



DESIGN ENGINEER SUSTAIN

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T2 @ St.Johns

Manchester

Environmental Standards Statement

QA

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Section 1 – Executive Summary

Energy Strategy Summary

The scheme accords with the adopted Core Strategy Policy EN 4, EN6 and the Supplementary Planning Document (SPD) criteria, while considering Manchester's recent declaration of a Climate Emergency.

The development will adopt an approach in accordance with the principles of the energy hierarchy and incorporate an enhanced material specification, along with high quality design and construction standards, in order to improve the energy efficiency of the whole building.

This enhanced material specification and design will deliver the following benefits:

- High performance thermal insulation throughout the building;
- Connection to a Combined Heat and Power system, a highly efficient and low carbon measure for hot water and electricity demands;
- Good natural daylighting combined with 100% low energy and LED lighting will reduce energy consumption; and,
- Heat recovery systems will further reduce heat losses.

A commitment is made to achieving a dwelling emission rate reduction of at least 9% relative to the current Part L1A (2013) compliance standard.

Climate Change Emergency

In response to Manchester City Council's declaration of a Climate Emergency, the following measures will form part of the specification of this development:

- An energy strategy that delivers the current Core Strategy carbon dioxide emission reduction and renewable energy generation targets;
- The option for residents to utilise various sustainable modes of transport with additional home working options;
- A+ energy rated white goods to limit unregulated energy demand;
- Passive building specification, intended to avoid cooling requirement;
- Energy reducing features such as daylighting sensors; and,
- Water efficiency measures to reduce water heating energy loads and to cut the process energy required to supply clean drinking water.

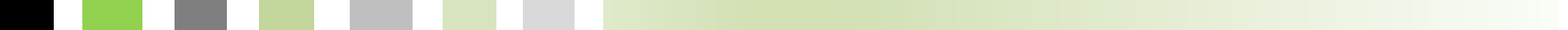
Sustainability Strategy Summary

The key specifications, site characteristics and design measures of the proposed development will minimise the environmental impact of the scheme throughout both the construction stage and the future occupation of the development.

Examples of the measures taken as part of the Environmental Standards in accordance with the requirements of Manchester City Council Core Strategy 2012 are as follows:

- Provision of A and A+ rated white goods;
- 100% low energy and LED internal lighting;
- Dedicated energy efficient fittings and controls;

- 
- Exceeding the requirements of building regulations for new buildings in terms of energy performance;
 - Specification of water efficient devices and equipment;
 - Precipitation-only irrigated landscape areas;
 - No increase in impermeable area as a result of development;
 - Adoption of a site waste management plan;
 - Segregated waste storage;
 - Best-practice resource monitoring and environmental protection on site;
 - Ecological enhancement and the introduction of new species;
 - Responsible sourcing of materials with low environmental impact;
 - Enhanced accessibility to local public transport and amenities;
 - Transport and travel planning;
 - Car free design; and, • Cycle storage provisions.

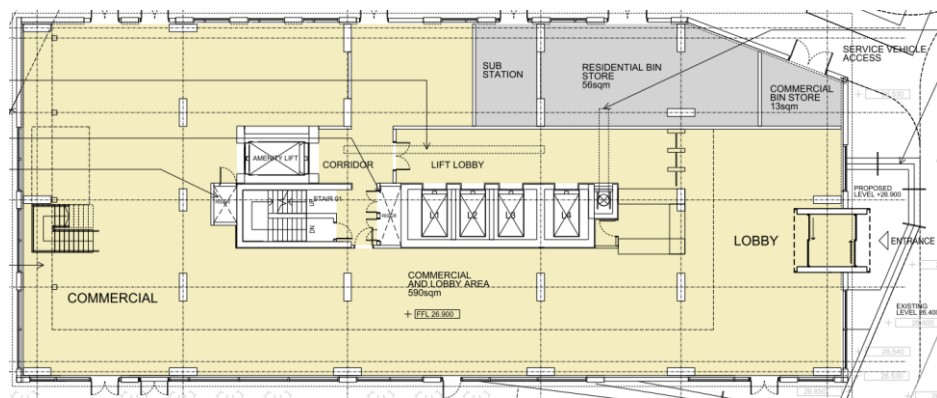


Section 2 – Introduction

Futureserv has been appointed by Vita Group Limited to review the sustainability performance of the proposed T2 development at St John's, 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 Vita Group Ltd have addressed these aims through their proposals, ensuring all practicable measures have been taken in order to deliver a sustainable development at this site.

This statement reviews the sustainable design features and appraises the energy strategy of the proposed mixed-use scheme at the 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.



Ground floor level



Section 3 – Development Proposals

The Site is located within the St. John's Masterplan with Water Street to the west, Manchester Goods Yard (as approved under PP.: 121511/FO/2018) to the east, Factory (as approved under PP.: 119890/VO/2018) to the south, and the Victoria and Albert Hotel located to the north ("the Site").

The 0.28ha Site currently comprises a construction Site, associated with the delivery of the extant consent on-Site (Planning Permission Ref. 114385/FO/2016, as amended) and Manchester Goods Yard (Planning Permission Reference: 121511/FO/2018, as amended). Therefore, no buildings, structures or trees currently exist on Site, and the Proposed Development will take place on a fully enabled Site with single-storey basement formed.

Figure 2.1 – Pre-development



Net-zero energy is an ambitious goal for any building, however like the related goal of creating a carbon-neutral building, any net-zero carbon building has to first achieve significant load reductions and system efficiencies, and then try to meet the remaining loads with onsite energy generation. This is the "lean", "clean", "green" approach as mentioned earlier in the document. The measures adopted by this development do follow this principle. The regulated energy sources are targeted for reduction by means of both passive and active measures in terms of improved u-values, reduced air tightness, and energy efficiency MEP systems. CHP is then proposed for onsite electrical and hot water generation, together with air source heat pumps (utilising energy absorbed from the outside ambient air) for the commercial co-workspaces.

Overall, the Carbon emissions from the proposed St. John's T2 development show potential for a total reduction in emissions from baseline set by current Building Regulations Part L 2013, by 10% on the residential and 20% on the commercial areas. This equates to a 19% and 26% increase over Part L1/L2 2010 and is well in excess of the required 15% improvement as required by the planning policy documents.

The strategy improves on the fundamental principles of the Building Regulations and will make a significant contribution to reducing the annual CO₂ emissions of the proposed development.

The proposed scheme will deliver a thirty-five-storey co-living & co-work development (including ground and mezzanine floors). The building will be supported by amenity space for residents, and flexible use commercial units at the ground floor level.

The proposed general arrangements and section drawing are presented in Figures 2.2 to 2.7.

Figure 2.2 – Proposed Basement Layout

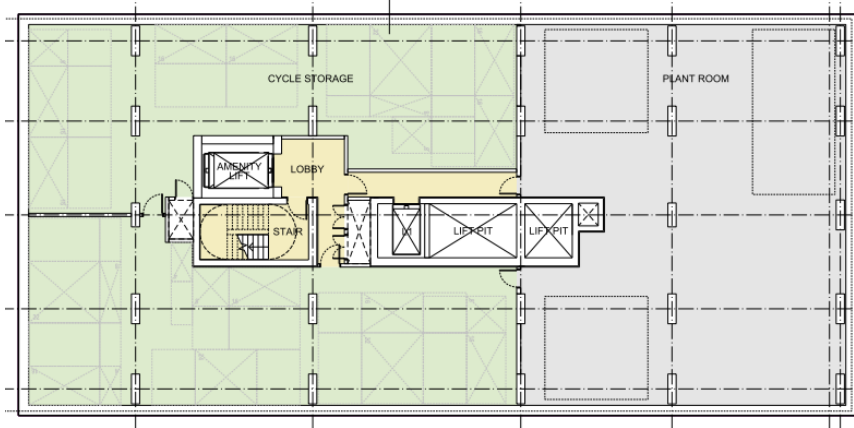


Figure 2.4 – Proposed Typical Upper Floor Co-Living Floor Layout

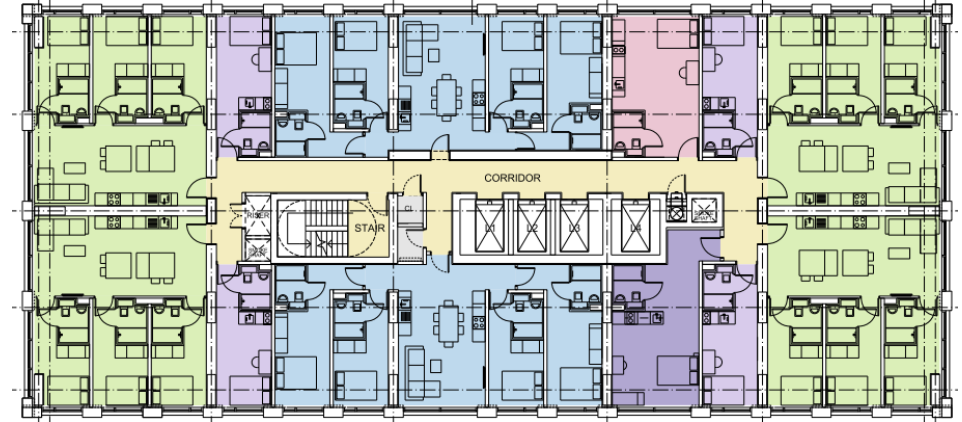


Figure 2.3 – Proposed Ground Floor Layout

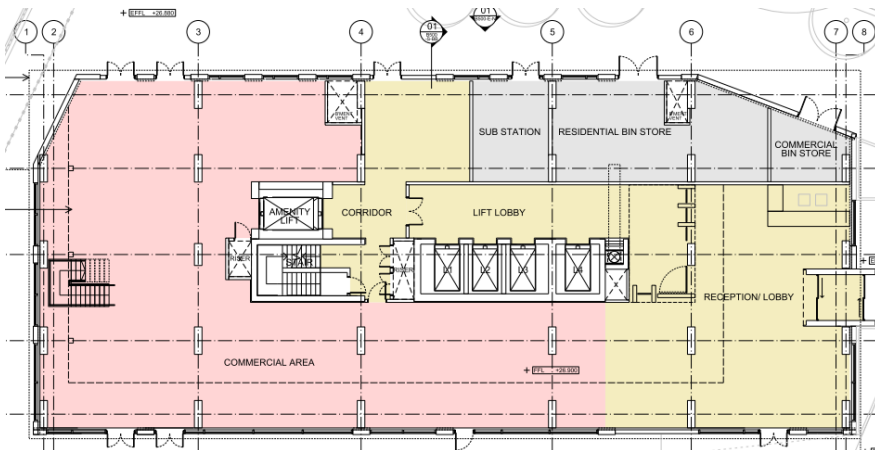


Figure 2.5 – Proposed Typical Co-Work Floor Layout

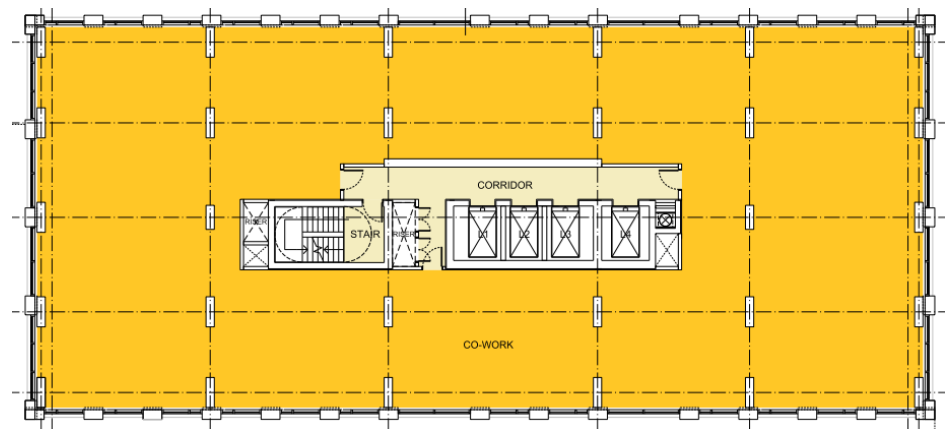


Figure 2.6 – Proposed Roof Layout

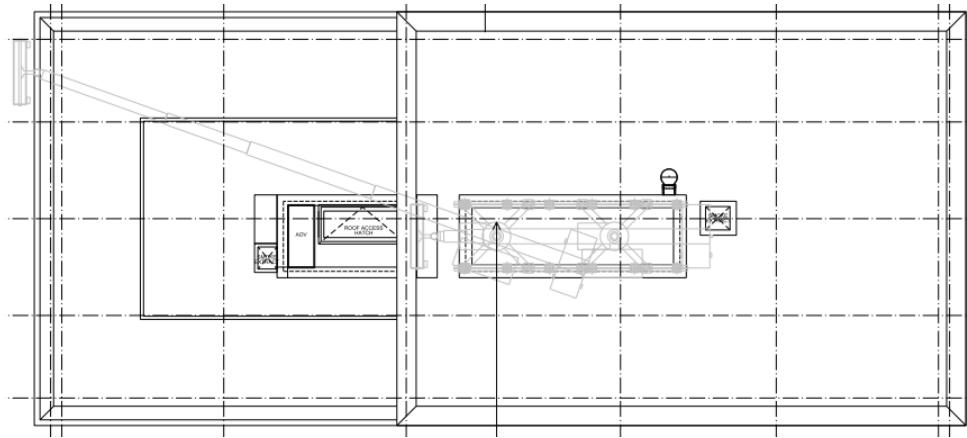


Figure 2.7 – Proposed T2 Building Elevations



Section 4 – Policy and Legislation

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

CS Policy DM 1 - Development Management requires all development to have regard to a number of development principles

Subject to scheme viability, developers will be required to demonstrate that new domestic development to achieve a Code for Sustainable Homes standard¹.

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

- To reduce the need for energy through design features that provide passive heating, natural lighting and cooling;
- To reduce the need for energy through energy efficient features such as improved insulation and glazing; and,
- To meet residual energy requirements through the use of low or zero carbon energy generating technologies.

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

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

Domestic CO₂ emissions reduction targets

Table 12.1

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

Non-domestic CO₂ emissions reduction targets

Table 12.2

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

The proposed development is located within a Target 3: Micro Generation Area and must comply with Part L (2013).

The emission reductions targeted within policy EN6 relate to previous Building Regulation Part L 2010. As a consequence of the reduction in emission rates required by current building regulations (Part L1A 2013) relative to Part L1A 2010, the revised equivalent target CO₂ emission reductions for the residential scheme is -9% dwelling emission rate reduction over Part L 2013. Further details of the building regulation requirements are provided in the section below.

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

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, set minimum space standards, and ensure 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 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.

Manchester's Great Outdoors

A Green and Blue Infrastructure Strategy for Manchester aims to invest to date 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.

Climate Emergency

A Climate Emergency was declared by Manchester City Council on the 10th July 2019 in response to the findings of the Intergovernmental Panel on Climate Change (IPCC) report. The City Council believe that there is serious risk to Manchester's people of climate change affecting economic, social and environmental well-being, supply chains – including food security, financial systems and local weather, among many others. Therefore, the target for becoming a zero-carbon city has been accelerated by 12 years, setting 2038 as the new target for the city. The council has agreed the following:

- To deliver the 2038 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.

- 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.

National Planning Policy

In addition to the local planning policies, the National Planning Policy Framework 2019 is a material consideration. The National Planning Policy Framework (amended February 2019) replaces all previous PPSs and PPGs.

The NPPF states that the planning system should play an active role in guiding development to sustainable solutions. 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 a high quality built environment, 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 roles should not be undertaken in isolation, because they are mutually dependent. Economic growth can secure higher social and environmental standards, and well-designed buildings and places can improve the lives of

people and communities. Therefore, to achieve sustainable development, economic, social and environmental gains should be sought jointly and simultaneously through the planning system.

Pursuing sustainable development requires careful attention to viability and costs in plan-making and decision-taking. To ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, enable the development to be deliverable. At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development - for decision-taking this means approving development proposals that accord with the development plan without delay.

Regulatory Framework

Building Regulations

Building Regulations, Part L - Conservation of Fuel and Power sets the compliance standards for energy demand and carbon dioxide emissions from buildings.

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

- I. The predicted rate of carbon dioxide emissions from the dwelling (the Dwellings Emission Rate DER) is not greater than the Target Emissions Rate (TER). Additionally, the Dwelling Fabric Energy Efficiency (DFEE) is not greater than the Target Fabric Energy Efficiency (TFEE);
- II. The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document;

- III. The dwelling has appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer;
- IV. The performance of the dwelling as built, is consistent with the DER, including site checking that the air permeability is within reasonable limits; and
- V. The necessary provisions for energy efficient operation of the dwelling are put in place including operating and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

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

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

The 2013 revision to Part L of the Building Regulations was a key milestone towards the government's (now delayed) target for zero-carbon buildings. Following a long consultation period, new (carbon dioxide) emission rate targets were published in November 2013, as follows:

- A 6% improvement on the 2010 Part L targets for housing on aggregate which means there is flexibility across different types of homes; and,
- Additionally, the new target for non-domestic buildings is a 9% improvement on the 2010 Part L targets on aggregate.

Domestic and non-domestic buildings are therefore achieving a 6% or 9% emission reduction over Part L 2010 emission rate criteria (upon which Manchester City Council's Policy EN6 emissions targets are based) by virtue of simply complying with the current regulatory standards.

Section 5 – Energy Strategy

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 the proposed development. This section outlines those commitments that have been made by Vita Group Ltd to ensure this proposed development contributes to sustainable development, meets the council's current policies and examines the following categories identified in the Guide to Development in Manchester, Supplementary Planning Document (SPD):

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

The key specifications, site characteristics and design measures of the proposed development are considered below. They will mitigate the environmental impact

of the scheme throughout both the construction stage and the future occupation of the development.

Energy

In order to limit energy demand and carbon dioxide (CO₂) emissions from the operation of the new dwellings and non-domestic areas, the following design features will be integrated within the scheme. These will enable the occupants and building users to lead a low-impact lifestyle:

Energy Efficiency Strategy

Energy Strategy -

- The proposed approach to emissions reduction for the new build co-living will be through a fabric led energy strategy, in accordance with the principles of the energy hierarchy;
- The energy efficiency of the new build co-living and common areas will be improved through the application of a significantly enhanced material specification, exceeding Approved Document L1A (2013) criteria.
- The enhanced material specification will be supplemented with efficient mechanical and electrical systems – including a combined heat and power system to deliver low carbon hot water - and heat recovery systems; and,

The proposed space heating strategy for the building will be provided by a high efficiency, full electric system to meet the limited energy loads generated by the co-living.

Further details of the proposed approach to reducing the energy demand and associated carbon dioxide emissions of these co-living and non-domestic areas are presented in the Energy Strategy Section.

General Principles

- Provision of A and A+ rated white goods (where applicable);
- Provision of EU energy efficiency labelling scheme details to assist in the purchasing of energy efficient white goods;
- Heat recovery systems dwelling to maintain a healthy living environment;
- 100% low energy and/or LED internal lighting;
- All external space lighting to be provided by dedicated energy efficient fittings and controls;
- One-hundred-and-fifty-two cycle storage spaces plus external cycle stands will be provided across the St John's Masterplan to encourage the use of sustainable modes of transport; and,
- The scheme will be car free, reflecting the highly accessible location of the development and encouraging the use of sustainable modes of transport.

Water

The new co-living will be designed to reduce mains/potable water consumption and will include water efficient devices and equipment.

- A water efficiency strategy will be determined for the development. This will include 'A' rated appliances (where provided);
- Specification of efficient water fixtures throughout the scheme (low flow taps and showers, dual flush WCs and low volume baths);
- In order to reduce the demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <105litres/person/day;
- The landscaped areas of the development will be irrigated solely by precipitation throughout all seasons of the year to reduce unregulated water consumption.

Resource Management and Pollution

Efficient Use of Land

- The proposals include for the redevelopment of a previously developed, brownfield site as promoted by national and local planning policy; and
- The redevelopment represents an efficient use of land with a large accommodation density within the thirty-two storey co-living development.

Pollution Control

To reduce emissions of gases with high global warming potential (GWP) and nitrogen oxide (NOx) into the atmosphere, the new build dwellings will be specified with:

- Insulating materials that have a GWP of less than 5 will be specified throughout the development to reduce the construction phase impact of this scheme upon climate change;
- Pollution Prevention Guidance will be adhered to in respects of air (dust) and water (ground and surface) pollution during the demolition and construction phase;
- External light fittings will be controlled through a time switch, or daylight sensor, to prevent operation during daylight hours to limit the impact of artificial lighting for the development's residents and surrounding environment;
- The impact of sound associated with the occupied development will be mitigated by the design and specification of the dwellings. Sound insulation will be specified to achieve Building Regulation Part E compliance standard (this will be verified by pre-completion testing). This will reduce the impact of sound pollution for the occupants within adjoining dwellings and the surrounding area;
- The development sites are with the locality of the River Irwell. Where necessary, temporary drainage and pollution prevention measures will be in place on site, this may include, for example, bunded areas and

spill kits to prevent harmful chemicals / materials from draining to natural watercourses; and silt traps to ensure that suspended solids are removed from the drainage water; 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.

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:

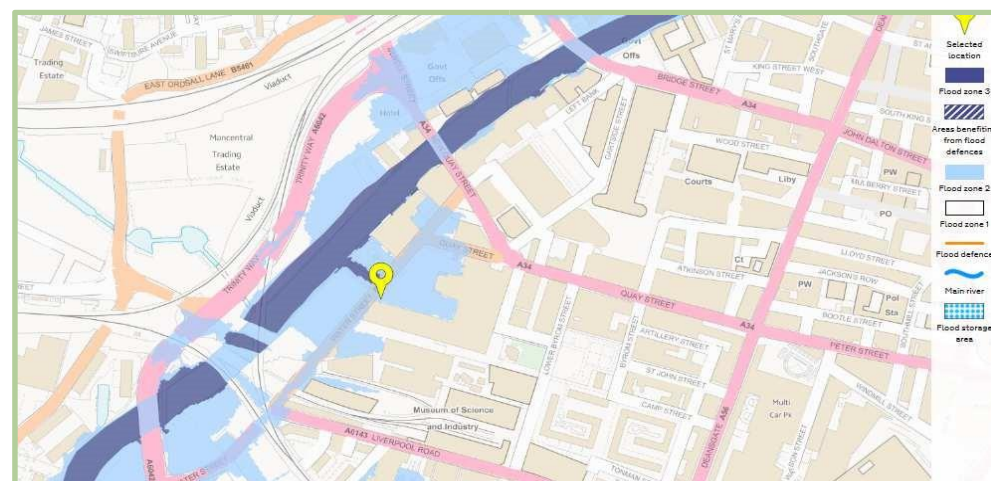
- Materials with low environmental impact throughout their lifecycle;
- Materials responsibly sourced from suppliers operating an Environmental Management System or procuring timber from FSC and PEFC sources, for example will be prioritised; and,
- Consideration will be given to local sourcing of construction materials where feasible and viable, which will minimise the impact of carbon dioxide emissions associated with the transportation of materials.

Surface Water Run-off

Flood Risk

The proposed Site is located within flood risk zone 1 (low probability of flooding) and in part flood risk zone 2 (medium probability of flooding). Data provided on the Environment Agency website confirms the flood risk zone classifications for the site (see Figure 4.1).

Figure 5.1 – Flood Risk Map



- The River Irwell is in the locality of the Proposed Development site;
- The pre-developed site comprises existing building and /or hardstanding areas. Post development, the ratio of impermeable area to soft landscaping will be similar or improved with a greater soft landscaped area than prior to development. Overall, this will provide a beneficial impact on surface water run-off as a result of development.
- Drainage for the scheme involves direct discharge to the River Irwell via a new drainage network as part of the wider St John's Masterplan, with appropriate measures to prevent watercourse pollution in accordance with the Manchester Core Strategy. This strategy has been approved by the LPA and LLFA under previous consents on and around the site.

Waste

Construction Waste -

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

- Prior to commencement of the above ground construction phase, a site waste management plan (SWMP) will be produced by the developer, containing procedures for waste minimisation as well as optimisation of waste recovery and recycling, in accordance with the Waste Hierarchy. This SWMP will 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.
- A site waste management plan will identify opportunities to minimise waste generation and divert at least 85% of construction waste from landfill; and,
- This scheme will promote the minimisation of waste in site
- development and seek to maximise the use of recycled materials in construction.

Domestic Waste -

- The co-living will provide infrastructure and facilities that meet the need of the occupants for segregated storage, thereby optimising the ability to recycle waste. The occupants will benefit from a waste chute on each floor that will separate refuse into three waste streams.
- A waste management strategy has been developed, ensuring that adequately sized bin storage areas serviced via regular private collections are provided. Commercial waste storage will be provided within the demise of the units. access for collection personnel and vehicles has been established and other aspects of waste management is designed into the development at an early stage of the design. The strategy allows for storage of recyclable materials in order to optimise the recycling rates.

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:

- Good levels of natural day lighting will be achieved within the dwellings. This will provide a good quality of life for the occupants and reduce the need for energy to light the dwellings; and,
- An improved landscaped communal outdoor space at the ground floor level will form part of the design.

Management

In order to minimise the impact of the development during construction and operation whilst providing a safe place to live, the proposals include for the following provision:

- This scheme will comply with Secure by Design criteria;
- The main contractor for the development will be required to operate an ISO14001 environmental management system (EMS), which covers their operations;
- Construction site impacts will be minimised, measures to protect water courses, as well as to prevent impacts upon the local area in terms of dust and noise pollution during construction works; and,
- Vita have prepared a robust management strategy to allow for the operation of the development, which is submitted as part of this application.

Biodiversity

- An Ecological Survey and Assessment of the site has been undertaken by ERAP Consultant Ecologists. The report concludes that there no significant or protected species were found during the site survey however; the redevelopment will provide an opportunity to secure ecological enhancement for fauna.
- There are some trees and areas of soft landscaping to the perimeter of the various car parks and buildings.
- The Ecology Report did, however, identify some areas of the site and trees that may be of use to nesting birds. As such, site clearance has been carried out in line with the recommendations of the ecologist, with tree protection measures implemented in accordance with BS5489.
- Post-development, the site will comprise areas of landscaped public space, as well as buildings and hard standing. It is envisaged that the overall impact of the redevelopment upon the number of native plant species on site will be positive. New species introduced to the development will be either native, or those that provide a benefit to the local ecosystem, in accordance with the advice of the project ecologist.

- Where possible, in accordance with the advice of an ecologist with local expertise, habitats and features will be included to encourage local BAP species, such as the House Sparrow via the provision of foraging areas and bird boxes.

Transport

Transport Links -

- The site benefits from excellent sustainable access opportunities and is well connected by existing walking and cycling routes to key trip attractors. Bus and train can also be used to easily access the site;
 - Bus – The nearest bus stops are located along Quay Street and Liverpool Road; all approximately within 250m walk from the site. These bus stops provide regular services to a variety of destinations across Greater Manchester.
 - Rail – The nearest railway station is Salford Central which is approximately 520m to the north west of the development site. The station provides services to Manchester Victoria, Rochdale, Southport, Leeds, Kirby, Clitheroe, Wigan and other regional locations.
 - Metrolink – The nearest Metrolink station is Deansgate Castlefield which just a 10minute walk from the site. This provides regular services to destinations including Bury, Oldham, Ashton-Under-Lyne, East Didsbury and Manchester Airport.
- The proposed layout and car-free nature of the development acknowledge the excellent sustainable location of the site and also current car ownership levels of residents in Manchester city centre; and,

- Numerous measures are included to enhance cycle and pedestrian facilities and access to and from the Site. One-hundred-and-fifty-two cycle spaces will be located within the basement of the development.

Framework Travel Plan -

To further enhance the sustainable credentials of the proposal the Site is underpinned by a Framework Travel Plan prepared by Vectos Ltd.

- This plan seeks to promote existing transport routes, complement the sustainable location of the Site and meet the needs of future residents and visitors.

Local Amenity Access -

- Residents are able to walk to local amenities and shops; and,
- The site benefits from very good links to local amenity space and recreational facilities, such as:
 - Recreational Space – The River Irwell is within the locality of the development site. Hardman Square and St John's Gardens are located 200m to the north east and south east of the site; and,
 - Education – Manchester Metropolitan University, Manchester University and Salford University are located within 2km of the site.
 - Cultural – The Site is in walking distance of a multiplicity of cultural institutions such as the Science and Industry Museum, numerous theatre and art venues and Manchester's City Library.

Manchester City Councils Green and Blue Infrastructure Strategy

The proposed building is contextualised as part of the wider St John's Masterplan where there will be significant investment into the public realm.

The river Irwell runs past the development site providing an attractive setting for co-living and restaurants. This will provide an opportunity to capitalise on the views and encourage access to part of the city centre's Blue Infrastructure. Public green space along the river edge will provide access from Water Street to the river and linking the Ordsall Chord and Factory Square with the riverside walk and canal basin to overall improve connectivity and accessibility to Green and Blue Infrastructure within the city.

The formation of Riverside Gardens and vertical greenery throughout the St John's Masterplan will be a key component of the new development as it will draw people through the development and to help create successful neighbourhoods and support the city's growth.

Pollution Prevention Guidance will be adhered to by the main contractor in respects to air (dust) and water (ground and surface) pollution during the demolition and construction phase to prevent any degradation of existing Blue Infrastructure.

Section 6 – Environmental Performance

Details of the proposed energy strategy are presented below.

The strategy prioritises an enhanced 'fabric led' solution combined with a mixed mechanical and electrical servicing provision for the various uses within the buildings. An enhanced building fabric specification throughout the scheme allied to efficient servicing and controls will achieve compliance with the emission reduction and fabric energy efficiency targets stipulated by Building Regulation, Part L (2013) and Manchester City Council's adopted planning policies.

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 main areas and elements of the construction:

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

The building will be of concrete frame construction with either a unitised curtain wall external system or an SFS 'stick system'. Compliance with Part L1a and EN 6 has currently been demonstrated on the basis of curtain wall however, the façade system will be developed during the later design stages. The proposed material specification that will be incorporated to limit heat loss and ensure efficient operation of the dwellings. This enhanced material specification and design will deliver a Part L1A compliant solution and will provide the following benefits:

- High performance thermal insulation will ensure low U-values for all heat loss elements. Thermally efficient glazing and opaque panels within the curtain wall system will minimise heat loss through the building's thermal envelope;
- Thermally efficient, 'A' rated, double glazed windows will be specified with argon gas fill and low emissivity coatings to limit heat loss through the pane. Thermal breaks will be incorporated within the frames of the vision panels to further limit heat loss. The glazing g value has been specified to optimise beneficial solar gains but limit the propensity for the dwellings to overheat.
- Very low air tightness (targeting $<2.5\text{m}^3/\text{hm}^2$) will minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort whilst also optimising the response from the heat recovery systems;
- Attention to cold bridging junctions including the provision of insulation to limit heat transfer.
- Thermal mass (associated with this type of concrete frame construction) helps stabilise the internal temperature and provides a largely self-regulating environment, reducing the risk of overheating and the need for mechanical cooling in summer. Furthermore, this daily cycle of absorbing and releasing heat continues on a year-round basis and can reduce the energy needed to keep a building warm during the heating season. This works through the ability of thermal mass to capture and recycle heat solar and incidental heat gains;
- Efficient Form - co-living are an inherently efficient form of construction, both in terms of the materials required to build the dwellings and the ongoing heat energy demand. This is a result of relatively low areas of external heat loss elements associated with such layouts which enhance the energy efficiency of the dwellings and guarantees low energy demand throughout their occupation.

Building Services

The proposed mechanical and electrical specification that will be incorporated to ensure efficient servicing of these dwellings is presented in the guidance below.

Item	Specification
Ventilation	High efficiency MVHR, insulated ductwork
Lighting	100% 'Low E' LED type
Space Heating	Electric Panel Heaters
Water Heating	Gas fired CHP lead with back-up gas boilers, central semi-instantaneous plate heat exchangers and buffer vessels
Heating Controls	Programmer and appliance thermostat

This mechanical and electrical specification will deliver a Building Regulation Part L1A (2013) compliant scheme for all aspects of the development and will provide the following benefits:

- Mechanical ventilation with heat recovery (MVHR) systems will be specified in each dwelling to maintain a healthy living environment and further reduce the heat losses and the energy demand of the co-living. The proposed MVHR system can recover up to 94% of heat from the extracted stale air from the dwelling by using a counter flow heat exchanger which 'preheats' cool incoming, fresh air. The outgoing and incoming air pass next to each other, but do not mix. The design air permeability of 2.5 m³/hm² (@50Pa.) for the dwellings 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;
- No mechanical cooling is required for the dwellings. Indicative dynamic simulation energy model (DSM) calculations (applying the CIBSE TM59 assessment procedure) for this building demonstrate that the co-living are not considered to be at risk from overheating due to the proposed

ventilation strategy which incorporate a summer by-pass function to provide cool air within the dwelling during warm days.

Furthermore, the solar transmittance value of the glazing (i.e. the g value) has been limited to g=0.45 to ensure a balance of useful energy from the sun entering the properties whilst limiting excessive solar gains;

- Low energy and LED lighting will be specified throughout both the development in order 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;
- Combined Heat and Power plant will act as the lead boiler for the development, delivering low carbon hot water throughout the scheme via a communal distribution system, linked to central, semi-instantaneous plate heat exchangers and buffer vessels. It is proposed that the CHP engine is circa 85-90% efficient and supplies 30% of the heat load, thereby optimising the system's operating time.

Low and Zero Carbon Energy Feasibility

A number of low and zero carbon energy technologies have been considered for this site, including:

- Solar Hot Water;
- Photovoltaics (PV);
- Wind;
- Heat Pumps;
- Combined Heat and Power; and
- Biomass heating.

A review of the development proposals and site location concludes that none of these options 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 is limited available roof space to accommodate this technology 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 co-living.

✗ Photovoltaics (PV) panels harness solar thermal energy and convert it into electricity which can then be used within a building. The panels are typically orientated in a southerly direction in tilted arrays, thereby enabling this technology to operate efficiently. This technology is not however considered to be a viable option for this site as a consequence of limited roof areas for PV location and the remaining area within the scheme is public realm which doesn't lend itself to renewable energy plant.

✗ 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 tower 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 extracts heat from the outside air to supply useful heat for space and cooling 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 potentially technically feasible for this site and may be considered.

✓ Combined heat and power (CHP) is effectively an on-site mini power plant providing both electrical power and thermal heat energy. It is classified as an energy efficiency solution and low carbon measure, rather than a renewable energy technology. A CHP system operates by burning a primary fuel (normally natural gas) by use of either a reciprocating engine or turbine, which in turn drives an alternator to generate electrical power. The heat emitted by the engine and exhaust gases is recovered and used to heat the building or to provide hot water.

The viability of CHP is dependent upon the building base load requirements for both heat and power. Buildings with high heat demands and constant power demands lend themselves to CHP. It is important that the unit is not oversized as this will lead to inefficient operation. Excess electricity generated by the CHP plant may be exported to the grid when circumstances allow. The heat generated during this process is supplied to an appropriately matched heat demand that would otherwise be met by a conventional boiler. CHP systems are highly efficient, making use of the heat which would otherwise be wasted when generating electrical or mechanical power. This allows heat requirements to be met that would otherwise require additional fuel to be burnt.

Given there will be a virtually constant hot water demand at the proposed development, it would be justified to operate the CHP all year all round which, along with the option to export surplus electrical energy to the grid, serves to improve the commercial viability of this type of system. The building is deemed to have sufficient base load heat demand to warrant the inclusion of a combined heat and power plant and therefore this technology will be given further consideration.

✗ Biomass heating would be capable of delivering the target CO₂ emission reductions but are considered inappropriate for this type of development and location. This is due to the requirement for a large fuel store and the high NOx

emissions associated with biomass combustion which is inappropriate for this urban location.

Emissions Performance Calculations

In order to demonstrate the environmental benefits associated with the 'fabric led' specification to energy demand and emissions reduction at the site, approved SAP software has been used to generate representative energy demand models of the dwellings.

Residential Regulated Energy Demand and Emission Calculations

SAP 2012 software calculates the regulated energy demand of the dwellings and associated carbon dioxide emissions, in accordance with the requirements of Building Regulation, Part L (2013) that this development will be constructed in compliance with. These calculations determine the regulated energy demand and dwelling emission rate reductions achieved by the enhanced material specification.

In order to demonstrate the environmental benefits associated with the 'fabric led' approach to energy demand and emission reductions, approved SAP software has been used to generate energy demand models for representative dwellings within the scheme.

Numerous iterations of the SAP energy calculations have been completed to appraise various fabric and M&E servicing strategies whilst ensuring Manchester City Council's emissions reduction targets will be met by the selected option.

The Dwelling Emission Rate reduction for the scheme will provide at least 10% improvement over Part L1A (2013) as a result of the proposed specification. See the separate energy statement for the detailed Block Compliance Reports.

Manchester City Council's Core Strategy policy EN6 targets a 15% emission reduction over Building Regulation Part L (2010). The 2013 revision to Part L1 of the Building Regulations includes an aggregate 9% improvement on the 2010 Part L1 targets for housing & a 6% improvement on the 2010 Part L2A for commercial buildings.

Domestic buildings are therefore achieving a 9% emission reduction respectively over Part L 2010 emission rate criteria by virtue of simply complying with the current (Part L 2013) regulatory standards which the scheme has been designed to improve upon. Accordingly, Manchester City Council have confirmed that, accounting for the uplift in building regulation criteria, their revised Core Strategy policy EN6 targets above Part L1 (2013) for housing and requires a 9% improvement on the current Part L1A Criterion 1 compliance targets.

The calculated emission rate reduction over Part L1 & Part L2 2013 demonstrates the building's energy efficiency and carbon dioxide emission reduction targets accord with those of Manchester City Council's Core Strategy policies EN4 and EN6.

Commercial Target Emissions Rate	18.80 kg/CO2/m²
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Building Emission Rate	14.90 kg/CO2/m²
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Carbon Reduction from Target Emission Rates Part L 2013	20% reduction = 26% reduction over Part L2 2010 emissions
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Therefore, the CO₂ reduction due to utilising the energy hierarchy on this development has been calculated to be **20%** and also in line with Manchester City Council Local Plan Document.

The Part L2 2013 specifications have been strengthened to deliver 6 per cent carbon dioxide savings relative to part L2 2010 therefore the emissions rate is a **26% improvement** on the Part L 2010.

Residential Target Emissions Rate	15.79 kg/CO2/m²
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Dwelling Emission Rate	14.10 kg/CO2/m²
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Carbon Reduction from Target Emission Rates Part L 2013	10.7% reduction = 19.7% reduction over Part L1 2010 emissions
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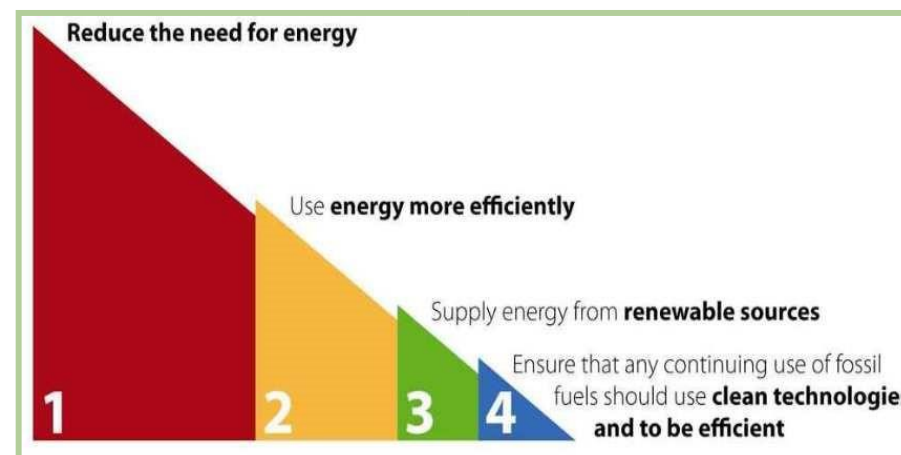
Therefore, the CO₂ reduction due to utilising the energy hierarchy on this development has been calculated to be **10%** and also in line with Manchester City Council Local Plan Document.

The Part L1 2013 specifications have been strengthened to deliver 9 per cent carbon dioxide savings relative to part L1 2010 therefore the emissions rate is a **19% improvement** on the Part L1 2010.

Whilst there may be some variation from the currently proposed building specifications as the design progresses through RIBA Stage 4 post planning, the developer however, commits to meeting the requirements of Core Strategy Policy EN6 as detailed above.

Energy Hierarchy

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



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 such demand-side activities to reduce wastage and improve efficiency.

The construction, design and specification proposed for this scheme will deliver dwellings that are inherently efficient and cost-effective during occupation.

First Principle

The building will be constructed with a material and design specification which far exceeds minimum Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand.

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.

Second Principle

The mechanical ventilation with heat recovery systems will also capture much of the heat from the extracted air from these properties. Additionally, the proposed 100% low energy and LED lighting provision and sophisticated control systems for the space and water heating will also ensure that energy consumed is used efficiently, as per the second principle of the Energy Hierarchy.

Third Principle

It is not deemed to be necessary to incorporate renewable and/or decentralised energy technologies within this development as the Building Regulation Part L1A (2013) emissions and fabric energy efficiency criteria have been met solely through efficient servicing and a high specification thermal envelope.

Fourth Principle

The space and water heating demand of the scheme will be met by various systems including:

- Combined heat and power, plus back up boilers providing water heating; and,
- Electric panel space heating (100% efficient).

This will ensure that fossil fuels consumed for heating purposes will be burnt cleanly and efficiently.

The development proposals are therefore, aligned with the energy hierarchy promoted within the Manchester Guide to Development and the MCC Core Strategy.

Section 7 – Climate Change Emergency

A Climate Emergency was declared by Manchester City Council on 10th July 2019, with a target to make Manchester carbon neutral by 2038. 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 delivers the current Core Strategy carbon dioxide emission reduction and renewable energy generation targets;
 - In securing compliance with the current, stringent building regulation Part L targets, a commitment is made to construct a high quality, energy efficient thermal envelope thereby minimising demand side energy loads – in accordance with the principles of the energy hierarchy;
 - A commitment is made to achieving at least 9% dwelling emission rate reduction relative to the current Part L1A (2013) compliance standard.
- The site's city centre location will enable a low carbon, sustainable lifestyles. Located minutes away from several major railway stations, the residents have the option to utilise various sustainable modes of transport. This is facilitated by:
 - Secure cycle storage on site; ○ Travel options, including local access to transport nodes for bus and Metrolink; ○ Local amenities are within easy walking distance of the site; and,
 - Home working options are supported by the generous co-living dimensions and good levels of natural daylighting.
- Unregulated energy demand (that is, the energy demand associated with appliances and cooking) typically accounts for over half of the total carbon dioxide emissions from modern residential developments such as this.

- To limit this, the integrated white goods will have as a minimum an A+ energy rating.
- The design of the co-living development incorporates a passive building specification, intended to avoid cooling requirements;
 - Analysis of overheating will be undertaken to further refine the dwelling specification, further into the development cycle;
 - The glazing proportions, ventilation system and solar control glazing are designed to optimise solar gains within the building yet limit the propensity to overheat. Thus, these dwellings do not require active cooling which further limits the energy demand of the development.
- The buildings are designed to incorporate features that will serve to reduce energy demand arising from access to the dwellings;
 - The lighting provision within the common areas will include active sensors.
- The fit-out specification of the dwellings will seek to minimise water demand. Water efficiency measures (such as dual flush toilets, flow restrictors and reduced volume baths) will limit potable water demand to <105litres/person/day;
 - This will reduce water heating energy loads and also cut the process energy required to supply clean drinking water.
- Waste is a misuse of natural resources and also contributes a large proportion of the UK's carbon footprint;
 - Waste minimisation during construction will raw reduce materials demand, thereby reducing the building's embodied carbon footprint; and,
 - During occupation, the building will benefit from recycling facilities to enable the local authority waste reduction targets,

diverting more materials away from landfill and reducing the occupants' carbon footprint further;

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

Section 8 – Conclusion

The Statement has reviewed the environmental performance of the proposed development site at Union, St John's in Manchester against national and local policies. The material specification and servicing strategy for the scheme and the building (carbon dioxide) emission rates for the various uses throughout the development have also been reviewed.

- Minimising the impacts of climate change is a key element of the proposed design with significant design iterations and energy demand calculations having been undertaken to ensure the proposed energy strategy will incorporate an enhanced 'fabric led' material specification, along with high quality design and construction standards to improve the energy efficiency of the building.
- These proposals will deliver a scheme that is inherently efficient and cost-effective during occupation and that accords with the adopted Core Strategy Policy EN 4, EN6 and the Supplementary Planning Document (SPD) criteria while taking into account Manchester's declaration of a Climate Emergency.
- The development will be designed and specified in accordance with the principles of the energy hierarchy in line with the adopted Core Strategy Policy EN 4.
- The proposed scheme has been demonstrated to be aligned with the energy efficiency requirements and carbon dioxide emission reduction targets within the Core Strategy policies EN4 and EN6. A commitment is made to achieving at least 9% dwelling emission rate reduction relative to the current Part L1A (2013) compliance standard.
- The key issues of Manchester City Council's Supplementary Planning Document (Environmental Standards) in accordance with the Core

Strategy Policy DM 1 have been achieved by the proposals. These are as follows:

- Water management for the development will achieve a calculated daily consumption of <105litres/person/day through the specification of efficient water fixtures.
- The development sites are divided into the following flood risk zones; Flood Zone 1 and Flood Risk Zone 2 for the Site. Post development, the ratio of impermeable area to soft landscaping will be similar or improved with a greater soft landscaped area to provide a beneficial impact on surface water run-off.
- Drainage for the scheme involves direct discharge to the River Irwell via a new drainage network as part of the wider overall scheme, with appropriate measures to prevent watercourse pollution in accordance with the Manchester Core Strategy.
- Waste arising during construction and occupation/operation will be minimised. A site waste management plan will be adopted during construction and a comprehensive waste management plan for the site will accord with the local authority recycling scheme. A waste management strategy has been developed in negotiation with MCC Environmental Health Officers ensuring that adequately sized bin storage areas for the Site (including provision for the non-domestic areas) are provided.
 - Construction site management procedures will minimise adverse impacts on the environment and control pollution generated during the construction phase. These include a waste management strategy to reduce the quantity of waste generated, and to increase re-use and recycling of materials. A commitment will be made to minimise waste and pollution.
 - The redevelopment will provide an opportunity to secure ecological enhancement for fauna. New species introduced to the

development will be either native, or those that provide a benefit to the local ecosystem, in accordance with the advice of the project ecologist.

Materials are proposed to be responsibly sourced, materials with low environmental impact will be selected and local suppliers will be prioritised. In combination this procurement strategy will minimise, and conserve energy associated with transportation and waste generation. This meets the council's objectives in addressing the recently declared Climate Emergency.

The proposed building is contextualised as part of the wider St John's Masterplan where there will be significant investment into the public realm in regard to Green and Blue infrastructure. This will include the formation of riverside gardens and public green space linking the riverside development with the riverside walk and canal basin in accordance with Manchester's Green and Blue Infrastructure Strategy.

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

- The proposal comprises a large accommodation density within the development and in addition, retail units and amenity space is also incorporated within the scheme. The proposal includes the redevelopment of a previously developed site and represents a very efficient use of land.
- 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,
- Exceeding the regulatory compliance criteria, the scheme will assist in mitigating the impact of climate change.

In conclusion, the proposals reviewed within this statement for the mixed-use scheme at Union, St John's, Manchester will deliver an efficient and sustainable

scheme, providing a quality development that accords with the guidance provided within the Manchester City Councils adopted policies.