OMNISYSTEMS
CONSULTING ENGINEERS

+61 3 9530 0505 / +61 421 678 458
info@ose.net.au
Unit 51, 6-14 Wells Rd Oakleigh 3166
ABN 47 685 634 235

To:	Andrew Gray	**Date:**	18 Feb 2026
Company:	Gray Kinnane Property	**Ref No:**	OSE34782
From:	David Levin	**EA:**	M01
Project:	1009-1013 Mt Alexander Road, Essendon	**Revision:**	02

ADVICE RELATED TO APARTMENT MAKE-UP AIR AND MECHANICALLY ASSISTED NATURAL CROSS VENTILATION

1.0 Preamble

Omnisystems Consulting Engineers (OSE) are the appointed building services engineers for the proposed 1009-1013 Mt Alexander Road residential development in Essendon, VIC. It has been requested from the client and the town planning consultant that a mechanical services design strategy be proposed for approval to address the issues below:

1.1 Mould development as a consequence of inadequate make-up air

The client has experienced issues with mould growth within previous multi-residential developments and has requested that specific attention and design strategies are put in place to mitigate this risk.

It has become common (poor) practice in Melbourne to rely on occupants **cracking open a window** to enable sufficient make-up air for kitchen hood and toilet exhaust systems. It is assumed that this cumbersome action is rarely performed by occupants which results in poor ventilation, high indoor humidity levels, condensation and a favourable environment for mould to develop.

1.2 Natural Cross Ventilation

Office of the Victorian Government Architect (OVGA) reviewed the preliminary architectural floor plans of this project and observed that some apartments were not provided with effective natural ventilation and that mechanical assistance may be required.

Apartments G.02, 1.03, and x.02 and x.05 on levels 2 to 5 with operable openings on only one aspect do not comply with the OVGA design guidelines prescribing at least two aspects (to enable effective cross ventilation).

2.0 Proposed Mechanical Design

2.1 Reference Drawings

- OSE34782-M106-LEVEL 2 MECHANICAL SERVICES LAYOUT-P2
- OSE34782-M201-MECHANICAL SERVICES SECTIONS-P2

2.2 Functional Description

The proposed design reflected in the reference drawings addresses both issues and is considered low maintenance with no requirements for air filters within apartments to be cleaned.

2.2.1 Passive Mechanical Make-up Air System

A passive solution to make-up air is proposed by means of introduced outside air delivered to the corridor ceiling void.

A communal outside air fan, smoke damper, and air filter are proposed to be installed on every floor controlled by a differential pressure sensor within the ceiling void, set to 3 Pa [adjustable].

Each apartment will be provided with a fire damper linking the corridor ceiling void to the apartment ceiling void.

The kitchen AC return air register links the apartment ceiling void to the occupied region of the apartment.

As exhaust systems are engaged, the internal pressure within the apartment will drop and increase the make-up air flow. This variable air-flow demand controlled system is aligned with the NCC's objective of energy efficient air-tight buildings while still achieving exhaust air flow rates when these systems are engaged (*+10min for toilet exhaust systems).

Considering that the ventilation opening within each apartment fire-wall is less than 0.1m^2, a smoke damper is not required (only a fire damper). It is proposed that a Lorient LVH44 (600W x 150H) intumescent damper be installed (Detail: Stud Wall 19 tight to slab, FRL -/90/30)

2.2.2 Mechanically Assisted Natural Ventilation System

The proposed mechanical pressure-controlled make-up air system will promote natural ventilation to apartments.

Each apartment is configured to be slightly positively pressurised and as windows and sliding doors are opened, the pressure will drop and cause the outside air fan to ramp up and deliver outside air through transfer openings above each apartment entry door. This scenario is depicted in Figure 1 and 3 below.

Should the wind be directed toward ventilation openings on the façade, the AC grille will act as a relief opening permitting air flow in the opposite direction entering the corridor ceiling void and functioning as make-up air to other apartments on the floor.

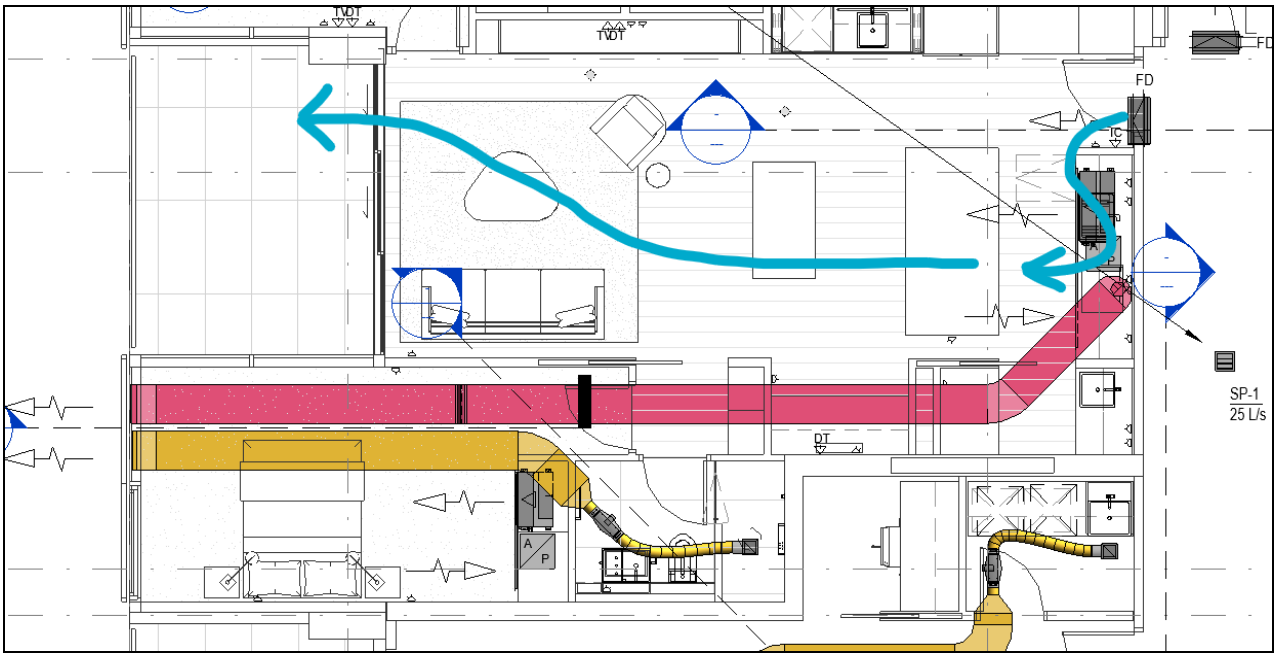


Figure 1: Apt x.02 Mechanically Assisted Cross Ventilation

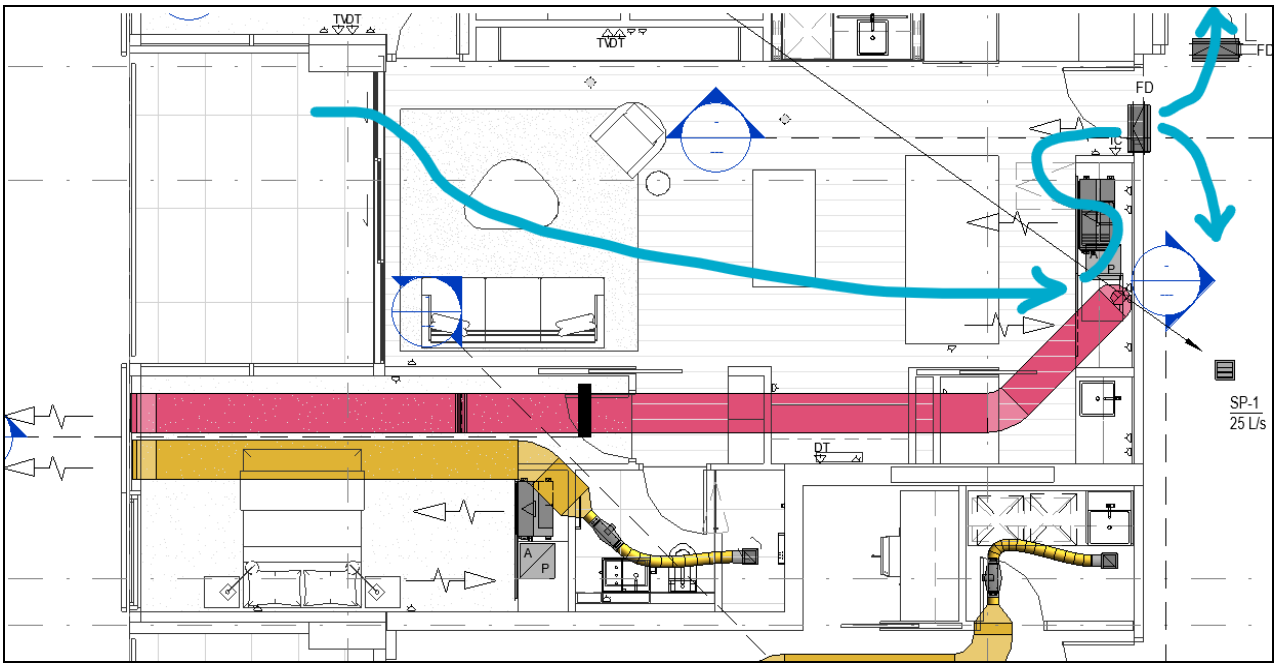


Figure 2: Apt x.02 Cross Ventilation Relief Opening

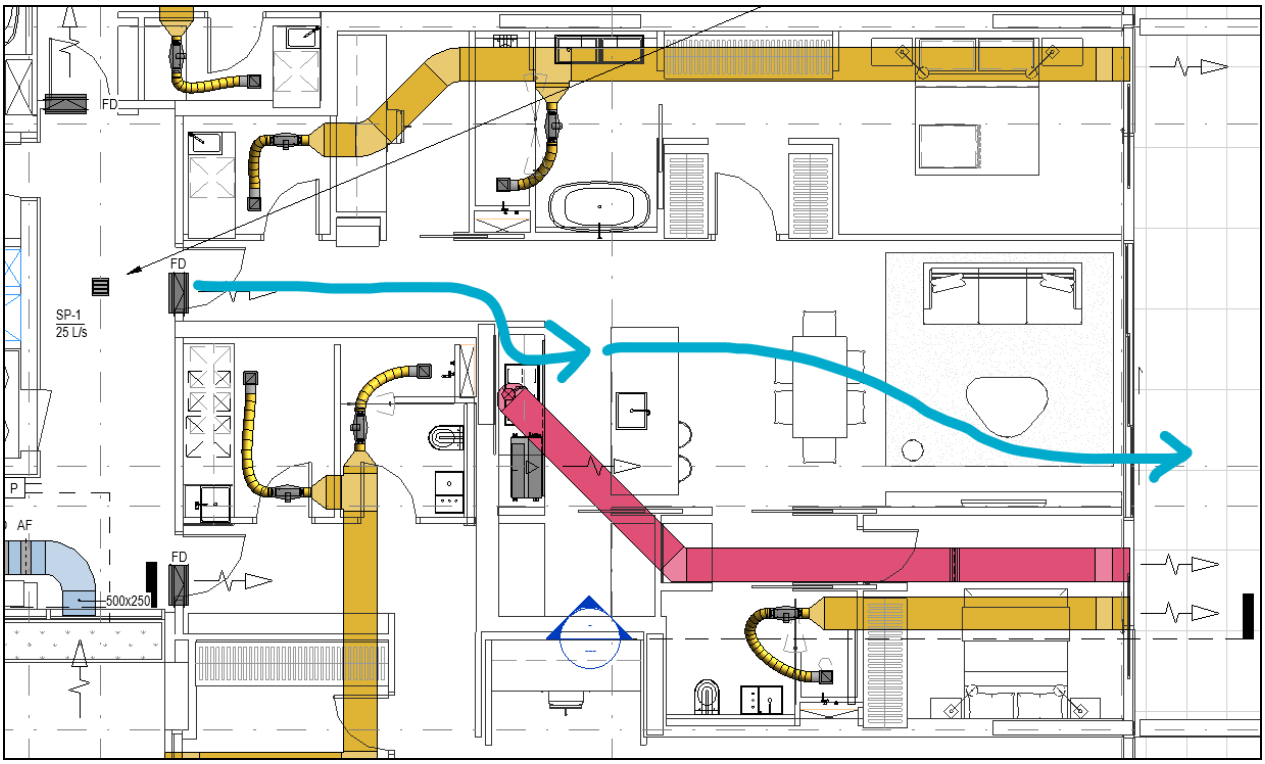


Figure 3: Apt x.05 Mechanically Assisted Cross Ventilation

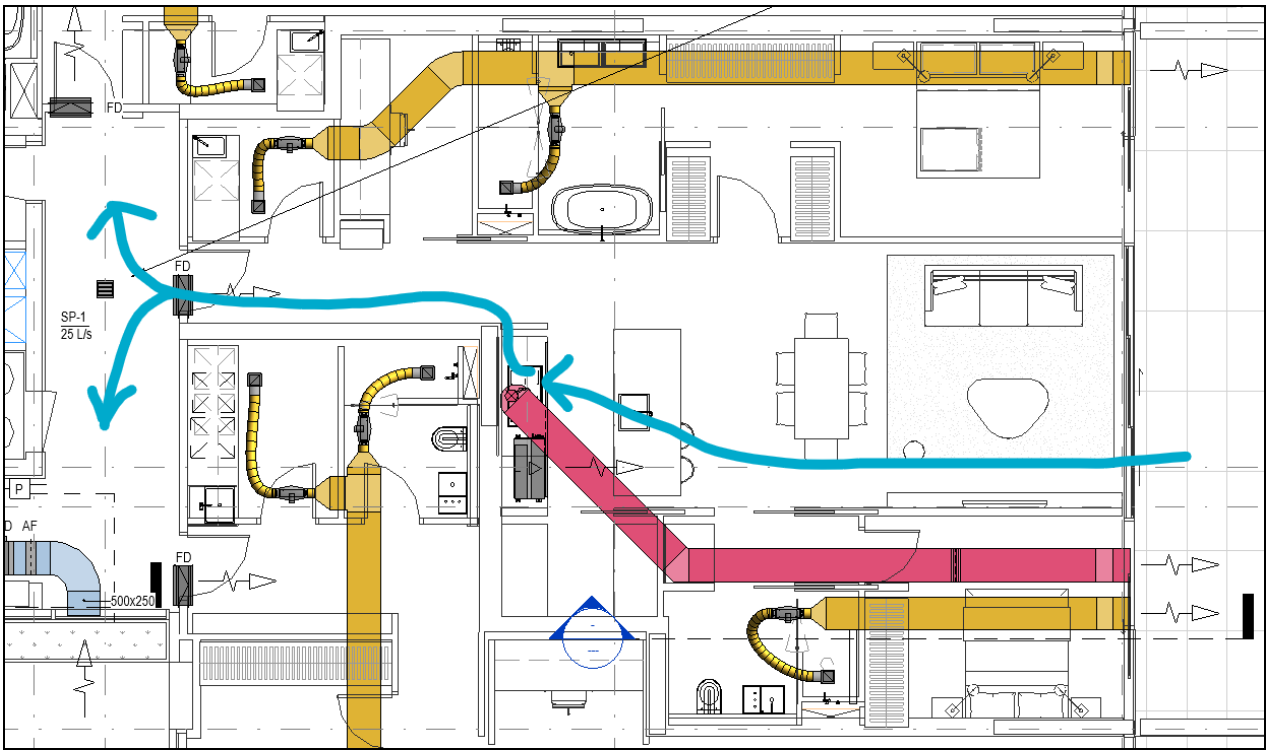


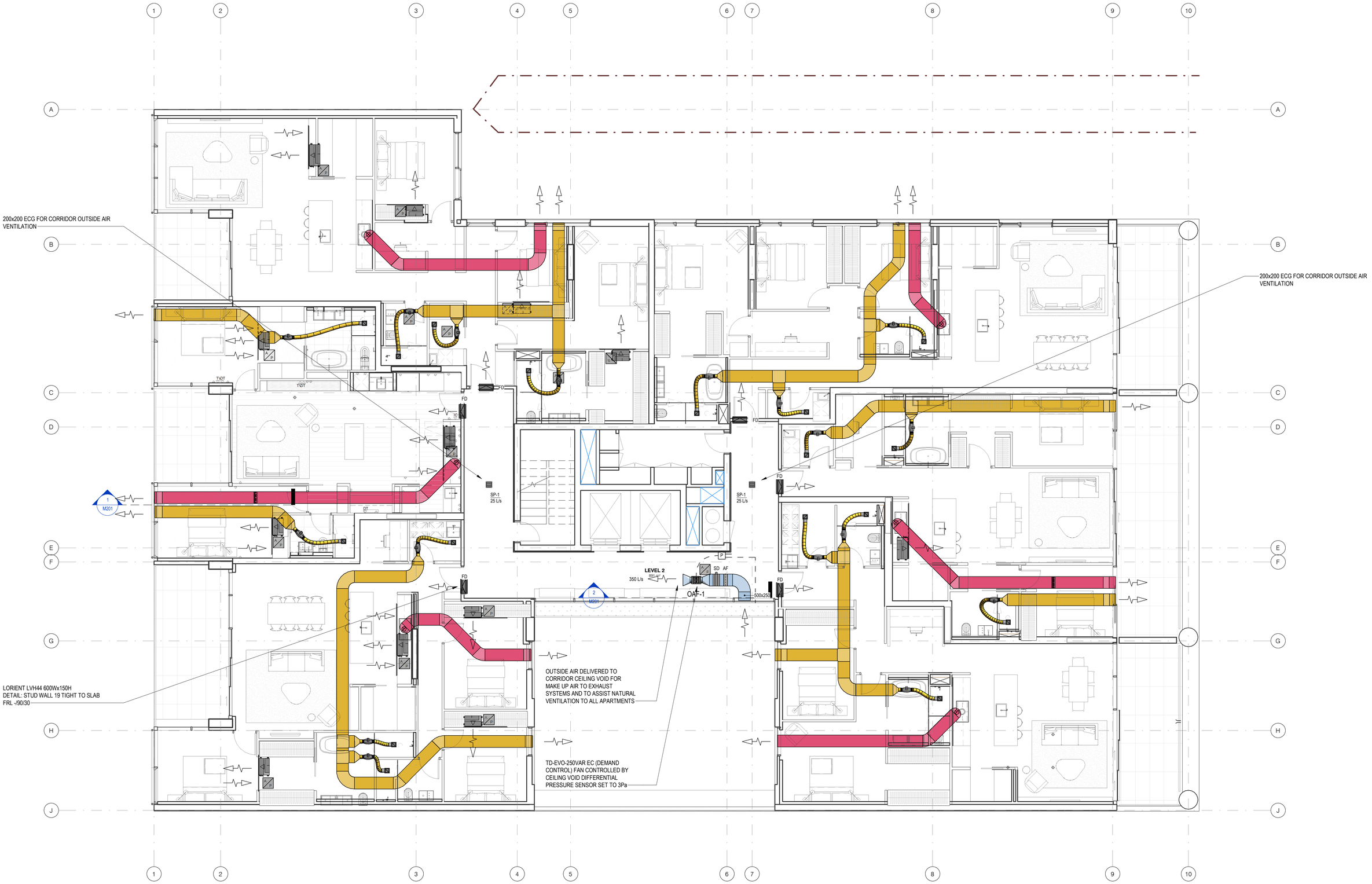
Figure 4: Cross Ventilation Relief Opening

3.0 Conclusion

The proposed design offers a low-cost and low maintenance solution to ensure that precise volumes of make-up air is provided passively without occupant behaviour. The solution also promotes natural ventilation within apartments when windows and sliding doors are opened.

The positive pressurisation of the indoor environment will improve overall air quality as make-up air will predominantly be provided by filtered outside air rather than unfiltered façade leakage.

It should be noted that the design pressure should be adjusted and tuned during commissioning stage to ensure the system is operating in accordance with its objective - 3Pa is just an indicative starting set point.



ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	12/02/2026
P2	PRELIMINARY ISSUE	17/02/2026

	NAME	DATE
DRAWN:	DL	12-02-2026
CHECKED:	DL	12-02-2026
APPROVED:	DL	12-02-2026

ASSOCIATED DRAWINGS

ALL DIMENSIONS SHOWN SHALL BE VERIFIED ON SITE. ENGINEERS DRAWINGS SHALL NOT BE SCALED. ALL DIMENSIONS, VERTICAL ELEVATIONS AND COORDINATED SERVICES DIMENSIONS TO BE TAKEN OFF ARCHITECTS DRAWINGS. NO CLAIM SHALL BE ALLOWED FOR EXTRAS WHICH MAY ARISE THROUGH NEGLECT OF THIS ADVICE

CONSULTANT:

ABN 17 090 549 709
Unit 51, 6-14 Wells Rd, Oakleigh 3167
Telephone : +61 3 9530 0505
Facsimile : +61 3 9012 4211
Mobile : +61 42 167 8485
Email : lawrence.katz@ose.net.au
Web : www.ose.net.au

OMNISYSTEMS
ENGINEERING CONSULTANTS

PROJECT:

HOLLICK PLACE APARTMENTS

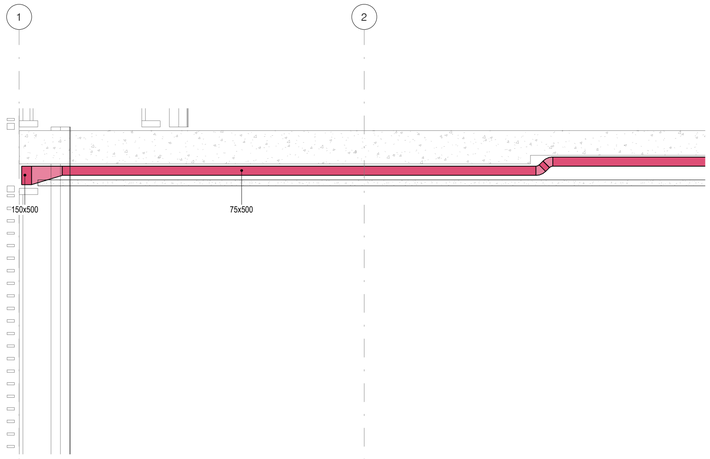
1009-1013 Mt Alexander Rd, Essendon, VIC, 3040

TITLE:
MECHANICAL SERVICES
LEVEL 2 MECHANICAL SERVICES LAYOUT

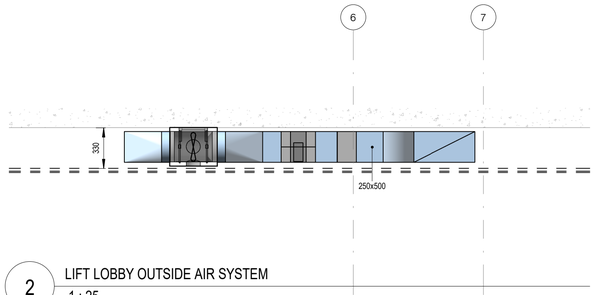
ISSUE No.
P2

PRELIMINARY ISSUE

PROJECT No.	DRAWING No.	
OSE34782	M106	
DATE: 12-02-2026	SCALE: 1 : 75	PAGE SIZE: A1
DRAWN: DL		



1 TYPICAL DUCT TERMINATION SECTION
1 : 25



2 LIFT LOBBY OUTSIDE AIR SYSTEM
1 : 25

ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	12/02/2026
P2	PRELIMINARY ISSUE	17/02/2026

	NAME	DATE
DRAWN:	DL	12-02-2026
CHECKED:	DL	12-02-2026
APPROVED:	DL	12-02-2026

ASSOCIATED DRAWINGS

ALL DIMENSIONS SHOWN SHALL BE VERIFIED ON SITE. ENGINEERS DRAWINGS SHALL NOT BE SCALED. ALL DIMENSIONS, VERTICAL ELEVATIONS AND COORDINATED SERVICES DIMENSIONS TO BE TAKEN OFF ARCHITECTS DRAWINGS. NO CLAIM SHALL BE ALLOWED FOR EXTRAS WHICH MAY ARISE THROUGH NEGLECT OF THIS ADVICE

CONSULTANT:
ABN 17 090 549 709
Unit 51, 6-14 Wells Rd, Oakleigh 3167
Telephone : +61 3 9530 0505
Facsimile : +61 3 9012 4211
Mobile : +61 42 167 8485
Email : lawrence.katz@ose.net.au
Web : www.ose.net.au
OMNISYSTEMS
ENGINEERING CONSULTANTS

PROJECT:
HOLLICK PLACE APARTMENTS
1009-1013 Mt Alexander Rd, Essendon, VIC, 3040

TITLE:
MECHANICAL SERVICES
MECHANICAL SERVICES SECTIONS

ISSUE No. P2
PRELIMINARY ISSUE

PROJECT No. OSE34782
DRAWING No. M201
DATE: 12-02-2026
SCALE: 1 : 25
PAGE SIZE: A1
DRAWN: DL