



DESIGN ENGINEER SUSTAIN

WWW.FUTURESERV.CO.UK

Carmoor Road, Manchester, M13 0FB Environmental Standards Statement

QA

Document ref: P6823-17.1

Document History

Issue	P1 - Draft			
Date	07 November 2022			
Purpose	For Comment			
Created by	John Livingstone			
Signature				

Approvals

Name	Craig Cleary			
Title	Director			
Signature				
Date of Issue	October 2022			
Version	First Draft			

Distribution

Document Issue	Name	Organisation	Role
Preliminary Issue			

Futureserv Ltd

10 Oxford Court
Bishopsgate
Manchester
M2 3WQ

enquiries@futureserv.co.uk



Contents

Section 1 – Executive Summary 4

Section 2 – Introduction..... 5

Section 4 – Policy and Legislation 9

Section 5 – Energy Strategy 14

Section 6 – Environmental Performance 19

Section 7 – Climate Change Emergency 24

Section 8 – Conclusion 26

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 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;
- Air source heat pump to supply highly efficient and low carbon hot water demand;
- 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 that will better upon Part L (2021) compliance standard.

This new set of regulations is a 39% increased improvement upon the previous 2010 regulations which were superseded by Part L (2021) in June 2022.

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;
- Energy efficient 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.

The site is located near a newly proposed district heating plant, the systems proposed for this development will be designed to feed off this making use of the low carbon heating provided.

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 energy efficient 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;
- Accessibility to local public transport and amenities;
- Transport and travel planning;
- Secure Cycle storage provisions.



Section 2 – Introduction

Futureserv has been appointed by Tiger Development Limited to review the sustainability performance of the proposed new development of student accommodation at Carmoor Road.

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 Tiger Development 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 student residential development. 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 development plan defined central area of Manchester. It sits just outside of the defined city centre, just beyond the Corridor Manchester sub-area of the city centre. It is also just outside of and within easy walking distance of the defined Oxford Road Corridor regeneration area. The Oxford Road Corridor is a focus for the University of Manchester teaching departments. The site is very close to the Manchester University NHS Foundation Trust hospitals on Upper Brook Street and Oxford Road.

The site is located immediately south of a community centre managed by the West Indian Organisations Co-ordinating Committee (WIOCC). The immediate area comprises a mix of residential and commercial uses, including offices and other Class E uses. Opposite the site is the Octagon office building, a private car park and an electricity sub-station. The Octagon is a multi-level office building of significant scale and massing. To the north and west of the site is the Liberty Park student accommodation. To the south are the rear of commercial uses fronting Hathersage Road. St Mary's Hospital occupies a significant site to the west side of Upper Brook Street. Layout, scale and massing locally is varied but it is generally to a suburban scale and relatively low-rise.

The existing buildings will be demolished and will be replaced with construction of purpose-built student accommodation with 172 beds. This will be a mix of studio and cluster units alongside ancillary facilities and shared amenity space, site access and other associated works in a development of three to six storeys.

Existing uses on the site includes a garage workshop and a building used previously as a private day nursery which is now vacant. None of the buildings are of any architectural merit or are subject to statutory protection. The nearest statutorily listed asset (Victoria Baths on Hathersage Road) is some distance away. The application site is not within a conservation area. It is situated some 250 metres north of Victoria Park conservation area.

Regenerating this student living area will also help to reduce the pressure on sites across the Oxford Road Corridor and encourage the return of HMOs in the south Manchester suburbs.



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.

Solar PV is proposed for onsite electrical generation, together with air source heat pumps (utilising energy absorbed from the outside ambient air) for Hot water heating demands.

Overall, the Carbon emissions from the proposed Carmoor Road development show potential for a total reduction in emissions from baseline set by current Building Regulations Part L 2021, by 1.56%. This equates to 40.56% 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 six-storey student residential building to include 172 student bedrooms in a split block design ranging from 3-6 storeys. The building will be supported by amenity space for residents. The building will also be home to a reception area and gym on the ground floor.

The proposed general arrangements and section drawing are presented in Figures 2.2 to 2.8.



Figure 2.2 – Ground floor Layout



Figure 2.3 – Proposed First floor Layout



Figure 2.5 – Proposed Third Floor Layout



Figure 2.4 – Proposed Second Floor Layout



Figure 2.6 – Proposed fourth floor Layout



Figure 2.7 – Proposed Fifth floor layout



Figure 2.8 – Roof layout demonstrating possibility for PV array

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 L2A 2021) relative to Part L1A 2010, the revised equivalent target CO₂ emission reductions for the residential scheme is 39% 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;

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 2021 is a material consideration. The National Planning Policy Framework (amended February 2021) 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 L2A addresses the conservation of fuel and power in new dwellings. The proposed development is registered against Building Regulations, Part L (2021) which requires all newly constructed dwellings need to comply with 5 criteria set out in Approved Document L2A 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 building as built, is consistent with the BER, 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.

The 2021 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 June 2022 as follows:

- A 39% improvement on the 2010 Part L targets for housing which means there is flexibility across different types of homes; and,

The suggested development building is therefore achieving a 39% 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 Tiger Developments 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;
- Renewable energy;
- Environmental design;
- Water management and weather resilience;
- Waste management;
- Construction management;
- Biodiversity; and,
- 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 will be through a fabric led energy strategy, in accordance with the principles of the energy hierarchy;
- The energy efficiency of the new build will be improved through the application of a significantly enhanced material specification, exceeding Approved Document L1 (2021) criteria.
- The enhanced material specification will be supplemented with efficient mechanical and electrical systems – including an air source heat pump 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 Student resident building.
- The development is also suggested to have a PV array in place to offset CO₂ emissions as well decrease dependence on grid electricity.

Further details of the proposed approach to reducing the energy demand and associated carbon dioxide emissions of the student residence are presented in the Energy Strategy Section.

General Principles

- Provision of energy efficient 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;
- Approximately 70 Secure cycle storage;

Water

The new build 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, site area of 0.21 ha.
- The redevelopment represents an efficient use of land with a student accommodation of six storey development which will complement the existing surrounding context.

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;
- External noise survey and external fabric assessment by the acoustician to ensure a reduction in noise from traffic or other sources and protect existing and/or future residents from noise disturbance.
- A baseline noise survey has been undertaken to determine the existing noise levels such that noise emissions from new plant and equipment can be designed to meet the noise criteria specified by MCC.
- The baseline noise survey has also been used to ensure the external building fabric, inclusive of ventilation requirements, meets the desired internal noise levels specified by MCC / BS8233:2014. The assessment has taken account of road traffic noise and the potential for events at the adjacent West Indian Community Centre.
- 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 entirely within flood risk zone 1 (low probability of flooding). Surface flooding risk has also been assessed and shows very low risk which means the area has a chance of flooding led 0.1% each year.

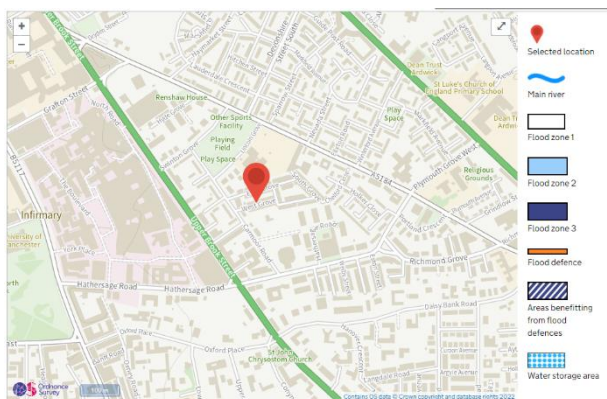


Figure 5.1 – Flood Risk Map

Waste

Demolition and Construction Waste -

Best practice techniques to prevent and minimise waste during the design, Demolition 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 on site development and seek to maximise the use of recycled materials in construction.

Domestic Waste -

- The student residence will provide infrastructure and facilities that meet the need of the occupants for segregated storage, thereby optimising the ability to recycle waste.
- 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. All recyclable materials will be segregated and appropriately labelled.

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,
- The proposals include communal landscaped courtyards.

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:

- A Crime Impact Assessment has been undertaken and the scheme will incorporate recommendations by GMP to provide a safe and secure environment for the residents. The scheme will be managed 24/7;
- 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,

Biodiversity

- There are limited trees on-site and adjacent to the site.
- An arboriculture impact assessment and arboriculture management strategy are submitted with the planning application. These have been taken by Verity Wester Ecology.

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 Upper Brook St, Oxford Road and Stockport Road and provide regular access to Manchester city centre. The closest of which is Upper Brook St less than a fifteen-minute walk from the site, is a high frequency bus route connecting Didsbury, universities and the city centre
 - Rail – The nearest railway station is Ardwick Station which is approximately 1.2KM to the north of the development site. The station provides services to Manchester Piccadilly and Rose Hill Marple. This provides access to Manchester Piccadilly which offers connection to many locations including Manchester Airport.
- Measures are included to enhance cycle and pedestrian facilities and access to and from the Site. 70 cycle spaces will be located within the landscaped courtyard. Short stay visitor cycle parking will be provided by the Carmoor Road entrance.

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 development will include landscaped areas and is also of close proximity to Whitworth Park and Swinton Grove Park.
 - 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.
 - City Centre – The city centre is a short walk from the site and affords the residents many recreational activities and shopping facilities.

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 (2021) 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.

Compliance with Part L and EN 6 has currently been demonstrated based on a fabric first design that will not rely on high performance complex building services installations. 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 L 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 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 $3 \text{ m}^3/\text{hm}^2$) will minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort;
- Attention to cold bridging junctions including the provision of insulation to limit heat transfer. As well as a design that ensures that elevated summertime temperatures are mitigated by careful consideration of orientation, ventilation opening and glass specifications.
- Efficient Form – student residential buildings 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.

Development construction specifications below demonstrate how this project will far surpass the requirements of building regulations.

Construction Element	Building Regulation Specification	Project Development Specification
Floor	0.18 W/m2k	0.12 W/m2k
Wall	0.26 W/m2k	0.15 W/m2k
Roof	0.16 W/m2k	0.10 W/m2k
Window	1.6 W/m2k	1.4 W/m2k
Air Permeability	8 m3/h/m2 @ 50Pa	3 m3/h/m2 @ 50Pa

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	Air source heat pump technology.
Heating Controls	Programmer and appliance thermostat

This mechanical and electrical specification will deliver a Building Regulation Part L (2021) 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 development. 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 3 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;
- Mechanical cooling is only in amenity areas. No cooling is applied in dwellings or circulation areas. Indicative dynamic simulation energy model (DSM) calculations (applying the CIBSE TM59 assessment procedure) for this building demonstrate that the development is 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=0.55 in north/east facing windows and 0.4 in south/west facing windows 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;

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:

- ✓ 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 applicable for this site and is considered in the design of the building.

✓ 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 will be implemented in the project as the development has several flat accessible roof spaces, PV arrays will be installed in these locations to support and supplement heating and power to further reduce demand for grid connected electrical systems and eliminating the use of gas burning heating systems.

✗ 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.

✗ 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.

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

✗ 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. In this situation it is not an effective solution as renewable and passive measures can meet the demands of the building more efficiently.

Emissions Performance Calculations

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

Residential Regulated Energy Demand and Emission Calculations

IESVE software calculates the regulated energy demand of the dwellings and associated carbon dioxide emissions, in accordance with the requirements of Building Regulation, Part L (2021) 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.

Numerous iterations of the SBEM 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 Building Emission Rate reduction for the scheme will provide a 1.56% improvement over Part (2021) as a result of the proposed specification. This means a 40.56% improvement on Part L (2010). 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 2021 revision to Part L2A of the Building Regulations includes an aggregate 39% improvement on the 2010 Part L targets.

Domestic buildings are therefore achieving a 39% emission reduction respectively over Part L 2010 emission rate criteria by virtue of simply complying with the current (Part L 2021) regulatory standards which the scheme has been designed to improve upon.

The calculated emission rate reduction over Part L2A 2021 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.

Target Emissions Rate	3.84 kg/CO2/m²
Building Emission Rate	3.78 kg/CO2/m²
Carbon Reduction from Target Emission Rates Part L 2021	1.56% reduction = 40.56% reduction over Part L1 2010 emissions

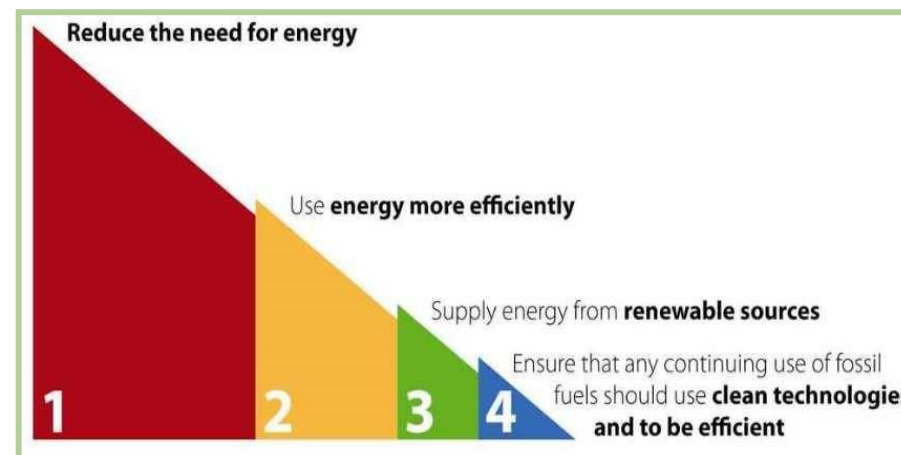
The Part L2 2021 specifications have been strengthened to deliver 39 per cent carbon dioxide savings relative to part L2 2010 therefore the emissions rate is a **40.56% improvement** on the Part L 2010.

This well exceeds Manchester City Council Local Plan Document which requires a 15% improvement on Part L 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 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 ensure that energy consumed is used efficiently, as per the second principle of the Energy Hierarchy.

Third Principle

The development will include the use of renewable technology and will reduce carbon loads using a 150m² Photovoltaic array. PV technologies have improved massively over the past twenty years and have viable technology in most cases in the UK. The developments green roofs are perfect for facilitating the proposed PV array.

Fourth Principle

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

- Air source heat pump; and,
- Electric panel space heating (100% efficient).

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 1.56% dwelling emission rate reduction relative to the current Part L (2021) compliance standard. Equivalent to a 40.56% improvement over Part L (2010).
 - The development is also aiming to achieve BREEAM Excellence accreditation.
- The site being in walking distance from Manchester University 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 study is supported by the generous 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 F rating in line with new regulations and the best available option will be used.
- The design of the student resident 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) 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 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 Carmoor Road 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 considering 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 1.56% building emission rate reduction relative to the current Part L (2021) compliance standard. This equates to a 40.56% improvement over Part L 2010.
- The systems will also be designed to feed into the local district heating plant that is proposed to be built near the site and will further reduce the emissions associated with heating demand.
- 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 for the Site meaning it has a very low chance of flooding. 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 will include measures to prevent watercourse pollution in accordance with the Manchester Core Strategy.
- Waste arising during demolition/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.

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

- The proposal comprises of a student residence building with multiple clusters and studios to offer affordable living for students at the local Manchester campus. 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 student residence scheme on Carmoor Road, 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.