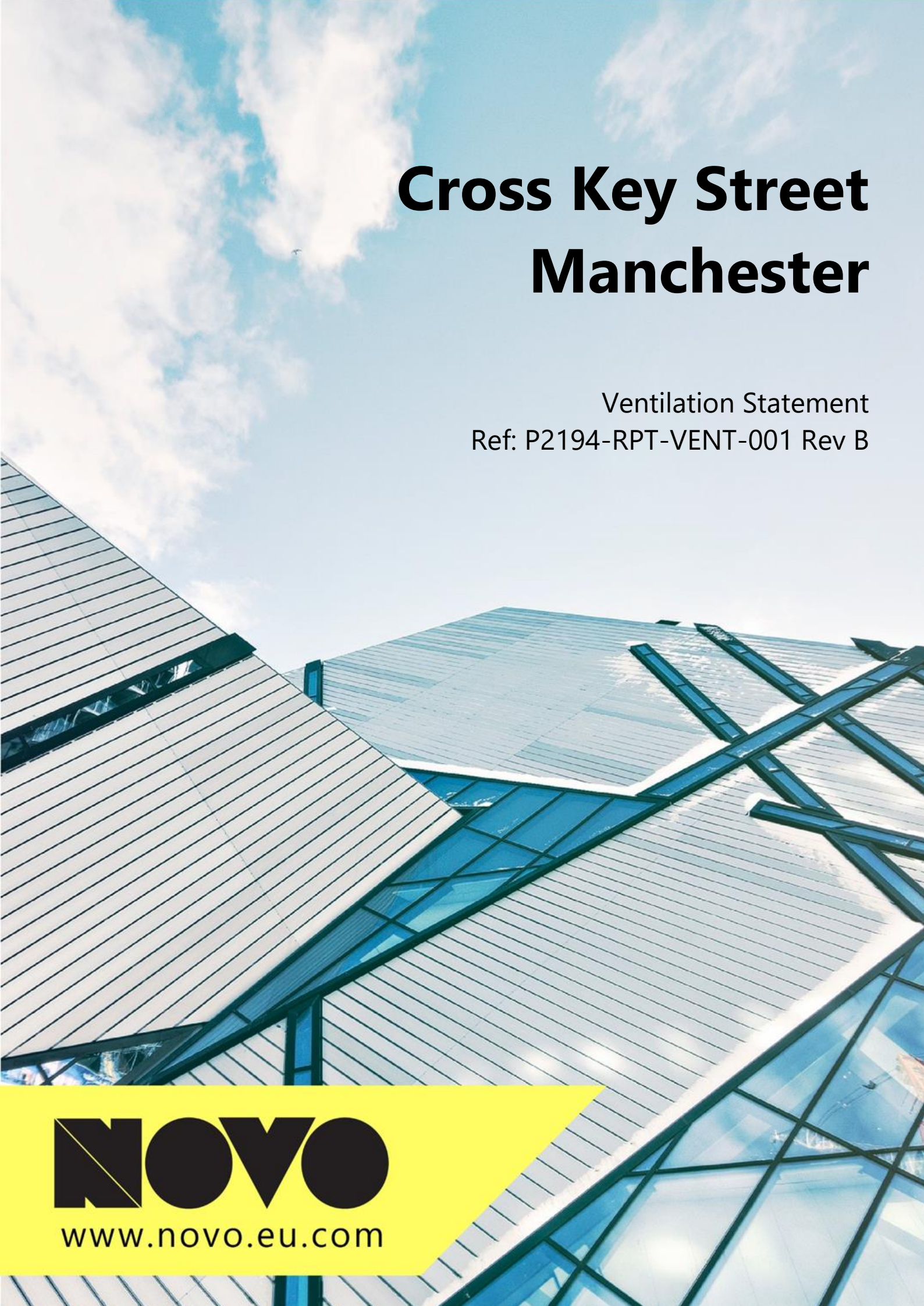
Cross Key Street Manchester

Ventilation Statement
Ref: P2194-RPT-VENT-001 Rev B



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AMENDMENT HISTORY

REVISION	DESCRIPTION	DATE	AUTHOR	CHECKED
A	Initial Issue	27.02.24	B. Duckworth	C. Franks
B	Smoke Vent Amended	05.03.25	A. Fellows	R.Grubb

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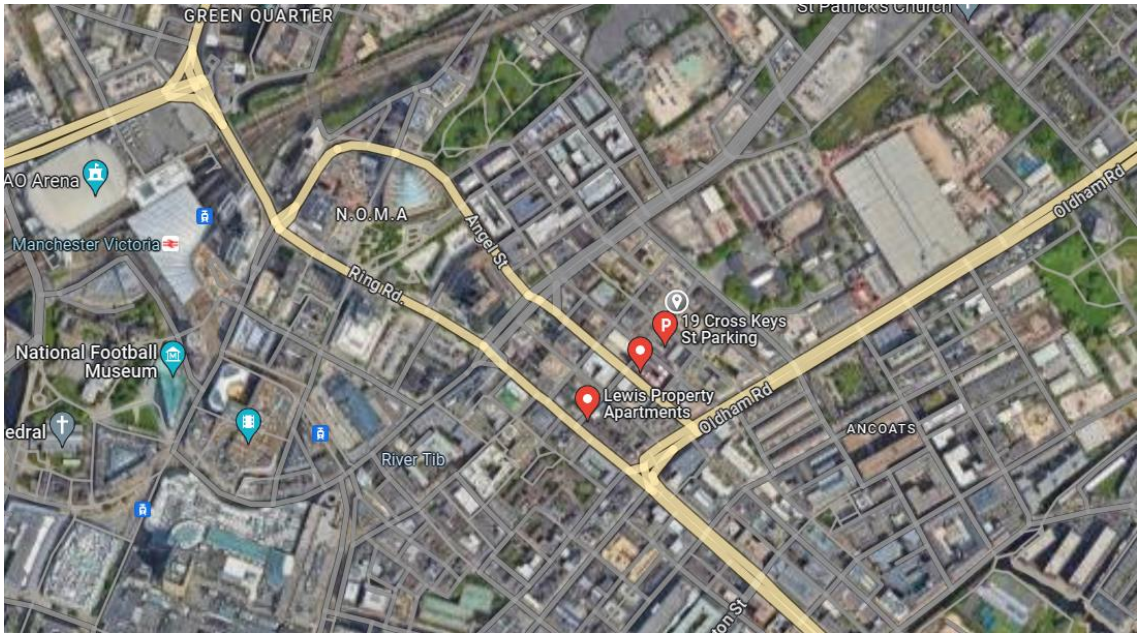
1 INTRODUCTION

The Site is located on Cross Keys Street located in close proximity to Manchester Victoria Station. The surrounding area is predominantly domestic in nature with various new builds neighbouring the development. Local amenities nearby include supermarkets, retail opportunities, good transport links and various museums.

Figure 3: Ariel View



The project will comprise of a new build residential scheme. The residential development will comprise a mixture of one-, two- and three-bedroom apartments.

This document has been commissioned to provide an overview of the ventilation strategies for the scheme and supports a planning application for residential development. This strategy is subject to further detailed design as the overall scheme is developed by the Architect and Design Team.

The following ventilation systems will be considered:

- Plant areas Ventilation
- Common Areas and Meeting/Amenity Rooms Ventilation
- Apartment Ventilation

Smoke ventilation riser locations/sizes and automatic opening vents have been determined by the Fire Engineer and the Architect. This system shall be developed by the Architects and Fire Engineer

2 POLLUTION

Global concern for environmental pollution has risen in recent years, as concentrations of harmful pollutants in the atmosphere are increasing. Buildings have the potential to create major pollution both from their construction and operation, largely through pollution to the air (dust emissions, NOx emissions, ozone depletion and global warming) but also through pollution to watercourses and ground water.

Poor air quality has a detrimental effect on humans, fauna and flora. Gases such as nitrous oxides (NO_x) can react with other gases and environmental factors including sunlight to create substances that have a major impact on health and wellbeing. The resulting substances can be highly detrimental to human health. They can be carcinogenic, affect respiratory function (including asthma and other bronchial complaints), have a sensitising effect for allergy suffers and increase instances of heart disease. Legislation covering the UK sets maximum acceptable limits for measured air pollutants.

The proposed development will aim to minimise the above impacts, both at the design stage and on-site.

2.1 OZONE DEPLETION

CFCs and HCFCs, compounds commonly used in insulation materials and refrigerants, can cause long-term damage to the Earth's stratospheric ozone layer, exposing living organisms to harmful radiation from the sun. They also significantly increase global warming if they leak into the atmosphere. Following the Montreal Protocol, production and use of CFCs is no longer permitted and EC regulations will require phasing out of HCFCs by 2015. However, products that replace these gases are often still potent global warming contributors. Where refrigerants are used for air-conditioning and comfort cooling, they will be CFC and HCFC-free.

2.2 INTERNAL POLLUTANTS

Volatile organic compounds (VOCs) are emitted as gases (commonly referred to as offgassing) from certain solids or liquids. VOCs include a variety of chemicals, some of which are known to have short-term and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials, furnishings, adhesives, Urea-formaldehyde foam insulation (UFFI), pressed wood products (hardwood plywood wall panelling, particleboard, fibreboard) and furniture made with these pressed wood products. 'No' or 'low' VOC paints are available from most standard mainstream paint manufacturers. These 'eco-friendly' paints are made from organic plant sources and powdered milk-based products. The design team will seek to select internal finishes and fittings with low or no emissions of VOCs and comply with European best practice levels as a minimum.

2.3 NOX EMISSIONS FROM BOILERS

Nitrous oxides (NOx) are emitted from the burning of fossil fuels and contribute to both acid rain and to global warming in the upper atmosphere. At ground level, they react to form ozone, a serious pollutant and irritant at low level. Burners in heating systems are a significant source of low-level NOx,

while power stations (and therefore electric heating) are a significant source of NOx in the upper atmosphere.

The apartments and commercial spaces within the proposed development will incorporate electric heating, which will emit no NOx at the site.

3 VENTILATION

3.1 COMMON AREAS, MEETING ROOMS AND CONCIERGE VENTILATION STRATEGY

Common Landlords areas shall be naturally ventilated where possible with supplementary ventilation provided via local mechanical fans as required.

Meeting rooms, concierge and facility management areas including the residents lounge shall either be naturally ventilated or mechanically provided with fresh air to meet a requirement of 10l/person/second.

Should there be a requirement for mechanically supplied fresh air, a supply/extract system shall be installed, with heat recovery, to give facility for tempering of the fresh air and improved room environmental conditions. The equipment shall include automatic summer bypass of the heat exchanger and have facility for condensate drainage. Presence sensors shall be used to control the ventilation equipment, so use is restricted to hours of occupation.

3.2 PLANTROOM

Plantrooms will be either naturally ventilated or provided with mechanical ventilation. Basement plant areas shall have extract ventilation to meet the Fire Consultants requirements.

Ground floor upwards plant rooms shall be naturally ventilated.

3.3 REFUGE CHUTES

Refuse chutes are not used in this building.

3.4 RESIDENTIAL APARTMENTS

Building Regulations Part F 2021 states that all newly constructed dwellings are required to comply with the following criteria: -

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.

It is proposed that the ventilation strategy for each apartment will satisfy these requirements. The exact specification will be determined at detailed design stage. The whole house ventilation strategy will be adopted to ensure that the air quality and the noise levels always of the day are acceptable.

The MVHR units that shall be selected shall have the additional air flow capacity to run at a higher air volume to assist with the overheating strategy. MVHR units that are oversized provide with a manual boost switch to reduce the reliance on openable windows, but still meet Approved Document Part O for overheating will be provided.

3.5 PURGE VENTILATION

The architect has selected the external fenestration to comply with and approved Document Part F as below.

Table 1.4 Purge ventilation openings

Opening type	Minimum total area of openings
Hinged or pivot windows with an opening angle of 15 to 30 degrees	1/10 of the floor area of the room
Hinged or pivot windows with an opening angle of greater than or equal to 30 degrees	1/20 of the floor area of the room
Opening sash windows	
External doors	

3.6 SMOKE VENTILATION

Smoke ventilation is generally by means of natural ventilation smoke shaft to each escape corridor with floor to ceiling internal louvers to suit the fire consultant's requirements. Smoke fans may be located locally for corridors that can't be naturally ventilated to suit the Computational Fluid Dynamic study by the fire consultant and the requirements of BS EN 9991.