Ventilation Statement

Maybrook House, Manchester



atelier ten

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1 Introduction

1.1 Purpose of Report

This Ventilation Statement has been prepared to support the detailed planning application for the proposed Maybrook House Hotel development in Manchester city centre. This report provides details of the proposed ventilation and extract strategy, which has been designed in accordance with the requirements of Building Regulations Approved Document F and associated CIBSE guidance documents.

1.2 Site Description

Maybrook House is situated on a prominent corner in Manchester city centre and is bounded by Deansgate to the east, Blackfriars to the north, Parsonage to the west, and Parsonage Lane to the south. The building extends to G+5 storeys in height and includes a basement level. It comprises a number of existing uses, including office, retail, restaurant, café, and drinking establishment. Part of the basement space was previously used as a gym; however, this has since closed. To the rear of the building is a service yard and a small amount of car parking. Vehicular access to the site is via Parsonage Lane to the rear. The materiality of the existing building will be covered in the accompanying Design and Access Statement (DAS).

1.3 Development Description

The proposed description of development is as follows:

Change of use of part basement, part ground and all upper floors from gymnasium, restaurant and office use (Use Class E) to hotel (Use Class C1) together with a two-storey vertical extension, external alterations and other associated works.

Table 1.1 Areas

Use	Floorspace (m² GIA)
Refurbishment	8,122
New Build	2,390
TOTAL	10,512

2 Ventilation Strategy

2.1 Overview

This ventilation statement has been prepared in support of the proposed hotel development and outlines the proposed building ventilation strategy for the guest accommodation, public areas, ancillary back-of-house accommodation, and smoke ventilation systems.

The ventilation proposals have been developed to provide suitable indoor environmental quality, thermal comfort, energy efficiency, acoustic performance, and compliance with the relevant statutory and technical guidance. The systems have been coordinated with the architectural and structural constraints of the existing building and have been developed to support the operational requirements of the proposed hotel use.

The proposed ventilation strategy has been designed in accordance with the following guidance and standards:

- Approved Document F of the Building Regulations
- Approved Document B of the Building Regulations
- CIBSE Guide A – Environmental Design
- CIBSE Guide B – Heating, Ventilating, Air Conditioning and Refrigeration
- BS 9999
- DW/144
- DW/172
- TR/19

Due to the city centre location of the proposed development and the associated external noise environment, the guest accommodation will adopt a sealed façade approach with non-openable windows throughout the hotel guestrooms. This strategy is considered necessary to achieve the required internal acoustic comfort standards and maintain an appropriate guest environment within the development.

As a result, the building has been designed around a predominantly mechanical ventilation strategy incorporating high-efficiency Air Handling Units (AHUs), heat recovery systems, demand-controlled ventilation, and dedicated smoke ventilation systems.

The ventilation systems will serve the following accommodation:

- Hotel guestrooms and ensuite facilities
- Front-of-house bar and restaurant area
- Ancillary back-of-house accommodation
- Kitchen and food preparation areas
- Staff welfare and WC facilities
- Refuse stores
- Plantrooms
- Basement accommodation
- Firefighting lobbies and protected escape routes

2.2 Guest Room Ventilation Strategy

Following a review of the available ventilation strategies, the proposed development will utilise a centralised Air Handling Unit (AHU) solution serving the hotel guest rooms and associated back-of-house spaces.

In response to the spatial constraints associated with the existing building, the ventilation system has been developed using three distributed AHU systems rather than a single large central plant arrangement. Splitting the ventilation provision across multiple AHUs reduces the overall ductwork sizes and riser requirements, allowing the services strategy to be integrated more effectively within the available ceiling voids and existing building structure.

The centralised AHU approach provides a robust and maintainable solution suited to hotel operation, offering the following benefits:

- Centralised maintenance access
- Reduced in-room maintenance requirements
- Improved acoustic performance within guest rooms
- Reduced visual impact within occupied spaces
- Improved operational flexibility
- Enhanced energy efficiency through central plant optimisation

The guest room ventilation systems shall provide continuous tempered fresh air ventilation to guest rooms whilst extracting air from en-suite bathroom facilities.

Ventilation rates shall be designed to meet the client standards which are in excess of the minimum requirements of Approved Document F of the Building Regulations.

The ventilation systems will incorporate high-efficiency heat recovery devices to minimise operational energy consumption and support the overall building carbon reduction strategy.

To improve operational efficiency, the guest room ventilation systems will incorporate Variable Air Volume (VAV) dampers to modulate supply and extract airflow rates based on occupancy conditions. This allows reduced ventilation rates to be achieved during periods when rooms are unoccupied, whilst maintaining the required fresh air rates during occupied periods.

Supply and extract ductwork shall generally be routed within ceiling voids and service risers.

AHUs shall be located at roof level with air intakes located away from street level air pollution. Air intakes and exhaust points will have adequate separation between them to prevent any short circulation of air supplies.

Filtration in accordance with Section 2.7 will be applied to all AHU systems.

Acoustic attenuation shall be provided throughout the ventilation systems to ensure compliance with the project acoustic criteria. Intake and exhaust attenuators shall be provided at AHU connections as required to meet the external acoustic levels.

2.3 Front-of-House Ventilation

The front-of-house bar and restaurant areas will be served by two ceiling-mounted Air Handling Units (AHUs) providing tempered fresh air ventilation to the occupied spaces.

The systems have been designed to accommodate both typical day-to-day occupancy levels and increased ventilation demand associated with larger social events and functions.

Under normal operating conditions, the systems shall serve a typical occupancy of approximately 242 people, providing a fresh air ventilation rate of 10 l/s/person. During this mode of operation, the AHUs will typically operate at approximately 75% fan speed, allowing reduced operational energy consumption, lower internal noise levels, and improved system efficiency during standard hotel operation.

The systems shall also be capable of operating at full duty to accommodate a maximum occupancy of approximately 440 people during peak occupancy events and functions. Under these conditions, the systems shall provide a ventilation rate of approximately 8 l/s/person.

The AHUs shall be ceiling-mounted within designated back-of-house areas to maintain a discreet installation and avoid visual impact within the public areas.

Fresh air intake and exhaust ductwork shall terminate via wall-mounted weather louvres located primarily at the rear of the building to minimise impact on the primary street-facing façades.

Intake and exhaust louvres shall be positioned with suitable separation distances in accordance with current ventilation guidance to minimise the risk of cross-contamination and re-entrainment of exhaust air.

2.4 Back-of-House Ventilation

2.4.1 Preparation Kitchen Ventilation

The proposed preparation kitchen facility associated with the hotel bar and restaurant operation is not intended to function as a full commercial kitchen and will therefore have reduced cooking and extract requirements compared with a traditional high-output catering environment.

The kitchen operation is anticipated to primarily support light food preparation and reheating activities, resulting in reduced heat gains, lower grease generation, reduced odour generation, and lower overall extract requirements.

Ventilation to the kitchen area will be provided via a dedicated mechanical extract system combined with tempered supply air from the central ventilation system serving the back-of-house areas.

The ventilation strategy has been developed to maintain suitable indoor air quality, remove heat and odours generated by catering activities, and provide comfortable working conditions for staff.

Localised extract ventilation shall be provided where required to suit the final catering equipment selection and operational requirements.

All kitchen extract systems shall incorporate suitable filtration and discharge arrangements in accordance with current regulatory guidance.

The kitchen extract system shall comply with the requirements of DW/172, DW/144, TR/19, BS 9999, and Approved Document B.

The extract systems shall discharge to atmosphere via suitably located external louvres positioned to avoid nuisance, visual impact, and re-entry of exhaust air into the building.

2.4.2 WC Ventilation

Mechanical extract ventilation with heat recovery shall be provided to all public and back-of-house WC facilities throughout the development to maintain acceptable indoor air quality and remove odours and moisture at source.

The WC ventilation systems shall operate continuously during occupied hours to maintain negative pressure within the toilet areas and prevent migration of odours into adjacent occupied spaces.

Replacement air shall be provided via transfer air arrangements from adjacent circulation areas.

WC extract systems shall discharge to atmosphere via suitably located external louvres positioned to avoid nuisance, visual impact, and re-entry of exhaust air into the building.

2.4.3 Ancillary Areas

The proposed central ventilation systems will additionally provide ventilation to ancillary accommodation including laundry areas, stores, staff areas, circulation corridors, and associated

support spaces.

Ventilation rates shall be determined in accordance with occupancy levels, equipment loads, and operational requirements.

Communications and IT rooms shall be positively pressurised where required to prevent ingress of dust and airborne contaminants.

2.5 Refuse Stores and Plantrooms

Refuse stores and associated refuse lobbies shall be naturally ventilated where practical through permanent external louvres.

Where natural ventilation is not achievable, mechanical extract ventilation shall be provided at a minimum rate of 10 air changes per hour.

Careful consideration will be given to the placement of any nearby air intake points to the room louvres / discharge point to avoid re-circulation of odours.

Mechanical and electrical plantrooms shall be ventilated either naturally or mechanically subject to the thermal loads associated with installed equipment. Ventilation provisions shall ensure suitable operating temperatures are maintained for all installed plant and equipment.

2.6 Smoke Ventilation Strategy

The smoke ventilation strategy shall be developed in accordance with Approved Document B and the project fire strategy.

2.6.1 Firefighting Lobby Smoke Ventilation

Fire-fighting lobbies shall be provided with smoke ventilation by means of smoke shafts designed in accordance with BRE guidance document 'Smoke Shafts Protecting Fire-Fighting Shafts: Their Performance and Design'.

The system shall comprise:

- Motorised lobby ventilators with a minimum dynamic free area of 1m²
- Architectural non-vision louvres with motorised dampers
- Mechanical smoke extract fans
- Master override panel
- Automatic Opening Ventilator (AOV) at the head of the firefighting stair
- Fan speed controllers, controls, sensors, and associated ancillaries
- Fire alarm system interfaces

The firefighting stair shall be provided with an Automatic Opening Ventilator (AOV) with a minimum dynamic free area of 1m² located at the top of the stairwell.

2.6.2 Basement Smoke Extract

The basement level shall be provided with a smoke clearance system which will operate upon fire detection via either the sprinkler system or the automatic fire detection system.

The basement smoke clearance system shall generally comprise:

- Duty and standby smoke extract fans
- Smoke dampers to divert airflow to the fire zone
- Mechanical extract ductwork
- Make-up air ductwork
- Fire-rated smoke extract ductwork
- Smoke damper control panels
- Combined smoke ventilation control panel with mimic display and manual override controls
- Associated power, controls, and fire alarm interfaces

Each smoke extract fan shall be sized to provide a minimum extract duty equivalent to 10 air changes per hour to the largest smoke zone served by the system.

2.7 Filtration

The ventilation systems will incorporate high-efficiency filtration in accordance with the client technical standards.

Supply air systems will include minimum F9 (ePM1) particulate filtration to ensure high indoor air quality within guestrooms and public areas.

Extract air systems will incorporate F7–F9 filtration stages as appropriate.

In recognition of the urban city-centre location and associated air quality constraints, provision will be made for additional air treatment, including activated carbon filtration, subject to detailed coordination with the project air quality assessment.

The overall ventilation strategy is designed to achieve IDA2 indoor air quality standards in accordance with the client brief.

2.8 Energy Efficiency and Acoustic Considerations

The ventilation systems have been developed to support the wider building energy and acoustic strategies.

Key energy efficiency measures incorporated within the design include:

- High-efficiency heat recovery systems
- Variable air volume control
- Demand-based ventilation control
- Reduced fan speeds during low occupancy operation
- Centralised maintenance and plant optimisation

The sealed façade approach and centralised ventilation strategy additionally support the acoustic requirements of the development by minimising external noise ingress into hotel guest rooms.

All ventilation plant and associated systems shall be selected and acoustically attenuated to satisfy the project noise criteria and local authority planning requirements.

2.9 Summary

The proposed ventilation strategy has been developed to provide a robust, energy-efficient, and maintainable solution appropriate to the operational requirements of the hotel development.

The systems are intended to provide:

- Suitable indoor air quality for all occupied areas
- Compliance with Building Regulations and relevant guidance
- Improved acoustic comfort within guestrooms
- Reduced operational energy consumption
- Flexible operation aligned with hotel occupancy patterns
- Integrated smoke ventilation provisions
- Coordination with the architectural and structural constraints of the existing building

The ventilation proposals outlined within this statement have been developed in accordance with Manchester Core Strategy Policy EN6 and the Council's Air Quality and Planning Guidance, ensuring that the development minimises exposure to poor external air quality, incorporates appropriate filtration of incoming air, and avoids the generation of adverse air quality or odour impacts on surrounding receptors