

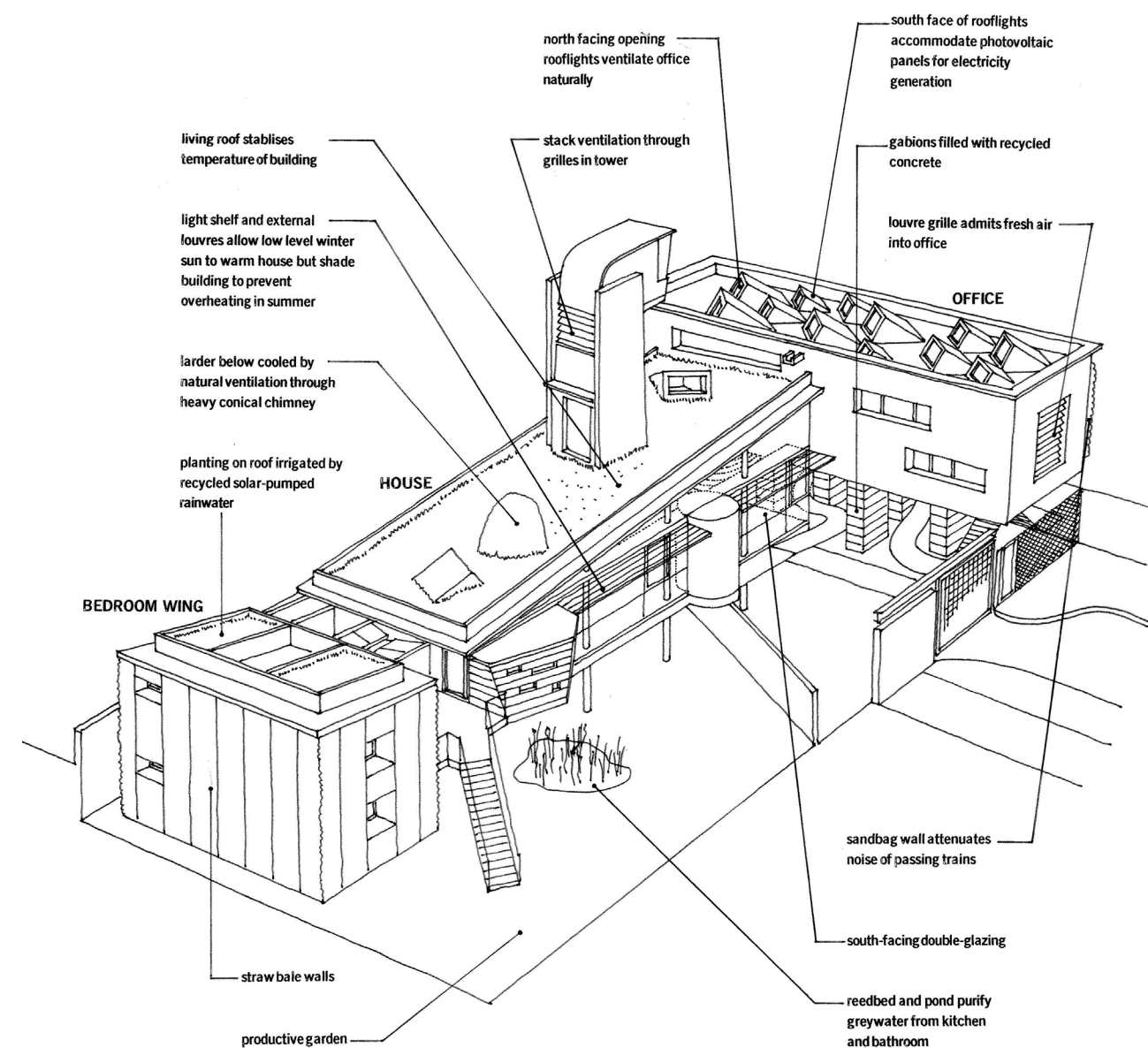
# Stock Orchard Street

20+ and 60+ improvements  
explanatory narrative

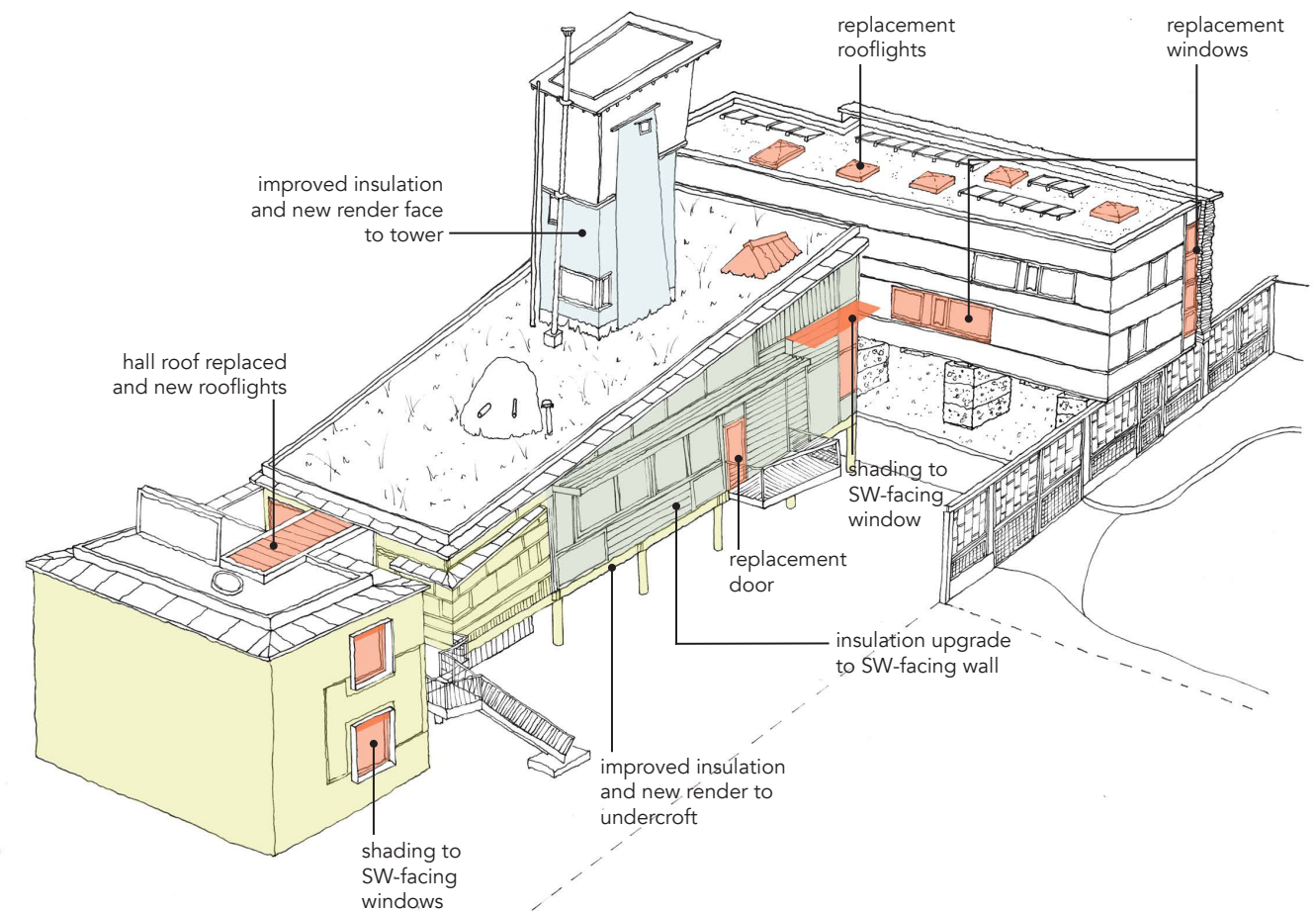


photo: Mark Hadden

## ECO-IMPROVEMENTS TO THE ORIGINAL DESIGN

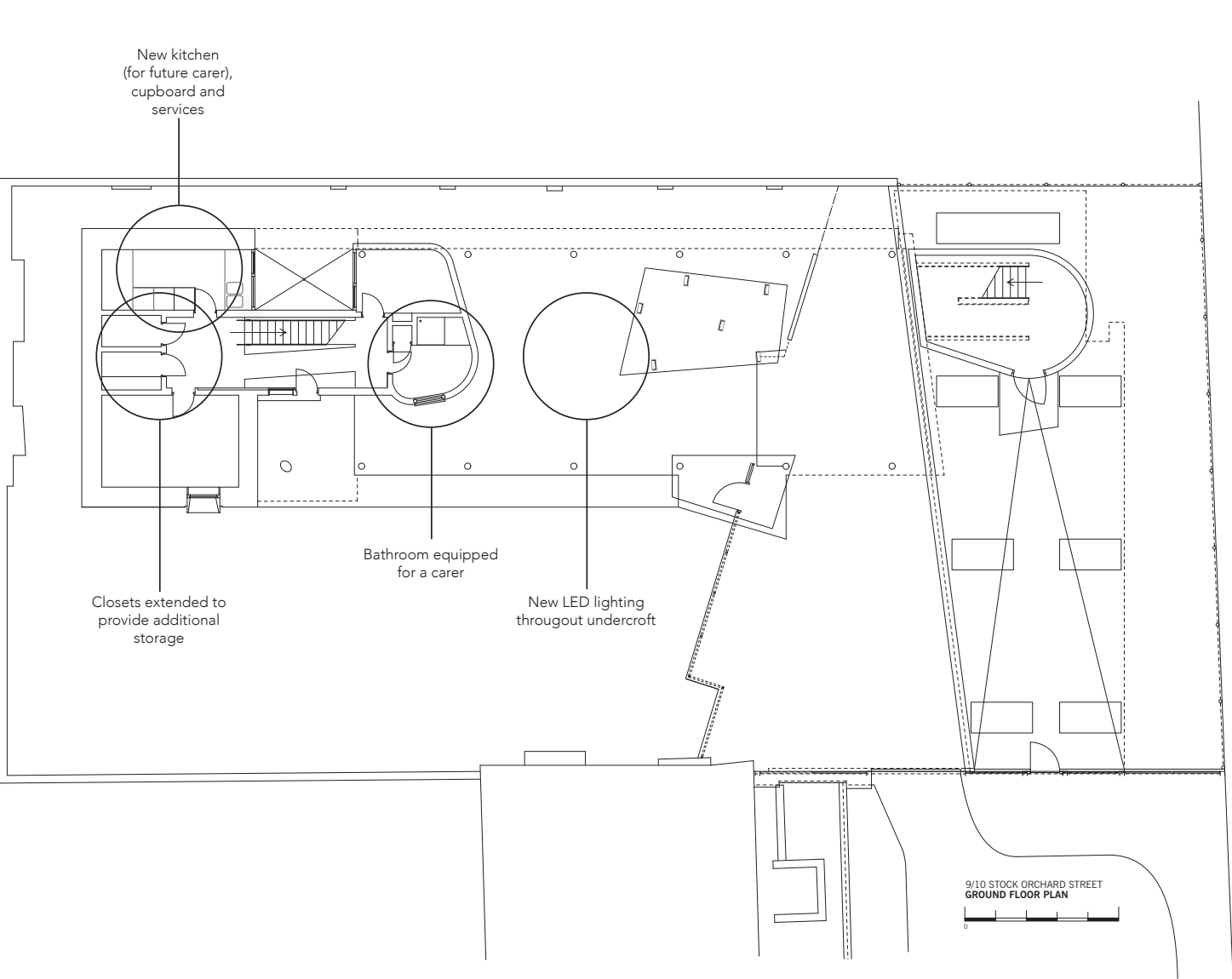


THE ORIGINAL: fabric first approach with breathing walls and natural ventilation

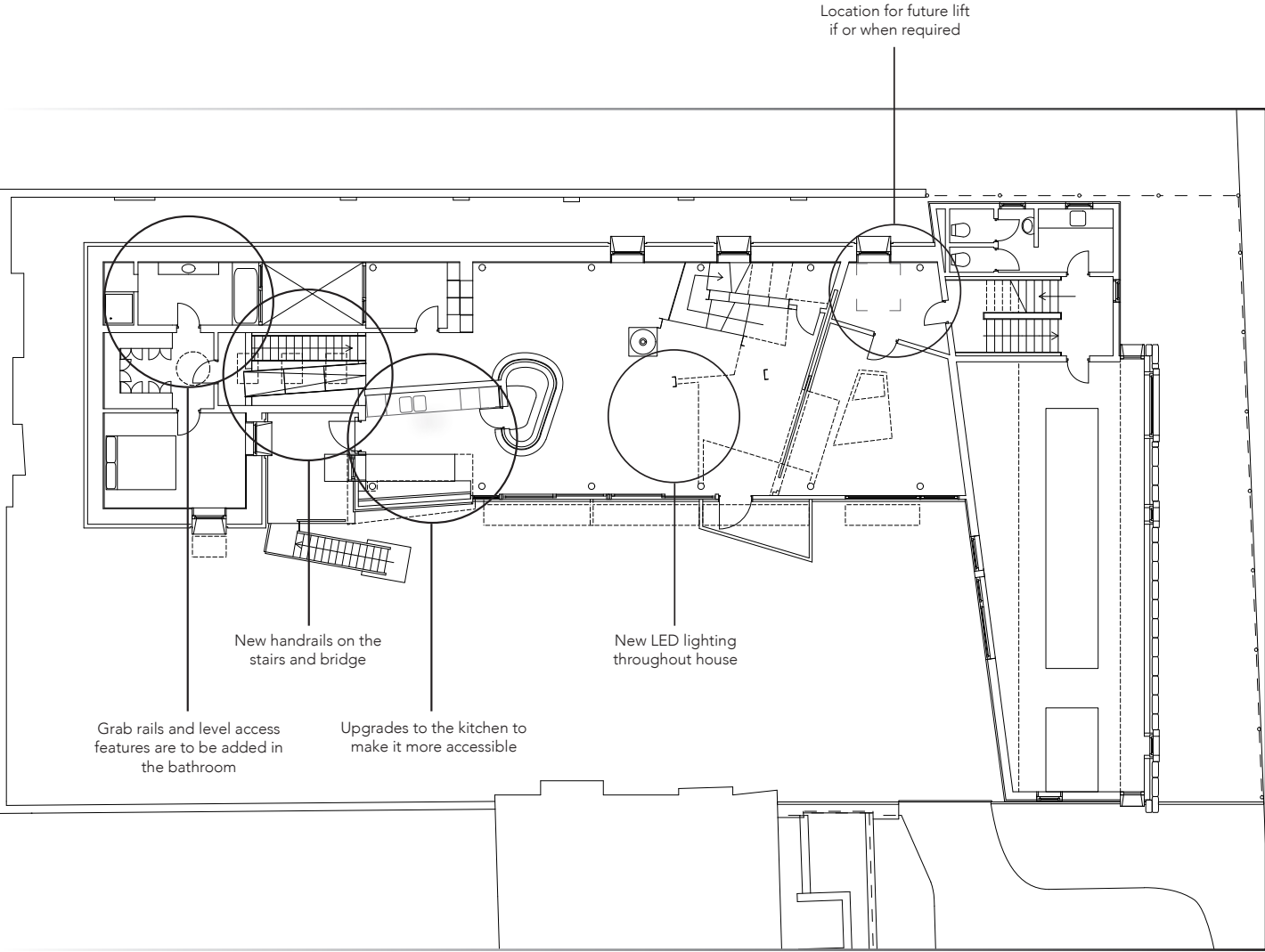


THE RETROFIT: improved insulation and airtightness with MVHR, replacement windows and rooflights and new solar shading

AGE-FRIENDLY (60+) IMPROVEMENTS TO THE ORIGINAL DESIGN



Ground Floor plan highlighting some of the 60+ improvements



First Floor plan highlighting some of the 60+ improvements

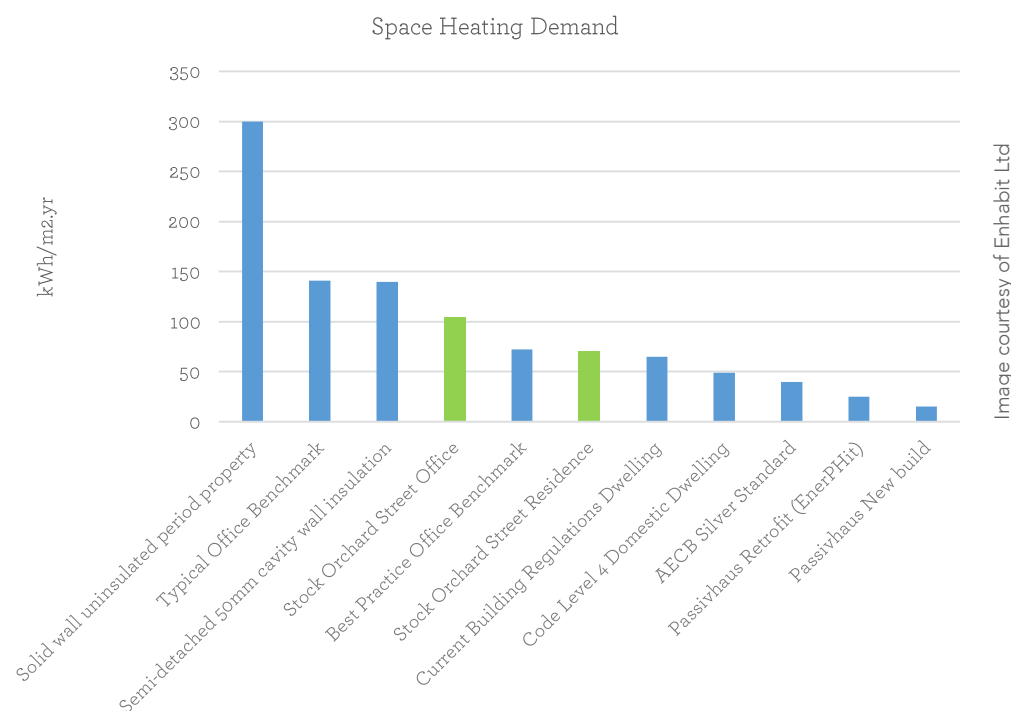


## ECO-IMPROVEMENTS TO THE ORIGINAL DESIGN

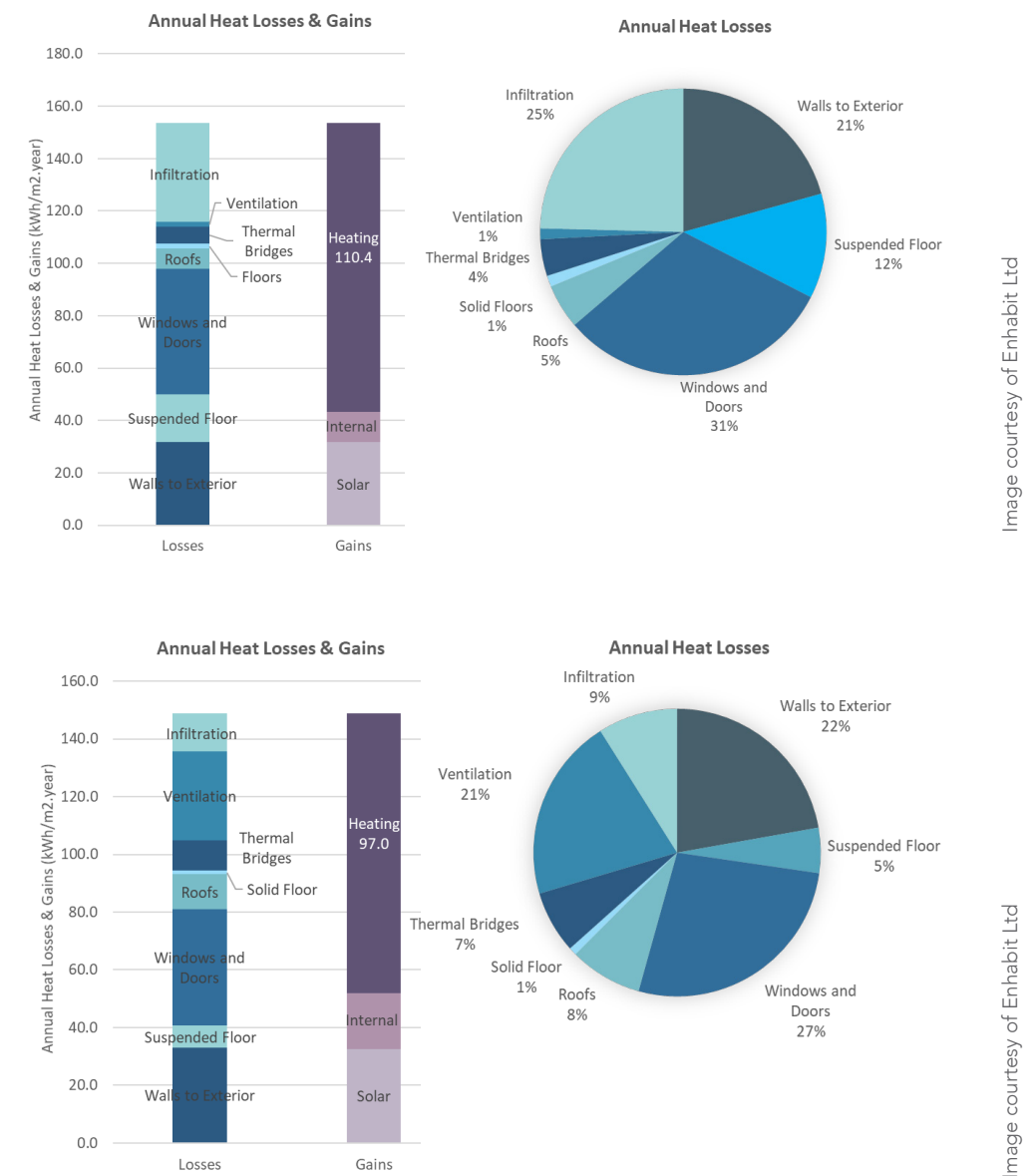
### Research and Data Analysis

An analysis of the energy consumed in the building, which is dependent partly on its form, was made using a Passivhaus Planning Package model (below).

The Passivhaus model enabled us to pinpoint specific areas that warranted attention. By identifying elements of the building fabric and modelling targeted improvements we could instantly see the effect on reductions in energy demand resulting from them.



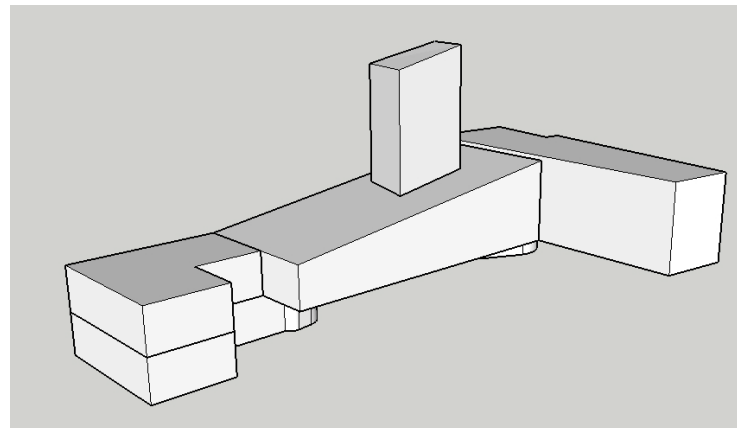
Comparative chart showing energy consumption of typical UK building constructions illustrating how Stock Orchard Street house and office performed prior to retrofit



Charts showing heat gains and losses (with source) per annum for the house element (top) and the office element (below) of the buildings. The pie chart illustrates the areas of the building that are the greatest contributors to heat losses.



Air tightness testing



Passivhaus model of the buildings

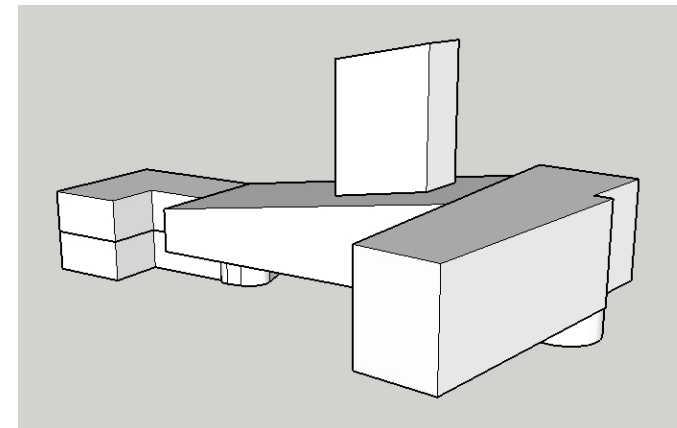


Image courtesy of Enhabit Ltd

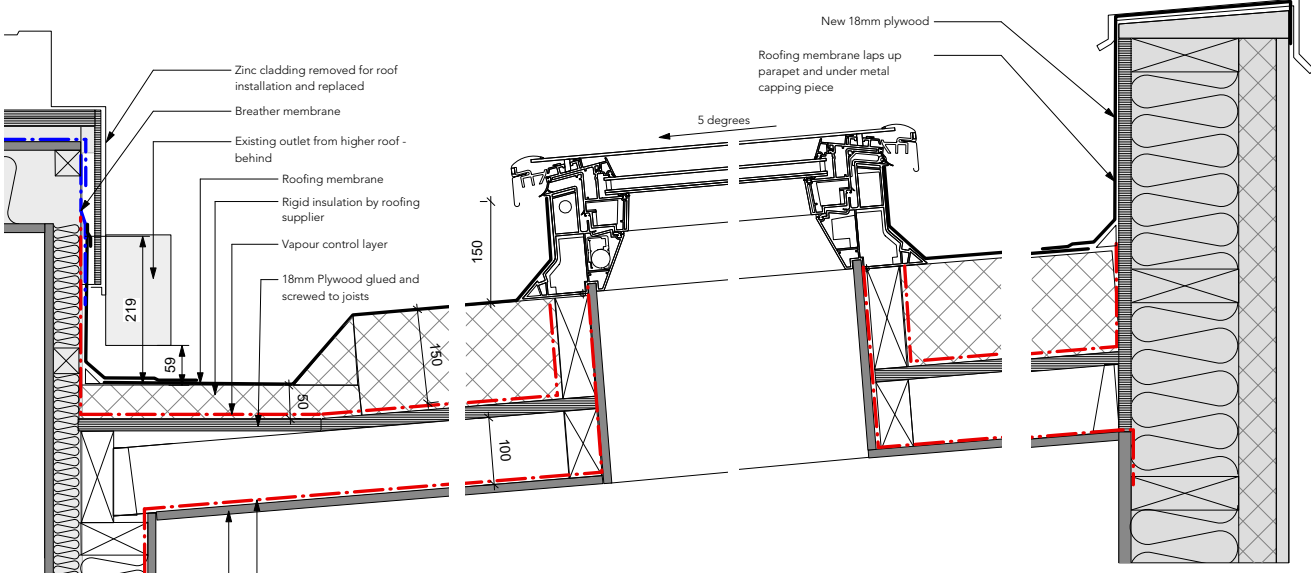


HALLWAY LINK

THE PROBLEM

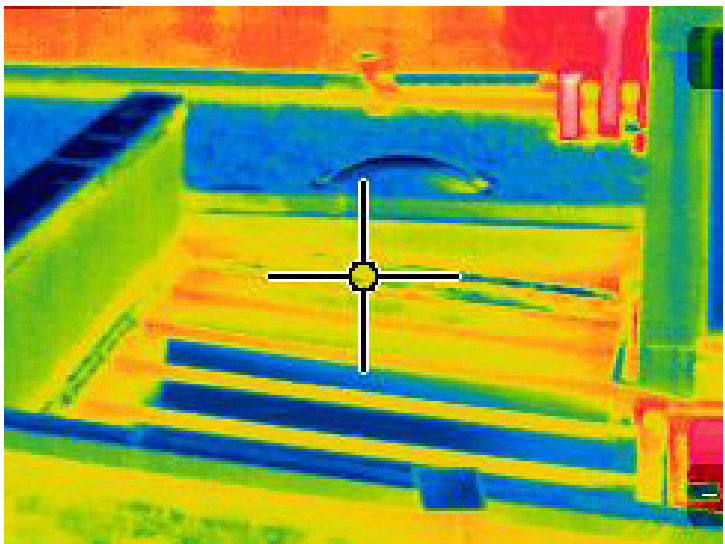


THE SOLUTION



The polycarbonate rooflight did not perform very well. It has now been replaced with a solid, insulated roof with fixed rooflights and blinds. This will improve airtightness and reduce heat loss.

Details and guttering in this area have been improved in the process.



Thermal image showing air leakage and thermal bridging across the polycarbonate sheeting covering the link.

Image courtesy of Enhabit Ltd

THE HALLWAY/LINK BLOCK

Images L to R: comparative images showing before (during construction) and after views of the link block. Note the absence of handrails to the bridge link and stair





## SOUTH-WEST WINDOW WALL

### THE PROBLEM



Existing south west wall

Thermal image showing air leakage and thermal bridging of steel at the top and in the ceiling.  
Image courtesy of Enhabit Ltd

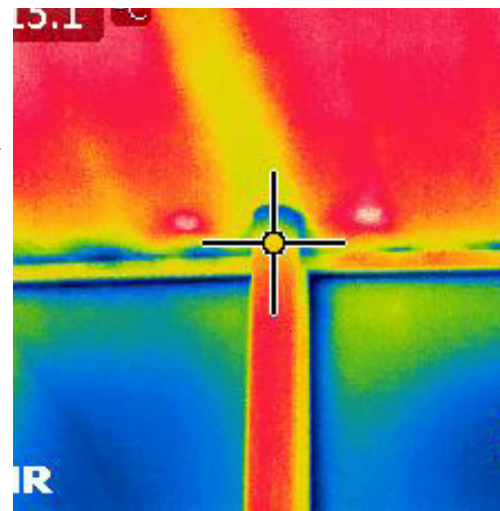
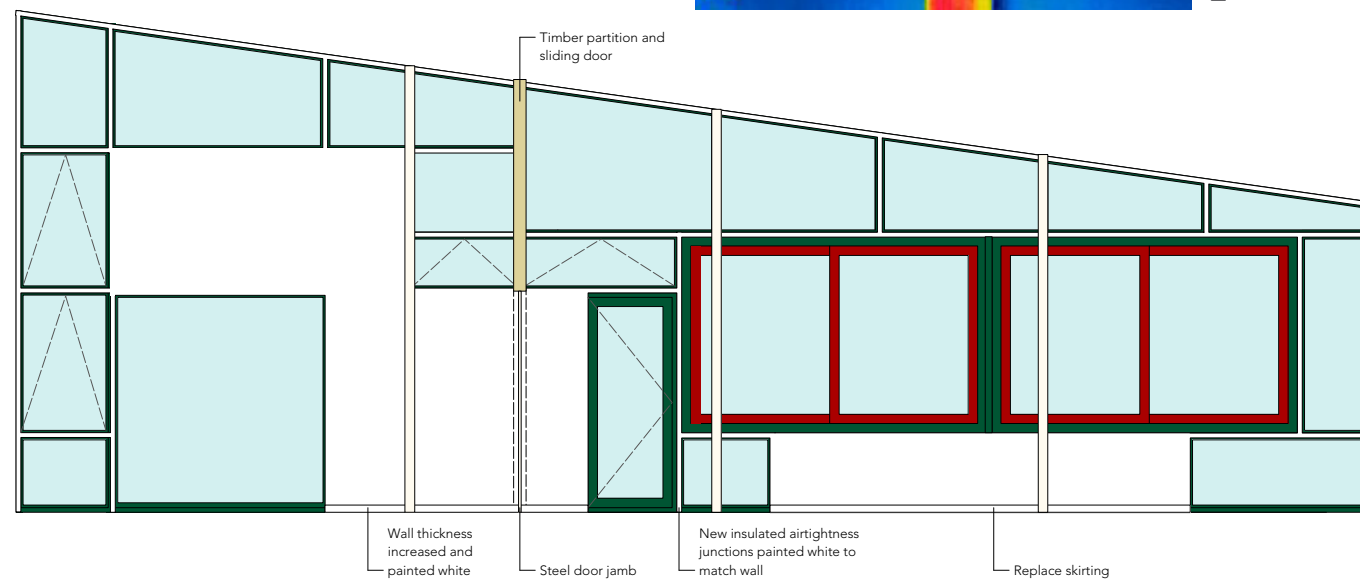
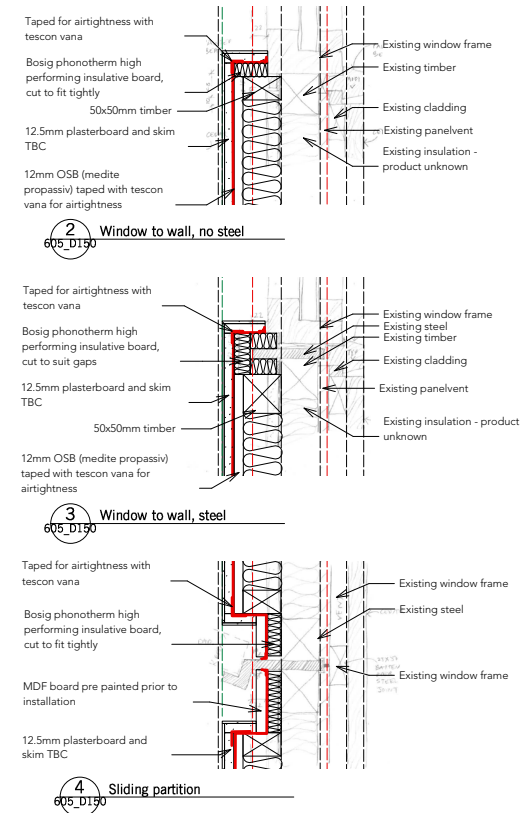


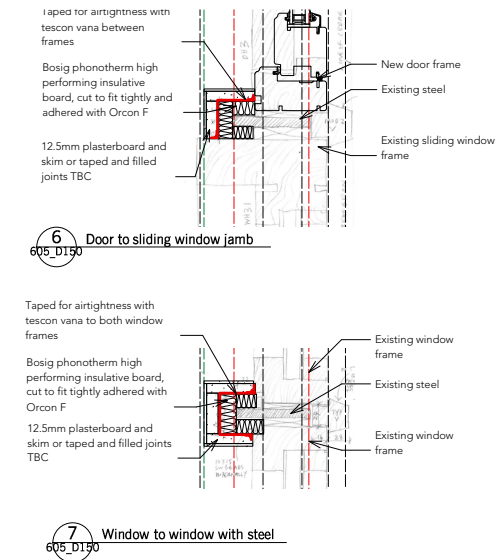
Image courtesy of Enhabit Ltd



Internal elevation showing extent of insulated wall



### THE SOLUTION



The southwest glazed wall comprised a framework of steel flats connected to the main columns that is located between the individual windows, forming a type of curtain wall. The steel frame penetrated the external envelope causing multiple thermal bridges and was not airtight. The proposal thickened out the wall with a solid insulated board, and airtightness tape was applied around all junctions. This thickened wall extended across all areas of the facade. The white areas of the image to the lower left shows the extent of these insulated areas.



Above, L to R: insulating the steels to the south-west wall.  
Wall with additional insulation.

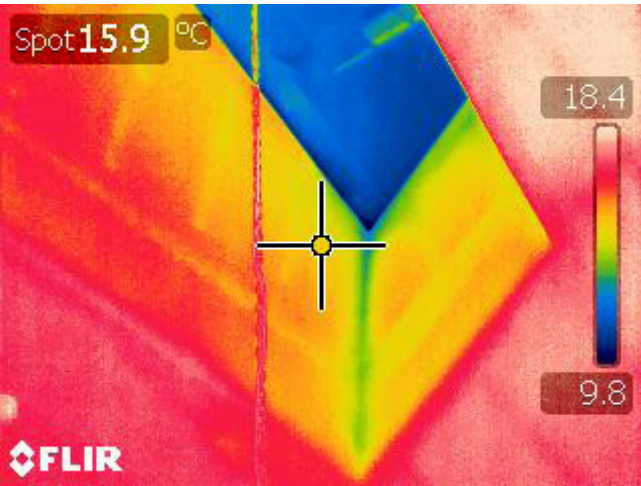


CONFERENCE/DINING ROOM ROOFLIGHT

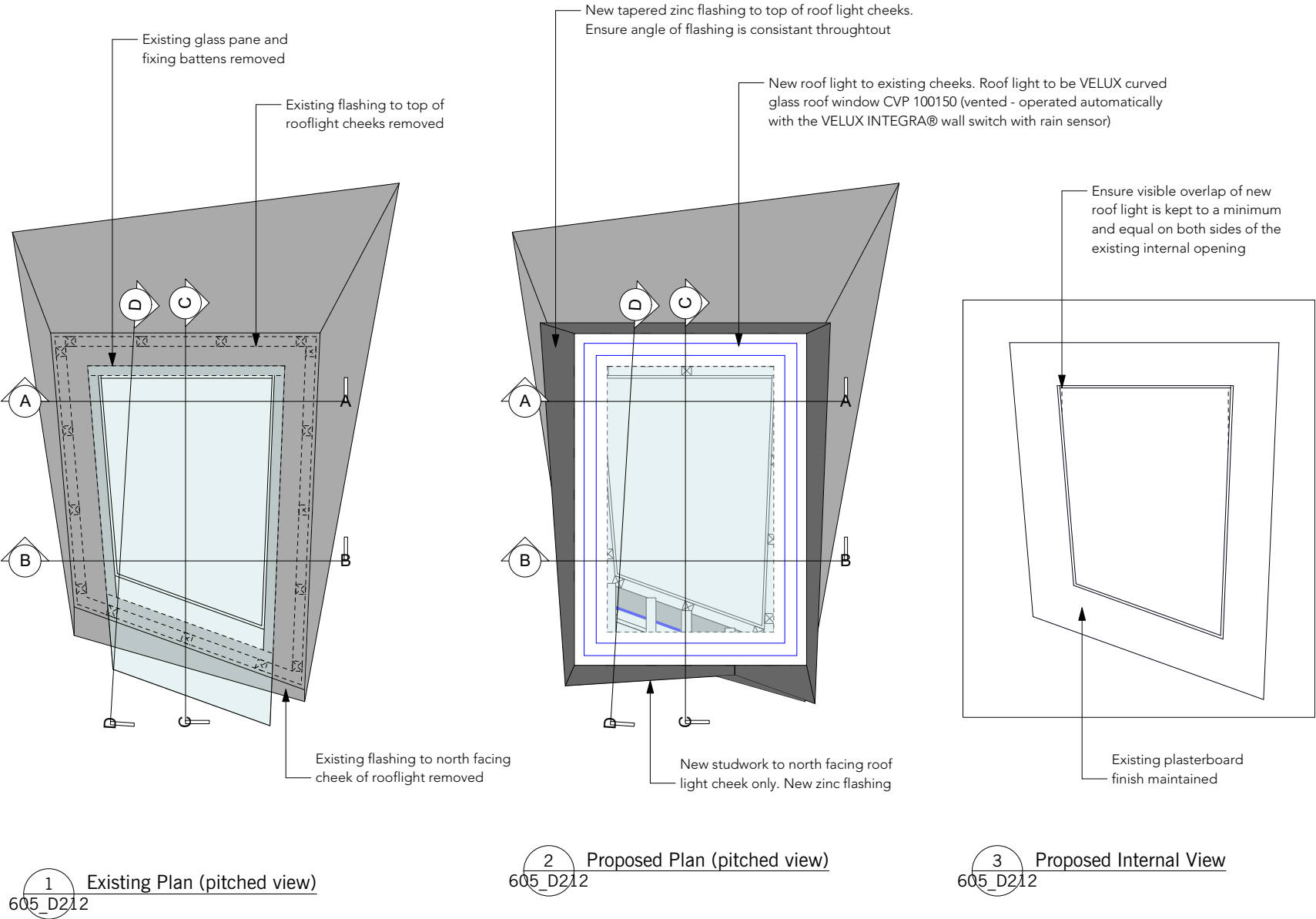
THE PROBLEM



The existing rooflight was not airtight, and the glazing had a poor U-Value. To improve airtightness and provide summer ventilation this was replaced with an openable rooflight containing an integral solar control blind and blackout for when showing presentations in the conference room below.



Drawing showing the proposed replaced rooflight



Drawing showing the proposed replaced rooflight on the existing base

NR Electric operated VELUX Elst Roof Light Dimming





Top row, L to R: the conference room rooflight with zinc flashing removed.

The new rooflight on the grass roof has integral solar control blind and balcony. It is also openable using wifi controls from below.

The new rooflight could not be laid at a pitch greater than 15 degrees so the cheeks needed building up. Here the raising triangles set out the new location of the rooflight.

Bottom row, L to R: the new rooflight was not the same shape as the existing opening so the opening needed amendment. A 'fold' in the upstands was needed to accommodate it, shown here.

View of the rooflight from below. Internally the internal linings needed amending and raising to reach the new rooflight and air tightness membranes were installed to ensure no leakage in future.

Two views of the finished rooflight.



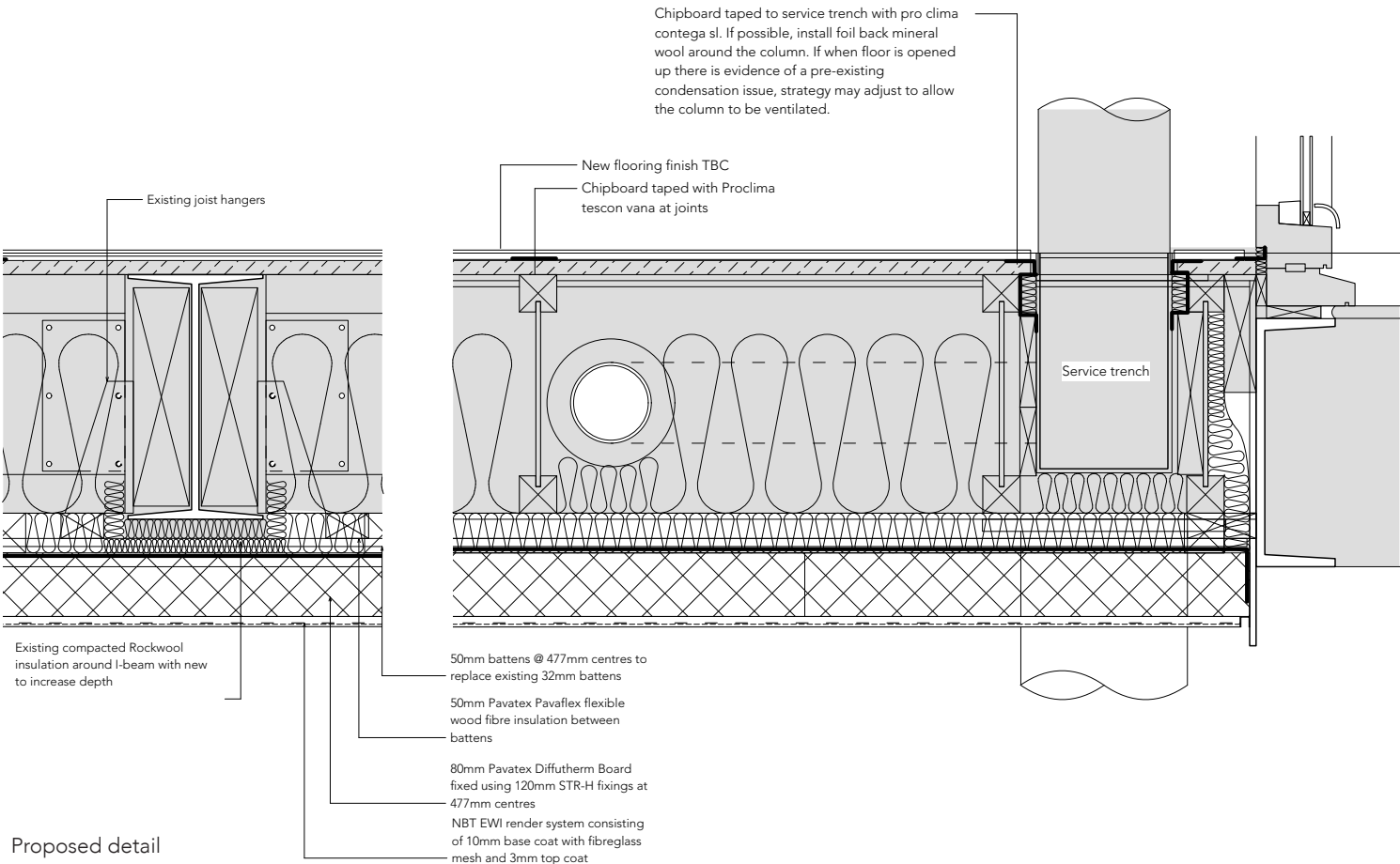


UNDERCROFT SOFFIT

THE PROBLEM



Reducing impact on the horizontal steel beams and improving the appearance of the house soffit. Airtightness taping around the steel columns helps to reduce risk of condensation



Thermal image of soffit showing thermal bridging image Courtesy of Enhabit Ltd



Newly rendered soffit shown downstanding below the perimter beam





## AGE-FRIENDLY (60+) IMPROVEMENTS

Clockwise from above:  
Eye-level ovens remove the need to bend down; a new kitchen for a future carer was installed on the ground floor - together with the bedroom and separate bathroom this forms a suite of rooms for independent living, a carer or a relative; new level access shower; handrails in the bathroom; new handrails to staircase and bridge.







ECO (20+) IMPROVEMENTS

Top row: the original MVHR which was not commissioned properly; new MVHR in the larder; new access hatches to the cleaned MVHR ducts; air tightness tape being installed around window openings and at floor to ceiling junctions.  
Bottom row: newly insulated soffit to the house with LED lighting; new render to the walls of the tower; external solar control blinds over replaced windows to bedrooms reduce summer overheating; insulated and sealed larder door, keeping the coolth out of the heated spaces of the living



With thanks to

**Enhabit**

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**Sarah Wigglesworth Architects**

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Clare Bond

Ronan Feeney

**Contractor**

Steve Fitzjohn of Interior Solutions (management and all trades)

Waldemar Oskory (carpentry and joinery)

Pete Lee                      Electrics & general building

Ian Barker                    Electrics & general building

Kevin Richardson        Plastering

Paul Myers                 Zinc work

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