structural Feasibility Report

Main House and Cottage

New Roofs and Floors

VECTOR STRUCTURES LIMITED
Bringing Ideas to Life

Client:	Mr Zubair Hussain
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Document Ref: 2025.Lortolan.RP.S.0300-A1.C1
Date: 01/09/2025

Document Control Sheet

This document has been issued and amended as follows:

Issue Date	Issue	Prepared by	Comments
16/03/2025	C1	M Khokhar, BEng. MSc. CEng PEng MICE	1st Issue
22/05/2025	C2	M Khokhar, BEng. MSc. CEng PEng MICE	2nd Issue
24/07/2025	C3	M Khokhar, BEng. MSc. CEng PEng MICE	3rd Issue
01/09/2025	C4	M Khokhar, BEng. MSc. CEng PEng MICE	4th Issue

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1 INTRODUCTION

L'Ortolan is a Grade II listed former Vicarage built in circa 1840, in the style of the Gothic revival with brick elevations and stone mullions. The building has been used as a restaurant since 1978 and is to be converted to residential use to become a delightful family home in a village setting that has excellent transport links. Set within established grounds with ample parking, the property stands in well-maintained grounds on a total plot of 0.92 acre and lawned grounds extend to the front and to the western boundary with a number of mature trees. The property owner has already obtained relevant planning permission and/or listed building consent for change of use. The 5-bed main building is set over two floors with a cellar. The property also has an additional detached building located to the rear (cottage/annex); currently this is used as an office, but the intention is to convert this into a residential accommodation.

This report covers the feasibility study on structural aspects of the new roof in main house as well as new roof and floor of cottage.

1.1 Background

1.1.1 Vector Structures Limited were commissioned by Mr Zubair Hussain to look into feasibility study of the existing property and associated annex at L'Ortolan, Church Lane, Shinfield, Reading RG2 9BY.

1.1.2 The report will look into the structural aspects and challenges related to new roof of the main house as well as new floor and new roof within cottage area. Reference is made to previously submitted architectural drawings.

1.1.3 The comments in this report are based on the visual inspection.

1.1.4 A trial hole was dug to check the state and depth of existing cottage foundations. A trial hole was also dug at the front corner of the main house. Relevant details, including key dimensions, are covered in this report.

1.2 Scope of Works

1.2.1 The purpose of this feasibility study is to look into the possibility of having a new roof in the main house as well as a new floor in the cottage/annex.

1.2.2 This report lists the areas where further structural investigations have been completed.

2 FEASIBILITY ASPECTS OF PROPOSED ADDITIONS

2.1 Main Building New Roof

Photo 1 – Existing Main House – Front View- Flat Roof.

Photo 2 – Main House – Front View - Proposed New Roof.

Photo 3 – Main House – Rear View - Proposed New Roof.

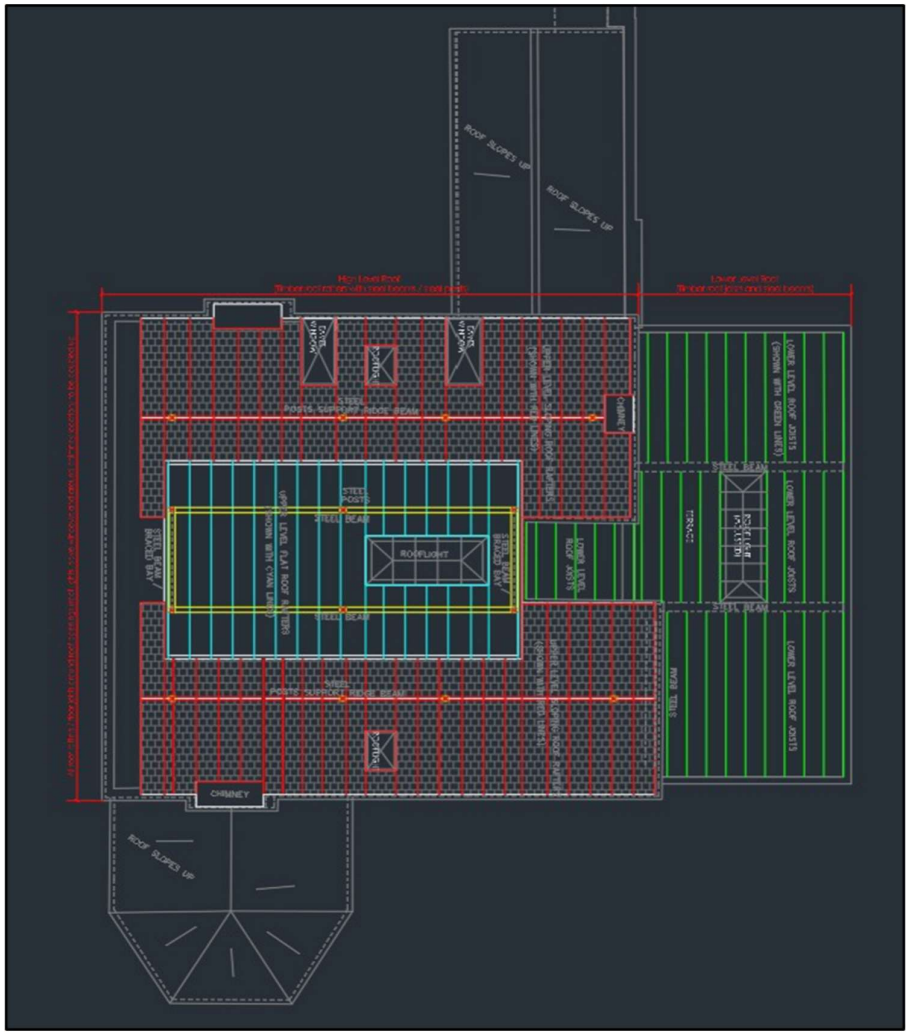

Photo 4 – Main House Plan – New Roof - Indicative /concept structural member framing.

The new roof of the main house will be in timber to keep dead weight of the roof on existing structure to minimum. Where required, steel beams and steel frames will be introduced to support floor, bridge long spans and to provide support and stability to new roof rafters. Braced bays will be introduced to guard against wind forces that may act on the new roof. Existing roof members will be exposed, measured and checked with latest codes against structural performance capacity. It is worth noting that there will be a change in use due to proposed works; therefore, all existing roof members will be checked against floor /occupancy load of 1.5kN/m^2 (Live Load).

A topographical survey was carried out a few months ago and architectural drawings were developed from the information provided. However, for structural checks, intrusive investigations will be required to ascertain the following elements that are not covered in the topo. Some of these checks have already been carried out and described below;

- There are no timber sections in existing roof. The roof is made up of concrete sections that will be exposed during construction.
- Thickness of any load bearing walls and wall material are available from topo survey.
- Presence of any other hidden structural members and existing services will be checked during construction or pre-construction phase.
- Main house existing foundations were checked. Trial pit dug in May 2025 at the front corner of main house has shown that the existing concrete foundation is minimum 600mm thick and founded at approx. 450-500 mm below existing ground level. The approximate plan projection of this footing is approximately 1000mm from outer face of existing brick wall. During initial planning stages, this seems satisfactory; further checks will be performed before the final building control drawings are produced.

Photo 4a: Main House Foundation Trial Pit

Key points are as follows.

- All sloping roof rafters at higher level of main roof will be in timber (shown in red).
- All flat roof rafters at higher level of main roof will be in timber (shown in cyan). These will support weight of new solar panels.
- Steel framing may be used at selected location. These members will support roof timber framing (shown in yellow)
- All flat roof rafters in lower level of main roof will be in timber (shown in green). These will span onto steel beams (shown in dotted black)
- All timber roof rafters at both roof positions (higher and lower-level roof) will be doubled up at all opening positions, around chimneys, around skylight openings and any other floor openings.
- For stability, all timber wall plates will be strapped down to walls. Stability against wind /lateral forces will be achieved by introducing braced bays (shown in dotted yellow lines)
- The floor framing will consist of use of light weight timber and use of selected steel beams. These aspects will be considered at preliminary structural design stage when the type, size, weight and supplier of roof lights, solar panels etc. are known and after appropriate planning permission has been granted.

I would like to point out that there was an additional floor when the main house was first built (photo below). It was removed during subsequent renovations. Given that the property was previously designed for extra floor, addition of a new floor at this stage is deemed to be acceptable.

Every effort will be made to keep the historic character of the main house maintained by use of appropriate structural elements.

2.2 Cottage / Annex – Additional Floor & New Roof

Photo 5 – Existing Cottage / Annex – Front View (L) & Side View (R) - Pitched roofs.

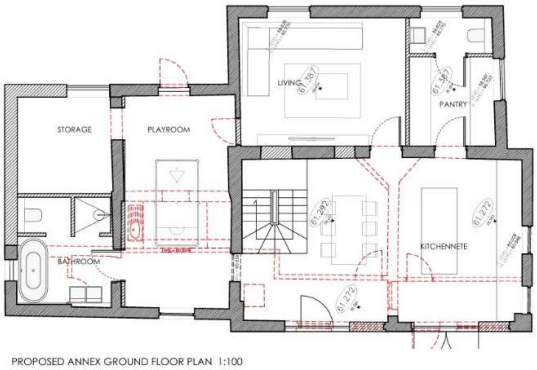

Photo 6 – 3D Image (L) and Plan of proposed cottage (R) - Architectural Image / Drawing extract

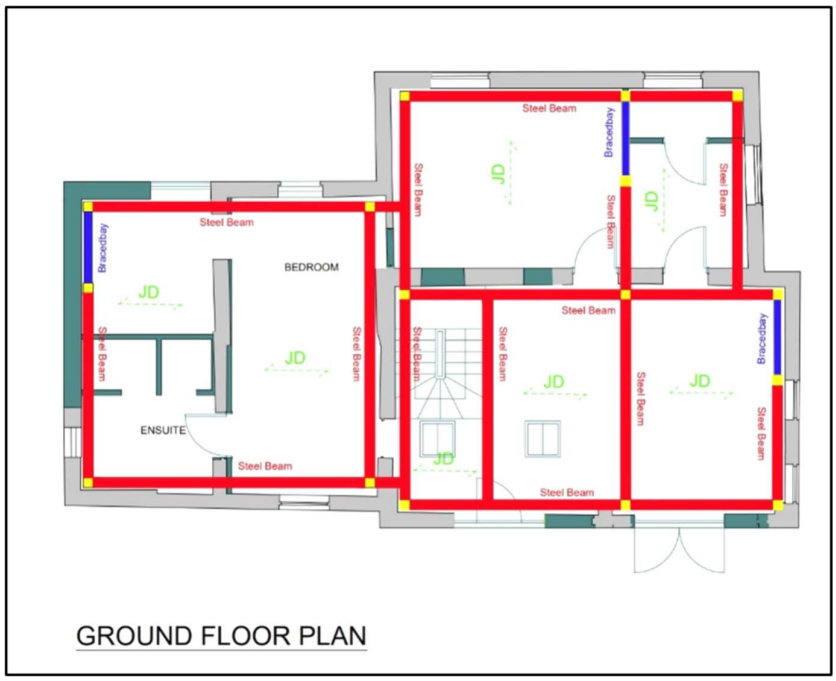

Photo 7 – Existing Cottage – Indicative Internal Structural Framing at Ground Floor Level.

All columns are shown in yellow, and all beams are shown in red with braced bays shown in blue.

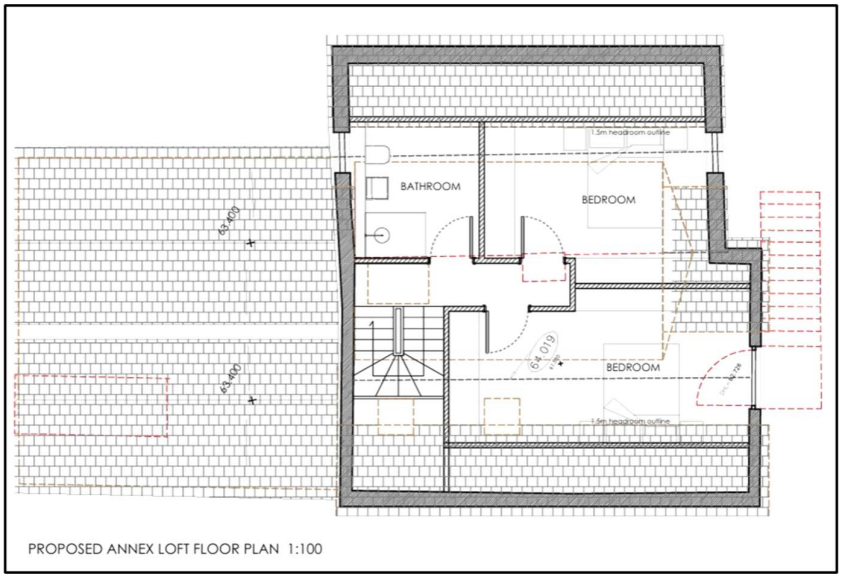

Photo 8 – Proposed Loft Plan - Cottage

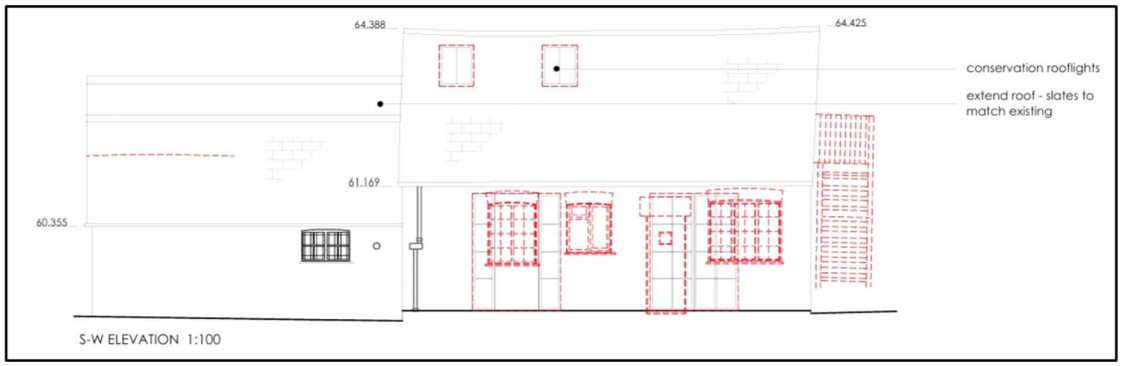

Photo 9 – SW Elevation of Cottage

Photo 10 – Existing Cottage Foundation Check – Trial hole carried out near existing stairs.

(Top of foundation is 450mm or 6 bricks down from existing ground level; the foundation steps out to sides by 100mm and sits on soft clay. Note: No concrete in sight)

Structural Challenges

The addition of a new floor and proposed roof modifications in cottage poses a few challenges.

The first challenge is the existing condition of this structure.
This building consists of 1 No. old office and 1 No. newly constructed office space. Several cracks were noticed in old office area during my first visit, and these were reported in my previous structural inspection report (Reference 2024.Lortolan.RP. S.0300-A0.C1 dated 01/11/2024). Cracks ranging from 2 to 4mm were noted at the junction between the main walls due to possible structural distress or foundation movements. It was also noted that old wall ties were present externally that were holding the two outer walls of the old annex together. It is highly likely that the ties are now corroded and they are loose (and can be turned); the corrosion is visible on the ties to the exterior surface.

The second challenge is the existing condition of the foundations that were constructed in 1840. Recent trial hole for the foundation inspection indicates that the existing walls lack decent sized foundations to carry load of the additional floor and proposed roof modifications.
Please refer to photo 10 for results of trial hole.

The third challenge is the structural framing /support proposal for this structure. It is proposed that an independent internal structural framing is installed (Photo 10- columns, beams and associated members) along with light weight timber construction at upper level.

The existing cottage wall has minimal foundations; likely to be non compliant to latest British codes of practices. These may require underpinning at detailed design stage. The underpinning may help control cracks mentioned above.

Conclusion

The structural proposals listed above for main house and cottage are workable and economical for both my client as well as English Heritage. It also offers cost savings and ensure safety during construction which is a key consideration under current CDM regulations.