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VENTILATION STATEMENT

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Authored by:

name: Mike Merriman
role: Associate
signed:

date: 23.07.26

Reviewed by:

name: James Walford
role: Director
signed:

date: 23.07.26

Authorised for Issue by:

name: **James Walford**
role: **Director**
signed:

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The signed original of this page is retained by the issuing team.

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Contents

1 INTRODUCTION 1

2 VENTILATION STRATEGY 2

2.1 Strategic Objectives 2
2.2 System Description 2
2.3 Ventilation Rate Calculations and Compliance 3
2.4 Indoor Air Quality and Filtration 3
2.5 Installation and Commissioning 4
2.6 Maintenance and User Guidance 4

3 CONCLUSION 4

1 INTRODUCTION

This ventilation strategy outlines the detailed design, specification, and statutory compliance of a mechanical ventilation system incorporating mechanical ventilation heat recovery units and local extract fans for the new Facilities Unit at the University of Manchester Fallowfield Campus. The strategy is prepared in accordance with Approved Document Part F (2021) and is designed to ensure the continuous provision of high-quality indoor air through mechanical ventilation with heat recovery. The proposed system serves to control CO2 levels, dilute indoor pollutants, prevent mould and condensation, and improve energy efficiency by reclaiming heat from extract air streams.

The strategy reflects current best practice for mechanically ventilated, energy-efficient buildings and has been tailored specifically for the building size, occupancy, and usage patterns. The system ensures adequate background ventilation in all occupied rooms and where required in ancillary support spaces such as circulation / stores and WC's, while offering a high degree of occupant control and ease of maintenance. With the inclusion of demand-control features, acoustic attenuation, filtration, and energy-efficient heat recovery, the design balances comfort, compliance, and sustainability in a single integrated solution.



Figure 1: Ground Floor Plan

2 VENTILATION STRATEGY

2.1 Strategic Objectives

The ventilation system proposed in this report follows the ventilation principles as defined in Approved Document F (ADF) 2021: Volume 2. The design proposes both occupancy control and continuous mechanical supply and extract ventilation with heat recovery (MVHR), combined with local extract systems. This strategy is appropriate for new buildings with high levels of airtightness, where infiltration and natural ventilation alone is not suitable to meet ventilation needs. The design also aligns with the Non-Domestic Building Services Compliance Guide, which sets performance benchmarks for energy and airflow efficiency.

ADF requires that extract should be provided to all sanitary accommodation, bathrooms, washrooms, food and beverage preparation areas and rooms that are designed to contain printers/photocopiers in substantial use. For whole building ventilation rates, the outdoor air should be supplied for occupiable rooms in offices at whichever of the following provide the higher rate: 10l/s per person or 1l/s per m^2 of floor area. Common spaces in offices should also be provided with Mechanical ventilation, installed to provide a supply of outdoor air at 0.5 litres per second per m^2 of floor area.

The strategy must also account for user-friendliness, maintenance accessibility, effective filtration, acoustic performance, and commissioning documentation. This integration supports the objectives of Approved Document L.

Key objectives of the strategy include:

- Providing a healthy indoor environment through continuous background ventilation.
- Ensuring effective extract ventilation in wet rooms to control moisture and odors.
- Delivering tempered fresh air to habitable rooms with minimal energy loss.
- Recovering thermal energy from stale air via a high-efficiency heat exchanger.
- Meeting or exceeding the minimum ventilation rates defined in ADF sections 1.24 to 1.37.
- Achieving compliance with commissioning, user instruction, and maintenance requirements of ADF Sections 4.

2.2 System Description

The proposed mechanical ventilation system comprises two systems: heat recovery units serving the occupied offices, workshops and meeting spaces, and zonal extract fans serving toilets, changing areas, comms rooms and other ancillary spaces.

The extract fans extract air from wet rooms, including bathrooms, WCs, and cleaners cupboard to discharge direct to outside. Transfer air is drawn from adjacent circulation areas and occupied spaces into sanitary accommodation before extraction to atmosphere. The system operates continuously to provide minimum background ventilation rates and modulates in response to occupancy and CO_2 levels where applicable.

All occupied rooms are typically provided with individual MVHR units ducted with supply and extract terminals strategically located for optimal airflow distribution. Airflows can be modulated in real-time to meet the ventilation needs of the occupants while minimising energy consumption. BMS control is provided to allow manual override and monitoring.

2.3 Ventilation Rate Calculations and Compliance

Approved Document F requires that mechanical ventilation in offices and room-specific extract ventilation meet minimum performance levels. For this property, the background ventilation requirements have been assessed in accordance with Sections 1.24–1.37 of Approved Document F. The following ventilation rates represent the minimum performance criteria required. However where possible this will be bettered to achieve enhanced occupant comfort.

Corridor (Supply and Extract): 70m^2 x 0.5l/s = 35l/s

Changing 1: 1 Shower & 1 WC = 21l/s

Changing 2: 1 Shower & 1 WC = 21l/s

ESU Shower: 1 Shower = 15l/s

Toilets: 4 toilets & 1 Shower = 39l/s

These rates are achieved as a minimum using dedicated extract terminals in each wet room.

For habitable rooms, ventilation rates have been assessed against both the occupancy criterion of 10 l/s/person and the area criterion of 1 l/s/m^2. The design airflows provided represent the greater of the two requirements:

Staff Rest: 18 occupants – 180l/s

MTC Office: 3 occupants - 30 L/s

Meeting: 6 occupants – 60l/s

Managers Office: 2 occupants - 20 L/s

FMC Office: 6 occupants - 60 L/s

2.4 Indoor Air Quality and Filtration

The proposed ventilation strategy provides mechanical supply and extract ventilation with heat recovery to all occupied spaces. Airflow rates have been designed in accordance with Approved Document F and are capable of maintaining acceptable indoor air quality under normal occupancy conditions.

Supply air to occupied spaces shall be filtered using minimum G4 coarse filtration, or the manufacturer's standard filtration specification for the selected ventilation units.

2.5 Installation and Commissioning

The system will be installed in accordance with manufacturer guidelines and the Non-Domestic Building Services Compliance Guide. Ductwork will be routed through service zones and ceilings, with all penetrations sealed for airtightness and in line with the requirements of the fire strategy.

Commissioning will be carried out in accordance with Section 4 of Approved Document F. This includes measuring and balancing airflow rates in every room using calibrated equipment. Results will be recorded, verified, and issued as part of the Building Regulations compliance pack. An Operation and Maintenance (O&M) manual will be handed over to the occupants, containing detailed instructions on filter replacement, system settings, and fault codes.

2.6 Maintenance and User Guidance

Regular maintenance is essential to ensure performance and compliance. Filters shall be inspected and replaced in accordance with manufacturer recommendations. The system should undergo a full service annually by a qualified engineer. Ductwork inspections are recommended every 5 years, with cleaning as necessary.

Controls will be installed in accessible locations, with manual override options, visual indicators, and touchscreen interfaces where applicable.

3 CONCLUSION

This ventilation strategy provides a robust, compliant, and energy-efficient solution for the provision of high-quality indoor air in the new facilities office building. The system achieves continuous mechanical ventilation with effective heat recovery and meets or exceeds the requirements set out in Approved Document F, including minimum airflow rates, commissioning procedures, and occupant usability.

The system also supports compliance with Part L, reduces environmental impact, and enhances occupant comfort and health. With appropriate installation, commissioning, and maintenance, this represents a robust and compliant ventilation solution for the proposed development.

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