



- 1 strong horizontal form
- 2 contrasting white slab edges/black concrete spandrels
- 3 coarse pick-hammered concrete
- 4 strong palette of black, white, and yellow (Muroglass cladding/bin chutes)
- 5 black, steel opening windows in white, timber surrounds
- 6 windows are large and balconies generous



Paintwork deteriorating on timber frame/sill (internal). Evidence of mould growth.

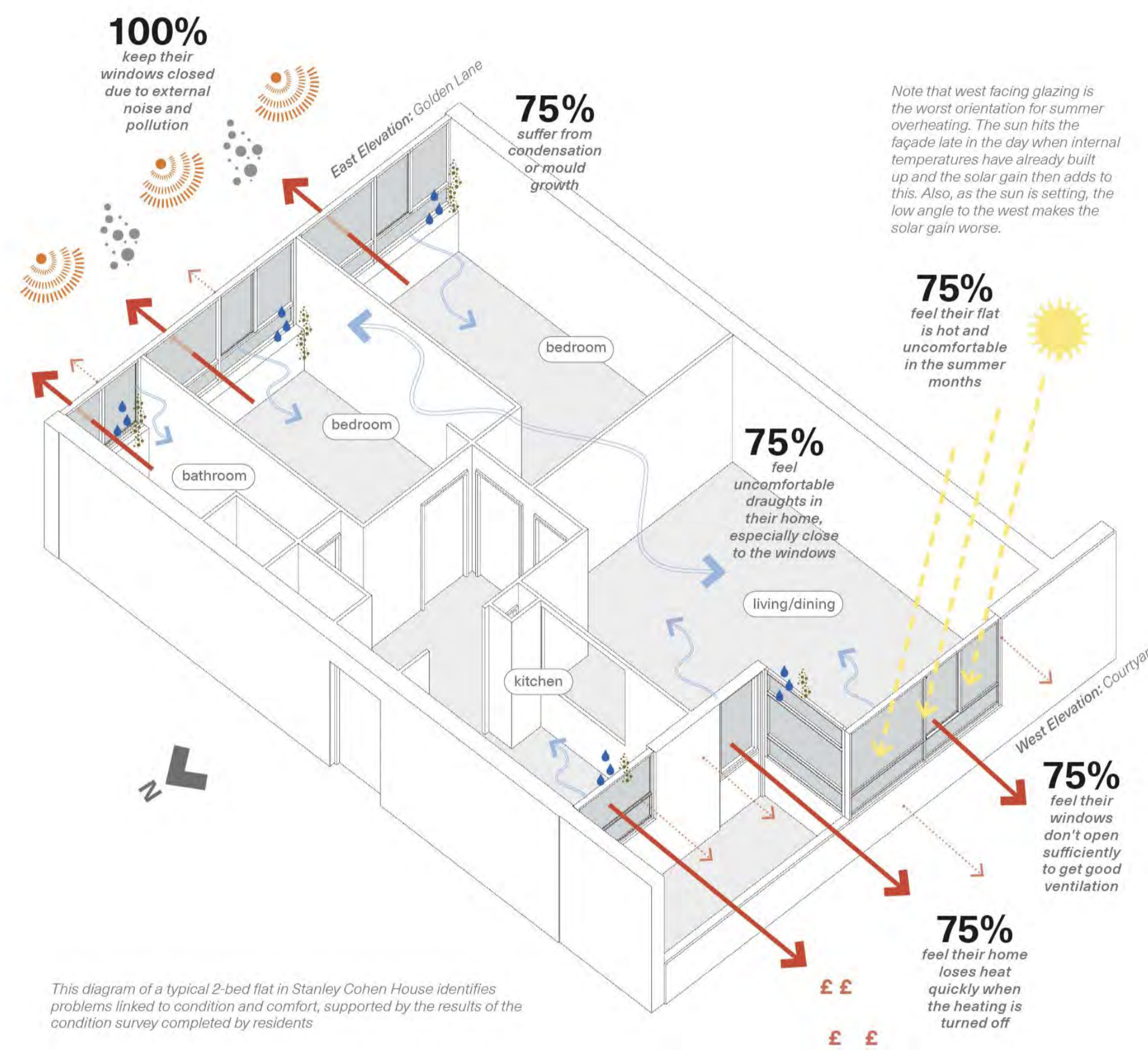


Paintwork deteriorating on timber frame/sill and steel opening lights (internal).



Paintwork deteriorating on timber frame/sill (internal and external).

NOW

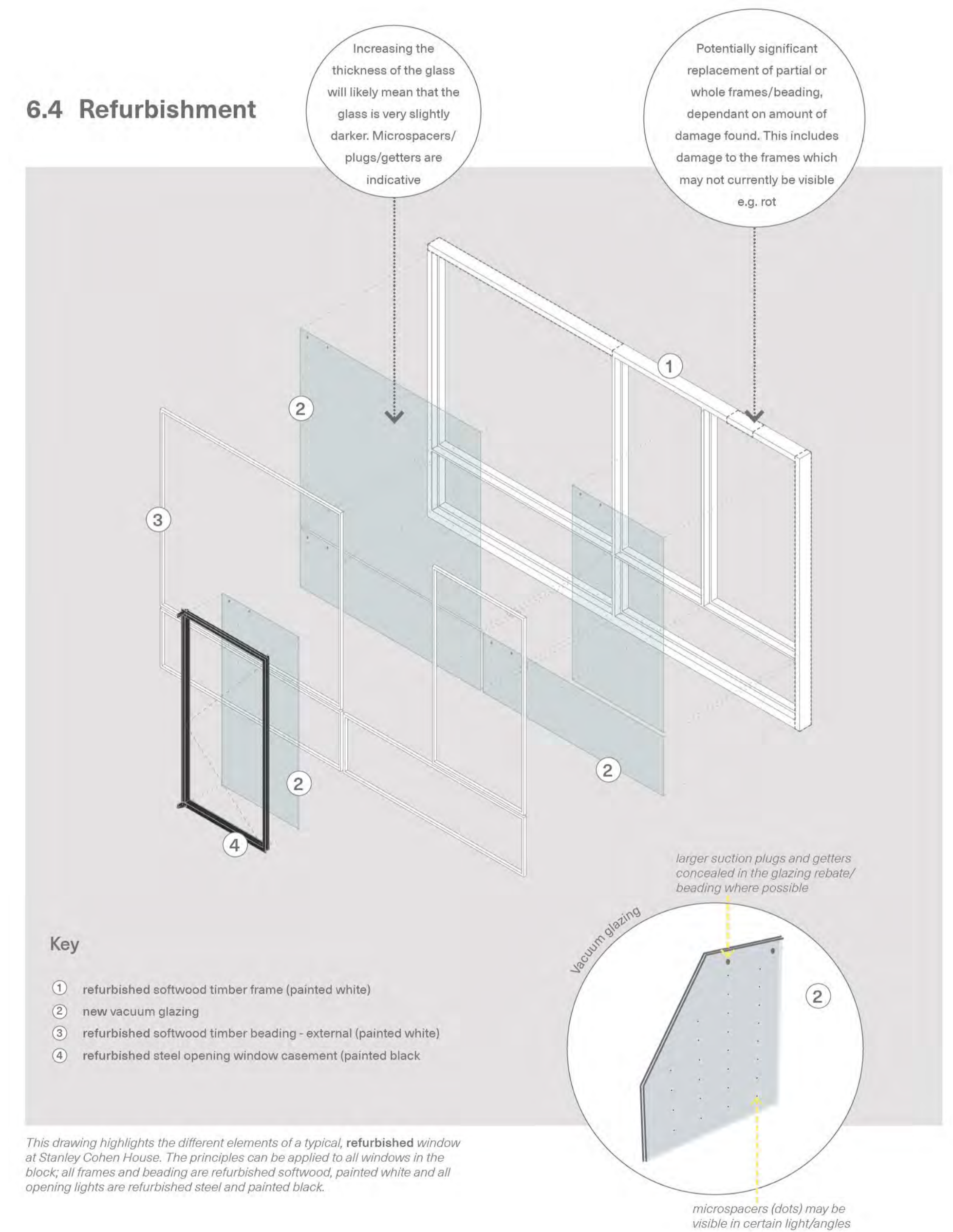


This diagram of a typical 2-bed flat in Stanley Cohen House identifies problems linked to condition and comfort, supported by the results of the condition survey completed by residents

- Key**
- Heat loss through single glazing
 - Heat loss through external walls & thermal bridges (incl. window frame)
 - ↔ Uncontrolled incoming air (draughts)
 - Excess solar gains (summer)
 - ☀ Noise pollution
 - ☁ Air pollution
 - ☄ Mould growth
 - 💧 Condensation build-up

CHALLENGES

6.4 Refurbishment



PROPOSAL

BASTERFIELD, BAYER, BOWATER CUTHBERT HARROWING, HATFIELD

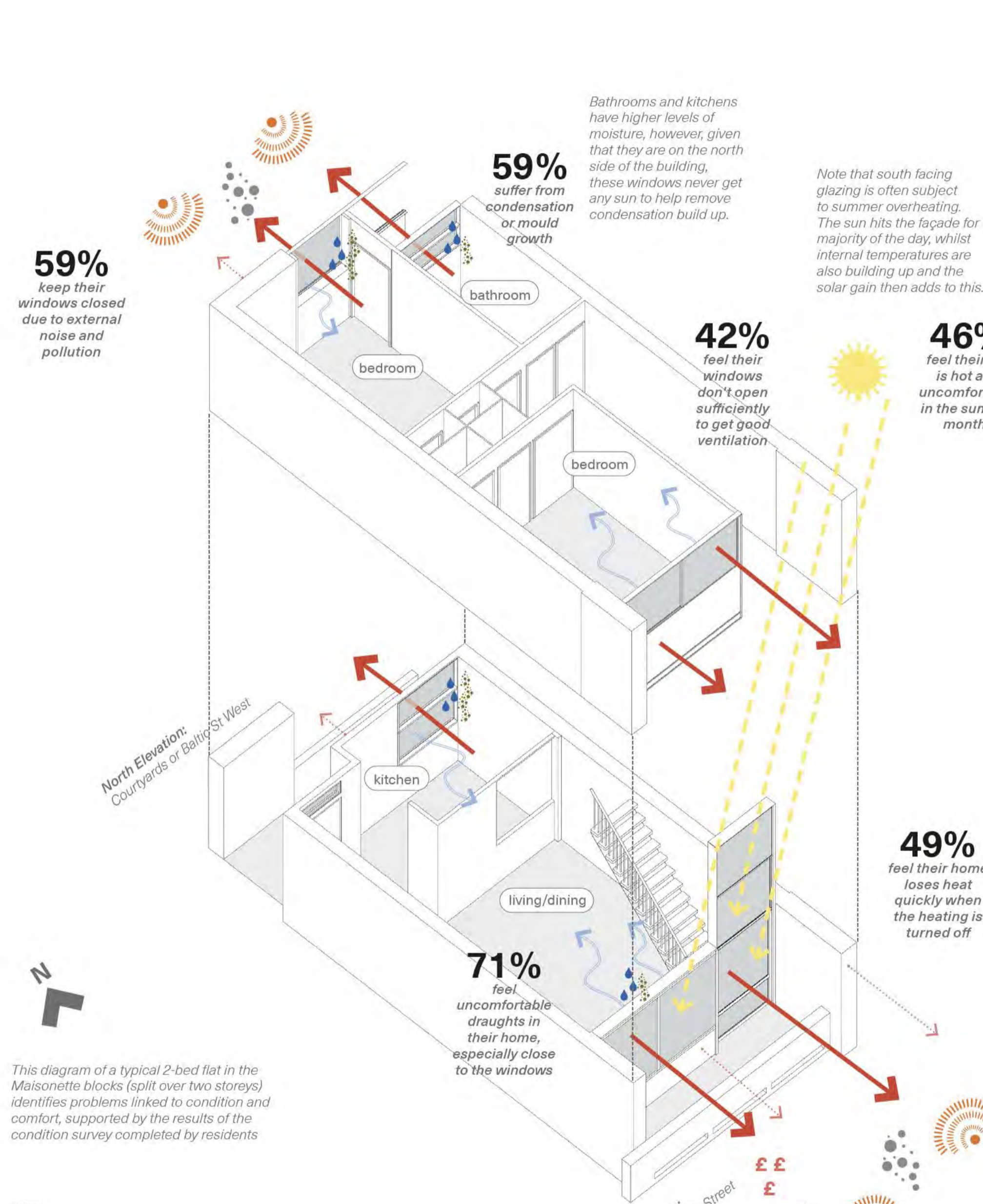


- 1 strong, rhythmic pattern to elevation, with a continuous band of glazing and coloured glass
- 2 bedroom reads as 'a floating box piercing glass screen'
- 3 bright colour of the cladding and the lighter quality of the aluminium frames contrasts with the comparatively darker materials used elsewhere
- 4 aluminium-framed windows slide horizontally
- 5 spaciousness and light from large windows and generous balconies
- 6 glazed aluminium doors slide vertically
- 7 curtain tracks at transom level
- 8 figure of eight heating coil
- 9 escape balconies (north elevation, not shown)
- 10 courtyard access from living rooms



Protective coating on timber frame Oxidisation of the aluminium frames internally and externally (sliding). Peeling paintwork to timber reveal Oxidisation of the aluminium frames internally and externally (door system) Damage/deterioration of the Miroglass spandrel panels. Many are faded or have been replaced with a poor colour match

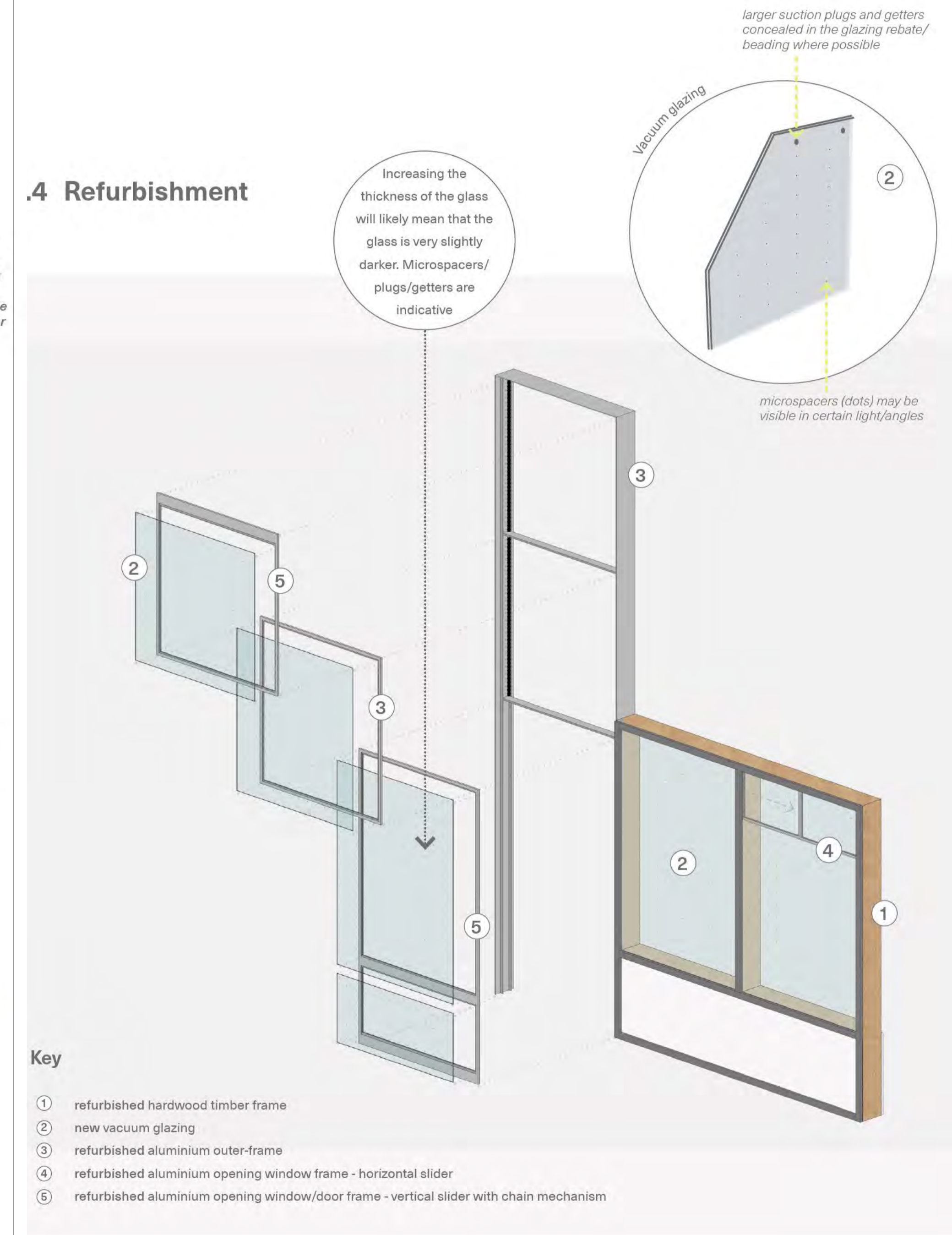
NOW



- Key**
- Heat loss through single glazing
 - Heat loss through external walls & thermal bridges (incl. window frame)
 - Uncontrolled incoming air (draughts)
 - Excess solar gains (summer)
 - ☀️ Noise pollution
 - ☁️ Air pollution
 - 🍄 Mould growth
 - 💧 Condensation build-up

CHALLENGES

4 Refurbishment



This drawing highlights the different elements of a typical, refurbished window in one of the Maisonette blocks. The principles can be applied to all windows in the block, apart from the north facing softwood window (these are described as significant in heritage terms). Principally, the vast majority of the

PROPOSAL



- 1 transition point between the Maisonette blocks and Crescent House
- 2 floor-to-ceiling windows
- 3 the exposed aggregate of the concrete shelf and planter (internal)
- 4 the wide pre-cast concrete planters at floor level
- 5 shelves at cill level, with holes for flower pots
- 6 the open concrete balustrades on the access galleries
- 7 tomato red painted kitchen windows



The original sliding aluminium bar appears to be missing on some of the unframed sliding windows, leaving a gap for warm to escape out of.

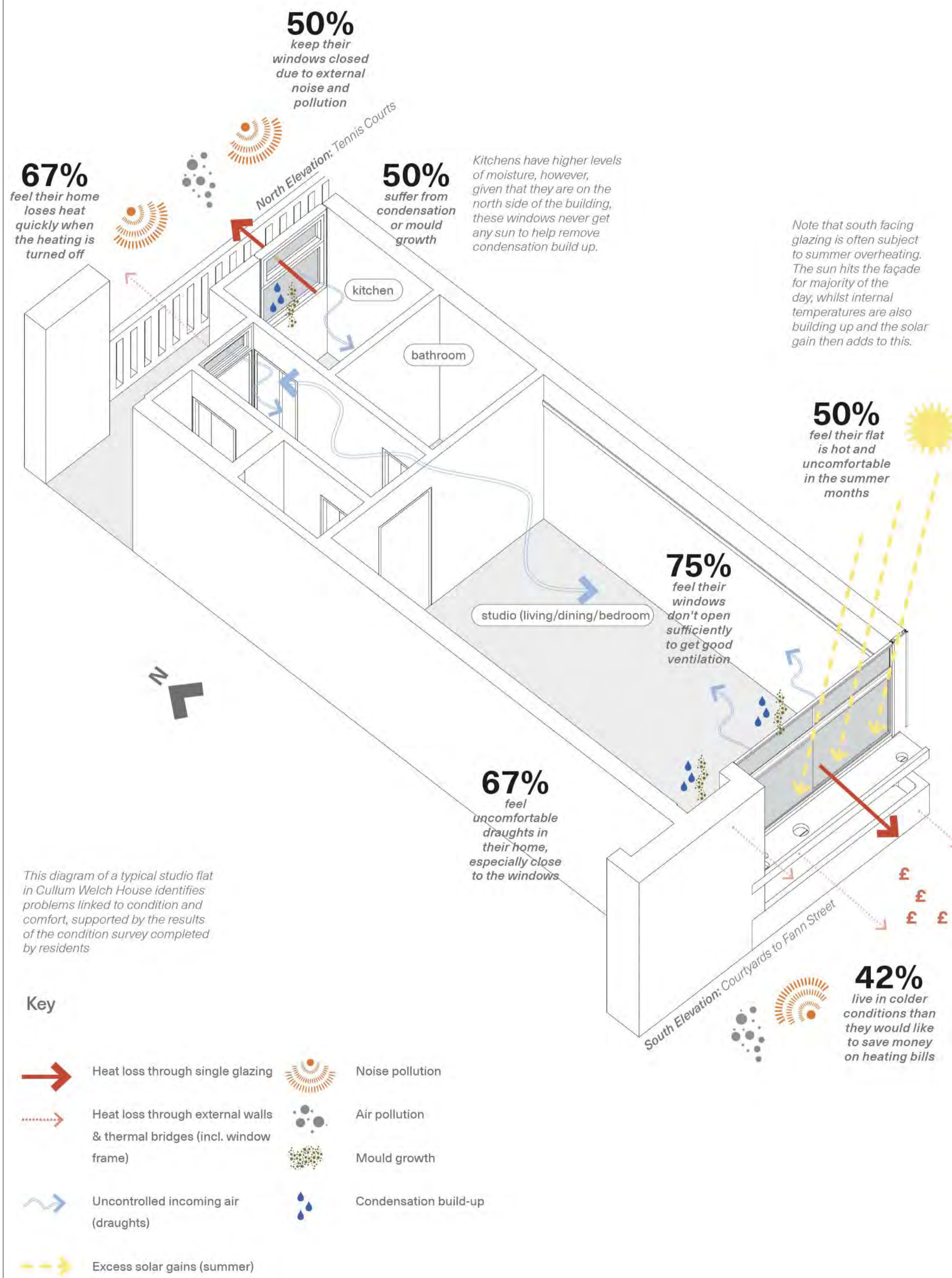


Ventilation panels have been retrofitted into some windows and some have subsequently been covered to stop any draughts.



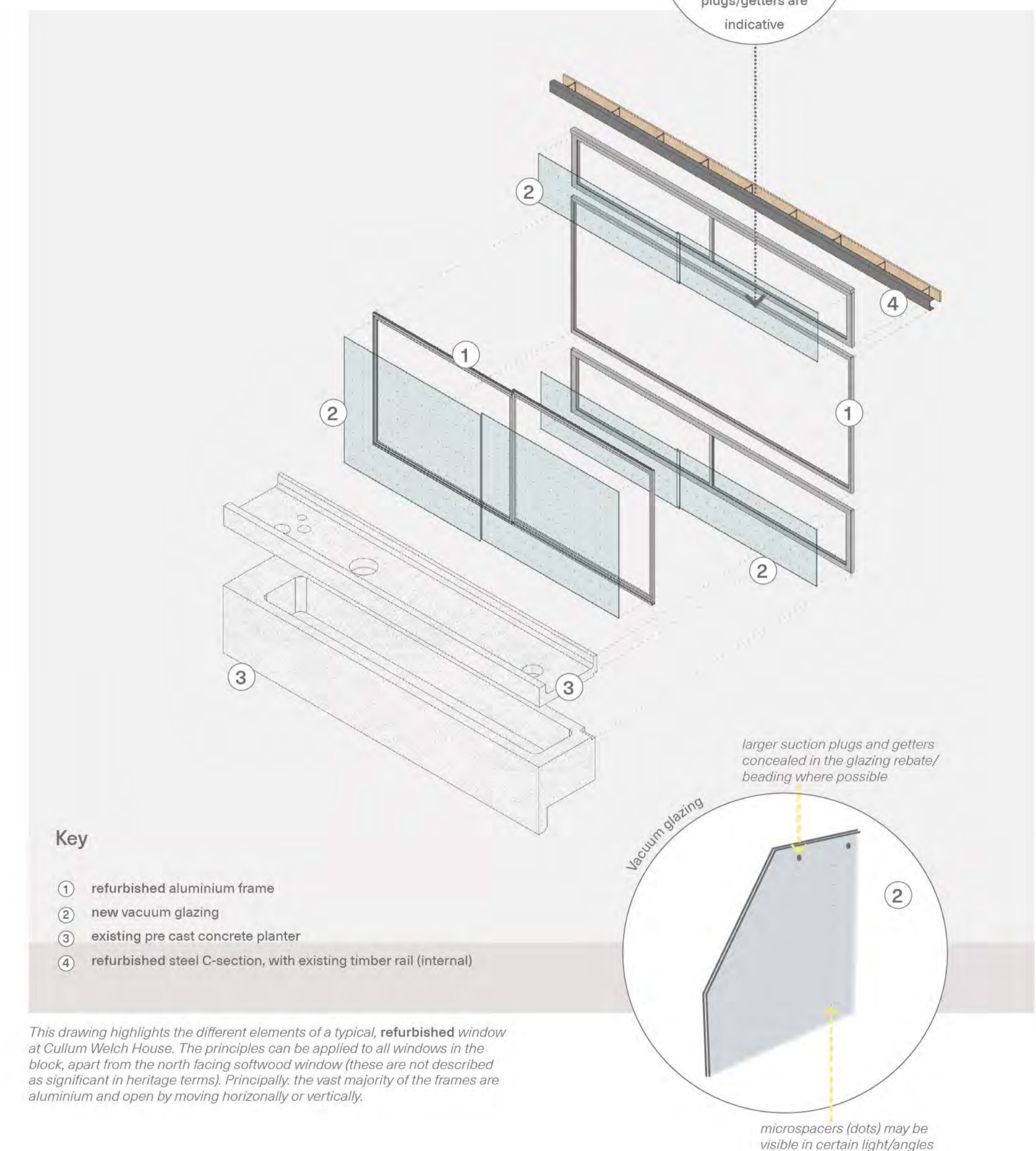
The original aluminium frames and runners are weathered and stiff, showing signs of oxidation.

NOW



CHALLENGES

6.4 Refurbishment

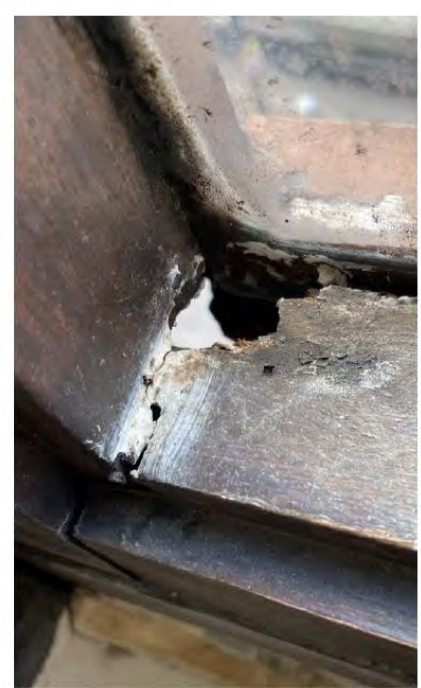


PROPOSAL

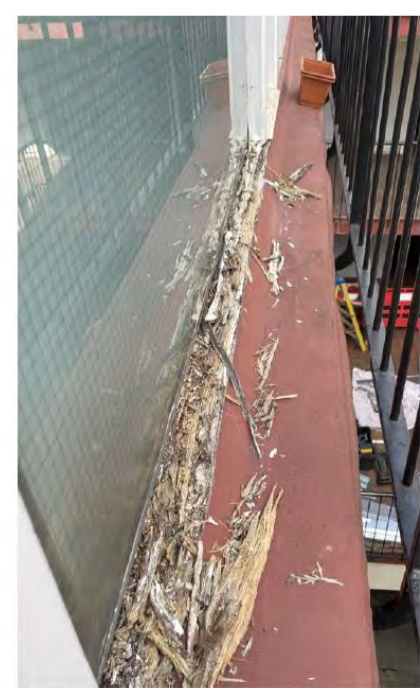
CRESCENT HOUSE



- 1 bush-hammered, in situ concrete bands
- 2 hardwood timber window frames
- 3 pivoting centrally hung casements
- 4 aluminium opening lights
- 5 georgian wired glass
- 6 white infill panels (spandrel panels)
- 7 stepped profile of the building along the curve of the road
- 8 mosaic tiles on exposed floor slab edges
- 9 rendered concrete cross walls, painted rust-red
- 10 built in timber 'floating' shelves



Deterioration of the hardwood frame/sill on the west facade where the glass pane has become exposed to the elements. Evidence of mould growth.



Deterioration of the softwood frame/sill on the kitchen window facing the internal lightwells.

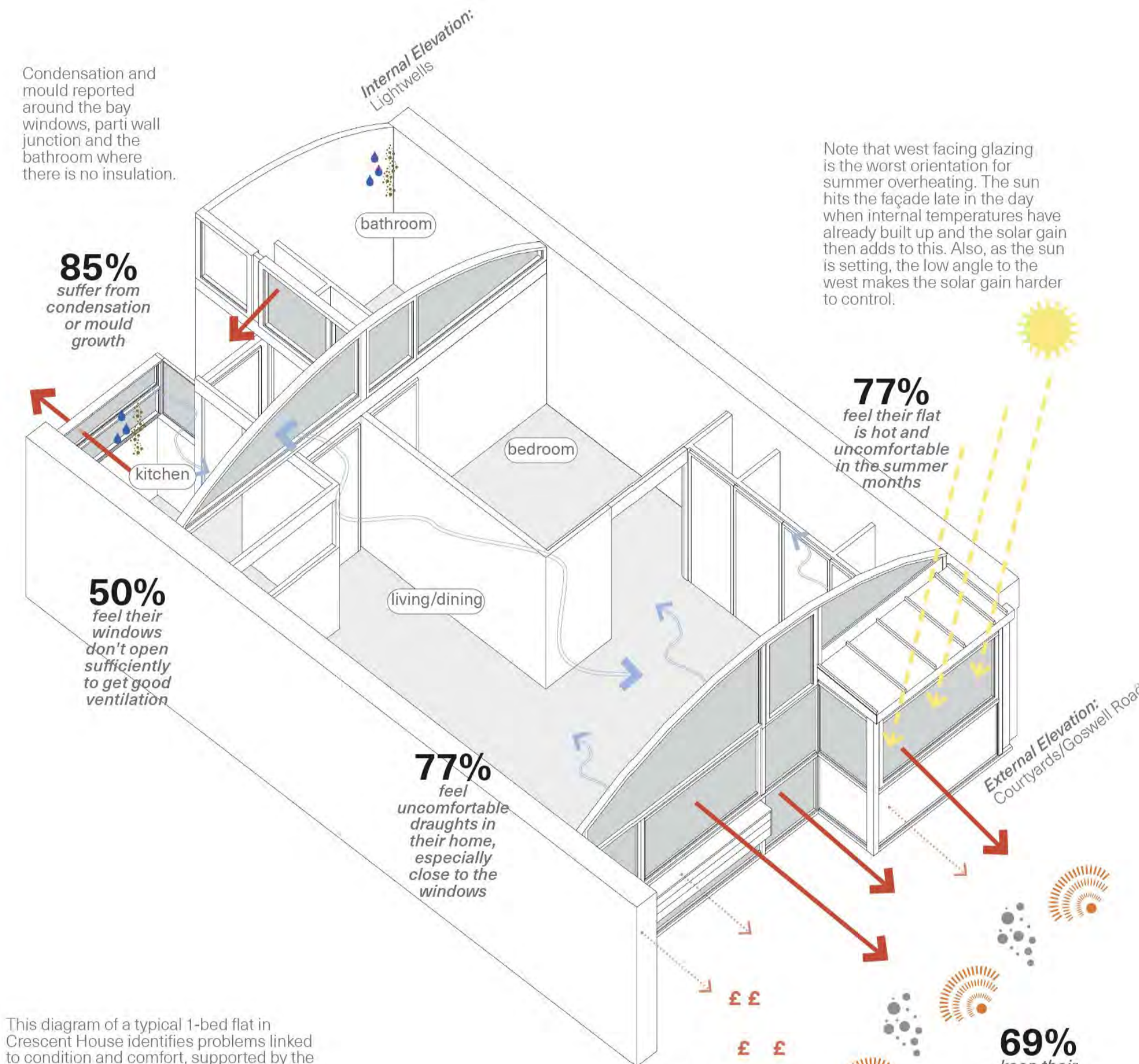


Deterioration of the hardwood frame/sill on the west facade (oriel window).



Paintwork deteriorating on timber frame and the spandrel panel. Evidence of mould growth.

NOW

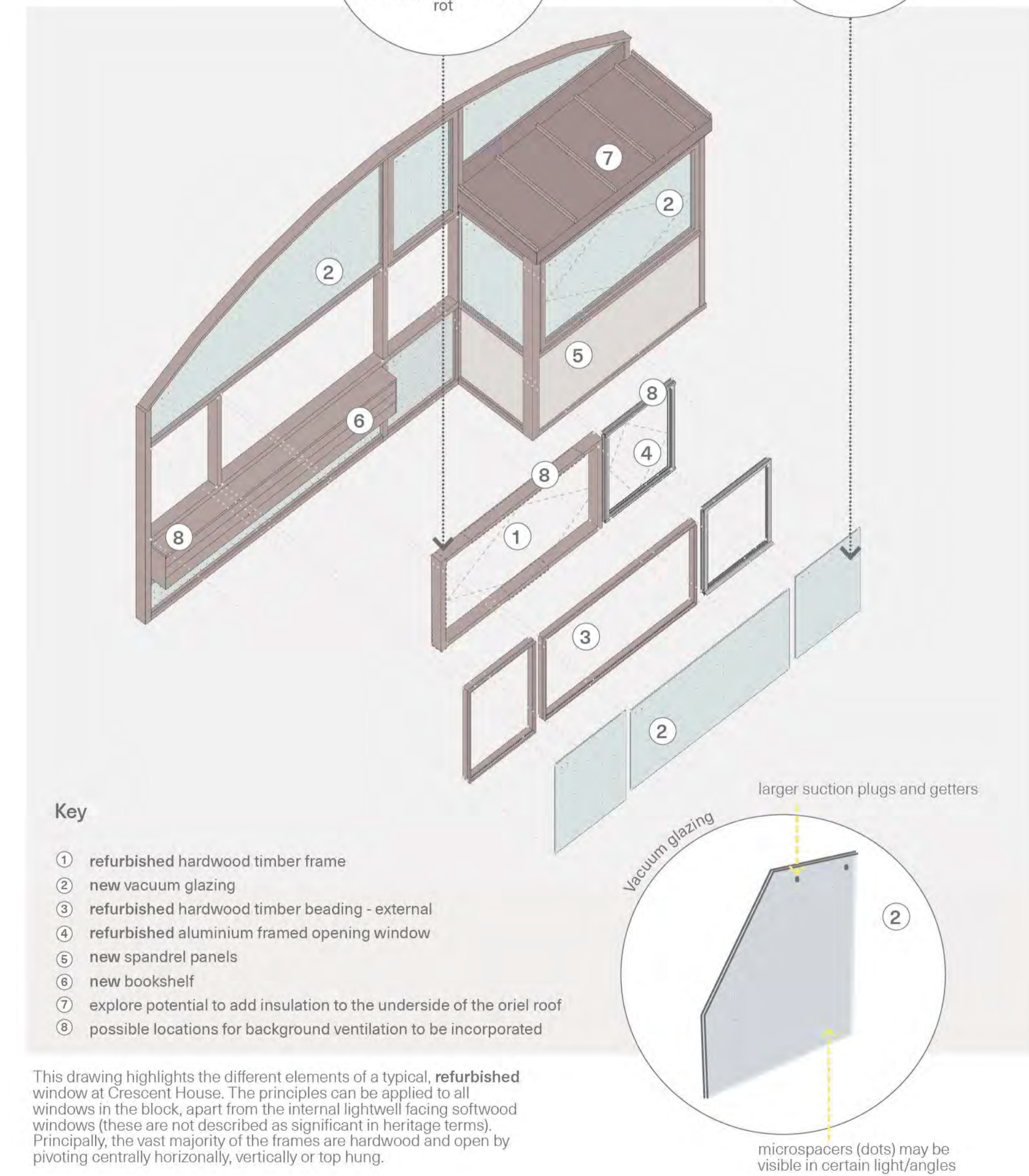


This diagram of a typical 1-bed flat in Crescent House identifies problems linked to condition and comfort, supported by the results of the condition survey completed by residents.

- Key**
- Heat loss through single glazing
 - Heat loss through external walls & thermal bridges (incl. window frame)
 - ↔ Uncontrolled incoming air (draughts)
 - Excess solar gains (summer)
 - ☀ Noise pollution
 - ☁ Air pollution
 - ☄ Mould growth
 - 💧 Condensation build-up

CHALLENGES

6.4 Refurbishment



This drawing highlights the different elements of a typical, **refurbished** window at Crescent House. The principles can be applied to all windows in the block, apart from the internal lightwell facing softwood windows (these are not described as significant in heritage terms). Principally, the vast majority of the frames are hardwood and open by pivoting centrally horizontally, vertically or top hung.

PROPOSAL

CRESCENT HOUSE PILOT PROJECT

bre

Airtightness Testing

Test Conditions

The apartment was tested as a whole by mounting the test equipment (blower door) within a hallway door serving the space under test, see Figure 2. All internal doors wedged opened to allow airflow through entire area under test, as required by CIBSE TM23:2022.

The apartment was also tested with a range of sealed configurations (see Table 4) to highlight areas of air leakage. The testing was undertaken by inducing both a positive and negative pressure across the building envelope and the results averaged.



Figure 2: Test set-up showing the blower door mounted in the front door.

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Test results

The airtightness test on the whole apartment was conducted in accordance with the requirements of CIBSE TM23:2022.

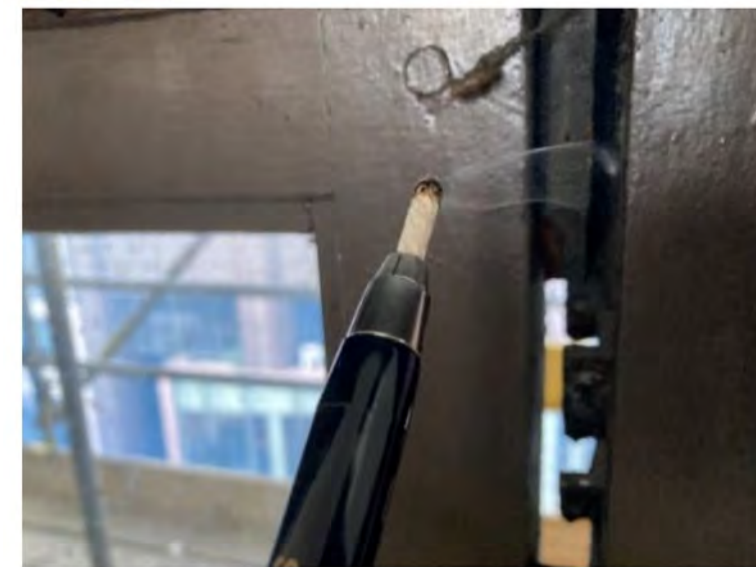
The envelope areas were calculated from supplied drawings.

The airtightness test results are presented in Table 4, below.

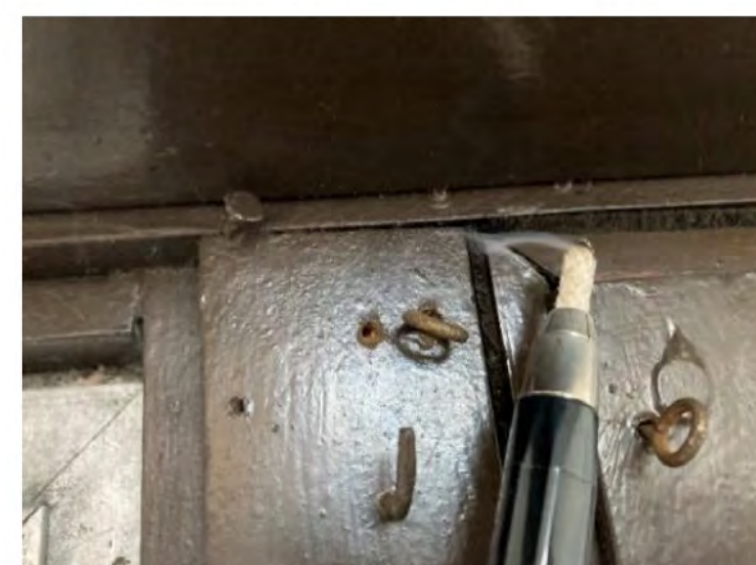
Test Number sealed/unsealed parts of building envelope.	Envelope Area m ²	Airtightness Result Negative	Airtightness Result Positive
Test 1 - Whole Apartment (bathroom extract sealed for all tests)	141.71	7.47 m ³ hr ⁻¹ m ² @50Pa 9.90 Air Change per hour @50Pa	8.79 m ³ hr ⁻¹ m ² @50Pa 11.65 Air Change per hour @50Pa
Test 2 - Whole Apartment with kitchen window sealed	141.71	7.13 m ³ hr ⁻¹ m ² @50Pa 9.46 Air Change per hour @50Pa	8.54 m ³ hr ⁻¹ m ² @50Pa 11.32 Air Change per hour @50Pa
Test 3 - Whole Apartment with kitchen and bathroom window sealed	141.71	5.93 m ³ hr ⁻¹ m ² @50Pa 7.86 Air Change per hour @50Pa	7.50 m ³ hr ⁻¹ m ² @50Pa 9.94 Air Change per hour @50Pa
Test 4 - Whole Apartment with kitchen, bathroom and main window sealed	141.71	3.84 m ³ hr ⁻¹ m ² @50Pa 5.09 Air Change per hour @50Pa	5.58 m ³ hr ⁻¹ m ² @50Pa 7.40 Air Change per hour @50Pa
Test 5 - Whole Apartment with kitchen, bathroom, main window, and service cupboard sealed	141.71	3.32 m ³ hr ⁻¹ m ² @50Pa 4.40 Air Change per hour @50Pa	5.31 m ³ hr ⁻¹ m ² @50Pa 7.03 Air Change per hour @50Pa

Table 4: Airtightness Test Results on 13/02/2023

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Photograph 9: Air Leakage - main window frame (SAL7)



Photograph 10: Air Leakage - window frame (SAL8)



Photograph 14: Air Leakage - window frame (SAL12)

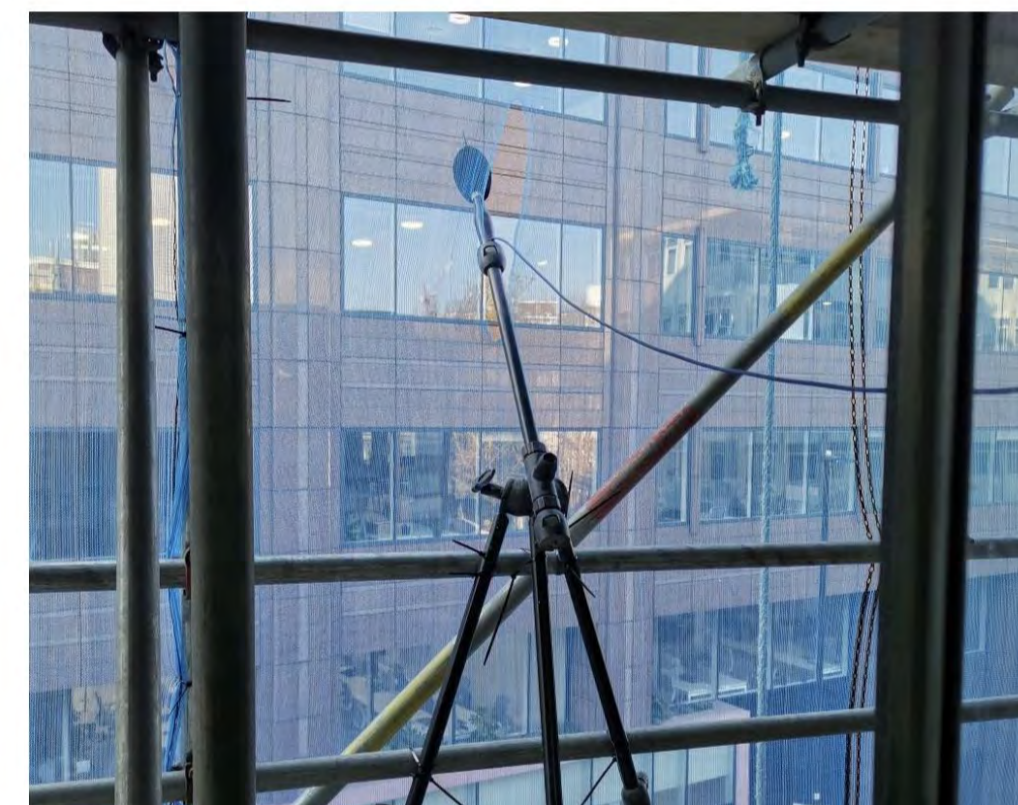
AIR LEAKAGE

bre

Photographs



Photograph 1: Two sound level meters set up internally with window system under test.



Photograph 2: External microphone located at external façade.

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Test numbers and test results

Test number, specimen type and sound insulation performance presented as a level difference (D), are presented in Table 2, below. Randomly selected hourly periods were used for the analysis.

Test number	Test element	Selected measurement details	Difference (D)
L152-001	Original window system	Tuesday 14 th Feb - 12pm to 1pm	33.7 dB
L152-002		Wednesday 15 th Feb - 1am to 2am	33.8 dB
L152-003		Thursday 16 th Feb - 9am to 10am	33.6 dB
L152-004		Friday 17 th Feb - 3am to 4am	33.8 dB
L152-005		Saturday 18 th Feb - 5pm to 6pm	33.6 dB
L152-006		Sunday 19 th Feb - 8am to 9am	33.8 dB

Table 2: Measurement details with test numbers and difference (D) results for each hour of logarithmically averaged 15-minute measurements.

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

Table 3: Test number and difference (D) test result from the logarithmically averaged hourly results in Table 2.

NOISE

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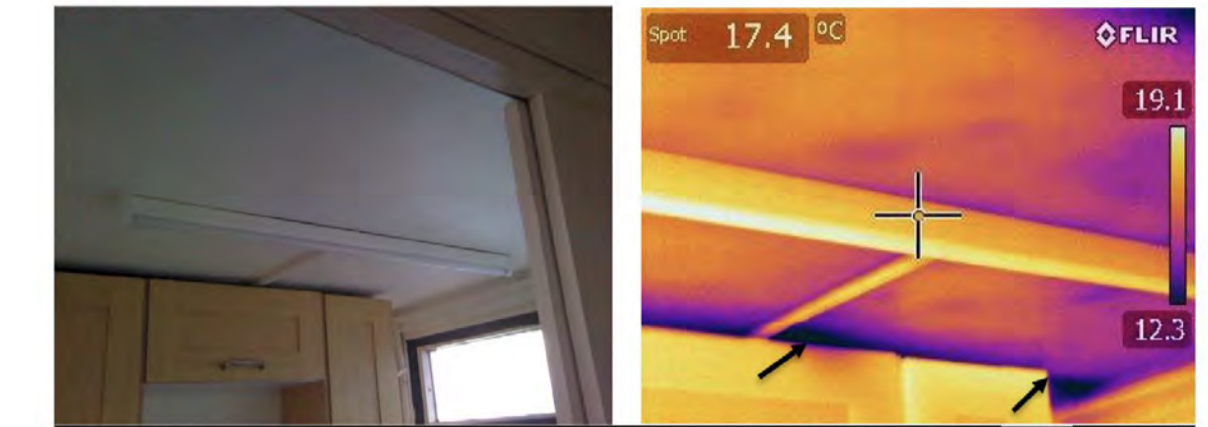


Figure 11: Thermal Image kitchen - heat loss highlighted Location THL4

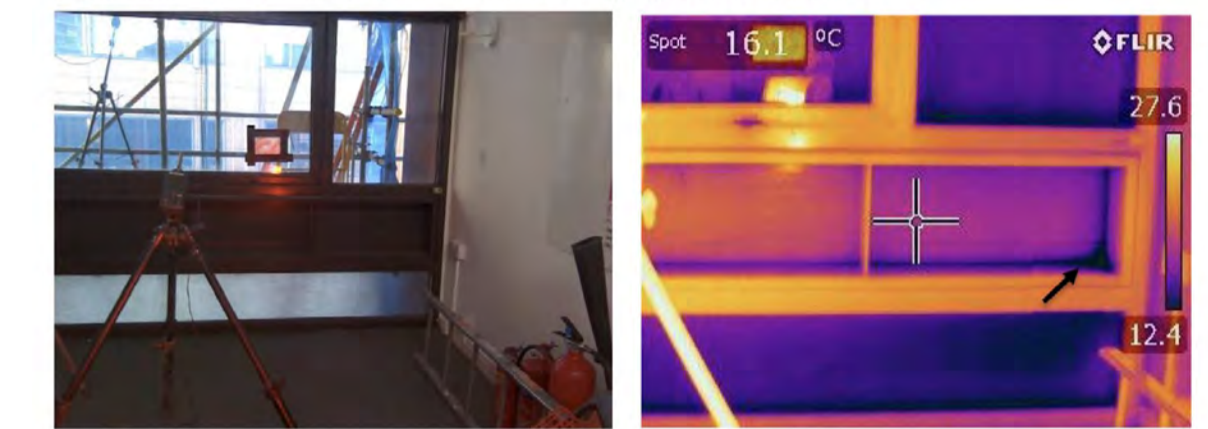


Figure 12: Thermal Image shelving - heat loss highlighted Location THL5 (see Figure 7)

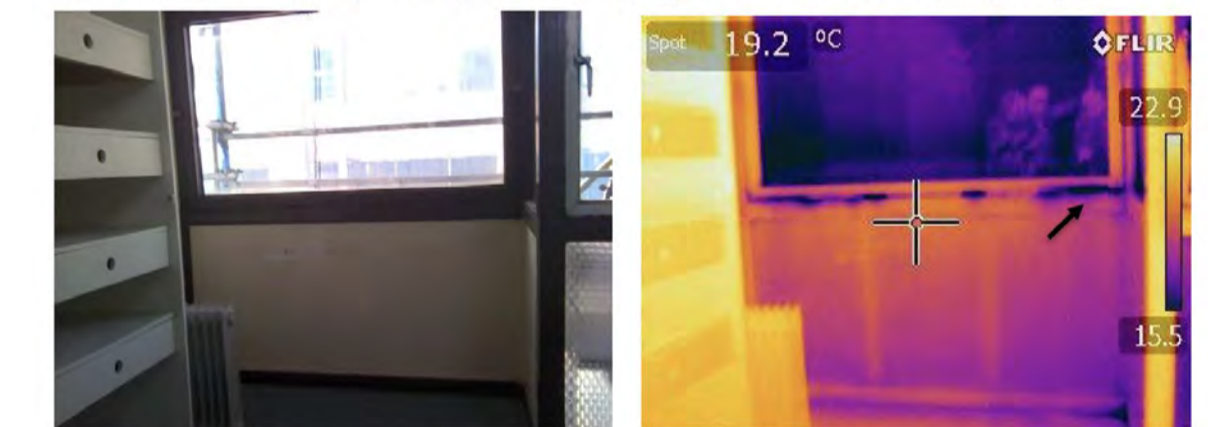


Figure 13: Thermal Image front window - heat loss highlighted Location THL6

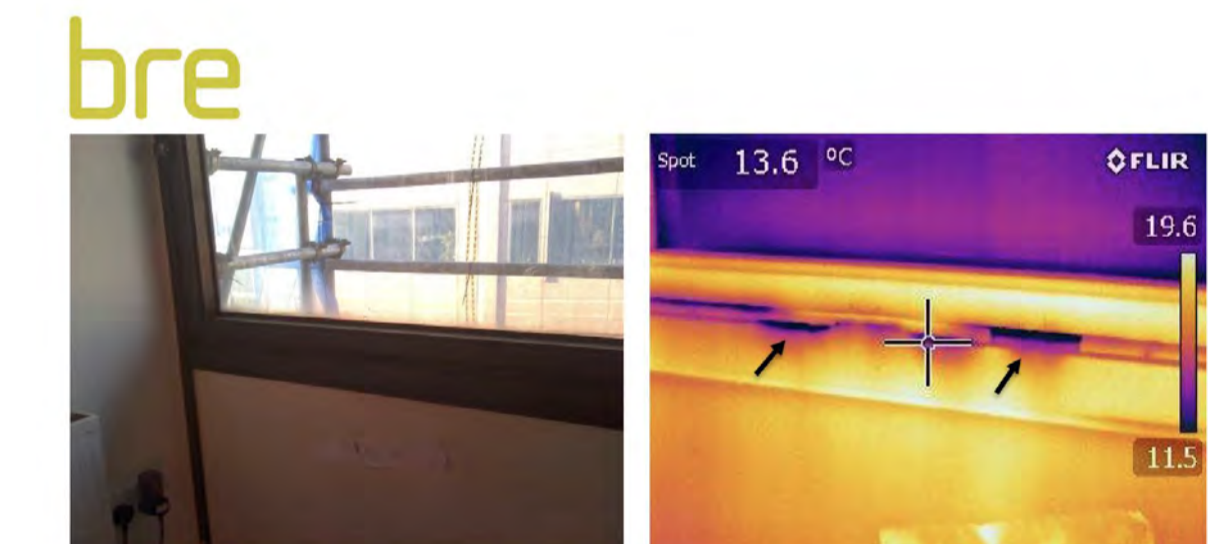


Figure 14: Thermal Image - close up of front window - heat loss highlighted Location THL6

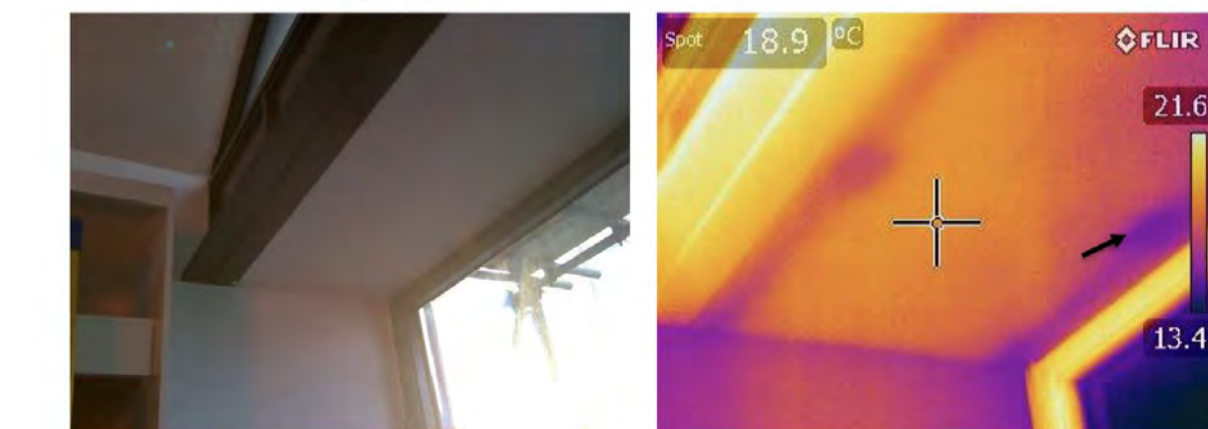


Figure 15: Thermal Image - front window reveal - heat loss highlighted Location THL7

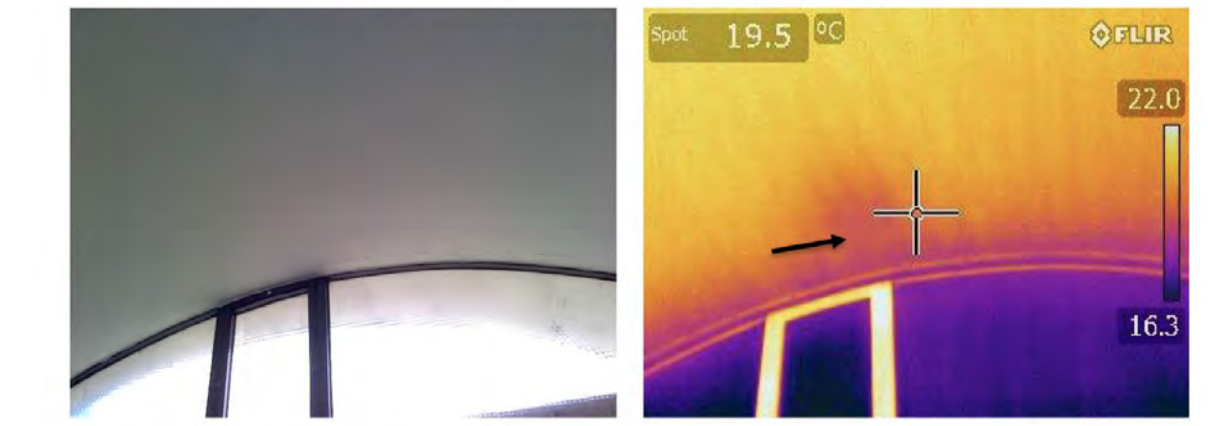


Figure 16: Thermal Image - front window roofline - heat loss highlighted Location THL8

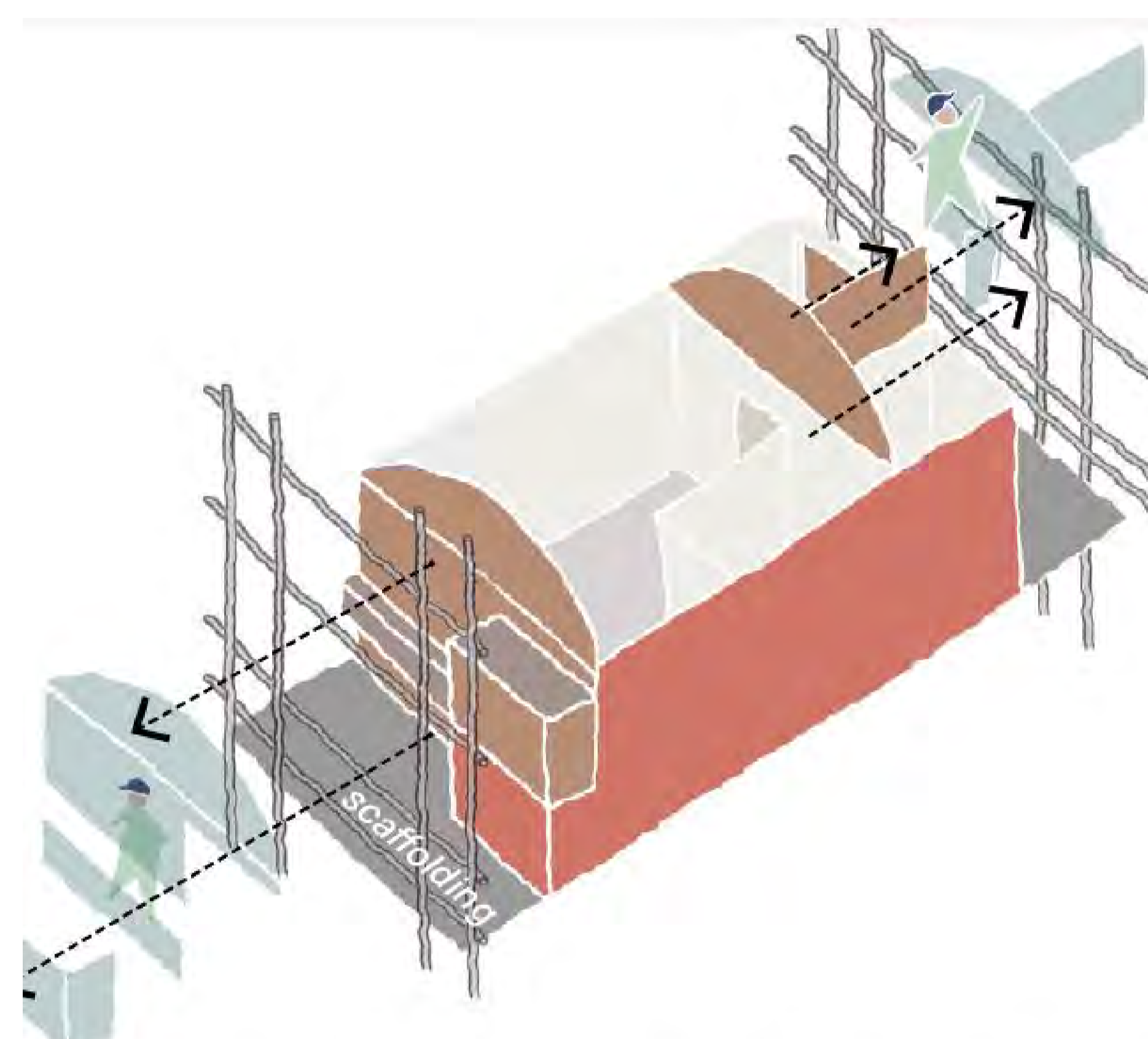
THERMAL

GENERAL PROCESS



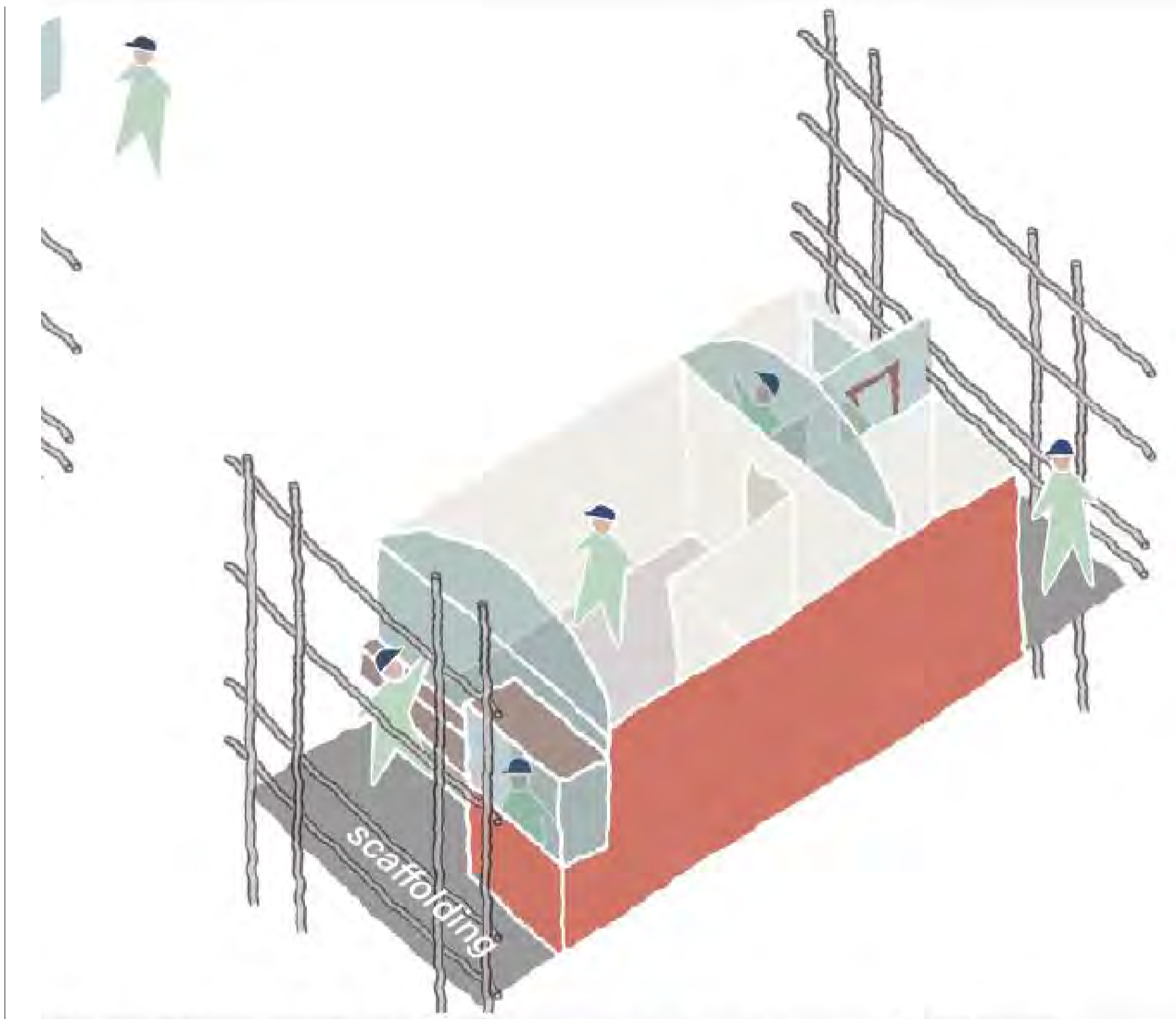
Step One: Install scaffold. Temporarily remove existing glass to template for new vacuum glazing. Measure glass and place order (min 12 weeks from order to delivery). Strip decorations on existing window frames. Establish extent of repair needed for the frames and estimate programme for the repair works. Put existing glass back in. (1 week)

.....
timeframe will vary on a flat by flat basis



Step Two: In accordance with the estimated programme for repair, remove the existing windows and repair damaged frames to coincide for them to finish at the time of the glass delivery. Replace any damaged sections of frame that cannot be repaired. Insert new perimeter seals into opening lights. Redecorate frames. (5-7 weeks)

St
gc
cc



Step Three: Install new vacuum glass. Making good and decorations to surrounding areas completed. (2-3 weeks)

MEASURE

REPAIR

NEW GLASS

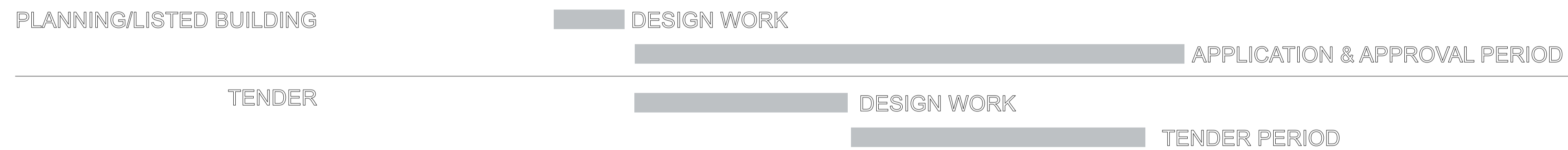
CRESCENT HOUSE



STANLEY COHEN



CULLUMN WELCH



BASTERFIELD, BAYER, BOWATER, CUTHBERT HARROWING, HATFIELD

