M&E Statement - Louvres

Due to the constraints of the existing building, it is not feasible to route the M&E services to the roof. The internal layout and structure do not allow for a new vertical riser without significant intervention to the historic fabric.

For this reason, the strategy proposes rear elevation louvres to minimise the visual and physical impact on the building. These louvres are fitted within existing window openings at the rear, requiring only minimal works to the façade.

The existing refrigerant route to the roof will be reused where possible for the single external condenser, further limiting alterations to the building fabric.

Roof plant / routing constraints

Due to the constraints of the existing building structure and internal layout, it is not feasible to route new ventilation ductwork to the roof. A new vertical services riser would require significant intervention to the historic fabric, which we are seeking to avoid.

The only plant proposed on the roof is a single VRV outdoor condenser unit, reusing existing refrigerant pipework. No additional ventilation ductwork or plant can be located on the roof. Therefore, the ventilation strategy utilises the rear elevation window openings for intake and discharge air.

Louvre sizing and airflow considerations

All louvres have been sized to meet the required airflow while keeping face velocities at approximately 3 m/s for supply/intake air and 5 m/s for extract air. This ensures:

- Supply velocities remain low to minimise noise and prevent water ingress
- Extract velocities are within acceptable discharge limits

Typical architectural louvres provide 45–50% free area once blades, bird mesh and weather baffles are considered. Because of these free area limits and the required airflow, multiple louvres are necessary.

All louvres are installed within existing rear window openings to minimise alterations to the building façade.

Breakdown of proposed louvres and duties

Louver	Purposed	Approx. Size (W × H mm)	Duty (m^3/s)	Notes
L1	HRU Intake – Ground floor & basement kitchen	840 × 735	0.5	Split intake to maintain supply velocity
L2	HRU Intake – Ground floor & basement kitchen	840 × 735	0.5	Second intake for same HRU
L3	Toilet Extract	840 × 735	0.27	Cannot combine with supply louvres to avoid short-circuiting
L4	HRU Exhaust (includes integral thermocooler)	840 × 1380	1.0	Integral AC heat rejection via HRU exhaust
L5	Make-up air for internal AC units	840 × 1380	–	Ensures airflow to condenser units
L6	Make-up air for internal AC units	840 × 1380	–	Additional intake to prevent recirculation/overheating
L7	Outdoor Unit 1 discharge – Fujitsu AJY054LELDH	840 × 1365	0.89	Serves ground floor AC; velocity ~1.6 m/s
L8	Bin store ventilation	840 × 1365	–	Bin store 8.9 m^2; louvre provides ~0.57 m^2 free area, exceeding typical guidance
L9	Outdoor Unit 3 discharge – Fujitsu AJY090LELDH	840 × 1365	1.58	Serves basement AC; velocity ~2.8 m/s

Design

The proposed louvres have been designed to appear as decorative screens to the rear elevation. The details are shown on plan Ref: 8621 / 01 / 901 / A.

Summary

- The number of louvres is driven by required airflows and velocity limits. Reducing the number would either increase face velocity above acceptable limits or require combining intakes and exhausts, which is not feasible due to contamination/short-circuiting concerns.

- Each louvre serves a distinct function: HRU intake/exhaust, toilet extract, AC condenser airflow, or bin store ventilation.
- Placement within existing window openings limits alterations to the external fabric.
- The louvres have been designed to complement the surrounding building architecture whilst ensuring they complete the necessary operational functions.

In conclusion, all louvres proposed are required to meet the ventilation and operational needs of the building while respecting face velocity limits and minimising impact on the listed façade.