

RT/SF/25039

Client and property details:  
Messrs Hooper Jacobs and Williams  
88 Woodbourne Avenue  
Brighton  
BN1 8EJ



**Chartered Structural Engineers**

68 Amberley Drive  
Hove, BN3 8JP  
Tel: 07958721387  
[ralph@tiemannandco.uk](mailto:ralph@tiemannandco.uk)

24<sup>th</sup> December 2025

Dear Messrs Hooper Jacobs and Williams,

**Re: Feasibility of New Residential Property at Caldyne Park, off Wallage Lane, Worth, Crawley, RH10 4PE**

Many thanks for forwarding your drawings via DD Architects.

The purpose of this brief report is to comment on the structural feasibility of the above project, review the proposals, provide recommendations on a very preliminary basis. We will include items for further investigation as required.

This is a specialist's summary, limited to the above structural matters. It does not constitute a detailed building review, including confirmation of structural element sizes, including the foundations.

The conclusions expressed in this report represent our professional opinion, based on an experienced assessment of the information provided.

When the report contains a list of structural recommendations, this list may not necessarily be exhaustive.

The report is for the exclusive use of our Client and his/her agents. Although we have no objection to it being shown to others, we do not accept any responsibility to third parties. Please feel free to share the content of this report with other specialists as required. With your written permission, we would be more than happy to discuss your case in more detail with them if they wish to do so. Additional professional fees may apply.

No extensive investigations into the design of the property or services or the history of the site have been carried out as part of this review.

**Proposed Ground Floor Plan**  
Scale 1:200

**Key:**  
Continuous Thermal Envelope ☐

**Rooms:**  
Bed 02, Living, Kitchen, Dining Room, Living Room, Library, Bed 01, Western Meadow, Garden, Carport, Garage, and a small circular feature labeled 'Circ 01 - 3002'.

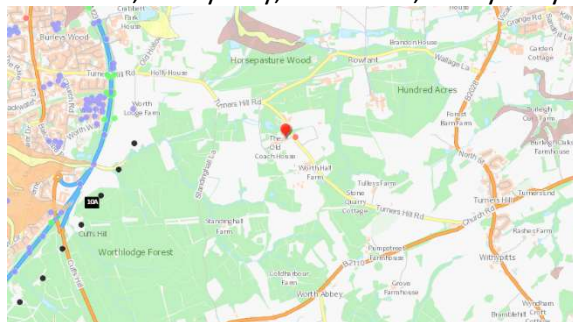
**Scale:**  
millimeters  
scale 1:200

**DDO Architects**  
Dustin M. Turner  
Dan Sauer  
2017

At the detailed design stage, additional information, such as a full soil site investigation, is expected to become available. This, in combination with the identification and mapping of any remaining underground structures, including their foundations, can be used to fine tune the final foundations solution. The latter may require piling if the supporting soils are structurally inadequate to support the new loads from the structure, or if there is the potential of differential settlement if one part of the new structure is resting on top of a hard spot (i.e., remnants of an old fuel tank for example) and the other part on virgin compressible soil.



A desktop review of the publicly available geology maps in the area (catalogued by the British Geological Survey) indicates that the superficial deposits are unknown, with isolated pockets of Clay, Silt, Sand and Gravel (Head), with Sand and Gravel (River Terrace Deposits) and Clay, Silt, Sand and Gravel (Alluvium) nearby. The bedrock is indicated as Sandstone (Upper Tunbridge Wells Sand), with Mudstone (Grinstead Clay Member), and Sandstone (Ardingly Member) nearby. The nearest boreholes indicate superficial Topsoil, followed by a banded mixture of Upper Tunbridge Wells Sandstone, Sandy Clay, Sandstone, Sandy Grey Clay, and Sandstone.



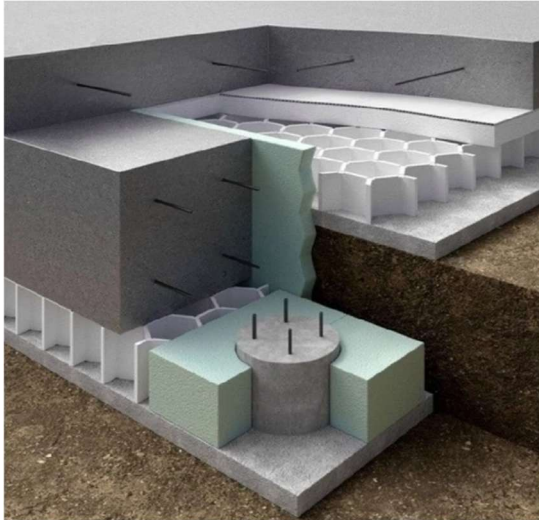
The reinforced concrete structure below ground is recommended to be cast using a waterproof mixture, such as Xypex, which promotes non-soluble crystalline structures when moisture comes into contact with the concrete, including within the concrete's early thermal micro-cracks, thus promoting self-healing. This will require that the reinforced concrete is designed and detailed to keep the minimum crack widths to below 0.2mm. This typically means that the elements will have a denser reinforcement matrix than traditional reinforced concrete elements above ground.

In addition to specifying a waterproof concrete, we also strongly recommend the use of an external tanking system. We recommend that this be installed by certified installers that can provide a suitable guarantee/warranty, on both the materials used and the workmanship. It may be possible to pressure test the installation, as well as any penetrations through it, as part of the works.

The use of continuous reinforced thermal isolators between the property basement and the below ground garage is strongly recommended. Detailed design would need to look at how these two elements share loads onto each other, and these elements may need to be enhanced accordingly.

[illegible]

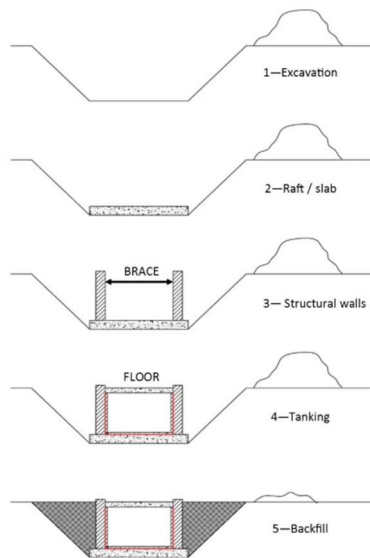
For foundations and structures below ground in shrinkable soils, an additional vertical layer of compressible material will be required, such as Cordek Claymaster. This would need to be detailed and coordinated with the currently proposed external insulation material. The latter will also need to be protected with a suitably detailed and specified protection board to prevent damage from the back-filling operation. Should the foundations need to be piled, the basement base may need to be designed with a formed void under it. The top sections of the piles can also be sleeved. The extent of the sleeve would need to be confirmed from a thermal perspective. Structurally this is achievable.



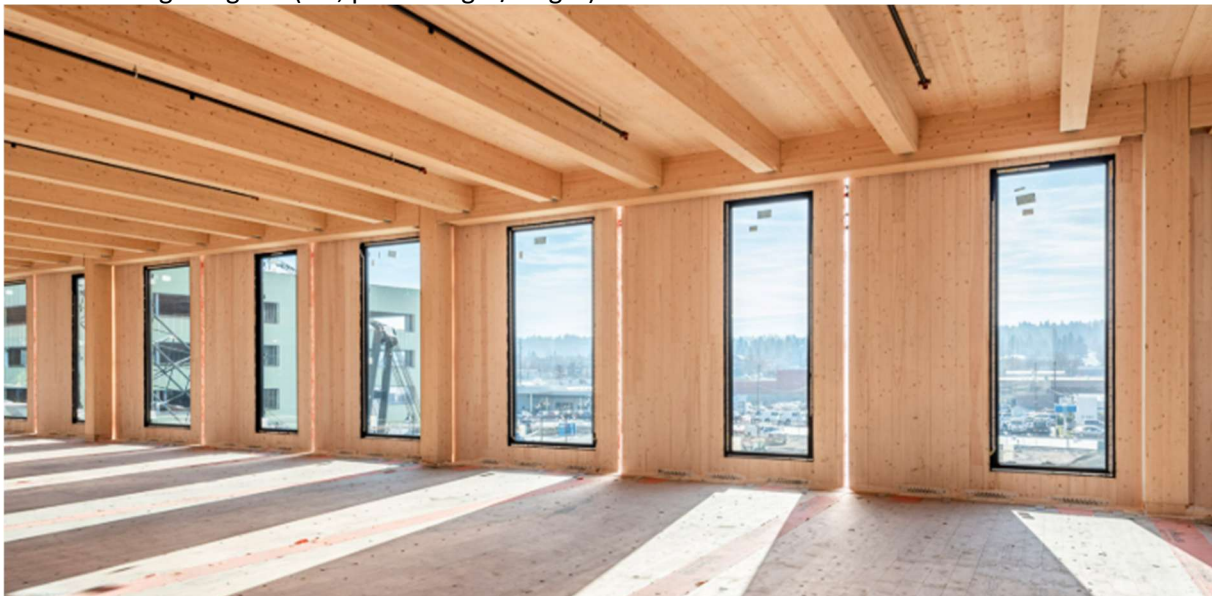
We recommend the introduction of a full depth French drain around the property together with the land drain at the bottom of this to help redirect any ground water away from the property. If the water table is deemed to be fairly shallow, this would need to be reviewed accordingly, in addition to the effects this could have on the insulation and the basement structure. A full hydrostatic pressure can easily be resisted by a reinforced concrete structure.

As a minimum, the perimeter band of external insulation part of the basement's base slab, as well as those regions under load-bearing internal walls, will need to be of a high compressible strength, suitably sized and specification to resist the relatively higher localised loads from above. Followed detailed design, it may be necessary to introduce a reinforced concrete toe; this would help distribute high perimeter wall loads down to a magnitude that the chosen materials can resist without crushing. This would not impact the external insulation concept. The external insulation part of the walls will also need to be sized to resist the lateral crushing loads from the soil and any applied hydrostatic loads.

An open-cut construction for the basement has been assumed, but the sides of the basement structure can also be formed using steel sheet piling, and/or contiguous piled walls. The existing ground conditions may determine what options are feasible. The Geotechnical Engineers undertaking the soil site investigations should be asked to comment on what construction methods are plausible for the basement.



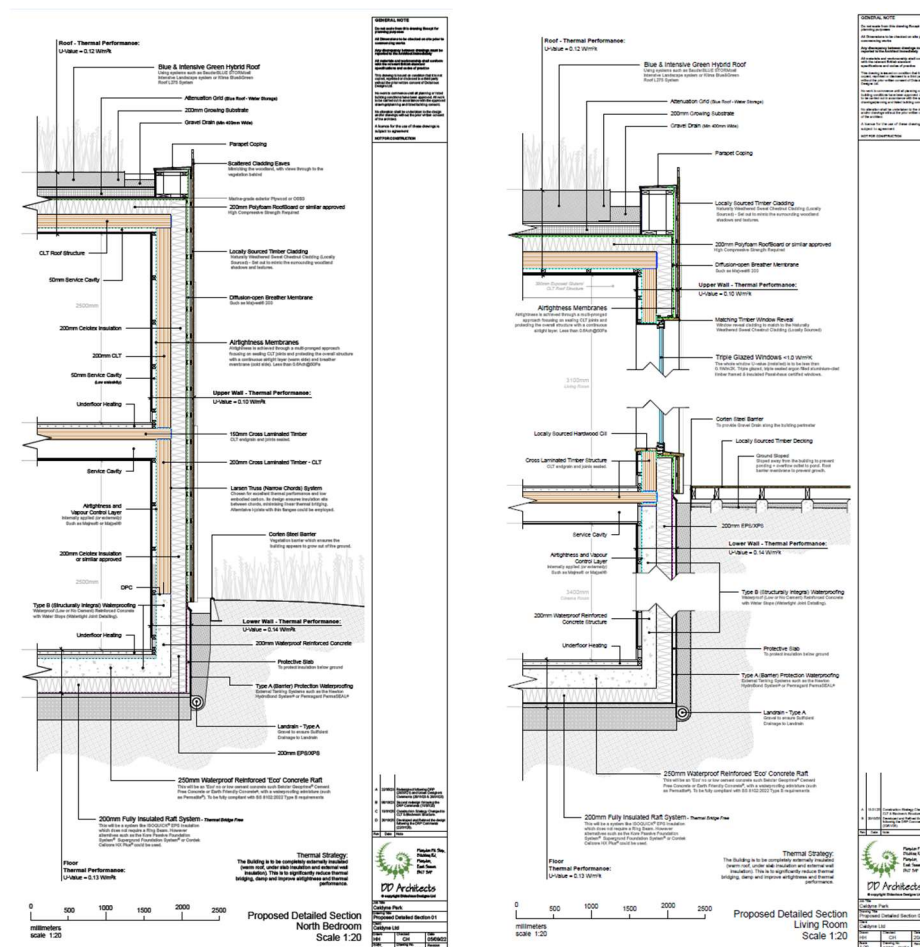
The proposed cross-laminated-timber (CLT) superstructure, which includes both walls and roofs, will prove to be a good construction material choice and would need to be designed to support the estimated lateral wind and racking forces as well as all vertical gravity and imposed/live loads. CLT naturally provides rigid diaphragm action which is a bonus from a structural perspective, as it only requires localised strengthening around large formed openings. The CLT frame will need to be mechanically fixed to the top of the reinforced concrete basement structure. The external wall insulation will need to be detailed to withstand any potential shrinkage from the CLT structure. This is typically and relatively more significant perpendicular to the grain (i.e., panel thickness) and minimal along the grain (i.e., panel length/height).



The proposed green roofs should be okay to be supported by the CLT roof panels, The latter can be enhanced by using additional roof beams which can be placed with the structural zone of the roof if required within the detailed design stage.



Other than the above, and based on the information provided to us to date, we have not identified any significant structural issues that should not be possible to resolve in the detailed design stage. The newly proposed loads, from a global perspective, are primarily going to be supported by the new foundations. The proposed foundations of this property, using lightweight materials such as timber as part of the superstructure, are considered to be within the capacity of the expected size of foundations for this type of property, assuming a base raft foundation. Should the foundations need to be piled, the piles will be designed to resist all the applied loads.



We recommend that the following are undertaken:

1. All the new structural elements to be designed to the latest codes and regulations.
2. Building Control to be invited to inspect the property at the various stages of the works.
3. All structural works need to be coordinated by others with other specialist's recommendations/improvements, such as but not limited to, waterproofing, tanking, thermal insulation, acoustic isolation, fireproofing, etc. Building Control will need to be made aware of the proposals to ensure their requirements can be satisfied in full.

We do not believe any of these elements to be too onerous and the newly proposed works, upon initial inspection, be relatively specialised structurally, however, achievable by a competent Main Contractor/Builder.

Would you be so kind as to forward this letter to whoever needs it and discuss with them as required? We will also be at the end of the phone if needed should they wish to contact us directly. Thanks.

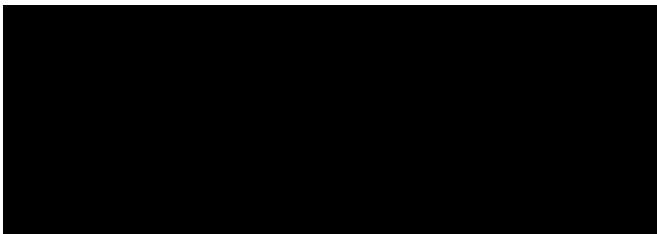
We have now completed our structural services as previously agreed, however, should you have any questions please do not hesitate to contact us.

Should you/your Architect (Principal Designer)/Builder (Principal Contractor) require any further assistance during the construction phases, we would be happy to help at our hourly rate.

We take this opportunity to thank you for your appointment and we wish you all a swift and successful project.

We trust that the above is suitably detailed for your current requirements. Please do not hesitate to contact us if you would like to discuss further or if I can be of any further assistance.

Yours sincerely,



BEng (Hons) MSc CEng MStructE  
For and on behalf of TIEMANN & Co Ltd  
Chartered Structural Engineers