

Ventilation Strategy

Noma Manchester



SES Engineering Services
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1.0 Introduction

The building comprises a ground floor with building Entrance, Reception, an office unit and 2no "shell and core" commercial units. 10 floors VAV served office accommodation from central AHUs, with demand control heating and cooling from fan coil served office, a tenth floor roof terrace. In addition there are 1 floor levels of underground parking, cycle store, shower/changing facility and plant rooms.

2.0 HVAC Systems and Types and Zoning

The air conditioning systems for each area served are as follows. All units are to incorporate energy recovery in the form of thermal wheels or plate heat exchanger. Refer to Appendix A of this specification for component make up, type of heat recovery and filtration.

Office areas:

- 2 port fan coils with ducted fresh air
- VAV system

Ground Floor Office areas:

- 2 port fan coils with ducted fresh air
- Demand Control MVHR system

Ground Reception areas:

- 2 port fan coils with ducted fresh air
- Demand Control MVHR system

Meeting/Conference Rooms:

- All fresh air system with VAV boxes
- 2 port fan coils with ducted fresh air

Toilets, Showers, Changing:

- Dedicated AHU for Toilets with negative pressure in toilet, capture valve type extract grills in cubicles. Separate supply based on fresh air.
- AHU serving Toilets with +ve air pressurisation into the corridor and extract air from the cubicles. Air transfer by means of door undercuts.

Noma will be ventilated throughout via 8No. landlord's ventilation system with the Air Handling units and zoning arrangements are as follows and as indicated on the drawings:. The number of units reflects the need to keep the air handling unit volume flow rates as small and similar as possible due to the height restriction on the roof:

1	AHU—11—01	Offices	6.6 m ³ /s
2	AHU—11—02	Offices	6.6 m ³ /s
3	AHU—11—03	Offices	6.6 m ³ /s
4	AHU-1 1 -04	Offices	6.6 m ³ /s
5	AHU-1 1 -05	Toilets	4.8 m ³ /s
6	AHU-00-01	Entrance / Reception area	0.36 m ³ /s
7	AHU-00-02	Ground Floor Office	0.19 m ³ /s
8	AHU-00-03	Ground Floor Office	1.28 m ³ /s

2.1 Office Areas

The office areas are to be provided with 4 air handling units, 2 for the west side and 2 for the east side of the roof. Heating and Cooling is to be provided by Fan Coil Units where the primary fresh air is delivered to the FCUs causing induction of the room air and aiding delivery of the mixed air to the room. The FCU are to be mounted with the ceiling void and are to be connect to supply grills. These units will be fed with chilled water and LTHW.

The supply and extract air ducts are to be routed externally on the roof to the 4no building tenant riser on the outside of the stair/lift core, one riser for each quarter of the building. The tenant risers to take the air to all offices between level 1 and 10.

These 4 No air handling units will provide tempered fresh air, heated or cooled and M5 and 7F filtered on supply and M5 on return. Each air handling unit will comprise heat recovery (via a thermal wheel) in order to provide energy efficiency and reduce operational cost

The ground floor office is supplied by locate ceiling mounted AHUs connected to louvres on the external facade. Supply air and return air have G4 panels. All filters are complete with pressure switches and the heat recovery for these units will be provided by counterflow plate heat exchanger (aluminium construction) to provide a minimum of 80% energy recovery from the exhaust air to the supply air path.

A minimum separation of 5m between supply and extract is to be achieve on all AHUs

2.2 Toilets, Showers and Landlords

The Landlord area comprising of the Toilets, Shower and circulations space areas are to be provided with 1 no dedicated air handling units located on the roof. Heating and Cooling is to be provided by at the roof mounted air handling units from the primary fresh air is delivered to each area. These units will be fed with chilled water and LTHW.

The supply and extract air ducts are to be routed externally on the roof to the 1 no building landlords riser on the outside of the stair/lift core. The landlord risers to take the air to all offices between the roof level and all the way down to the basement level shower/changing areas.

This air handling unit will provide tempered fresh air, heated or cooled and M5 and 7F filtered on supply and M5 on return. This air handling unit will comprise heat recovery (via a thermal wheel) in order to provide energy efficiency and reduce operational cost

The ground floor office is supplied by locate ceiling mounted AHUs connected to louvres on the external facade. Supply air and return air have G4 panels. All filters are complete with pressure switches and the heat recovery for these units will be provided by counterflow plate heat exchanger (aluminium construction) to provide a minimum of 80% energy recovery from the exhaust air to the supply air path.

2.3 Ground Floor Office and Reception

The ground floor office and reception are supplied by locate ceiling mounted AHUs connected to louvres on the external facade. Supply air and return air have G4 panels. All filters are complete with pressure switches and the heat recovery for these units will be provided by counterflow plate heat exchanger (aluminium construction) to provide a minimum of 80% energy recovery from the exhaust air to the supply air path.

A minimum separation of 5m between supply and extract is to be achieve on all AHUs

2.4 Bin Store and Cycle store

The ground floor bin store and cycle store will contain a local extract ventilation system. This will comprise extract grilles, with high level ductwork and an inline extract fan (with attenuation) discharging exhaust air to outside via a wall mounted louvre. Make-up air will be via a wall mounted intake louvre.

Odour is completed by controlling the odour at source via regular washdown via localised back flow category 5 washdown.

2.5 F&B / Commercial Units

The ground floor F&B units with Shell and Core fit out only during the basement.

Building riser space has been allowed for the kitchen to have 40ACHs of extract ventilations to the roof from a commercial kitchen and discharge with the appropriate cowl at least 1m above roof level.

Approx 900mm Louvres have also be proved to the facade of these spaces to allow connection of AHUs to be installed connected directly to the outside at ground level.

2.6 PLANTROOMS

All plantroom are naturally ventilated via a wall mounted louvres.

3.0 CAR PARK VENTILATION

The design aim of the car park system is to:

- Achieve ventilation by purely mechanical extract.

In addition, where provided, the mechanical extract fans are to:

- Provide Smoke extract in line with the Building Regulations.

3.1 Below Ground Car Park

The basement car park is to be mechanically ventilated to achieve 6 air changes per hour with an increase to 10 air changes per hour for smoke control in the event of a fire. A system of mechanical extract equal to 10 air changes per hour is provided with the carpark and mark up air is brought in at the car park entrance where queuing is likely to form.

The mechanical extract systems shall be split into 2 parts, each providing 50% of the total airflow required. Each part to have an independent power supply which operates in the event of a failure of the main power supply.

3.2 Carbon Dioxide Control

Carbon dioxide is to be monitored and used to control the extract air flow rates for mechanical extract systems.

3.3 Extract Air Collection/Movement

The extract air is to be collected into low level attenuated collection ducts adjacent to the extract plant

The extract air is to be moved towards the central extract inlets by means of impulse or Induction type fans Type EF 18. This system has been validated by specialist CFD analysis.