

VENTILATION STRATEGY REPORT

FOR THE: EXTENSION TO CLAYTON HOTEL MANCHESTER AIRPORT



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1 Introduction

This report has been produced to set out the design intent for providing ventilation to the Bedroom Block Extension to Clayton Hotel Manchester Airport.

Given the development's proximity to Manchester Airport the opportunity for natural / passive ventilation solutions are limited and therefore the majority of the proposed building will require mechanical ventilation.

The proposed extension will be an 8 storey building generally comprising 216No bedrooms (levels 1 through 8), ground floor reception area, restaurant, and ancillary spaces.

Mechanical ventilation is required to the following areas:

1. Bedrooms and bedroom corridors
2. Ground floor reception, restaurant, and toilets
3. Kitchen supply and kitchen

The key aim within the ventilation strategy is to employ suitable high efficiency solutions to minimise energy costs and reduce carbon dioxide (CO₂) emissions.

2 Ventilation System Design Criteria

The mechanical ventilation system shall be designed in accordance with Dalata Hotel Group Employers Requirements (ER's), Building Regulations Part F, and CIBSE Volume B guidelines.

2.1 Occupancy, Ventilation (Fresh Air Rates) & Noise

Space Type	Occupancy Density (m ² /person)	Ventilation Rate (l/s/person)	Noise Rating (NR)
Guest Rooms			
Guest Room, Suite	2 p/room	10	30
Guest Bathroom	1 p/room	20	35
Corridor	-	0.5 l/s.m ²	30/35
Linen store	-	1.3 l/s.m ²	40
Front of house			
Main Lobby	7.5	7.5	35
Reception Lobby	2.0	7.5	30
Office	8.0	10	30
Luggage Storage	-	1.0 l/s/m ²	45
Public Areas			
Public Toilets		10 ach	35
Restaurants	3.0	10	35
Bar	3.0	10	35
Back of House			
Kitchen		60 ach	
Circulation	-	0.5 l/s/m ²	
Offices	8	7.5	30

2.2 Duct Sizing

Duct Sizing shall be based on HVAC Ductwork Classification Class A with the following parameters outlined with the Dalata Hotel Group Employers Requirements (ER's).

Supply and return air ductwork velocities shall not exceed:

- 5.0 m/s in main duct runs
- 3.5 m/s in branch duct runs
- 2.5 m/s in final connections to terminal devices or diffusers.

3 Ventilation Strategy

All mechanical ventilation systems shall include the following energy efficiency measures:

- Building Management System (BMS) automatic controls and energy metering
- Variable speed fan technology
- High efficiency fans
- High efficiency heat recovery
- High efficiency thermal insulation

3.1 Supply and Extract Ventilation - Bedrooms

The fresh tempered supply air to the bedrooms and extract air from the en-suites shall be served from a centralised air handling units. Due to plant height restriction 3No air handling units (AHU's) shall be provided at roof level.

Units shall be manufactured by IV Produkt (Envistar Range) integrating thermal wheel heat recovery and thermo cooler heat pump technology. The AHUs shall be provided with Class F7 filtration and room side attenuation.

The supply and extract ductwork routes shall be via the combined vertical risers for extract and supply, bedroom corridor supply and vertical riser extract.

The centralised AHUs shall provide the necessary ventilation in accordance with Part F Building Regulations and CIBSE Vol B

The AHU design shall be in compliance with the energy code ERP Eco 2018

3.2 Supply and Extract Ventilation – Ground Floor

The fresh tempered air supply air to and extract air from the Reception, Public Areas, Toilets & Restaurant shall be served from a centralised air handling plant.

An air handling unit shall be provided at first floor roof level within the screened plant area.

Unit shall be manufactured by IV Produkt (Envistar Range) integrating thermal wheel heat recovery and thermo cooler heat pump technology.

The AHUs shall be provided with Class F7 filtration and room side attenuation.

The supply and extract ductwork routes shall be via the ground floor ceiling void.

The centralised AHU shall provide the necessary ventilation in accordance with Part F Building Regulations and CIBSE Vol B

The AHU design shall be in compliance with the energy code ERP Eco 2018

3.3 Supply and Extract Ventilation – Kitchen

The fresh tempered air supply air to and extract air from the Restaurant Kitchen. 2No dedicated AHUs to be provided at roof level.

An air handling unit shall be provided at first floor roof level within the screened plant area.

Unit shall be manufactured by IV Produkt (Envistar Range) integrating thermal wheel heat recovery and thermo cooler heat pump technology.

The AHUs shall be provided with Class F7 filtration and room side attenuation.

The supply and extract ductwork routes shall be via the ground floor ceiling void.

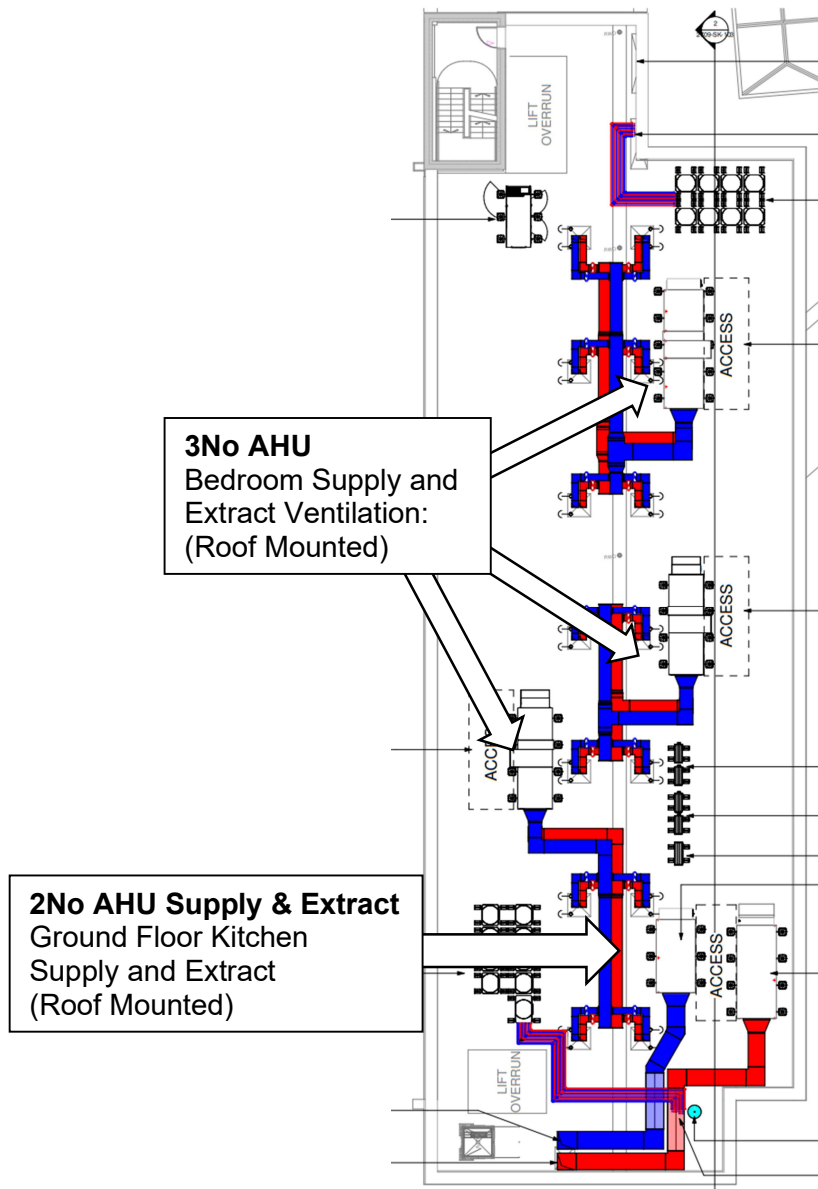
The centralised AHU shall provide the necessary ventilation in accordance with Part F Building Regulations and CIBSE Vol B

The AHU design shall be in compliance with the energy code ERP Eco 2018

4 Ventilation Plant Layout

4.1 Roof Plant

See below AHU roof plant layout:



4.2 1F Plant

See below AHU first floor plant layout:

