Ventilation and Extraction Statement

Plot H, Charles Street

25-011

November 2025

Rev 2

Rev	Description	By	Date
-	Draft issue for comment	JG	24/10/25
1	Deloitte comments incorporated	JG	11/11/25
2	Deloitte comments incorporated	JG	24/11/25

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1 INTRODUCTION

This Ventilation and Extraction Statement has been prepared by HGCE Ltd on behalf of RGRE Ltd, ID Manchester Ltd and The University of Manchester ('the Applicants') in support of an application for full planning permission for the redevelopment of the multi storey car park located on Charles Street, Manchester, M1 7AR ('the Site').

The proposed development comprises Purpose Built Student Accommodation (PBSA) with ground floor flexible commercial floorspace across three buildings of 8, 10 and 38 storeys, with a two-storey podium.

This 0.742 hectare site in Manchester City Centre is bounded by Charles Street (south), the Manchester South Junction and Altrincham Railway Viaduct and Granby Row (north), Sackville Street (east), and Princess Street (west). The site currently comprises a vacant multi-storey car park (closed October 2024) and three vacant retail units (last occupied June 2025). The car park and retail units are no longer fit for purpose and are subject to a planning application for demolition.

This statement has been produced to detail the supply and extract ventilation strategy for the proposed development and describes how ventilation requirements have been incorporated into the design of the building.

This Ventilation Statement has been prepared to illustrate the proposed ventilation designs. It addresses the building regulation requirements described within Approved Document Part F, 2021 for ventilation to the various elements of the proposed development.

The report details the approach to ventilation for the student accommodation areas, both residential areas (levels 01 and above) and amenity spaces (Levels 00 and 01), and the ground floor commercial units.

The statement also highlights the need to provide complete, energy efficient, fully working and balanced ventilation systems 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;
- 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.

HG Consulting Engineers have collaborated with the design team to provide a holistic solution for the building that will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the proposed development whilst providing comfortable living and working accommodation.

A thermal modelling exercise, using the methodology prescribed by the 2021 edition of Approved Document Part O of the Building Regulations, and CIBSE TM59: Design methodology for the

assessment of overheating risk in homes (2017), has been undertaken to demonstrate that the internal temperatures over a typical year show a risk of overheating that is within the prescribed tolerances.

2 DESIGN STANDARDS

The ventilation design shall be in accordance with recognised UK and industry best practice, including guidance form the following industry bodies:

- British and European Standards (BSI).
- Chartered Institution of Building Services Engineers (CIBSE).
- Building Services Research and Information Association (BSRIA).
- Building Research Establishment (BRE).
- Heating & Ventilating Contractors Association (HVCA).

2.1 STATUTORY REQUIREMENTS

Ventilation systems design will also be based on the following Statutory Requirements:

- The Building Regulations, Including Part F and part O
- Clean Air Act
- The Control of Pollution Act
- The Construction (Design and Management) Regulations
- British Standards and Codes of Practice

2.2 VENTILATION RATES

Area/Room	**Ventilation Criteria**
Cluster Flats and Studios	Dwellings To meet Approved Document Part F of the Building Regulations - “Means of Ventilation” Section 5, New dwellings, System 4 – Continuous mechanical supply and extract with heat recovery (MVHR)
Commercial spaces	12 l/s/person based on an occupancy of 1 person per 5m^2. No food uses.
BOH Offices, Amenity/Hub Areas, study rooms, private dining	12 l/s/person
Gym	20 l/s/person
WCs	6 ac/h
Parcel, cycle and general stores	2 ac/h
Refuse	2 ac/h
Mechanical and electrical plantrooms	To be provided with natural ventilation or mechanical ventilation as appropriate to their use

3 VENTILATION STRATEGY – PBSA

3.1 BASIS OF DESIGN

The ventilation strategy has been designed to comply with the Building Regulations approved document Part F Means of Ventilation 2021, and the Domestic and Non-Domestic Ventilation Compliance guides.

This document describes the basis of the design and outline scope of ventilation works for the PBSA element of the proposed development which includes student amenity floorspace at ground floor level, and at Level 1 of the main tower building. In the main (38 storey) tower, cluster flats are proposed from Levels 4 to 29, and studios are proposed for Levels 30 to 37. In the secondary (8 and 10 storeys) towers, a mix of cluster flats and studios are proposed at all levels from Level 1 up.

Table 1.2 Minimum extract ventilation rates for continuous extract systems[1]

Room	High rate (l/s)	Continuous rate
Kitchen	13	The sum of all extract ventilation in the dwelling on its continuous rate should be at least the whole dwelling ventilation rate given in Table 1.3
Utility room	8	
Bathroom	8	
Sanitary accommodation	6	

NOTE:

1. If the continuous rate of ventilation provided in a room is equal to or higher than the minimum high rate specified in the table, no extra ventilation is needed.

Table 1.3 Minimum whole dwelling ventilation rates determined by the number of bedrooms

Number of bedrooms[1][2]	Minimum ventilation rate by number of bedrooms (l/s)
1	19
2	25
3	31
4	37
5	43

NOTES:

1. If the dwelling only has one habitable room, a minimum ventilation rate of 13l/s should be used.
2. For each additional bedroom, add 6l/s to the values in Table 1.3.

3.2 CLUSTER FLAT AND STUDIO VENTILATION

The residential areas ventilation systems will be designed to operate continuously at the minimum extract ventilation rates for continuous extract systems. This will allow the construction of a tightly sealed and correctly ventilated environment reducing thermal heat loss through reduced infiltration, whilst at the same time improving air quality and reducing the occurrence of moisture and mould.

To recover the heat from the extract systems, extract ventilation will be provided by mechanical ventilation heat recovery (MVHR) units in each residential unit (cluster flat or studio). Each habitable space will be provided with supply air from the MVHR unit to recover the heat which would typically be lost through the extract air. The MVHR unit serves as a method of recovering heat first and foremost, with fresh air being predominantly delivered through a natural ventilation solution, provided by opening windows. In areas where air quality is found to be a concern, the MVHR units will provide the primary method of fresh air supply.

The units will be provided with a high level of heat recovery efficiency using an integrated counterflow heat recovery cell.

The air volumes will be determined to satisfy the requirements of the Approved Document Part F of the Building Regulations (see abstract from Approved Document Part F) as a minimum, with enhanced flowrates being provided in some areas to aid overheating mitigation.

Each unit will intake fresh air and discharge exhaust air through the façade. The intake and exhaust louvres will be located a suitable distance apart to prevent cross contamination.

An intake supply filter inside the unit will be provided to remove incoming particulate and pollen matter. In areas where air quality is found to be a concern, separate NOx filters shall be fitted to the intake of the MVHR units.

The ventilation unit will remove air from the bathrooms and kitchens and provide air to the habitable rooms. This will be via a rigid flat ductwork system with supply and extract air grilles located in the ceilings.

These systems shall operate day to day automatically and be controlled to vary ventilation rates via EC/DC motors' and integrated humidity sensors. The units shall operate on a trickle and boost principle with trickle rates being the minimum extract ventilation rates, shown in table 1.2 above. The boost rates shall be at least the minimum whole dwelling ventilation rates shown in table 1.3 above.

The MVHR will also incorporate summer bypass to ensure that elevated internal temperatures do not cause pre-heating of incoming air in the summer months.

The units shall have the facility to commission the supply and extract fans individually via inbuilt minimum and maximum speed adjustments, or alternative wired remote-control unit.

Air terminals on the façade shall be required for connecting the MVHR ventilation ductwork intake and discharge points to outside and are coordinated with the architectural design intent.

Studios will have a dedicated MVHR unit incorporating a cooker hood and shall be wall mounted as the image below:



Cluster flats will have an MVHR mounted in a kitchen cabinet which will serve all areas of the associated cluster flat. The cluster kitchens shall also be provided with cooker hoods, incorporating carbon filters, to remove cooking odours. A typical cluster MHVR unit is shown below:



Cluster corridors and circulations areas will not be provided with dedicated ventilation, although will be indirectly ventilated by the movement of air from adjoining spaces through the movement of occupants around the building.

3.3 PURGE VENTILATION (PART F) AND OVERHEATING (PART O)

Purge ventilation, giving the occupant final control over their environment, will be provided by free area natural ventilation openings in the building façade, or by a combination of natural ventilation openings and mechanical ventilation, or by dedicated purge fans, depending on the area in question.

Natural ventilation openings take the form of inwardly opening windows with fall protection provided by a decorative louvre, see image below, courtesy of Hodder and Partners:



The table below summarises the approach to purge ventilation and to overheating:

Habitable Area	Air quality issues?	Purge ventilation provision (Part F)	Overheating approach (Part O)
Studio	No	Opening windows do not provide 1/20th of the floor area as a free area. As such the MVHR units will be capable of boosting to 4 ac/h to provide mechanical purge ventilation via a manual purge switch.	Opening windows are assumed to be closed overnight due to acoustic concerns. An MVHR boost rate of 25 l/s is shown to be adequate to mitigate overheating in line with Part O with opening windows used during the day.
Cluster KLD	No	Opening windows provide 1/20th of the floor area as a free area so natural purge ventilation is applicable.	Opening windows are assumed to be openable both day and night as no sleeping provision is included within KLDs. Opening windows provide adequate

			performance in terms of overheating mitigation.
Cluster bedroom	No	Opening windows provide 1/20th of the floor area as a free area so natural purge ventilation is applicable.	Opening windows are assumed to be closed overnight due to acoustic concerns. An MVHR boost rate of 10 l/s is shown to be adequate to mitigate overheating in line with Part O with opening windows used during the day.
Studio	Yes	Opening windows cannot be used due to air quality concerns. MVHR units will be capable of boosting to 4 ac/h to provide mechanical purge ventilation via a manual purge switch.	Opening windows cannot be used due to air quality concerns. The purge rate of 4 ach/h is sufficient to mitigate overheating during day and night periods.
Cluster KLD	Yes	Opening windows cannot be used due to air quality concerns. Dedicated purge fans will be capable of extracting 4 ac/h to provide mechanical purge ventilation via a manual purge switch.	Opening windows cannot be used due to air quality concerns. The purge rate of 4 ach/h is sufficient to mitigate overheating during day and night periods.
Cluster bedroom	Yes	Opening windows cannot be used due to air quality concerns. Dedicated purge fans will be capable of extracting 4 ac/h to provide mechanical purge ventilation via a manual purge switch.	Opening windows cannot be used due to air quality concerns. The purge rate of 4 ach/h is sufficient to mitigate.

Following guidance from Blackbird Acoustics, Manchester city centre is to be determined as a high-risk location, and preliminary noise data confirms that bedroom windows are to be modelled as closed during sleeping hours for the purposes of overheating mitigation. Further information regarding overheating mitigation can be found in the HCGE overheating strategy document, provided as an appendix to the energy statement, and the Blackbird Acoustics Noise Assessment.

3.4 AMENITY SPACES

A central air handling units shall be provided to supply tempered fresh air to each of the amenity spaces at ground floor and level 01. These areas include the following room uses:

Level 00

- Gym
- Health and Wellbeing
- Private Dining
- Co-Working
- Lounge

Level 01

- Lounge
- Library
- Entrance
- WCs
- Management Suite
- Parcel Store

The unit shall be located within the level 02 plant area, discharging to atmosphere via louvred walls within the façade at level 02. The unit shall be of the heat recovery type as per Nuaire's BPC unit or equal and approved. The unit shall generally comprise of the following sections:

- Return air fan
- Air intake louvre
- Motorised shut off damper
- Fresh air filter (F7 Grade Filter)
- Extract filter (M5 Grade Filter)
- Counter flow heat exchanger (providing heat recovery)
- Supply fan

The systems shall be controlled to supply a variable air volume in line with occupancy of each area, controlled with CO_2 sensors and variable air volume controllers. This will meet minimum fresh air requirements and be provided with manufacturer's controls package to ensure fresh air rates and temperatures are maintained at comfortable levels and allow connection to the central building management system.

The spaces shall be ventilated to provide 12l/s per person.

Rigid metal ductwork will be used to supply and extract air from the amenity spaces at levels 00 and 01 via grilles located in the ceiling of each space.

Intake and exhaust ductwork will be insulated to prevent condensation.

Louvres on the façade shall be required for connecting the ventilation ductwork intake and discharge points to outside.

Attenuators will be installed to reduce external noise intrusion where required.

3.5 BASEMENT REFUSE STORES, CYCLE STORES AND PLANTROOMS

All proposed refuse areas and cycle stores are to be provided with appropriate dedicated extract ventilation.

Refuse and cycle store extract ventilation shall be provided via the basement smoke ventilation system and shall exhaust foul air to atmosphere at ground floor level, away from public spaces and air intakes.

Supply air make-up will be supplied through the smoke ventilation make-up air system through intake louvres along the elevation to external.

The refuse store lobbies shall be provided with permanent ventilation equal to 0.4m^2 free area.

Plantrooms will be provided with ventilation where heat generating equipment is located. Otherwise plantrooms will generally be unventilated.

3.6 SMOKE VENTILATION SYSTEM - BASEMENT SMOKE CONTROL

A smoke clearance system shall be installed in the basement, comprising a smoke extract and associated make-up air system, that shall operate for the purposes of smoke clearance. Please refer to the fire strategy for further details of the proposed system.

The system shall be capable of extracting at a rate of 10 ac/h from any one of the basement fire compartments at any one time, with zonal smoke control dampers provided to each compartment.

The system shall also be capable of providing the day-to-day ventilation of the cycle stores, plant rooms and refuse stores at basement level.

All plant items associated with the system shall also be fed by the Generator to ensure operation when the electricity supply is interrupted.

Air terminations for the basement smoke ventilation system are within decorative panel areas which have been coordinated with Hodder and Partners with respect to key performance requirements including free area and resistance to airflow. Full details of these ventilation terminals can be found in the Design and Access Statement.

3.7 SMOKE VENTILATION SYSTEM - SMOKE SHAFTS

A smoke ventilation system shall be installed that shall operate automatically in the event of a fire within the residential sections of the development.

Automatic opening vents (AOV) are provided at the head of each of the stair cores. These shall operate in conjunction with mechanical and natural smoke shafts to provide a means to keep escape routes free of smoke for evacuation and firefighting purposes. Please refer to the fire strategy for further details of the proposed system.

All plant items associated with the system shall also be fed by the Generator to ensure operation when the electricity supply is interrupted.

4 VENTILATION STRATEGY – COMMERCIAL

4.1 BASIS OF DESIGN

The ventilation strategy has been designed to comply with the Building Regulations approved document Part F Means of Ventilation 2021, and the Non-Domestic Ventilation Compliance guides.

This document describes the basis of the design and outline scope of ventilation works for the proposed commercial units.

With respect to the ventilation design of the commercial units, the following is taken as a worst-case scenario, in terms of use classes:

Flexible Use Class E Commercial, Business and Service, excluding hot food.

Please note: the proposed use class E excludes hot food. For information, this includes:

Use Class E Commercial, Business and Service (a, b – excl. hot food, c, g)

E(a) Display or retail sale of goods, other than hot food

E(b) Sale of food and drink for consumption (mostly) on the premises – excluding hot food (see below on restrictive planning condition)

E(c) Provision of:

E(c)(i) Financial services,

E(c)(ii) Professional services (other than health or medical services), or

E(c)(iii) Other appropriate services in a commercial, business or service locality

E(g) Uses which can be carried out in a residential area without detriment to its amenity: (i, ii, iii)

There are three flexible commercial units located at ground level. The commercial units are not proposed to have any cooking facilities and as such kitchen ventilation is not required. The table below outlines the allowances made for ventilation of these units. Occupancies are taken from BSRIA rules of thumb, table 3: Building occupancy densities, as retail establishments which gives a worst-case occupancy density of 5 m^2/person.

Unit	Area (m2)	Occupancy (persons)	Ventilation rate (l/s/person)	Total ventilation rate (l/s)
1	122.7	25	12	300
2	218.6	44	12	528

3	240.9	48	12	576

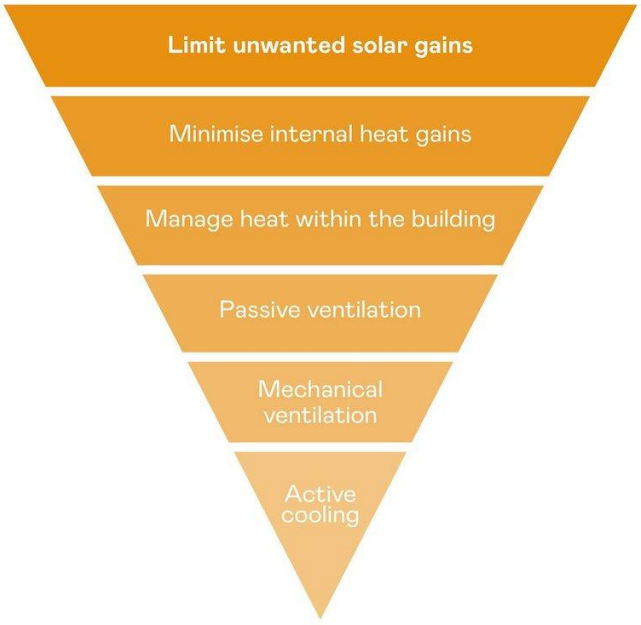
As the units will be let as tenant fit-out, no ventilation plant will be installed as part of the scheme, however, adequate air terminal provision will be allowed for a minimum of the ventilation rates shown in the table above.

Air terminations for future commercial systems are within decorative panel areas which have been coordinated with Hodder and Partners with respect to key performance requirements including free area and resistance to airflow. Full details of these ventilation terminals can be found in the Design and Access Statement.

5 OVERHEATING ASSESSMENT

A dedicated thermal comfort report has been produced in support of the energy and carbon strategy. The energy and carbon strategy focuses on meeting the expectations and intent of Places for Everyone (2024) policy JP-S2 sections (2) and (5), JP-S3 section (2) as well as linking to Truly Affordable Net Zero (TANZ) requirements.

The thermal comfort report addresses the requirement to demonstrate that overheating mitigation within the proposed development will follow the cooling hierarchy, shown in the image below, prioritising passive measures and avoidance of heat gains.



Further to the demonstrated adherence to local planning policy, the strategy also demonstrates compliance with Building Regulations Approved Document Part O (2022) as well as providing evidence for BREEAM HEA04 credits.

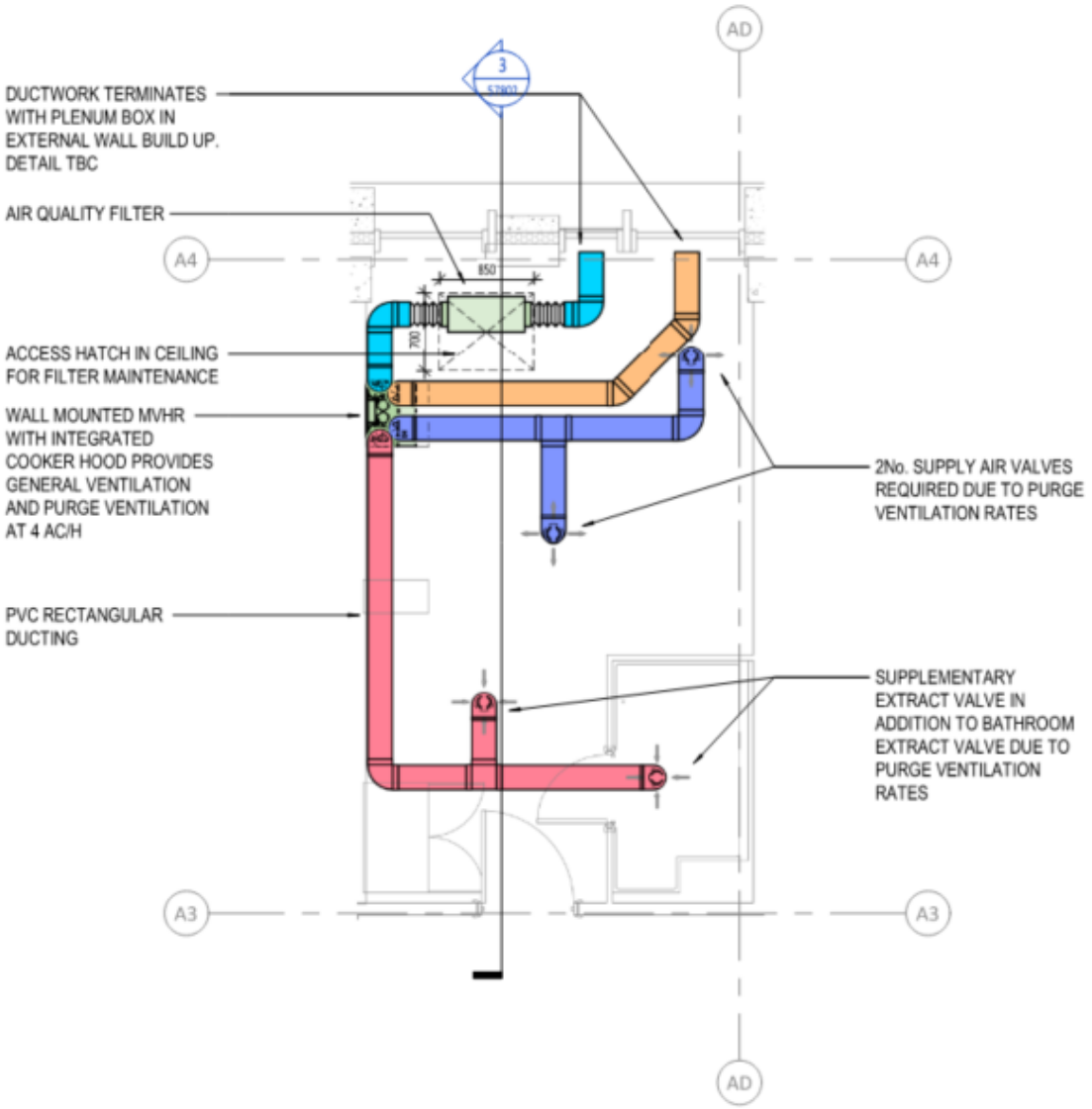
Please refer to this document for full details of the designed overheating mitigation measures.

Reference should be made to the table in section 3.3 for a summary of the overheating mitigation measures applied to the residential areas which have been shown to comply with Part O and CIBSE TM59 under current weather conditions. Further tests for future weather scenarios are also discussed in the overheating report.

6 TYPICAL LAYOUTS

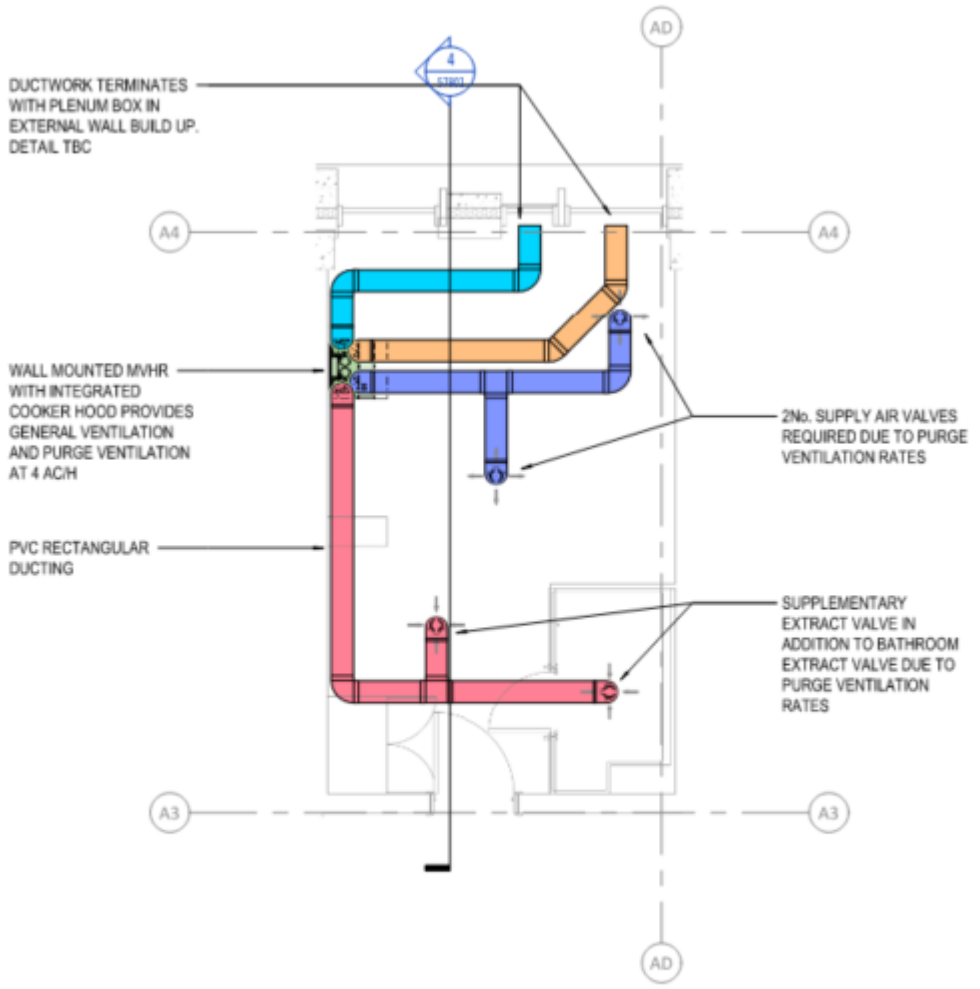
The following drawing extracts show proposed ventilation arrangements for the typical residential areas of the development, detailing approaches where air quality is of concern, and approaches where air quality is found to be acceptable.

6.1 STUDIO WITH AIR QUALITY CONCERNS



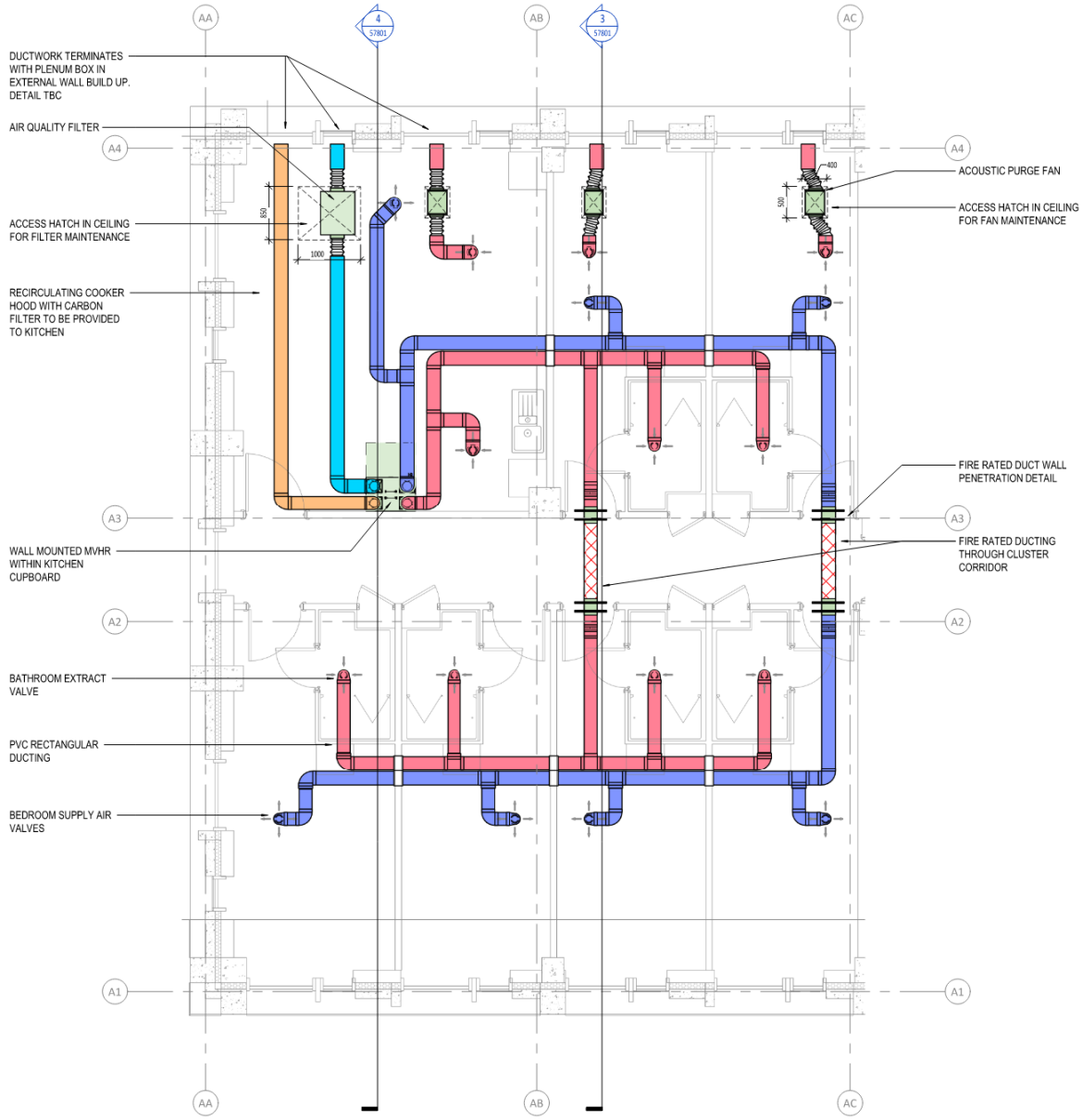
1 Typical Studio Ventilation Layout in areas with Air Quality Concerns
1 : 50

6.2 STUDIO WITHOUT AIR QUALITY CONCERNS



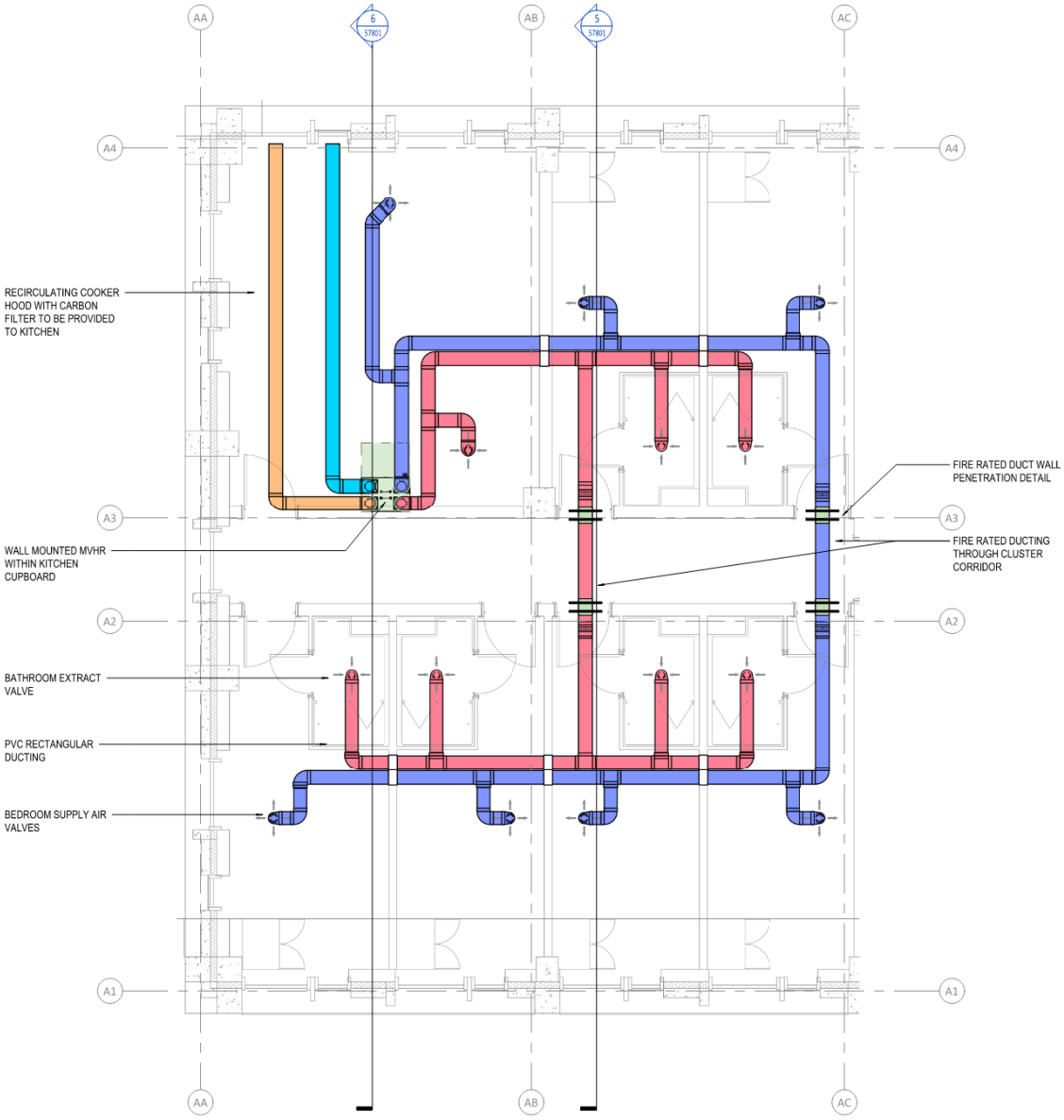
2 Typical Studio Ventilation Layout in areas without Air Quality Concerns
1 : 50

6.3 CLUSTER WITH AIR QUALITY CONCERNS



1 Typical Cluster Ventilation Layout in areas with Air Quality Concerns
1 : 50

6.4 CLUSTER WITHOUT AIR QUALITY CONCERNS



2 Typical Cluster Ventilation Layout in areas without Air Quality Concerns
1 : 50

7 CONCLUSION

The preceding report details the approach to ventilation for the student accommodation areas, both residential areas (levels 01 and above) and amenity spaces (Levels 00 and 01), and the ground floor commercial units.

The statement highlights how the proposed systems provide a complete, energy efficient, fully working and balanced ventilation systems that are designed around the following key criteria:

- 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;
- 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.

A holistic solution for the building has been developed, in collaboration with the design team, which will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the proposed development whilst providing comfortable living and working accommodation.

The thermal modelling exercise, using the methodology prescribed by the 2021 edition of Approved Document Part O of the Building Regulations, and CIBSE TM59: Design methodology for the assessment of overheating risk in homes (2017), demonstrates that the internal temperatures over a typical year show a risk of overheating that is within the prescribed tolerances. Full details of the overheating assessment can be found within the Thermal Comfort report, produced by HGCE Ltd, also submitted as part of this planning application.