



SECTION 73

VENTILATION STATEMENT

DECEMBER 2022



The Ventilation Statement comprises separate documents for phases 2 and 3.  
These are attached to this statement.



# PHASE 2 VENTILATION STRATEGY STATEMENT

St. Michaels, Manchester  
Commercial Development

Project Title: St. Michaels, Manchester

Project Ref: 2986

Date: 31/08/2021

Report Ref: 01

## VENTILATION SYSTEMS

System Objectives;

To provide complete, energy efficient, fully working and balanced ventilation system to the development that can:-

- Deliver sufficient outdoor fresh air to occupants;
- Deliver good indoor air quality;
- Ensure acceptable internal noise levels are not exceeded;
- Assist in the removal of heat gains;
- Remove odours, contaminants and moisture;
- Avoid cold draughts;
- Assist in avoidance of summertime overheating;
- Provide summertime night time cooling of the building fabric when required;
- Provide an easily controlled and maintainable system;
- To recover heat from the exhaust air stream for re-use in the fresh air supply.

The ventilation strategy, location of plant areas, proximity to external noise sources and selection of internal systems shall all be carefully considered from an acoustic perspective with particular attention to those areas which are very noise sensitive.

**A mechanical ventilation strategy is proposed, whereby:-**

### PHASE 2

#### Offices

Air handling units shall be provided to supply tempered fresh air to the office spaces. They will utilise a variable air volume strategy, controlled to limit carbon dioxide levels on the floorplates. This approach will provide optimised air quality whilst minimising energy use. The AHUs shall be located in the designated roof plant area. The air handling units will be served by the air source heat pump LTHW and CHW circuits, to provide heating and cooling, the units will also incorporate all necessary filtration and attenuation. The units provide heat recovery in the form of a thermal wheel and shall generally comprise of the following sections:-

1. Air intake louvre
2. Motorised shut off damper
3. Panel filters
4. Bag filter
5. thermal wheel (providing heat recovery)

## St. Michaels, Manchester Commercial Development

6. Supply fan
7. Return air fan
8. LTHW frost and heating coils
9. CHW cooling coils

The fans shall be inverter driven to provide variable speed control. Access panels shall be provided to allow access to all components.

### Landlord and WC AHU

An air handling unit shall be provided to supply tempered fresh air to the landlord spaces and changing rooms and extract vitiated air from the WCs and Shower rooms. Make up air shall be provided naturally via undercut doors, door transfer grilles or transfer duct subject to the extent of air volumes required. The AHU shall be located in designated roof plant area. The air handling unit will be served by the air source heat pump LTHW circuits, to provide heating, the units will also incorporate all necessary filtration and attenuation. The units provide heat recovery in the form of a plate heat exchanger and shall generally comprise of the following sections:-

1. Air intake louver
2. Motorised shut off damper
3. Panel filters
4. Bag filter
5. Plate heat exchanger (providing heat recovery)
6. Supply fan
7. Return air fan
8. LTHW frost and heating coils

The fans shall be inverter driven to provide variable speed control. Access panels shall be provided to allow access to all components.

### Basement AHU

An air handling unit shall be provided to supply tempered fresh air and remove vitiated air from the basement spaces. The AHU shall be located in the basement plant room. Intake air will be drawn from the landscaping and exhausted via façade louvers located at the ground floor. The air handling unit will be served by the air source heat pump LTHW circuit, to provide heating, the units will also incorporate all necessary filtration and attenuation. The units provide heat recovery in the form of a thermal wheel and shall generally comprise of the following sections:-

1. Air intake louver
2. Motorised shut off damper
3. Panel filters
4. Bag filter
5. thermal wheel (providing heat recovery)
6. Supply fan
7. Return air fan
8. LTHW frost and heating coils

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### **Basement carpark and general smoke extract and makeup air intake**

Extract fans will be provided sized to provide adequate basement or carpark smoke extract, as well as general carpark extract in normal operation. In the event of smoke extract, the system will utilise motorised smoke and fire dampers to control zonal extract. An intake air fan will provide makeup air to the basement spaces in a smoke extract scenario. Carpark makeup air will be drawn passively via intake louvres in the landscape.



# **Phase 3, St Michael's Manchester**

Ventilation Strategy Report  
Ref: P1785-VENT-001 Rev A

**NOVO**

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## AMENDMENT HISTORY



| REVISION | DESCRIPTION   | DATE     | AUTHOR     | CHECKED      |
|----------|---------------|----------|------------|--------------|
| A        | Initial Issue | Nov 2022 | C. Pearson | B. Duckworth |

## 1 EXECUTIVE SUMMARY

The following is the ventilation strategy for the project known as St Michael's Phase 3.

To provide complete, energy efficient, fully working and balanced ventilation system to the development that can: -

- Deliver sufficient outdoor fresh air to occupants.
- Deliver good indoor air quality.
- Ensure acceptable internal noise levels are not exceeded.
- Assist in the removal of heat gains.
- Remove odours, contaminants and moisture.
- Avoid cold draughts.
- Assist in avoidance of summertime overheating.
- Provide summertime night-time cooling of the building fabric when required.
- Provide an easily controlled and maintainable system.
- To recover heat from the exhaust air stream for re-use in the fresh air supply.

The ventilation strategy, location of plant areas, proximity to external noise sources and selection of internal systems shall all be carefully considered from an acoustic perspective with particular attention to those areas which are very noise sensitive.

All rooms will be provided with ventilation to suit Approved Document Part F.

The hotel's rooms shall all have mechanical ventilation

The offices shall have ventilation to British Council of Offices standards

The apartments shall have Mechanical Ventilation Heat Recovery (MVHR) systems to suit the requirements

## 2 VENTILATION STRATEGY

### 2.1 Apartment Ventilation

The building façade is sealed (other than balcony doors) and outside air will be supplied to the living rooms and bedrooms, exhausted from bathrooms and kitchens, via mechanical ventilation heat recovery units (MVHR).

This approach will allow each residence to meet the continuous ventilation requirements of the Building Regulations Approved Document F, whilst delivering the thermal efficiency required to comply with the Building Regulations Approved Document L1 and maintain the acoustic integrity of the façade.

Approved Document F also has a requirement for purge ventilation, in order to allow the removal of pollutants, such as burnt toast and paint fumes etc, via a short-term higher rate ventilation method.

To satisfy this requirement an MVHR boost facility will be provided together with reliance upon operation of the balcony doors (where provided). This pragmatic approach to compliance will have to be agreed with building control and it should be noted the boost facility also compromises the design acoustic criteria.

All habitable spaces will be provided with mechanical temperature control in summer and winter, which will mitigate the need to operate the boost facility / open the balcony doors to control the temperature.

Horizontally mounted MVHRs will be installed within areas of deeper ceiling void, whilst vertically mounted MVHRs will be installed within the residence utility cupboard. Extensive noise control measures will be installed to the MVHR units to ensure their operation does not cause a disturbance to the occupants.

Outside air from the MVHR will be introduced directly into the space via diffusers shared with the FCU/ indoor VRD unit, whilst the exhaust will utilise kitchen grilles / bathroom valves.

A low volume extract point will be provided in the kitchen, but the cooker hood will be a recirculation unit and will not be connected to the MVHR system, to reduce the risk of grease infiltrating into the central ventilation system. All diffusers, grilles and exhaust valves will be selected in consultation with the interior designer. The outside air is drawn in to the MVHR and the vitiated air discharged via discreet façade features detailed by the architect.

### 2.2 Hotel Ventilation

The hotel will be cooled, heated and ventilated by a number of separate systems, of varying configurations, which can be best summarised as follows.

Spa Air Handling Unit (including plate heat exchanger heat recovery) that shall be located at level 1 plant with ductwork distributed to the basement 1 level.

The pool area, sauna and steam rooms shall have dedicated plant to serve the specialist areas, selected by a pool specialist at RIBA Stage 3.

Ground Floor Function Air Handling Unit (including plate heat exchanger heat recovery) that shall be located at level 1 plant with ductwork distributed to the ground floor.

Sixth Floor Function Air Handling Unit (including plate heat exchanger heat recovery) that shall be located at level 7 plant with ductwork distributed to the 6<sup>th</sup> Floor

A dedicated Kitchen Air Handling Unit (including DX heating / cooling and filtration) will serve the Kitchen and dining suite

All WC areas shall have local extract fans, discharged locally through the façade.

Smoke ventilation shall be provided as detailed in the fire consultant's report, the duty standby smoke extract fans will be located at level 41 roof level.

BOH Air Handling Unit (including plate heat exchanger heat recovery) that shall be located at level 1 will serve the following areas at basement with the

The following spaces (not mentioned previously) will be provided with local exhaust, drawing air from the neighbouring spaces:

- Basement Stores
- Switch rooms
- Cycle Store
- Bin Stores
- Loading Bay
- Tank Room, unless low determined as low risk by the fire consultant and this can then be removed.
- Bin stores

The following spaces (not mentioned previously) will be provided with local supply and exhaust ventilation incorporating heat recovery:

- Hotel Foyer
- Admin
- Mail Room
- Laundry
- Housekeeping

Outside air will be supplied to the bedrooms and lounges in larger suites, exhausted from WCs and showers, via mechanical ventilation heat recovery units (MVHR).

Horizontally mounted MVHRs will be installed within areas of deeper ceiling void. Extensive noise control measures will be installed to the MVHR units to ensure their operation does not cause a disturbance to the occupants.

Outside air from the MVHR will be introduced directly into the space via diffusers shared with the FCU / indoor VRF unit, whilst the exhaust will utilise bathroom valves. All diffusers and exhaust valves will be selected in consultation with the interior designer. The outside air is drawn in to the MVHR and the vitiated air discharged via discreet façade features detailed by the architect.

The circulation corridors will be provided with an overall 1 air change per hour of tempered ventilation, with exhaust taken from service lobbies –the air handling units and risers are shared with the main hotel.

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### 2.3 Office Ventilation

At the level 1 plantroom, office air handling unit(s) with heat recovery plate heat exchangers shall be located to provide ventilation to the offices as a minimum to Approved Document Part F.

Outside air will be supplied at constant volume and scheduled variable temperature by ductwork from three central air handling units located at level 1. Extract from the office floor plate will be drawn in via the ceiling void and returned to the level 1 installed air handling unit for heat recovery via a thermal wheel.

Constant volume regulators will be provided on supply and extract systems at floor interfaces.

Landlord areas, including lobbies, toilets, cleaners will be served by the same air handling plant. The extract from landlord areas will generally be drawn from toilets, cleaners and changing facilities via shunt fans and ceiling mounted grilles, heat recovery from this vitiated air stream will be achieved via a plate heat exchanger to avoid any potential for cross flow contamination.

All WC areas shall have local extract fans, discharged locally through the façade.

Smoke ventilation shall be provided as detailed in the fire consultant's report, the duty standby smoke extract fans will be located at level 41 roof level.