

Poland Street Zone – Jersey Wharf

Ventilation Statement

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author **Jon Whiteley**

date 30/04/2022

approved **Jon Whitely**

signature 

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Glossary

Term	Definition
ACH	Air Changes per Hour
AOV	Automatic Openable Vent
MCC	Manchester City Council
MVHR	Mechanical Ventilation Heat Recovery
PIR	Passive Infrared Sensor (presence detector)
PVC	Polyvinyl Chloride

1 Introduction

This ventilation strategy document has been produced in order to communicate the basis of design and provide a description of the main ventilation systems proposed for the Jersey Wharf development in the Poland Street Zone, Manchester. This document has been produced as a requirement of the Manchester City Council (MCC) planning process.

1.1 Context

Buro Happold have been appointed by Manchester Life Development Company to undertake Mechanical, Electrical and Public Health (MEP) design works for the proposed Jersey Wharf residential development. The development, situated on Jersey Street within the Poland Street Zone, will include 190 residential units, ground floor commercial floorspace and ancillary amenity space spread over two eight-storey blocks.

1.2 Site Description

The Site is bounded by Jersey Street to the north, Rochdale Canal to the south, Flint Glass Wharf/Works to the west and grassland to the east.

The eastern portion of the Site is grassland area, the middle of the site is currently vacant and comprises hardstanding, and the western portion of the site comprises a low-rise warehouse and associated car park. The Site is currently fenced off which restricts access.

Adjacent to west of the Site are Flint Glass Works and Flint Glass Wharf, warehouses converted to offices and residential respectively. Across Jersey Street to the north of the Site is the recently approved Eliza Yard, a mid-rise residential development being brought forward by Manchester Life as part of the next phase of regeneration within Ancoats as well as a large, underutilised car park.

1.3 Description of Development

Development of land bounded by Jersey Street to the north, Rochdale Canal to the south, Flint Glass Wharf/Works to the west to deliver a residential development, with ground floor commercial floorspace, and ancillary amenity space within an 8 storey building, cycle parking provision, hard and soft landscaping, access and servicing and other associated works.

1.4 Ventilation Strategy Description

1.4.1 Dwellings

As a residential led development, it is vital that comfortable internal conditions are maintained consistently throughout each apartment. Adequate fresh air supply must be made available to dwellings in order to prevent air pollutants, manage odours and maintain good health of residents.

To ensure this, Mechanical Ventilation with Heat Recovery (MVHR) is proposed to each dwelling to provide background ventilation, with a manual boost option allowing increased air change rates for a brief period of time. This

system will be aided by openable windows (or Juliet balcony doors) within habitable spaces, providing the option for manual purge ventilation.

1.4.2 Commercial Units

The ground floor commercial units are designed to a “shell and core” level of fit-out, therefore the tenant occupying the space will install a mechanical ventilation system to suit their usage requirements. Supply and extract vent openings shall be provided within the façade above windows and doors to enable the future tenants to connect their ventilation equipment during their fitout works. Additionally, space has been allocated within risers and at roof level for tenant fitout mechanical equipment.

1.4.3 Circulation Spaces

Circulation spaces such as corridors and stairwells will be ventilated by the passive movement of air throughout the building.

1.4.4 Plant Areas & Bin Stores

Plant areas and Bin Stores will be naturally ventilated through the use of louvred openings within the façade where connectivity to the external environment is practicable. Local mechanical ventilation will be provided to prevent stagnation where connectivity cannot be achieved. In larger bin stores mechanical ventilation will be provided to ensure air circulation and avoid stagnation in the deeper spaces.

1.4.5 Ground Floor Amenity Spaces

The ventilation systems within the ground floor entrance, amenity space, office, WC's, main reception and staff welfare space will be provided through the use of local MVHR units mounted on the underside of the soffit, ducted to the façade where they will terminate in louvres installed within the façade.

1.4.6 Ground Floor Service Bay / Disabled Parking Area

Ventilation to the ground floor service bay and disabled parking spaces is to be provided via natural means, in accordance with the requirements of Approved Document F. The provided roller shutter doors shall be either ‘perforated’ or ‘brickbond’ in order to allow adequate ventilation necessary to limit carbon monoxide to:

- a. An average concentration of not more than 30 ppm over an eight hour period; and
- b. Peak concentrations of not more than 90 ppm for period not exceeding 15 minutes

2 Basis of Ventilation Design

To ensure the quality of outside air drawn into the building, a number of factors such as recirculation of exhaust air or intake of contaminants have been considered. Extract discharges and air intakes will face different directions or be spaced adequately, where feasible, in order to minimise cross contamination and short-circuiting.

The dwelling exhaust discharges will be located within the elevations, terminating from the ceiling void of each apartment.

Smoke ventilation systems shall terminate at roof level where possible, and in building elevations clear of emergency escape routes where not.

Natural ventilation systems have been utilised where possible to perimeter plant spaces, refuse spaces and cycle stores via louvre openings within the facade.

2.1 Air Permeability

Design Criteria	Reference
Building will be designed to meet an air tightness level of 2 m ³ /s per m ² of building envelope at 50 Pa pressure differential	To meet BSRIA air tightness specification, an air leakage test will be carried out to satisfy Approved Document Part L1 requirements.

2.2 Ventilation Standards

Dwelling Areas	
Lounge	Mechanical Ventilation with Heat Recovery (MVHR) – Background ventilation as prescribed by Part F for the whole apartment. Purge ventilation to be provided via openable windows as prescribed by Part F for the whole apartment.
Bedrooms	Mechanical Ventilation with Heat Recovery (MVHR) – Background ventilation as prescribed by Part F for the whole apartment. Purge ventilation to be provided via openable windows as prescribed by Part F for the whole apartment.
Kitchen	Mechanical Ventilation with Heat Recovery (MVHR) – Background ventilation as prescribed by Part F for the whole apartment, kitchen extract hoods are to be recirculating type. (manual boost function present)
Bathroom / WC	Mechanical Ventilation with Heat Recovery (MVHR) – Background ventilation as prescribed by Part F for the whole apartment. Minimum room ventilation rate of 8 l/s. (manual boost function present)
Entrance Hall	No fresh air is supplied directly to this area. Fresh air will be circulated from surrounding areas.
Utility Cupboard	No fresh air is supplied directly to this area. Fresh air will be circulated from surrounding areas.

Landlord Areas	
Entrance / Reception	12 l/s per person
Office	12 l/s per person
Staff Welfare	12 l/s per person
Refuse Stores	Naturally ventilated where adjacent external facade, otherwise ventilated via Mechanical Ventilation with Heat Recovery units
Amenity Space	12 l/s per person
Stairs / Corridors	Naturally ventilated
Passenger Lift Lobbies	Naturally ventilated and natural smoke shaft
WC's	6ACH

Plant Rooms	
LV Switch Rooms	Naturally ventilated
Utility Sub Stations	Naturally ventilated
Comms provider intake room	Naturally ventilated
Water tank rooms	Naturally ventilated

3 Description of Ventilation Systems

3.1 Dwellings

3.1.1 Mechanical Ventilation

Mechanical Ventilation Heat Recovery (MVHR units) located within the utility cupboard of each apartments will be used to provide 'whole dwelling' ventilation across all of the proposed dwelling types. Supply and extract ventilation will be delivered from these local units, with high heat recovery percentages achieved via an integral heat exchanger. Extract air will be taken from bathrooms and kitchens with supply air being provided to bedrooms and living spaces.

Intake and exhaust grilles will be positioned on the external façade of the building's, adequately spaced in order to avoid recirculation of exhaust air.

The MVHR system shall provide 'background' ventilation, supplying and extracting air at a balanced, continuous low rate complying with ADF. The system shall include 'boost' functions, enabling the occupant to increase the rate of air replacement in the dwelling for a set period of time.

In order to limit the risk of overheating during the summer period, the units will be provided complete with optional '100% summer bypass' function, ensuring that free cooling is available when external conditions are cooler than internal. Openable windows are provided as the primary means of mitigating the risk of overheating and shall comply with the requirements of Approved Document O.

The distribution ductwork within the apartments will be PVC type with sleeve fittings. Where ducts pass through protected lobbies, fire stopping collars will be provided. Extract air will be taken from bathrooms and kitchens with supply air being provided to bedrooms and living spaces.

Volume control dampers will be provided where required to provide balanced air distribution in each apartment.

The MVHR units will be provided with attenuation in order to meet the internal and external noise criteria.

Kitchen extract is to be provided via the MVHR unit and a recirculating cooker hood is provided over the hob. The recirculating cooker hood will have manual on/off operation and speed control.

3.1.2 Natural Ventilation

All apartments will have purge ventilation provided with natural ventilation openings in accordance with Part F of the Building Regulations.

3.2 Ancillary Areas

Circulation spaces such as resident corridors and stairwells will be ventilated by the passive movement of air around the building.

3.3 Plant Rooms / Refuse Stores

Plant areas and Refuse Stores will be naturally ventilated by louvred openings where connectivity to the external environment is practicable. Local mechanical ventilation will be provided to prevent stagnation where connectivity

cannot be achieved. In larger bin stores mechanical ventilation will be provided to ensure air circulation and avoid stagnation in the deeper spaces.

3.4 Smoke Extract Ventilation

The residential corridors are to be provided with a natural smoke extract AOV windows in line with the fire strategy for the building. The head of each stairwell will be provided with Automatic Opening Vents (AOV's) which will be linked back to the fire alarm system and open on activation of the alarm.

As AOV openings are not possible in the ground level central corridors (across both blocks), mechanical smoke ventilation is to be provided to these areas, terminating at the façade. A number of protected lobbies between refuse stores, loading and parking bays shall be provided at ground floor level, each containing mechanical smoke ventilation, also terminating at the façade.

3.5 Commercial Units

The ground floor commercial units are designed to a "shell and core" level of fit-out, therefore the tenant occupying the space will install a mechanical ventilation system to suit their usage requirements. Supply and extract vent openings shall be provided within the façade above windows and doors to enable the future tenants to connect their ventilation equipment during their fitout works. Additionally, space has been allocated within risers and at roof level for tenant fitout mechanical equipment.

3.6 Ground Floor Service Bay / Disabled Parking Area

Ventilation to the ground floor service bay and disabled parking spaces is to be provided via natural means, in accordance with the requirements of Approved Document F. The provided roller shutter doors shall be either 'perforated' or 'brickbond' in order to allow adequate ventilation necessary to limit carbon monoxide to:

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4 Conclusion

The ventilation strategies described above have ensured Part F of the building regulations are met and that the air quality and occupant comfort within the building is satisfactory.

Any negative impact of ventilation systems on accommodation within the proposed development or neighbouring properties has been mitigated by:

- Ensuring all ventilation systems do not exhaust onto any neighbouring buildings or locations where people are likely to be present.
- Providing openable windows/doors within habitable spaces to mitigate the risk of overheating during summer months, in accordance with Approved Document O.
- Installing noise attenuation equipment on ventilation plant in order to comply with the acoustic criteria.
- Installing grease-filtered kitchen recirculation fans to mitigate the exhaust of odours to external.
- Ensuring smoke shafts terminate above or away from any emergency escape routes.

Jon Whiteley
Buro Happold Limited
2nd Floor, Eastgate
2 Castle Street, Castlefield
Manchester
M3 4LZ
UK

T: +44 (0)161 233 5000

Email: Jonathan.Whiteley@BuroHappold.com