



MAYFIELD REPUBLIC LIMITED

MAYFIELD DEVELOPMENT, THE REPUBLIC

VENTILATION SYSTEMS STRATEGY REPORT



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QUALITY CONTROL

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CONTENTS

QUALITY CONTROL	3
CONTENTS	4
INTRODUCTION	5
OFFICE GENERAL VENTILATION	6
TOILET EXTRACT VENTILATION	7
KITCHEN EXTRACT VENTILATION	7
GROUND FLOOR RECEPTION AND MEZZANINE VENTILATION	8
GROUND FLOOR EVENT SPACE VENTILATION	9
MEZZANINE LEVEL SHOWER VENTILATION	10
MEZZANINE LEVEL TENANT PLANT VENTILATION	10
BIN STORE VENTILATION	10
GENERATOR ROOM VENTILATION	10
TRANSFORMER ROOM VENTILATION	10
FRESH AIR VENTILATION RATES	11



INTRODUCTION

This report has been developed to provide outline details of the initial ventilation strategy for the proposed development of Baring Street Office 2 as part of the wider Mayfield Development.

The proposed scheme will deliver 13 floors of speculative office space. At ground floor and mezzanine level it is proposed to provide a double height reception area, possible flexible event space and café/ retail space.

This report presents the proposed strategy for ventilation provision for the scheme which has been developed along with the other design team members.

OFFICE GENERAL VENTILATION

General mechanical supply and extract ventilation shall be provided to all of the speculative office areas proposed at floors 1 – 11. Two air handling units will be located at roof level. One air handling unit will serve the west wing of the building and the other AHU will serve the east wing. This will allow each office floor plate to be split into two tenanted areas.

Roof Plant Item	Number	Description
AHU West Wing	1	F7 Filter (supply) G4 Filter (extract) Thermal Wheel LTHW heating and CHW cooling coils Fresh Air Requirement =18.5m ³ /s Cooling Load = Temper Air Only Heating Load = Temper Air Only
AHU East Wing	1	F7 Filter (supply) G4 Filter (extract) Thermal Wheel LTHW heating and CHW cooling coils Fresh Air Requirement =15.1m ³ /s Cooling Load = Temper Air Only Heating Load = Temper Air Only

Incoming supply air will be filtered and tempered by the air handling units and distributed through galvanised ductwork into the building. As the AHUs are at roof level the intake air will be taken from height i.e. circa 50m above road level to improve the intake air quality.

Supply and extract distribution ductwork shall be routed via the designated east wing and west wing service risers to discharge fresh air onto the rear of exposed indoor ducted Fan Coil Units. Vitiating air will be extracted directly out of the office area via bellmouth ductwork connections and discharged to atmosphere via the roof mounted air handling plant.

The fresh air and exhaust air distribution ductwork shall be routed exposed at high level through the holes within the structural cellular beams.

Fire dampers shall be provided within the ventilation ductwork to maintain the integrity of fire compartmentation in accordance with the Fire Strategy and the requirements of Building Control.

Supply and extract ductwork will be thermally insulated where it passes through spaces that are at different temperatures to that of the transferred air or where external to the building.

Each air handling unit shall be appropriately insulated and plastic coated to suit the external environment.

Room side and atmosphere side attenuators shall be provided to meet the requirements detailed in the acoustic report.

Each air handling unit shall be complete with integral controls that shall govern the operation of the unit. Each air handling unit integral controller shall sit on the BMS network as an outstation and enable fault reporting, monitoring, operation and set point control via the BMS.

TOILET EXTRACT VENTILATION

Mechanical toilet extract systems are proposed to be provided to extract air from the WC's within the core at each level of the building in line with Approved document F to limit moisture build up and foul smells.

Two number extract fans will be provided. One fan will serve the west side of the core and the other shall serve the east.

Roof Plant Item	Number	Description
Toilet extract plant	2	2m ³ /s

Each central extract system shall incorporate an external roof mounted twin centrifugal extract fan complete with auto changeover (duty share) integral controls. The exhaust from these systems will be discharged to atmosphere with due regard to adjacent air inlets to avoid foul smells recirculating.

The extract ductwork installation shall be contained within the false ceiling with extract grilles/valves provided over cubicles and ranges of wash hand basins and urinal bowls.

Replacement air in to all toilet and changing areas shall be provided from the adjacent lobby area via transfer ducts.

KITCHEN EXTRACT VENTILATION

At this stage the commercial kitchen provision is unknown. For future flexibility, 2 no kitchen extract systems have been proposed. One in the east wing to service a potential commercial kitchen at ground floor level and one in the west wing to service a potential commercial kitchen located on one of the office floor plates adjacent to the core.

Currently space has been allowed for at roof level for 2 number kitchen extract fans and air filtration. Should a retail tenant or commercial tenant wish to install a commercial kitchen, the kitchen extract plant at roof level shall be provided as part of the tenant CAT B fit out and shall be designed to suit the type of cooking being undertaken. The kitchen extract systems would discharge vertically at high level with efflux cones to achieve an efflux velocity of 15 m/s.

As part of the base build, fire rated ductwork shall be installed in the risers indicated on the stage 2 drawings in line with DW/172. The fire rated kitchen extract duct in the east wing shall be installed from roof level down to ground floor level within the riser to allow a future tenant to extend ductwork outside of the riser to service a commercial kitchen at ground floor level. The fire rated kitchen extract duct in the west wing shall be installed from roof level down to level 1 to allow a future tenant to modify and extend the ductwork to serve a commercial kitchen on any of the office floorplates within the west wing of the building adjacent to the core.

GROUND FLOOR RECEPTION AND MEZZANINE VENTILATION

General mechanical supply and extract ventilation shall be provided to serve the following areas:

- Ground Floor Reception
- Potential Ground Floor Café
- Circulation Space
- Mezzanine Level Lobby
- Mezzanine Potential Retail Space

An air handling unit complete will be located within the AHU plantroom at mezzanine floor level.

As a result of the air quality analysis undertaken, Incoming supply air will be filtered with the provision of both particulate filters and NOx filters because the intake air is taken from the façade at Mezz level.

Ground Floor Plant Item	Number	Description
AHU – Reception / Cafe	1	F7 Filter (supply) G4 Filter (extract) NOx Filtration Thermal Wheel LTHW heating and CHW cooling coil Fresh Air Requirement =0.6m3/s Air Flow to meet cooling requirement =3m3/s

Supply and extract distribution ductwork will be routed from the plant room to each space exposed at high level. The ductwork shall terminate at supply and extract diffusers and grilles.

Fire dampers shall be provided within the ventilation ductwork to maintain the integrity of fire compartmentation in accordance with the Fire Strategy and the requirements of Building Control.

Supply and extract ductwork will be thermally insulated where it passes through spaces that are at different temperatures to that of the transferred air or where external to the building.

Room side and atmosphere side attenuators shall be provided to meet the requirements detailed in the acoustic report.

The air handling unit shall be complete with integral controls that shall govern the operation of the unit. Each air handling unit integral controller shall sit on the BMS network as an outstation and enable fault reporting, monitoring, operation and set point control via the BMS

GROUND FLOOR EVENT SPACE VENTILATION

General mechanical supply and extract ventilation shall be provided to serve the event space at ground floor. As an auditorium is one of the flexible options being considered at Ground Floor level which is considered to be the most intensive potential use for this space the calculations have been undertaken on this basis.

An air handling unit will be located within the AHU plantroom at mezzanine level.

Incoming supply air will be filtered with the provision of both particulate filters and NOx filters due to the fact that the intake air is taken from the façade at Mezz level in line with the air quality report.

Ground Floor Plant Item	Number	Description
AHU – Auditorium / Conference	1	F7 Filter (supply) G4 Filter (extract) NOx Filtration Thermal Wheel CHW Cooling LTHW Heating Coils

Supply and extract distribution ductwork shall be routed from the plant room to each space exposed at high level. The ductwork will terminate at supply and extract diffusers and grilles.

Fire dampers shall be provided within the ventilation ductwork to maintain the integrity of fire compartmentation in accordance with the Fire Strategy and the requirements of Building Control.

Supply and extract ductwork will be thermally insulated where it passes through spaces that are at different temperatures to that of the transferred air or where external to the building.

Room side and atmosphere side attenuators shall be provided to meet the requirements detailed in the acoustic report.

The air handling unit shall be complete with integral controls that shall govern the operation of the unit. Each air handling unit integral controller shall sit on the BMS network as an outstation and enable fault reporting, monitoring, operation and set point control via the BMS.

MEZZANINE LEVEL EXTERNAL LOUVRES

To provide flexibility as the design progress a band of external louvres will also be provided at high level to the North, East and West façade areas of the reception and flexible fit-out space. This will allow potential future tenants to install local ventilation plant for fresh air within their demise and avoid the use of large central plant.

Any commercial cooking or grease extract will not connect to these louvres as provision for this is on the roof.

MEZZANINE LEVEL SHOWER VENTILATION

Mechanical Ventilation Heat Recovery Units (MVHR/s) shall be installed at high level at mezzanine level above the suspended ceilings complete with either removable ceiling tiles or dedicated access panels to provide extract ventilation and make up air to the shower areas and associated changing facilities at mezzanine level. As a result of the air quality analysis undertaken, particulate and NOx filtration shall be provided due to the fact that the intake air is taken from the façade at Mezz level.

The shower room ventilation system/s shall be controlled via the BMS based on occupancy sensors located within each space. The system shall operate at a trickle ventilation rate until such time that any presence sensor detects occupancy. When occupancy is detected the system shall increase in duty to provide the full supply and extract ventilation. This full duty shall operate for a period of time after occupancy (run on timer) at which time it shall again reduce to provide a trickle ventilation system. The ventilation unit shall incorporate integral inverter controls for efficient system balancing and control of trickle/duty flows. Fault signals shall be relayed back to the BMS by the fan integral controller.

Supply and extract ductwork shall be extended from the MVHR unit and shall terminate at air valves located within the ceiling in each space. Intake and exhaust ductwork shall be extended from the MVHR unit to the façade to terminate at active sections of the louvred south facade.

MEZZANINE LEVEL TENANT PLANT VENTILATION

Full height louvres shall be provided in the façade of the tenant plant and comms room cooling plant area to provide sufficient air flow to discharge the heat rejected from the proposed external condensers in the area.

BIN STORE VENTILATION

An extract fan shall be installed at high level within the bin store to provide mechanical extract ventilation to the bin store only.

Extract ductwork shall be extended from the extract fan and shall terminate at extract grilles located at high level. Exhaust ductwork shall be extended from the extract fan unit to the façade and terminate at active sections of the louvred south facade.

GENERATOR ROOM VENTILATION

The current proposal for the life-safety generator is to locate it on the roof. The generator would be a containerised unit with intake and exhaust air provided as part of the packaged system.

TRANSFORMER ROOM VENTILATION

A louvred façade shall be provided to all of the transformer rooms at ground floor level in line with DNO requirements.



FRESH AIR VENTILATION RATES

Space	Fresh Air Ventilation Rates
Office Areas	14 l/s/person @ 1:10m ²
Ground Floor Reception	10 l/s/person
Ground Floor Flexible Event Space	10 l/s/person
Ground Floor Café / Co-working	10 l/s/person
Mezz Level Galleried retail space	10 l/s/person
Bin Store	5 l/s/m ²
Showers	10 ACH
Toilets / WCs	6 ACH



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