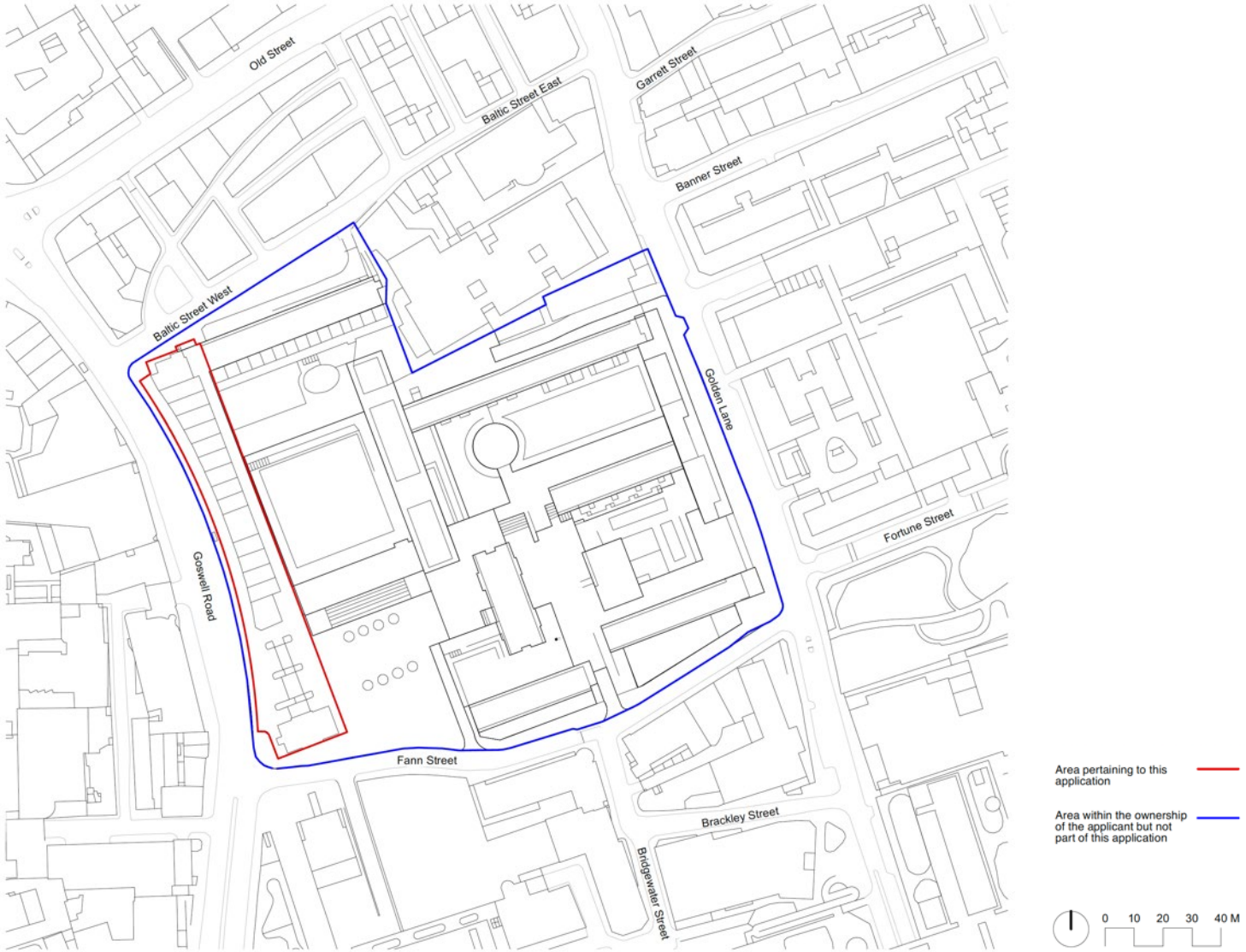
CITY OF LONDON

Crescent House

Planning & Transportation Committee

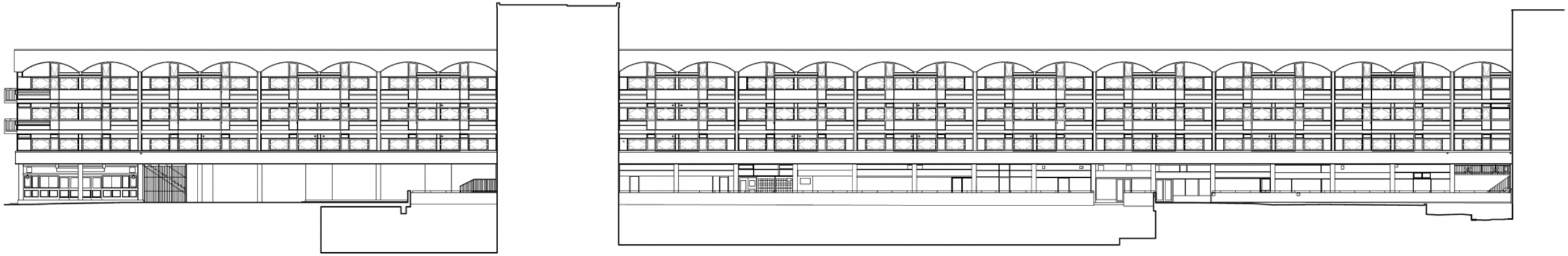
Crescent House



Site Location Plan

Typical General Arrangement Plan

West Elevation



East Elevation

North Elevation

South Elevation

Elevations

View of Crescent House from Goswell Road

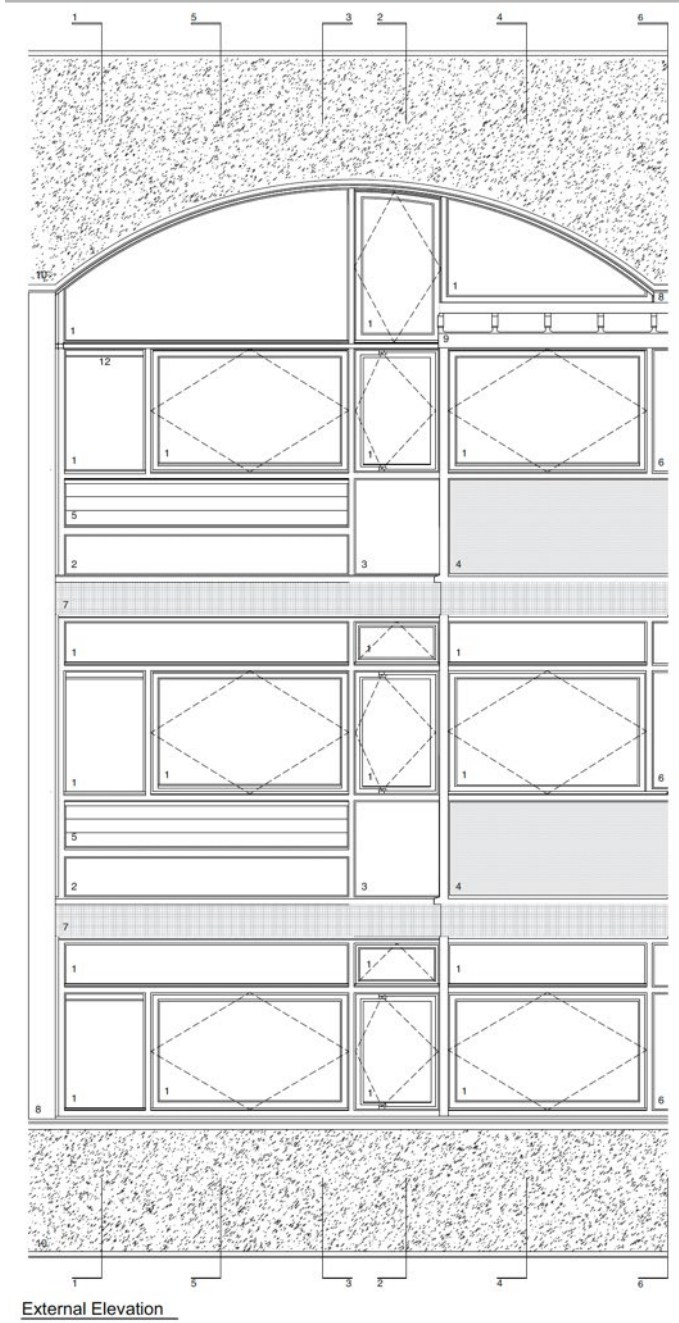
View from Golden Lane Estate

View from Goswell Road - 1962

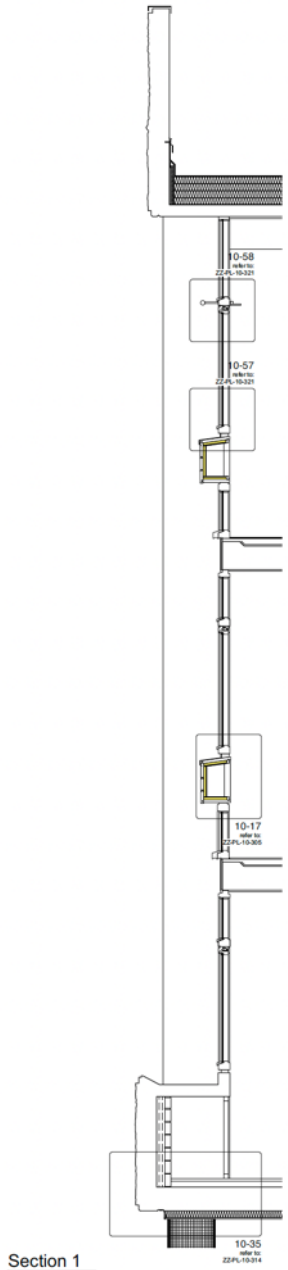
Typical window – 1962

Typical window – 2023

Window Condition 2023



External Elevation



Section 1

Key Proposals:

Repair existing window frames – retaining as much original fabric as possible.

Replace existing single glazing with new Vacuum Insulated Glass (VIG)

Addition of insulation to projecting bookshelf

Replace existing roof covering and add additional thermal insulation

Add rendered insulation to first floor soffit

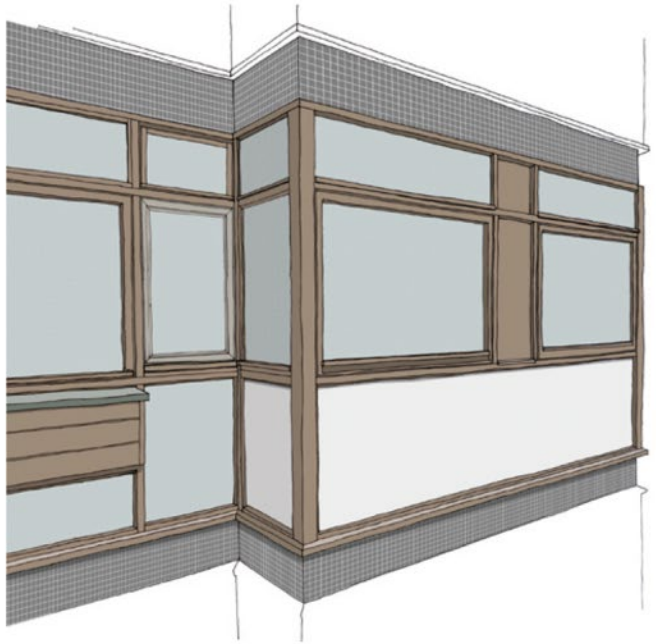
General external decorations

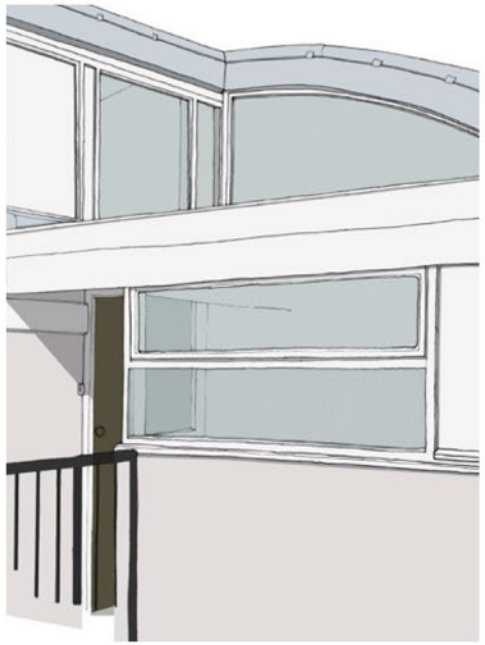
Proposals

Types of Window Repairs & Refurbishments

1. Damaged or decayed wood
2. Stained/dirty surfaces
3. Damage/failure of mosaics
4. Historic repairs
5. Failure of opening casements
6. Damaged or missing ironmongery/hardware
7. Poor quality paintwork

Window Repair





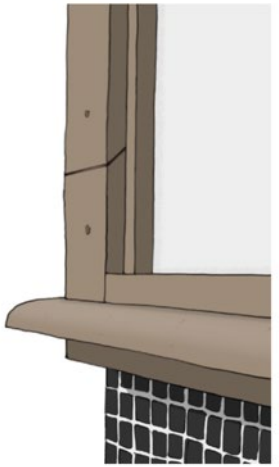
Repair of Window Frames

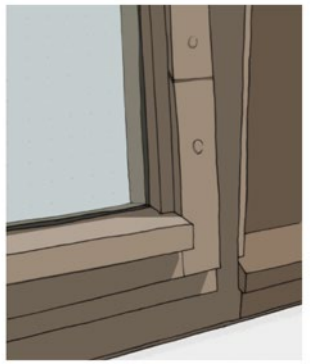
All existing frames will be stripped of paint and stains to allow the condition of the timber to be assessed.

There are three main types of repair proposed, depending on the extent to which the timber is degraded, damaged or missing. Details of these three methods are shown on the right. For further detail refer to NBS Specifications WR-C51 and WR-Z10.

Each type of repair is applicable to both sapele and softwood window frames.

(1) **Minor Repairs**
Small areas of degradation will be repaired using two-part resin to infill the damaged area.





(2) **Small Sections**
Where there are short sections of degraded timber, a new section of timber will be spliced in.

(3) **Extensive Repairs**
Where the degradation extends along a significant portion of the timber, the whole length will be replaced with a new section of timber. This also applies where a section of timber is missing. Where frames/casements are degraded to such an extent that they cannot be repaired effectively, they will be replaced with a like-for-like replacement.

Window Repair

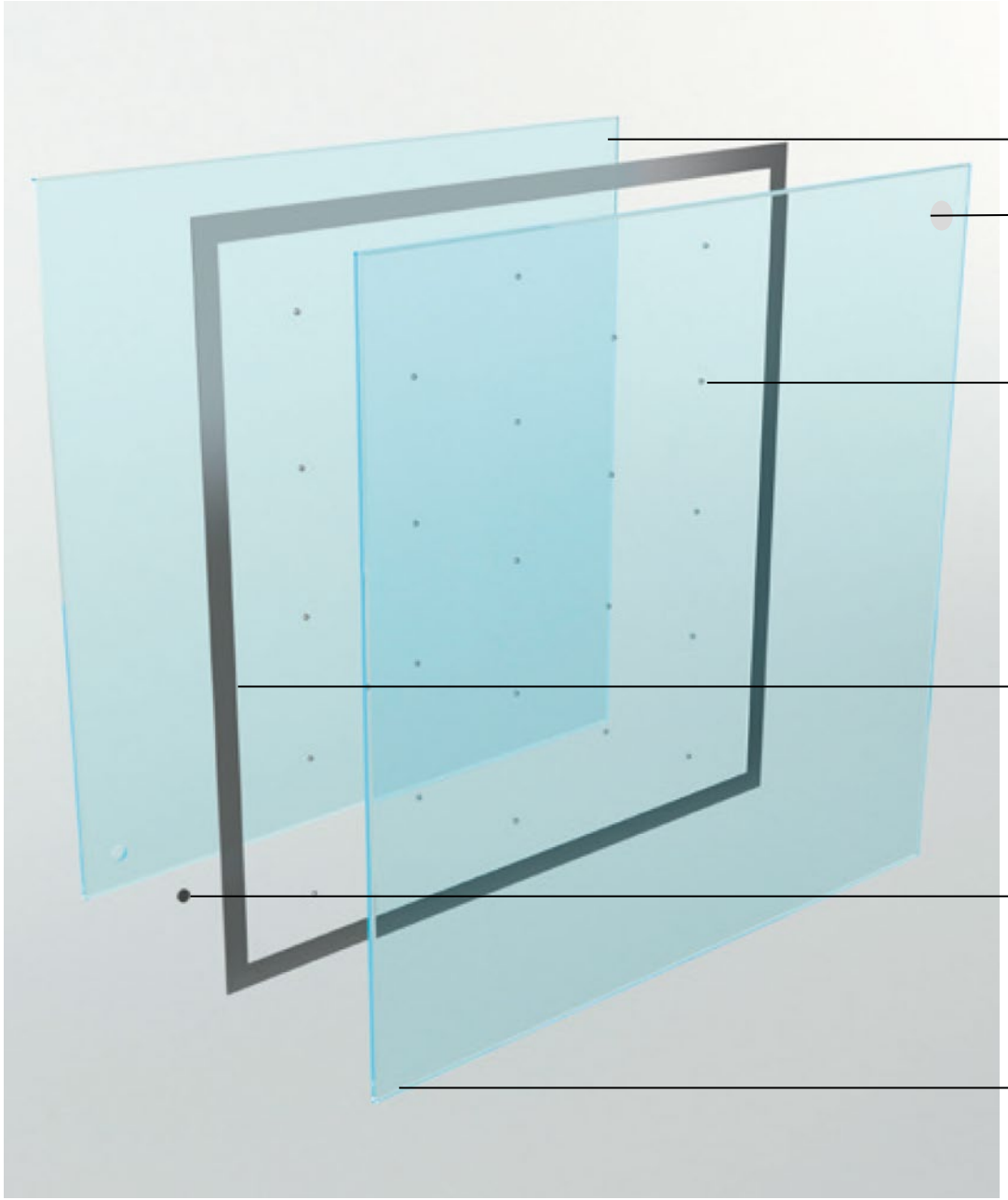
Original Window – no obvious rot

Window removed from frame and rot discovered

Window repaired with new sapele spliced into frame

Completed repair, window reinstalled and oil finish applied

Window Repair – repair process



4mm glass (toughened)

Getter (number dependent on sheet size)

Micro support pillar

Edge seal (0.3mm)

Evacuation port

4mm glass (toughened)

Glass Replacement – Vacuum Insulated Glass

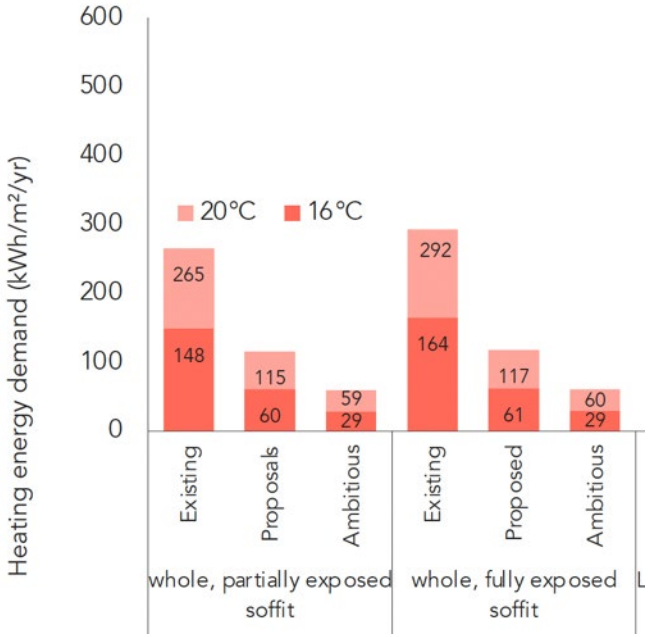
Vacuum Insulated Glass - Installed

Performance
U-value:
VIG: 0.47 W/m²K

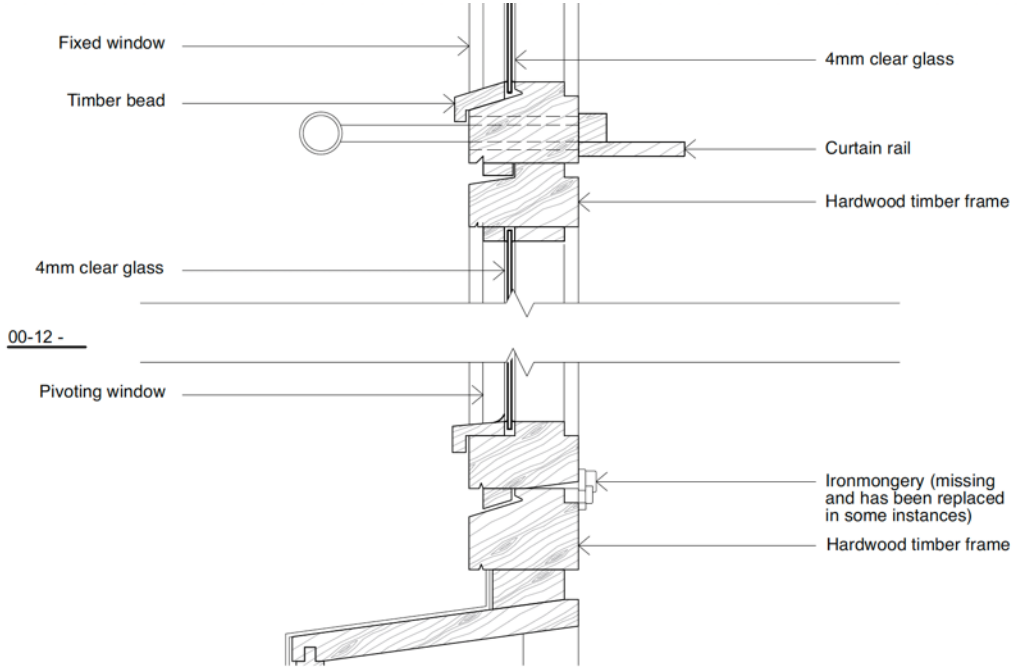
Sound Reduction: 36dB (RW)

Context
Existing glass U-value 5.0 W/m²K

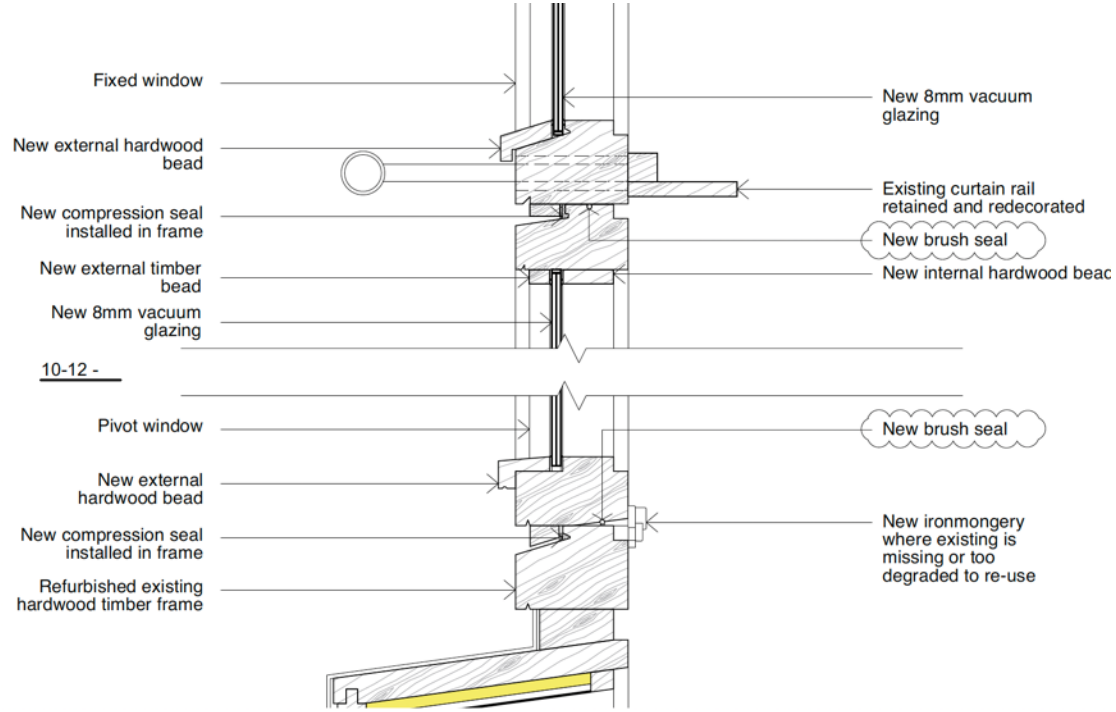
Reduction in heating energy demand:



Vacuum Insulated Glass - Benefits

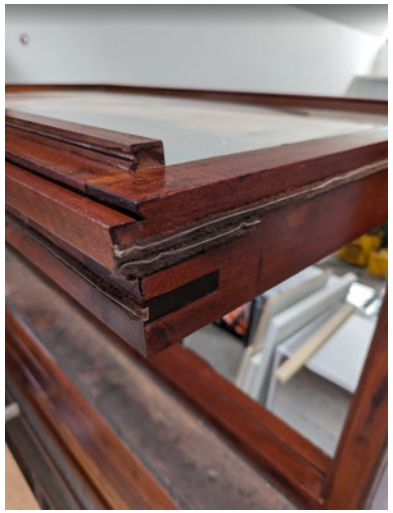


Existing window with single glazing

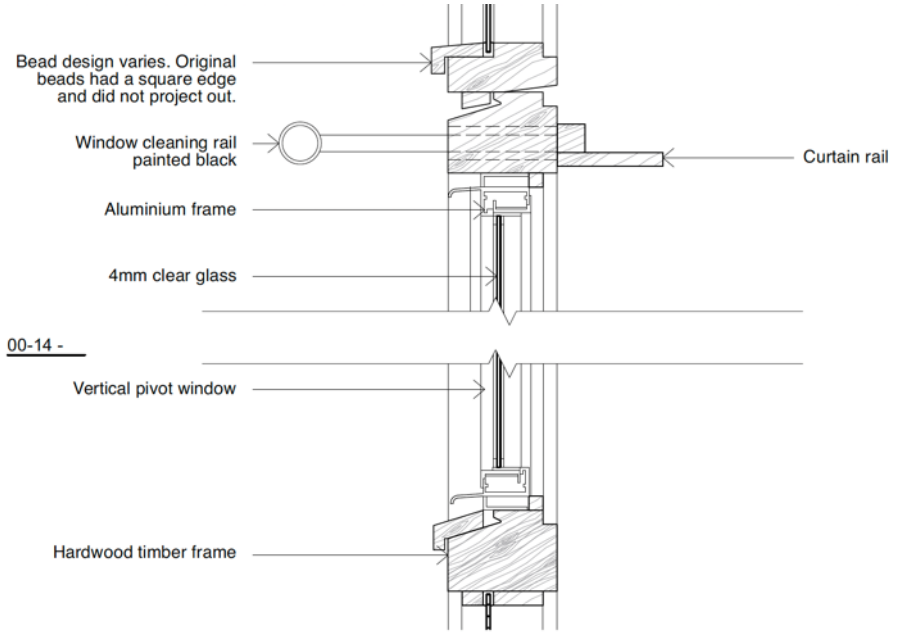


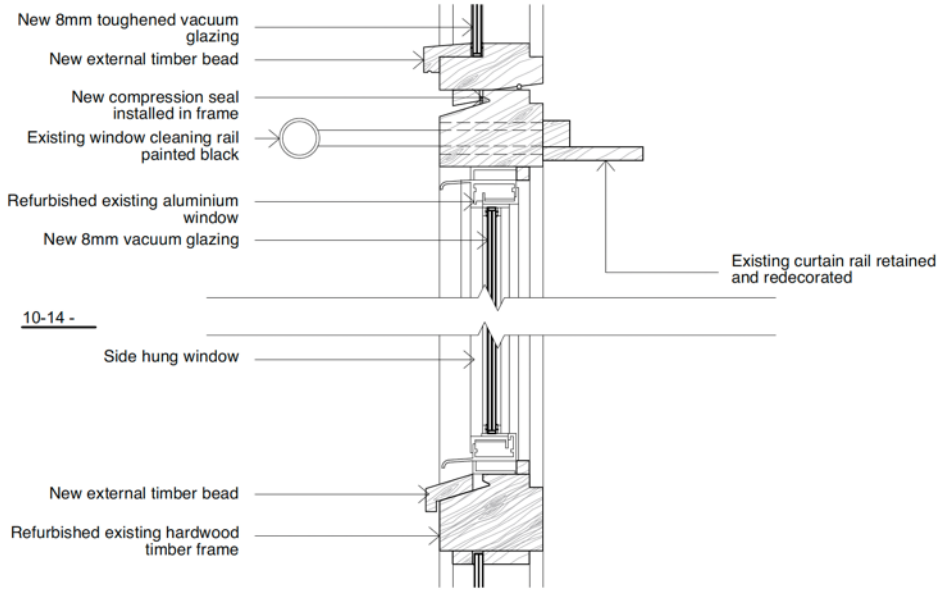
Proposed window with VIG

VIG can be installed into existing timber window with no adpations required to the rebates in the window frames. Existing external sapele beads will be replaced with new sapele beads.
Brush and compression seals will be installed into the opening window frames.



Vacuum Insulated Glass - Installation



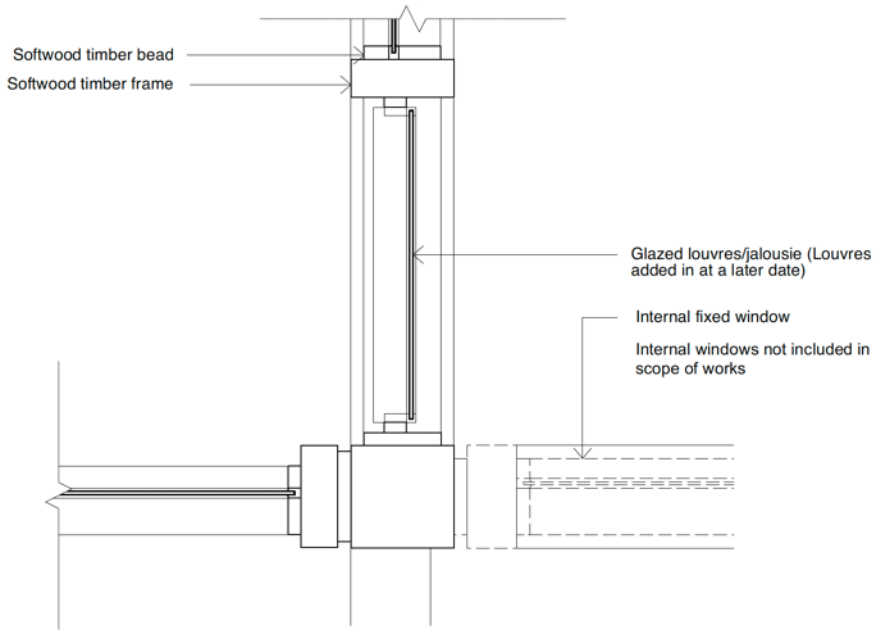


Existing window with single glazing

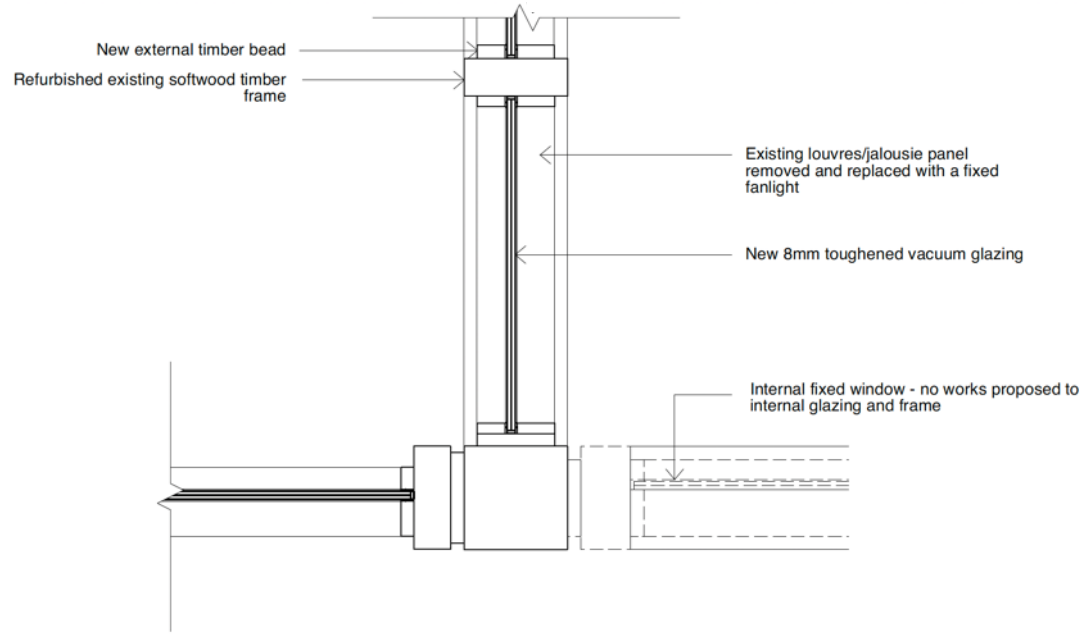
Existing window with VIG installed

VIG can be installed into the vertical pivot window with no adaption required to the frame.
The existing frame will be cleaned and re-anodized (the original finish).
New compression seals will be installed into the frame.

Vacuum Insulated Glass - Installation



Existing jalousie window

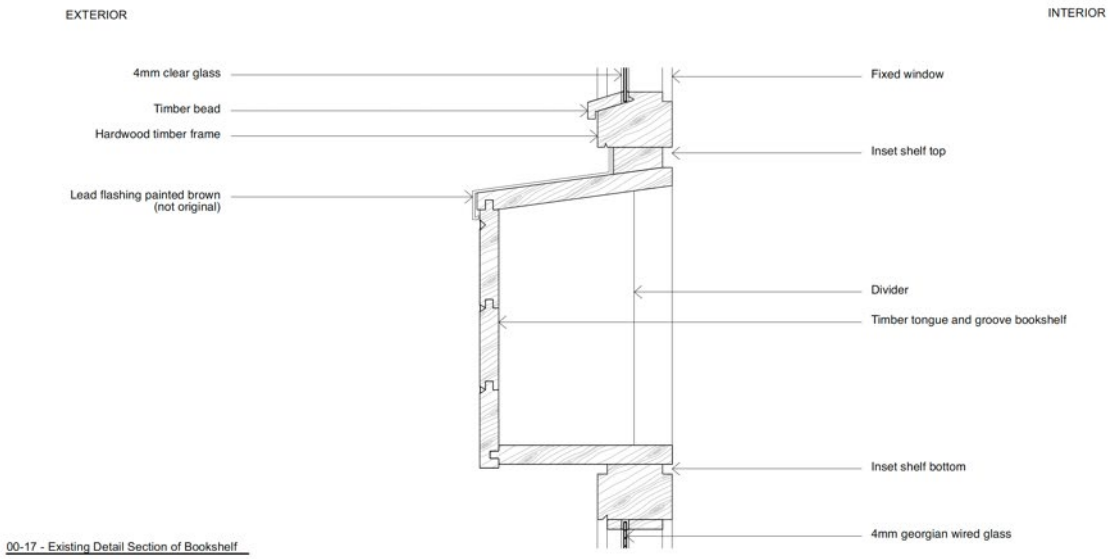


Proposed fixed light with VIG installed

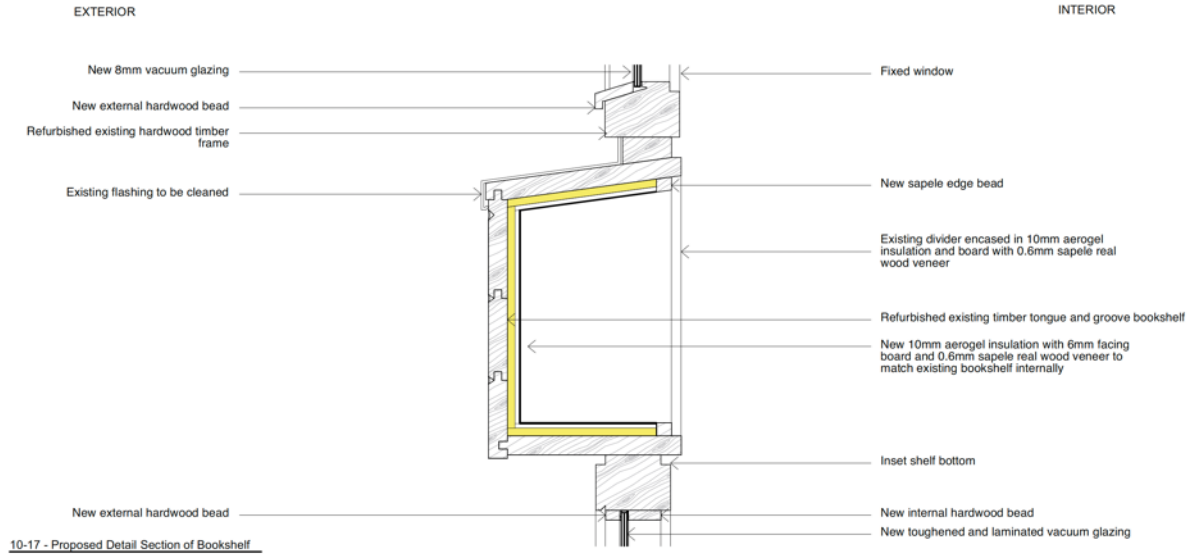
The existing jalousie window is a significant route for heat loss in the home. It is proposed to remove and replace with a fixed panel of VIG.

The BRE testing data shows the air leakage through this window (when closed) accounts for 18% of the measured air leakage from the entire property.

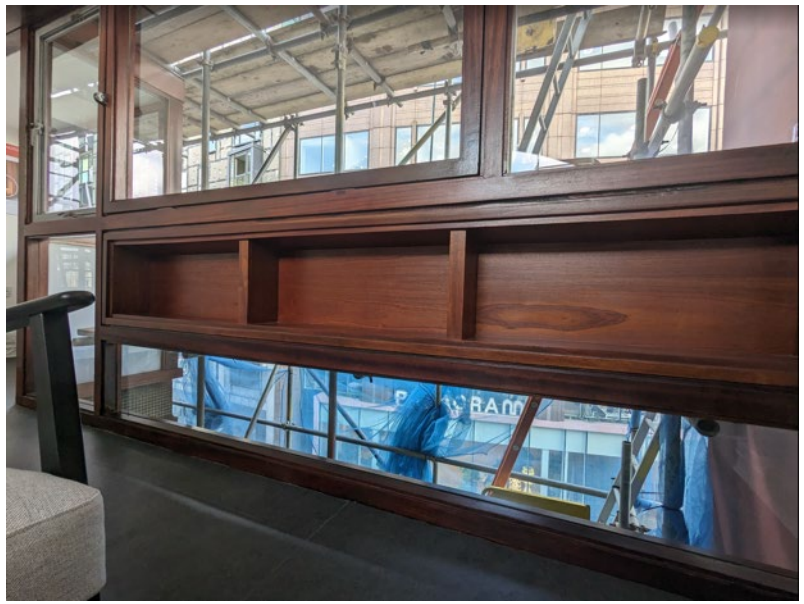
Vacuum Insulated Glass - Installation



Existing

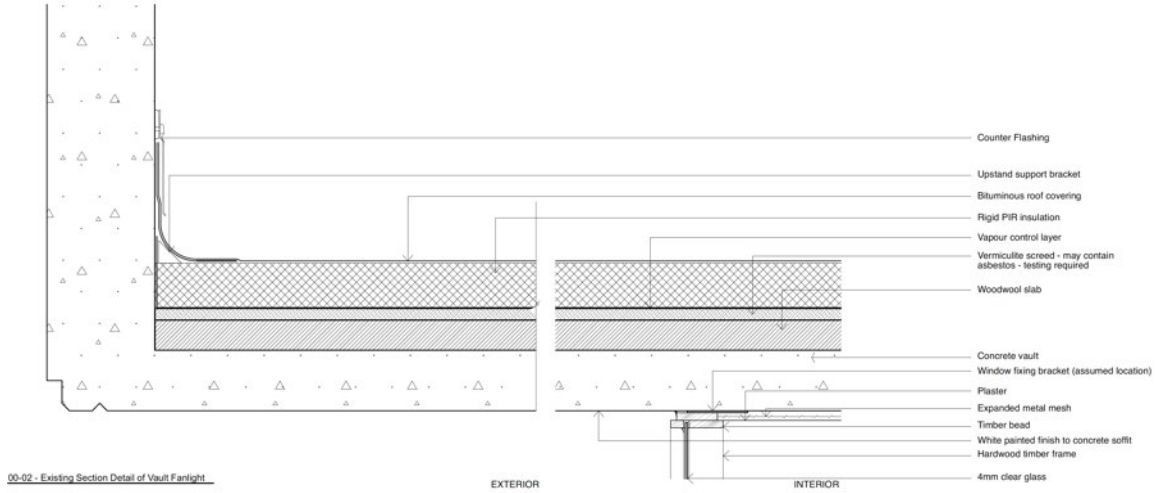


Proposed



It is proposed to line the internal face of the bookshelf with a 10mm aerogel insulation, 6mm facing board, and a sapele vaneer.
The proposal aims to reduce the risk of condensation forming in the bookshelf.

Insultation of Bookshelf

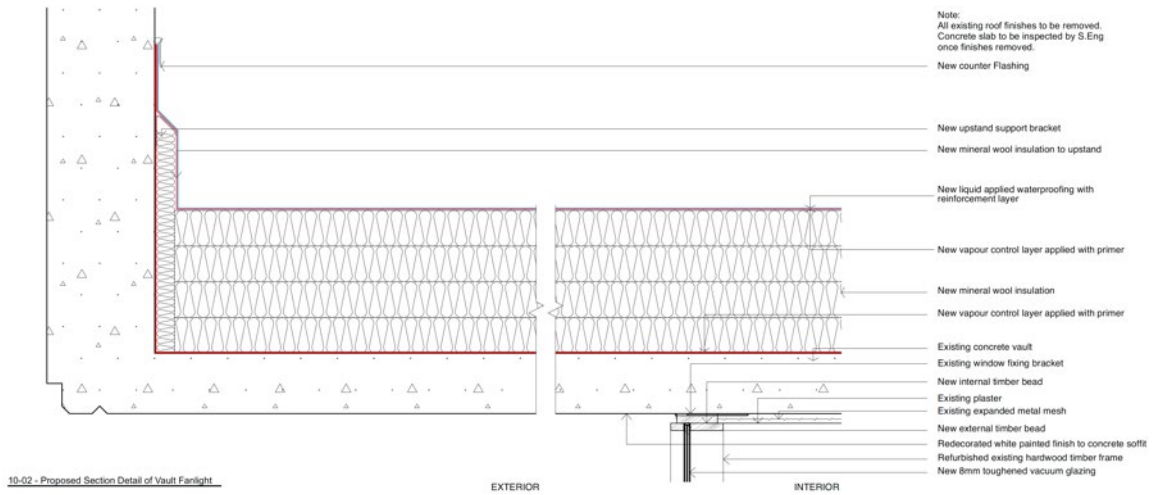


Existing Roof Build-up (U-value circa: 0.38W/m^{2}K)

Existing roof coverings to be removed.

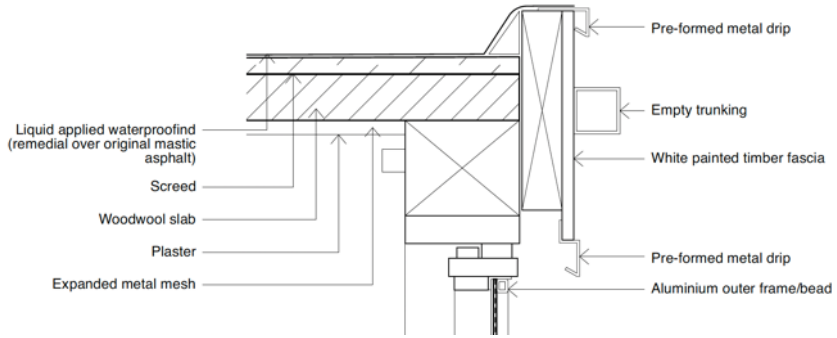
Concrete slab to be inspected and any remedial works to concrete carried out.

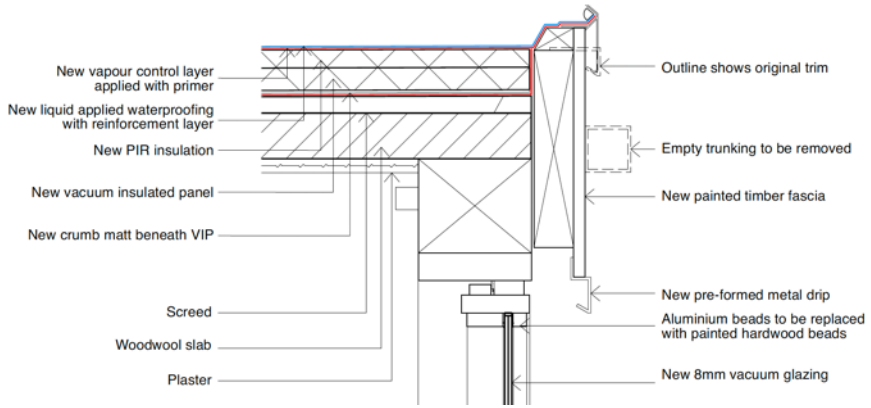
New insulation and cold applied liquid waterproofing roof system added.



Proposed Roof Build-up (U-value: 0.17W/m^{2}K)

Roof Works – Main Roof





Existing Roof Build-up (U-value circa: 0.5W/m^{2}K)

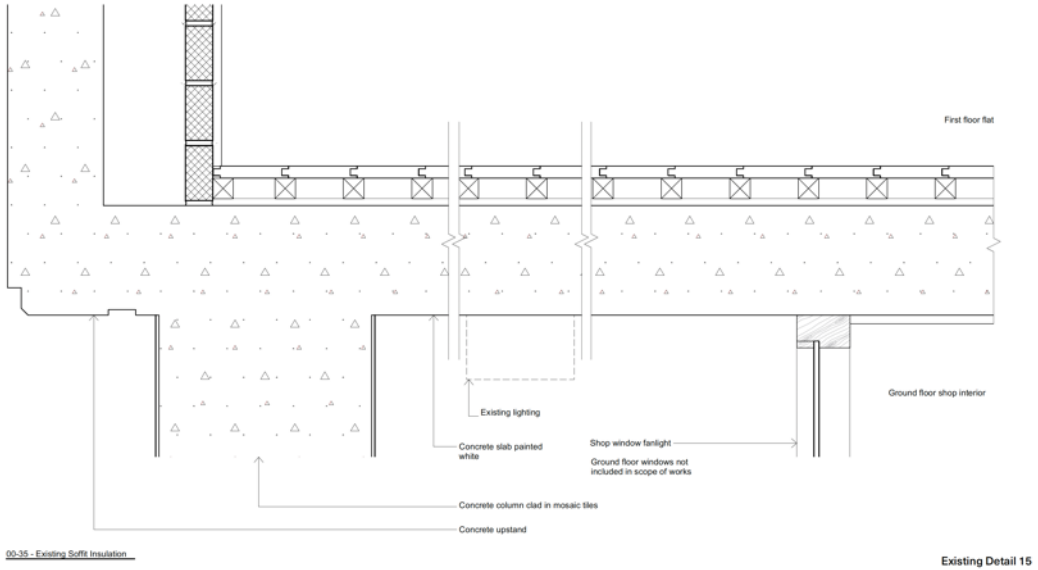
Existing roof coverings to be removed.

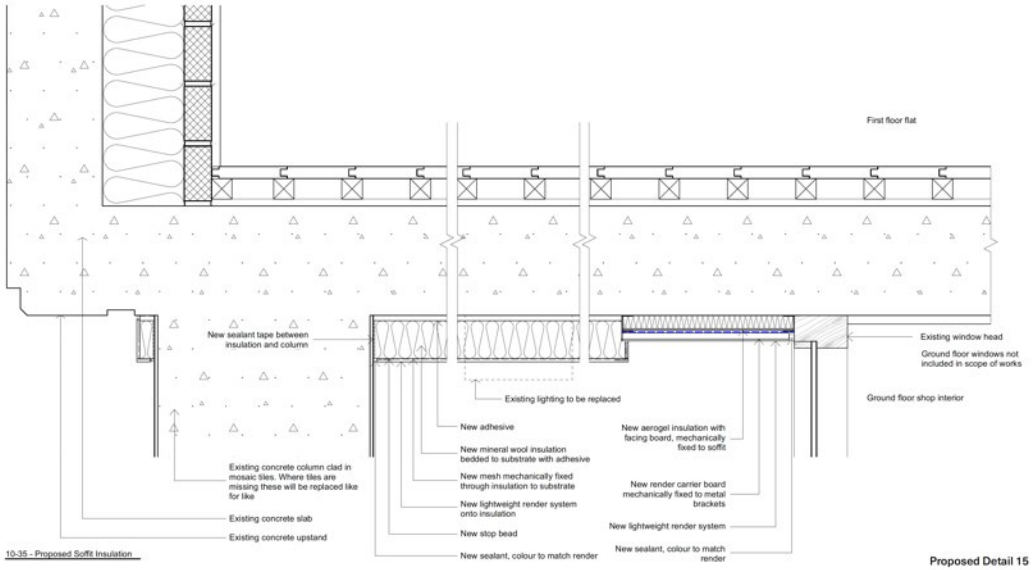
Woodwool decking to be inspected and any remedial works to concrete carried out.

New insulation and cold applied liquid waterproofing roof system added.

Proposed Roof Build-up (U-value: 0.22W/m^{2}K)

Roof Works – Kitchen Roof





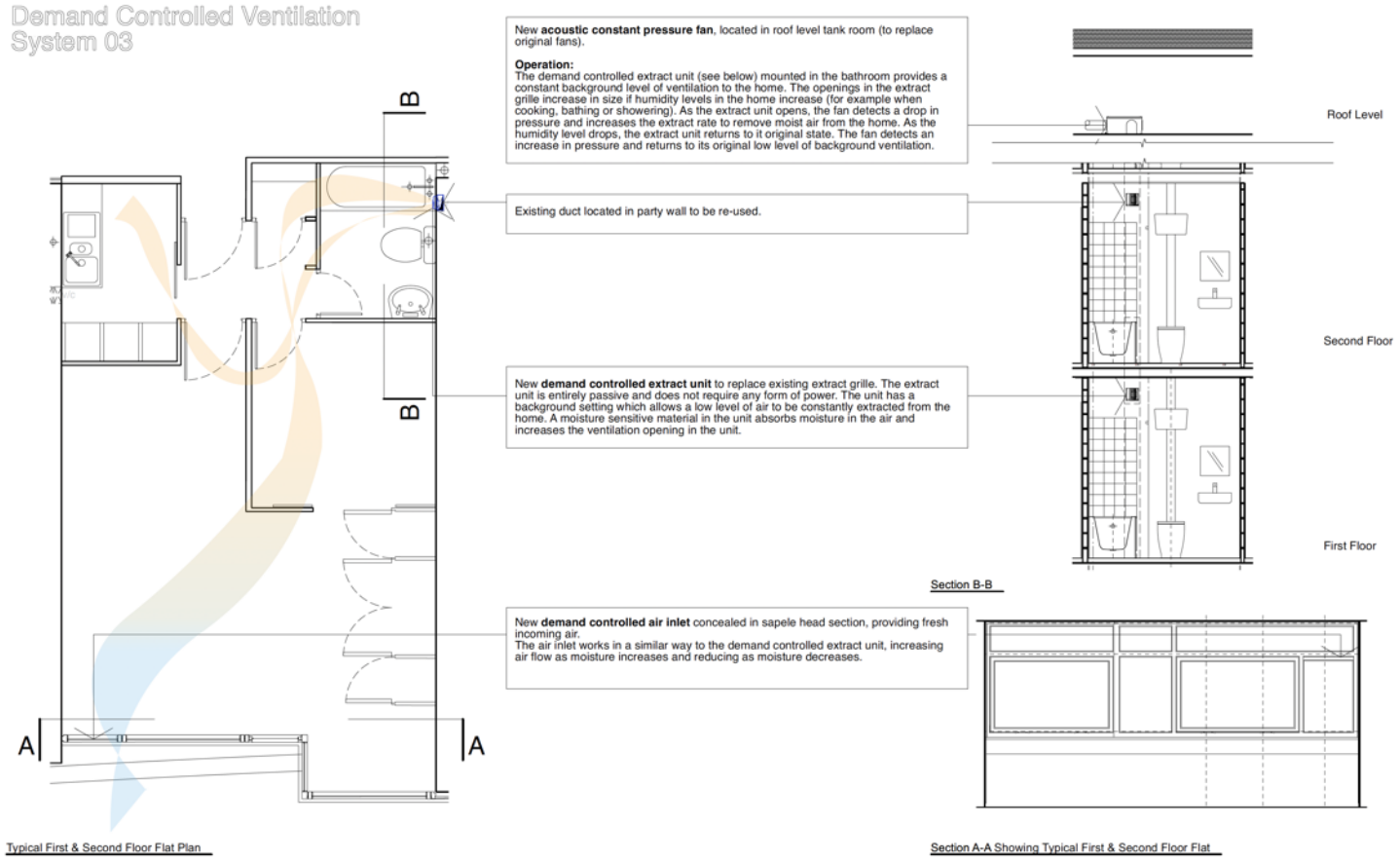
Existing (U-value circa: 2.3 W/m^{2}K)

Proposed (U-value: 0.4 W/m^{2}K)

New insulation to be applied to soffit.
Mineral wool insulation 70mm thick to main area.
Aerogel insulation 25mm thick to perimeter of ground floor shops etc.

Render applied directly to mineral wool insulation and onto carried board over aerogel

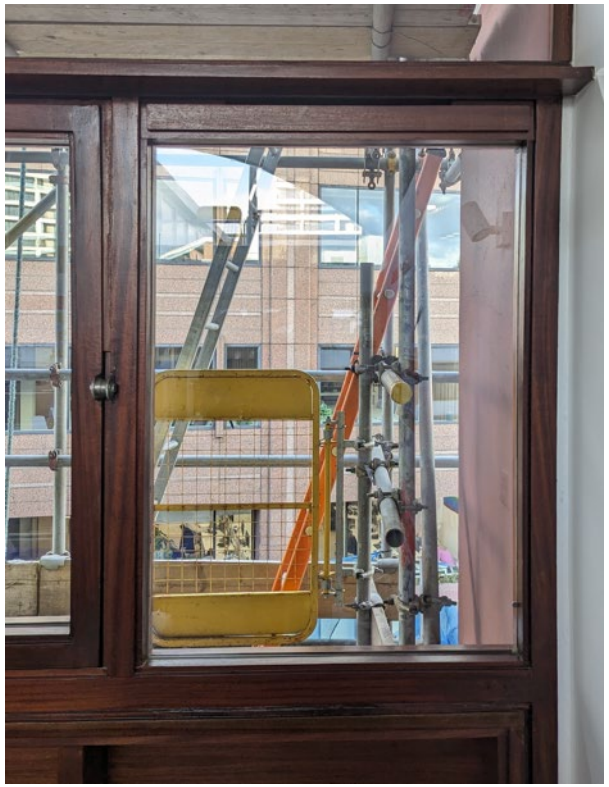
Soffit



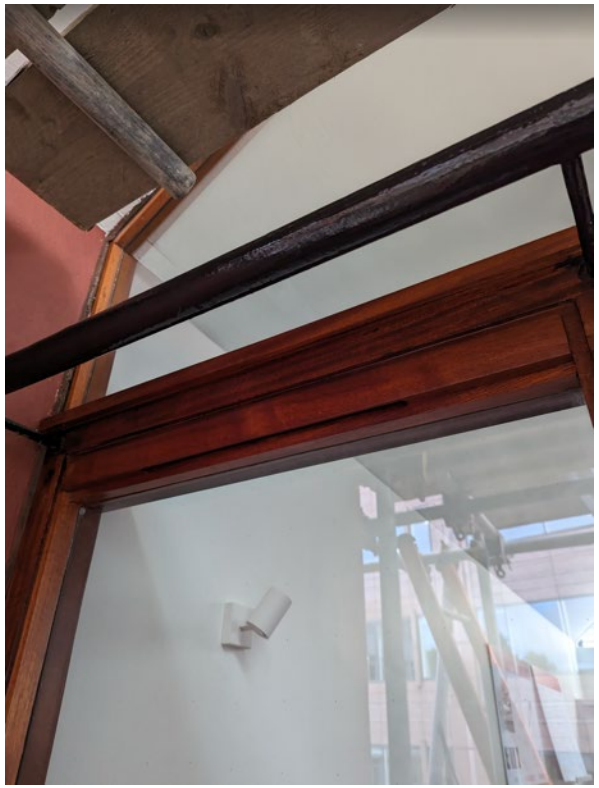
Ventilation System 03

As a result of the recognised link between improved thermal performance and the need for better, more controlled mechanical ventilation, new mechanical extract will be provided to all homes. This will take the form of adding a demand controlled ventilation system to each home.

Demand controlled ventilation adjusts ventilation extract rates based on the internal conditions in the home; as the moisture content of the air increases, extract rates increases to remove more air from the home.



Internal view of trickle vent



External view of trickle vent

Trickle vent with sapele cover removed

The existing windows have non-controllable trickle vents incorporated into the jambs of the pivot windows. In the process of overhauling the windows these will be removed and new beads installed to close the gaps.

A new head section is proposed to the frame of the fixed light above the bookshelf, to allow installation of a concealed demand controlled trickle vent, to provide background ventilation as part of the demand controlled ventilation system.

Additional Works – Ventilation Air Inlet (trickle vent)

A Pilot Project has been run to test a number of the proposals contained in the application. Work carried out:

Repair of window frames.
Installation of VIG.
Installation of demand controlled ventilation system.
Installation of electric heating and hot water.

Interior of 347 Crescent House prior to Pilot Project starting.

347 Crescent House – Pilot Project

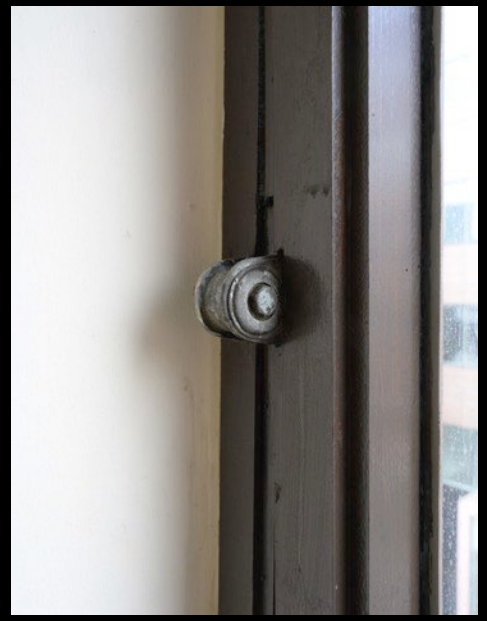
Original Naco pull handle

Original espagnolette handle

Replacement handle

Bookshelf

Aluminium window



Original pivot hinges

Shadow gap details

Kitchen window detail

347 Crescent House – Pilot Project – Before Works

Interior of 347 Crescent House during Pilot Project

347 Crescent House – Pilot Project Works In Progress

347 Crescent House – Pilot Project – completed works

347 Crescent House – Pilot Project – Completed Works

347 Crescent House – Pilot Project – Insulated Bookshelf

The Building Research Establishment (BRE) have carried out test to measure the changes in performance of the home before and after the pilot project.

Airtightness:

RESULTS

Whole home average airtightness - before: **8.13** $m^3.hr^{-1}.m^{-2}$@50Pa
Whole home average airtightness - after: **4.82** $m^3.hr^{-1}.m^{-2}$@50Pa

To put the result of 4.82 m^3.hr1.m-2@50Pa into context, building regulations say that new dwellings should achieve maximum air leakage of 10 $m^3.hr^{-1}$.m-2@50Pa. However, the building that is used as a benchmark (the notational dwelling) in the building regulations has an airtightness of 5 $m^3.hr^{-1}$.m-2@50Pa.

Acoustics:

RESULTS

The figure (D) in the table below is the sound reduction provided by the windows and frames.

Test number	Test element	Measurement details	Overall Difference *(D)*
L152-007	Original window system	Logarithmically averaged overall performance for selected hourly results in **Table 2**.	33.7 dB
L152-014	New window system	Logarithmically averaged overall performance for selected hourly results in **Table 4**.	36.4 dB

From the results of the acoustic testing, the newer installed window system (LandVac) provides an increase in the acoustic performance by +3dB which equates to an approximate doubling of the original window system performance.

Pilot Project – Measured Improvements

Interior of 347 Crescent House
after completion of Pilot Project

347 Crescent House – Pilot Project

347 Crescent House – Pilot Project

347 Crescent House – Pilot Project

347 Crescent House – Pilot Project