Government Property Agency

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MANCHESTER DIGITAL CAMPUS

Ventilation Systems for Extract and Odour Control Statement

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TECHNICAL NOTE

Manchester Digital Campus

SUBJECT
Planning – Ventilation Systems for extract and odour control

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TECHNICAL
NOTE

Ventilation Principles

This Technical Note presents the ventilation systems for extract and odour control in various building areas at the Manchester Digital Campus. The ventilation strategies for the buildings encompass multiple systems, including.

- Office General Ventilation
- Car Park Ventilation
- Basement Ventilation
- Toilet Ventilation
- Smoke Ventilation
- Specialist Local Extract Ventilation
- Retail Area Ventilation

Each system is designed to ensure optimum air quality, occupant comfort, and compliance with Building Regulations Part F 2021.

Office general ventilation is designed to maintain a comfortable and healthy environment. The system is designed to provide fresh air for the occupants while effectively removing stale air. Mechanical ventilation, via dedicated air handling units is proposed. Inlets and discharges are located within the Seventh/ Eighth floor plant room or directed through the plant room roof, to ensure efficient air removal of stale air. The ventilation rates will adhere to or exceed those stipulated within the Building Regulations to ensure proper air exchange and prevent build up of pollutants.

Car park ventilation is provided for the basement car park. The ventilation systems are sized to remove exhaust gases and maintain acceptable air quality levels. The systems will use supply and extract fans with strategically placed ductwork, positioned to exhaust polluted air and introduce fresh air. Carbon monoxide sensors are proposed for integration into the system with a monitoring and control system to enable the ventilation where necessary. Inlets and discharge housings are positioned within the landscape at ground level and as away from general personel access areas.

Basement ventilation is provided to control the indoor environment within the basement areas to supply adequate air exchange. A combination of supply and exhaust systems are employed to remove stale air, whilst supplying fresh air to prevent negative pressure and mitigate internal environment issues. Inlets and discharges are positioned within the landscape at ground level and discharging at a height suitable for the removal of stale air, moisture and odours.

Toilet ventilation is provided to maintain a hygienic and comfortable environment within the toilet and shower facilities. Supply and extract AHUs are proposed to remove vitiated air directly from the welfare facilities preventing the spread of odours. Inlets and discharges are located within the Seventh/ Eighth floor plant room or directed through the plant room roof, to ensure efficient air removal of stale air and odours. The ventilation rates are designed to acheive compliance with the Building Regulations and provide a sufficient amount of air changes per hour to ensure proper dilution of the room air.

TECHNICAL NOTE

In compliance with the building fire strategy, smoke ventilation systems are provided within both buildings. The systems are designed to extract smoke, heat and gases, as required, from affected areas, allowing for safe evacuation and facilitating fire fighting operations. These systems typically consist of smoke exhaust fans, smoke dampers, smoke shafts, and dedicated smoke control zones. Inlets and discharges are positioned within the landscape at ground level and discharging at a height suitable for the removal of smoke, heat and gases during a fire incident. Smoke detection systems are to be integrated to automatically trigger the ventilation systems when smoke is detected. The smoke control systems generally apply to the basement, car parks, fire fighting cores and atriums.

Certain areas within the buildings may require specialist local extract systems to remove specific pollutants or contaminants. The systems are designed to capture exhaust pollutants at or near to the source, ensuring a safe and clean environment. Inlets and discharges are directed through the eighth floor plant room roof or an exhaust stack, to effectively remove extracted air. The design and implementation of these systems will be compliant with relevant regulations and industry standards.

Retail areas ventilation is designed to maintain a comfortable and healthy environment. The system is designed to provide fresh air for the occupants while effectively removing stale air. Mechanical ventilation, via dedicated air handling units is proposed. Inlets and discharges are located within the Seventh/ Eighth floor plant room or directed through the plant room roof, to ensure efficient air removal of stale air. The ventilation rates will adhere to or exceed those stipulated within the Building Regulations to ensure proper air exchange and prevent build up of pollutants.

Controls & Energy Reduction

Automatic control systems will fall within the operation of a Building Management System (BMS). The Mechanical & Electrical services will be controlled and monitored will be via a single Building Management System (BMS) for each of the buildings. The central head end will serve as the primary control unit, consolidating data from all outstations and facilitating centralized monitoring and control of the entire building.

The BMS will control the HVAC installation to regulate temperature, ventilation, and air quality. It will ensure the HVAC systems maintained the desired comfort conditions while optimising energy consumption. This will be controlled by a combination of CO_2 sensors and room temperature sensors in conjunction with the BMS.

Energy monitoring and management shall be provided, with energy meters and sensors provided to monitor energy consumption in the building. The BMS shall provide real time data and analytics to optimise energy usage.

This technical note provides an overview of the ventilation systems for extract and odour control. These systems will all be implemented in accordance with local regulations and standards, to prioritse occupant comfort and well being.

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