



RIDGE

**VENTILATION STRATEGY
REPORT FOR PLANNING
APPLICATION
50 FOUNTAIN STREET
ASK REAL ESTATE
16th August 2021**



**50 FOUNTAIN STREET
ASK REAL ESTATE**

16th August 2021

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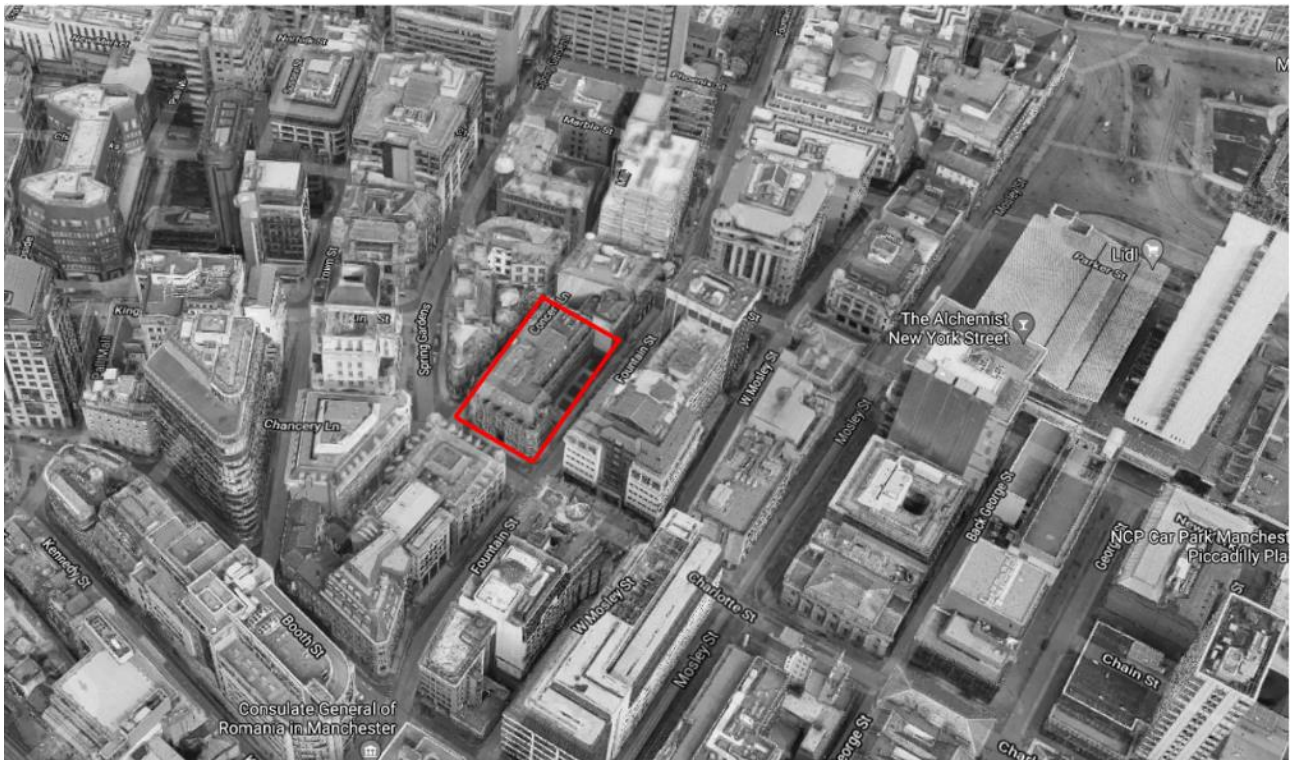
1. INTRODUCTION

This report has been prepared by Ridge & Partners LLP in support of the planning application for the proposed redevelopment of 50 Fountain Street, Manchester.

2. DEVELOPMENT PROPOSALS

2.1. Description of Development Site

The site is located in Manchester and is bounded by Fountain Street to the South East, Spring Gardens to the South West, Concert Lane to the North West and existing buildings off York Street to the North East.



3D View of the site and the surrounding area

The proposed development is for the redevelopment of 50 Fountain Street to provide office accommodation. The majority of the building will be demolished but the front façade will be retained.

The Acoustic Report, prepared by Cundall, states that the site is suitable for natural mixed mode ventilation. This acceptability is based on the site's background noise levels and therefore allows openable windows or natural ventilation panels to provide cooling within the building without the need for significant energy consumption.

3. VENTILATION COMPLIANCE

All the ventilation systems shall comply with the following:

- Approved Document B
- Approved Document F
- CIBSE Guides
- Relevant British Standards

- DEFRA Guidance Document “Guidance on the Control of odour and Noise for Commercial Exhaust Systems”

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.

Section 5 of this report details the ventilation proposals in accordance with the aforementioned documents.

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

4. DEVELOPMENT AREAS

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

- Office space
- Communal spaces – corridors/lobbies/staircases/toilet facilities
- Reception
- Back of house facilities
- Meeting rooms
- Bicycle store & changing facilities
- Refuse store
- Gym / Studio
- Future retail space (Shell & Core)
- Future possible food and beverage area (Shell & Core)

All of these different spaces require differing 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 6 of this report.

5. VENTILATION PROPOSALS

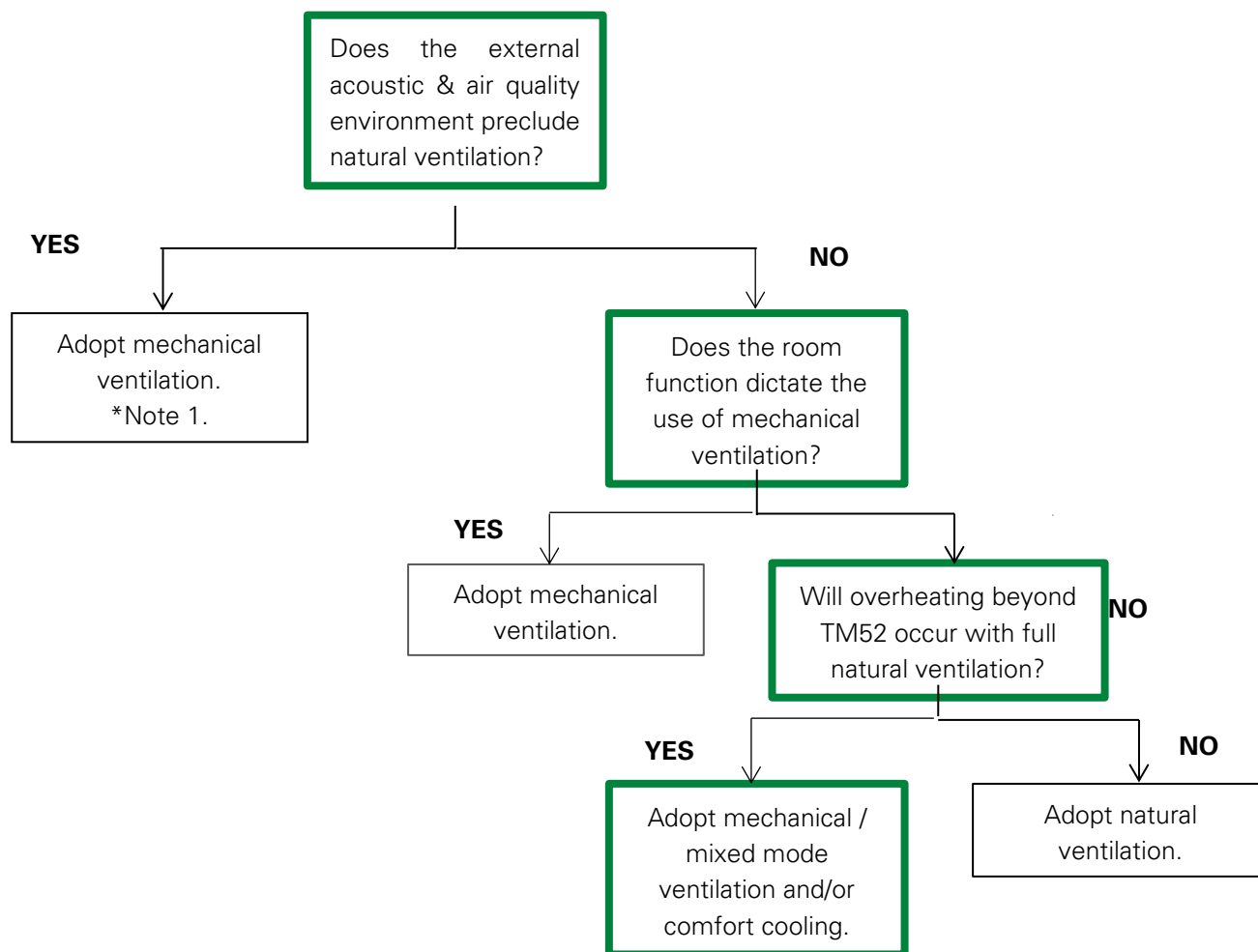
5.1. Ventilation Strategy

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 will be 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 – MAIN OFFICE AREAS



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

5.2. Natural Ventilation / Mixed Mode

The adoption of natural ventilation systems such as openable windows, atria and ventilation stacks reduce the dependency on mechanical system. It is important to note though that the performance of natural ventilation is dependent on nature.

Tall rooms and atria can take advantage of the 'stack effect' which is where warm air rises within the building and escapes via high level windows. Fresh, cooler air is drawn in at lower level windows or doors.

Double sided and shallow plan rooms can take advantage of cross ventilation from window to window, taking advantage of the forces of the wind. This is the most effective arrangement for providing ventilation (in winter) and cooling in summer.

Single sided room ventilation can also prove effective for rooms with a depth of circa 2.5 times the height of the room – giving a maximum depth of 7.5m for a 3.0m high space. This is particularly advantageous in areas which would be exposed to external noise levels (e.g. traffic noise), through the opening of windows.

However, natural ventilation alone is often not sufficient to meet the ventilation needs all the time and therefore mixed mode ventilation should be adopted, which combines elements of both natural and mechanical ventilation. Mixed mode has three modes of operations:

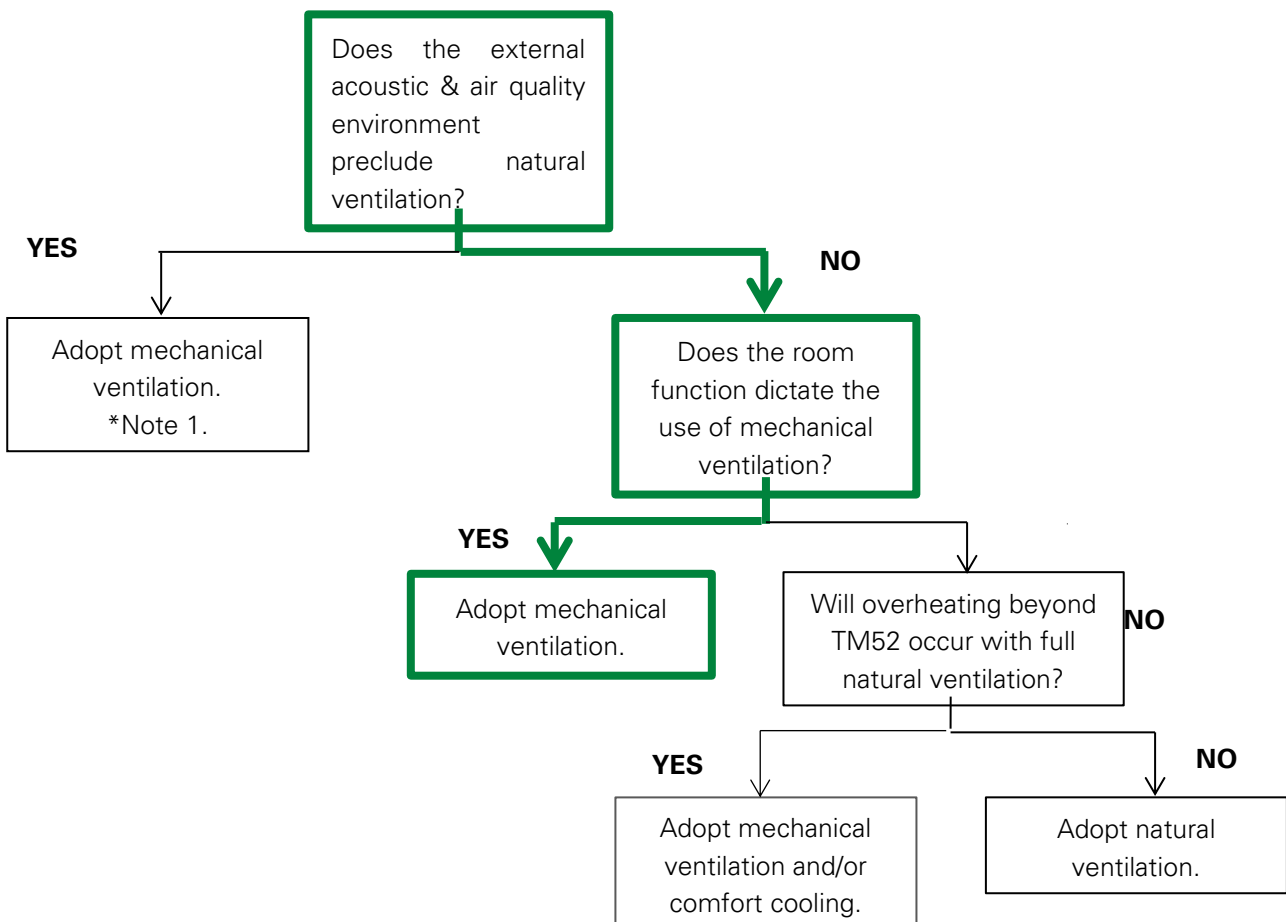
- Supplementary- when natural ventilation is no longer sufficient, mechanical ventilation via a low energy fan is applied to meet the ventilation need.
- Complementary – both natural and mechanical ventilation work together to meet the ventilation requirements.
- Alternate – both natural and mechanical ventilation systems are included separately within the system. The system used is dependent on both the ventilation requirement and the climate conditions.

The functional requirements of the future retail space and possible food and beverage area do not lend themselves to natural ventilation but instead to mechanical ventilation and comfort cooling.

Although these spaces are currently shell and core only at this stage, high level strip louvers and a soft spot have been allowed for to allow a future tenant to fit out accordingly.

Grease Destruction odour control systems will be imposed on future tenants installing kitchen ventilation systems, in accordance with the DEFRA Guidance Document “Guidance on the Control of odour and Noise for Commercial Exhaust Systems”

STRATEGIC DESIGN APPROACH – RETAIL / FOOD AND BEVERAGE



5.3. Hybrid Heat Recovery Ventilation

Natural ventilation can be used to good effect in spring and summer, however in winter the use of natural ventilation in the form of openable windows can lead to an increase in heat loss and therefore higher heating demand. Using a mixed mode system, where mechanical ventilation is used in the winter, minimises heat

losses to the environment and despite the additional electrical energy requirements, an overall reduction in CO2 emissions can be achieved.

A mechanical ventilation with heat recovery unit (MVHR) passes the warm exhaust air through a heat exchanger where some of the thermal energy is transferred to the colder incoming 'supply' air. This reduces the amount of heat needed to be added to the supply air and can at times lead to no additional heat required, thus minimising the CO2 emissions.

For the redevelopment of 50 Fountain Street, this hybrid heat recovery system has been proposed throughout the commercial offices, the landlord office in addition to the gym and studio, to allow natural ventilation to be used wherever possible, thus reducing the energy demand but still providing a mechanical ventilation system for use in the winter.

The mechanical ventilation air handling plant will be located at roof level with the ductwork dropping vertically down the central core risers. From the risers, horizontal ductwork will serve each floor with supply and extract ventilation.

The air handling plant will draw in fresh air 10 metres from sources of pollution, such as exhaust louvres, in order to increase the BREEAM opportunity for the development.

The roof top located standby generator will have its exhaust suitable located away from any fresh air intakes.

There is also a soft spot for the future retail space which will allow fresh air intake and exhaust to be suitably located.

5.4. Mechanical Extract Ventilation

Some spaces, such as the plantrooms, toilets and changing facilities require Mechanical Extract Ventilation to meet the ventilation requirements defined in Approved Document Part F; with the required extract rates are summarised below:

ROOM FUNCTION	EXTRACT RATE
Printer/ Photocopier Rooms	20l/s per machine when in use
Sanitary accommodation and washrooms	Intermittent air extract rate of: • 15l/s per shower/bath • 6l/s per WC/urinal
Food and beverage preparation areas (excluding commercial kitchens)	Intermittent air extract rate of: • 15l/s with microwave and beverages only • 30l/s adjacent to hob with cookers • 60l/s everywhere else with cookers All to operate while food and beverage preparation in progress

The mechanical extract fans will be run and standby and will be located at roof level.

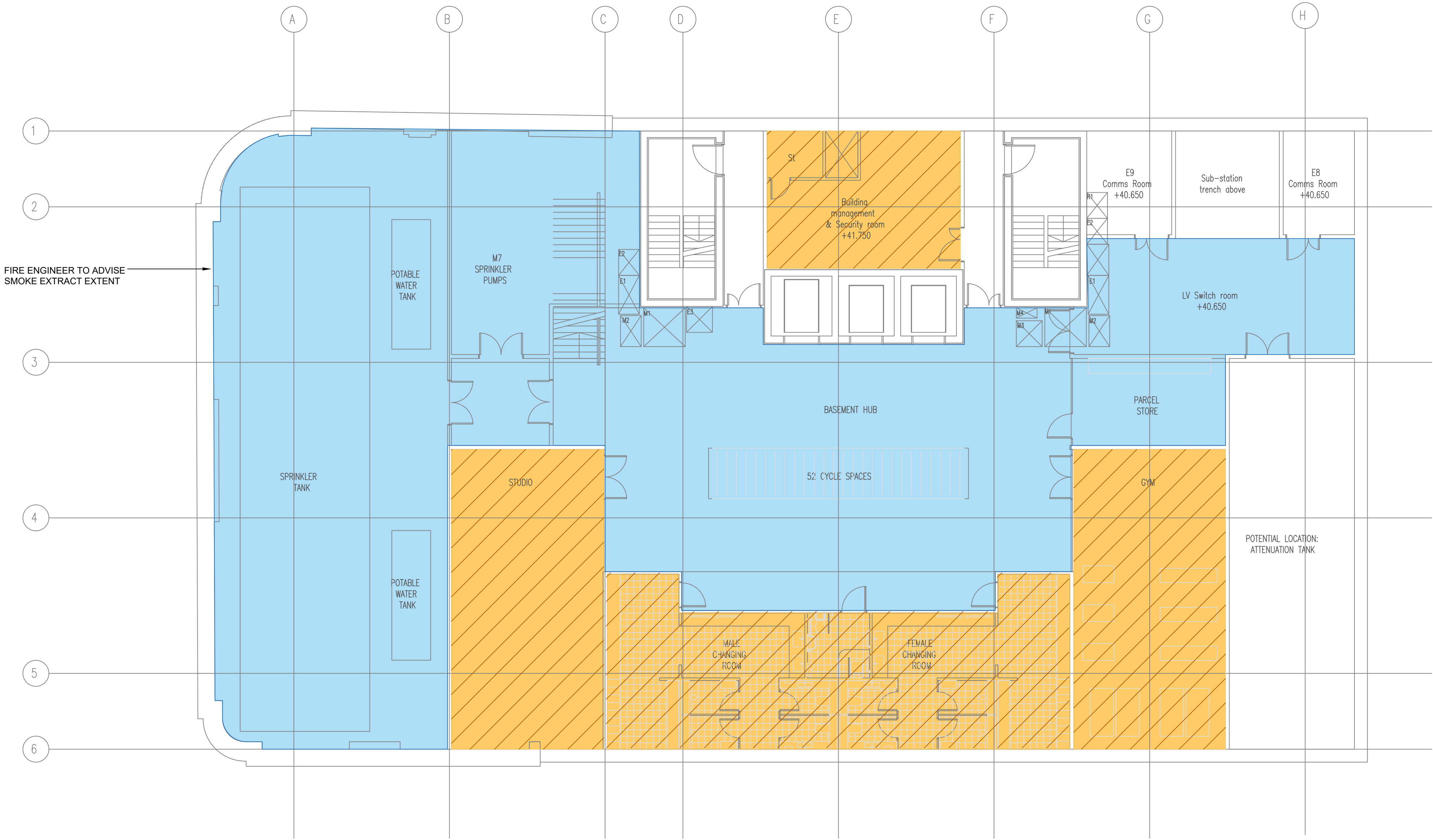
6. SUMMARY OF STRATEGIES

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
Office spaces	Mixed mode ventilation
Communal spaces – corridors/lobbies/staircases	Natural ventilation
Toilets	Extract only
Reception	Mixed mode ventilation
Back of house facilities	Supply and Extract
Meeting rooms	Mixed mode ventilation
Bicycle store	Extract only
Changing facilities	Supply and Extract
Refuse store	Extract only
Gym / Studio	Supply and extract
Future retail space (Shell & Core)	Supply and extract
Future possible food and beverage area (Shell & Core)	Supply and extract

APPENDIX 1

VENTILATION STRATEGY DRAWINGS



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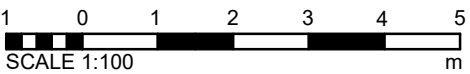
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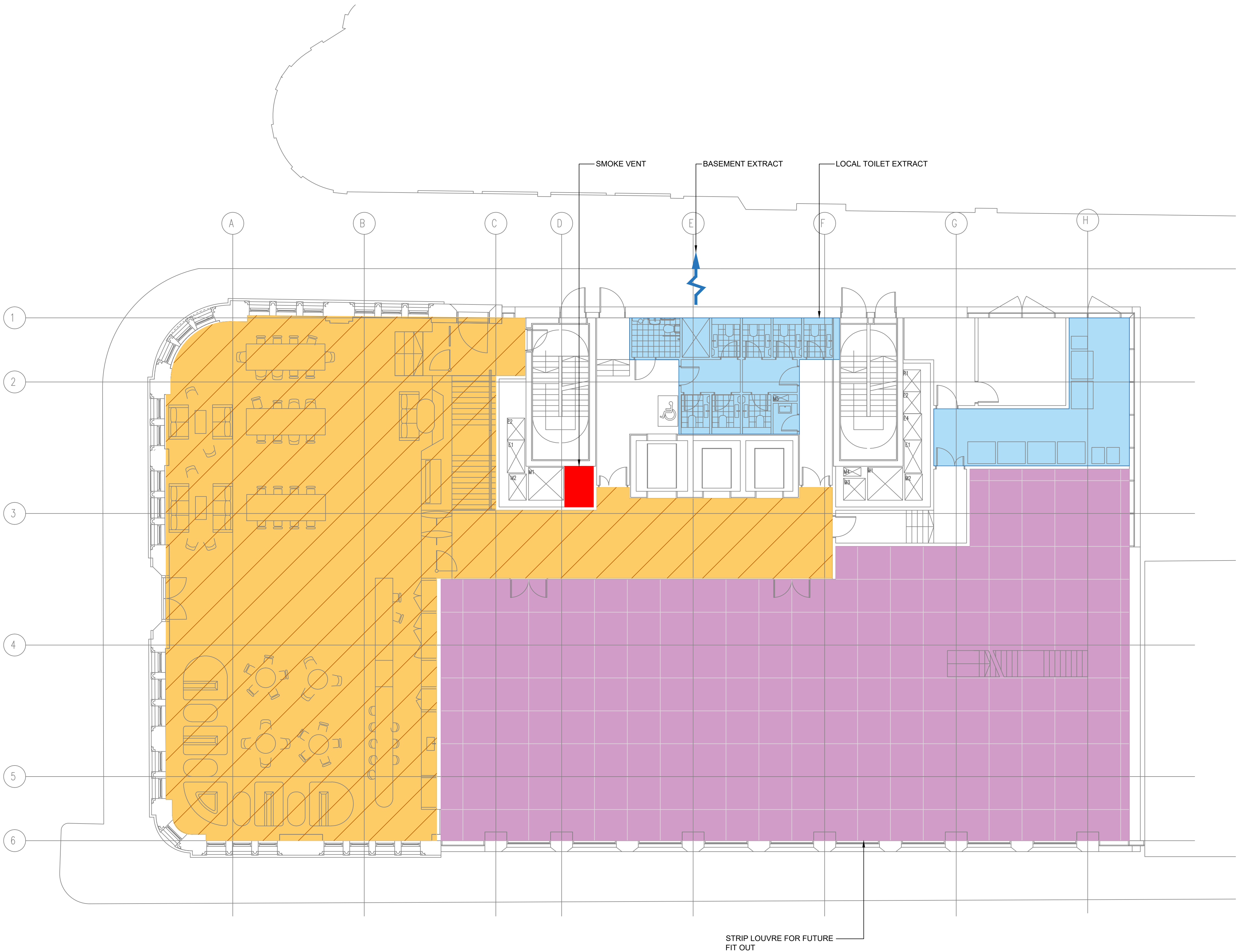
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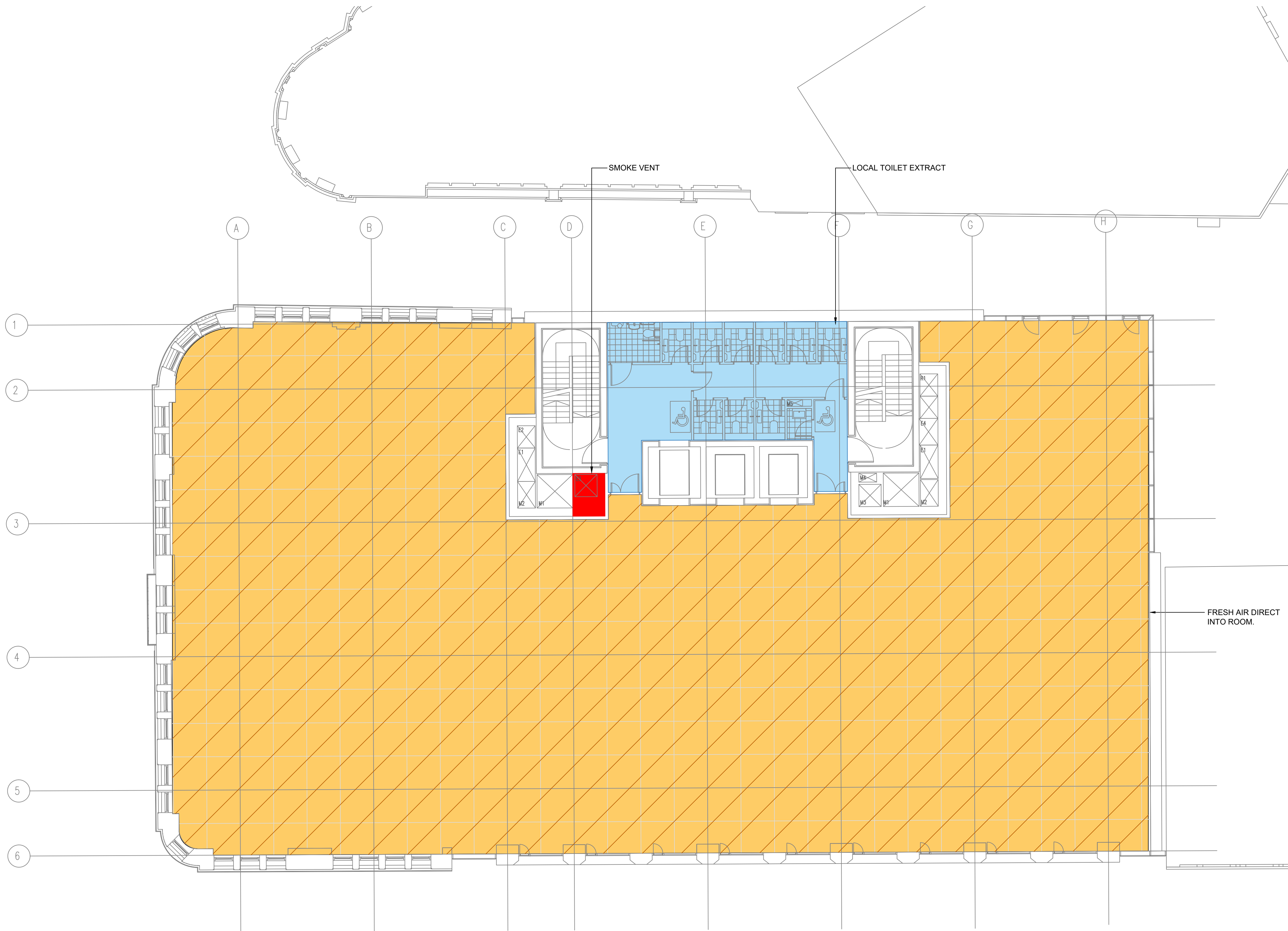
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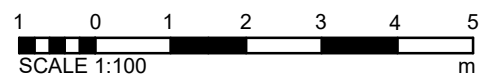
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