



ELEMENT
SUSTAINABILITY

APEX TOWER, MANCHESTER

ENVIRONMENT STANDARDS AND ENERGY STATEMENT

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Maira Azhar Team Lead	Shaun O'Neill Sustainability Consultant	Laurie Wills Director

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ELEMENT
SUSTAINABILITY

phone: 01829 733 444

email: hello@elementsustainability.co.uk

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www: [www: www.elementsustainability.co.uk](http://www.elementsustainability.co.uk)

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1. INTRODUCTION

Element Sustainability has been commissioned by Arrowsmith Investment Ltd. to review the sustainability performance of the proposed Apex Tower Development in Manchester.

This Statement reviews the sustainable design features and appraises the energy strategy of the proposed development, and covers the sustainability appraisal for the two planning applications, as per the following site locations:

- Site A (The Tower Site) – West of the Briton's Protection Public House
- Site B - between the Briton's Protection Public House and the Jury's Inn Hotel

The purpose of this statement is to summarise the relevant policy background and requirements of the Manchester City Council (hereafter referred to as the Council) and demonstrate the ways in which Arrowsmith Investment Ltd have addressed these aims through their proposals.



2. DEVELOPMENT PROPOSALS

2.1 Development Site Description

The application site is located within the Manchester City Centre zone, inside the inner ring road (Mancunian Way), on the Southern side of the city. The site is a short distance from the Rochdale Canal and close to the emerging new part of the City Centre towards First Street on a prominent street junction in close proximity to a number of key buildings and amenities such as the Manchester Central station and the Bridgewater Hall.

As mentioned previously, this Statement will undertake the sustainability appraisal for two sites. These sit along each other (see figure 2.1 for site boundary and context), with the Britons Protection Public House between them. The details of the site are as below:

- Site A (also known as the Tower Site), faces onto the Albion Street (in the West).
- Site B is a long and narrow (5m wide) between the Britons Protection Public House and the Jury's Inn.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The proposal seeks planning approval for a residential development of seventy-two, two bedroom apartments in a twenty six storey tower building. Associated landscaping and ancillary accommodation is also to be included within the planning approval.

Site A will be accessible from Albion Street, with frontages onto Great Bridge Water Street and Trumpet Street. An entrance hall, staff area and space for vertical circulation are provided at ground floor. The proposed



basement has purely been included to house the sprinkler tanks. The first floor is primarily dedicated to ancillary services such as the refuse bin area and storage for cycles. The remaining floors will house the two bedroom apartments. In addition, seventy-two resident plus six visitor cycling spaces as well as two car parking spaces with Electric Vehicle (EV charging points) are proposed for the Scheme.

The following table shows the accommodation summary for Site A.

Table 2.1 – Accommodation Schedule Summary (Site A)

Floor	2 Bed Apartments
Ground	-
Lower Mezzanine	-
Upper Mezzanine	-
2 nd – 25 th Floor	72

It is proposed that Site B will also provide a mixed-use scheme, with office space (152m² of floor area) on the 1 – 2nd floor and four apartments on the 2nd – 4th floor. Site B is accessible by pedestrians from the Great Bridgewater Street. One space for parking (with EV charging) is proposed and located at the rear of building with access from Trumpet Street.

Figure 2.2 – Proposed Ground Floor Layout (Site A)



Figure 2.3 – Proposed Ground Floor Layout (Site B)*Figure 2.4 – Proposed First Floor Layout (Site A)*

Figure 2.4 – Proposed Floor Layout – 2nd to 25th Floors (Site A)



Figure 2.5 – Proposed Floor Layouts (Site B)



3. POLICY REVIEW

3.1 National Planning Policy

The National Planning Policy Framework (NPPF) 2021 states that the planning system should play an active role in guiding development to sustainable solutions. At the heart of the 2021 updated NPPF lies the ‘presumption’ in favour of sustainable development; the golden thread running through plan-making and decision taking. There are three dimensions to sustainable development, as stated within the NPPF: economic, social, and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

An economic role – contributing to building a strong, responsive, and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

A social role – supporting strong, vibrant, and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating beautiful and safe places, with accessible local services that reflect the community’s needs and support its health, social and cultural well-being; and

An environmental role – contributing to protecting and enhancing our natural, built, and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

These dimensions are considered to be mutually dependent with the NPPF, in its entirety, defining sustainable development. The NPPF states that ‘the purpose of the planning system is to contribute to the achievement of sustainable development’ (paragraph 7). It summarises the objective of sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their needs. It goes on to state that at a similarly high level, members of the United Nations – including the United Kingdom – have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being, and environmental protection.

3.2 Local Planning Policy

3.2.1 Manchester Core Strategy

Manchester's Core Strategy (CS) was adopted on 11th July 2012 and is the key Development Plan Document in the Local Development Framework (LDF).

CS Policy DM 1 - Development Management requires all development to have regard to a number of development principles. Subject to scheme viability, developers may be required to demonstrate that new non-domestic development to achieve a BREEAM Rating of ‘Very Good’ or for domestic development to achieve the Code for Sustainable Homes standard¹.

CS Policy EN 4 - Reducing CO₂ Emissions by Enabling Low and Zero Carbon Development requires all development to follow the principle of the Energy Hierarchy, being designed:

¹ On the 25th of March 2015 the Government issued a Written Ministerial Statement setting out the conclusion of the Housing Standards Review. The statement set out a new policy on the application of technical housing standards that applied immediately to all local planning authorities and qualifying bodies. This had a direct effect on the application of existing Code policies, and the setting of new Code policies. The Government elected to remove the Code for Sustainable Homes and incorporate new additional optional Building Regulations on water and access, and a new national space standard.



- 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; and
- To meet residual energy requirements using low or zero carbon energy generating technologies.

CS Policy EN 5 - Strategic Areas for low and zero carbon decentralised energy infrastructure include:

- The Regional Centre, which also includes the Oxford Road Corridor and Eastlands;
- District Centres and associated major development sites;
- Airport Strategic Site;
- Strategic housing location; and,
- Strategic employment locations.

Within these areas new development, regeneration and retrofit projects, will be expected to take place in the context of more detailed proposals for decentralised low and zero carbon energy infrastructure in the form of energy proposals plans.

CS Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies requires applications for residential development of 10 or more units and all other development over 1,000m² to meet, as a minimum, the targets shown in the tables below, unless unviable.

Table 3.1 – Policy EN6 CO₂ Emissions Reduction Targets; Domestic

Target	% Minimum Requirements
Target One: Network development area	CHP/District heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target Two: Electricity intense buildings	+15% increase on Part L 2010
Target Three: Micro generation area	+15% increase on Part L 2010

The Proposed Development falls under the Target 2 criteria and must comply with Part L (2013). The emission reductions targeted within policy EN6 relate to Building Regulation Part L 2010. As a consequence of the reduction in emission rates required by current building regulations (Part L, 2013) relative to Part L 2010, the revised equivalent target CO₂ emission reductions for the residential scheme are presented below:

- Residential - 9% dwelling emission rate reduction over Part L 2013; and
- Non-domestic - 6% building emission rate reduction over Part L 2013.

CS Policy EN 8 – Adaption to Climate Change requires all new development 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 rainwater permeability;



- Reduction in urban heat island effect using Green Infrastructure such as green roofs, green walls, increased tree cover and waterways;
- The need to control overheating of buildings through passive design; and
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation.

CS Policy T 1 – Sustainable Transport aims to deliver a sustainable, high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking, to support the needs of residents and businesses and to prepare for carbon free modes of transport, the Council will support proposals that:

- Improve choice by developing alternatives to the car;
- Promote regeneration and economic vitality by relieving traffic congestion and improving access to jobs and services, particularly for those most in need and for those without a car;
- Improve access to transport services and facilities to enable disabled people and people with mobility impairments to participate fully in public life;
- Improve pedestrian routes and the pedestrian environment;
- Improve and develop further Manchester's cycle network (for example the Manchester Cycleway and the Trans Pennine Trail); and
- Facilitate modes of transport that reduce carbon emissions e.g., by incorporating charging points for electric vehicles, subject to their appropriate design and location.

3.2.2 Guide to Development in Manchester, Supplementary Planning Document

Manchester's 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. These principles include a number of environmental standards, and includes the following categories which are identified in the SPD:

- | | |
|--|----------------------------|
| • Energy efficiency; | • Waste management; |
| • Renewable energy; | • Construction management; |
| • Environmental design; | • Biodiversity; and, |
| • Water management and weather resilience; | • Waterways. |



3.2.3 Manchester Residential Quality Guidance

This document provides guidance for building new build dwellings in Manchester. The residential quality guidance demands design excellence in all new housing built in the city, sets minimum space standards, and ensures high environmental standards. The guidance includes the following nine components:

Make it Manchester – developers must understand the city’s unique character, heritage old and new, density and scale in various parts of the city and appreciate how new homes will fit in to what’s already there.

Make it bring people together – new homes must encourage a sense of community and neighbourliness, offering a mix of tenures to promote a mix of people.

Make it animate streets and spaces – understand the relationship between new homes and its environment and create public space.

Make it easy to get around – make sure developments have good transport links, along with good walking and cycling provision.

Make it work with the landscape – development should improve the connection with the local environment with improved biodiversity, as well as greening and water schemes.

Make it practical – dealing with waste, car parking, bike storage and visitors should be made as easy as possible.

Make it future proof – design must anticipate the impacts of climate change and extreme weather with efficient design and adaptability.

Make it a home – sufficient space, natural light, privacy and storage are essential for people to settle down and flourish.

Make it happen – ensuring proposals are delivered, to a high quality, with high design standards and high sustainability.

3.2.4 Manchester’s Great Outdoors

A **Green and Blue Infrastructure Strategy for Manchester** aims to invest in the city’s Green and Blue infrastructure over the next 10 years (by 2025). Four objectives have been established to enable the vision to be achieved:

1. Improve the quality and function of existing green and blue Infrastructure, to maximise the benefits it delivers.
2. Use appropriate green and blue infrastructure as a key component of new developments to help create successful neighbourhoods and support the city’s growth.
3. Improve connectivity and accessibility to green and blue infrastructure within the city and beyond.
4. Improve and promote a wider understanding and awareness of the benefits that green and blue infrastructure provides to residents, the economy and the local environment.



3.2.5 Climate Emergency

On 10th July 2019, a motion asking MCC to formally declare a **climate emergency** was unanimously agreed. The motion declares that climate change is a serious risk to Manchester's future and committed to embedding the issue as an integral part of council decision-making – making sure that all key decisions are taken with the city's target of becoming zero-carbon by 2038 in mind. The council has agreed the following:

- To deliver the 2038 zero carbon target and determine if an earlier target can be possible;
- Encourage involvement in all wards by April 2020 through meetings as part of the Our Manchester strategy;
- Review all policies, processes and procedures to ensure the council can become carbon neutral. Present an action plan by March 2020 detailing how the city can stay within its carbon budget;
- Make climate breakdown and the environment an integral part of activity throughout the council, including all decision making, ensuring key decisions take into account the impact on achieving the zero-carbon target;
- Investigate measures to ensure future procurement is carbon neutral. Increase the percentage of social value with an additional environmental element;
- Work with suppliers to green their supply chains and support local production;
- Investigate and introduce measures to help reach domestic zero carbon levels including addressing fuel poverty and retrofitting existing homes; and
- Investigate ways to ensure that future local plans place a mandatory requirement for all new development to be net zero carbon by the earliest possible date.

In March 2020 the Executive adopted the Manchester Climate Change Framework 2020-2025. The five-year framework sets out measures that MCC will take in order to reduce carbon emissions from its buildings, energy use and transport. Measures include retrofitting buildings to improve energy efficiency, increasing the use of Electric Vehicle Vehicles, and seeking 100% renewable energy. Whilst this has also not been formally adopted into planning policy, it is a key consideration for future development proposals.

3.3 Emerging Policies

The Draft 'Places for Everyone' (PfE) Plan is a new long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. It has been prepared by the GMCA on behalf of the nine districts.

The Draft Plan will determine the kind of development that takes place across the city-region, maximising the use of brownfield land and urban spaces while protecting green belt land from the risk of unplanned development. It will also ensure all new developments are sustainably integrated into Greater Manchester's transport network or supported by new infrastructure.

The consultation for the PfE concluded in October 2021 and that it is now expected to progress to examination. It is therefore considered that the Plan is in an advanced stage of preparation and will hold some weight in the determination of planning applications within Greater Manchester.



3.4 Regulatory Framework

Building Regulations, Part L - Conservation of Fuel and Power sets the compliance standards for energy demand and carbon dioxide emissions from buildings. Guidance on how to meet the requirements of this regulation is provided within a number of approved documents. The relevant document is referenced below:

Approved Document L1A addresses the conservation of fuel and power in new dwellings. The Proposed Development is registered against Building Regulations, Part L1A (2013) which requires all newly constructed dwellings need to comply with 5 criteria set out in Approved Document L1A unless exempted through the transitional provisions:

- I. The predicted rate of carbon dioxide emissions from the dwelling (the Dwellings Emission Rate DER) is not greater than the Target Emissions Rate (TER). Additionally, the Dwelling Fabric Energy Efficiency (DFEE) is not greater than the Target Fabric Energy Efficiency (TFEE);
- II. The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document;
- III. The dwelling has appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer;
- IV. The performance of the dwelling as built, is consistent with the DER, including site checking that the air permeability is within reasonable limits; and
- V. The necessary provisions for energy efficient operation of the dwelling are put in place including operating and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

Approved Document L2A addresses the conservation of fuel and power in new non-domestic buildings. The proposed development will be registered against Building Regulations, Part L (2013) which requires all newly constructed buildings to comply with the 5 criteria set out in Approved Document L2A:

- I. Achievement of an acceptable Building CO₂ Emission Rate. i.e., the BER is less than the TER (target emission rate for a notional building);
- II. Limits on design flexibility – including U-values, air permeability, air handling plant efficiency, duct leakage, insulation, lighting system efficiency;
- III. Limiting solar gains in summer;
- IV. Construction quality and commissioning - The BER must be recalculated as constructed; and
- V. Provision of information - Information must be provided to the building operator.

Approved Document L1A (2021) standards will come into effect in June 2022 therefore, the Proposed Development is designed to comply with these emerging targets. Emerging Part L 2021 standards are expected to reduce dwelling carbon emissions by 31% in relation to Building Regulations Part L1A, 2013.

The Fabric Energy Efficiency criterion has also become significantly more onerous to achieve relative to current Part L1A (2013) building standards. Furthermore, the Proposed Development is designed to meet the additional criteria for Primary Energy Rate which is a new metric being introduced as part of the upcoming 2021 regulatory update.



3.5 Applicable Targets

Based upon a review of relevant planning policy requirements, legislative drivers, and client priorities, the following list provides a brief precis of the key criteria that should be targeted for this development:

- **CS Policy DM 1 - Development Management;**
- **CS Policy EN 4 – Reducing CO₂ Emissions;**
 - Following the principles of the Energy Hierarchy to reducing CO₂ Emissions;
- **CS Policy EN 5 - Strategic Areas for low and zero carbon decentralised energy infrastructure;**
- **CS Policy EN 6 – Target Framework For CO₂ Reductions From Low or Zero Carbon Energy Supplies;**
 - Residential - 9% dwelling emission rate reduction over Part L1A (2013)
 - Non-Domestic – 6% building emission rate reduction over Part L2A 2(013)
- **CS Policy EN 8 – Adaption to Climate Change;**
- **CS Policy T 1 – Sustainable Transport;**
- **Great Jackson Street Framework (2018) – Key Principles;**
- **The Guide to Development in Manchester SPD;**
- **A Green and Blue Infrastructure Strategy for Manchester;**
- **Approved Document L1A (2013)** will guide the compliance standards for energy demand and carbon dioxide emissions from buildings to ensure compliance with CS Policy EN 6; and
- **Upcoming, Approved Document L1A (2021)** – it is acknowledged that the Proposed Development will be assessed against the emerging Part L1A (2021) Building Regulations, subject to the development programme and progression. For this reason, the forthcoming 2021 compliance standards for primary energy demand, and carbon dioxide emissions and fabric energy efficiency will also guide the design of the Proposed Development.



4. SUSTAINABILITY STATEMENT

This section provides an appraisal of the development proposals and details the specific approach, design features and specifications which will contribute to reducing the environmental impact of this scheme. This section outlines those commitments that have been made to ensure this scheme contributes to sustainable development and meets the Council's policy aims.

4.1 Energy Improvements

In order to limit energy demand and carbon dioxide (CO₂) emissions from the operation of the buildings, a number of design features will be integrated that will collectively contribute towards the emissions reduction target for the scheme.

Detailed measures are presented in Chapter 5 of this report, but in essence, the energy strategy focuses on a holistic and multi-faceted approach of improving the buildings' performance by applying a fabric-led approach and through improvements in the efficiency of the mechanical and electrical systems.

The reduction in energy demand to meet the carbon reduction targets will be achieved through the following design measures and low carbon technology options:

- High performance thermal insulation
- Low air permeability
- Maximising solar control to mitigate overheating risks
- Photovoltaic (PV) panels
- Air Source Heat Pumps
- Heat Pump Hot Water Cylinders
- Heat recovery ventilation systems (MVHR)

It is envisaged that these measures will result in the following carbon reduction targets for Site A and B:

- ✓ Residential Units (Site A) – 9% improvement over Part L1A Building Regulations (2013)
- ✓ Residential Units (Site B) – 9% improvement over Part L1A Building Regulations (2013)
- ✓ Non-Domestic (offices in Site B) – 8.8% improvement over Part L2A Building Regulations

These reductions are in line with the requirements of the Manchester Core Strategy Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies.

4.2 Water Conservation

The proposed development will be designed to reduce mains/potable water consumption and will include the following water efficient design and equipment:

- 'A' rated appliances will be used for dishwashers and washing machines (where provided) for their water saving capabilities;
- Specification of efficient water fixtures throughout the scheme (low flow taps and showers, dual flush WCs and low volume baths);



- In order to reduce water demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <125litres/person/day; and
- The landscaped areas of the development on the ground floor will survive off natural irrigation, however, initially, there may be a requirement for additional watering during spells.

The following image shows the proposed landscape area on the ground floor. Shade tolerant ornamental plants and grasses are proposed for this area.

Figure 4.8 Proposed Landscape Plan – Site A



4.3 Flood Risk Management:

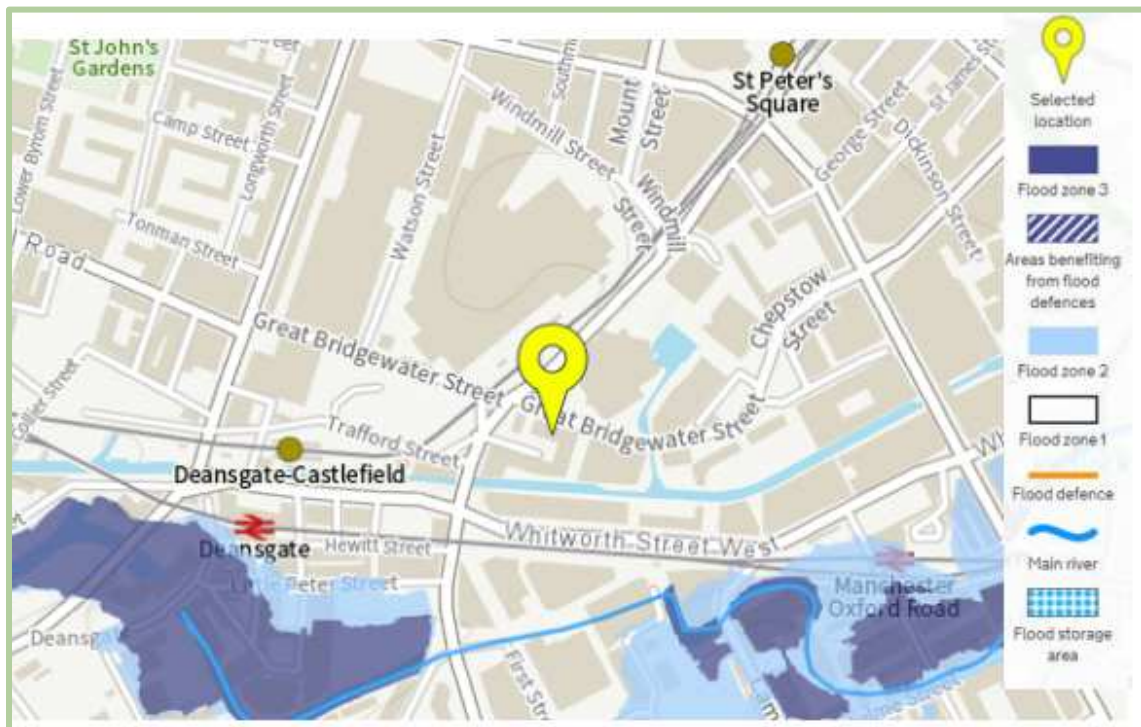
The Site is located within Flood Zone 1, and the probability of flooding is low (with a 1 in 1000 annual probability of river or sea flooding).

- As per the findings from the EA Risk of Flooding from Surface Water map, there is low risk from surface water flooding;
- There is no risk of flooding from reservoirs; and
- There is no risk of flooding from the groundwater.



The image below shows the extent of flooding on site (low to very low) on the EA Surface Water Flood Map.

Figure 4.9 EA Surface Water Flood Map



4.4 Waste Management

4.4.1 Construction Waste

Best practice techniques to prevent and minimise waste during the design and construction phases of the development will be adopted, as follows:

- Prior to commencement of the above ground construction phase, a site waste management plan (SWMP) will be produced by the developer to limit the on and off-site environmental impacts of construction. The SWMP will detail:
 - Recycled and secondary materials;
 - Waste reduction;
 - Waste segregation;
 - Waste recovery; and,
 - Waste disposal.
- This scheme will promote the minimisation of waste arising in site development and seek to maximise the use of recycled materials in construction; and,
- A site waste management plan will identify opportunities to minimise waste generation and divert construction waste from landfill.



4.4.2 Operational Waste

The operational waste strategy for the scheme focuses on the segregation of waste at source, in order to maximise the potential for residents and visitors to recycle. All residents with information on collection frequency, as well as guidance on recycling and health and safety practices related to the management and storage of waste.

The proposed strategy has been developed in compliance with the policies of Manchester City Council:

- Waste will be segregated at source (in the apartments) with the help of segregated bins. It is expected that there will be multiple streams of waste – general, recyclables and compost / green waste;
- Waste will be stored in 660 litre bins (for general waste and recyclables) and 240 litres for compost waste;
- Residents will be required to take their waste (via lifts) to the refuse store on the first floor;
- The number of bins and subsequently the size of the refuse store is based on waste generation figures for each apartment;
- Waste generated at the ground floor and basement will be transferred to the refuse room on the first floor by the staff of the management company;
- The management company will be responsible for transferring the waste from the refuse store to a hardstanding area on Trumpet Street on the day of collection by refuse operators; and
- Following collection, the bins will be returned to the refuse store.

The figure below shows the location of the refuse area on the first floor for Site A.

Figure 4.10 – Refuse Store on First Floor (Site A)

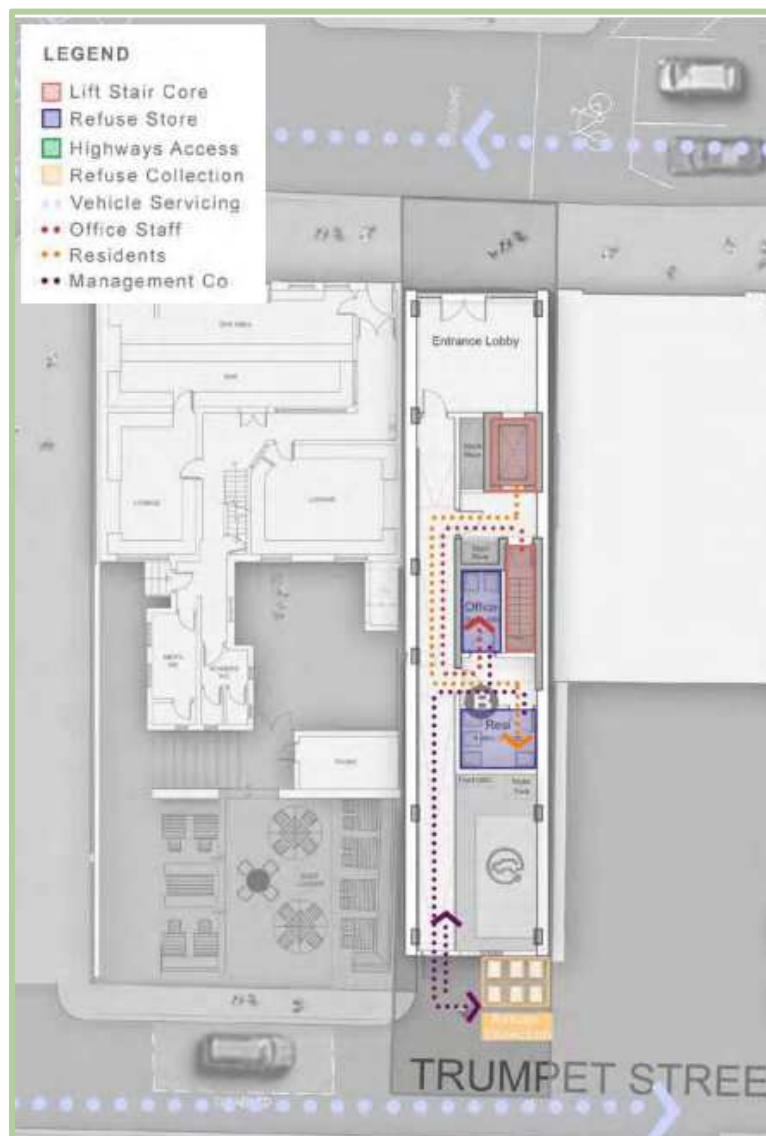


The following measures outline the sustainable waste management strategy for Site B.

- Waste will be segregated at source (in the apartments) with the help of segregated bins. It is expected that there will be multiple streams of waste – general, recyclables and compost / green waste;
- Waste from the offices will also be segregated into general and recyclable waste;
- Waste will be stored in 660 litre bins (for general waste and recyclables) and 240 litres for compost waste;
- Residents and office staff will take their waste (via lifts) to their respective refuse stores on the ground floor (see figure 4.11);
- The number of bins and subsequently the size of the refuse store is based on waste generation figures for each apartment and/ as requirements of waste storage per floor space;
- The management company will be responsible for transferring the waste from the refuse stores to a hardstanding area on Trumpet Street on the day of collection by refuse operators; and
- Following collection, the bins will be returned to their respective refuse stores.

The figure below shows the location of the refuse area on the ground floor for Site B.

Figure 4.11 – Refuse Store on Ground Floor (Site B)



The above waste management measures for Site A and B are in compliance with the Manchester City Council publication GD01 – Waste Storage and Collection Guidance for New Developments, Version 6, 2017 and Manchester City Council – Residential Quality Guidance.

4.5 Materials

This development will contribute towards making more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction. This is demonstrated by the selection of:

- Materials with low environmental impact throughout their lifecycle;
- Responsibly sourced materials from suppliers operating an Environmental Management System or procuring timber verified by either the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification standard (PEFC);
- Local sourcing of construction materials where feasible and viable, which will minimise the impact of carbon dioxide emissions associated with the transportation of materials;
- Robust materials such as block paving and stone will be utilised for hard landscaping therefore, minimising the frequency of replacement and maximising materials optimisation and extending replacement intervals;
- Material selection within the apartment and office spaces will be carefully considered to avoid the use of toxic materials, such as Volatile Organic Compounds (VOCs) and contribute towards creating a healthy indoor environment; and
- Excavated material (such as soil and substructural elements) from construction and demolition works will be used, where practical, for landscaping purposes and within the public realm.

An accompanying Circular Economy Statement has been prepared for the proposed Apex Tower Development which outlines the Circular Economy measures that have been considered within the design of the proposed development at both sites.

4.6 Ecology and Biodiversity

A Phase 1 Habitat survey was undertaken for the site and the results show that the site is a sufficient distance from any designated site for nature conservation. Therefore, any adverse impacts on these sites are discounted.

There are no species or habitats that are legally protected on site – no roosting bats were detected, and the site is considered to be of negligible importance for them.

Given that both sites are located on existing hardstanding surfaces, there is no impact expected on vegetation and there are no ecological constraints in relation to plant species either. A variety of rupestral herbs were found on the west facing brick wall, and these will likely not survive from the shade created for the proposed building, however, these types of herbs are a common feature for lime-mortar brick walls, which are common and pre-existing features of the local area.

Recommendations for the protection of birds is to be considered within the design, such as the provision of nesting boxes for swifts and the selection of plants to achieve biodiversity net gains.



4.7 Transport

The proposed application site has a high level of connectivity and benefits from access to a number of sustainable transport options, especially the connection to the National Cycle Network Route 6 which runs along the western side of the site on Albion Street.

As a result, there are limited number of car parking spaces (2 spaces with EV charging on the ground floor for Site A and 1 space with EV charging for Site B on the ground floor) provided in a bid to encourage residents to go car-free and instead access alternative modes of transport such as walking, cycling and the use of public transport.

In with sustainable transport commitments by the Developer and the Council's target for sustainable transport measures, 72 resident cycle spaces plus 6 visitor cycling spaces are proposed for Site A on the first floor (refer to the figure below for the proposed location). 2 bike hooks for office floor and 4 bike hooks for the residents are proposed for Site B. These will be accommodated within the respective residential / office unit on Site B.

Figure 4.10 – Cycle Storage on First Floor (Site A)



The Site also benefits from the existing bus service, with the nearest bus stop 70m away on the Great Bridgewater Street. The Deansgate Metrolink stop is located 200m to the west of the site, the Deansgate Train Station and the Manchester Oxford Road Station is located 250m away to the southwest of the site, thereby making the site extremely accessible for the residents to choose public transport options.

All new residents will receive travel information digitally and through leaflets, where information about walking, cycling and access to public transport will be shared. In addition, three months prior to occupancy, a Travel Plan Co-ordinators will be appointed to ensure the sustainable transport measures proposed for the scheme are working. Progress on their success will be reported to the Council.



5. ENERGY STRATEGY

5.1 Energy Strategy for the Apex Tower

In essence, the Energy Strategy for the Apex Tower focuses on a holistic and multi-faceted method of improving the building's performance by applying a fabric-led approach allied to improvements in the efficiency of the mechanical and electrical systems and the inclusion of renewable and low carbon energy technology. The design measures outlined in the Energy Strategy comply with the policy requirements as set by the Manchester City Council's Core Strategy.

This Strategy looks at Sites A and B, covering both the residential apartments (on Site A and B) and the commercial space (office spaces) on Site B.

5.1.1 Build Fabric and Thermal Performance – Residential Apartments

The standard measurement of heat transfer through a given building material or construction type is the U-value ($\text{W/m}^2\text{K}$); the lower the U-value, the more slowly heat transfers and is lost out of a building.

In buildings, heat loss generally occurs through the following areas and elements of the construction:

- Ground Floor;
- External Walls;
- Roofs;
- Doors and Windows;
- Thermal (cold) Bridging; and,
- Uncontrolled Ventilation.

Table 5.1 presents the fabric parameters proposed for limiting heat loss and improving the building performance for residential apartments in Site A and B.

Table 5.1 - Fabric Parameters for Residential Apartments (Site A and B)

Construction Element	Proposed Fabric Specification
Ground Floor	$U=0.16 \text{ W/m}^2\text{K}$
External Wall	$U=0.24 \text{ W/m}^2\text{K}$
Roof	$U=0.16 \text{ W/m}^2\text{K}$
Windows	$U=1.5 \text{ W/m}^2\text{K}$, $g=0.55$ <i>Double Glazed, UPVC, Low-E</i>
Air Permeability	$5.0 \text{ m}^3/\text{hm}^2$ (@50Pa.)

These specifications and design attributes will provide the following benefits:

- **High performance thermal insulation** throughout the building envelope (ensuring very low U-values for all heat loss elements) and thermally efficient windows and doors will minimise heat loss through the main building elements;



- **Thermally efficient, double-glazed windows** will be specified with argon gas fill and low emissivity coatings to limit heat loss through the panes. The glazing g-value will be specified to optimise beneficial solar gains but limit the propensity for the apartments to overheat;
- **Low air permeability** of $<5.0\text{m}^3/\text{hm}^2$ (@50Pa.) is targeted for this build in order to minimise uncontrolled ventilation. This will further reduce heat losses and provide high levels of occupant comfort (in combination with the proposed mechanical ventilation strategy). Focus on the quality of the build is vital to deliver such airtight buildings;
- **Attention to cold bridging junctions** including the provision of insulation to reduce heat and limit heat losses that occur at the junctions between building elements and around openings and will significantly improve the emission rate of the apartments; and
- **Efficient Form** – residential apartments are an inherently efficient form of construction, both in terms of the materials required to build the apartments and the ongoing heat energy demand. This is a result of relatively low areas of external heat loss elements associated with such layouts which enhance the energy efficiency of the apartments and guarantees low energy demand throughout their occupation.

This specification will help to deliver an energy efficient development that achieves an emission rate reduction and fabric energy efficiency performance significantly beyond the requirements set by building regulation Part L (2013).

5.1.2 Build Fabric and Thermal Performance – Offices (Site B)

The office space within Site B will follow the same fabric and thermal efficiency approach for energy reduction. The same U values and air permeability rates will be specified for this space. In addition, the corridors and stairs will be heated.

5.1.3 Building Services Specification – Residential Apartments (Site A and B)

In addition to the improvements in the building fabric and thermal performance, a number of measures to improve the energy efficiency of the building systems have also been considered. The proposed mechanical and electrical specification that will be incorporated to ensure efficient servicing of the buildings is presented in Tables 5.2.

Table 5.2 System Parameters for the Residential Apartments (Site A and B) – Residential Apartments



Building Elements	Proposed Fabric Specification
Mechanical Ventilation	Mechanical Heat Recovery Ventilation (MVHR) K+1 - 0.58 / 88% K+2 - 0.55 / 90% K+3 - 0.6 / 91% Heat Exchanger Efficiency – min. 80%, max 91% (with insulated ductwork)
Space heating	Electric Panel Heaters
Controls	Integrated Programmer and Thermostat
Water Heating	Self-contained heat pump hot water cylinders
Water Use	<125 litres / person / day
Lighting	Low energy LED
Renewables	9,720 kWh/year PV

This mechanical and electrical specification will deliver a Building Regulation Part L2A (2013) compliant scheme and will provide the following benefits:

- **Mechanical ventilation with heat recovery (MVHR)** systems will be specified in each apartment unit to maintain a healthy living environment and further reduce the heat losses and the energy demand of the apartments. The proposed MVHR system can recover up to 95% of heat from the extracted stale air from the apartments by using a counter flow heat exchanger which ‘pre-heats’ cool incoming, fresh air. The outgoing and incoming air pass next to each other, but do not mix. The design air permeability of 5.0m³/hm² (@50Pa.) for the apartments will virtually eliminate uncontrolled ventilation and ensure that the majority of the expelled stale air will pass across the heat exchanger, thereby boosting the energy reduction potential of these systems;
- **Electrical panel heating (for space heating)** generates a reduced overheating potential – electric space heating delivers virtually instantaneous heating at the location it is required. Unlike a ‘wet system’ associated with communal gas boilers which inherently have a long lag time for the heat to be generated and then dissipated when no longer needed. This lag time can lead to the units overheating as the hot water remains in the radiators for a considerable time after the heat demand is required;
- **Self-contained heat pump hot water cylinders:** exhaust air heat pumps (NIBE f730) have been specified for heating water for the residential apartments. These are high performing and extremely energy efficient systems for high heat output with minimal energy consumption;
- **LED lighting** will be specified throughout the scheme to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs. This means that about c.90% of the electrical energy is converted to light, rather than wasted heat as in conventional bulbs;



- **Sophisticated heating controls** including appliance programmer and room thermostats will ensure the efficient delivery of heat from electric panel heaters to further reduce the apartments' energy demand; and
- **Photovoltaic (PV) Panels (for Site A)** harness solar thermal energy and convert it into electricity which can then be used within a building. The panels may be roof mounted and orientated in a southerly direction to enable this technology to operate efficiently. This technology is considered to be a feasible option for Site A only.

5.1.4 Building Services Specification – Offices (Site B)

The energy strategy proposed for the offices differs from the residential component of the scheme by utilising ASHPs for space heating and Electric POU's for water heating.

Table 5.3 below shows the building systems specified for the commercial space of 152 sqm of floor area (offices) on Site B.

Table 5.3 System Parameters for Commercial Space (Site B)

Building Elements	Proposed Fabric Specification
Mechanical Ventilation	Mechanical Heat Recovery Ventilation (MVHR) SPF 1.5, Heat Exchanger Efficiency of 65%
Space heating	Air Source Heat Pumps (ASHPs) / Variable Refrigerant Flow
Controls	Time / Date Programmer and Thermostat
Water Heating	Instantaneous Point of Use (PoU)
Water Use	<125 litres / person / day
Lighting	Low energy LED
Renewables	N/A

This mechanical and electrical specification will deliver a Building Regulation Part L2A (2013) compliant scheme and will provide the following benefits:

- **Mechanical ventilation with heat recovery (MVHR)** systems will be specified in each apartment unit to maintain a healthy living environment and further reduce the heat losses and the energy demand of the apartments. The proposed MVHR system can recover up to 95% of heat from the extracted stale air from the apartments by using a counter flow heat exchanger which 'pre-heats' cool incoming, fresh air. The outgoing and incoming air pass next to each other, but do not mix. The design air permeability of 5.0m³/hm² (@50Pa.) for the apartments will virtually eliminate uncontrolled ventilation and ensure that most of the expelled stale air will pass across the heat exchanger, thereby boosting the energy reduction potential of these systems;



- **Air Source Heat Pumps (for space heating):** are a low carbon solution that are ideal for office spaces. They are highly efficient method of producing heat as ASHPs collect low-grade heat from the air to supply useful heat for space heating requirements by applying additional energy input (in the form of electricity).
- **Electric Point of Use (PoU)** will meet the residential units' hot water load. The water flows immediately to the desired temperature therefore conserves water with little energy or circulation losses. To further limit energy demand for hot water, dwellings will be provided with water-efficient fixtures and fittings, to limit overall water consumption to
- **LED lighting** will be specified throughout the scheme to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs. This means that about c.90% of the electrical energy is converted to light, rather than wasted heat as in conventional bulbs; and
- **Sophisticated heating controls** including appliance programmer and room thermostats will ensure the efficient delivery of heat from electric panel heaters to further reduce the apartments' energy demand.

5.2 Energy Performance Calculations

In order to demonstrate the environmental benefits associated with the energy strategy for this site, approved SAP 2012 software (has been used to generate the energy demand models for the residential component of the two buildings. SAP software calculates the regulated energy demand and associated carbon dioxide emissions in accordance with the requirements of Building Regulation, Part L1A (2013) that this development will be constructed in compliance with.

Table 5.6 below presents a summary of these calculations, which show the regulated energy demand and emission reductions achieved by the enhanced material specification, efficient servicing, and renewable energy solutions.

Table 5.6 – Calculated Dwelling Emission Rate – Residential Apartments (Site A and B)

	Site A	Site B
Dwelling Emission Rate (DER) (kgCO ₂ /m ² /yr.)	24.07	24.98
Target Emission Rate (TER) (kgCO ₂ /m ² /yr.)	26.45	27.45
% Reduction over Part L2A (2013)	9.0	9.0

The calculations show that there is an expected improvement of 9% over part L of Building Regulations (2013), for the apartments in Site A and B. This shows that the proposed development is in compliance with the Council's adopted Core Strategy Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies.

In order to demonstrate the environmental benefits associated with the energy strategy for the commercial spaces on Site B, representative Simplified Building Energy Models (SBEM) have been completed using the Design Builder software. It should be noted that these results are indicative of the overall demand for energy.

Table 5.7 below presents a summary of these calculations, which show the regulated energy demand and emission reductions achieved by the enhanced material specification and the specification of energy efficient systems for the office space within Site B.



Table 5.7 – Energy Calculations for Commercial Space (Site B)

	First Floor Office	Second Floor Office
Building Emission Rate (DER) (kgCO ₂ /m ² /yr.)	20.4	19.1
Target Emission Rate (TER) (kgCO ₂ /m ² /yr.)	23	20.4
% Reduction over Part L2A (2013)	11.3	6.3

The calculations show that there is an expected improvement of 8.8% (*average*) over Part L2A of the Building Regulations (2013) for the office space and is in compliance with the targets for non-domestic buildings as per the Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies of the Manchester Core Strategy.

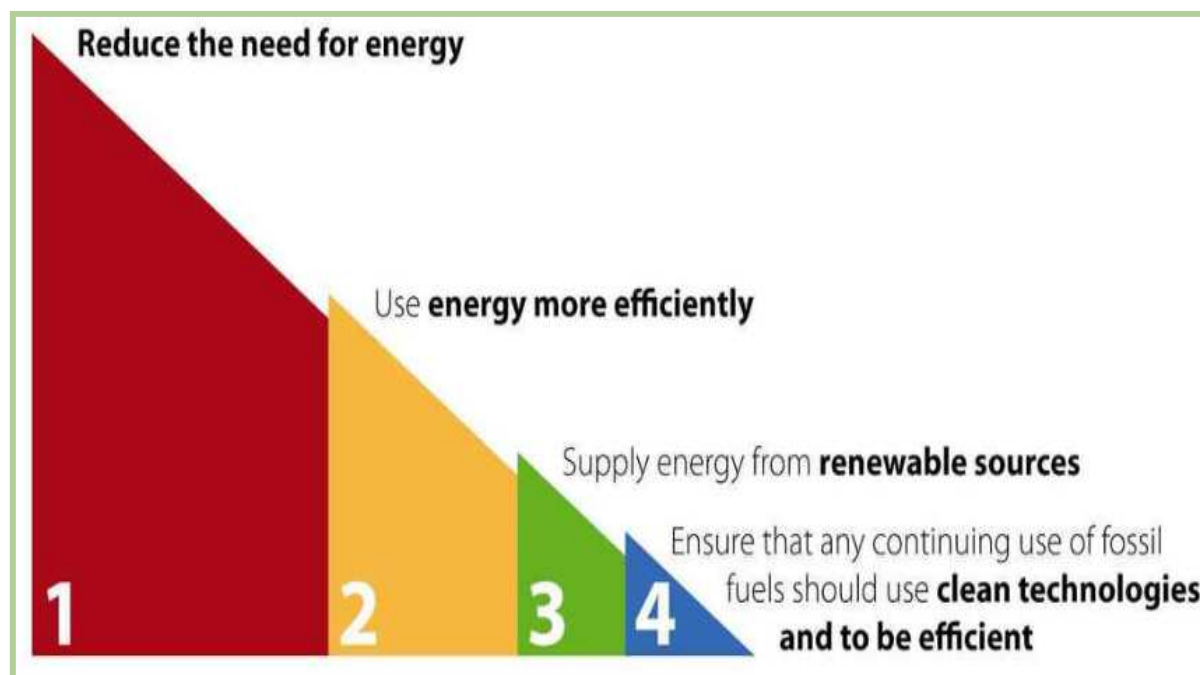
A separate Energy Strategy statement has been prepared to support this development planning application by King Associates (reference 3356-KIN-ES-RP-001). This document provides further details of the energy strategy.

5.3 Energy Hierarchy

The Apex Tower scheme will incorporate a significantly enhanced material specification along with high quality design and construction standards in order to improve the whole building energy efficiency through a 'fabric led' energy strategy. The proposed construction, design and specification will deliver a scheme that is inherently energy efficient during occupation.

The energy hierarchy provides a framework to guide energy policy and decision making to achieve practical and cost-effective carbon emission reductions. The hierarchy prioritises demand-side activities to reduce wastage and improve efficiency (see Figure 5.1).

Figure 5.1 – The Energy Hierarchy



First Principle:

The following efficiency measures are designed to reduce heat losses and minimise energy demand:

- The building will be constructed with high specification materials and design criteria which exceed current minimum Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand.
- Heating systems will be provided with zonal, programmable thermostatic controls linked to a master control panel which would allow occupants to control zones within their units independently for maximum flexibility. This is intended to reduce the demand for additional energy usage.

Second Principle:

The approach taken for this Scheme will help to minimise energy demand and associated carbon dioxide emissions and is aligned with the second principle of the energy hierarchy which states that reduction in energy demand should be achieved initially by energy efficiency.

To this effect, the following measures have been proposed:

- The design air permeability target for the buildings is $5.0\text{m}^3/\text{hm}^2$ (@50Pa.). This low air permeability target will assist to limit the heat loss through the structure of the building;
- High efficiency air handling units with heat recovery capture 'waste' heat from the extracted stale air;
- The g value within the buildings will be optimised to control solar gain in the summer months and allow beneficial gains in the winter season to minimise the overheating risk and limit the heating energy demand within the units; and
- 100% LED provision and sophisticated control systems for the space within the buildings will also ensure the energy consumed is used efficiently. Photocell switching and automatic presence control of the lighting will be specified in order to further improve the efficiency of the lighting system.

Third Principle:

Renewable and low carbon technology including photovoltaic cells and air source heat pumps will be specified for the development in a bid to reduce the scheme's operational carbon footprint.

Fourth Principle:

The use of electric panels and electric (point of use) hot water heaters will ensure that fossil fuels converted and distributed through the National Grid as electrical energy for heating purposes will be consumed cleanly and efficiently.

Furthermore, as the UK electricity grids' CO₂ footprint continues to improve, so too would the carbon dioxide emissions associated with the operational phase of the proposed scheme.



6. CONCLUSION

This Statement has reviewed the sustainability performance of the proposed Apex Tower Development against national and local planning policies. The conclusion that can be drawn from the review is as per the following:

Sustainability Performance –

- Water consumption of the development will be minimised. The internal water strategy will exceed the regulatory standard specified to achieve a calculated daily consumption of <125litres/person/day through **the specification of efficient water fixtures**.
- The proposed scheme prioritises **the use of sustainable transport options** and the design has prioritised pedestrians and cyclists over the private car. Provision of cycle storage and bike hooks in conjunction with charging points for Electric Vehicles will contribute towards creating a highly connected and sustainable development. A Travel Plan will be provided to all occupants with information on cycling routes, carpool schemes and timetables for public transport options.
- The development Site is located within Flood Risk Zone 1. Post development surface water run-off rates will be **managed and mitigated through the implementation of SUDs** where applicable.
- Waste arising during construction and occupation/operation will be minimised through the **implementation of a Construction and Environmental Management Plan (CEMP)**. The CEMP will be used to ensure that there is adequate management and storage of construction waste takes place in line with the Council's policies. Opportunities for the possible recycling of construction from excavation works will also be considered in line with best practice.
- **A refuse management strategy** has been developed to manage waste and recyclables from the operational phase of the development. Source segregation and the provision of satellite refuse areas on each floor (and in close proximity to the lifts) will encourage the residents to recycle and **divert waste away from landfills**.
- Materials are proposed to be **responsibly sourced and materials with low environmental impact** will be selected and local suppliers will be prioritised. Material selection will be carefully considered to avoid the use of toxic materials and materials with VOCs.
- The findings from the Phase 1 Habitat Survey show that there are **no legally protected and / or notable species and their habitats on site**.
- The proposal aims to create a very efficient use of land. The **highly accessible**, city-centre location will provide a development that **supports a sustainable community while creating opportunities for employment** and enjoyment.

Energy Strategy –

The development will be designed and specified in accordance with **the principles of the energy hierarchy** and in line with the **Manchester's Core Strategy**.

A two-layered approach has been adopted to best fit the residential and commercial components of the scheme, which is as per the following:



Residential Units (Site A and B):

- For the residential units, the focus has been on reducing the demand for energy by **limiting heat gains and losses through the building fabric** as well as improving the efficiency of the building fabric.
- The apartments will utilise **the use of electric panels for space heating, low energy lighting and heat pumps** for water heating; this will ensure that the most efficient and reliable systems are used.
- The Scheme will benefit from **the use of PV Panels** to reduce reliance on fossil fuels and will help contribute to reducing the development's carbon footprint; and
- Based on these specifications, energy modelling exercise, using the SAP 12 software, shows that there will be 9% emissions reductions **over Part L of the Building Regulations (2013)**.

Commercial Space (Site B):

- A combination of **enhanced building fabric** (significantly beyond the regulatory compliance standard), efficient mechanical and electrical systems, and controls, will achieve compliance with the emission reduction targets stipulated by Building Regulations Part L2A (2013).
- The Scheme will also benefit from **ASHPs** that have been specified for meeting the space requirements, which are extremely energy efficient and will play a significant role in reducing the development's carbon footprint;
- The commercial spaces will be provided with **electric POU**s to meet their water heating requirements, which are ideal for reducing the energy demand for heating water during peak hours;
- **Local controls** will be utilised to ensure maximum thermal comfort and energy savings; and
- Energy modelling calculates **8.8% emissions reductions** over Part L of the Building Regulations (2013).

In conclusion, the proposals reviewed within this statement for the scheme at the Apex Tower Development in Manchester will deliver an efficient and sustainable scheme, providing a quality development that accords with the guidance provided within the Manchester City Councils adopted policies.

