

Report

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Ventilation Strategy

Planning Submission

Phase 2 New Victoria: Office Development

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Table of contents

1 Introduction ..... 4

1.1 Purpose of this document ..... 4

1.2 Description of Development..... 4

1.3 Site Location ..... 4

1.4 Planning Application Boundary ..... 4

2 Ventilation Strategy ..... 5

2.1 Office Areas ..... 5

2.1.1 General Ventilation ..... 5

2.1.2 Office Floor WC Ventilation ..... 6

2.2 Ground floor retail area ..... 6

2.3 Electrical Services ..... 6

2.4 Generator Plant Ventilation..... 6

2.5 Level 09 Office Kitchen Extract..... 6

2.6 Basement Ventilation ..... 7

2.6.1 General Basement Back of House and Plant Areas ..... 7

2.6.2 Landlord Cycle Shower and Changing Rooms ..... 7

2.6.3 Bin Stores ..... 7

2.6.4 Sprinkler Pump Room ..... 7

2.7 Gas Meter Room..... 7

2.8 Smoke Extraction..... 7

2.9 Acoustic Attenuation ..... 8

Table of figures

Figure 1, Proposed Development Location with Red Line Boundary – by Piercy & Company ..... 4

Figure 2, Office Floors and Retail Ventilation Strategy ..... 5

Figure 3, Proposed location for office on-floor AHU outside air intake and exhaust air louvres on a typical office floor. .... 5

Figure 4, Proposed location for WC areas exhaust air louvres on a typical office floor. 6

Figure 5, Proposed basement plant ventilation louvres along North-West Elevation .... 7

## 1 Introduction

### 1.1 Purpose of this document

The report has been prepared on behalf of 'Toriview Ltd' (the "Applicant") for the planning application of New Victoria Office (the "Proposed Development"), a office development which is adjacent to Manchester Victoria Station and Corporation Street. The site is in Manchester

This report is intended to provide full details of the planned ventilation and air extractions systems for the proposed development. Discharge velocity, louvres and gratings will be sized and located to ensure noise and odours will be discharged in a manner that minimises any negative impact on pedestrian walkways or adjacent buildings. Air filters used for odour and particulate reduction will be appropriate to the type of function being served within the building and subject to air quality assessment.

The location of louvres and their integration into the façade have been coordinated with the architectural aspirations for the development. Please refer to the Architect's Design and Access Statement document.

### 1.2 Description of Development

Construction of a 10 Storey office building plus basement, comprising up to 18,101 sq.m (GEA) of office accommodation, ground floor commercial units, roof terrace, plant, cycle parking, hard and soft landscaping, access and servicing and other associate works.

### 1.3 Site Location

The site is bounded by Manchester Victoria Train Station to the east, the Metrolink tramlines to the south west, Corporation street to the west and the Phase 1 New Victoria residential development to the north.

### 1.4 Planning Application Boundary

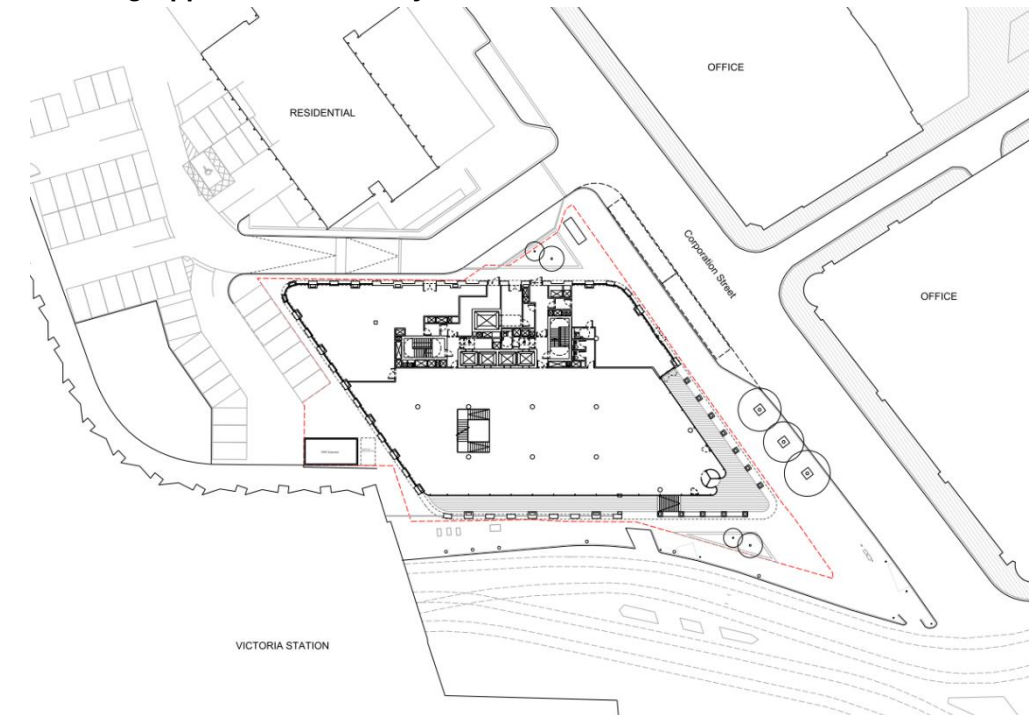


Figure 1, Proposed Development Location with Red Line Boundary – by Piercy & Company

## 2 Ventilation Strategy

### 2.1 Office Areas

#### 2.1.1 General Ventilation

The office air handling units (AHUs) serving the category 'A' office spaces between level 0M and level 09 will be located locally, on floor within a plant room, with louvres along the façade of the plant room. Appropriate acoustic treatment to the louvre vents and AHU will be provided as specified by the acoustic consultant's report. The outside air intake and exhaust air locations will be adequately separated to mitigate short-circuiting.

The AHUs will be double stacked types with high efficiency thermal wheel for heat recovery. The outside air to the AHUs will be filtered, heated or cooled by AHUs to serve the office floor. The thermal wheel within the AHUs will transfer a large portion of the heat contained within the extracted indoor air to the outdoor air being supplied, which will reduce the fresh air heating load during the winter. During the summer, the thermal wheel will transfer heat from the warmer outside air intake to the cooler exhausted air stream extracted from the office, which will reduce the fresh air cooling load. The exhaust air from the AHUs will discharge straight to atmosphere.

The office area is being designed as a shell and core, for fit out by tenant. On-floor supply air and extract air ductwork will be distributed across the floor plate to each office floor's CAT 'A' connections for tenant fit-out.

The outside air provision to the office floors from the office AHUs will exceed the minimum requirements in Approved Document Part F of the Building Regulations.

Figure 3 indicates the ventilation strategy for the office floor areas.

#### MEP Services Strategy Office Floor on Floor Ventilation Strategy

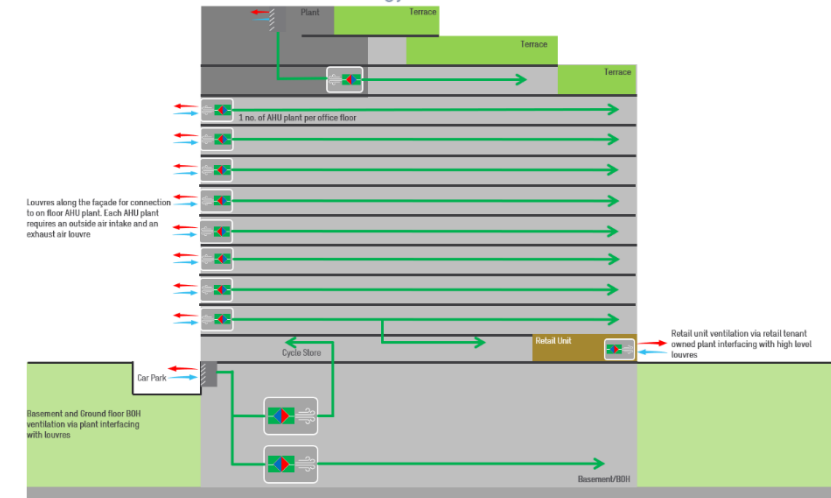


Figure 2, Office Floors and Retail Ventilation Strategy

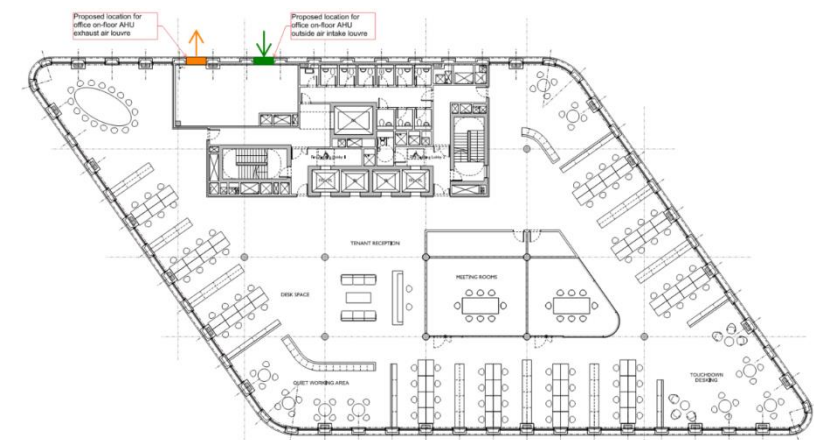


Figure 3, Proposed location for office on-floor AHU outside air intake and exhaust air louvres on a typical office floor.

### 2.1.2 Office Floor WC Ventilation

The office toilets located within the office floors from level 0M to level 09 will be served by localised twin extract fans located at high level within the toilet core. The negative pressure within the WC areas would mitigate the migration of odours from the WC to other areas. Make-up air to the toilet areas will be via air transfer grilles from the office floor plate to the toilet core.

Each toilet extract fan located within the toilet core will interface with local outside exhaust air louvres located along the façade adjacent to the WC core.

The office toilet extract ductwork will be distributed locally within the toilet core, branching off to serve the toilets.

The exhaust air louvres will be adequately separated from any outside air intake louvres in the vicinity to mitigate risks of re-circulation of air.

Any local WC areas at ground floor level will be served by local twin extract fans. Air will be extracted from above the toilet cubicles via ductwork system to the twin extract fans for discharge direct to atmosphere through weather louvres at suitable positions.

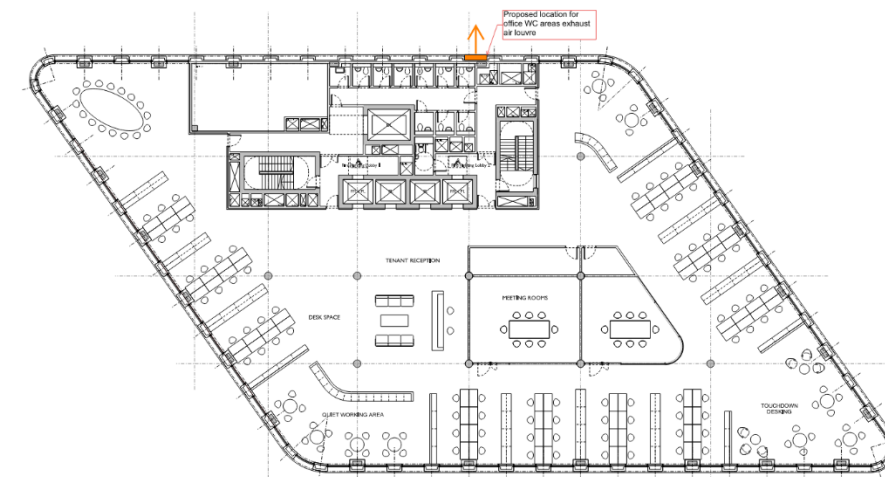


Figure 4, Proposed location for WC areas exhaust air louvres on a typical office floor.

### 2.2 Ground floor retail area

The retail areas at ground level will be designed as a shell and core, allowing for flexibility in the future tenant fit-out.

Space provision will be made for the retail tenant to install mechanical ventilation heat recovery unit(s) within the tenant's demise, to provide outside air ventilation to the space.

Outside air intake and exhaust air louvres integrated along the façade of the ground level of the retail areas will be provided to enable the tenant to connect their ventilation system air handling plant to the louvres.

Any kitchen extract system from the ground floor retail plant will be located at roof level. Space provision will be made at roof level for the retail tenant to install the kitchen extract ventilation plant.

Kitchen extract air will be exhausted via kitchen extract unit at roof level. The kitchen and preparation areas will be designed such that the spaces are at a negative pressure whenever operational. Within the kitchen, it is anticipated that ventilated supply/extract canopy(s) will be installed by the tenant.

The kitchen extract system will be designed with adequate particulate, odour and grease filtration, in accordance with the latest regulations and good practice guidances to mitigate any potential impact to neighbouring properties. The kitchen exhaust will be exhausted away from any outside air intake to mitigate risks of re-circulation of air.

Tenant extract ductwork will be located within an allocated riser provision within landlord areas to enable access to the kitchen tenant for maintenance and cleaning.

### 2.3 Electrical Services

The supply authority's electrical intake substation or switch rooms located externally to the building will be naturally ventilated to atmosphere. The supply authority's electrical substation or switch rooms will be designed as per their requirements.

### 2.4 Generator Plant Ventilation

The landlord's essential life safety generator as well as space provision for a future tenant generator will be both located at L09. The generators will be located within an attenuated acoustic enclosure or room, as per acoustic consultant's advice.

Exhaust air from the generators will exhaust to atmosphere via a builders work ventilation shaft rising up to level 10 of the building. Outside air intake will be via make-up air from atmosphere.

Combustion gases from the diesel engines will be exhausted via flues, rising up and discharging above roof level. The diesel exhaust flues will be located away from any air intakes at roof level to mitigate cross contamination of air streams.

### 2.5 Level 09 Office Kitchen Extract

Plant space will be allowed for at roof level to accommodate a future kitchen extract plant serving a potential L09 kitchen to be used for the office tenants.

Kitchen extract air from the potential L09 kitchen area will be exhausted via kitchen extract unit at roof level, as per strategy described in section 2.2.

## 2.6 Basement Ventilation

### 2.6.1 General Basement Back of House and Plant Areas

Ventilation of back of house (BOH), cycle stores at ground and plant areas within the basements will be served by a double stacked type AHU with high efficiency thermal wheel for heat recovery. The AHU will be located within a plant room at basement level. Supply air and extract air from the AHU will be routed across the basement levels at high level via ductwork and local ventilation risers where required to ventilate each room/zone.

The outside air intake and exhaust air ductwork from the AHU will connect to louvres at ground level within the car park (high level basement) located along the north-west elevation. Figure 5 indicates the proposed location of louvres serving ventilation plant within the basement.

The outside air intake and exhaust air louvres will be adequately separated to mitigate risks of re-circulation of air.

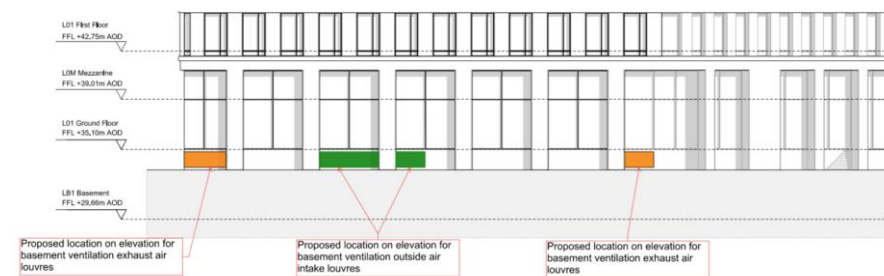


Figure 5, Proposed basement plant ventilation louvres along North-West Elevation

### 2.6.2 Landlord Cycle Shower and Changing Rooms

The landlord cycle shower and changing room areas at basement level will be served by an AHU, with high efficiency plate heat exchanger for heat recovery, located within a plant room also at basement. The heat exchanger will transfer a large portion of the heat contained within the indoor air to the outdoor air being supplied. The cycle shower supply and extract ductwork will be distributed at high level to serve the landlord cycle shower and changing room areas.

The outside air intake and exhaust air ductwork will connect to louvres as described in section 2.6.1.

### 2.6.3 Bin Stores

Ventilation of bin store areas will be via dedicated duty/standby axial fans. The fans will be located within the bin stores at high level. The exhaust air ductwork from the fans will connect to louvres as described in section 2.6.1

The make-up air for the bin stores will be via the general basement BOH and plant ventilation AHU system. The negative pressure within the bin store would mitigate the migration of odours from the bin store to the other basement areas.

### 2.6.4 Sprinkler Pump Room

Supply and extract duty/standby axial fans will be located within the sprinkler pump room at high level to provide adequate air flow for cooling and combustion of the standby sprinkler diesel engine pump.

Combustion gases from the diesel engine will be exhausted via flue, rising up the building within a riser and discharging above roof level. The diesel pump exhaust flue will be located away from any air intakes at roof level to mitigate cross contamination of air streams.

The outside air intake and exhaust air ductwork from the fans will connect to louvres as described in section 2.3.1.

## 2.7 Gas Meter Room

The gas meter room located at ground level will be naturally ventilated to atmosphere as per utility provider requirements.

## 2.8 Smoke Extraction

Subject to detailed resolution of the Fire Strategy and agreement with Building Control, the following systems are envisaged at this stage:

### Mechanical Smoke and Heat Exhaust Ventilation

- Basement/BOH Plant rooms and corridors
- Basement Cycle Storage Area
- Basement Cycle Shower and Changing Room Areas
- Bin and Waste Storage Areas

### Firefighting Lobbies and Stairs

- Mechanical smoke extract to each firefighting shafts
- System will be designed in accordance with the principles set down in BS999

The basement plant and BOH areas will be served by a duty/standby mechanical smoke extract system located within a plant room at basement

level. The system will be based on mechanical smoke control based on 10 air changes an hour from the largest compartment, under a zoned extract arrangement. The system (fans, extract and supply ductwork) will be fire rated (integrity and insulation) in accordance with BS9999 with discharge points situated away from any escape routes/Fire Service entry routes.

Each firefighting lobby will be served by duty/standby smoke extract fans ducted to each lobby and via motorized louvre dampers activated by smoke detectors and pressure sensors in the lobbies. The smoke fans for each system will discharge straight to atmosphere. The fans will be located at the top of each firefighting shaft.

Make up air for the system will be provided via Automatic Opening Vent (AOV) located at the head of the circulation stairs.

## **2.9 Acoustic Attenuation**

Attenuation will be provided, where required, on the room and atmospheric side ductwork of the ventilation plant to mitigate noise reverberation within the ductwork and noise break out. The atmospheric side comprises of the outside air intake and exhaust air ductwork, and the room side the supply air and extract air ductwork. Inline ductwork attenuation on the atmospheric side of ventilation plant would mitigate the noise break out to the local environment, whilst attenuation on the room side of ventilation plant would help control noise levels of the mechanical ventilation systems to satisfy internal noise level criterias.

Attenuation and acoustic measures will be provided in accordance with the advice and requirements set out in the acoustic consultant's acoustic report and assessment.