

RIDGE

VENTILATION STRATEGY REPORT
MARLSBRO HOUSE
MANCHESTER.

MARLSBRO HOUSE
ACLO

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VERSION CONTROL

VERSION	DATE	DESCRIPTION	CREATED BY	REVIEWED BY
1.0	08.04.2026	Stage 2 Issue	FC	MB
2.0	27.04.2026	Stage 2 Issue	FC	MB

RIDGE

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1. INTRODUCTION

This report has been prepared by Ridge & Partners LLP in support of the planning application for the proposed refurbishment of Marlsbro House (grade II listed building) located within the Stevenson Square Conservation Area.

2. DEVELOPMENT PROPOSALS

2.1. Description of Development Site

The Site is located in Manchester city centre. The building is within the immediate settings of the Newton buildings and former Newton street police station both grade II listed

The Proposed refurbishment of the existing building will be delivered to comprise of the following principal uses:

- *Restaurant & bar and Kitchen areas*
- *Recording studio and live band areas.*
- *Offices and meeting rooms*

Together with these principal uses, the Proposed refurbishment comprises amenities such as cycle shower changing rooms and secure cycle



Sectional view of the floors within building

3. VENTILATION COMPLIANCE

All the ventilation systems shall comply with the following:

- Approved Document F
- Approved Document L
- Approved Document O
- CIBSE Guides
- Relevant British Standards

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, promoting good practice ventilation strategies throughout the development.

Section 6 of this report details the ventilation proposals in accordance with the aforementioned documents.

4. DEVELOPMENT AREAS

The different areas within the development can be split into the following:

- Offices and meeting rooms
- Restaurant
- Commercial Kitchen
- Toilet facilities and storeroom
- Recording studio
- Live band and Bar areas
- Plant spaces and refuse/bin areas
- Reception
- Shower changing rooms

All these different spaces require ventilation strategies in order to meet the requirements and criteria set out in Section 3, in addition to meeting the health and the wellbeing requirements of the occupants.

These strategies are summarised in Section 7 of this report.

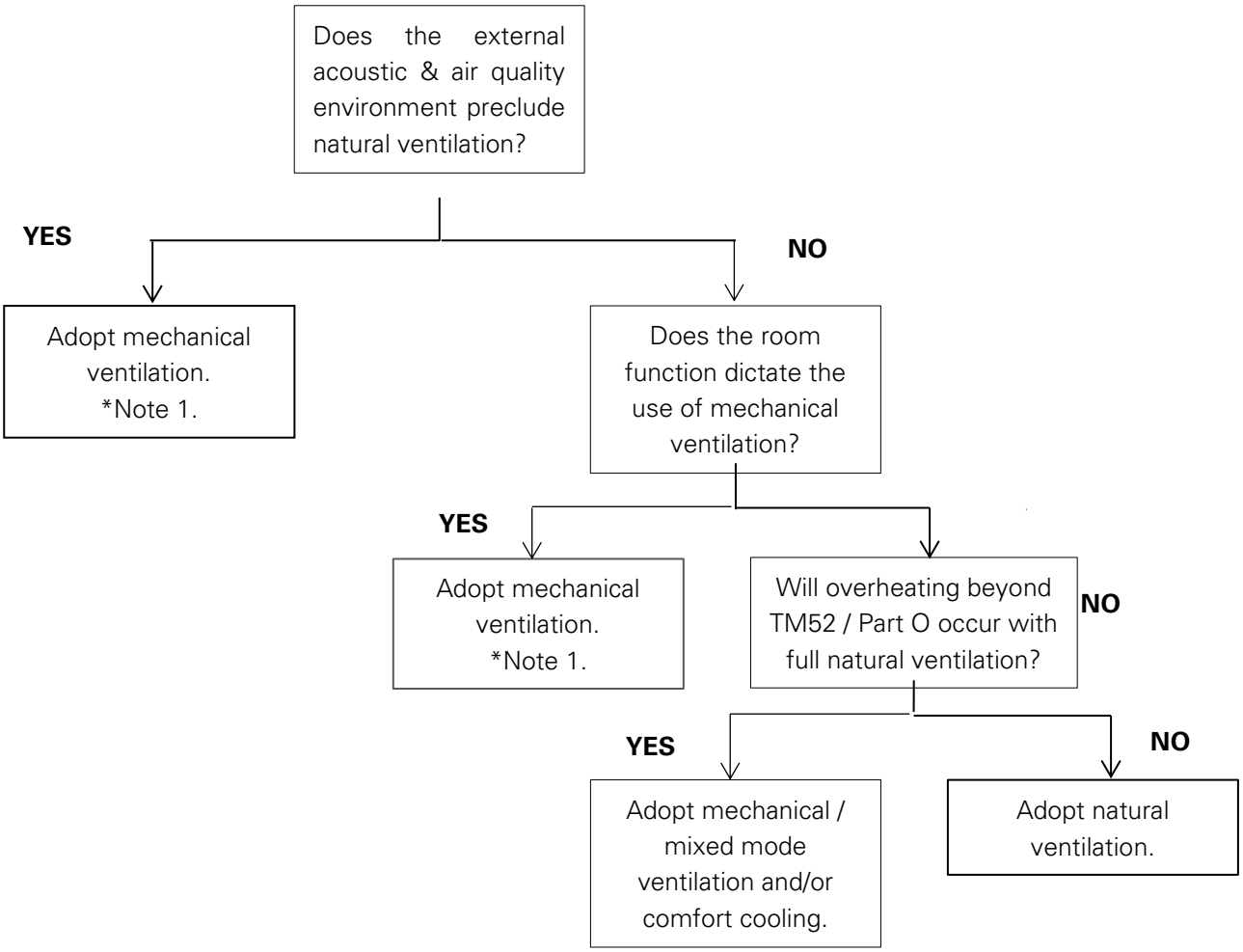
5. VENTILATION STRATEGIC DESIGN APPROACH

Whilst the principal function of the ventilation strategy is to provide sufficient fresh air and to exhaust odours, the correct ventilation strategy is crucial to minimise the energy consumed by the building – mechanical ventilation is a significant contributor of the building's electrical energy and therefore a strategy with natural ventilation is preferred.

However, mechanical ventilation is needed to the spaces that have high internal heat gains, in addition to reducing or negating external noise from traffic or other sources.

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

STRATEGIC DESIGN APPROACH (GENERIC)



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

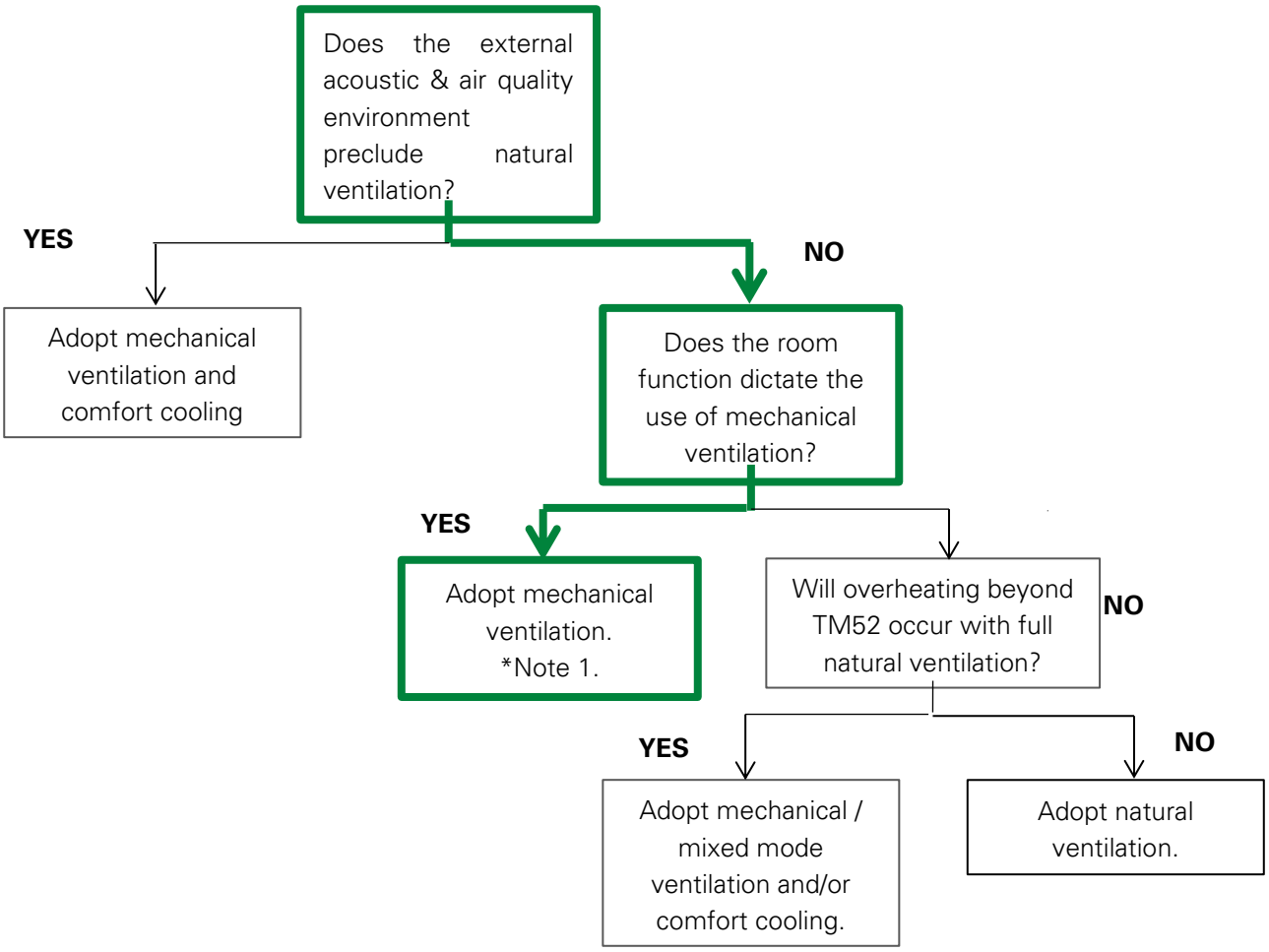
6. VENTILATION PROPOSALS

6.1. Offices, co-working area and meeting rooms

Due to the functional requirements for the offices and co-working areas, natural ventilation is not suitable for inclusion and therefore mechanical ventilation, and comfort cooling will be provided to these areas.

These areas will be ventilated via MVHR located at high level within the floor space. Fresh air intake and exhaust louvres will be coordinated to mitigate cross contamination.

STRATEGIC DESIGN APPROACH – OFFICES, CO-WORKING AREA AND MEETING ROOMS



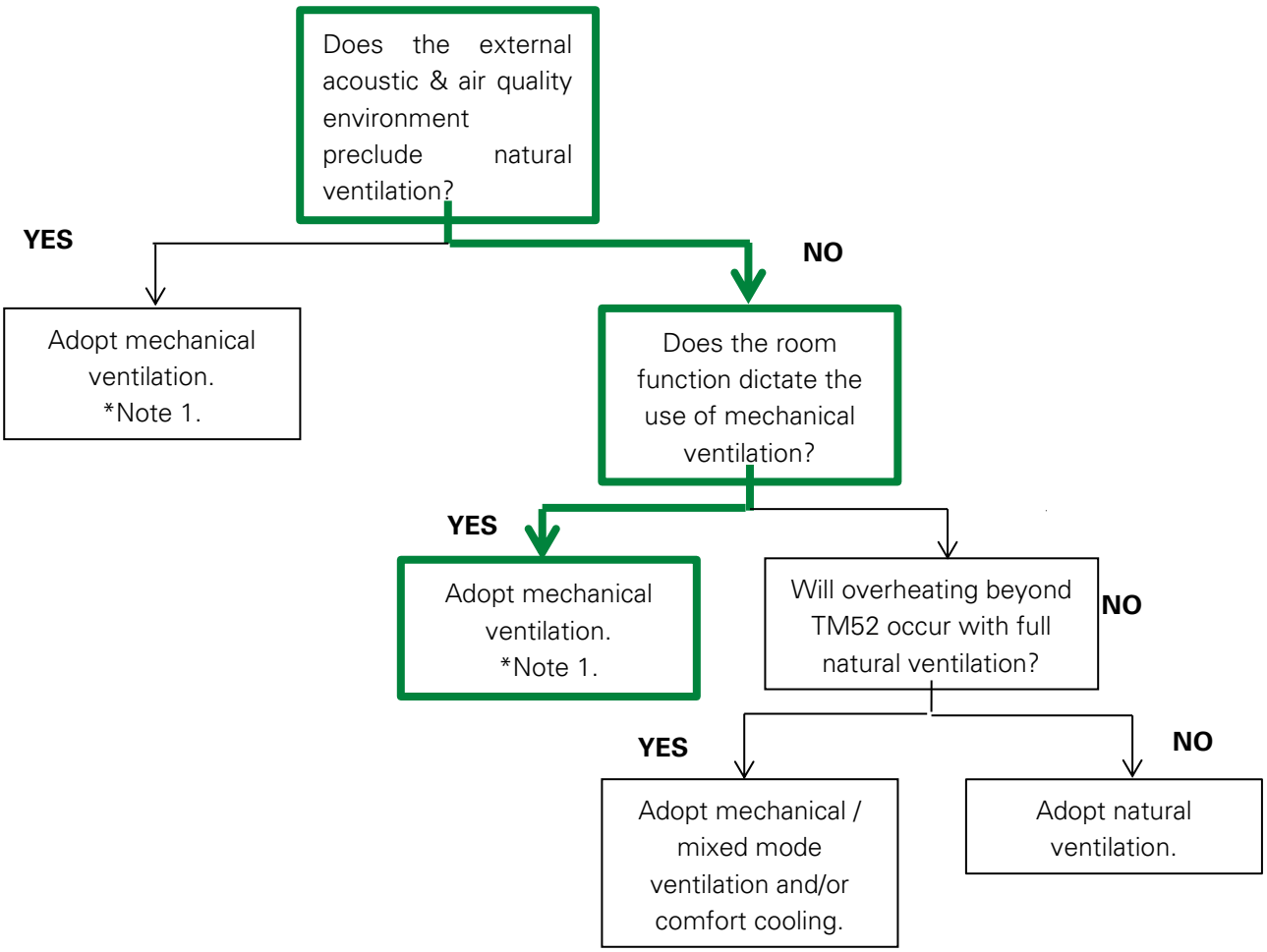
*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation Systems

6.2. Recording studio

Due to the extent of internal heat gains, the functional requirements of the recording studio do not lend themselves to natural ventilation but instead to mechanical ventilation and comfort cooling.

The recording studio will be ventilated via Mechanical Ventilation with Heat Recovery (MVHR) and DX cooling/heating. Fresh air intake and exhaust louvres will be from the rear elevation. Ductwork sizes will be insulated, attenuated and sized to meet low velocities (no higher than 1.5m/s)

STRATEGIC DESIGN APPROACH – RECORDING STUDIO



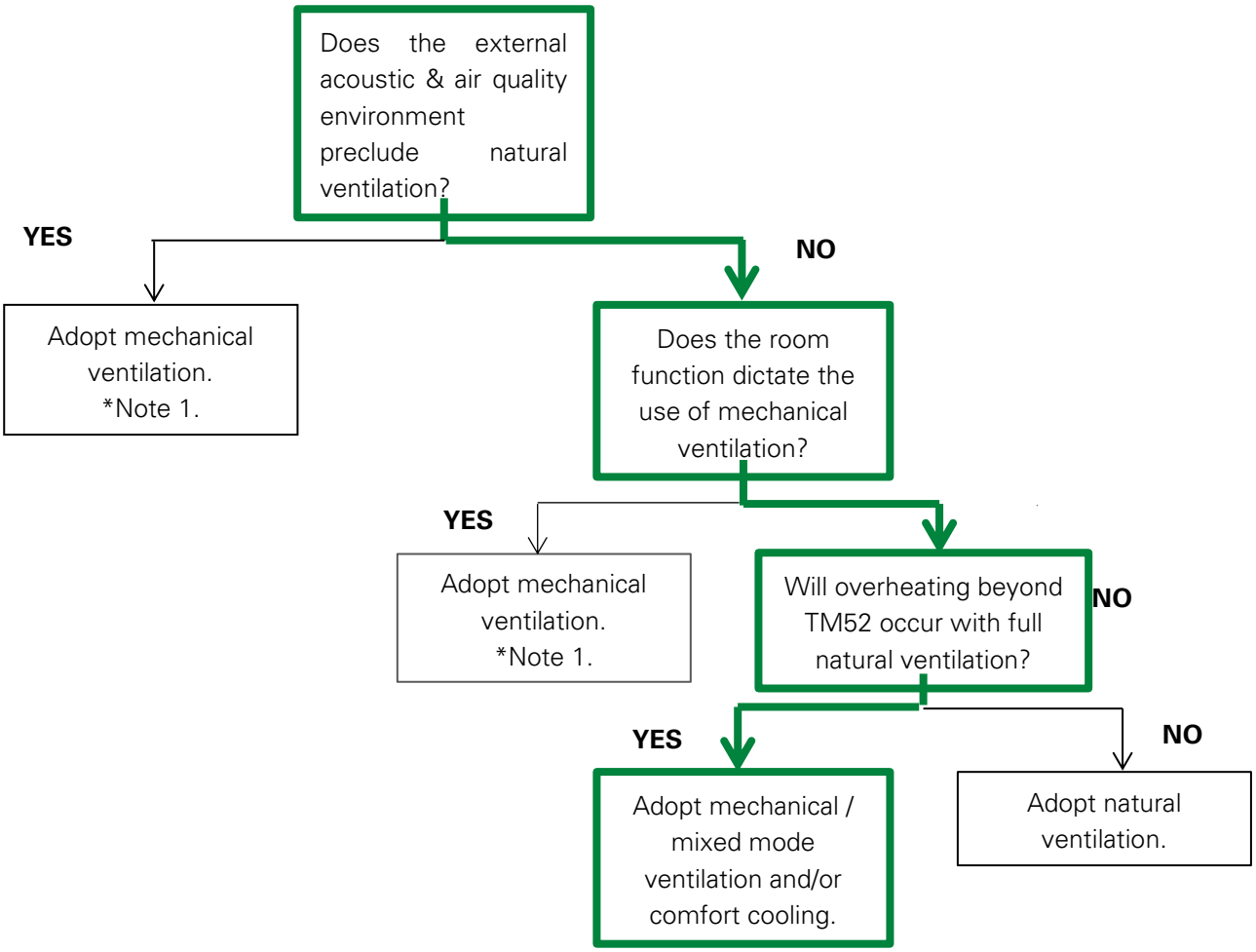
*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation Systems

6.3. Office Lounges

Although the office lounge spaces alone do not dictate the use of mechanical ventilation, the extent of internal heat gains dictate the requirements for comfort cooling and therefore the inclusion of mechanical ventilation.

The mechanical ventilation will be delivered via local Mechanical Ventilation with Heat Recovery (MVHR) serving the offices.

STRATEGIC DESIGN APPROACH – OFFICE LOUNGES

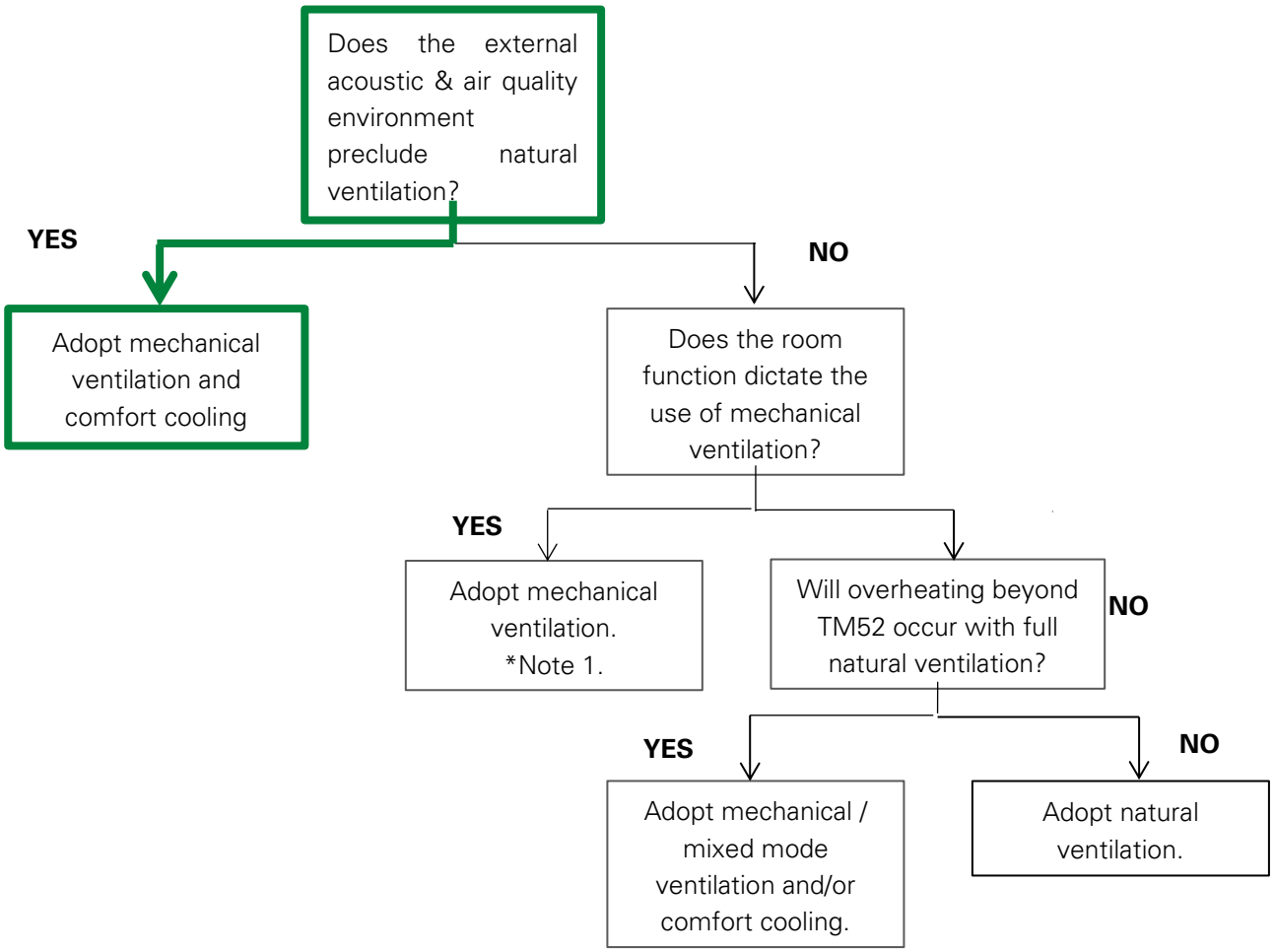


*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation systems

6.4. Reception

The main reception area within the ground floor entrance and basement reception will be ventilated via Mechanical Ventilation with Heat Recovery (MVHR) unit serving adjacent area. Supply ductwork from the MVHR unit will serve the fan coil unit in the reception area.

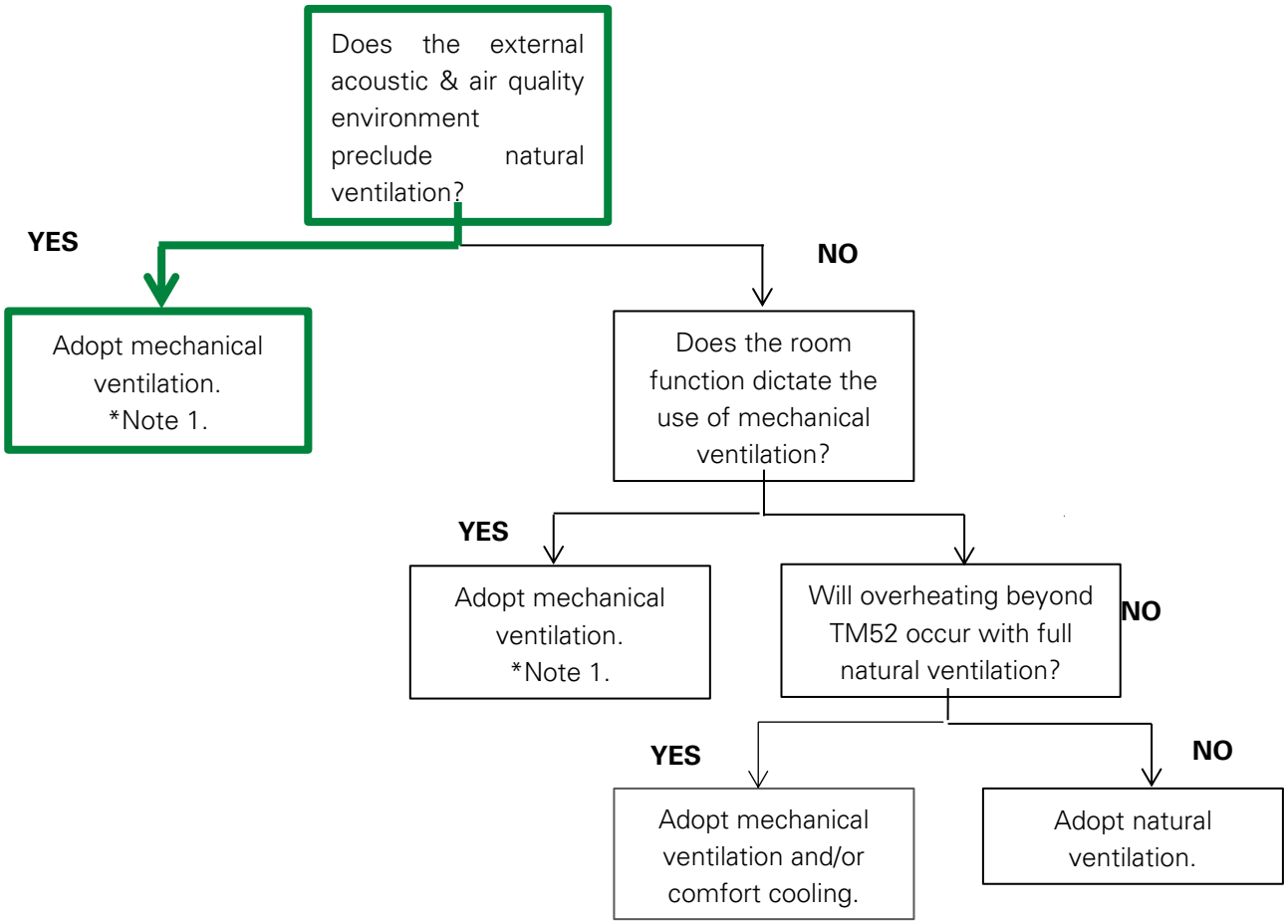
STRATEGIC DESIGN APPROACH – MAIN RECEPTION



6.5. Shower Changing room

The mechanical ventilation to the changing room within the basement will be ventilated via Local MVHR located at high level within the room with fresh air intake and exhaust via louvres on the front elevation.

STRATEGIC DESIGN APPROACH – CYCLE SHOWER CHANGING ROOM



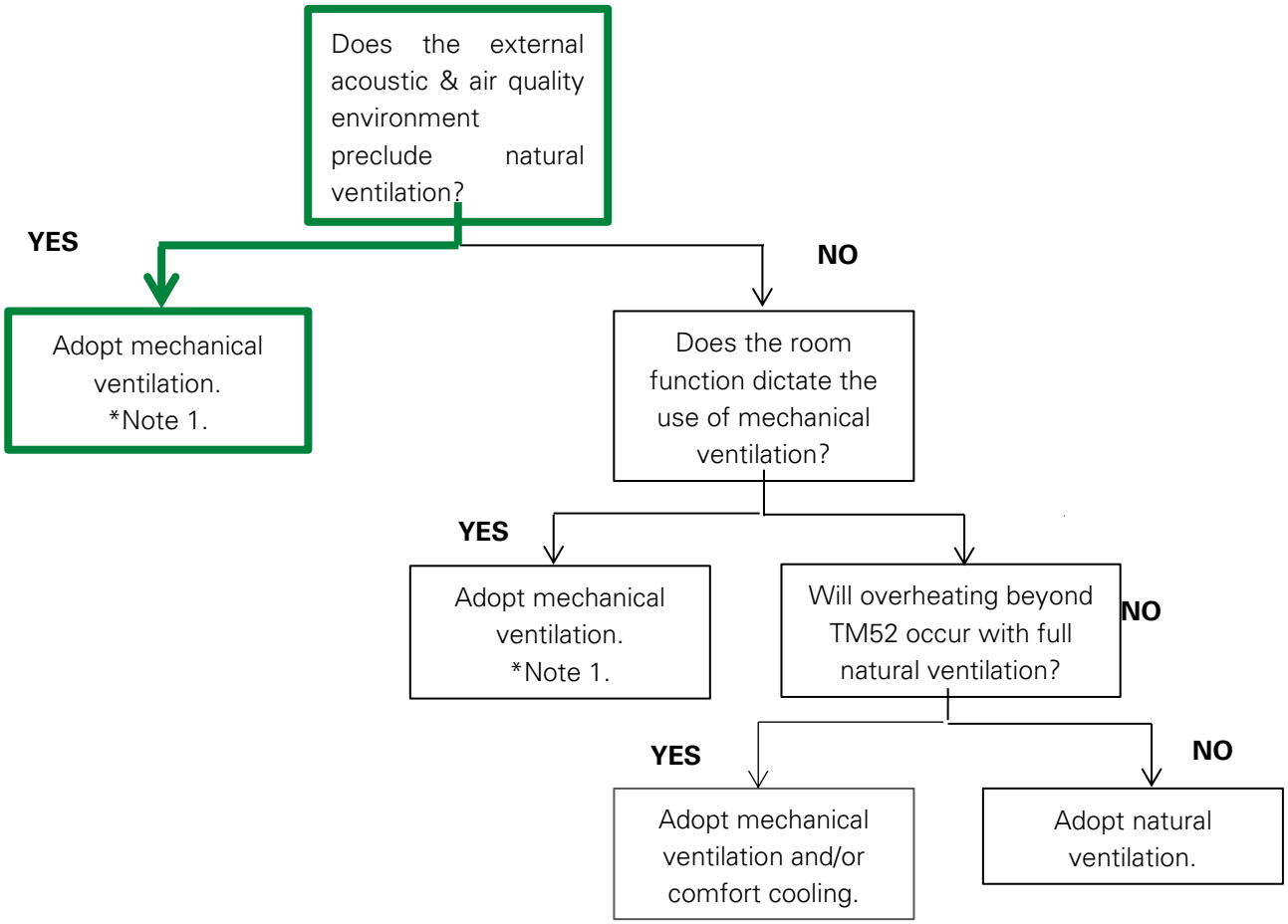
*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation systems

6.6. Toilet and Storeroom

Spaces, such as the toilets and storerooms require Mechanical Extract Ventilation to meet the ventilation requirements defined in Approved Document Part F and CIBSE Guides.

The exhaust louvres through the façade will be coordinated to minimise cross contamination with intake louvres for other areas.

STRATEGIC DESIGN APPROACH – TOILETS AND STOREROOM

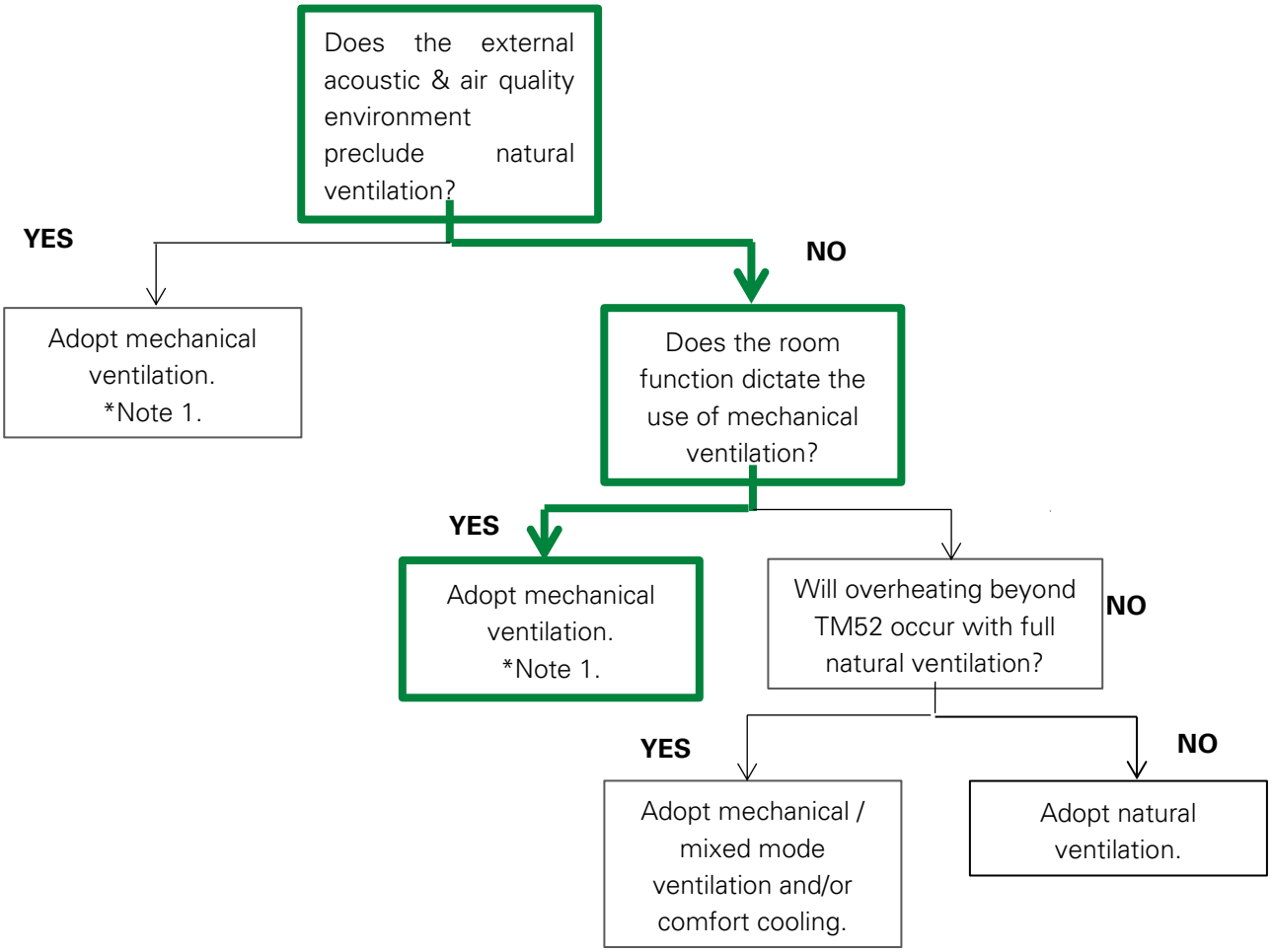


6.7. Live band area

The functionality of the live band area dictates the use of mechanical ventilation, the "depth of plan" and the extent of internal heat gains dictate the requirement for comfort cooling and hence associated mechanical ventilation delivered through mechanical ventilation with heat recovery units.

High level strip louvres will be allowed for with the fresh air intake and exhaust louvres coordinated to mitigate cross contamination.

STRATEGIC DESIGN APPROACH – LIVE BAND AREA



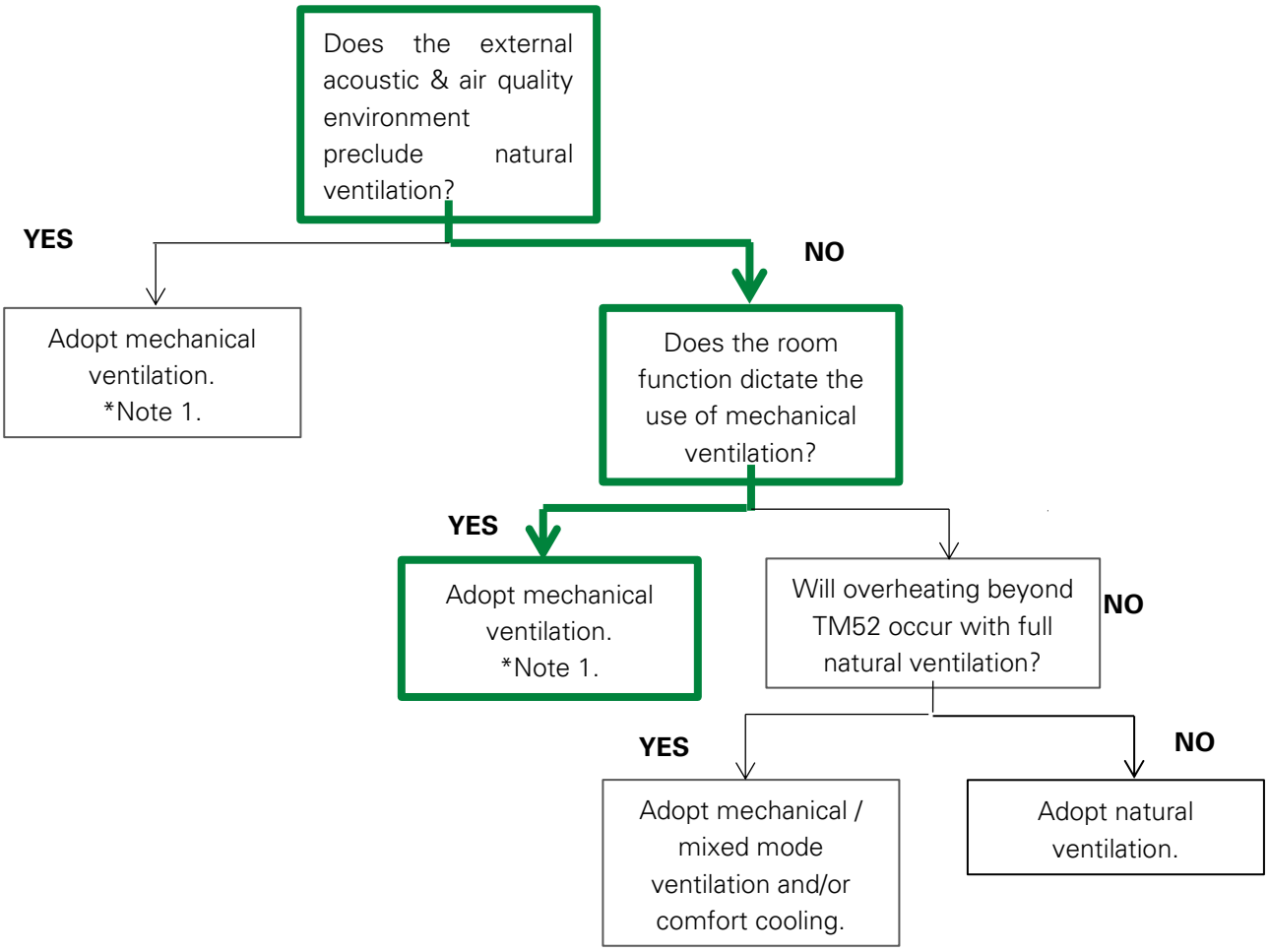
*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation Systems

6.8. Bar & Restaurant

Although the bar & restaurant spaces alone do not dictate the use of mechanical ventilation, the "depth of plan" and extent of internal heat gains dictate comfort cooling and hence the associated mechanical ventilation.

The mechanical ventilation will be delivered via Mechanical Ventilation with Heat Recovery (MVHR) with high level strip louvers allowed for. Fresh air intake and exhaust louvres will be coordinated to mitigate cross contamination.

STRATEGIC DESIGN APPROACH – BAR & RESTAURANT



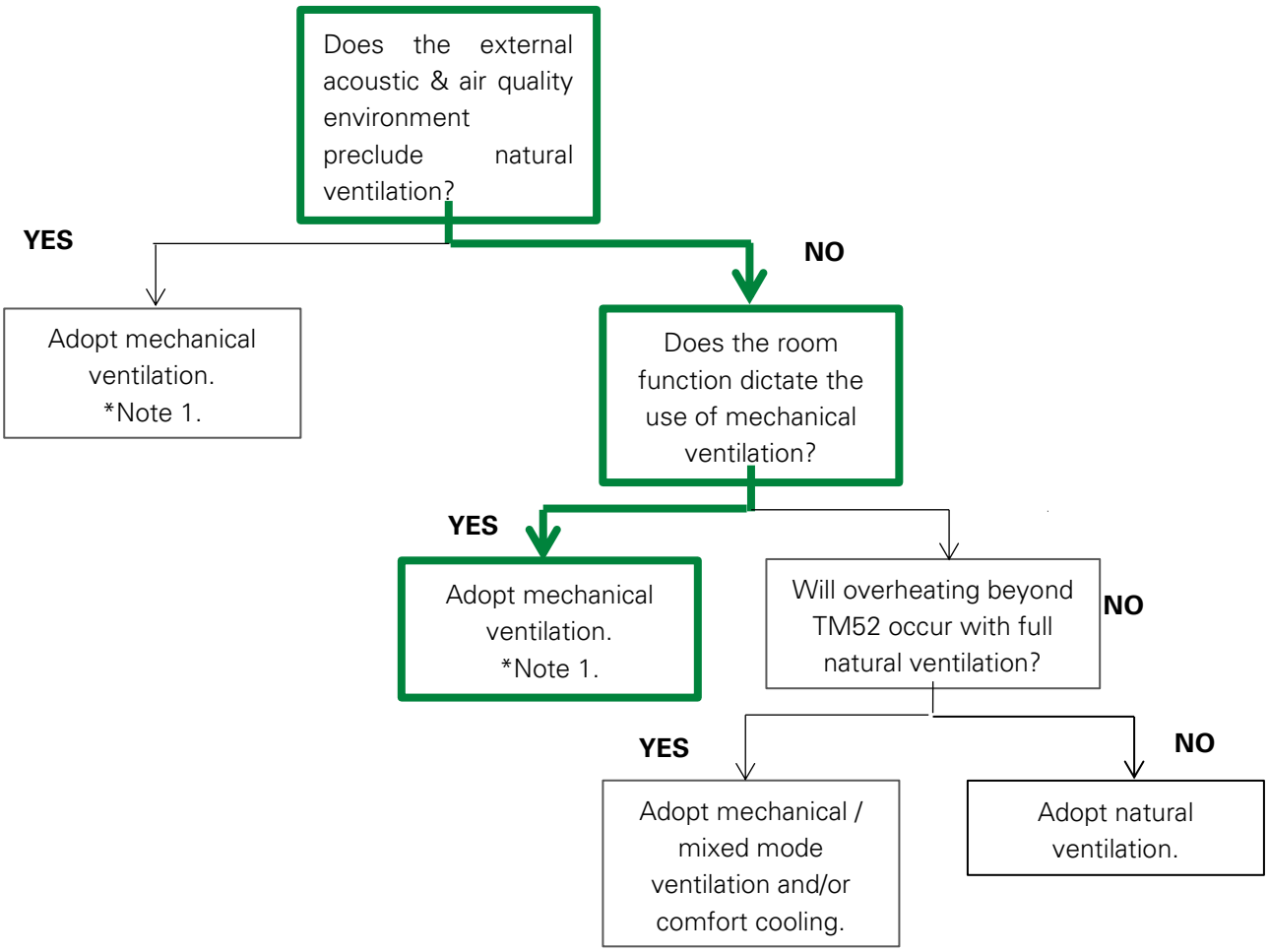
*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation systems

6.9. Commercial Kitchen

The commercial kitchen will be ventilated through separate extract fan and air handling unit(supply) installed at roof level plant deck and top of external staircase.

A filtration system will be required to be installed to remove oil, smoke, grease and odour from the extract air.

STRATEGIC DESIGN APPROACH – COMMERCIAL KITCHEN



*Note 1: Utilise comfort cooling where overheating occurs and/or appropriate mechanical ventilation Systems

7. SUMMARY OF STRATEGIES

A strategic approach has been adopted to ascertain the most appropriate ventilation strategy for each 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.

ROOM FUNCTION	PROPOSED VENTILATION STRATEGY
Offices lounges	Mechanical Ventilation with Heat Recovery (Supply & Extract)
Bar & Restaurant	Mechanical Ventilation with Heat Recovery (Supply & Extract)
Recording studios	Mechanical Ventilation with Heat Recovery (Supply & Extract) with DX cooling/heating
Live band area	Mechanical Ventilation with Heat Recovery (Supply & Extract)
Commercial Kitchen	Supply from Air Handling Unit and extract fan with grease destruction. Refer to Section 7.3.1 for details on grease destruction system.
Office and Meeting rooms	Mechanical Ventilation with Heat Recovery (Supply & Extract)
Reception	Ventilation from adjacent space MVHR
Refuse Store and external plant space	Natural ventilation

7.1. Mechanical Ventilation with Heat Recovery (MVHR)



Majority of the spaces will be provided with mechanical ventilation heat recovery (MVHR). This shall comprise of a centralised continuous mechanical supply and extract ventilation unit, able to operate in 100% summer bypass with a high heat recovery efficiency (minimum 80%). The air volumes shall be determined to satisfy the requirements of the Approved Document Part F of the Building Regulations and CIBSE Guides and the Specific Fan Power requirements of the Approved Document Part L of the Building Regulations.

The MVHR units shall be at high level. Each unit shall draw fresh air and discharge extract through the façade. The intake and exhaust louvers shall be separated to prevent cross contamination with a filter inside the unit near the heat exchanger to remove pollen and particulate matter.

The ductwork will be attenuated to meet noise criteria and insulated to improve heat recovery efficiency of the vent system.

7.2. Local Extract

Local extract will be installed in spaces such as toilets and stores areas.

The extract fan will be installed in the ceiling void and will have the option to operate on an occupancy sensor (PIR) with a run-on timer.

The exhaust louvres will be coordinated to minimise cross contamination with intake louvres for other areas.

7.3. Air Handling Unit (AHU)

7.3.1. Kitchen supply AHU and Extract fan

The kitchen will be ventilated through a dedicated supply only Air Handling Unit (AHU) installed on the roof level plant deck.

The AHU will feature DX cooling and filters. The fresh air intake and exhaust ductwork from the extract fan on the roof plant deck and top of stair plant deck will be separated to avoid cross-contamination.

The kitchens extract fan system will feature a filtration system consisting of an Electrostatic Precipitator (ESP) and short wavelength ultraviolet radiation (UV-C) to remove oil, smoke, grease and odour from the return air.

The filtration system will consist of an Electrostatic Precipitator (ESP) with integral sumps to collect oil, grease and smoke particles filtered out of the exhaust air. The ionisation voltage runs at a negative potential which increases the ionisation and also produced more Ozone, helpful for reducing the commercial kitchen odours.

UV-C produces ozone and hydroxyl free radicals which oxidise odours and grease, permanently destroying the molecular structure of the compounds.



Kitchen extract system with ESP and UVC filtration

Manchester City Council does not have any bespoke odour control ventilation requirements and instead refer to the Department of Environment, Food and Rural Affairs Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems 2005 and Odour Guidance for Local Authorities 2010.

Both documents were withdrawn in 2017 and since then guidance from EMAQ+ Control of Odour and Noise from Commercial Kitchen Exhaust Systems has been used since 2018



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