ELEMENT SUSTAINABILITY

FIRST STREET, MANCHESTER ENVIRONMENTAL STANDARDS STATEMENT

DECEMBER 2024

REF: 2024.118



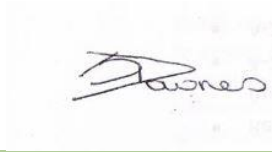
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1. INTRODUCTION

Element Sustainability has been commissioned by Vita Meadow Ltd to review the sustainability and energy performance of the proposed First Street Plot 9b purpose-built student accommodation (PBSA) scheme in Manchester. The proposed construction compound will not impact our assessment and therefore this report focuses primarily on the proposed development site.

The purpose of this statement is to summarise the relevant policy background and requirements of Manchester City Council and to demonstrate the ways in which the developer has addressed these aims through their proposals, ensuring all practicable measures have been taken 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.

This report is intended to support the planning application for this development and therefore, establish an approach to the delivery of this scheme which meet the criteria outlined by the council that the developer commits to implement at the site.

2. DEVELOPMENT PROPOSALS

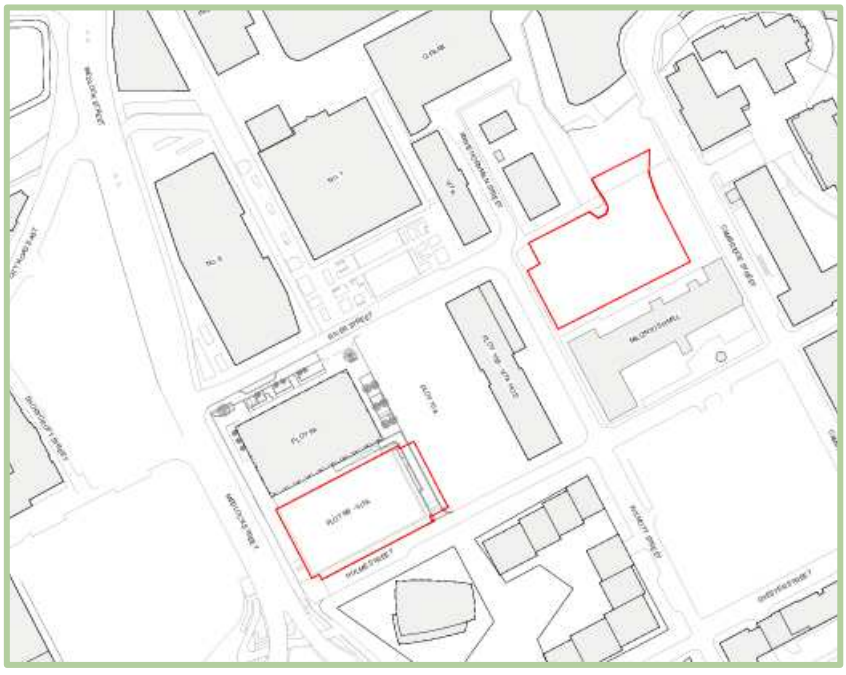
2.1 Development Site Description

The Site comprises two areas, the development site and construction compound.

- The Proposed Development will be located entirely on 'Plot 9B', bound to the west by Medlock Street; to the north by land at Plot 9A of the FSDF area (currently being redeveloped into an office block of up to 9 storeys (pursuant to Planning Permission 132600/FO/2021); to the east by land at Plot 10A (currently being redeveloped into an office block of up to 13 storeys (pursuant to Planning Permission 136043/FO/2023)) and to the south east by Hulme Street and land at Plot 11 of the FSDF area (currently being redeveloped to deliver three co-living buildings of up to 45 storeys (pursuant to Planning Permission 125573/FO/2019 (as amended)). Plot 9B measures approximately 0.25ha.

- The area bound by the River Irvell to the north; Cambridge Street to the east; Machintosh Mills to the south and river street and Annie Hornian Street to the west will be used as a site compound for the construction phase of works (the 'Construction Compound'). The Construction Compound measures 0.46, and comprises an area of vacant, brownfield land.

Figure 2.1 – Site Location Plan



2.2 Development Proposals

The Proposed Development includes the erection of a purpose-built student accommodation (PBSA) building (Sui Generis), alongside ancillary amenity space, landscaping, secure cycle parking and other associated works, and use of Land east of River Street as a construction compound.

Figure 2.2 to 2.8 present the proposed elevations and floor plans for the proposed development:

Figure 2.2 – North Elevation

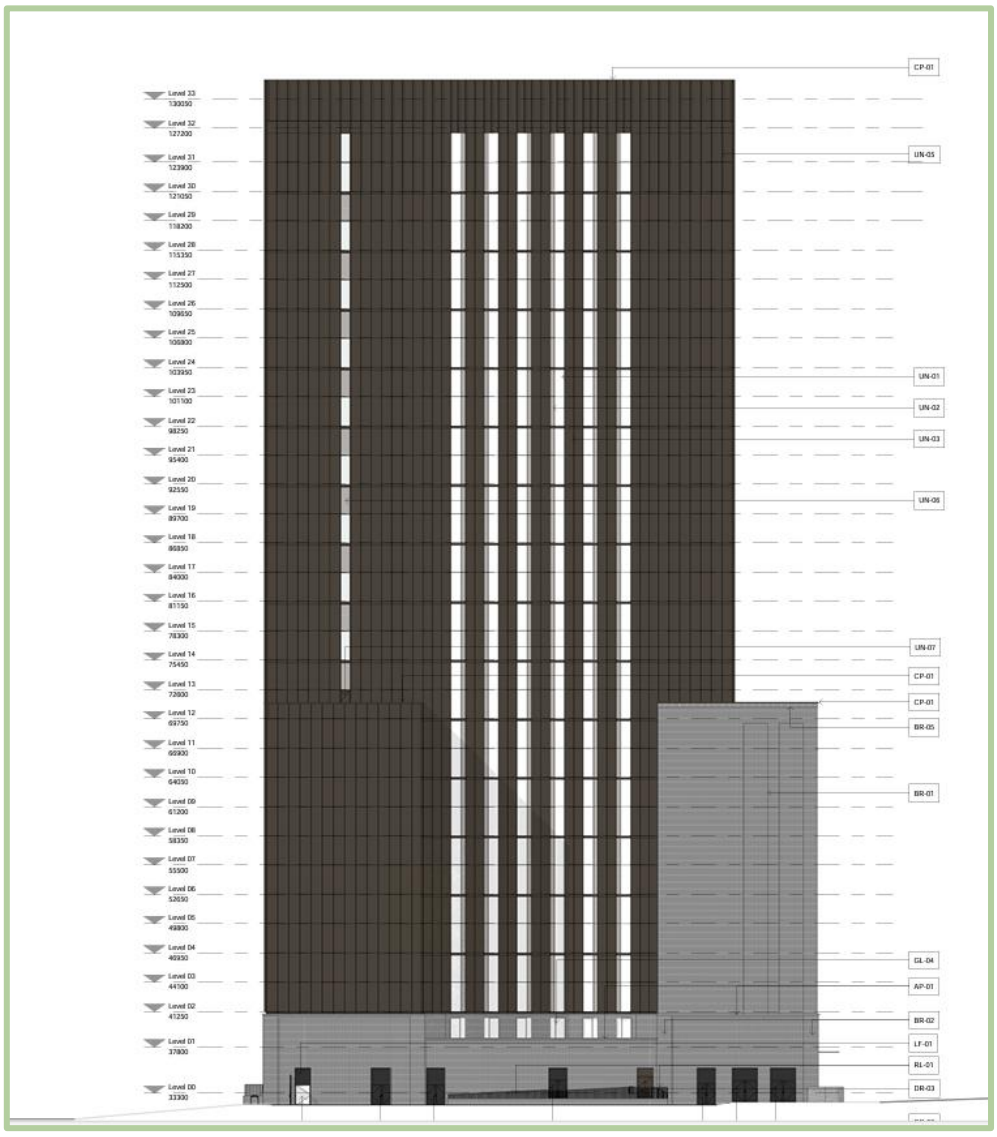


Figure 2.3 – General Arrangement Ground Floor

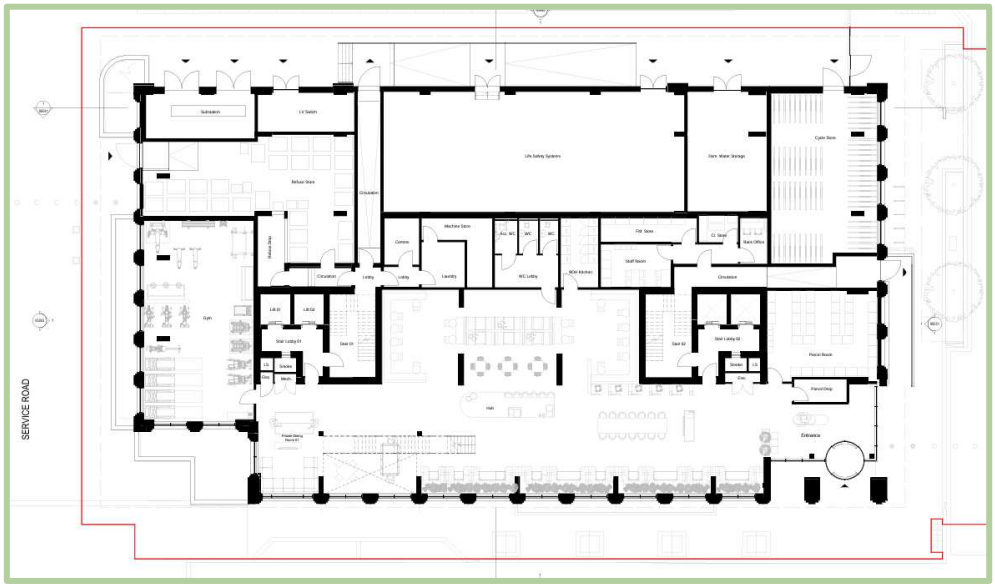


Figure 2.4 – General Arrangement Proposed First Floor



Figure 2.5 – General Arrangement Levels 02-11



Figure 2.6 – General Arrangement Level 12



Figure 2.7 – General Arrangement Levels 13-31

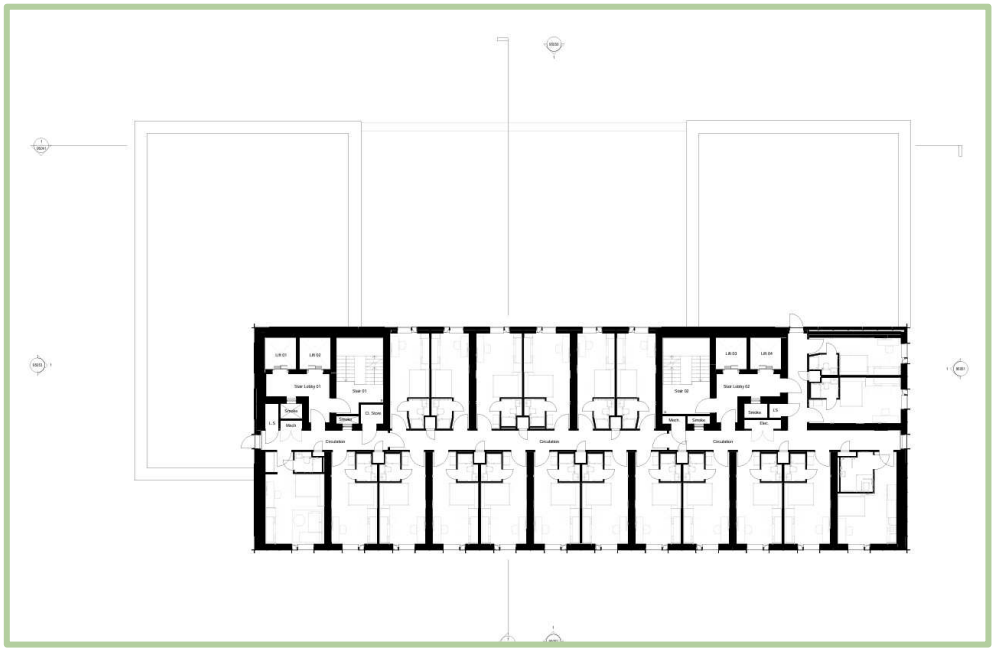
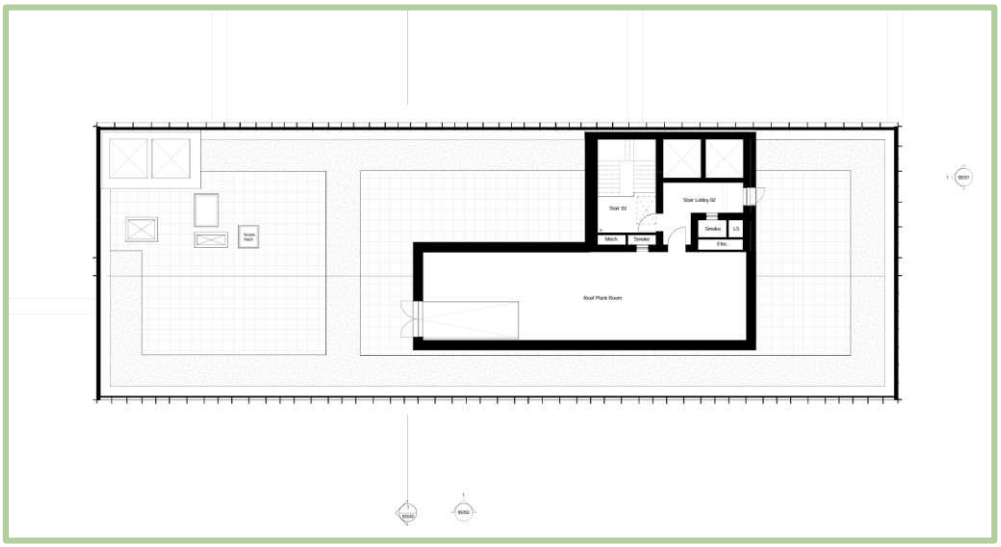


Figure 2.8 – General Arrangement Levels 32



3. POLICY REVIEW

3.1 National Planning Policy

The National Planning Policy Framework was revised in response to the Levelling-up and Regeneration Bill: reforms to national planning policy consultation on 19th December 2023 and sets out the government's planning policies for England and how these are expected to be applied.

The purpose of the planning system is to contribute to achieving sustainable development. The planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways, as set out below:

An economic role – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

A social role – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations, and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

An environmental role – to protect and enhance our natural, built and historic environment, including effectively using land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low-carbon economy.

These objectives should be delivered through the preparation and implementation of plans and the application of the policies in this Framework. Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.

3.2 Local Planning Policy

3.2.1 Manchester Core Strategy

Manchester's Core Strategy was adopted on the 11th July 2012 and remains the key document in the adopted Manchester Local Plan. It sets the out the long-term strategic policies for Manchester's future development and will form the framework that planning applications will be assessed against.

Policy EN 4 - Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development: The council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO_2 emissions, and rising fossil fuel prices, through the following actions:

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 5 - Strategic Areas for Low and Zero Carbon Decentralised Energy Infrastructure: Within Manchester it is considered that the following strategic areas, will have a major role to play in achieving an increase in the level of decentralised, low and zero carbon energy supplies available:

- 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.

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:

- Reduction in urban heat island effect using green infrastructure such as green roofs, green walls, increased tree cover and waterways; and,
- The need to control overheating of buildings through passive design; and

Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO_2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.

Policy EN9 - 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. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.

Policy EN14 – Flood Risk: The council requires developments to:

- 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).

Policy EN15 – Biodiversity and Geological Conservation: The council will seek to maintain or enhance sites of biodiversity and geological value throughout 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, with reference to:

- The Manchester Biodiversity Strategy, which provides further details of priority habitats within Manchester and opportunities for biodiversity enhancement including corridors such as the Mersey, Medlock and Irk River valleys, the canals and disused railway lines, and areas of managed greenspace particularly in parks;

- The Green Infrastructure Framework for Greater Manchester, which encompasses an ecological framework that seeks to guide and inform habitat creation and repair, including identifying large 'biodiversity opportunity areas' including the Moston Brook Corridor and Nutsford Vale;

    - Manchester's Climate Change Action Plan;
    - The Strategic Flood Risk Assessment (SFRA) for Manchester;
    - The River Basin Management Plan for the North West; and,
    - The Manchester Tree Strategy.

Any adverse impacts on biodiversity will need to be justified against the wider benefits of the proposal, assessed against other Local Development Framework policies. Where adverse impacts are unavoidable, developers will be required to provide appropriate mitigation and / or compensation. Development should, wherever possible, seek to maintain, enhance or restore existing geology.

Policy EN16 – Air Quality: The council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself.

Policy EN17 – Water Quality: The council require:

- New developments to avoid any adverse impact on water quality, including during the construction phase, and wherever possible should seek to enhance water quality, both chemical and ecological.

Policy EN19 – Waste: The council will:

- 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 (prevention, reduction, re-use, recycling/composting, energy recovery, final disposal);

- 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; and,

- Encourage communities to take responsibility for the waste they create through the provision of accessible facilities.

Policy DM1 – Development Management: All development should have regard to the following specific issues, for which more detailed guidance may be given within a supplementary planning document:

- Accessibility: buildings and neighbourhoods fully accessible to disabled people, access to new development by sustainable transport modes;
- Community safety and crime prevention;
- Design for health;

- Adequacy of internal accommodation and external amenity space;
- Refuse storage and collection;
- Effects relating to biodiversity, landscape, archaeological or built heritage;
- Green infrastructure including open space, both public and private;
- The use of alternatives to peat-based products in landscaping/gardens within development schemes;
- Flood risk and drainage and,
- Subject to scheme viability, developers will be required to demonstrate that new development incorporates sustainable construction techniques (In terms of energy targets this policy should be read alongside policy EN6 and the higher target will apply).

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;
- Facilitate modes of transport that reduce carbon emissions e.g by incorporating charging points for electric vehicles, subject to their appropriate design and location;
- Would reduce the negative impacts of road traffic, for example, congestion, air pollution and road accident casualties; and,
- Take account of the needs of road users according to a broad hierarchy consisting of, in order of priority:

    1. pedestrians and disabled people,
    2. cyclists, public transport,
    3. commercial access,
    4. general off peak traffic,
    5. general peak time traffic.

3.2.2 PFE - Addendum to Manchester Core Strategy

Following the adoption of the PfE document, the subsequent Core Strategy (CS) policies have been partially replaced by Places for Everyone (PfE) policies. Any part of the policy that is not replaced remains part of Manchester's Core Strategy.

CS Policy T1 Sustainable Transport: The following bullet point details what has been replaced:

- 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.

    This policy was replaced by PfE Policy JP-CA1.

CS Policy EN4 Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development: The following bullet point is what has been replaced:

- All development must follow the principle of the Energy Hierarchy.

  This policy was replaced by PfE Policy JP-S2.

CS Policy EN6 Target Framework for CO_2 Reductions from Low or Zero Carbon Energy Supplies: The following aspects of the policy have been replaced:

- The CO_2 emissions reduction targets and the target framework development locations

  This policy was replaced by PfE Policy JP-S2.

CS Policy EN8 Adaption to Climate Change: The following bullet point details what has been replaced:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rainwater permeability; and,
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation.

  This policy was replaced by PfE Policies JP-S2, JP-S4 and JP-G8.

CS Policy EN14 Flood Risk: The following bullet point details what has been replaced:

- 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.

  This policy was replaced by PfE Policy JP-S4.

CS Policy EN15 Biodiversity and Geological Conservation: The following aspects of the policy have been replaced:

Development should wherever possible seek to maintain, enhance or restore existing geology.

This policy was replaced by PfE Policy JP-G8.

CS Policy EN17 Water Quality: The following bullet point details what has been replaced:

- Development should minimise surface water run-off from development and associated roads, and maximise the use of appropriate sustainable drainage systems, to minimise groundwater contamination, and to avoid pollutants reaching watercourses.

  Replaced by PfE Policy JP-S4

These elements of the above policies have therefore been removed from the previous Local Planning Policy section.

3.3 Regional Planning Policy

3.3.1 Places For Everyone

Places for Everyone is the joint development plan of nine Greater Manchester local authorities (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, and Wigan) dealing with strategic planning issues including jobs, homes, transport, and the natural environment.

All nine authorities adopted the PfE Plan on 21st March 2024. Therefore, this is now part of the statutory development plan for each of the nine PfE authorities.

As a result, the following polices have been considered as part of the proposed development:

Policy JP-S1: Sustainable Development: To help tackle climate change, development should aim to maximise its economic, social and environmental benefits simultaneously, minimise its adverse impacts, utilise sustainable construction techniques and actively seek opportunities to secure net gains across each of the different objectives.

In bringing forward previously developed sites for development, particular attention will be paid to tackling land contamination and stability issues, ensuring that appropriate mitigation and remediation is implemented to enable sites to be brought back into use effectively.

Addressing Climate Change

Greater Manchester's Vision is to be at the forefront of action on climate change and to make its fair contribution to international commitments by becoming a carbon neutral city region by 2038.

To meet the carbon commitments, the following will be required:

- Be carbon neutral by 2038;
- Hold cumulative carbon dioxide emissions to within the council's carbon budget; and,
- Initiate a programme of mitigation to reduce emissions including by:
    - Significantly upscaling solar photovoltaic energy;
    - Reducing heat demand in homes;
    - Moving away from carbon intensive gas as the primary source of heat; and,
    - Increasing biofuel use.

- In supporting Greater Manchester's ambitions, climate change is a key theme running throughout the plan, rather than being reduced to a single policy, and it is only through this combination of actions that it can be properly addressed. In particular:
    - Methods to de-carbonise the city region through new and existing development, effective land management and through the provision of infrastructure and new technologies Policy JP-S2 'Carbon and Energy'; and,
    - The delivery of renewable and low carbon energy schemes Policy JP-S3 'Heat and Energy Networks'.

Carbon and Energy

- Meeting the 2038 carbon neutrality target will require a radical transformation across a range of sectors to drive carbon reduction. Within this, new development will have a critical role to play, and all new homes and commercial/industrial buildings will need to achieve net zero carbon by 2028.

- It is expected that development in the plan area will apply a net zero carbon approach to operational emissions up until 2028, thereafter emissions in construction should be considered. Minimum carbon reduction targets will be set in line with the Future Homes Standard of 80% or until such a time this is superseded.

- From 2025, applicants will need to demonstrate carbon reductions have been maximised with an opportunity to offset any residual carbon to a carbon offset fund. The approach will be reviewed in line with future standards as they are introduced.

- By following the energy hierarchy, new development will need to achieve net zero carbon through the maximisation of on-site measures first. However, circumstances where a development has demonstrated that the hierarchy has been followed and there are no reasonable alternatives to meet the minimum carbon reductions, then payment to offset remaining emissions will also be required. Such payments should be expected to fund other carbon saving programmes within Greater Manchester to help meet the 5 Year Environment Plan targets.

Policy JP-S 2 – Carbon and Energy: The aim of delivering a carbon neutral Greater Manchester no later than 2038, with a dramatic reduction in greenhouse gas emissions, will be supported through a range of measures including:

- Promoting the use of life cycle cost and carbon assessment tools to ensure the long-term impacts from development can be captured;

- Taking a positive approach to renewable and low carbon energy schemes, particularly schemes that are led by, or meet the needs of local communities;

- An expectation that new development will, unless it can be demonstrated that it is not practicable or financially viable;

    - Be net zero carbon which applies:

        - From adoption – to regulated operational carbon emissions;

    - From 2025 development should also calculate and minimise carbon emissions from unregulated emissions alongside regulated emissions.

    - Development proposals should set out how this has been achieved in an energy statement in accordance with the energy hierarchy, which in order of importance seeks to:

        - Minimise energy demand;
        - Maximise energy efficiency;
        - Use renewable energy;

  - Use low carbon energy; and
  - Utilise other energy sources.

- From 2025 any residual carbon emissions that cannot be fully mitigated onsite should be offset, in agreement with the relevant local planning authority, through a financial contribution to a carbon offset fund;

- As an interim measure, development should be consistent with the 2021 Part L Building Regulations unless superseded by changes to building regulations and/or national or local planning policies.

    - Where practicable, prioritise connection to a renewable energy/heating/cooling network in the first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date; and,

- For renewable energy generation priority should be given to PV installation where technically feasible, alternative technologies will be appropriate where the equivalent generation is evidenced;

- For non-residential developments, achieve at least BREEAM excellent standard (or equivalent) for the 'Ene 01 – reduction of energy use and carbon emissions' category rising to 'BREEAM outstanding' equivalent for ENE 01 from 2028;

- Include a detailed energy statement to demonstrate via site relevant evidence how the development has sought to maximize reductions in carbon emissions in line with relevant policy targets, including the minimisation of overheating risks and appropriate measures for post occupancy evaluation. Whole life cycle emissions should be considered where possible.

- Districts Local Plans may set out specific carbon emission reduction and energy demand targets within Local Plans.

Policy JP-STRAT14 - A Sustainable and Integrated Transport Network: New development will have a significant role in delivering a sustainable and integrated transport network in order to reduce car dependency and increase levels of walking, cycling and public transport.

Policy JP-S3 – Heat and Energy Networks: The provision of decentralised energy infrastructure is critical to the delivery of our objectives for low carbon growth, carbon reductions and an increase in local energy generation. The following measures will help to achieve this:

1. Delivery of renewable and low carbon energy schemes will be supported with particular emphasis on the use of decentralised energy networks in areas identified as "Heat and Energy Network Opportunity Areas". These have been identified where:

    a. Existing heat/energy networks are operational or have been commissioned;
    b. Sufficient density of existing heat demand occurs; and,
    c. Significant future development is proposed at the strategic development locations.

2. Within the identified "Heat and Energy Network Opportunity Areas", unless it can be demonstrated that there are more effective alternatives for minimising carbon emissions or such connection is not practicable or financially viable.

Policy JP-S4 - Flood Risk and the Water Environment: An integrated catchment-based approach will be taken to protect the quantity and quality of water bodies with reference to the North West River Basin Management Plan and managing flood risk, by:

- Working with natural processes and adopting a natural flood management approach to slow the speed of water drainage and intercept water pollutants;
- Locating and designing development so as to minimise the impacts of current and future flood risk, including retrofitting or relocating existing developments, infrastructure and places to increase resilience to flooding;
- Expecting developments to manage surface water runoff through sustainable drainage systems and as close to source as possible;
- Development should achieve greenfield run-off rates unless it is demonstrated to be impracticable; and,
- Ensuring that sustainable drainage systems:
    - Are designed to provide multifunctional benefits wherever possible, including for water quality, nature conservation and recreation;
    - Avoid adverse impacts on water quality and any possibility of discharging hazardous substances to ground;
    - Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and
    - Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.

- As a minimum, residential development should meet the mandatory water efficiency standard of 125 litres/person/day as set out in Building Regulations. District local plans may and should consider setting a tighter water efficiency standard of 110 litres/person/day where there is a clear local need with reference to national guidance on housing optional technical standards.

Policy JP-S6 - Resource Efficiency: The achievement of a circular economy and a zero-waste economy will play a key role in meeting Greater Manchester's ambition of becoming a leading green city region by 2038. The following measures will help achieve this:

- Development and implementation of the Zero Waste Strategy for Greater Manchester which promotes overall reduction in the level of waste produced and supports resource efficiency within the Plan area in order to gain the maximum value from the things we produce;
- Recognition of the role of existing infrastructure in managing our waste and protecting such facilities to ensure adequate waste management capacity is maintained; and
- Using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof to the impact of climate change, reduce and recycle waste and minimise water use.

Policy JP-G2 – Green Infrastructure Network: A strategic approach will be taken to the protection, management and enhancement of Greater Manchester's Green Infrastructure in order to protect and enhance the ecosystem services which the Green Infrastructure Network provides, including flood management, climate change mitigation and adaptation.

Wherever practicable, opportunities to integrate new and existing green infrastructure into new development will be taken to protect, enhance and expand the green infrastructure network.

Policy JP-G6: Urban Green Space: To ensure there is an appropriate scale, type, quality and distribution of accessible urban green space that can support a high quality of life and other important green infrastructure functions:

- Existing urban green space will be protected and enhanced in balance with other considerations; and
- Developers and other stakeholders will be required to deliver new high quality urban green spaces.

Development should be designed to support the positive use of nearby green spaces, such as by offering a high-quality setting, providing natural surveillance, and facilitating easy access by walking and cycling.

Policy JP-G7 - Trees and Woodland: the aims and objectives of the Greater Manchester Tree and Woodland Strategy, aiming to significantly increase tree cover, protect and enhance woodland, and connect people to the trees and woodland around them.

This will be done through local planning and associated activities such as:

- Where development would result in the loss of existing trees, requiring replacement on the basis of two new trees for each tree lost, or other measures that would also result in a net enhancement in the character and quality of the treescape and biodiversity value in the local area, with a preference for on-site provision; and
- Protecting trees and woodland during the construction phase of development.

Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity: Through local planning and associated activities a net enhancement of biodiversity resources will be sought, including, where relevant, by:

- Increasing the quality, quantity, extent and diversity of habitats, particularly priority habitats identified in national or local biodiversity action plans and those that support priority species;
- Improving connections between habitats, to protect and enhance the provision of corridors, ecological networks (including Nature Recovery Networks) and steppingstones that enable the movement of species, especially as the climate changes;
- Enhancing the management of existing habitats, including through habitat restoration, avoiding habitat fragmentation and combating invasive species;
- Protecting sites designated for their nature conservation and/or geological importance, with the highest level of protection given to international and then national designations;
- Facilitating greater access to nature, particularly within urban areas;
- Supporting the development and implementation of the Great Manchester Wetlands Nature Recovery Network; and
- Safeguarding, restoring and sustainably managing our most valuable soil resources, tackling soil degradation/erosion and recovering soil fertility.

Development will be expected to:

- Follow the mitigation hierarchy of:
    - Avoiding significant harm to biodiversity, particularly where it is irreplaceable, through consideration of alternative sites with less harmful impacts, then
    - Adequately mitigating any harm to biodiversity, then
    - Adequately compensating for any remaining harm to biodiversity.

- Achieve a measurable net gain in biodiversity of no less than 10%; and,
- Development proposals should be informed by the findings and recommendations of the appropriate biodiversity/ecological assessment(s) in the PfE evidence base and/or any updated or appropriate biodiversity/ecological assessments submitted as part of the planning application process.

Policy JP-P1 - Sustainable Places: The aim is to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:

- Distinctive, with a clear identity that:
    - Conserves and enhances the natural environment, landscape features, historic environment and local history and culture;
    - Enables a clear understanding of how the place has developed; and
    - Respects and acknowledges the character and identity of the locality in terms of design, siting, size, scale and materials used.
- Resilient, capable of dealing with major environmental events;
- Adaptable, able to respond easily to varied and changing needs and technologies;
- Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained;
- Resource-efficient with:
    - A low carbon footprint;
    - Efficient use of land;
    - Minimised use of new materials; and,
    - High levels of recycling,
- Supported by critical infrastructure, such as energy, water and drainage and green spaces; and,
- Functional and convenient, enabling people and uses to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage.

3.4 Manchester's Great Outdoors

The Green and Blue Infrastructure Strategy for Manchester aims to invest in the city's green and blue infrastructure over the next ten 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.

3.5 Climate Emergency

On 10th July 2019, a motion asking Manchester City Council (MCC) to formally declare a **climate emergency** was unanimously agreed. The motion declares that climate change is a serious risk to Manchester's future. Manchester is 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;
- 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 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 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.

3.6 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 L - Volume 2: Buildings other than dwellings provides guidance on how to comply with Part L of Schedule 1 to the Building Regulations and the energy efficiency requirements for buildings other than dwellings.

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

- New buildings, in the form of target CO_2 emission rates;
- New buildings, in the form of target fabric efficiency rates; and,
- New buildings in the form of target primary energy rates.

3.7 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:

Places for Everyone

- Policy JP-S1: Sustainable Development
- Policy JP-S2: Carbon & Energy
- Policy JP-STRAT14: A Sustainable and Integrated Transport Network
- Policy JP-S3: Heat and Energy Networks
- Policy JP-S4: Flood Risk and the Water Environment
- Policy JP-S6: Resource Efficiency
- Policy JP-G2: Green Infrastructure Network
- Policy JP-G6: Urban Green Space
- Policy JP-G7: Trees and Woodland
- Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity
- Policy JP-P1 Sustainable Places

Manchester Core Strategy

- Policy EN 4 - Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development
- Policy EN 5 - Strategic Areas for low and zero carbon decentralised energy infrastructure
- Policy EN 6 - Target Framework for CO_2 Reductions from Low or Zero
- Policy EN 8 – Adaption to Climate Change
- Policy EN9 - Green Infrastructure
- Policy EN14 – Flood Risk
- Policy EN15 – Biodiversity and Geological Conservation
- Policy EN16 – Air Quality
- Policy EN19 – Waste
- Policy DM1 – Development Management
- Policy T1 - Sustainable Transport

Guide to Development in Manchester, Supplementary Planning Document

Manchester City Council Climate Emergency Declaration

Building Regulations, Part L

- Approved Document Volume 2: Buildings other than Dwellings (2021 edition)

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 Performance

In order to limit energy demand and carbon dioxide (CO_2) emissions from the operation of the building, Futureserv have identified a number of design features that will be integrated that will collectively contribute towards the emissions reduction target for the scheme.

Detailed measures are presented in Section 5 of this report, but in essence, the energy strategy proposed is an enhanced 'fabric led' solution coupled with the inclusion of an energy efficient servicing provision to maximise the buildings' performance.

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

- Improved thermal insulation;
- Low air permeability;
- Photovoltaic array:
- Electric panel heaters;
- Efficient air source heat pumps; and,
- Low energy LED lighting.

These measures will secure the carbon reduction targets sought by the local planning authority and **Building Regulations Part L: Approved Document Volume 2 (2021 edition)**.

4.2 Flood Risk and Surface Water Management

Data obtained from the Environment Agency was used to determine which flood zone the site is located within and the potential flood risk to the proposed development.

Figure 4.1 below presents the latest Environment Agency (EA) Flood Zone Map data which demonstrates that the site is located wholly within Flood Zone 1, demonstrating a low probability of flooding from rivers. However, the site does encroach on a Flood Zone 2 area to the north east corner of the site.

Figure 4.1 – Environment Agency Flood Risk Zone Map

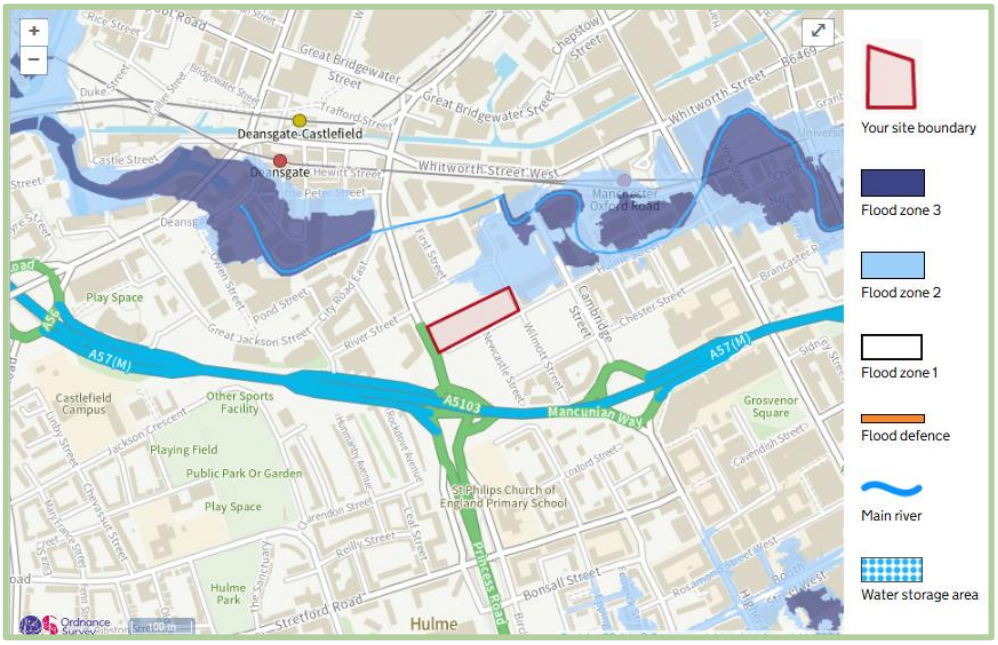
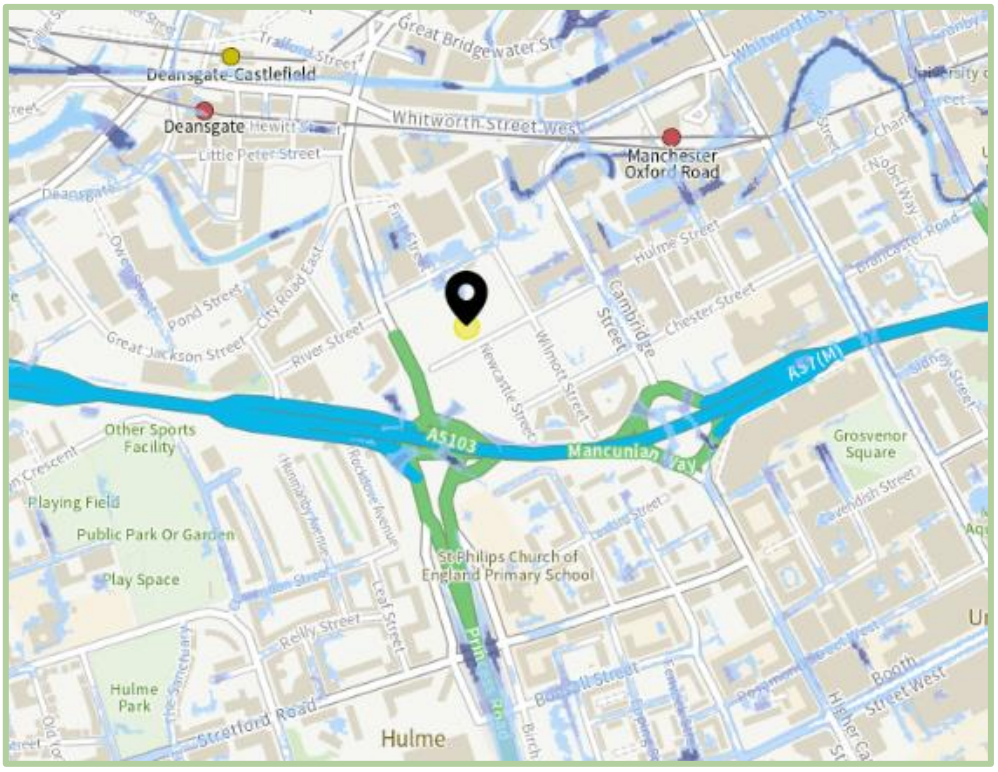


Figure 4.2 demonstrates that the area is at low risk from surface water flooding as well, with a chance of flooding of less than 0.1% each year.

Figure 4.2 – Flood Risk from Surface Water Map



In accordance with **Policy EN14** the proposed development is not considered to be in an area at high risk of flooding.

4.2.1 Drainage Strategy

A sustainable drainage strategy has been produced by ROC Consulting Limited which outlines the following possible drainage solutions which will be utilised to manage any flood risk on site:

- An assessment of potential SUDS measures has been undertaken based on current available site investigation data and the constraints of the proposed development site;
- infiltration-based SUDS are not considered to be technically feasible due to the encountered ground conditions;
- The design of the SUDS features would be undertaken at the detailed design stage in conjunction with the design of the piped drainage systems and other attenuation storage.

In accordance with **PfE Policy JP-S4 - Flood Risk and the Water Environment** the proposed development will seek to **manage surface water runoff through sustainable drainage systems and as close to source as possible.**

4.3 Materials

A circular economy statement and life cycle assessment (LCA) have been prepared Element Sustainability Limited for the scheme and from these, the following conclusions can be made:

- The proposed scheme will be designed in accordance with the UK Green Building Council Circular Economy Principles. Therefore, the following measures will be included:
    - Cement replacement products will be utilised where feasible, including or similar to ground granulated blast furnace slag (GGBS) within concrete components;
    - Robust materials such as York stone flags, granite blend setts, granite edging and concrete blocks will be utilised within the hard landscaping design. Therefore, minimising the frequency of replacement intervals and maximising material optimisation and extending replacement intervals;
    - All concrete for the scheme will be sourced from batching plant facility located on Great Jackson Steet

- Two LCAs have been prepared in accordance with both the BREEAM MAT01 credit methodology (2024.118-First Street-BREEAM MAT01 LCA-1.0) and the RICS Professional Statement version 2 (2024.118-First Street-RICS LCA-1.0). This assesses the impact of the scheme over a sixty-year period. A range of material option appraisals have also been conducted to identify possible ways to reduce the environmental impact of the scheme.

- The design proposals will also contribute towards making more efficient use of non-renewable materials resources, and to reducing the lifecycle impact of materials used in construction.

- The proposed scheme prioritises sustainable design and construction techniques to reduce CO_2 emissions and to future proof and to adapt to the impacts of climate change in line with PfE policy JP-S6 Resource Efficiency;

- An Environmental Product Declaration will be sought for each material specified to assess the environmental life cycle impact. All materials will be responsibly sourced, including all timber

used on the project, which is to be 'legally harvested and traded timber' and sourced in accordance with the UK government Timber Procurement Policy;

- Materials will be sourced in accordance with a Sustainable Procurement Plan (SPP). A SPP includes sustainability aims, objectives and strategic targets to guide procurement activities;

- Responsibly sourced materials from suppliers operating an Environmental Management System and procuring timber verified by either the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification standard (PEFC) will be prioritised;

- Material selection 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 works will be used, where practical, for landscaping purposes.

Local sourcing of construction materials where feasible and viable will minimise the impact of carbon dioxide emissions associated with the transportation of materials. In addition to this, **materials with low levels of embodied carbon will be prioritised in accordance with Core Strategy Policy EN4.**

4.4 Water Efficiency

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

- A water efficiency strategy will be determined for the site and will include for the provision of 'A' rated appliances as a minimum;

- In order to reduce water demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <110 litres/person/day in line with PfE Policy JP-S4 - Flood Risk and the Water Environment;

- The scheme is targeting a 40% improvement over the BREEAM baseline specification. The baseline component specification is equivalent to the water efficiency of industry standard components, steered by the minimum levels required by the Water Supply (Water Fittings) Regulations (157) and Part G of the Building Regulations; and,

- A water meter on the mains water supply to the building will be specified to monitor and manage consumption.

Efficient water fixtures will be specified throughout the building such as low flow taps, showers and dual flush WCs in order to reduce water consumption.

4.5 Ecology and Biodiversity

A Preliminary Ecological Appraisal and Biodiversity Net Gain Report have been produced by Penny Anderson Associates Ltd, and from this the following conclusions can be drawn:

- The site contains no statutory nature conservation sites and none of ecological significance, nor are there any within one kilometre of the site;
- It is recommended that all mature trees within and immediately adjacent to the site are retained and protected with an undisturbed buffer zone of thirty metres;
- Shrubs will be introduced in the form of ornamental planting to the west and east of Plot 9b;
- Eight semi-mature small-leaved lime (Tilia cordata) trees will also be planted along First Street to the east of Plot 9b;
- The total calculated net habitat units change for the site are 0.12 units yielding a net gain of 1213.63%;
- The inclusion of hedgerow features in the proposed landscape provides a net gain of 0.02 hedgerow units;
- Opportunities to further enhance the biodiversity value of the site may be possible (depending on the final design) through the inclusion of bat, bird and insect habitat boxes.

In accordance with both Manchester's Core Strategy Policy EN15 – Biodiversity and geological Conservation and the Places for Everyone Policy JP-G8, the proposed development will protect and enhance the biodiversity value of the proposed site, through the **introduction of onsite measures and through the protection of existing trees.**

4.6 Waste Management

4.6.1 Construction Waste

Best practice techniques to prevent and minimise waste during the design and construction phase 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 encompass:
    - Recycled and secondary; materials;
    - Waste reduction;
    - Waste segregation;
    - Waste recovery; and,
    - Waste disposal.
- This development will promote the minimisation of waste arising and seek to maximise the use of recycled materials in construction.
- In line with the BREEAM assessment target, the scheme will aim to divert 95% of waste from going to landfill.

- The principal contractor will implement sound environmental management practices and consideration for neighbouring sites during their activities on-site.

In accordance with **EN19 – Waste** the **waste management plan** will be prepared 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.

4.6.2 Operational Waste

SLR Consulting Limited have prepared a Waste and Servicing Strategy for the proposed scheme and from this the following conclusions can be made:

The operational waste strategy for the scheme focuses on the segregation of waste at source, in order to maximise the potential for building users to recycle. All users will be informed on collection frequency, as well as guidance on local recycling facilities to assist with the management and storage of waste.

The proposed waste management strategy has been developed in compliance with the policies of Manchester City Council to optimise recycling rates:

- Waste will be segregated at source with the help of split bins to receive multiple streams of waste – general, recyclables and compost;
- Student residents will be responsible for delivering their waste via lifts to a ground floor refuse drop lobby where there would be a hatch opening to drop in to the open state bins below;
- It will be the responsibility of the on-site management team to monitor bin capacity and replace bins as they get full; and,
- The refuse store has external access onto the west facade and the service road. The management team will be responsible for moving the refuse bins to the collection point.

The proposed development will be designed to be functional and convenient, **enabling people to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage** in accordance with **PfE Policy JP-P1.**

4.7 Pollution

To reduce the schemes impact on the surrounding communities and environments, the proposals will include the following:

- The external lighting strategy will be designed to reduce unnecessary light pollution through effective design, energy consumption and nuisance to neighbouring properties;
- Pollution Prevention Guidance will be adhered to in respects of air (dust) and water (ground and surface) pollution during the demolition and construction phase; and,

- Dust suppression measures will also be put in place as part of the Main Contractor's Environmental Management Plan, such that any potential risks to watercourses or the neighbouring properties are minimised.

The principal contractor will put measures in place to ensure that the surrounding area will not be polluted as a direct result of the activities on site during the construction phase.

4.8 Health and Wellbeing

To enable the occupants of the proposed development to lead lower impact lifestyles and enhance their quality of life, the following measures will be delivered:

- The thermal comfort performance of the proposed development will be optimised to provide a healthy living environment for its occupants;
- The communal roof terrace will allow building users to interact with nature;
- The proposed design will create a close community allowing users to socialise and improving community engagement;
- A Crime Impact Assessment has been prepared by Greater Manchester Police demonstrates that CCTV will be utilised and areas such as the bike store entrance will be well lit. Providing an environment which feels safe and secure for residents; and,
- The proposed development will incorporate energy reduction measures in the ventilation systems to reduce the carbon footprint of the site using heat recovery devices and energy efficient fan selections as outlined within Futureservs Ventilation Statement.

Good levels of natural day lighting will be achieved within the proposed development. This will provide a good quality of life for the building users and reduce the need for energy to light proposed development.

4.9 Transport

A Transport Statement has been produced by SLR Consulting Limited and a review of the most appropriate and sustainable modes of transport has been conducted, in order to assess the feasibility of each transport option available to the future occupiers of the proposed development. The conclusions that can be drawn from this appraisal are as follows:

4.9.1 Public transport

- The nearest bus stops are located along Medlock Street which can be accessed within a one-minute walk of the site;
- Along Whitworth Street, which is approximately four hundred metres from the site, students can access a free city centre shuttle bus every ten minutes;

- The nearest Metrolink stop is the Deansgate Castlefield Stop which can be accessed via approximately a five-minute walk from the site;

- Deansgate Railway Station is located approximately six hundred metres north of the site and both Manchester Oxford Road and Piccadilly Station can also be accessed within a twenty-minute walk of the site.

4.9.2 Cycling and Walking

- The proposed scheme is located within the surrounding First Street Framework Area and as such there are many pedestrianised links in and around the site location, connecting the site to local amenities and outdoor spaces;

- There are footways provided along both sides of Medlock Street, which can be used to access local transport links, including bus, train and tram;

- Cycling is an effective mode for short trips up to eight kilometres. A five kilometre cycle represents a journey time of approximately twenty minutes, at a leisurely cycle speed of ten miles per hour. Therefore, within a five kilometre catchment, the whole of Manchester City Centre and surrounding areas including; Old Trafford, Salford, Cheetham Hill, Broughton, Ancoats and New Islington can be reached;

- The proposed development will provide approximately one hundred and thirty, two-tier cycle parking spaces, which can only be accessed externally, as well as providing a bicycles to hire scheme; and,

- The site benefits from excellent cycle infrastructure and with the developing Bee Network, the connectivity will increase ensuring can be actively promoted as a sustainable mode

- This is demonstrated by achieving a GMAL score of 8[1].

Due to the site's proximity to local amenities and the presence of public transport services within easy walking distance, **the site is considered to be well located to encourage trips to be made on foot, bicycle or via public transport.**

[1]Greater Manchester Accessibility level (GMAL) - a way of measuring the density of public transport provision at any location within the Greater Manchester region. The levels range from 1 which represents the least accessible sites to 8 which represents the most accessible sites.

5. ENERGY STRATEGY

An energy strategy for the proposed development has been prepared by Futureserv Limited, which outlines the approach to achieving compliance with Building Regulations, Part L Approved Document Volume 2 (2021), Manchester's Core Strategy and the relevant PfE policies.

The energy strategy prioritises an enhanced 'fabric led' solution coupled with 'full electric' servicing provision and has been designed in accordance with the Energy Hierarchy (see Figure 5.1); this provides a framework to guide energy policy and decision making to achieve practical and cost-effective carbon emission reductions. The energy hierarchy is built upon four principles:

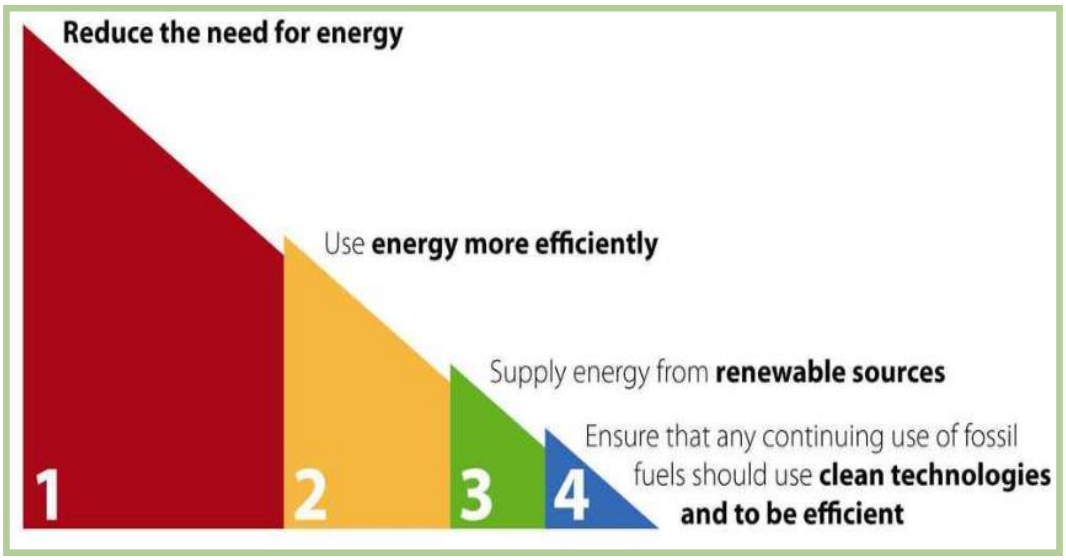
i. First Principle
   - Reduce the need for energy.

ii. Second Principle
   - Use energy more efficiently.

iii. Third Principle
   - Supply energy from renewable sources.

iv. Fourth Principle
   - Ensure that any continuing use of fossil fuels should use clean technologies and be efficient.

Figure 5.1 – The Energy Hierarchy



In accordance with Places for Everyone Policy JP-S2 – Carbon and Energy, the Energy Hierarchy has been used as a framework to guide this energy strategy to achieve practical and cost-effective carbon emission reductions. It is intended that the construction, design and specification proposed for this scheme will deliver a development that is inherently efficient and cost-effective during occupation.

5.1 First Principle – Reduce the Need for Energy

The standard measurement of heat transfer through a given building material or construction type is the U-value (W/m^{2}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 main areas and elements of the construction:

- Ground Floor;
- External Walls;
- Roofs;
- Doors and windows;
- Thermal bridging; and,
- Uncontrolled ventilation.

This development will benefit from a material and design specification that is aligned with Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand in accordance with the first principle of the energy hierarchy, including:

- ✓ High performance u - values;
- ✓ Reduced thermal bridge heat losses;
- ✓ Efficient form of construction; and,
- ✓ Low design air permeability target.

This 'fabric led' approach to minimising energy demand and associated carbon dioxide emissions through the performance of the thermal envelope is aligned with the first principle of the energy hierarchy, which states that reduction in energy demand should be achieved initially by energy efficiency.

The proposed material specification that will be incorporated throughout to limit heat loss and ensure efficient operation, this is presented in Table 5.1.

Table 5.1 – Proposed Fabric Specification

Item	Proposed Fabric Specification
Ground Floor	U= 0.10 W/m^{2}K
External wall	Brick façade sections: U=0.14-0.16 W/ m^{2}K Curtain walling: U=0.58 W/ m^{2}K
Roof	U=0.10 W/ m^{2}K
Windows	U= 0.89 W/m^{2}K
Air Permeability	2.25 m^3/h-m^2 (@50Pa.)

The proposed design specification is in alignment with Part L Approved Document Volume 2 and demonstrates compliance against both the emission reduction and primary energy targets. However, further design considerations will be assessed as the design progresses through RIBA Stage 3 and 4.

This material specification and design will however provide the following benefits:

- **High performance thermal insulation** will ensure low U-values for all heat loss elements and will minimise heat loss through the building's thermal envelope;

- **Extremely Low air tightness** (design air permeability targeting 2.50 m^3/hm^2) will minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort.

This enhanced fabric specification will **deliver a Building Regulation, Part L Approved Document Volume 2 (2021) compliant scheme for all aspects of the proposed development**. It ensures an inherently energy efficient development, focussing upon limiting demand side reductions in accordance with the energy hierarchy.

5.2 Second Principle - Use Energy More Efficiently.

As per the second principle of the energy hierarchy, the operational efficiency of the development will be optimised via the use efficient mechanical and electrical systems.

The proposed building services that will be incorporated to ensure efficient servicing of the are presented in Table 5.2 below.

Table 5.2 – Proposed Mechanical and Electrical Specification

Item	Specification
Space Heating	Electric panel heaters
Ventilation	Mechanical ventilation with heat recovery (MVHR) – Landlord areas and studios Extract ventilation to kitchen and bathrooms
Lighting	Highly efficient LED lighting throughout
Water Heating	Provided by a central air source heat pump with storage cylinder
Renewable Technology	Photovoltaic array and ASHP system

The mechanical and electrical specification will provide the following benefits:

- **Low energy and LED lighting** - will be specified in order to maximise operational efficiencies and lifespan of the fittings. LED's 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.

- **Air source heat pumps -** Air source heat pumps (Water heating) are a low carbon solution that are ideal for non-residential spaces. They are a highly efficient method of producing heat, as ASHP's 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).

- **Intermittent Extract Ventilation** will be specified, which will draw moisture laden, stale air out of the rooms and maintain a healthy living environment.

This mechanical and electrical specification **will deliver a Building Regulation Part L Approved Document Volume 2 (2021) compliant scheme** for all aspects of the proposed development.

6. PROPOSED RENEWABLE ENERGY SOLUTION

The enhanced fabric specification will be supplemented by renewable energy technology as part of the site wide energy strategy designed by Futureserv Limited to optimise the on-site building emission rate reductions in accordance with Places for Everyone Policy JP-S2 and the Energy Hierarchy.

6.1 Renewable Technology Feasibility

An analysis of the most appropriate renewable energy options has been undertaken to ensure compliance with Building Regulation Part L.

A number of renewable energy technologies have been considered for this site, including:

- Solar hot water;
- Photovoltaics (PV);
- Wind;
- Air source heat pumps;
- Ground source heat pumps; and,
- Biomass heating.

A review of the development proposals and site location concludes that air source heat pumps and photovoltaic panels (PV) are feasible for this scheme, as detailed below in Table 6.1.

Although the site is within a Heat and Energy Network Opportunity Area. The proposed development is not located near to an existing system and alternative methods being more viable. The proposed energy strategy is a more effective alternative for minimising carbon emissions, which is also in line with the requirements of PfE Policy JP-S3 – Heat and Energy Networks. The scheme also incorporates air source heat pumps and photovoltaics, thereby aligning with PfE Policy JP-S1 which requires a significant upscaling of solar photovoltaic energy.

Table 6.1 – Renewable Technologies Review

Technology	Description	Advantages & Limitations	Feasibility
Solar Hot Water	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.	✓ Low maintenance. ✓ Feasible for small scale developments.	No - This technology is not considered to be a suitable option for this site and these solar thermal technologies make only a relatively limited contribution to reducing the building's energy demand and carbon dioxide emissions. Furthermore, there are potential problems associated with routing the pipework through the building.
		✗ Panels ideally facing south at 30° tilt for optimum efficiency.	

Technology	Description	Advantages & Limitations	Feasibility
Photovoltaics (PV)	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 or floor mounted and orientated in a southerly direction to enable this technology to operate efficiently.	✓ Low maintenance. ✓ Easy to integrate into buildings design. ✓ Cost of PV is constantly dropping. ✘ Panels ideally facing south at 30° tilt for optimum efficiency. ✘ Overshadowing will reduce performance. ✘ Can require significant roof space.	Yes – This technology is a viable option for this site with sufficient roof area to accommodate the proposed PV array.
Wind Turbines	Wind generation equipment harnesses the wind to turn a propeller and in doing so, drive an alternator to generate electricity. The turbines may be pole or roof mounted.	✓ Low maintenance. ✓ Excess electricity can be exported to the grid. ✓ Vertical Axis Turbines can operate at wind speeds as low as 2m/s. ✘ A wind speed of at least 6m/s is typically required for traditional turbines to operate efficiently. ✘ Visual and noise impact risk.	No – Wind turbines are considered unsuitable for this site due to a poor wind resource and lack of space to locate the turbines. Integrating these systems at height on the roof is not considered feasible due to the associated noise, vibration, and structural stresses upon the buildings. Furthermore, there are planning issues and perceived safety concerns with this technology.
Ground Source Heat Pumps	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.	✓ Highly tested and efficient technology ✓ Can be used for space and water heating. ✓ Lifespan of 20-25 years. ✘ Excavation works required for buried piping to be installed. ✘ Planning permission potentially required for installation.	No – This technology is considered unsuitable for this site due the prohibitive costs and technical constraint of installing boreholes. Plus, the proposed energy strategy will provide similar, if not better, carbon reductions.

Technology	Description	Advantages & Limitations	Feasibility
Air Source Heat Pump	Air source heat pumps collect low-grade heat from the air to supply useful heat for space and/or water heating requirements. They operate in the same way as a ground source heat pump, 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.	✓ Can be used for space and water heating. ✓ Highly tested and efficient technology ✓ Low maintenance. ✓ Lifespan of 20-25 years. ✘ Reduced efficiency in cold conditions. ✘ Requires a unit on the outside of the building	Yes – The incorporation of ASHPs is a feasible option for this development. The proposed system is a highly efficient option.
Biomass Heating	Biomass boilers typically burn wood chips or pellets as fuel to provide space heating and hot water.	✓ Almost a carbon neutral technology. ✘ Frequent and large fuel deliveries. ✘ Large fuel store required. ✘ Regular maintenance.	No – This technology is considered inappropriate for this type of development due to the need for a large fuel storage facility and frequent, large fuel deliveries combined with regular maintenance.

6.2 Third Principle – Supply energy from renewable sources.

6.2.1 Photovoltaic Array

Photovoltaic (PV) arrays have been selected as an appropriate renewable energy technology to contribute to the CO_2 emission reduction target for the 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 at this site would provide the following benefits:

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

Proposed System Details –

- The proposed system details will be confirmed at the Technical Design Stage.

Land Use –

- There are no land use issues associated with PV technology at this site;
- The development has sufficient roof area to accommodate the PV arrays; and,
- The PV arrays can be installed as part of the roof system in order to minimise the visual impact.

Local Planning Issues –

- There are no planning policy issues associated with this technology and this type of technology is favoured under the PfE requirements.

Noise Issues –

- PV is silent in operation.

Whole life cost and lifecycle impact –

- Current installed costs for PV are approximately £1,500 / kWp installed.
- Additional costs throughout the system's thirty-year lifecycle are limited to:
    - Cleaning of the arrays; and,
    - Replacement of the DC / AC inverter unit which typically have a lifespan of around ten years.

6.2.2 Air Source Heat Pumps

The proposed system that will provide hot water for the proposed development. These systems benefit 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 twenty years;

- Very high operating efficiencies;

- No fossil fuel connection to the proposed scheme will ensure the development tracks the decarbonisation 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.

ASHPs primarily consume grid mix electricity which is, in part (albeit diminishing) sourced from a mix of fossil fuels / LZC and nuclear. The inherent characteristics of the ASHP also ensures that fossil fuels are consumed efficiently, in accordance with the 3rd and 4th principle of the energy hierarchy.

6.3 Fourth Principle – All Electric Energy Strategy

6.3.1 Electric Panel Heaters

Electric panel heaters which are to be used in the toilets and circulation zones are 100% efficient at the point of consumption. Thereby generating a reduced overheating potential. This is due to the fact that electric space heating delivers virtually instantaneous heating at the location it is required.

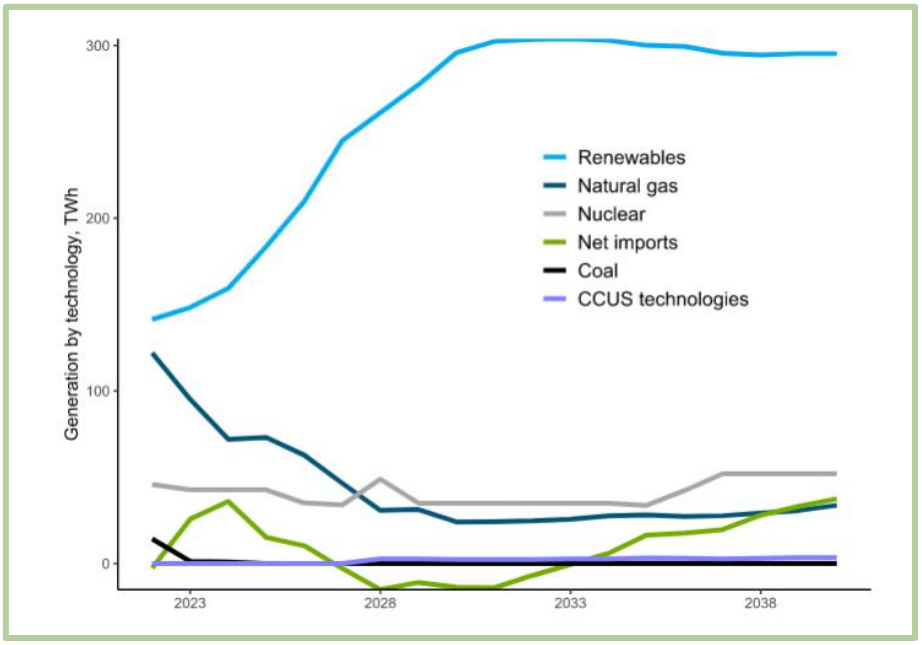
Therefore, this all-electric energy strategy which primarily consume grid mix electricity which is, in part sourced from a mix of fossil fuels / LZC and nuclear. The inherent characteristics of the ASHP and electric panel heaters ensures that fossil fuels are consumed efficiently, in accordance with 4th principle of energy hierarchy.

6.4 Decarbonisation

As the UK electricity grid's CO_2 footprint continues to improve, so too would the carbon dioxide emissions associated with the operational phase of the proposed scheme, which benefits from a 'full electric' energy strategy.

UK grid mix electricity carbon emissions will decrease significantly by 2035, with the carbon intensity of electricity generation falling by 93% between 2020 and 2035. This is due to the progressive shift away from fossil fuels as demonstrated in Figure 6.1.

Figure 6.1 - Electricity generation by Fuel Source, TWh



Source – BEIS, Energy and Emissions Projections (2022)

The energy strategy proposed for the scheme uses a combination of ASHP's, electric panel heaters and photovoltaics. These are highly efficient systems that utilise grid electricity to provide space heating.

The use of heat pumps will ensure that fossil fuels converted and distributed through the National Grid as electrical energy will be consumed cleanly and efficiently.

Electricity is now recognised as a less carbon-intensive fuel source than mains gas and other fossil fuels, which is only likely to improve as the percentage of electricity generation from renewable technologies increases.

Therefore, this will further support the schemes move towards operational net zero carbon in accordance with the Places for Everyone requirements.

7. CARBON DIOXIDE EMISSIONS CALCULATIONS

In order to demonstrate the environmental benefits associated with the energy strategy for the proposed development, a Simplified Building Energy Models (SBEM) Assessment has been conducted by Futureserv Limited using IES Virtual Environment software and assessed against SBEM V6.1.e.1 in order to demonstrate compliance with Building Regulations, Part L 2021.

7.1 Regulated Energy Performance Calculations

Table 7.1 below presents a summary of the results, which show the Building Emission Rate (BER) and (regulated) energy demand performance associated with the proposed energy strategy for the building.

Table 7.1 – Calculated Regulated Building Emission Rates

	First Street
Building Emission Rate - BER ($kgCO_2/m^2/yr.$)	3.36
Building Target Emission Rate - TER ($kgCO_2/m^2/yr.$)	3.42
% BER Reduction over AD: Volume 2 (2021)	**1.75%**
Building Primary Energy Rate - BPER ($kWh/m^2/yr.$)	35.15
Building Target Primary Energy Rate TPER ($kWh/m^2/yr.$)	36.02
% DPER Reduction over AD: Volume 2 (2021)	**2.42%**

The development will incorporate an enhanced material specification along with high quality design and construction standards, in order to improve the energy efficiency of the building through a 'fabric led' energy strategy, allied to efficient mechanical and electrical systems.

This proposed material specification coupled with the proposed renewable technologies and building services will improve upon the minimum compliance under Building Regulations Part L Volume 2: Buildings other than dwellings (2021) primary energy target by 2.42%.

The proposed development **has the potential to secure a minimum carbon dioxide reduction rate of 1.75%,** thereby improving upon current Part L Volume 2 (2021) requirements and the requirements stipulated **by Manchester City Council.**

7.1.1 Policy EN6 Domestic Carbon Dioxide (CO_2) Emissions Reduction Targets

The proposed energy strategy outlined throughout this energy statement is expected to achieve four ENE 01 Credits, in line with PfE Policy JP-S2 requirements. The data files from the Stage 2 SBEM calculation have been loaded into BREEAM Projects and the triple metric energy performance has been verified which assesses the following:

- Building heating and cooling demand;
- Building Primary Energy Consumption; and,
- Total CO_2 emissions.

The proposed development **is Part L (2021) compliant** and achieves the **BREEAM 'Excellent' standard for energy reduction (BREEAM Credit Ene01).**

8. PLACES FOR EVERYONE

Manchester City Council has adopted the Places for Everyone policies, which includes **Policy JP-S1- Sustainable Development and Policy JP-S 2 – Carbon and Energy.**

In support of this, the developer wishes to highlight the following measures that will form part of the energy strategy for this development:

- The proposed scheme will be designed in accordance with the UK Green Building Council Circular Economy Principles. Which in turn helps to reduce the schemes life cycle carbon impact and therefore, the following measures will be included:
    - Robust materials such as York stone flags, granite blend setts, granite edging and concrete blocks will be utilised within the hard landscaping design. Therefore, minimising the frequency of replacement intervals and maximising material optimisation and extending replacement intervals;
    - Cement replacement products will be utilised where feasible, including or similar to ground granulated blast furnace slag (GGBS) within concrete components;
    - All concrete for the scheme will be sourced from batching plant facility located on Great Jackson Steet.

- The scheme has been calculated to achieve the carbon emissions reduction required by Part L (2021 edition) of the building regulation compliance requirements;

- As stated in Sections 4 and 6, the proposed scheme has been designed in accordance with the principles of the energy hierarchy, which in order of importance seeks to:
    i. Minimise energy demand;
    ii. Maximise energy efficiency;
    iii. Use renewable energy;
    iv. Use low carbon energy;

- It is the design team's preference not to connect to a heat network, as the proposed energy strategy is a more effective alternative for minimising carbon emissions, which is in line with the requirements of Policy EN 4 - Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development. The scheme also favours ASHP and PV, thereby aligning with PfE Policy JP-S1 which requires a significant upscaling of solar photovoltaic energy.

- Policy JP-S2 expects new developments to be net zero carbon by:
    - From adoption – to regulated operational carbon emissions; and

The proposed scheme will support a shift towards net zero carbon during operation. This will be achieved through:

1. The specification of air source heart pumps and photovoltaics, which are both highly efficient renewable technologies, will reduce the energy intensity of the hall in line with Part L (2021) of Building Regulations.

2. The fully electric energy strategy will also benefit further from the decarbonisation of the grid, which is expected to improve as the percentage of electricity generation from renewable technologies increases (see Figure 5.2).

3. Therefore, the operational CO_2 emissions associated with the proposed scheme are anticipated to decrease in line with these improvements.

4. The proposed energy strategy outlined throughout this energy statement is also expected to achieve four ENE 01 Credits, in line with PfE Policy JP-S2 requirements.

9. BREEAM PRE-ASSESSMENT

BREEAM UK New Construction V6 scheme is a performance-based assessment method and certification scheme for new non-domestic buildings. The primary aim of BREEAM UK New Construction is to mitigate the life cycle impact of new buildings on the environment in a robust and cost-effective manner. This is achieved through integration and the use of the scheme by clients and their project team at key stages in the design and construction process.

The building's performance is assessed under a number of categories, including:

- Energy;
- Water;
- Transport;
- Materials;
- Land Use;
- Pollution;
- Health and wellbeing; and
- Management.

The BREEAM rating benchmarks for BREEAM UK new construction projects assessed using the 2018 version 6.1 of BREEAM are presented in Table 9.1 below.

Table 9.1 – BREEAM Rating Benchmarks

BREEAM Rating	% Score Required
Outstanding	≥ 85
Excellent	**≥ 70**
Very Good	≥ 55
Good	≥ 45
Pass	≥ 30

There are minimum standards associated with the BREEAM 'Excellent' standard in terms of the building's energy and emission performance. However, to ensure that performance against fundamental environmental issues is not over-looked in pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas e.g. energy, water, materials etc.

A BREEAM 'Excellent' rating requires the following minimum performance standards, see Table 9.1.

Table 8.2 – Mandatory 'Excellent' Standards

BREEAM NC V6 Issues	*Minimum Standards for BREEAM for 'Excellent' rating*
MAN 3: Responsible construction practices	*One credit (responsible construction management)*
MAN 4: Commissioning and Handover	*One credit (commissioning-test schedule and responsibilities)*

MAN 4: Commissioning and Handover	*Criterion 11 (Building User Guide)*
ENE 1: Reduction of energy use and carbon emissions	*Four credits (Energy performance)*
ENE 2: Energy Monitoring	*One credit (First sub metering credit)*
WAT 1: Water Consumption	*One credit*
WAT 2: Water Monitoring	*Criterion 1 only*
MAT 3: Responsible Sourcing of Materials	*Criterion 1 only*
WST 3: Operational Waste	*One credit*

In line with these mandatory 'Excellent' rating criteria, the PfE guidance, requests that non-residential developments achieve the BREEAM 'Excellent' standard (or equivalent) for the 'Ene 01 – reduction of energy use and carbon emissions' category.

9.1 Potential BREEAM Rating

A BREEAM UK V6 Non-Domestic New Construction (multi residential) BREEAM Pre-assessment has been prepared by a qualified, licensed BREEAM Accredited Professional. This determines the feasible credits and potential BREEAM rating for the scheme and demonstrates a commitment to the principles of good construction, design and sustainability.

Please see Appendices for full details of the pre-assessment report.

Indicative BREEAM rating = 'Excellent'

Working alongside the qualified Accredited Professional, the technical design team has reviewed the individual credit criteria and award of credits within the Pre-assessment in order to optimise the building's BREEAM performance. All credits allocated within this BREEAM Pre-assessment will require further technical verification and additional feasibility assessment during the formal Design Stage and Post Construction BREEAM assessment. The BREEAM Pre-assessment (presented in the Appendix of this Statement) shows that the buildings are expected to perform as follows:

- Indicative building BREEAM score = **75.21%** *(minimum required for BREEAM 'Excellent' = 70%)*
- Indicative BREEAM rating = Potential for **BREEAM 'Excellent' rating[2].**

Following an initial review of the proposals the BREEAM New Construction Pre-assessment report demonstrates that the proposed development is able, in principle, to meet all mandatory credit requirements and achieve an overall BREEAM 'Very Good' rating for the proposed scheme.

[2] *Note that a number of assumptions have been made within this initial appraisal which will require confirmation by means of further technical input during the formal assessment, once the design and specifications are finalised. The approach to achieving the target BREEAM rating may, therefore, be subject to change further into the development cycle.*

10. CLIMATE CHANGE EMERGENCY

On 10th July 2019, a motion asking Manchester City Council (MCC) to formally declare a climate emergency was unanimously agreed. In support of this, the developer wishes to highlight the following measures that will form part of the specification of this development:

- An energy strategy that exceeds Building Regulations, Part L Approved Document Volume 2 (2021), in relation to reducing carbon emissions and minimising energy consumption.

- The proposed strategy will also improve upon standards targeted within Core Strategy Policy EN6 which relates to Building Regulations Part L 2010.

- A site waste management plan (SWMP) will be produced by the developer to limit the on and off-site environmental impacts of construction waste.

- The development will be designed to incorporate features that will serve to reduce energy demand, and in turn, carbon emissions arising from access to the building:

    - ASHP systems;
    - Photovoltaic array;
    - Electric panel heaters; and,
    - LED lighting.

- The site is well located to encourage trips to be made on foot, by bike or via public transport. This is facilitated by:

    - Bus stops along Medlock Street;
    - The nearest Metrolink stop is the Deansgate Castlefield Stop; and,
    - The incorporation of cycle spaces and a cycle hire scheme.

- The site will provide biodiversity net gain on site through the introduction of new trees and shrubs.

- The proposed development will also limit embodied carbon levels through the specification of locally sourced concrete and the use of cement replacement materials.

These commitments, in combination, seek to work towards the carbon reduction target of no more than 1.5°C global temperature increase and assist the council in meeting their Climate Change Emergency objectives.

11. CONCLUSION

This Statement has reviewed the sustainability performance of the proposed First Street Plot 9b development against national and local planning policies. The conclusions that may be drawn from the review are as per the following:

Sustainability Performance –

- The scheme is expected to achieve a **BREEAM rating of 'Excellent'** with an expected score of 75.21%. This represents the top 10% of UK new non-domestic buildings (advanced good practice).

- The proposed scheme will be **designed in accordance with the UK Green Building Council Circular Economy Principles and an LCA has also been conducted to assess the predicted environmental impact** of **materials.** Materials will be selected for their durability and resilience in accordance and will be locally sourced where feasible, in accordance with Core Strategy **Policy EN4**.

- The scheme will be specified with **efficient water fixtures and controls**. This will achieve a calculated daily consumption of **<110 litres/person/day in line with Policy JP-S4 - Flood Risk and the Water Environment** and achieve the BRE baseline performance by 40% under BREEAM issue Wat 01.

- This scheme **promotes access to sustainable modes of transport** which will contribute towards creating a highly connected and sustainable development in accordance with **Policy T1**. The scheme as a result achieves a **GMAL rating of 8.**

- The site is in an area at low risk from flooding, with it being **located within a Flood Risk Zone 1** in accordance with **Policy EN14.**

- Waste arising during construction will be minimised through the **implementation of a Site Waste Management Plan (SWMP) in accordance with Policy EN19.** The SWMP will be used to ensure that there is adequate management, and that 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.

- **A Refuse Management Strategy** has been developed to manage waste and recyclables from the operational phase of the development. Source segregation will encourage the individuals to recycle and **divert waste away from landfills in line with Policy JP-P1 - Sustainable Places**.

- In accordance with both **Manchester's Core Strategy Policy EN15 – Biodiversity and geological Conservation and the Places for Everyone Policy JP-G8**, the proposed development will protect and enhance the biodiversity value of the site and the total calculated net habitat units change for the site are **0.12 units yielding a net gain of 1213.63%.**

Energy Strategy –

The scheme will be designed and specified in accordance with **the principles of the energy hierarchy** and improves upon the **carbon dioxide (CO_2) reduction targets and guidance set by Manchester City Council:**

- The proposed scheme will be compliant with building regulation Part L Volume 2 (2021).
- The proposed material and mechanical specification will provide various benefits including; **upgraded thermal insulation**, **highly efficient mechanical servicing, and low energy lighting.**
- The proposed energy strategy outlined throughout this energy statement is also expected to achieve four ENE 01 Credits, in line with PfE Policy JP-S2 requirements.
- The scheme will integrate **efficient air source heat pumps and a photovoltaic array** in order to limit the carbon emissions arising from the scheme. This supports the trajectory towards a NZC building and benefits from the continued decarbonisation of the grid.

Furthermore, the proposals accord with the aims of the National Planning Policy Framework, as follows:

- The **re-use of the piece of land** will provide a development that inherently supports **sustainable accommodation space with access to local amenities and sustainable modes of transport**. The reuse of the site is also an efficient use of land and resources;
- **Construction practices that minimise adverse impacts on the environment** will be adhered to including a waste management strategy to reduce the quantity of waste generated, and to increase re-use and recycling, a commitment will be made to minimise waste and pollution; and,
- **Improving upon the regulatory Part L compliance criteria** will assist in lessening the impact of this development on the environment by way of reducing carbon emissions.

In conclusion, the proposed development will deliver a quality development that accords with the guidance provided within Manchester Core Strategy as well as national planning and regulatory standards.