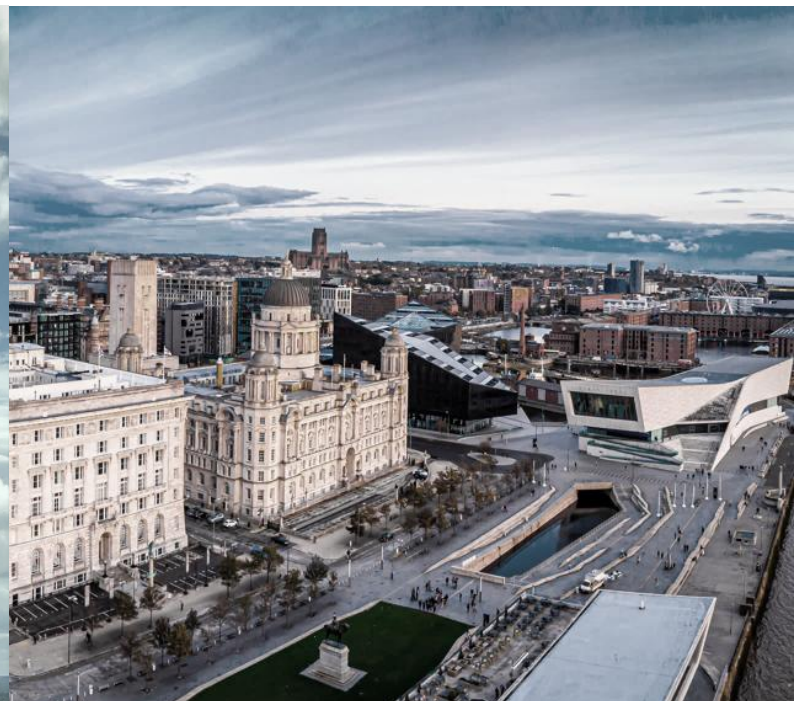




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NQ Building, Manchester Ventilation Statement



NQ Building, Manchester

Ventilation Statement

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1 Executive Summary

Futureserv Ltd has been appointed by Renaker to provide a Ventilation Statement for the change of use of commercial units (43, 45 & 49 Bengal Street) within ground level of NQ Building on Bengal Street, Manchester from commercial (Use Class E) to three flexible commercial (retail, food and beverage (Use Class E) and/or public houses, wine bars, drinking establishments (Sui Generis) with associated external elevation works. The ventilation strategy improves on the fundamental principles of the Building Regulations and will make a contribution to reducing the annual CO₂ emissions of the proposed development.

The statement also highlights the need to provide complete, energy efficient, fully working and balanced ventilation systems that can:-

- Deliver sufficient outdoor fresh air to occupants;
- Deliver good indoor air quality;
- Ensure acceptable internal noise levels are not exceeded;
- Assist in the removal of heat gains;
- Remove odours, contaminants and moisture;
- Avoid cold draughts;
- Assist in avoidance of summertime overheating;
- Provide summertime night time cooling of the building fabric when required;
- Provide an easily controlled and maintainable system;
- To prevent cross infection (by full fresh air and negative pressure regime);
- To recover heat from the exhaust air stream for re-use in the fresh air supply.

Futureserv Consulting Engineers have collaborated with the design team in order to provide a holistic solution for the building that will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the proposed development whilst providing comfortable working and social accommodation.

2 Introduction

This statement has been prepared to accompany the planning application to convert three units from commercial (Use Class E) to three flexible commercial (retail, food and beverage (Use Class E) and/or public houses, wine bars, drinking establishments (Sui Generis)

The proposed new development works include:

- Unit 1 (43 Bengal Street) – to become a flexible commercial retail unit
- Unit 2 (45 Bengal Street) – to become a flexible commercial retail unit
- Unit 3 (49 Bengal Street) – to become a flexible commercial retail unit

This statement has been produced to detail the supply and extract ventilation strategy for the proposed developments and describes how ventilation requirements have been incorporated into the design of the building.

This Ventilation Statement has been prepared to illustrate the proposed ventilation designs. It addresses the building regulation requirements described within Approved Document Part F, 2021 for ventilation to the various facets of the proposed development.

Futureserv Consulting Engineers have collaborated with the design team in order to provide a holistic solution for the building that will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the proposed development whilst providing comfortable working and social accommodation.

It has been established that each of the commercial units does not incorporate a commercial-style kitchen, instead will only be making light snacks. Therefore, kitchen extracts / odour filters were excluded from this Ventilation Strategy

3 Design

The ventilation design shall comply with the following building regulation approved documents and standards:

3.1 Design Standards

The ventilation systems will be designed in accordance with recognised UK and industry best practice.

- Design will be based on standards and guidelines, including:
- British and European Standards (BSI).
- Chartered Institution of Building Services Engineers (CIBSE).
- Building Services Research and Information Association (BSRIA).
- Building Research Establishment (BRE).
- Heating & Ventilating Contractors Association (HVCA).

3.2 Statutory Requirements

Ventilation systems design will also be based on the following Statutory Requirements:

- The Building Regulations
- Clean Air Act
- The Control of Pollution Act
- The Construction (Design and Management) Regulations
- British Standards and Codes of Practice
- Manchester City Council Planning Conditions & Requirements

3.3 Ventilation Rates

Ventilation rates for each area of the development illustrated below:

Area/Room	Ventilation Criteria
Bar/amenity areas, BOH areas	10 l/s/person
WCs	6 ACH
BOH Kitchen, cleaner's stores	10 ACH
General stores	2 ACH
Refuse	Natural

4 Ventilation Strategy

4.1 Basis of Design

The ventilation strategy has been designed to comply with the Building Regulations approved document Part F Means of Ventilation 2021 Volume 2 ,the Domestic and Non-Domestic Ventilation Compliance guides and CIBSE Guide A

These documents describe the basis of the design and outline scope of ventilation works for the various parts of the proposed development.

Table 1.5 Recommended comfort criteria for specific applications

Building/room type	Customary winter operative temperatures for stated activity and clothing levels*			Customary summer operative temperatures (air conditioned buildings†) for stated activity and clothing levels*			Suggested air supply rate / (L.s ⁻¹ per person unless stated otherwise)	Filtration grade‡	Maintained illuminance§ / lux	Noise criterion§		
	Temp. / °C	Activity / met	Clothing / clo	Temp. / °C	Activity / met	Clothing / clo				NR	dBA§	dB(C)§
Airport terminals:												
— baggage reclaim	12–19 ^[1]	1.8	1.2	21–25	1.3	0.6	10 ^[2]	F6–F7	200	45	50	75
— check-in areas ^[3]	18–20	1.4	1.2	21–25	1.3	0.6	10 ^[2]	F6–F7	500 ^[4]	45	50	75
— concourse (no seats)	19–24 ^[1]	1.8	1.2	21–25	1.3	0.6	10 ^[2]	F6–F7	200	45	50	75
— customs area	18–20	1.4	1.2	21–25	1.3	0.6	10 ^[2]	F6–F7	500	45	50	75
— departure lounge	19–21	1.3	1.2	22–25	1.2	0.6	10 ^[2]	F6–F7	200	40	45	70
Art galleries — see Museums and art galleries												
Banks, building societies, post offices:												
— counters	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	F6–F7	500	35–40	40–45	65–70
— public areas	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	F5–F7	300	35–45	40–45	65–70
Bars/lounges	20–22	1.3	1.0	22–25	1.3	0.6	10 ^[2]	F5–F7	100–200 ^[5]	30–40	35–45	60–70
Bus/coach stations — see Railway/coach stations												
Churches	19–21	1.3	1.2	22–25	1.3	0.6	10 ^[2]	G4–F6	100–200	25–30 ^[6]	30–35	55–60
Computer rooms^[7]	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	F7–F9	300	35–45	40–50	65–75
Conference/board rooms	22–23	1.1	1.0	23–25	1.1	0.6	10 ^[2]	F6–F7	300/500 ^[8]	25–30	30–35	55–60
Drawing offices	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	F7	750	35–45	40–50	65–75
Dwellings:												
— bathrooms	20–22	—	—	23–25	—	—	15 L.s ⁻¹	G2–G4 (extract) ^[9]	150 ^[4]	—	—	—
— bedrooms	17–19	0.9	2.5	23–25	0.9	1.2	0.4–1 ACH to control moisture ^[9]	G2–G4	100 ^[4]	25	30	55
— hall/stairs/landings	19–24 ^[1]	—	—	21–25 ^[11]	—	—	—	—	100	—	—	—
— kitchen	17–19	1.6	1.0	21–25	1.5	0.5	60 L.s ⁻¹	G2–G4 (extract) ^[9]	150–300	40–45	45–50	70–75
— living rooms	22–23	1.1	1.0	23–25	1.1	0.6	0.4–1 ACH to control moisture ^[9]	G2–G4	50–300	30	35	60
— toilets	19–21	—	—	21–25	—	—	>5 ACH	G2–G4	100 ^[4]	—	—	—
Educational buildings:												
— corridor	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	— ^[17]	100	35–45	40–50	65–75
— gymnasium	—	—	—	—	—	—	—	—	300	35–45	40–50	65–75
— laboratory	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	— ^[17]	100	35–40	40–45	65–70
— lecture halls ^[10]	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	G4–G5	500 ^[11]	25–30	30–40	55–65
— seminar rooms	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	G4–G5	300 ^[11]	25–35	30–40	55–65
— teaching spaces ^[10]	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	G4–G5	300 ^[11]	25–35	30–49	55–65
— workshop	16–19	1.8	0.9	— ^[13]	—	—	— ^[14]	Depends on use	— ^[15,16]	35–40	40–45	65–70
Exhibition halls	19–21	1.4	1.0	21–25	1.3	0.6	10 ^[2]	G3–G4	300	40	45	60

Table continues

Extract from CIBSE Guide A

4.0 Ventilation

4.1 Internal Areas

Local Heat Recovery units shall be provided to supply tempered fresh air to each of the units. The units shall be located locally within the ceiling voids of the area served discharging to atmosphere via local louvres within the facade. The units shall be of the heat recovery type as per Mitsubishi Lossnay units or equal and approved. The units shall generally comprise of the following sections: -

- Return air fan
- Air intake louver
- Motorised shut off damper
- Fresh air filter (F7 Grade Filter)
- Extract filter (M5 Grade Filter)
- Counter flow heat exchanger (providing heat recovery)
- Supply fan
- Local controllers provided in each area

The systems shall be controlled to supply a variable air volume in line with occupancy of each area, controlled with CO₂ sensors. This will meet minimum fresh air requirements and be provided with manufacturer's controls package to ensure fresh air rates and temperatures are maintained at comfortable levels and allow connection to the central building management system.

The spaces shall be ventilated to provide 10l/s per person.

Heat recovery units shall be mounted within the ceiling void and these will be routed via rigid ductwork to supply and extract grilles located in the ceiling.

Intake and exhaust ductwork will be insulated to prevent condensation.

Louvres on the façade shall be required for connecting the ventilation ductwork intake and discharge points to outside.

Louvres for each unit shall be made along the Bengal Street Façade and shall be complete with anodised decorative screening panels.

Attenuators will be installed to reduce external noise intrusion where required.

4.1.1 Toilets, Cleaners Store Ventilation

Toilet and cleaner's stores will be ventilated by means of mechanical extract systems with the fan units located locally to the space they are serving. Make up air shall be provided naturally via one of the following methods: undercut doors, door transfer grilles, transfer ducts or make-up air drawn directly from outside via a louvred façade. Subject to the extent of air volumes required.

The local WC extract fans shall be complete with the following.

- Time clock controller
- Electronic fan speed controller
- Fan auto changeover facility
- Duty/share facility which changes the lead fan every 12 hours
- AV mounts
- Back draught shutters
- Ductwork distribution system rising vertically through the building

4.1.2 Refuse Stores

All proposed refuse areas are external to the development ensuring natural ventilation.

5 Conclusion

The ventilation strategy improves on the fundamental principles of the Building Regulations and will make a contribution to reducing the annual CO₂ emissions of the proposed development.

The proposed development will incorporate energy reduction measures in the ventilation systems to reduce the carbon footprint of the site using heat recovery devices and energy efficient fan selections.

Waste heat will be recovered by the mechanical ventilation heat recovery (MVHR) systems. This type of ventilation will help to reduce heat demand and provide filtered air to the spaces. All fans and motors shall be specified to incorporate accredited technology and appropriate controls.