



**ELEMENT
SUSTAINABILITY**

**136 WITHINGTON ROAD,
MANCHESTER**

**ENVIRONMENTAL STANDARDS
STATEMENT**

NOVEMBER 2022

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1. INTRODUCTION

Element Sustainability has been commissioned by Views Limited to review the sustainability performance of the proposed residential scheme at Withington Road, Manchester.

The purpose of this statement is to summarise the relevant policy background and requirements of Manchester City Council (hereafter referred to as the council) and demonstrate the ways in which the developer, Views Limited, has addressed these aims through their proposals, ensuring all practicable measures have been taken in order to deliver a sustainable development at this site.

Details of the design attributes, specifications and characteristics of the scheme are appraised in order to demonstrate how the proposals contribute to sustainable development in Manchester and seek to mitigate the environmental impacts of the scheme, providing a sustainability appraisal in support of the planning application.



2. DEVELOPMENT PROPOSALS

2.1 Development Site Description

The development site is currently occupied by a large disused building, hardstanding and overgrown vegetation. It is enclosed by a collapsing wall along the perimeter of the site and numerous large deciduous trees running parallel to Withington Road, obscuring the property.

The site is bordered by a number of commercial units to the north, Withington Road to the east, a number of four and five storey buildings directly to the south, and two storey semi-detached/terraced houses to the west.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The proposed scheme comprises the redevelopment of the site to provide thirty-five residential apartments within a single block, split across four floors.

The following table shows the accommodation summary for the site.

Table 2.1 – Accommodation Schedule Summary

Floor	1 Bed Apartments	2 Bed Apartments	3 Bed Apartments
Lower Ground Floor	3	8	2
Upper Ground Floor	4	5	-
First Floor	3	6	-
Second Floor	2	2	-
Total	12	21	2
	35		



Figure 2.2 – Proposed Site Plan



Figure 2.3 – Proposed Ground Floor Layout

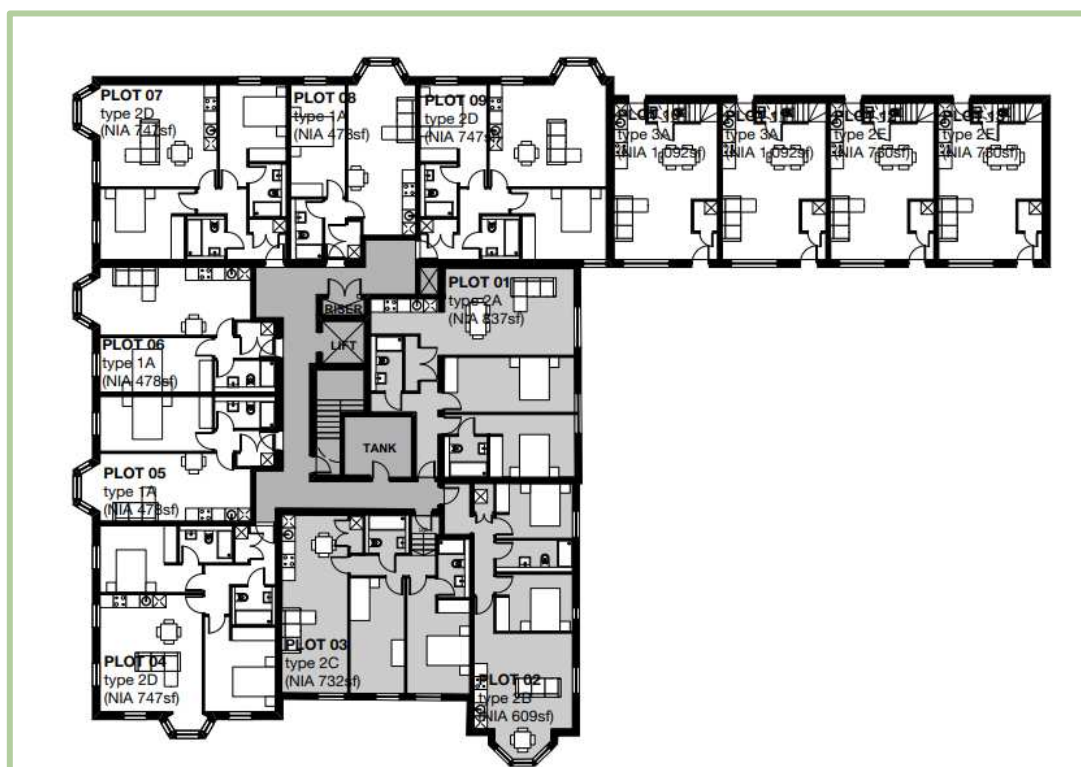


Figure 2.4 – Proposed Upper Ground Floor Layout



Figure 2.5 – Proposed First Floor Layout

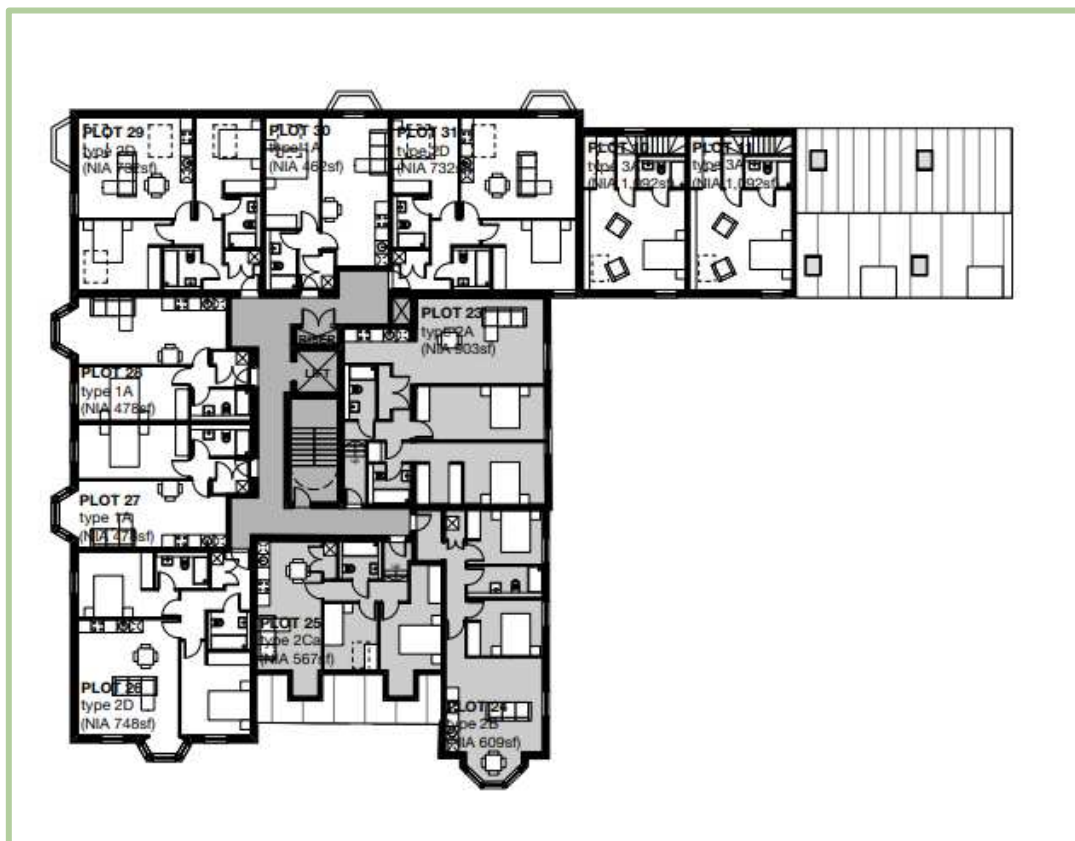


Figure 2.6 – Proposed Second Floor Layout

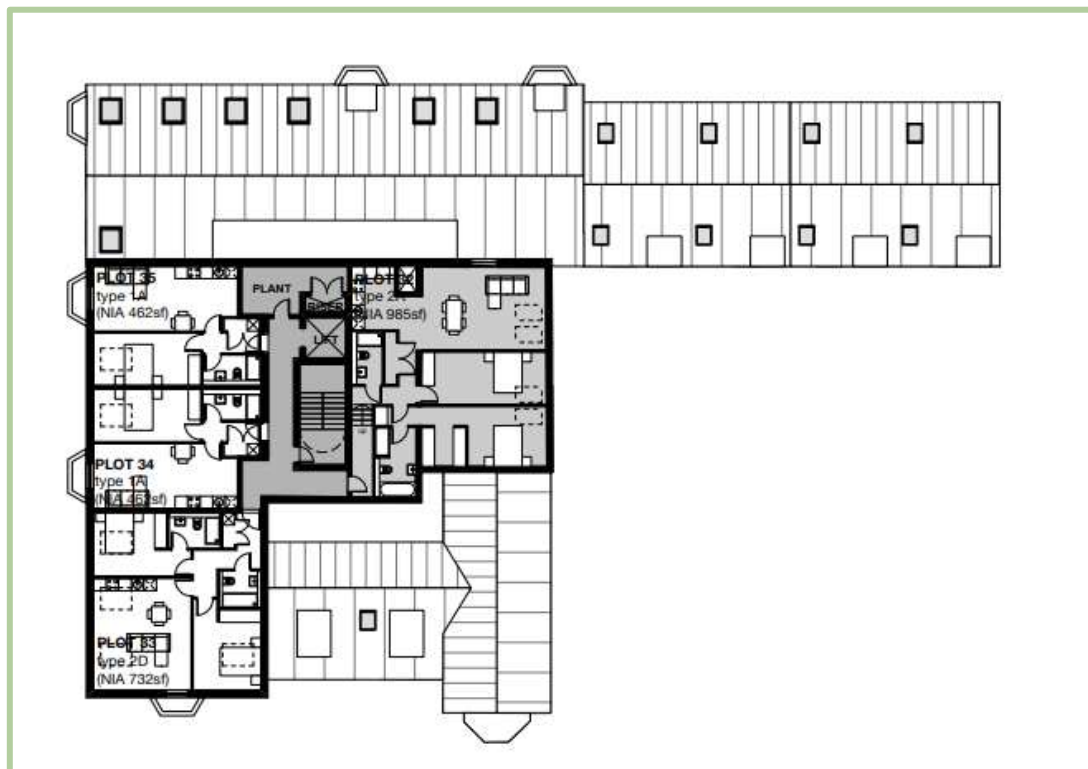


Figure 2.7 Proposed Front Elevation



Figure 2.8 Proposed Side Elevation (north)



Figure 2.9 Softworks Landscape Proposal



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).

Policy CC 5 - The Transport Strategy for Manchester City Centre will be delivered to ensure that transport is managed in a way which supports the projected growth of the City Centre. Developers should work with public transport providers to ensure that all users are able to access development by sustainable means, especially taking account of times when developments are likely to be busiest.

Policy T1: Sustainable Transport - 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.



- Improve pedestrian routes and the pedestrian environment
- Facilitate modes of transport that reduce carbon emissions e.g by incorporating charging points for electric vehicles, subject to their appropriate design and location.
- Take account of the needs of road users according to a broad hierarchy consisting of, in order of priority:
 - Pedestrians and disabled people
 - Cyclists, public transport,
 - Commercial access,
 - General off peak traffic,
 - General peak time traffic.

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
- 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.

Policy EN 6: Target Framework for CO₂ 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 the table below, 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 CO₂ emissions for all phases of the development. 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.

Table 3.1: Domestic CO₂ emissions reduction targets

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



Where the CO₂ 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 apply¹.

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 CO₂ mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.

Policy EN 8: Adaption 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 CO₂ mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.

Policy EN 9: Green Infrastructure - New development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Key features of Manchester's green infrastructure will include:

- The continued development of a network of green spaces, water bodies, canals, paths and cycleways, with priority given to those parts of the city where there is an identified existing lack of open space. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area.
- The continued maintenance and management of the Rivers Mersey and Irwell and their tributaries, for example the River Irk, River Medlock, Chorlton Platt Gore, Gatley Brook, Moston Brook and adjoining land, with regard to their multiple functions including recreation, flood management, and biodiversity.
- The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure as a result of development such as the Metrolink extension programme
- The encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaption to climate change in heavily urbanised areas.

New green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management.

¹ The revised Part L 2021 Approved Document Volume 1 proposes that newly built dwelling should have 31% lower carbon emissions than under the Part L1A (2013) compliance targets, therefore this is inherently deemed to provide an improvement beyond the adopted planning policy EN6 position, being as it is '...greater than the '% Minimum requirement'.



Policy EN 14: Flood Risk

- Development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).
- In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.
- All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.
- The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.

Policy EN 15: Biodiversity and Geological Conservation - The Council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to:

- Sites with international or national designations for their biodiversity value. Manchester contains one Site of Special Scientific Interest (SSSI); there is a Special Area of Conservation (SAC) and an SSSI just over the border in Oldham (both on the Rochdale Canal within Oldham);
- Other sites of biodiversity value, including Sites of Biological Importance (SBIs) and Local Nature Reserves (LNRs); Manchester currently has 35 SBIs (including the Rochdale and Ashton Canals) and 7 LNRs; priority habitats found within Manchester, as listed in the Manchester Biodiversity Strategy and included in the Greater Manchester Biodiversity Action Plan (GM BAP);
- Protected and priority species, as listed in the Manchester Biodiversity Strategy and included in the Greater Manchester Biodiversity Action Plan (GM BAP);
- Sites that are recognised for their geological importance;
- The Council's objective to protect and conserve the City's existing trees and woodlands and the aim for a net increase in trees across the City.

Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate

Policy EN 19: Waste - The Council will:

- Work with other Districts through the Greater Manchester Joint Waste Development Plan Document (GMJWDPD) to safeguard existing sites for waste management and identify and safeguard new sites in existing areas of employment where appropriate.
- Require all developers, including those of new waste management facilities within the District, to demonstrate the proposal's consistency with the principles of the waste hierarchy
- Require all developers to submit a waste management plan to demonstrate how both construction and demolition waste will be minimised and recycled on site wherever possible and how the sustainable waste management needs of the end user will be met
- Encourage communities to take responsibility for the waste they create through the provision of accessible facilities.



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;
- Renewable energy;
- Environmental design;
- Water management and weather resilience;
- Waste management;
- Construction management;
- Biodiversity; and,
- 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 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 Places for Everyone Joint Development Plan Document is now the subject of an independent examination, conducted by the Planning Inspectorate. This process began from the date of submission (14th February 2022) and will conclude upon receipt of the Planning Inspectors Report. The examination hearings concerning the plan will commence on Tuesday 1 November 2022 and are expected to run until Thursday 30 March 2023.

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 Volume 1: Dwellings: Gives guidance on how to comply with Part L of Schedule 1 to the Building Regulations and the energy efficiency requirements for dwellings. These standards came into effect in June 2022 and are subject to a twelve-month transitional arrangement period. Part L 2021 standards are expected to reduce dwelling carbon emissions by 31% in relation to Building Regulations Part L, 2013.

Minimum energy performance requirements shall be approved and expressed in accordance with the methodology for:

- a) new buildings (which shall include new dwellings), in the form of target CO₂ emission rates;
- b) new dwellings, in the form of target fabric efficiency rates; and
- c) new buildings in the form of target primary energy rates.

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 EN 4 – Reducing CO₂ Emissions;**
 - Following the principles of the Energy Hierarchy to reducing CO₂ Emissions;
- **CS Policy EN 6 – Target Framework for CO₂ Reductions From Low or Zero Carbon Energy Supplies;**
- **CS Policy EN 8 – Adaption to Climate Change;**
- **Policy EN 9: Green Infrastructure**



- Policy EN 14: Flood Risk
- Policy EN 15: Biodiversity and Geological Conservation
- Policy EN 19: Waste
- CS Policy T1 – Sustainable Transport;
- The Guide to Development in Manchester SPD;
- A Green and Blue Infrastructure Strategy for Manchester;
- Places for Everyone
- Approved Document Part L Volume 1 (2021)



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 approach of improving the buildings' performance by applying a fabric-led approach allied to 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;
- Heat recovery ventilation systems (MVHR);
- Photovoltaic array; and,
- Air source heat pumps

These measures will secure a 51.39 % improvement over Part L Volume 1.

These reductions exceed 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); and,
- In order to reduce water demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <110 litres/person/day.



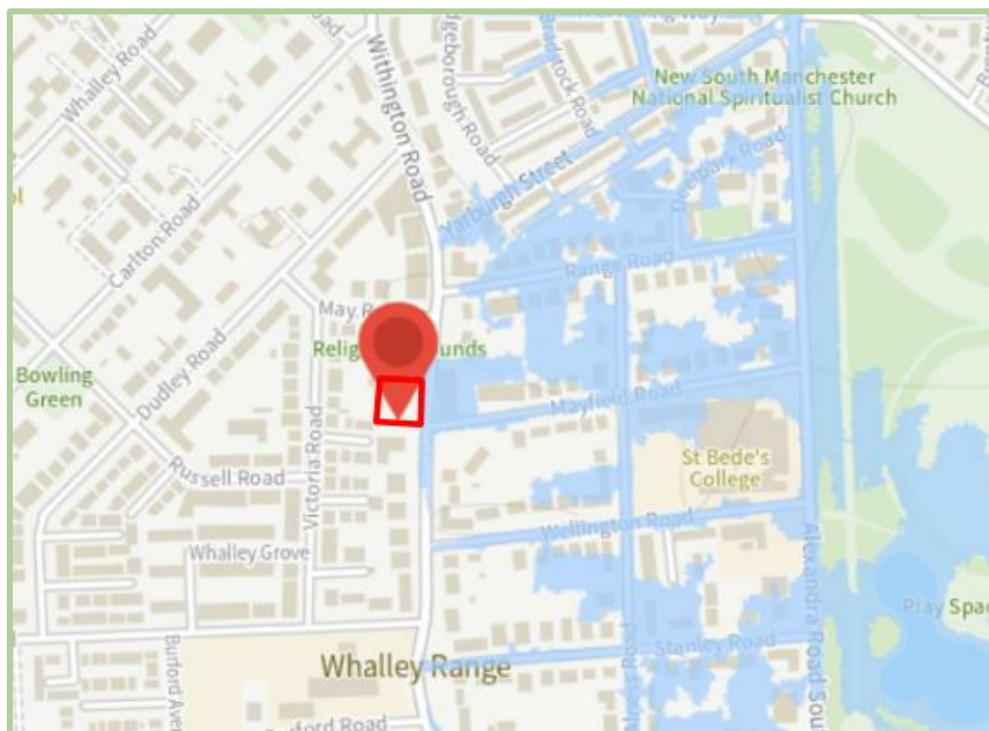
4.3 Flood Risk Management:

A flood risk assessment and drainage strategy has been conducted by Curtins for the development at 136 Withington Road. The findings demonstrate that the site is located within Flood Zone 1, though the eastern Withington Road boundary is on the periphery of Flood Zone 2. The site is not shown to be in an area which benefits from flood defences and has a 1 in 1000 annual probability of fluvial flooding. Therefore, it is at low risk of flooding from rivers or seas.

The site is also considered to be at low risk from tidal, groundwater and reservoir flooding.

Figure 4.1 below, displays the flood zone classification for Withington Road.

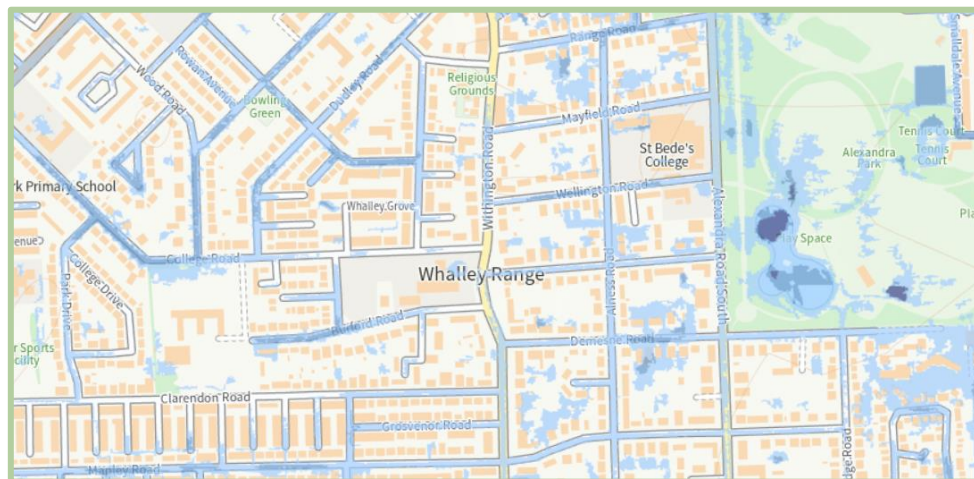
Figure 4.1 – EA Flood Zone Map



The extent of flooding caused by surface water is indicated in Figure 4.2 and it can be seen that the site is located in an area classified as being at 'Very Low' risk.



Figure 4.2 - EA Surface Water Flood Map



The surface water proposed drainage strategy for the development intends to discharge the roof water to ground via soakaways and permeable paving for the new access road. The development will also seek to include soft landscaping features.

4.4 Waste Management

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 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 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.

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 will be informed 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 with the help of segregated bins. It is expected that there will be multiple streams of waste – general, recyclables and compost / green waste;
- Residents will be required to take their waste (via lifts) to the refuse store on the ground floor;
- The number of bins and subsequently the size of the refuse store is based on waste generation figures for each apartment;
- The management company will be responsible for transferring the waste from the refuse store to a hardstanding service area on the day of collection by refuse operators; and
- Following collection, the bins will be returned to the refuse store.

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 permeable paving, 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 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.

4.6 Ecology and Biodiversity

The majority of the site is occupied by mature trees and overgrown planting. The mature trees play a role in forming the character of the street and can be seen from either end of Withington Road. These are also protected under the Conservation Area and will be maintained to upkeep the character of the site and to support biodiversity.

The overall objective is to successfully integrate the development into the site by providing a series of planted areas that increase the sites biodiversity. A number of separate vegetation types have been proposed, which will help to create habitats and improve the overall ecological value of the site. These include:



- Specimen tree planting
- Shrubs & ornamental planting
- Understorey planting
- Hedgerow planting
- Wildflower meadow

These will require varying management techniques in order to successfully achieve the overall objective.

Figure 4.3 - Softworks Landscape Proposal



4.7 Transport

The proposed site has a high level of connectivity and benefits from access to a number of sustainable transport options.

The nearest bus stop is located within one mile of the site, off Upper Chorlton Road. Providing regular services to key locations, such as Piccadilly Gardens, Withington and West Didsbury. The closest Metrolink stop is located at Firswood, approximately one mile from the site. From here Manchester City Centre can be accessed within twenty minutes and provides links to Manchester's major train stations and airport. Therefore, the site is located within an area that benefits from good accessibility to public transport networks, which provide regular service links to key destination within Greater Manchester.

There is designated car parking and thirty-six secure cycle parking spaces for residents, which will encourage cycling as a mode of transport to and from the site. Overall, the surrounding area benefits from excellent levels of pedestrian and cycling infrastructure and there are plenty of public transport options within appropriate walking distance of the site.



5. ENERGY STRATEGY

5.1 Energy Strategy

In essence, the Energy Strategy for 136 Withington Road focuses on a holistic and multi-faceted method of improving the building's performance by applying an enhanced fabric-led approach to limiting demand side energy loads, allied to improvements in the efficiency of the mechanical and electrical systems. The design measures outlined in the Energy Strategy comply with the policy requirements as set by the Manchester City Council's Core Strategy.

5.1.1 Build Fabric and Thermal Performance

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 the residential apartments.

Table 5.1 - Fabric Parameters

Construction Element	Proposed Fabric Specification
Floor	$U=0.10 \text{ W/m}^2\text{K}$
Walls	$U=0.15 \text{ W/m}^2\text{K}$
Roof	$U=0.10 \text{ W/m}^2\text{K}$
Windows	$U=0.80 \text{ W/m}^2\text{K}$ Triple Glazed
Air Permeability	$3.00\text{m}^3/\text{hm}^2$ (@50Pa.)
Cold Bridge	Accredited Construction Details <i>equivalent</i>

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, triple-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 $<3.0\text{m}^3/\text{hm}^2$ (@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. This 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 enhances the energy efficiency of the apartments and guarantees low energy demand throughout their occupation.

This enhanced fabric build specification will help 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 Approved Document Volume 1.

5.1.2 Building Services Specification

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 Table 5.2.

Table 5.2 - Mechanical and Electrical Specification (M&E)

Building Elements	Proposed Block M&E Specification	Proposed M&E Specification for Plots 10-13 Maisonettes
Mechanical Ventilation	Vent Axia Sentinel Kinetic B MVHR	Vent Axia Sentinel Kinetic B MVHR
Space Heating	Electric Panel Heaters	Electric Panel Heaters
	Time and temperature zone controls	Time and temperature zone controls
Water Heating	Electric immersion heater 120L, 1.06kWh/day 150L, 1.25kWh/day	200L, 1.60kWh/day loss from Dimplex EDL200 heat pump
Water Efficiency	<110 litres / person / day	<110 litres / person / day
Lighting	Low energy LED (10W, 80lm/W, 800lm capacity)	Low energy LED (10W, 80lm/W, 800lm capacity)
Renewable Technology	5.10kWp south orientated Photovoltaic (PV) array	



This mechanical and electrical specification will deliver a Building Regulations, Part L Approved Document Volume 1 compliant scheme, and will provide the following benefits:

- **Mechanical ventilation with heat recovery (MVHR)** systems will be specified in each apartment unit and within the maisonette units to maintain a healthy living environment and to further reduce the heat losses and energy demand of the apartments. The design air permeability of $3.0\text{m}^3/\text{hm}^2$ (@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;
- **Electric panel heating (for space heating)** is 100% efficient at the point of consumption and generates a reduced overheating potential – electric space heating delivers virtually instantaneous heating at the location it is required. Comparatively, a ‘wet system’ associated with communal gas boilers 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;
- **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 time and temperature zonal controls will ensure the efficient delivery of heat from electric panel heaters to further reduce the apartments’ energy demand.



6. PROPOSED RENEWABLE ENERGY SOLUTION

An analysis of the most appropriate renewable energy options has been undertaken. A number of renewable energy technologies have been considered for this site, including:

- Solar hot water;
- Photovoltaics (PV);
- Wind;
- Heat pumps; and
- Biomass heating.

A review of the development proposals and site location concludes that the addition of Photovoltaic Panels and Air Source Heat Pumps are feasible for this scheme, as detailed below:

✗ **Solar Hot Water** utilises the energy in sunlight and diffuse daylight to heat water for use in buildings. The main component of any solar water heating system is the collector, which absorbs the radiant energy of the sun and converts it to heat energy. This technology is not considered to be a feasible option for this site because there are potential problems associated with routing the pipework through the apartments.

✓ **Photovoltaic (PV)** panels 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. The addition of a PV array is considered to be a feasible option for this development.

✗ **Wind Turbines** are considered unsuitable for this site due to a poor wind resource and lack of space to locate the turbines at the lower levels of the scheme. Integrating these systems at height on the top floor of the buildings is not considered feasible due to the associated noise, vibration and structural stresses upon the building. Furthermore, there are planning issues and perceived safety concerns with this technology.

✗ **Ground Source Heat Pumps** collect low-grade heat from the ground to supply useful heat for space and water heating requirements. By applying additional energy input (in the form of electricity), it is possible to raise the temperature of the source heat to the temperature required. Such technology is considered unsuitable for this site due to an insufficient area (based upon the proposed densities) to install a horizontal ground collector and the prohibitive costs and technical constraint of installing vertical boreholes.

✓ **Air Source Heat Pumps** collect low-grade heat from the air to supply useful heat for space and/or water heating requirements for the maisonettes apartments. They operate in the same way as a ground source heat pump, and, by applying additional energy input (in the form of electricity), it is possible to raise the temperature of the source heat to the temperature required. The incorporation of ASHPs is considered a feasible option for this development.

✗ **Biomass heating** would be capable of delivering the target CO₂ emission reductions but are considered inappropriate for this type of development and location due to the requirement for a large fuel store and the high NO_x emissions associated with biomass combustion which is inappropriate for this urban location.



6.1 Proposed Renewable Energy Solutions

6.1.1 Photovoltaic Array

Photovoltaic (PV) arrays have been selected as the preferred, appropriate renewable energy technology to contribute to the CO₂ emission reduction target for the residential units within the proposed development. PV arrays are relatively straightforward to install, benefit from low maintenance costs and will reduce the operational cost of the building.

The use of PV in general would provide the following benefits:

- Reducing the building's electrical energy grid load;
- Simple installation and commissioning;
- Low maintenance; and,
- Reliable, proven technology.

The roof area is sufficient to accommodate the proposed 35.70m² PV array, which will provide the necessary 5.10kWp to achieve the carbon reduction targets stipulated in Building Regulations Part L Approved Document Volume 1.

The PV panels would be mounted upon the flat roof in tilted arrays and orientated in a southerly direction to optimise the operating efficiency of the system.

6.1.2 Air Source Heat Pumps

The typical basic components of an air source heat pump package comprise a hot water cylinder, heating coil, extractor fan and a heat pump. The proposed packaged system that will serve the maisonette apartments is an intelligent system that provides hot water efficiently.

This solution would provide the following benefits:

- Highly energy efficient water heating system;
- This technology benefits from a low 'carbon footprint' due to the inherent efficiency of the heat pump process. It is a well-established technology with an anticipated long lifespan - with proper care they can be operational for up to 20 years;
- Omission of fossil fuel (has) connection from the scheme will enable the development to track the decarbonisations of the UK electricity grid over time and reduce operational carbon emissions as a consequence; and,
- There are no fuel storage issues associated with heat pumps.



7. ENERGY PERFORMANCE CALCULATIONS

In order to demonstrate the environmental benefits associated with the energy strategy for this site, approved SAP 10 software has been used to generate representative energy demand models for the residential component of the building. SAP software calculates the regulated energy demand and associated carbon dioxide emissions in accordance with the requirements of Building Regulation, Part L Approved Document Volume 1 that this development will be constructed in compliance with.

Table 7.1 below presents a summary of these calculation results, which show the regulated energy demand and emission reductions achieved by the enhanced material specification, efficient servicing, and renewable energy solutions.

Table 7.1 – Calculated Block Dwelling Emission Rate

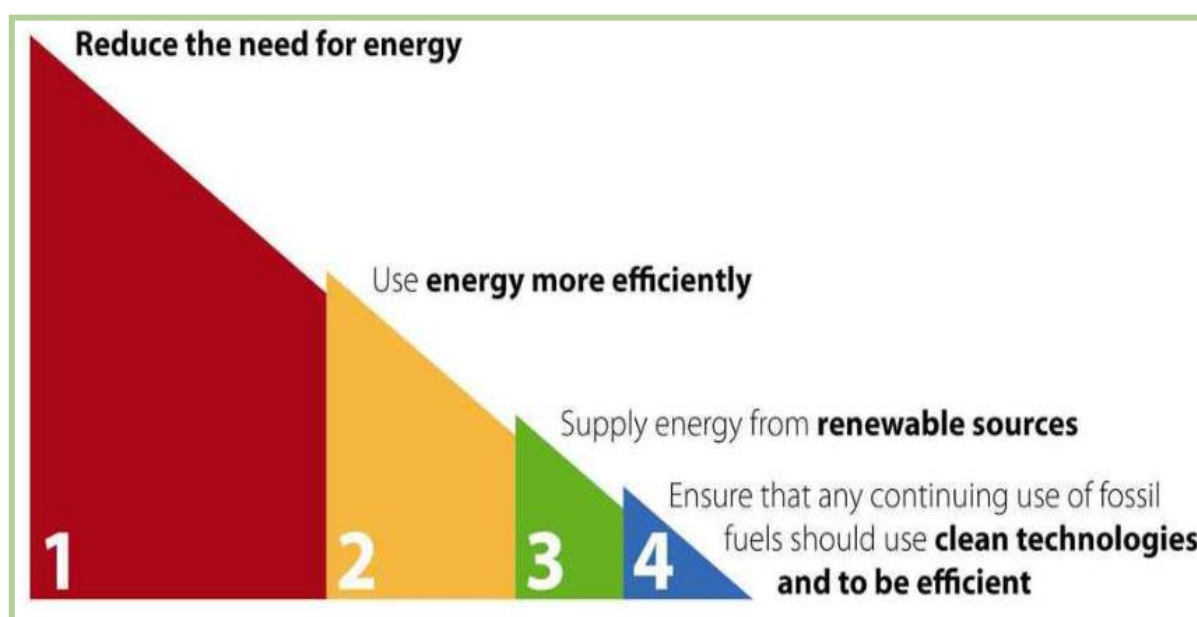
Representative Apartment	DER (kgCO ₂ /m ² /year)	TER (kgCO ₂ /m ² /year)	% Variance
Block Compliance	5.30	10.90	51.39

There is an expected average improvement of 51.39% over Building Regulations Part L Volume 1 (2021). The proposed development significantly exceeds the Council's adopted Core Strategy Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies.

7.1 Energy Hierarchy

The 136 Withington Road 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 7.1).

Figure 7.1 – 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. Which will allow occupants to control zones within their units independently for maximum flexibility. This is intended to reduce the demand for additional energy usage.
- The design air permeability target for the buildings is $3.0\text{m}^3/\text{hm}^2$ (@50Pa.). This low air permeability target will assist to limit the heat loss through the structure of the building;

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:

- 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:

The roof has sufficient space to accommodate a PV array which will help to provide renewable energy for the development in line with the third principle. In addition to this, ASHP's will provide the water heating requirements for the maisonette apartments.

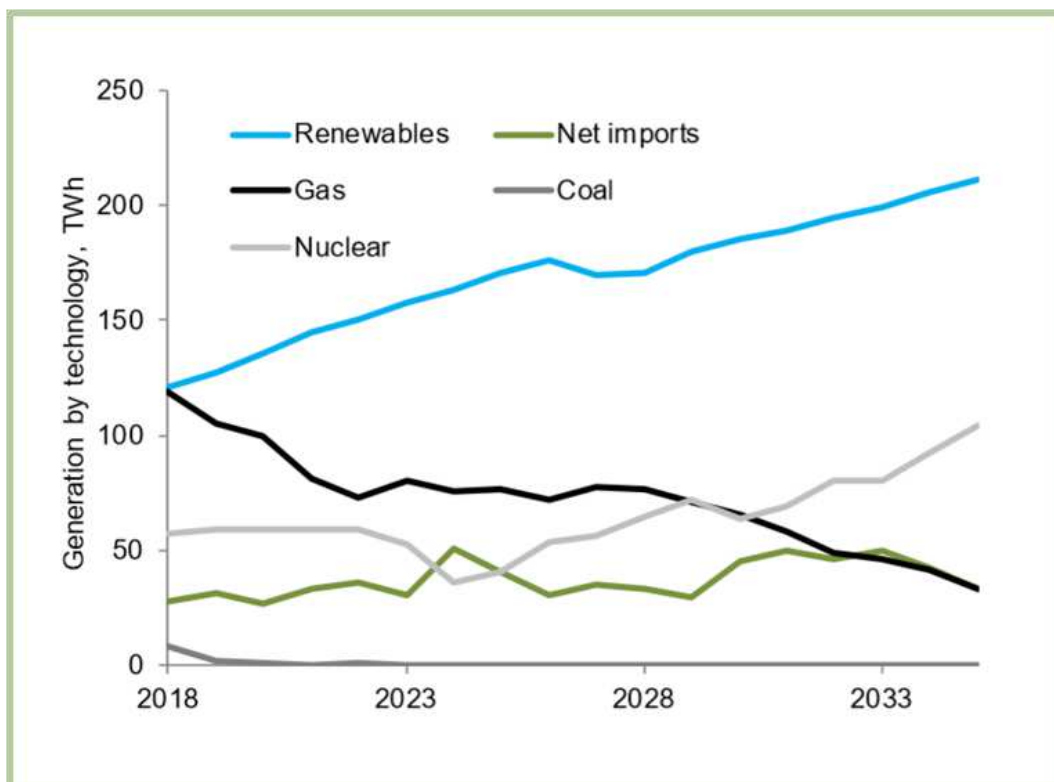
Fourth Principle:

The use of electric panels 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 grid's carbon dioxide (CO₂) footprint continues to improve, so too would the emissions associated with the operational phase of the proposed scheme which benefits from a 'full electric' energy strategy. Figure 7.2 below presents the BEIS Energy and Emissions Projections 2018).



Figure 7.2 - Energy and Emissions Projections 2018 (BEIS)



8. CONCLUSION

This Statement has reviewed the sustainability performance of the proposed 136 Withington Road 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 <110 litres/person/day through **the specification of efficient water fixtures**.
- The proposed scheme location promotes access **to sustainable transport options**. Provision of cycle storage and access to regular busses will contribute towards creating a highly connected and sustainable development.
- The site is located within Flood Zone 1, and therefore the probability of **flooding from nearby rivers is low**
- Waste arising during construction and occupation/operation will be minimised through the **implementation of a Waste Management Plan (WMP)**. The WMP 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 refuse areas 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.

Energy Strategy –

The development will be designed and specified in accordance with **the principles of the energy hierarchy** and exceeds the **targets and guidance set out in Manchester City Council's Core Strategy**.

- The focus is on reducing the demand for energy by **limiting heat gains and losses through the building fabric** which includes an enhanced material specification, well beyond the regulatory requirement.
- The apartments will integrate highly efficient mechanical and electrical systems, including **electric panels for space heating, low energy lighting and mechanical ventilation heat recovery**;
- Based on these specifications, the residential apartments will secure **51.39% carbon dioxide emissions reduction** over Building Regulations Part L Volume 1 (2021).
- The proposed energy strategy is also **in alignment with the developing Places for Everyone draft policies**.



- The development will benefit from an **all-electric energy strategy** that is 100% efficient at the point of consumption and generates a reduced overheating potential. Plus, As the UK's electricity grid decarbonises, the buildings' operational emissions will reduce over time.

In conclusion, the proposals reviewed within this statement for the residential scheme at 136 Withington Road in Manchester will deliver a highly energy efficient and sustainable scheme, providing a quality development that accords with the guidance provided within the Manchester City Councils adopted planning policies.

