



RIDGE

Ventilation Strategy Report
One Medlock Street
Manchester
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VENTILATION STRATEGY, ONE MEDLOCK STREET

ONE MEDLOCK STREET PREMIER INN HOTELS AND DOMINVS GROUP

Prepared for

Premier Inn Hotels and Dominvs Group

Prepared by

Ridge and Partners LLP
Belvedere House, 5th Floor
12 Booth Street
Manchester
M2 4AW
Tel: 0161 833 9579

Contact

Ben Pritchard
Assistant Building Services Engineer
bpritchard@ridge.co.uk
07813 697 333

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VENTILATION STRATEGY, ONE MEDLOCK STREET

1. INTRODUCTION

The purpose of this report is to provide a description of the Ventilation Strategy for the proposed re-development of the existing Premier Inn hotel site on Medlock Street in Manchester City Centre to support the planning application for the development.

2. SITE DESCRIPTION

The Site, known as One Medlock Street, measures c.0.94ha and comprises previously developed land within Manchester City Centre. It is bounded by River Street to the north; Medlock Street to the west and south-west; the Mancunian Way, its exit slip road and the Mancunian Way/Princess Parkway junction, to the south' and the River Street Tower PBSA development to the east. The existing site currently comprises an existing five-storey Premier Inn hotel, providing 200 rooms and designated surface parking for hotel residents (113 car parking spaces).

The site has all major services (gas, water, telecoms and electricity) within the surrounding roads which will require diverting or disconnections to develop the project, particularly the office block, but a gas main indicated on a Transco easement requires investigating.

3. THE PROPOSAL

The proposal comprises the demolition of the existing hotel building and structures and the development of the site for office uses (Use Class E), flexible office/community use (Use Class E/F1/F2) and purpose-built student accommodation (Sui Generis) comprising two separate buildings, along with associated ancillary internal and external amenity space, hard and soft landscaping and associated highway works.

Block A will provide 36,494m² (Gross Internal Floor area) of Cat A office space over 12 floors with a roof top pavilion on the 13th floor.

The proposed scheme will provide 428 student accommodation units in Block B, comprising of a mix of studios (64%), twodios (8%), threedio (8%), 6-bed cluster (10%) and 7-bed clusters (10%). Ancillary residential uses will also be provided in Block 1 including a post room on the ground floor and a gym on the first floor.

4. VENTILATION COMPLIANCE

All ventilation systems shall comply with the requirements of:

- Approved Documents B, F & O
- CIBSE Guides
- Relevant British Standards
- DEFRA Guidance Document "Guidance on the Control of odour and Noise for Commercial Exhaust Systems"

A further dictating approach in the design of the ventilation system is the criteria for overheating in accordance with Approved Document Part O for the student accommodation, with adoption the BCO Guide for the commercial offices.

Overall, the ventilation strategy shall support the overall "well-being" and safety of the occupants and enhance the environment of the spaces, support low energy and carbon solutions.

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Where deemed appropriate, the design shall attract relevant credits for BREEAM for offices and promote good practice ventilation strategies throughout the development.

5. DEVELOPMENT AREAS / DEMISES

The development can be split into the following principal areas/demises:

- Commercial Office
- Student Accommodation

These areas and demises can also be split down into different functions being:

- Commercial Offices
 - Office space
 - Communal spaces – corridors/lobbies/staircases/toilet facilities
 - Reception
 - Back of house facilities
 - Meeting rooms
 - Bicycle store & changing facilities
 - Refuse store
- Student Accommodation
 - Habitable rooms – bedrooms / kitchen & dining rooms / bathrooms
 - Amenity spaces – corridors / lobbies / staircases
 - Plant & equipment spaces
 - Storage, back of house and refuse

All these different types of spaces require specific ventilation strategies to meet the requirement for the health and wellbeing of the occupants and functionality of the spaces to meet the requirements and criteria set out in section 4 of this report.

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6. VENTILATION PROPOSALS

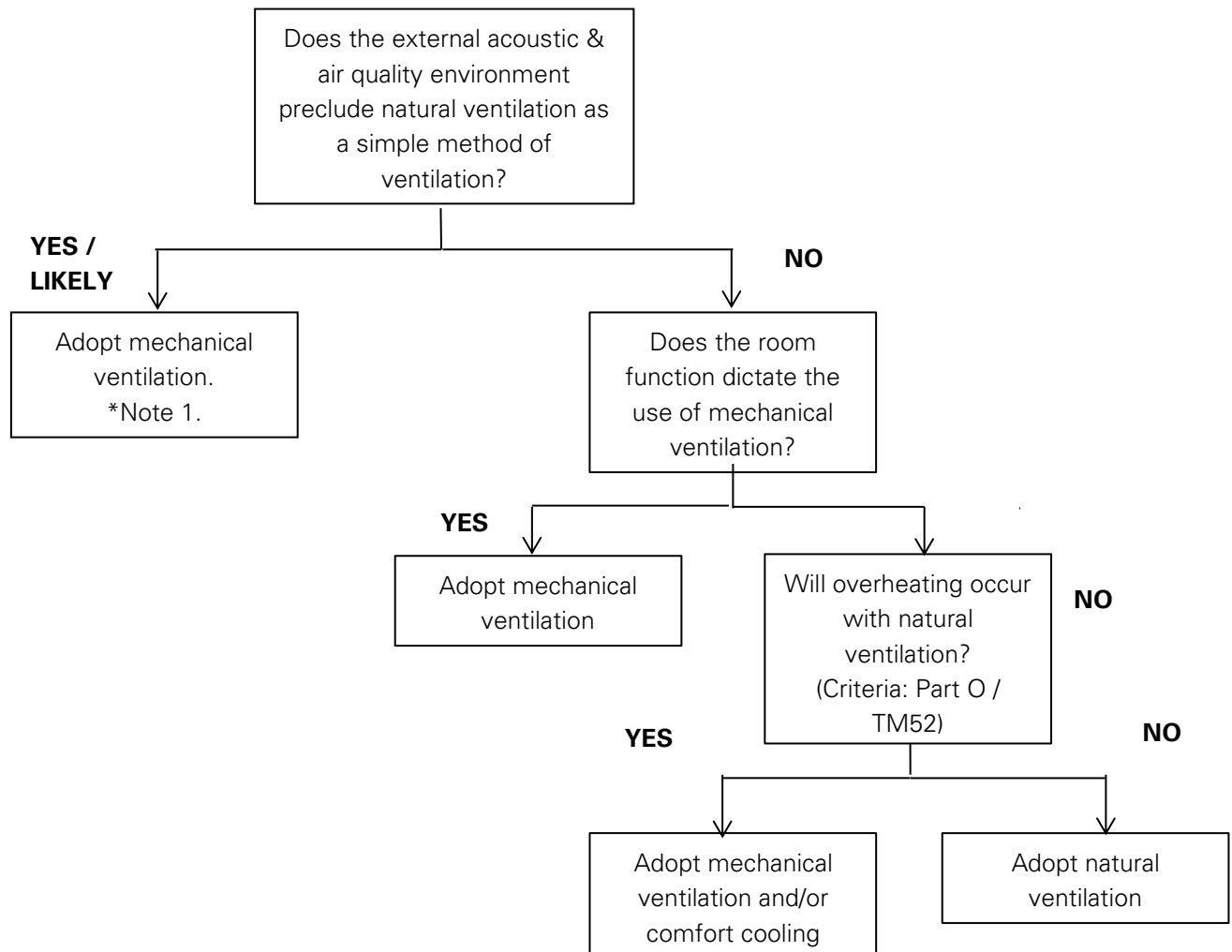
6.1. The Overall Ventilation Strategy Approach

The overall ventilation strategy is driven by the requirements set out as in Section 4 of this report with each of the different demises and room functions demanding different approaches. Overall, the primary objective will be to naturally ventilate the spaces however where this cannot be achieved, mechanical ventilation and/or comfort cooling will be adopted.

An Air Quality Assessment has yet to be carried out, with the site bounded by the Mancunian Way (A57M) which is an elevated dual carriageway.

The design methodology taken to establish the ventilation type has followed a strategic route:

STRATEGIC DESIGN APPROACH - EXAMPLE



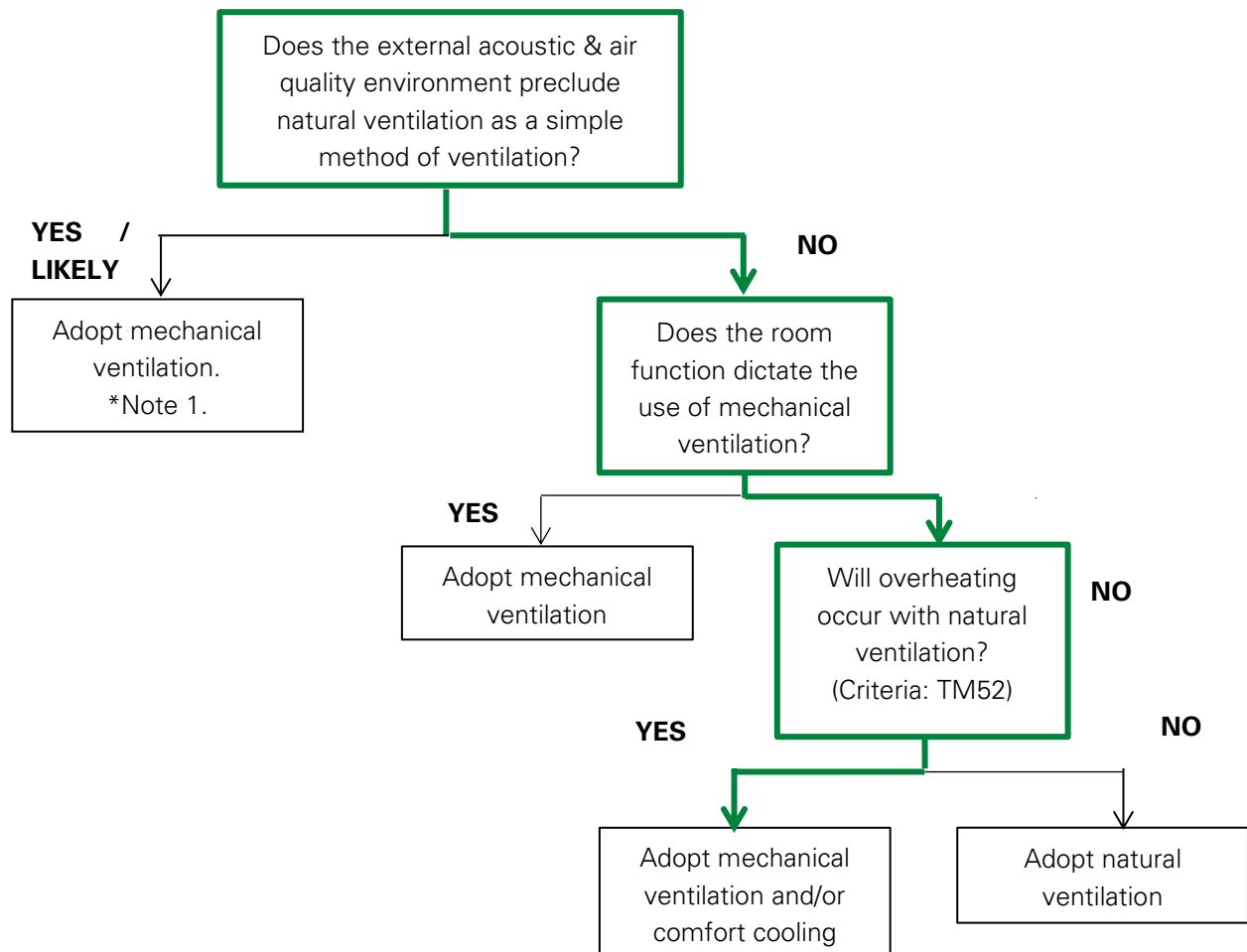
Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation systems.

6.2. Commercial Offices

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Although the functionality of the offices alone does not dictate the use of mechanical ventilation, the office “depth of plan” and extent of internal heat gains dictates the requirement for comfort cooling and hence associated mechanical ventilation. The air quality and acoustic constraints of being by a major road could also lead to the use of mechanical ventilation.

STRATEGIC DESIGN APPROACH – COMMERCIAL OFFICE



Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation systems.

The mechanical ventilation air handling plant will be located at roof level in a plant enclosure with mechanical ductwork dropping vertically within the central core risers. From the risers, horizontal ductwork will serve each floor with supply and extract ventilation for the defined occupancy levels.

The air handling plant at roof level will draw fresh air a minimum 10 meters from sources of pollution such as extract points (BREEAM Compliance).

The central core toilets will be ventilated by a dedicated toilet system with run and standby motors on the extract fan system.

All ventilation systems to the office will be in accordance with the BCO Guide for Offices.

The plant, storage and back of house areas will be provided with extract ventilation to meet the requirements of Part F.

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6.3. Student Accommodation Bedrooms and Kitchen / Living Space

The primary requirement for the bedrooms is normally to provide a naturally ventilated solution, this being the most desirable solution for residential use.

However, due to the requirement to avoid summertime overheating as per Part O of the Building Regulations, supplementary mechanical ventilation will be required.

Mechanical ventilation will be adopted to the kitchen / living space and to the bathrooms in accordance with Approved Document Part O.

Large opening vent panels in the façade have been proposed by the architect in both the bedrooms/ studios and the kitchen / living rooms to satisfy both the summertime overheating (Part O of the Building Regulations) and purge ventilation requirements (Part F of the Building Regulations.) These will have to provide sufficient free area opening to offer air movement. For the purposes of the Part O assessment, it has been assumed that the opening panels will have a free area of 60% and open to 90°. The extent of glazing and the specification of the glass are also important factors to balance the extent of natural daylight whilst at the same time reducing unwanted solar gain to avoid overheating. For the Part O assessment, the glazing G-value has been assumed to be 0.32.

A Part O assessment has been carried out based on the current design on a representative sample of the rooms to ensure they meet the requirements for naturally ventilated spaces.

The Part O overheating criteria for naturally ventilated spaces is:

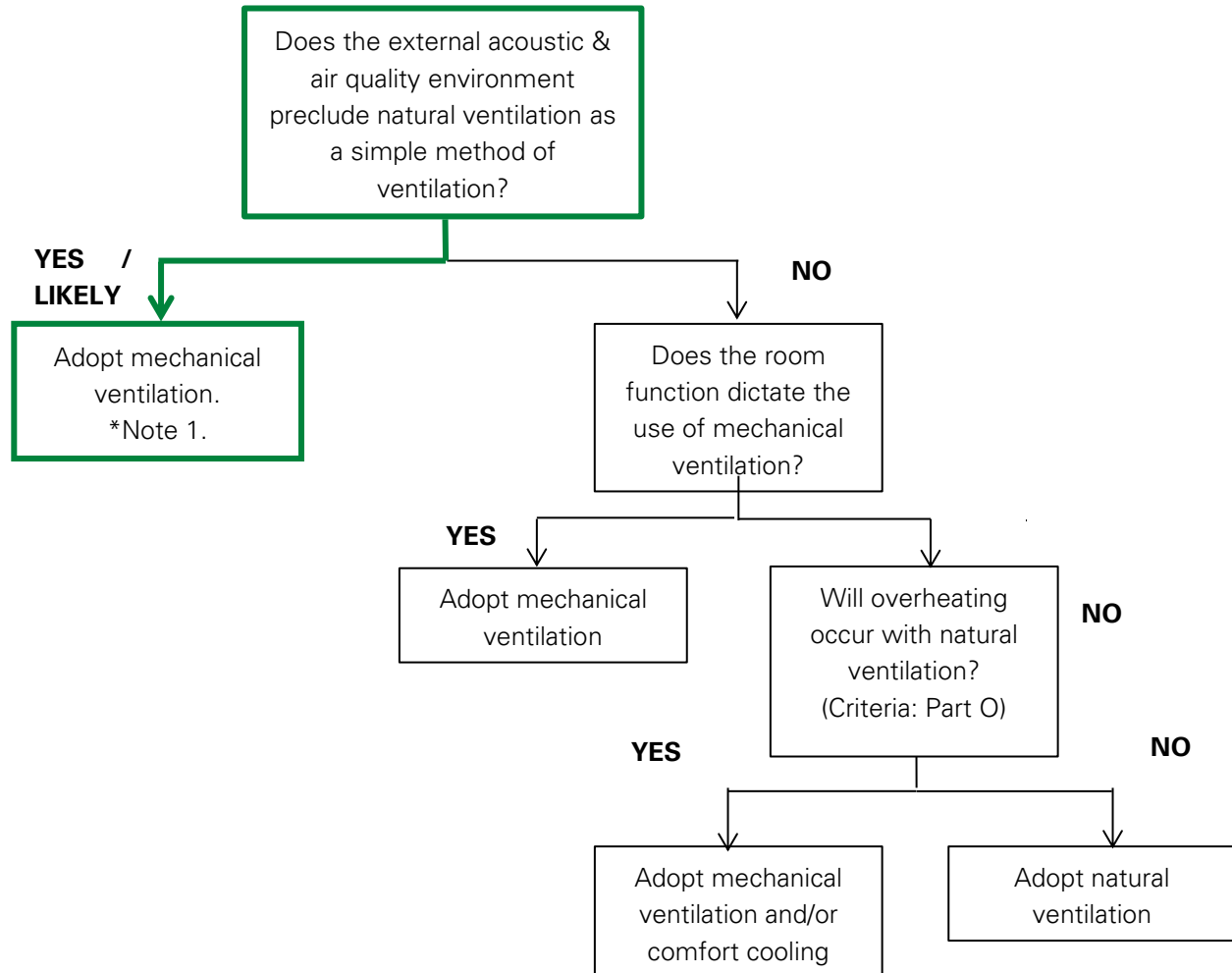
Compliance is based on passing both of the following two criteria:

- a) For living rooms, kitchens and bedrooms: the number of hours during which DT is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3 per cent of occupied hours. (CIBSE TM52 Criterion 1: Hours of exceedance).*
- b) For bedrooms only: to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26 °C for more than 1% of annual hours. (Note: 1% of the annual hours between 22:00 and 07:00 for bedrooms is 32 hours, so 33 or more hours above 26 °C will be recorded as a fail)*

The habitable rooms have passed Part O of the Building Regulations based on a combination of opening panels and the use of MVHR units.

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STRATEGIC DESIGN APPROACH – STUDENT ACCOMODATION BEDROOMS & KITCHEN / LIVING ROOMS



*Note 1 – Opening Panels proposed for avoidance overheating with MVHR

6.4. Student Accommodation Amenity Space

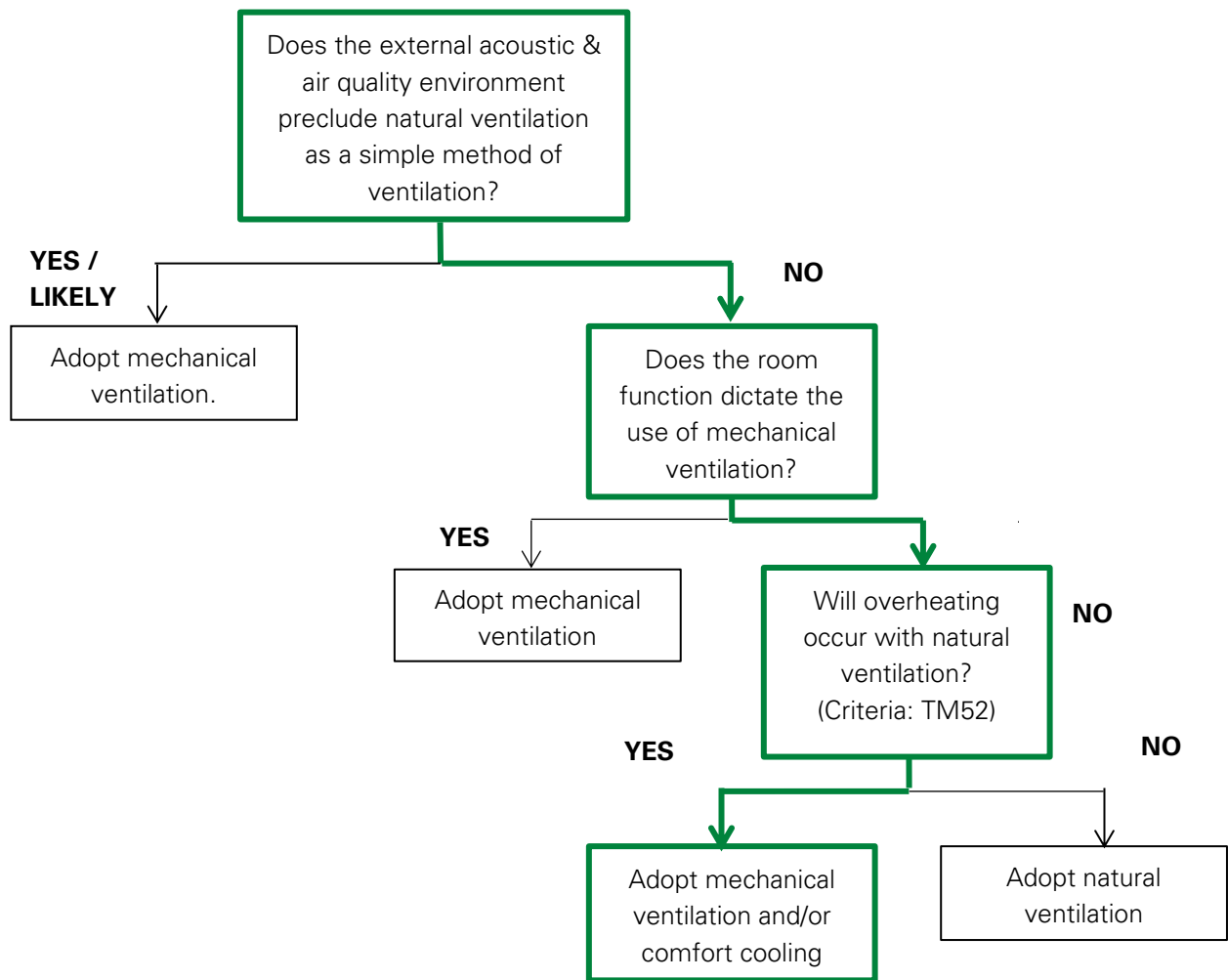
These types of spaces experience high peaks of occupants and subsequent heat gains and fresh air requirements. On that basis natural ventilation alone cannot accommodate these 'spikes' in heat gains and CO₂ levels. Therefore, mechanical ventilation is proposed in the form of local Mechanical Ventilation Heat Recovery systems (MVHR).

These systems shall be located in the ceiling level of each amenity space with the fresh air and exhaust provided locally in the form of louvres. Heating and cooling will be provided the form of reverse cycle heat pumps with indoor cooling and heating units located in the ceiling and of each room and heat rejection condensers on the roof.

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The plant, storage and back of house areas will be provided with extract ventilation to meet the requirements of Part F.

STRATEGIC DESIGN APPROACH – STUDENT ACCOMODATION AMENITY SPACE



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7. SUMMARY OF STRATEGIES

A strategic approach has been adopted to ascertain the most appropriate ventilation strategy for each building and type of space. This has taken account of environmental factors; energy efficiency and risk of overheating and the outcomes are summarised in the table below.

AREA	PART F (GENERAL)	PART O / TM52 (OVERHEATING)
Commercial Office	Mechanical ventilation with heat recovery	Comfort Cooling (VRV exposed fan coils)
Commercial Office Toilets	Mechanical extract ventilation	N/A
Student Accommodation (Bedrooms and Kitchen / Living Spaces)	Natural Ventilation with extract to wet areas (Bathroom & Kitchen) (Air Quality Report to be received)	Openable panels
Amenity Spaces (occupied)	MVHR (Local) to each demise	Comfort cooling (VRV with ceiling concealed fan coil units)
Plant Areas	To Part F (General natural vent louvre)	Assisted mechanical

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8. APPENDIX 1 – STUDENT ACCOMODATION OVERHEATING ANALYSIS – PART O

The Part O assessment was carried out on a sample of different types of rooms. These were:

- Bedroom
- Studio
- Threedio Bedroom
- Kitchen / Living Space

The results show that all the occupied spaces achieve full compliance with Approved Document Part O criteria utilising a natural ventilation strategy.

Natvent room name	Natvent criterion (a) result	Natvent criterion (b) result	Pass/Fail
10-Bedroom-001	Pass	Pass	Pass
10-Studio-001	Pass	Pass	Pass
10-ThreedioBedroom-SouthE	Pass	Pass	Pass
10-ThreedioBedroom-South	Pass	Pass	Pass
10-KLD-SouthWest	Pass	NA	Pass



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