

Joyce

17 Chorlton Street, Manchester M1 3HY

P01
ISSUE

Ventilation & Extraction Statement

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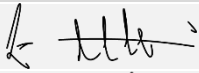
Submitted by Consolux M&E Ltd
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Date June 2025
Issue Preliminary
Project No 852
Revision P01

Document history

Author	Purpose	Revision	Date of Issue
Tom Kangulu	Preliminary Issue	1	June 2025

Approvals

This document requires the following approvals.
Signed approval forms are filed in the Management section of the project files.

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Executive summary

Consolux M&E Consulting Ltd has been appointed to deliver a Ventilation and Extraction Statement for the Joyce, 17 Chorlton Street, Manchester (Joyce by The James) scheme.

The statement outlines how the ventilation of the proposed development will be designed to comply with Approved Document F as well as the requirements of Greater Manchester's Air Quality Management Area (AQMA). In compiling the ventilation strategy, the results of both the Air Quality Impact Assessment and Noise Assessment have been taken into consideration.

To meet the requirements for low operational energy and high levels of occupant comfort, a Mechanical Ventilation with Heat Recovery (MVHR) system will serve the building. This system will deliver fresh air to rooms, pre-warmed in colder months by the outgoing air via highly efficient heat exchange system within the MVHR unit. In the summer the MVHR system could be turned off, or the heat recovery element could be bypassed. The MVHR system will allow windows to remain closed while still providing a constant supply of fresh air, offering benefits such as blocking exterior noise, and controlling dust and pollen levels through unit filters. In comparison to centralised and other conventional systems for this building type, decentralised MVHR approach provides greater zoning flexibility, lower distribution losses, and simpler maintenance at suite level.



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1.0 Introduction

Consolux M&E Consulting Ltd have been appointed to undertake a Ventilation and Extraction Statement in support of the planning application for Joyce, 17 Chorlton Street, Manchester. A high-Efficiency decentralised MVHR system is proposed to ensure continuous ventilation, improve energy efficiency, and enhance indoor air quality. The system supports occupant comfort and aligns with sustainability goals, particularly within the Greater Manchester AQMA. MVHR units will be ceiling-mounted in each suite, designed for low noise and minimal visual impact. Further details are provided in the accompanying planning documents. This Ventilation and Extraction Statement seeks to demonstrate the design intent and commitment to Manchester City Council's development aspirations.

1.1 Project information

The scheme to be assessed is 'Joyce by The James' located in 17 Chorlton Street, Manchester, consisting of the transformation of the existing 1973 office building (known as Boulton House) including an element of new build on the existing car park, into serviced apartment accommodation which will offer short-term accommodation as an alternative to hotels for visitors to the city, including a central courtyard on the ground floor.

The site has an area of 0.25 ha and is located to the north-east of Chorlton Street, between Major Street and Bloom Street, on the edge of Manchester's Gay Village and the Portland Street area. The Site is within a highly accessible location in Manchester City Centre and is well-served by public transport, located directly opposite Manchester Central Coach Station and within a short walk from Manchester Piccadilly and Oxford Road train stations. The Site is located outside of, but adjacent to, the Portland Street SRF area to the west of Chorlton Street. The SRF area comprises land bounded by Portland Street, Bloom Street, Abingdon Street and Chorlton Street.



Figure 1 - Scheme proposal

2.0 Legislation & policy context

2.1 Building Regulations Approved Document F

Approved Document F: In accordance with Approved Document F, ventilation requirements are designed to ensure adequate indoor air quality in buildings. The key criteria include:

- A. Ventilation Rates: Specific airflow rates must be achieved to maintain healthy indoor environments. This includes both natural and mechanical ventilation systems.
- B. Air Quality: Measures must be taken to prevent the buildup of pollutants, ensuring that indoor air remains safe and comfortable for occupants.

2.1.1 Compliance Methods To comply with Approved Document F, the following methods can be used:

- A. Natural Ventilation: Utilizing windows, vents, and other openings to provide sufficient airflow.
- B. Mechanical Ventilation: Installing systems such as MVHR units to ensure continuous and controlled ventilation.

For further details, please refer to the relevant sections of Approved Document F.

3.0 Reference studies

3.1 Air Quality Impact Assessment

NoiseAir Limited was commissioned to undertake an AQA in support of the development. It is considered that the Proposed Development complies with national and local policy for air quality.

A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the Proposed Development using the IAQM methodology. This identified that there is a maximum of medium risk of dust soiling impacts and a low risk of increases in particulate matter concentrations due to unmitigated construction activities for human health. However, through good site practice and the implementation of highly recommended mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of dust and particulate matter generated by construction activities on air quality are, therefore, considered to be not significant.

Based on the extent of predicted population exposure to the impacts on pollutant concentrations and the guidance provided by the IAQM, the Proposed Development is expected to result in a negligible impact associated with the operational phase traffic on nearby receptors and the residual effects are considered to not be significant.

A desk top study on the potential future users of the Proposed Development has been undertaken. The potential for exposure of future users to exceedances of the AQOs was assessed based on local monitoring results, predicted background concentrations, proximity to pollution sources, and AQMA designations. This indicated that concentrations of NO₂, PM₁₀ and PM_{2.5} are likely to be below the relevant AQOs at the Site.

Based on the assessment results, air quality issues are not considered a constraint to planning consent.

3.2 Noise Assessment

Calculations show that to achieve a reasonable internal acoustic environment in habitable rooms as specified within BS 8233:2014, the building envelope constructions should be selected to meet the sound reduction index (SRI) values presented in Table 8 of the report.

Table 8: Summary of Building Envelope Performance Requirements – Passive/ Active Ventilation				
Façade Zone	Room Type	Wall R _w +C _{tr} (dB)	Glazing R _w +C _{tr} (dB)	Ventilation D _{n,ew} +C _{tr} (dB) (2500EA)
1*	Living Room	51	33	37
	Bedrooms*		35	-
2	Living Room	51	30	30
	Bedrooms		30	30
*Façade Zone 1 bedrooms and/ or Studio Flats to rely on System 4 MVHR.				

With windows open, the recommended internal noise limit is likely to be exceeded at most of the habitable rooms at the development site. The report proposes that active ventilation is considered for habitable rooms where noise levels are considered to be elevated. Such a system would allow future occupants to enjoy acceptable internal noise levels while maintaining appropriate ventilation requirements.

4.0 Ventilation systems

4.1 Ventilation Requirements

Ventilation shall be designed in accordance with the recommendations of the Chartered Institute of Building Services Engineers (CIBSE) Guide-A **Table 1.5** Recommended comfort criteria for specific applications, Building Regulations Approved Document F and other applicable British Standards and/or regulations.

The proposed ventilation strategy for the development incorporates a Mechanical Ventilation with Heat Recovery (MVHR) system.

This preliminary decision of utilising a decentralised MVHR units is driven by their ability to offer both a continuous supply of filtered fresh air to individual suites and an energy-saving heat recovery process, which aligns with the sustainability goals.

In addition, localised MVHR systems will provide flexibility in terms of control, and maintenance, which is beneficial in a hotel's context where individual suite comfort and control are critical.

	Localised MVHR	Centralised MVHR
System	One ceiling mounted Local unit per Suite	Several Floor mounted AHUs on Roof
Spatial Requirement	Ceiling Void within Suite External vents on same floor at high level Technical feasible, as sufficiency space within Suite	On Roof. However, space is fully occupied by solar PV, ASHP, VRF condenser
Typical Application	Retrofits, apartments, small dwellings, hotel suites	New builds, large homes, commercial buildings
Airflow Balance	Independent per unit	Balanced across whole building
Control Method	Local control and allow variable fan duty to suit occupant demand. More energy efficient	Fixed air flow after commission. Due to system size and number of rooms, demand control is not practical Less energy efficient
Energy Efficiency	Higher Specific fan power is lower due to short duct run Typical <1.0L/s	Lower Specific fan power is high due to short duct run Typical >1.5L/s
Installation Flexibility	Easy, smaller ductwork Less MEP zone requirements Suitable for retrofit or refurbishment development	Difficult, bigger ductwork More MEP zone requirement
Redundancy	Higher Failure impacts only one suite	Failure impacts whole system
Fire Safety	More Safe All ductwork is self-contained within Suite. No risk of spread of fire	Less Safe Proper fire stopping / damper must be allowed to avoid spread of fire or smoke through centralised ductwork.

Table 1 – Localised vs Centralised MVHR

Due to the existing space constraints within the building, including riser spaces, corridor headroom, roof space, along with the need to achieve a high-level energy efficiency, localised MVHR systems are proposed. This approach allows for straightforward installation without the need for extensive ductwork and large AHU's, which may conflict with planning height limits, making it well-suited to the development.

However, it's important to note that this decision is made with the understanding that further refinement of the ventilation strategy may be required. Final selection between localised MVHR and centralised systems will ultimately be guided on technical performance, regulatory compliance, and whole-life cost assessment.

Area	Vent Criteria
Suite's kitchens	13 l/s
Suite's bathrooms (inc. drying space)	8 l/s
Suite's shower / ensuite	8 l/s
Suite's Habitable Spaces	0.3 l/s/m ²
Water Tank rooms	2 ACH-1
Commercial / Office Space	10 l/s/person
Bin Store	10 ACH-1
Bike Store	4 ACH-1

Table 2 - Typical Ventilation Rates

4.1.1 Design Parameters

In accordance with Approved Document F clause 1.24, the whole dwelling ventilation rate for the supply of air to the habitable suites in a dwelling should meet a minimum rate of 0.3l/s per m² of internal floor area (this includes all floors, e.g. for a two-storey building, add the ground-floor and first-floor areas).

To comply with the minimum extract ventilation rates for continuous extract systems; the following rooms will have to achieve a high rate as stated in table below:

Room	High Rate (l/s)
Kitchen	13
Utility Room	8
Bathroom	8
Sanitary accommodation	6

4.1.2 Individual unit ventilation (New build)

Hotel suites ventilation will be provided via high efficiency MVHR systems in line with Building Regulations Part F requirements (System 4). These systems will assist compliance with the Building Regulations Part L2 (Conservation of Fuel and Power) by reducing ventilation system energy consumption and carbon dioxide emissions.

Extract air will be drawn from bathrooms, kitchens and wet areas in line with the requirements of Building Regulations Part F with supply / makeup air delivered into living accommodation and bedrooms.

Ductwork will be proprietary plastic type with fire collars where penetrations are made through fire rated walls

Recirculating cooker hoods will be provided above oven / hob positions complete with carbon filtration.

Fresh air inlet and exhaust ductwork will be insulated and vapour sealed to prevent condensation build up.

All MVHR unit duct connections will be provided with in line attenuators (i.e. fresh air, supply air, extract air and exhaust air) to limit the transmission of air borne noise through the ductwork system.

Internal grilles will be circular disc valve type appropriate for system balancing.

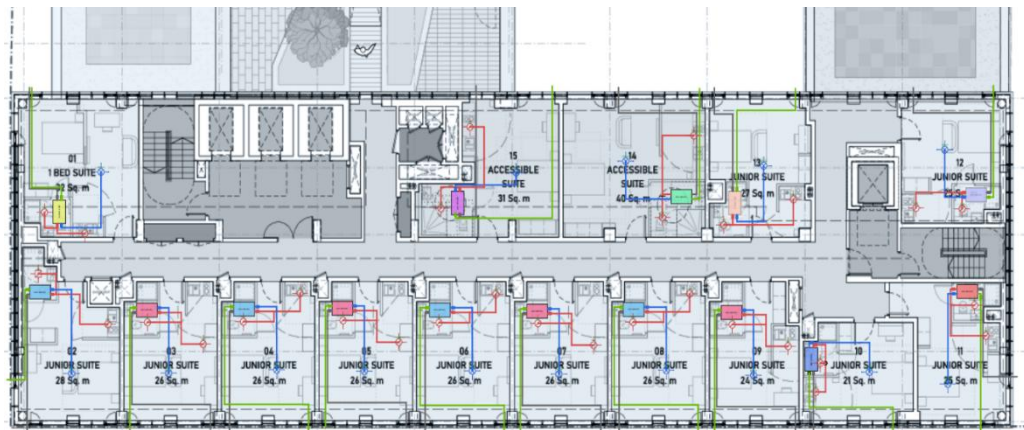


Figure 2 Indicative Suite Ventilation Strategy

New Building Apartment Fresh Air / Exhaust

Fresh air inlet and exhaust for the building will be routed from the external façade as indicated on the indicative plan above.

The proposal for the hotel suites ventilation is to utilise terminals concealed by a decorative screen, which is part of the window system. Refer to figure 3 below for an indicative terminal façade integration.

4.1.3 Individual unit ventilation (Conversion)

Ceiling-mounted Mechanical Ventilation with Heat Recovery (MVHR) units to provide efficient and effective ventilation for the suites, communal areas, and the commercial unit. These units are designed to fit into ceiling voids, making them ideal for spaces with height restrictions.

Ventilation Design: Each suite will be equipped with MVHR unit to ensure optimal indoor air quality and comfort. The MVHR unit will provide both supply and extract ventilation, recovering heat from the extract air to improve energy efficiency.

Pipe Materials and Fixing: The ductwork will be constructed using high-quality, low-profile ducting materials to fit within the ceiling voids. Secure fixing methods will be employed to ensure stability and performance.

Performance: The MVHR units are designed to deliver high airflow rates and heat recovery efficiency, maintaining comfortable temperatures and reducing energy consumption.

MVHR System Components:

- **Heat Exchanger:** High efficiency counterflow heat exchanger with a thermal efficiency of 85%.
- **Fans:** EC (Electronically Commutated) fans with variable speed control.
- **Filters:** G4 filters for general air filtration and F7 filters for finer particulate matter.
- **Ductwork:** Insulated ductwork to minimise heat loss and noise transmission.

4.1.4 Commercial unit ventilation

The Commercial units within the ground floor of the building are proposed to be primarily mechanically ventilated via MVHR system.

MVHR units to be provided with fresh air and exhaust ductwork routed to louvres located within the façade.

There is no provision for catering kitchen provision within the new build nor existing building.

Ventilation Design: The commercial unit will be equipped with MVHR units to handle the specific ventilation requirements of commercial spaces. These units will ensure that the commercial area has adequate air exchange and maintains a healthy indoor environment.

Pipe Materials and Fixing: The ducting for the commercial unit will be designed to accommodate higher airflow rates and will be securely fixed to ensure reliability.

Performance: The MVHR units will provide robust ventilation and heat recovery, supporting the commercial unit's operational needs and energy efficiency goals.

4.1.5 Communal areas ventilation

Ventilation Design: The communal areas will also utilise MVHR units to manage ventilation needs. These units will ensure that common areas have fresh air circulation and maintain a comfortable environment.

Pipe Materials and Fixing: Similar to the suites, the ductwork will be made from durable materials and securely fixed within the ceiling voids.

Performance: The units will operate efficiently, providing consistent ventilation and heat recovery to support the overall building performance.

4.1.6 MVHR Terminals Façade Integration

Façade-mounted MVHR units terminals will discreetly be integrated into building and colour-matched to surrounding finishes to minimise visual impact and maintain design continuity (Figure 4). Location to be coordinated with architectural team to support planning requirements, building aesthetics, and system performance. Final positioning subject to prevailing wind, acoustic separation, and compliance with extract distances.

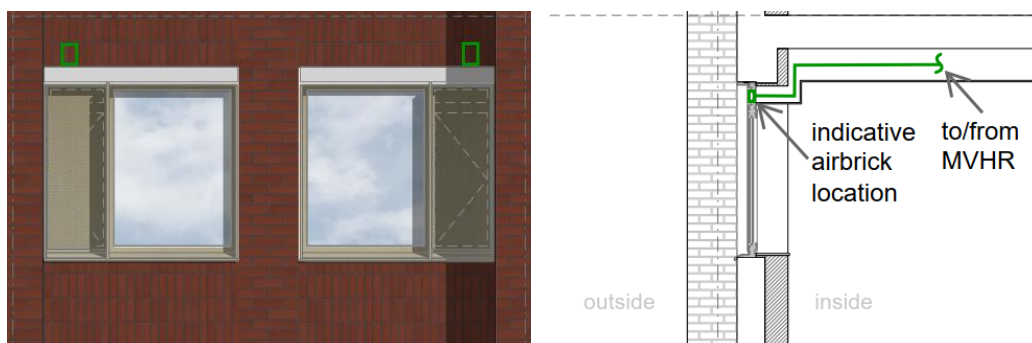


Figure 3 Indicative MVHR Terminal Façade Integration



Figure 4 Airbrick Retro-fit Examples

4.2 Acoustic Treatment

The hotel suites will be designed to satisfy the trickle and boost ventilation requirements via mechanical ventilation heat recovery systems (MVHR). This allows the suites to be ventilated efficiently during normal operation with heat recovery and summer bypass without the need to open the windows (with the exception of purge ventilation).

Purge ventilation will be achieved via openable windows and / or louvres as required for abnormal ventilation requirements.

Ventilation systems will be selected at appropriate fan speeds to limit case radiated break out noise.

Atmospheric and room side attenuators will be provided within the ductwork (Intake, Exhaust, Supply and Extract) to minimise air borne noise transfer into the suites.

Any internal plant will be acoustically treated to minimise acoustic impacts:

- General Fans: Attenuators to be installed on all ductwork connections as required to meet acoustic criteria.

5.0 Conclusion

The use of ceiling-mounted MVHR units across suites, communal areas, and commercial units, will ensure that each space benefits from efficient ventilation and heat recovery. This decentralized MVHR approach will enhance indoor air quality, improve energy efficiency, and support the projects overall sustainability goals by reducing distribution losses with a simplified zoning strategy. Compared to centralized systems, this decentralized method also offers greater flexibility, with reduced reliance on large ductwork and large rooftop plant.

MVHR decentralised strategy will ensure the development is compliant with Approved Document F as well as the requirements of Greater Manchester's Air Quality Management Area (AQMA). The results of both the Air Quality Impact Assessment and Noise Assessment have been taken into consideration. The noise assessment supports the use of active ventilation for habitable rooms where noise levels are considered to be elevated. Such a system would allow future occupants to enjoy acceptable internal noise levels while maintaining appropriate ventilation requirements.



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