



Boddingtons Manchester

Ventilation Strategy

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LATIMER
by Clarion Housing Group

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1.0 Introduction

1.1 General

This report outlines the ventilations strategy for the Boddingtons development of three residential blocks and is provided in order to support the planning application. The proposed development is located on part of the former Boddingtons Brewery Site in central Manchester. The project consists of the erection of circa 461 residential units with associated ancillary accommodation, within three cores ranging from 11 to 26 storeys. The residential accommodation will comprise of a mix of 1,2 & 3-bedroom dwellings and is mainly set around landscaping and access roads. There are to be resident's communal areas including main entrance, amenity space, bin stores, cycle storage, and a central courtyard, in addition, to retail/commercial units located at Level 00.

The development is broken down as follows:

- Block A1
- Block B1
- Block B2
- Landlord Areas
- Commercial Units

The purpose of this report is to support the planning application for the development with respect to the ventilation requirements determined by the energy strategy and the requirements of the Building Regulations Approved Document F.

The report addresses the following systems:

- Apartment Ventilation
- Communal Smoke Ventilation
- Ancillary Ground Floor area ventilation
- Commercial unit ventilation
- Plant and bin store ventilation

1.2 Design and Standards Guidance

All ventilation systems will be provided and designed in accordance with the relevant documentation available at the time of design and is listed below

- Building Regulations Approved Documents Part F and L1A
- Domestic Building Services Compliance Guide
- Local Statutory Planning Requirements
- Fire Engineering Consultants report recommendations
- British Standards and Codes of Practice
- Chartered Institution of Building Services Engineers (CIBSE) Guides and Technical memorandums.
- CIBSE Design Methodology for the assessment of overheating risk in homes (TM59)
- Building Services Research Information and Association (BSRIA) recommendations
- Building Engineering Services Association (BESA) Ductwork system specifications
- Acoustic ventilation and Overheating (AVO) Residential Design Guide

All ventilation systems will be provided with suitable means of acoustic treatment to ensure internal and external noise levels dictated by Planning and the Client's Brief. The acoustic requirements will be developed further as the design develops in conjunction with the acoustic consultants requirements,

2.0 Apartment Ventilation

Ventilation will be provided to all dwellings in accordance with the requirements of the Wallace Whittle Energy Strategy document.

Residential dwellings will be provided with a 'Whole House' ventilation system in accordance with the Domestic Building Services Compliance Guide section eight. The dwelling system will be of the continuous mechanical ventilation with heat recovery (MVHR) type as defined under System 4 of Approved Document F.

Each dwelling will be provided with a dedicated mechanical ventilation with heat recovery (MVHR) unit. The unit will intake fresh air and discharge exhaust air to atmosphere via suitably separated façade terminals. Inlet and outlet air terminals on the external façade will be no less than 1m apart to prevent recirculation of stale air. MVHR units will be complete with automatic controls and an automatic summer bypass facility.

Inlet and outlet slots will be formed in the façade to compliment the aesthetic intent of the development. Where practical these will be located in window reveals or soffits to minimise overall impact.

Supply air will be provided to each habitable room, i.e. living rooms, dining rooms and bedrooms, via ceiling mounted grilles. Air will be extracted from bathrooms, en-suite rooms, kitchens and utility cupboards containing washing machines/dryers.

A boost facility will increase extract rates proportionally via either humidity sensor or manual switch to the kitchen. Kitchen areas will be provided with a carbon filter type recirculation hood above the hob and the local MVHR extract connection will be located within 300mm of the hob.

It is proposed that purge ventilation to habitable rooms will be provided via manually openable windows. Where this is not possible enhanced MVHR units will be provided to overcome heat gains or noise pollution. The apartment ventilation systems will take cognizance of the Acoustics & Noise Consultants (ANC), AVO Residential Guide, and measures to mitigate overheating will be developed as part of the ongoing design process. At this stage a sample of apartments have been tested against CIBSE TM59 criteria for overheating in specific locations and floors. The whole of the development will be tested against the criteria as the design progresses through the next stage. Where the assessments identify overheating or acoustic requirements then ventilation rate will be boosted to overcome the issues.

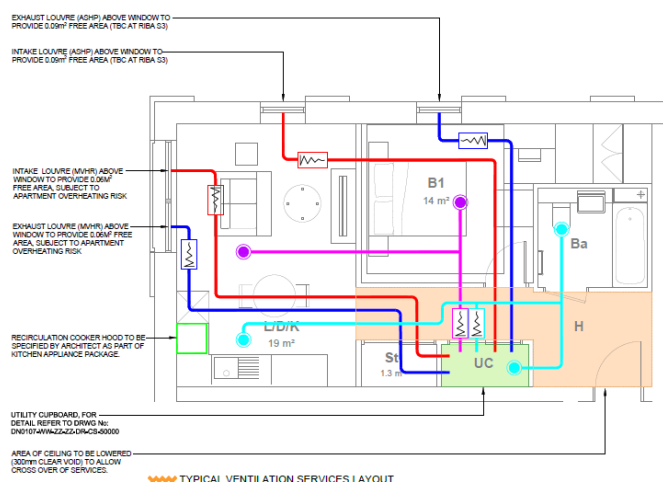


Figure 1 - Typical Apartment Ventilation Layout

3.0 General Ventilation

3.1 Communal Smoke Ventilation

In accordance with Approved Document B (Fire) any building over 18m will be provided with a safe means of access for the Fire Service. Typically, a firefighting shaft is provided comprising staircase, protected lobby and lift. In residential properties the protected lobby is often extended to include the communal corridors. All firefighting staircases will be provided with a 1m² head of stair automatically opening vent (AOV).

Where corridors to apartments are 'dead-end' or 'landlocked' a smoke vent shaft system will be required to protected lobbies/corridors and assist with smoke clearance. Such systems will consist of a proprietary smoke ventilation system subject to the Fire Engineering Strategy and agreement with Building Control/Greater Manchester Fire and Rescue Service.



Figure 2 - Typical Smoke Fan Arrangement

Duty and standby fans will be provided to each mechanical shaft located and at roof level.

The installations will be complete with an automatic control system to automatically operate in either mode. Smoke venting will be initiated under local detection of smoke; environmental venting will be operated under temperature control.

Under the Draft version of BS9991-2015 a differential pressure system is being considered that will pressurise the stair core, lift and lift lobby via a twin fan, twin façade louvre system in compliance with BS EN 12101-6-2005 class B. At this the provision has been allowed for at ground floor level with the fan inlets communicating via louvres on two façades. Natural extract is provided through vertical smoke shafts communicating to each floor with pressure and smoke release at roof level.

3.2 Bin and Refuse Stores and Bicycle Storage

Refuse storage areas including bin stores will be provided with a means of natural or mechanical ventilation. In accordance with BS5906 natural ventilation will be provided via a fixed opening not less than 0.2m² to atmosphere. Vents will be at high and low level and not be formed by louvred doors and be complete with vermin/insect screens.

Where mechanical ventilation is required 10 air change rates per hour will be provided. Smoke ventilation transfer ducts will be specified in accordance with the Fire Strategy from refuse store lobbies where required. Typically, these are fixed openings of 0.4m².

3.3 Commercial Units and Management Offices

General ventilation will be provided via the façade of the commercial units, typically via a continuous louvred strip at high level above the glazing line or in line with the structure at high level within the commercial units as detailed by the Architect. Where this is not possible and does not suite the architectural design of the standalone retail units, external louvre will be provided to suit the construction of the units. All such louvres will be provided as part of the façade package for tenant fitout. The ventilation of the units will be via void air handling units located at high level and may include toilet extract and make up provision.

The management offices will be provided with a similar arrangement of void ventilation units with associated louvres integrated into the façade at high level within the unit.



Figure 3 - Ground Floor Commercial Units

3.4 Catering Extract Provision

It is proposed that no hot food provision will be permitted to the commercial units, however spatial allowance has been made within the vertical riser provision for future catering extract if required in the future. Figure 4 shows the location of a potential discharge in the centre core for any proposed catering extract at a later date.

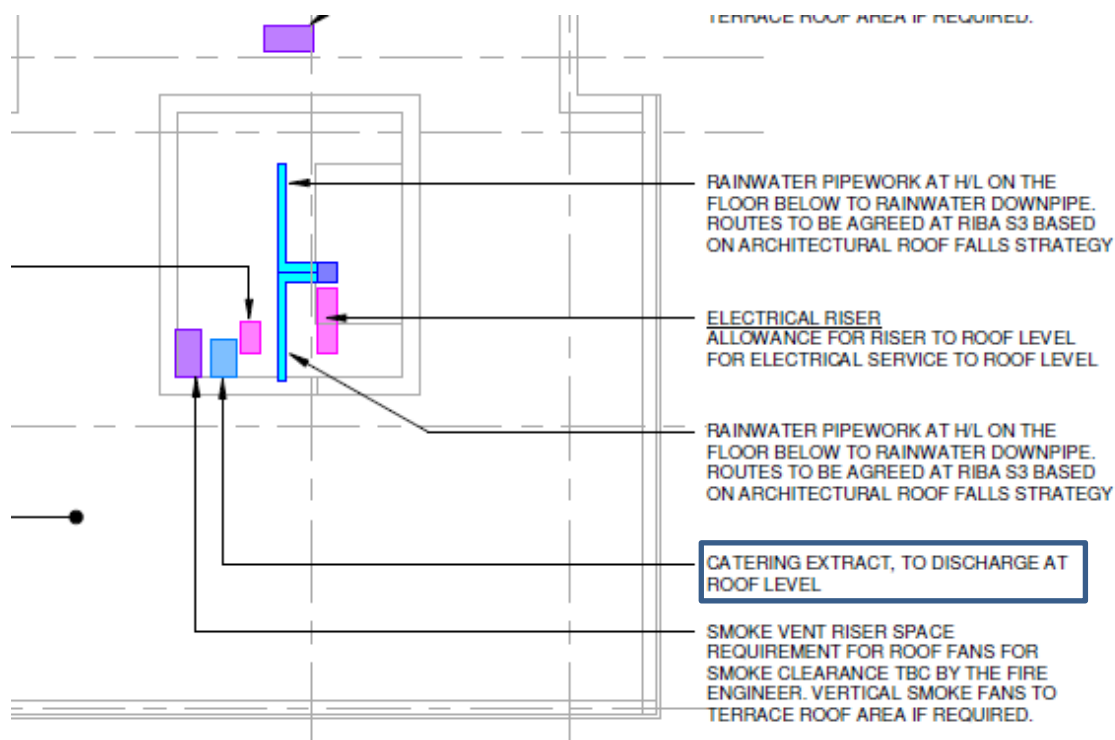


Figure 4 - Roof Level Discharge Zones

3.5 Emergency Generator Room

The generator room will be ventilated naturally via louvres to the façade. An exhaust will terminate at high level and located to avoid noise and air quality pollution.

As the generator is a Life Safety requirement its enclosure must be fire rated and as such cannot ventilate to the adjacent spaces.

It is noted that the generator should only run in emergency situations during the loss of mains power. However, the generator will require testing on a weekly basis and as such a means of acoustic treatment will be provided to ensure the external noise levels are achieved.

The generator exhaust rises through the internal fire rated riser and discharges at roof level.

3.6 Substations

The utility substations will be ventilated naturally via louvred doors and louvres to the façade. Ventilation is required to dissipate the significant heat generated by the transformers at full and part load.

Where natural ventilation cannot be achieved, a fan assisted mechanical system will be provided. A dedicated ducted system complete with temperature initiated duty and standby fans will be provided.

Substations will be ventilated in accordance with the specific IDNO / DNO providers requirements.

3.7 LV Switchrooms

Background mechanical ventilation will be provided to the LV switchroom(s) to prevent stagnation of air and dissipate any residual heat.

Mechanical extract ventilation providing at least 3 air changes will be applied to switchrooms with fresh air make up via ducted routes to the façade where required.

3.8 Cleaners Stores & Sanitary Accommodation

Mechanical ventilation will be provided to any cleaners stores and sanitary accommodation to the communal areas.

Mechanical extract ventilation providing at least 3 air changes will be provided to cleaners stores in line with CIBSE guidance.

Mechanical extract ventilation providing at least 6 air changes or 6l/s per water closet / urinal will be applied to sanitary accommodation in line with the requirements of ADF and CIBSE guidance.

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