



**BRUNSWICK PLACE,  
MANCHESTER**

**M&E STATEMENT,  
INCLUDING  
VENTILATION AND  
EXTRACTION**

**Client: Maryland Securities Ltd**

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## 1. Introduction

The following document outlines the ventilation strategy for the proposed residential development at:

Brunswick Place, Manchester, M40 7EZ

### 1.1. Site description

The site is located in the New Islington area of Manchester to the East of the city centre and close to the Etihad Campus.

The site currently consists of a listed mill building to the North East and a largely cleared plot to the South West. An existing 3 storey building currently sits on the corner of Beswick Street and Bradford Road.

The existing main Mill building consists of ground plus 6 storeys with a number of smaller structures attached. The building incorporates a central courtyard area.

The adjacencies to the proposed development site are as follows:

North East:	Existing buildings
South East:	Ashton Canal
North West:	Bradford Road
South West:	Beswick Street

### 1.2. Development description

The proposed development comprises two parts as follows:

#### Brunswick Mill Conversion

The renovation and conversion of the existing listed Mill building into residential apartments, retail tenancy fitout areas, amenity space and car parking.

#### New Build

The construction of two purpose built multi storey residential building ranging from 4 storey to 7 storey. The proposed development will include residential apartments, retail tenancy areas, amenity space and car parking.

Both buildings will incorporate cycle storage, bin storage and plantroom space at ground floor level.

The project proposals have been reviewed and it is considered that both the refurbishment and new build elements of the scheme can be constructed utilising sustainable design methods to ensure that the Manchester City Council aspirations for good quality building stock are met.

During the design period the ventilation proposals will be examined in detail and will be the subject of more refined SAP and thermal modelling analysis. This detailed analysis will be based on the actual details intended for construction to confirm and / or modify the information below. The final results can then be used to define the final Mechanical, Electrical and Public Health services strategy for the scheme.

## 2. Terms of Reference

This M&E Statement seeks to demonstrate the design intent and commitment to Manchester City Council's development aspirations. The strategy has been developed using the following regulations and planning policies:

This Environmental Standards Statement seeks to demonstrate that the design intent for the scheme as well as the commitment to aligning with Manchester City Council's aspirations and wishes to deliver sustainable developments. The environmental and energy strategy for the scheme has been developed using the following regulations and planning policies:

### 2.1. Regulations and Legislation

#### 2.1.1. Building Regulations

The Building Regulations Approved Document Part L (Conservation of Fuel and Power) 2013 outline the requirements for reductions in carbon emissions required for new developments.

New Build domestic / residential elements of the scheme have been initially reviewed against the requirements of Building Regulations Part L1A utilising SAP assessment software.

New Build landlord and commercial elements of the scheme have been initially assessed against the requirements of Building Regulations Part L2A utilising the SBEM assessment software / IES dynamic thermal modelling software.

Refurbishment domestic and non-domestic areas are assessed against Building Regulations Part L1B and L2B respectively.

#### 2.1.2. Future Homes Standard and Future Buildings Standard Consultation

The Future Homes Standards was the first stage of a two-part consultation on proposed changes to Part L (Conservation of fuel and power) of the Building Regulations. The consultation contained proposals for changes to the energy efficiency standards for new homes, as well as the wider impacts of Part L, including changes to Part F (Ventilation), its associated Approved Document guidance, airtightness and improving the 'as-built' performance of the constructed home.

The second stage of the two part consultation was published in January 2021 as the Future Buildings Standard. It builds on the Future Homes Standard consultation by setting out energy and ventilation standards for non-domestic buildings, existing homes and includes proposals to mitigate against overheating in residential buildings.

It sets out proposals for an overall Future Buildings Standard, which provides a pathway to highly efficient non-domestic buildings which are zero carbon ready, better for the environment and fit for the future.

The second consultation process closes in April 2021. Whilst the outcomes of the consultation processes will be incorporated into future regulations, the future homes standard and future building standard requirements are not currently required to be incorporated into new developments.

### 2.1.3. SAP 10 Consultation

SAP 10.1 was published in July 2018 to coincide with the publication of the Future Homes Standard regarding proposed changes to the thermal modelling process for dwellings.

The most significant proposals within the SAP 10 consultation documents are as follows:

- **Changes to fuel factors:** a significant reduction in the electricity fuel factor (from 0.519 kgCO<sub>2</sub>/kWh to 0.233 kgCO<sub>2</sub>/kWh). The revised figure is equivalent to the natural gas fuel factor operating at a 90% efficiency (0.21 kgCO<sub>2</sub>/kWh / 0.9 = 0.233 kgCO<sub>2</sub>/kWh).
- **Heating patterns:** heating profiles adjusted to operate consistently for all days of the week
- **Lighting Energy:** Allowance for more accurate lighting inputs to be used.
- **Thermal Bridging:** removal of Accredited Construction Details
- **Hot Water Demand:** standardised usage changed to more specific flow rate for actual fittings.
- **PV Panel Details:** PV panels will only be accounted for when directly connected to apartments.
- **Overheating:** natural ventilation sources consider the associated acoustic and security issues.
- **Thermal Mass:** thermal mass needs to be calculated for each development in lieu of previous default options.

Whilst the guidance has been published and adopted by some planning authorities (i.e. the Greater London Authority via the London Plan), the requirements will not come into force nationally until the Building Regulations are revised. In the meantime, SAP 2012 remains the incumbent protocol for assessing Building Regulations compliance for dwellings.

## 2.2. National Planning Policy

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other developments can be produced. The latest revision of the policy document was presented to parliament by the Secretary of State for Housing, Communities and Local Government in February 2019, replacing the previous March 2012 revision and previously published revisions from July 2018. This policy covers the following sections to be considered alongside local policies:

- 1 Introduction.
- 2 Achieving sustainable development.
- 3 Plan-making.
- 4 Decision-making.
- 5 Delivering a sufficient supply of homes.
- 6 Building a strong, competitive economy.
- 7 Ensuring the vitality of town centres.
- 8 Promoting healthy and safe communities.
- 9 Promoting sustainable transport.
- 10 Supporting high quality communications.
- 11 Making effective use of land.

- 12 Achieving well-designed places.
- 13 Protecting Green Belt land.
- 14 Meeting the challenge of climate change, flooding and coastal change.
- 15 Conserving and enhancing the natural environment.
- 16 Conserving and enhancing the historic environment.
- 17 Facilitating the sustainable use of minerals.

The policy seeks to pursue economic, social and environmental objectives to achieve sustainable design.

Section 14 seeks to promote the reduction of carbon emissions through the implementation of Renewable and Low to Zero Carbon technologies.

Section 15 seeks to minimise pollution sources including air pollution taking consideration of Air Quality Management Areas (AQMAs) and Clean Air Zones.

### **2.3. Manchester City Council Core Strategy**

The Manchester City Council, Manchester Core Strategy 2012 to 2027 document and planning policies have been utilised for assessment as follows. The following policies are extracted from the Manchester Core Strategy Document:

#### **2.3.1. Policy EN 4 - Reducing CO2 Emissions by Enabling Low and Zero Carbon Development**

The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO2 emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed:
  - to reduce the need for energy through design features that provide passive heating, natural lighting and cooling.
  - to reduce the need for energy through energy efficient features such as improved insulation and glazing
  - to meet residual energy requirements through the use of low or zero carbon energy generating technologies
- Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.
- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.



- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.
- The use of building materials with low embodied carbon in new development and refurbishment schemes.

### 2.3.2. Policy EN 6 - Target Framework for CO<sub>2</sub> reductions from low or zero carbon energy supplies

Applications for residential development of 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO<sub>2</sub> emissions for all phases of the development.

Developments smaller than the above threshold but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).
- Target 2 Electricity intense areas: Locations where the predominant building type has an all electric fit-out such as retail units and leisure complexes.
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.

Domestic CO<sub>2</sub> emissions reduction targets (Table 12.1)

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target 2: Electricity intense buildings	+15% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Non-domestic CO<sub>2</sub> emissions reduction targets (Table 12.2)

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible, a 15% increase on Part L 2010
Target 2: Electricity intense buildings (Applies to commercial uses with a high proportion of emissions from electricity use (>45 kg CO <sub>2</sub> /m <sup>2</sup> ))	+10% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Where the CO<sub>2</sub> emissions reduction required under any future revision to Part L of the building regulations becomes greater than the '% Minimum requirement', the reduction required under building regulations would apply.

Where the Council identifies an 'allowable solution', for example within an energy proposals plan, that would produce higher carbon reductions at no extra cost than that of achieving the '% Minimum requirement' (or required under building regulations if greater) the higher percentage reduction will be required. The cost comparison is based on the cost of incorporating the 'allowable solution' at design stage.

The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO<sub>2</sub> mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.

Guidance on what the energy statement should contain and how to decide which target applies to a development proposal is given in Appendix A of the policy.

### 2.3.3. Policy EN 6 implementation and precedents

Policy EN6 sets out details of the carbon reduction targets to be aimed for within the design of new developments. These are indicated above in Table 12.1 and 12.2 extracted from the Core Strategy Document. These targets are set out as improvements over basic compliance with the Approved Document Part L 2010.

As part of the government's long term carbon reduction strategy, Approved Document Part L of the Building Regulations was significantly revised in 2013. The implications of the 2013 revisions were to impose more stringent criteria for compliance. As a result of this, buildings which achieve compliance with the 2013 Part L requirements are widely considered to be achieving the following improvements over the original 2010 Part L criteria:

- Domestic: 6% improvement over 2010 Part L criteria
- Non-domestic: 9% improvement over 2010 Part L criteria

Additional carbon performance improvements between these base line levels and those set out in Policy EN6 (Tables 12.1 and 12.2) are considered within the building assessment.

#### **2.3.4. Policy EN 8 - Adaptation to Climate Change**

All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability.
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways
- The need to control overheating of buildings through passive design
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation

Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO<sub>2</sub> mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.

#### **2.3.5. Policy EN 16 – Air Quality**

The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas.

#### **2.3.6. Policy DM 1 - Development Management**

All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

- Appropriate siting, layout, scale, form, massing, materials, and detail.
- Impact on the surrounding areas in terms of the design, scale, and appearance of the proposed development. Development should have regard to the character of the surrounding area.
- Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.
- Accessibility: buildings and neighbourhoods fully accessible to disabled people, access to new development by sustainable transport modes.
- Community safety and crime prevention.

- Design for health.
- Adequacy of internal accommodation and external amenity space.
- Refuse storage and collection.
- Vehicular access and car parking.
- Effects relating to biodiversity, landscape, archaeological or built heritage.
- Green Infrastructure including open space, both public and private.
- The use of alternatives to peat-based products in landscaping/gardens within development schemes.
- Flood risk and drainage.
- Existing or proposed hazardous installations.
- Subject to scheme viability, developers will be required to demonstrate that new development incorporates sustainable construction techniques as follows (In terms of energy targets this policy should be read alongside policy EN6 and the higher target will apply):
  - a) For new residential development (note that the requirement to meet Code for Sustainable homes targets has been removed from planning policy)
  - b) For new commercial developments to demonstrate best practice which will include the application of the BREEAM (Building Research Establishment Environmental Assessment Method) standards. By 2019 provisions similar to the Code for Sustainable Homes will also apply to all new non-domestic buildings.

### **2.3.7. Guide to Development in Manchester 2007 Supplementary Planning Document**

The Core Strategy requires that all new residential developments should accord with the design guidance set out in the Supplementary Planning Documents (SPD). The Guide to Development in Manchester SPD was adopted on 11th April 2007 and supports and enhances the ongoing shaping of the City by providing a set of reasoned principles which will guide developers, designers, and residents.

### **2.3.8. Greater Manchester Spatial Framework Revised Draft 2019**

Greater Manchester Spatial Framework Revised Draft 2020 supports the council's strategies which include underpinning the ambition to become a carbon neutral city 2038.

Objective 7 of the document ensures Greater Manchester is a more resilient and carbon neutral city region which will:

- Promote carbon neutrality of new development by 2028.

- Promote sustainable patterns of development that minimise the need to travel and contribute to cleaner air.
- Locate and design development to reduce car dependency.
- Facilitate provision of infrastructure for cleaner vehicles.
- Improve energy efficiency and the generation of renewable and low carbon energy.

Policy GM-S2 is a policy that supports objective 7 and has the aim of delivering a carbon neutral Greater Manchester no later than 2038. Part of this policy is to take a positive approach to renewable and low carbon energy schemes. Keeping fossil fuels in the ground. It also provides an energy an energy hierarchy as follows:

- i. Minimise energy demand.
- ii. Maximise energy efficiency.
- iii. Utilise renewable energy.
- iv. Utilise low carbon energy; and
- v. Utilise other energy sources.

The policy has an interim requirement that all new dwellings should seek a 19% carbon reduction against Part L of the 2013 Building Regulations, along with a minimum 20% reduction in carbon emissions (based on the dwelling emission or building emissions rates) through the use of on site or nearby renewable and / or low carbon technologies.

Policy GM-S4 considers increasing resilience so that development of Greater Manchester will be managed so as to increase considerably the capacity of its citizens, communities, businesses and infrastructure to survive, adapt and grow in the face of physical, social, economic and environmental challenges.

One of the measures includes designing indoor and outdoor environments to provide a reduction and respite from more extreme temperatures and winds associated with climate change and greater urbanisation.

Policy GM-S6 tackles air pollution and improving air quality focusing particularly on locations where people live, where children learn and play, and where air quality targets are not being met.

One of the measures includes restricting and carefully regulating developments that would generate significant point source pollution such as some types of industrial activity and energy generation.

### **2.3.9. Manchester City Councils Climate Emergency Declaration 10th July 2019**

Manchester City Council unanimously declared a climate emergency in July 2019 and has committed to the goal of reducing the city's climate emissions to net zero by 2038, or earlier if possible, which is at least 12 years ahead of the current national target.

For the purpose of this document regulated carbon emission metrics will be reviewed and analysed, however; the trends shown will also apply to unregulated carbon emissions.

### **2.3.10. Manchester City Council Climate Change Framework**

Manchester Climate Change Framework for 2020-2025, builds on the Draft Manchester Zero Carbon Framework 2020-38, which was published in February 2019 and Manchester City Council's declaration of a climate emergency in July 2019. This gives a target for the 2020-25 period to reduce direct CO<sub>2</sub> emissions by at least 50% to stay within carbon budget targets. This is to support Objective 1 of the document which includes staying within our 15 million tonne carbon budgets for 2018-2100.

The Framework recognises that the UK gas supply will take a long time for decarbonisation with biogas and / or hydrogen and that to stop using gas will promote decarbonisation because of the opportunity available for reducing carbon emissions associated with grid electricity. Therefore, moving buildings to electric heating, air source heat pumps and zero carbon district heating provide a more immediate carbon reduction benefit.

The Framework wants to ensure new developments in the city do not eat into our limited carbon budgets and add to the already significant retrofit challenge. This means that we need them to be built and operated to zero carbon standards as soon as possible.

### **3. Mechanical, Electricity and Public Health Strategy**

#### **3.1. Plantroom and Riser Strategy**

It is envisaged that individual services plant rooms will be provided within each block to facilitate separate ownership of the buildings.

The blocks will be provided with the following plant spaces:

- HV Intake / Transformer Room adjacent to the old Engine House of the existing Mill (Approx size 6m x 4.5m)
- LV Electrical switch room within the old Engine House of the existing Mill
- Electrical meter room (Ground Floor Level of each block)
- Utility intake ducts to each commercial unit
- Telecoms / Data provider intake (Ground Floor Level of each block)
- Water tank and booster plantrooms within each block
- Photovoltaic panel zones at roof level complete with safe means of maintenance access

The following services risers will be provided within each core area:

- Mechanical pipework riser (in each core)
- Electrical cable riser / distribution board cupboard (in each core)
- Essential electric cable riser / distribution board cupboard (in each core)
- ICT / ELV cable riser (in each core)
- Lift shafts (1No lift for corner block, 2No lifts for Mid-block and 2No Lifts for the Mill block)

#### **3.2. Regulations / Compliance**

It is anticipated that the scheme will be designed and comply with the requirements of all industry standard regulations, acts and guides.

### 3.3. Outline Specification Sections (NBS References)

#### 3.3.1. 50 Disposal Systems

##### 3.3.1.1. 50-10 Drainage collection and distribution systems

###### 50-10-00 Rainwater

Rainwater services to be advised by the architect.

###### 50-10-05 Above Ground Drainage

Fully vented drainage pipe systems will be provided to convey waste from sanitary fittings, appliances, plant drains, safety valve discharges and gullies to the below ground drainage system.

All drainage pipework will be laid to fall and vented to atmosphere.

Acoustic treatment will be provided to ensure that accommodation noise criteria are achieved.

Soil waste and vent stacks will be provided within dedicated risers / boxing within bathroom and kitchen areas. These stacks will offset to suit changes in floor layout.

Where SWVPs are greater than 5-storeys in height, separate below ground drainage pop up connections will be provided for ground floor areas. Stacks from upper floors will offset to coordinate with the additional ground floor connections and tenancy areas.

Fire collars will be provided wherever drainage pipework penetrates fire rated fabric (walls and slabs).

Access panels will be provided above each slab penetration and rodding eyes at each major change of direction.

#### 3.3.2. 55 Piped Supply Systems

##### 3.3.2.1. 55-40 Water Supply Systems

###### 55-40-40 Hot & Cold Water Supply Systems

###### Incoming Water Supply Systems

Separate incoming mains cold water supplies will be derived from the local United Utilities infrastructure for each building (3No total).

The scheme will include for any utility reinforcement works required to accommodate the development.

The incoming MDPE pipework will be routed to the water tank and booster room within each respective block where a central stop cock, double check valve, water conditioner (if required) and building isolation valve will be provided.

The incoming supplies will feed tanks as follows:

- Corner Block: 1No combined domestic water and sprinkler water tank
- Mid Block: 1No combined domestic water and sprinkler tank



- Mill Conversion: 2No tanks; separate domestic water and sprinkler tanks

The tanks will be sectional GRP and mounted on concrete piers / levelling steels to meet manufacturer's requirements.

#### Pumped Cold Water Supply Systems

From the storage tank outlets, domestic water booster sets (or combined sprinkler and domestic water booster sets if sprinklers are required) will be provided to serve each block. The booster sets will be provided with backup (essential) power supplies as outlined within the electrical sections below.

The pipework from each booster will distribute through the ground floor ceiling void (or exposed within car park areas) to central riser locations within each core. Each riser will be complete with surge arrestor.

Pressure reducing valves will be provided at each floor to prevent excessive outlet pressures at lower floors whilst maintaining sprinkler head pressure requirements (if sprinklers are required).

Pipework will be routed within each corridor ceiling void from the riser to enter each apartment above the entrance door.

Each apartment / dwelling will be provided with an incoming domestic water pipe complete with two, inline isolation valves, one accessible from the apartment hallway (services cupboard) and one accessible from the landlord corridor outside the apartment.

Where sprinkler provision is identified by the fire engineer, a second incoming water pipe will be provided to the identified apartments complete with locked open isolating valves. Sprinkler heads will be provided throughout the required apartments and building areas as identified by the fire engineer and sprinkler specialist.

Allowance will be made within the system to flush the sprinkler circuit within each apartment as required.

All pipework within exposed / unheated areas will be trace heated to protect against freezing.

All pipework will be installed in copper and insulated throughout. The use of plastic pipework is not considered appropriate if dual usage of the system for domestic water service and sprinkler purposes is required.

All bin stores, plant rooms and external hose connections will be provided with appropriate backflow protection for fluid category 5 systems (either Reduced Pressure Zone valves or packaged break tank and booster).

All cold water systems will be flushed and chlorinated prior to final connection to the utility service.

#### Instantaneous Hot Water Supply Systems

Each concierge room, cleaner's cupboard and landlord area requiring domestic hot water will be provided with a local unvented type or instantaneous point of use water heater as appropriate.

#### Direct Hot Water Storage Supply Systems

Each apartment / dwelling will be provided with electrically generated hot water systems as follows:

- One bedroom apartments will be provided with instantaneous electric water heaters.

- Two and three bed apartments and town houses will be provided with a dedicated unvented hot water cylinder with electric immersion heater(s).

#### 55-40-50 Irrigation Systems

No allowance is currently made for external irrigation systems within the MEP strategy.

### **3.3.2.2. 55-60 Gas Supply Systems**

#### 55-60-55 Natural Gas Supply Systems

There are currently no proposals to provide natural gas services to the new development.

Any commercial unit natural gas requirements will be derived from independent utility connections. These will be detailed and applied for as part of the relevant future fitout works contracts.

### **3.3.2.3. 55-85 Piped Fire Suppression Systems**

#### 55-85-20 Dry Risers

Dry risers will be provided at each stair core as identified by the fire engineer and architect. Each stair core will be provided with a dual connection inlet box complete with drain.

Interconnecting pipework will run from the inlet box to the stair location where a landing valve will be provided at each floor level.

A surge arrestor will be provided at the top of each riser.

#### 55-85-30 Fire Hydrants

The existing hydrant provision around the site will be reviewed during the detail design phase to determine whether any additional provision is required within courtyard / public realm areas in order to comply with regulations and British Standards.

#### 55-85-75 Sprinkler Systems

Sprinkler provision is currently envisaged for the mill conversion, middle block and corner block as identified by the fire engineer. It is envisaged that sprinkler provision will be required as follows:

- Corner block: BS 9251 combined domestic and sprinkler system (standard fire duration)
- Middle Block: BS 9251 combined domestic and sprinkler system (extended fire duration)
- Mill Building: BS12845 commercial sprinkler system for ground floor retail units. BS9251 sprinkler tank for residential elements. Combined tank for domestic and commercial sprinkler system. Separate domestic cold water storage.

Initial thoughts are that category 3 systems will be required.

Where required, pipework will be sized to accommodate the combination of domestic water and sprinkler flows.

Where required, multi pump inverter driven booster sets will be provided in each plantroom complete with n+1 pumps and backup essential power supply as outlined in the electrical sections.

### **3.3.3. 60 Heating, Cooling & Refrigeration Systems**

#### **3.3.3.1. 60-45 Heating and cooling systems**

##### 60-45-40 Heating systems

It is proposed that electric heating systems are utilised throughout the development. This will require a passive envelope (fabric first) approach to be adopted in order to meet SAP / Part L carbon emission targets.

Landlord areas will also be heated to assist the apartments to pass the SAP requirements. This will require the landlord corridor and foyer areas to comply with the requirements of Building Regulations Part L2A for new build areas and L2B for refurbished area in the existing Mill block.

Each apartment will be complete with wall mounted panel heaters within each room complete with local switched fused spur.

A central LOT 20 controller will be provided within each main living area to enable the heating system with local thermostat control within each room.

Corridor and landlord areas will be provided with wall mounted panel heaters or radiant panels complete with local thermostats.

### **3.3.4. 65 Ventilation and Air Conditioning Systems**

#### **3.3.4.1. 65-10 Ventilation systems**

##### 65-10-10 Car Park Ventilation systems

Car park ventilation will not be required for this scheme.

##### 65-10-75 Smoke extract and control systems

A combination of natural and mechanical smoke ventilation shafts will be provided in line with the fire engineer's requirements including Automatic Opening Vents (AOVs) and motorised smoke dampers as required.

Smoke extract fans will be located at the top of the shafts or at roof level as identified by the fire engineer.

Smoke extract and control systems will be provided as identified by the fire engineer:

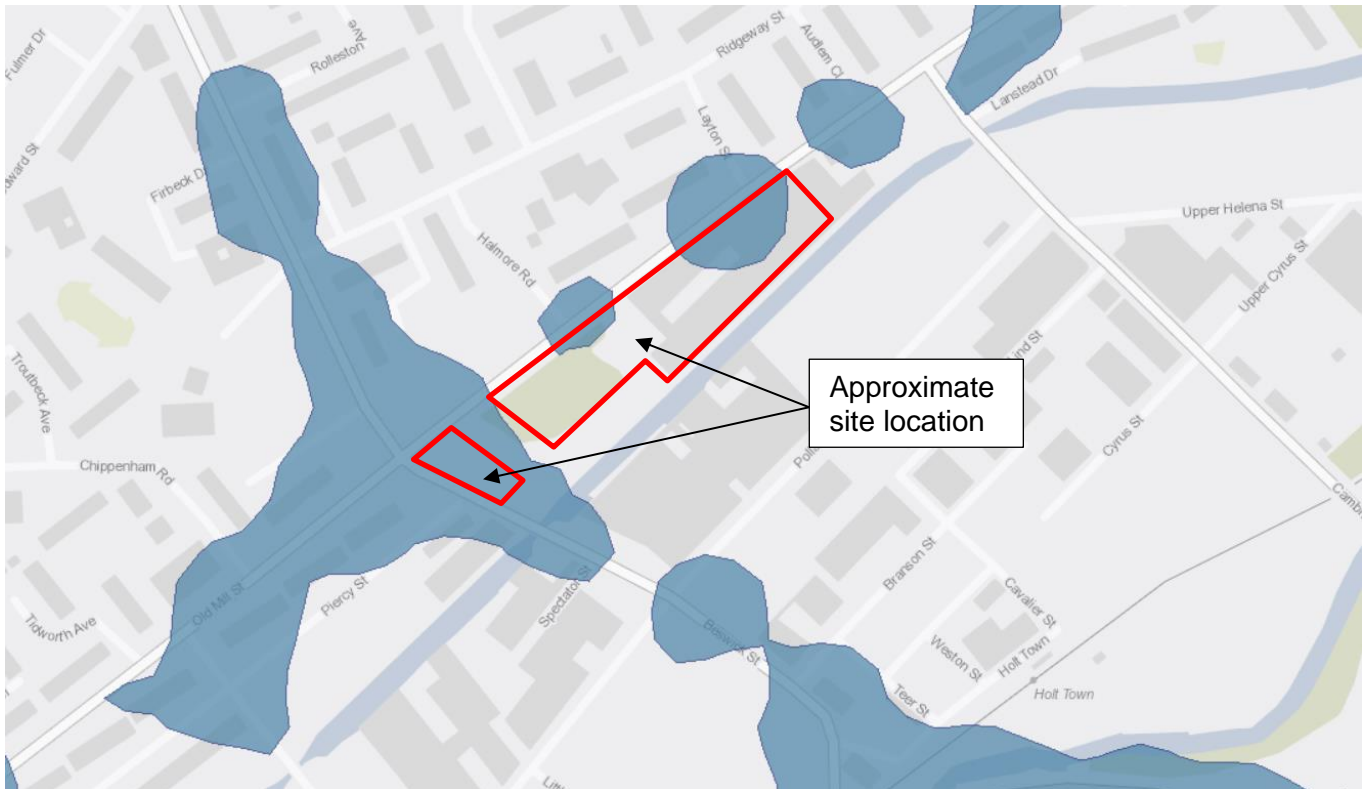
- Corridor Automatic Opening Vents (as indicated in the fire engineer's report / architect's drawings)
- Stairwell Automatic Opening Vents (within each stairwell)

## 65-10-95 Ventilation systems

### Air Quality Management Area

Initial review suggests that the proposed development site is partly located with the main Greater Manchester Air Quality Management Area (AQMA) with both Beswick Street and Bradford Road falling into the AQMA. As such, measures will be required to mitigate pollution within the occupied areas of the development.

Proprietary NO<sub>x</sub> / Carbon filtration units will be provided within the fresh air inlet ductwork for apartments affected by pollution issues based on the advice of an air quality specialist. These will absorb air borne particulates and help to minimise the effects of pollution on the internal environment.



Preliminary Air Quality Management Area information from the DEFRA AQMA Interactive Map

The extent of filtration unit provision will be finalised at the next stage of design.

Apartment Ventilation

Apartment ventilation will be provided via high efficiency Mechanical Ventilation Heat Recovery (MVHR) systems in line with Building Regulations Part F requirements (System 4). These systems will assist compliance with the Building Regulations Part L (Conservation of Fuel and Power) by reducing ventilation system energy consumption and carbon dioxide emissions.

Extract air will be drawn from bathrooms, kitchens and wet areas in line with the requirements of Building Regulations Part F with supply / makeup air delivered into living accommodation and bedrooms.

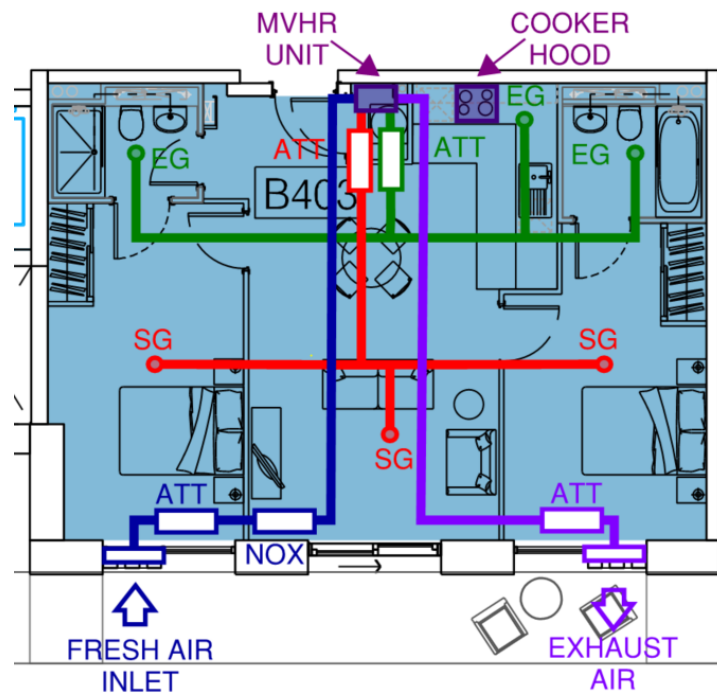
Ductwork will be proprietary plastic type with fire collars where penetrations are made through fire rated walls.

Recirculating cooker hoods will be provided above oven / hob positions complete with carbon filtration.

Fresh air inlet and exhaust ductwork will be insulated and vapour sealed to prevent condensation build up.

All MVHR unit duct connections will be provided with in line attenuators (i.e. fresh air, supply air, extract air and exhaust air) to limit the transmission of air borne noise through the ductwork system.

Internal grilles will be circular disc valve type appropriate for system balancing.



Indicative Apartment Ventilation Strategy

Key

- SG – Supply Grille
- EG – Extract Grille
- ATT – Attenuator
- NOX – NOX / Carbon Filter
- MVHR – Mechanical Ventilation Heat Recovery

New Building Apartment Fresh Air / Exhaust

Fresh air inlet and exhaust for the new building will be routed from the external façade as indicated on the indicative plan above. The proposal for apartment ventilation is to utilise either:

- a) louvres integrated into the window unit or
- b) grilles located in the soffit of the window reveal

Listed Mill Conversion Apartment Fresh Air / Exhaust

Fresh air inlet and exhaust for the mill conversion will be routed from roof level to avoid penetrations through the listed façade. The proposal for apartment ventilation is to provide vertical risers to accommodate fresh air inlet and exhaust requirements utilising roof mounted terminals.



Mill building apartment mechanical ventilation risers to accommodate fresh air inlet and exhaust air ductwork from ground floor to roof.

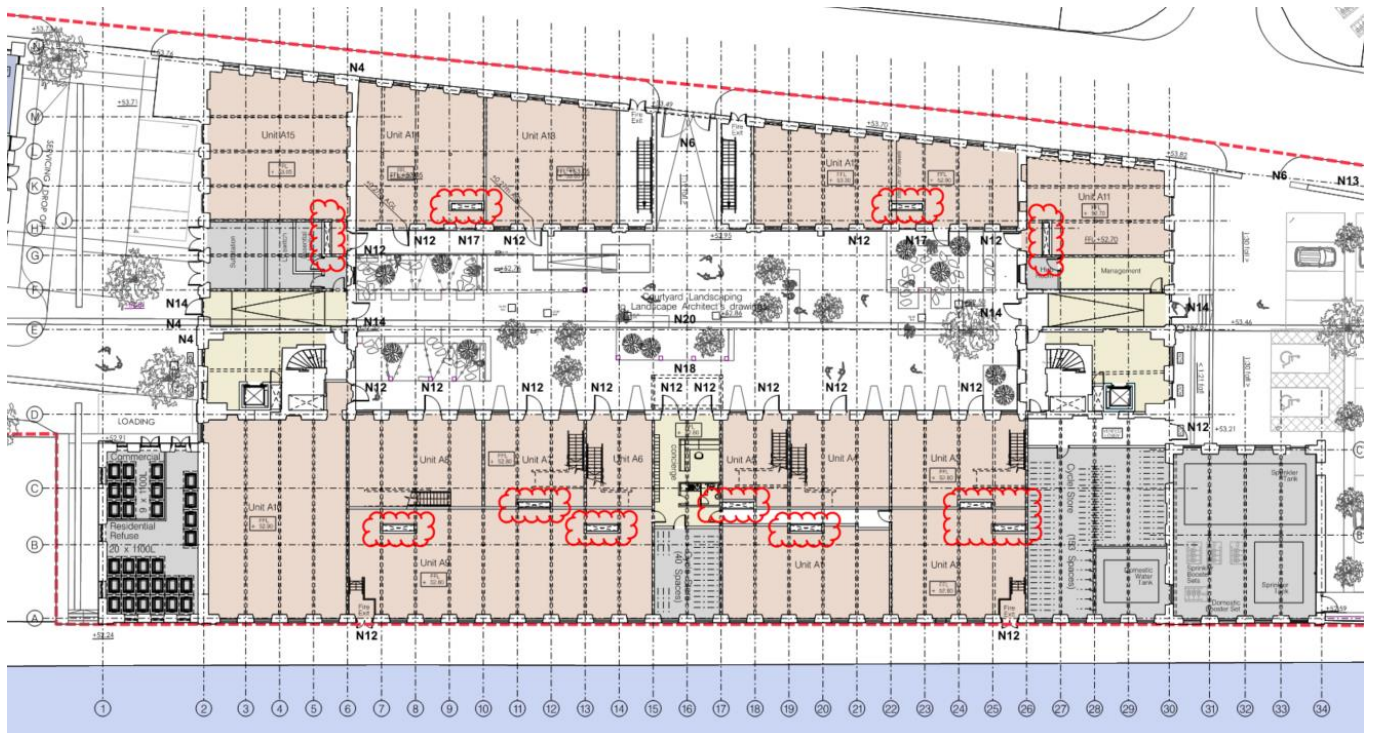
### Commercial Unit Ventilation

The Commercial units within the new Corner Building and listed Mill Conversion are proposed to be primarily naturally ventilated via openable windows.

However, if additional ventilation is required within the commercial units, provision has been included as follows:

- New build Corner Building: MVHR units to be provided with fresh air and exhaust ductwork routed to louvres located within the façade.
- Listed Mill Conversion: provision has been included for fresh air and exhaust ductwork risers from ground floor to roof level to serve MVHR units located within the tenancy area as indicated on the plan image below. A clear route will be left from the top of each riser to the ventilation equipment maintenance zone.

There is no provision for catering kitchen provision within the new build corner building or listed mill conversion.



Mill building commercial unit mechanical ventilation risers from ground floor to roof.

### Cleaner's Store Ventilation

Cleaner's stores will be provided with local extract which will run continuously. In the new building, these will discharge through the façade. In the existing Mill conversion these will discharge above roof level.

### Refuse Store Ventilation

The main refuse / bin stores located at ground floor level will be provided with a dedicated extract system incorporating ventilated lobbies.

### Acoustic Treatment

The apartments will be designed to satisfy the trickle and boost ventilation requirements via mechanical ventilation heat recovery systems (MVHR). This allows the apartment to be ventilated efficiently during normal operation with heat recovery and summer bypass without the need to open the windows (with the exception of purge ventilation).

Purge ventilation will be achieved via openable windows and / or louvres as required for abnormal ventilation requirements.

Ventilation systems will be selected at appropriate fan speeds to limit case radiated break out noise.

Atmospheric and roomside attenuators will be provided within ductwork branches to minimise air borne noise transfer into the apartments.

External plant will be acoustically treated to minimise acoustic impacts:

- Air Handling Units: Attenuators on all ductwork connections as required to meet acoustic criteria.
- General Fans: Attenuators on all ductwork connections as required to meet acoustic criteria.
- Smoke Extract fans: Intermittent operation so not attenuated.
- Condensers / Chillers for comms room and retail spaces: No treatment anticipated but acoustic packs or acoustic screens can be provided to meet required noise levels.

### Residential Server Room Ventilation

A dedicated forced ventilation system will be provided for each residential server room to prevent the excessive buildup of heat. This will be reviewed during the detail design stage and DX cooling systems provided as a last resort if necessary.

## **3.3.4.2. 65-70 Air Conditioning systems**

### 65-70-45 Air Conditioning systems

It is not currently intended to provide comfort cooling systems within the scheme.

Residential server rooms (one per block) may be provided with single DX cooling condensers as a last resort if forced ventilation systems are not viable.

## **3.3.5. 70 Electrical Systems**

### 70-50-35 High Voltage Site Connection System

High Voltage intake will be provided by the Utility company to dedicated Utility Sub-stations within the old engine room of the existing Mill block.

### 70-50-45 Low Voltage Site Connection System

We would anticipate the Utility company providing LV feeders to each of the blocks terminating in a MOD16 unit, or similar, before connection to a BEMCO / metering arrangement within a central metering room.

The viability of this proposal is currently under review and we will advise as soon as available.



We would anticipate the Utility company providing separate LV feeders to each of the commercial units from either the new substation or an adjacent utility substation.

#### 70-65-35 Generator Systems

Standard practice requires the provision of a generator to service the firefighting stair / lift and smoke ventilation system within each block and may be required to serve the smoke ventilation systems (dependent on equipment provided) within each Block.

The need for the generator maybe reviewed against the strategy within BS 9999 by the fire engineer and this will be advised within the design stage.

#### 70-70-45 Low Voltage Power Distribution System

Sub-main cables will be taken from the Utility Bemco metering arrangement to each of the apartments metal clad consumer unit and to the landlord's main switchboard.

Sub-main cables will emanate from the landlord's main switchboard to serve landlords distribution boards on every third floor.

All sub-main cables will be XLPE/PVC/LSZH cables distributed on galvanised steel traywork within risers and ceiling voids.

#### 70-70-75 Small Power Systems

Communal areas will be provided with power for cleaning and power to ancillary equipment such as fire alarm interfaces, mechanical systems, feed from the nearest landlord's distribution boards.

Apartments will be provided with the following circuits / equipment fed from dedicated apartment consumer unit:

- Electric Hob and Oven Feed
- Kitchen / Dining Ring Main
- Living / Bedroom Ring Main
- Living/Kitchen/Entrance Lighting Radial Feed
- Bedroom Lighting Radial Feed
- Fire alarm Radial Feed

Mechanical ventilation systems being feed from the nearest ring main.

All final circuit cabling will be XLPE/LSZH cabling from distribution boards / consumer units to light and power equipment.

#### 70-80-25 External Lighting Systems

The external lighting will be simple / minimal installation with bulkhead or similar luminaires at each entrance door.

Amenity lighting will be provided to the external areas to illuminate pathways to an acceptable level and increase security.

### 70-80-35 General Lighting Systems

Communal areas will be provided with ceiling mounted down lights to provide illuminance to the required level,

Stairwells we would advocate the provision of ceiling mounted luminaires below landings and half landings, as this assists with any Part L calculations.

Apartment lighting will be recessed down lighting with suitably IP rated luminaires within bathrooms and kitchens.

Consideration will be given to LED lighting, which may be necessary for compliance with the Part L and SAP calculations.

Consideration will be given to automated lighting control to corridors, stairwells, common areas and bathrooms to assist with the Part L and SAP calculations.

### 75-45-85 Telecommunication Systems

External ducts entering the vertical riser provision will be provided for BT provision as and when a tenant requests a service.

Riser space will be provided for BT or equivalent distribution equipment.

### 70-45-90 Television and Radio Distribution System

A terrestrial and sky dish with headend equipment will be provided on the roof / top riser of each core with vertical distribution and horizontal routes available for future fit out as and when a tenant requests a required service.

External ducts entering the vertical riser provision will be provided for cable TV provision as and when a tenant requests a service.

### 70-60-05 Access Control System

An access control voice / video intercom system will be provided between the block entrances and the concierge and between the block entrances and the apartments within that block.

The video system will be available for linking into a smart TV via and external port.

A handset for voice intercom will be provided within each apartment.

### 75-60-10 Closed Circuit Television System

With the view of keeping crime at bay around the building a CCTV system will be review and probably required.

As a minimum with would suggest CCTV should be provided a main entrances / reception areas and that consideration should be given to coverage of the external communal / elevations of the buildings.

### 75-60-40 Intruder Detection and Alarm System

It is not intended to provide intruder detection and alarm system to the individual apartments or the concierge / management spaces.

### 75-65-30 Fire Detection and Alarm System

In accordance with the fire engineer's requirements fire detection and alarm will be provided within each flat to protected entrance hall; this will be a smoke alarm within the hall complying with BS 5839-6.

Fire alarms will be provided within communal areas, plantrooms, risers, and reception areas in accordance with BS 5839-1 and will be an analogue addressable system with loop power sounders and zone isolation basis.

- (b) There is no requirement for sounders in the corridors or stairs as only the people in the fire flat will need to leave the building and call the Fire Service.
- (c) There is a requirement for automatic smoke detection within corridors where an automatic ventilation system is provided.

We would suggest that the Part 6 system and the Part 1 system are linked together such that when a tenant is not in occupancy and fire occurs, that there is an early warning signal to the concierge or external monitoring station.

The Part 1 system (landlord's areas) would be monitored off site via a Redcare line / GRPS signal.

#### 75-65-95 Water Leak Detection

Water leak detection will be provided to minimise potable water consumption.

#### 75-70-05 Assistance Call Systems

Where accessible apartments are to be provided then it may be that assistance call systems need to be considered, and an appropriate monitoring point.

#### 75-75-50 Building Management System

Building Management Systems will be provided in each building to control and monitor plant, utility meters and sub meters.

#### 70-84-45 Lightning Protection

A lightning strike risk analysis will be required for each of the Blocks. However, due to scale and height of the buildings, it is likely that lightning protection system will be required.

We understand that a concrete frame is likely and therefore we would anticipate a roof perimeter Cu tape with cu down conductors concealed within the fabric of the building.

At low level the Cu tape will exit the building and be connected, via a test point to the ground earth rods.

The intervals / quantities of the down conductors will be determined at the next stage.

### **3.3.6. 80 Transport System**

#### 80-40-25 Elevators

Provision for lifts within each block is proposed as follows:

- 2No lifts within the refurbished mill building
- 2No lifts within the mid block
- 1No lift in the corner block

The lifts will need to be a fire fighting lifts due to exceeding the 18m to the upper storeys in compliance with Building Regulations Part B.