
Island Site (General Partner) Limited

Environmental Standards Statement

Land bound by John Dalton Street, Ridgefield, Bow Street and South King Street,
Manchester

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1. Executive Summary

This Environmental Standards Statement has been prepared by Watt Energy & Consulting Engineers on behalf of Henry Boot to support a planning application for the development on the land bound by John Dalton Street, Ridgefield, Bow Street and South King Street, Manchester (henceforth referred to as The Development.”)

The development consists of the demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and a rooftop garden, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works.

The statement specifically addresses the following Manchester Council approved climate change action plans in addition to planning policies, as stipulated in the Manchester Core Strategy (July 2012):

- Guide to Development in Manchester SPD (April 2007)
- Our Manchester Strategy 2016-2025
- Manchester: A Certain Future (2013)
- Manchester Climate Change Board – The Zero Carbon Framework 2020-2038
- Climate Change and Low Emissions Implementation Plan 2016-2020
- Meeting Our Objectives and Targets – Manchester Climate Change Framework – 2020-25
- Manchester Residential Quality Guidance
- Core Strategy Policy DM 1 - Development Management
- Core Strategy Policy EN 4 - Reducing CO₂ Emissions by Enabling Low and Zero Carbon Development
- Core Strategy Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies
- Core Strategy Policy EN 8 – Adaptation to Climate Change
- Core Strategy Policy EN 9 – Green Infrastructure
- Core Strategy Policy EN 14 – Flood Risk
- Core Strategy Policy EN 15 – Biodiversity and Geological Conservation
- Core Strategy Policy T 1 – Sustainable Transport

The statement details how the development will incorporate sustainable design and resource efficiency in line with the Energy Hierarchy, so to meet the policy requirements and council targets whilst reducing its overall environmental impact. The methodology and calculations are consistent with the MCC Appendix A EN6 Energy Target Explanation. Note that any figures of predicted Energy Usage and CO₂ reductions are quoted from the Energy & Sustainability strategy prepared by Cundall’s (reference: TIS-CDL-XX-XX-RP-SY-70220 Rev B).

In relation to the planning documents and policies outlined above, the development is required to achieve a **9%** reduction in carbon emissions over Part L 2013 of the Building Regulations, equivalent to a **15%** reduction in carbon emissions over Part L 2010.



In order to achieve compliance the development has been designed with a holistic low energy design concept involving a fabric first approach. Low U-values & design air permeability have been targeted along with the consideration and application of low & zero carbon renewable technologies.

A LZC feasibility assessment was also carried out to confirm the most appropriate technology for the site. Further details can be found within section 3 of this report.

This report should be read in conjunction with the sustainable design strategy and SBEM calculations carried out by Cundall. The predicted site wide reduction in CO₂ over Part L 2013 of the Building Regulations can be found within the Energy & Sustainability Statement prepared by Cundall (reference: TIS-CDL-XX-XX-RP-SY-70220 Rev B).

This statement also examines how the design, specification and characteristics of the proposal will contribute to sustainability and meet the relevant objectives outlined within the National Planning Policy Framework (NPPF) 2019, in addition to the Manchester Council approved climate change action plans and core strategy planning policies outlined above. The sustainability measures assessed included:

- Flood Risk Zone
- Green and Blue Infrastructure
- Sustainable Drainage Systems (SUDs)
- Biodiversity / Ecology
- Internal Water Efficiency
- Waste Management
- Materials
- Pollution Control
- Health and Wellbeing
- Sustainable Transport

The development therefore complies with all Manchester City Council's current and future policy requirements and planning targets.

2. Planning Statement

2.1 The Site and Proposed Development

The site extends to approximately 0.13 hectares and is located at the heart of Manchester City Centre. The site comprises a rectangular block of buildings bound by John Dalton Street to the south, South King Street to the north, Bow Street to the east and Ridgefield to the west. Three existing buildings are located within the site boundary comprising:

- Old Colony House (25,968 sq ft), a vacant 7 storey building comprising office accommodation with a vacant former restaurant at ground floor level. The building fronts onto South King Street;
- 5 Ridgefield (11,748 sq ft), a 3 storey building comprising a former restaurant use at basement and ground floor level and vacant offices at first and second floors. The site fronts onto Ridgefield and Bow Street; and,
- Grange House (17,309 sq ft), a 6 storey building comprising ground floor retail/restaurant/office use with vacant upper floors formerly in office use. The building fronts onto John Dalton Street.

The buildings vary in age and character and are no longer fit for purpose as office accommodation. A significant proportion of the accommodation is currently vacant and/or underutilised.

The site is located within the St Ann's Square Conservation Area and adjacent to the Albert Square Conservation Area. None of the buildings within the site are listed.

The development comprises the demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and a rooftop garden, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works.

A site location plan can be seen in Figure 1 (below).

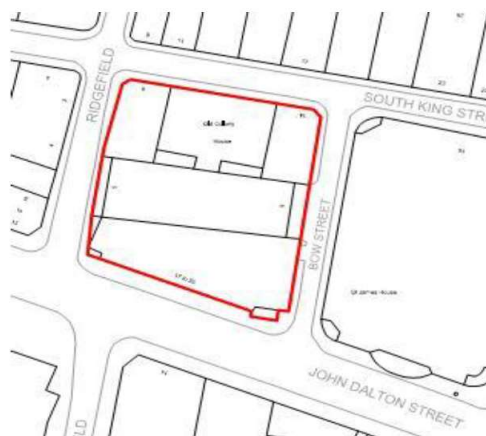


Figure 1: Site Plan (not to scale)

2.2 Relevant Policies and Guidance

2.2.1 Local Planning Policy

2.2.1.1 Manchester Core Strategy

Manchester's Core Strategy (CS) was adopted on 11th July 2012 and is the key Development Plan Document (DPD) guiding the measures assessed in this report.

CS Policy DM 1 - Development Management: Stipulates that all new development should have regard for several development principles relevant to sustainability, including: waste management, designing for health, flood risk, green infrastructure, biodiversity. Additionally, subject to scheme viability, developers will be required to demonstrate that new non-domestic development will achieve a BREEAM Rating of 'Very Good' or for domestic development to achieve the Code for Sustainable Homes standard.

CS Policy EN 4 – Reducing CO₂ Emissions: This policy targets the reducing of CO₂ emissions through the following of the energy hierarchy; firstly reducing the need for energy through efficient design measures, followed by clean energy and lastly, the application of renewable or LZC technologies. In addition to this point, MCC state within this policy all new development is required to use building materials that have low embodied carbon.

CS Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies: This Policy requires electricity intense residential development of 10 or more units to meet, as a minimum, a 15% reduction in domestic CO₂ emissions over Part L of the 2010 Building Regulations, unless proven to be unviable. As Part L 2013 of the Building Regulations represents a 6% improvement on 2010 levels, this target is subsequently equivalent to a 9% improvement in CO₂ emissions over Part L 2013.

CS Policy EN 8 – Adaptation to Climate Change: Expects all new development to be adaptable to climate change in terms of its design, layout, siting, and function of both building associated external spaces.

CS Policy EN 9 – Green Infrastructure: Requires new developments to maintain existing green infrastructure whilst using every opportunity, in accordance with current Green Infrastructure Strategies, to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between area of green infrastructure.

CS Policy EN 14 – Flood Risk: This policy expects all new developments to minimise surface water run-off through the use of SUDs and Green Infrastructure.

CS Policy EN 15 – Biodiversity and Geological Enhancement: Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on or adjacent to the proposed site.

CS Policy T 1 – Sustainable Transport: Policy aims to deliver sustainable, high quality, integrated transport systems to encourage a shift away from car travel to public transport, cycling and walking.



2.2.1.2 Guide to Development in Manchester, Supplementary Planning Document

The Development Guide in Manchester Supplementary Planning Documents (SPD) establish and set out the ongoing generation of the City by providing a set of set principles which will guide developers, architects, and residents in the design of the city. The MCC Core Strategy stipulates that all new residential developments should comply with the design guidance set out in the SPDs. These principles include the following environmental standards relevant to this report: energy strategy, water consumption, drainage management, weather resilience, waste management, construction management, biodiversity, and waterways.

2.2.1.3 Manchester Residential Quality Guide

The Manchester Residential Quality Guide has been developed to help shape the creation of new homes and communities across the Greater Manchester city region, beginning with the Centre and its immediate surroundings. This document outlines the considerations, qualities, and opportunities that will help to deliver high quality residential development as part of successful and sustainable neighbourhoods across Manchester. 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 neighborliness, 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.



2.2.1.4 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 maximize the benefits it delivers. 2. Use appropriate green and blue infrastructure as a key component of new developments to help create successful neighborhoods 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.

2.2.1.5 Manchester Climate Change Framework 2020-25

Following the declaration of a climate emergency by MCC In July 2019, this framework was adopted and is an in-depth strategy to accompany the Draft Manchester Zero Carbon Framework 2020-38, which was published in February 2019. It is a framework that will continue to develop over the next five years, in line with changes in policy, climate science, rate of progress and other factors. The framework has set out four objectives to facilitate this:

Objective 1 – Staying within our carbon budgets.

- Direct CO₂ emissions: staying within our 15-million-ton carbon budget for 2018-2100, including reducing the CO₂ emitted from our homes, workplaces and ground transport by at least 50% during 2020-25.
- Indirect CO₂ emissions: understanding and taking action on the things that we consume, and which generate greenhouse gases through their production, transportation and disposal.

Objective 2 – Climate adaptation and resilience

- Increase the amount of urban green infrastructure cover, aiming for a 10% increase by 2038 from 2018 levels, in line with the Greater Manchester aim.
- Respond to these risks by incorporating adaptation and resilience within our plans and strategies, and acting to make necessary changes to our buildings, infrastructure and our natural environment.

Objective 3 – Health and wellbeing

- Adapt the city's built and natural environment and prepare our residents to become more resilient to these changes. Increasing the amount and quality of green space to enable residents to benefit from the improved physical and mental health that will come as a result.
- Improving the energy efficiency of the city's homes and providing access to affordable, secure supplies of renewable energy are essential help get 38,000 Manchester households out of fuel poverty.



Objective 4 – Inclusive, zero carbon and climate resilient economy

- Ensure that Manchester establishes an inclusive, zero carbon and climate resilient economy where everyone can benefit from playing an active role in decarbonising and adapting the city to the changing climate.



2.2.2 Sustainable Design Definitions

As a result of ever changing and improving carbon emission targets, developments are required to take more sustainable approaches to the construction of their buildings which commonly differ from site to site. This results in buildings being explained under many definitions and using various terminology when they incorporate sustainable design to reduce these carbon emissions.

The most common of these terminologies can be summarised as:

- **Net Zero Carbon**
- **Carbon Neutral**
- **Low Carbon**

The below table outlines the formal definitions of each of these terminologies.

Terminology:	Carbon / Energy targets:	Definition:
Net Zero Carbon	Net Zero carbon emissions	Buildings that generate 100% of their energy needs on-site without the need to import energy.
Carbon Neutral	Net Zero carbon emissions	Buildings achieving net zero carbon emissions by offsetting through the use of a renewable energy supplier (electricity only) or via a financial contribution.
Low Carbon	Carbon emission % reduction normally over the building regulation standards.	Buildings achieving reduced carbon emission through energy-efficient design .

Table 2: Overview of Sustainable Design Definitions



2.2.3 Manchester City Council's Planning Document Targets

Manchester City Planning Policy currently uses the following documents to look to establish the carbon reduction targets to be achieved in new developments across the City.

These documents use different terminology to describe achieving the various reduced carbon emissions.

Please see below a summary of the terminology and targets set out within the current Manchester Planning Policy documents:

Planning Document:	Time of Production or Adoption:	Low Carbon Target:	Sustainable Design Definition:
Manchester Council's Core Strategy 2012-2027	Adopted 2012	Targets a 9% reduction in carbon emissions over Part L Building Regulations.	Low Carbon (9% over Part L 2013)
Climate Change and Low Emission Strategies 2016-2020	Adopted 2016	Targets a 48% reduction in carbon emissions from 1990 - 2020	Low Carbon (48% over 1990 emissions)
Manchester: A Certain Future	Produced in 2009, updated in 2013	Targets emitting 41% less CO ₂ in 2020 than in 2005 – Equates to 10% over Part L 2013 (if going by Part L requirements)	Low Carbon (10% over Part L 2013)
Draft Manchester Zero Carbon Framework	February 2019	Targets reducing carbon emissions by 50% over 2018 levels by 2022 and zero carbon by 2038	Low Carbon (50% over Part L 2013) by 2022, and Carbon Neutral by 2038

Table 3: Overview of Manchester Planning Documents Carbon Targets



2.2.4 National Planning Policy

The NPPF (February 2019) sets out the Government's planning policies for England and how these are expected to be applied. The overall emphasis of the NPPF is to reiterate the Government's key objectives, including securing sustainable development.

The NPPF defines the purpose of the planning system as being to contribute to the achievement of sustainable development. It explains at Paragraph 8 that there are three dimensions to sustainable development. These are economic, social and environmental and should be pursued simultaneously through the planning system.

Paragraph 10 states that at the heart of the Framework is a presumption in favour of sustainable development.



2.3 Sustainable Design Strategy

2.3.1 Energy and Carbon Emissions

Building Services Strategy

In response to the policy requirements and climate change plan targets set out in section 2.2, developments should aim to be energy efficient, and employ measures to conserve energy where these have no detrimental impact on the surrounding area.

Reference should be made to the Cundall's sustainability strategy which assesses the energy demand and carbon dioxide emissions of the development.

The proposed strategy for minimising energy use and carbon emissions is based on the energy hierarchy described in CIBSE Guide F 2012 (Energy efficiency in buildings). The energy hierarchy has been adopted for the development to ensure that the correct approach to design is taken to promote an energy-efficient low carbon solution (see figure 2). This has ensured that the benefits of effective methods of energy use reduction have been maximised first. The approach adopted is as follows:

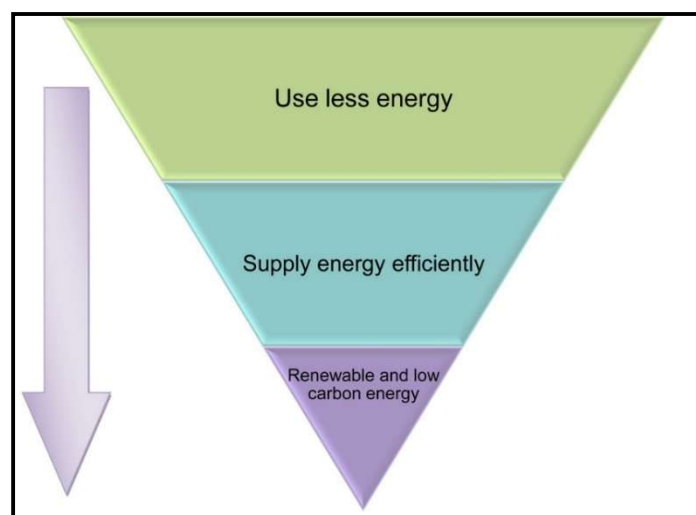


Fig 2: Energy Hierarchy

Minimise energy demand – Implement passive design measures and optimise the building envelope in terms of orientation, air tightness, and insulation. The design utilises high efficiency building fabric (low U-values) to minimise thermal losses.

Meet demands efficiently – Specification of energy efficient decentralised plant, heating, ventilation, lighting and system controls to facilitate efficient operation.

The development proposals pay particular attention is being paid to the wellbeing of occupants. The ventilation/ cooling strategy has been developed to provide comfortable internal temperatures for occupants. Low G-value glazing, and internal blinds will minimise solar gains and glare, thereby reducing comfort cooling energy loads during the summer months and optimising visual comfort.

Additional Renewable Energy Measures

The feasibility for incorporating low and zero carbon technologies (LZCT) has been considered through the design development of the building. The viability of several separate technologies was examined in a LZCT study (see section 3) which helped to identify potential opportunities for the inclusion of PV panels and variable refrigerant flow (VRF) air source heat pumps, which will contribute significantly to the emissions performance of the development. Further details on the proposed LZC technology can be found in the Cundall's sustainability strategy, reference TIS-CDL-XX-XX-RP-SY-70220.

In summary, roof-mounted PV panels and air source heat pumps are proposed for this project on and will contribute significantly to the emissions performance of the development.

Efficient and Sustainable Design Measures

In line with the above Sustainable Design Strategy, the following Energy Efficient design measures are specified.

- High levels of insulation throughout with minimal thermal bridges
- Passive solar gains and internal heat sources
- Excellent level of airtightness
- Good indoor air quality by openable windows
- PV array installed onto available roof space

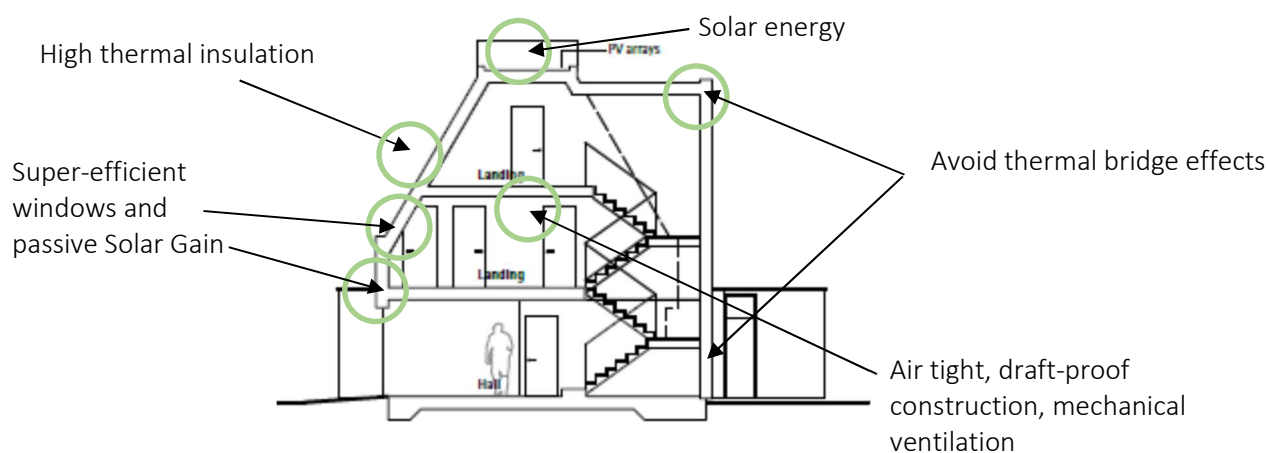


Fig 3: Examples of Efficient Design Measures

The Proposed specifications and key energy efficient design measures are as follows:

- Roof (all types) U-values of 0.14 W/m²K
- Ground/Exposed Floor U-values of 0.14 W/m²K
- External Wall U-values of 0.18W/m²K
- Use of ACD's to minimize Thermal Bridging and γ Value with the integration of hi-therm lintels.
- Low Window and Door U-values of 1.4 W/m²K
- Low G-value of 0.3.
- 100% low energy lighting throughout.
- Air Permeability Rate of 2m³/hm².
- Use of energy efficient lifts.

The performance of building fabric will be verified by use of a thermographic survey prior to handover. This will enable the performance of fabric to be assessed and any defects rectified prior to the practical completion of the development.

2.3.2 Choice and Impact of Renewable Technology

All reasonable technologies were investigated for their suitability to the site and development; please refer to section 3 for details.

In addition to energy efficiency measures, it is proposed that the development will feature a solar photovoltaic array as a viable Low/Zero carbon Technology. A PV array with 270m² total area and a modular efficiency of at least 20%, orientated south at an inclination of 30° to the horizontal could produce enough electricity to reduce CO₂ emissions by **8%** across the site. The peak output of the array will be 34kWp.

In addition, variable refrigerant flow air source heat pumps are proposed to provide the local cooling and heating to the office space and retail units. A standalone Air Source Heat Pump will provide DHW to the basement showers. This system could reduce the site-wide CO₂ emissions of the development by **7%**.

The use of on-site renewables and low carbon technologies could reduce the site-wide CO₂ emissions of development by **15%** across the site.

The proposed area allocated for the PV array can be seen in the image below:



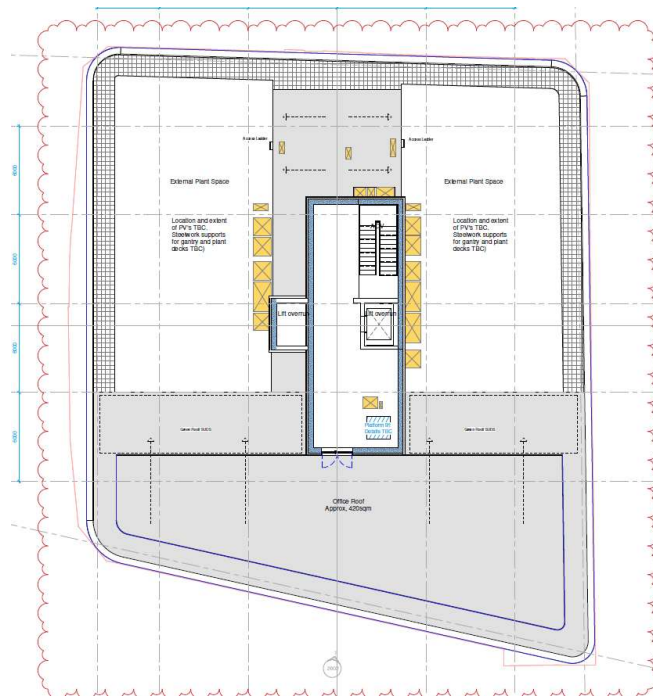


Fig 4: Roof layout indicating proposed location for solar photovoltaic array.

2.3.3 Energy and CO₂ Reduction Summary

A summary of all stages of the energy demand assessment from baseline figures to final carbon reduction are shown in table 3 below:

Summary of CO ₂ Emission Reductions	Total CO ₂ emissions (kgCO ₂ /year)
% CO ₂ displaced in total	37%
% CO ₂ displaced by energy efficiency measures	22%
% CO ₂ displaced by LZC Technologies	15%

Table 3: Summary of CO₂ Reductions

2.3.4 Manchester City Council Policy and Targets Summary

With regards to the Manchester City Council's planning documents policy and targets the table below details how the Sustainable Design Strategy (outlined in section 2.3.1) achieves the current planning policy requirements and targets.

Planning Document:	Sustainable Design Strategy
Manchester Council's Core Strategy 2012-2027	The Sustainable Design Strategy achieves a 37% reduction in carbon emissions over Part L 2010 - exceeding the EN6 documents Low Carbon target of 9% over Part L 2013.
Climate Change and Low Emission Strategies 2016-2020	The Sustainable Design Strategy achieves a 37% reduction in carbon emissions over Part L 2010 – exceeding the documents Low Carbon target of 48% over 1990 Emissions.
Manchester: A Certain Future	The Sustainable Design Strategy achieves a 37% reduction in carbon emissions over Part L 2010 – exceeding the documents Low Carbon target of 10% over Part L 2013.

Table 6. Summary of MCC and Planning Targets

As a result of the sustainable design parameters outlined within section 2.3.1 and the energy and CO₂ reduction figures summarised above, the development achieves a total reduction of **37%** in carbon emissions over Part L 2010. This therefore allows the development to be regarded as **low carbon**.



2.4 Adaptation to Climate Change

In addition to the primary building design and fabric, many other issues that will influence creating a Sustainable Development, including flood prevention, material use, waste minimisation and transport. All of these issues feature regularly within the separate climate change action plans, outlined within section 2.2, as areas that Manchester is aiming to significantly improve on in order to become a more carbon neutral and clean city.

All of the sections of creating a sustainable development should be taken into consideration from the start of the development and promoted throughout the building construction on site in order to maximise their benefits. Additionally, features which enable more efficient usage should also be specified to encourage the building users to maintain efficient use once construction has been completed.

2.4.1 Flood Risk Zone

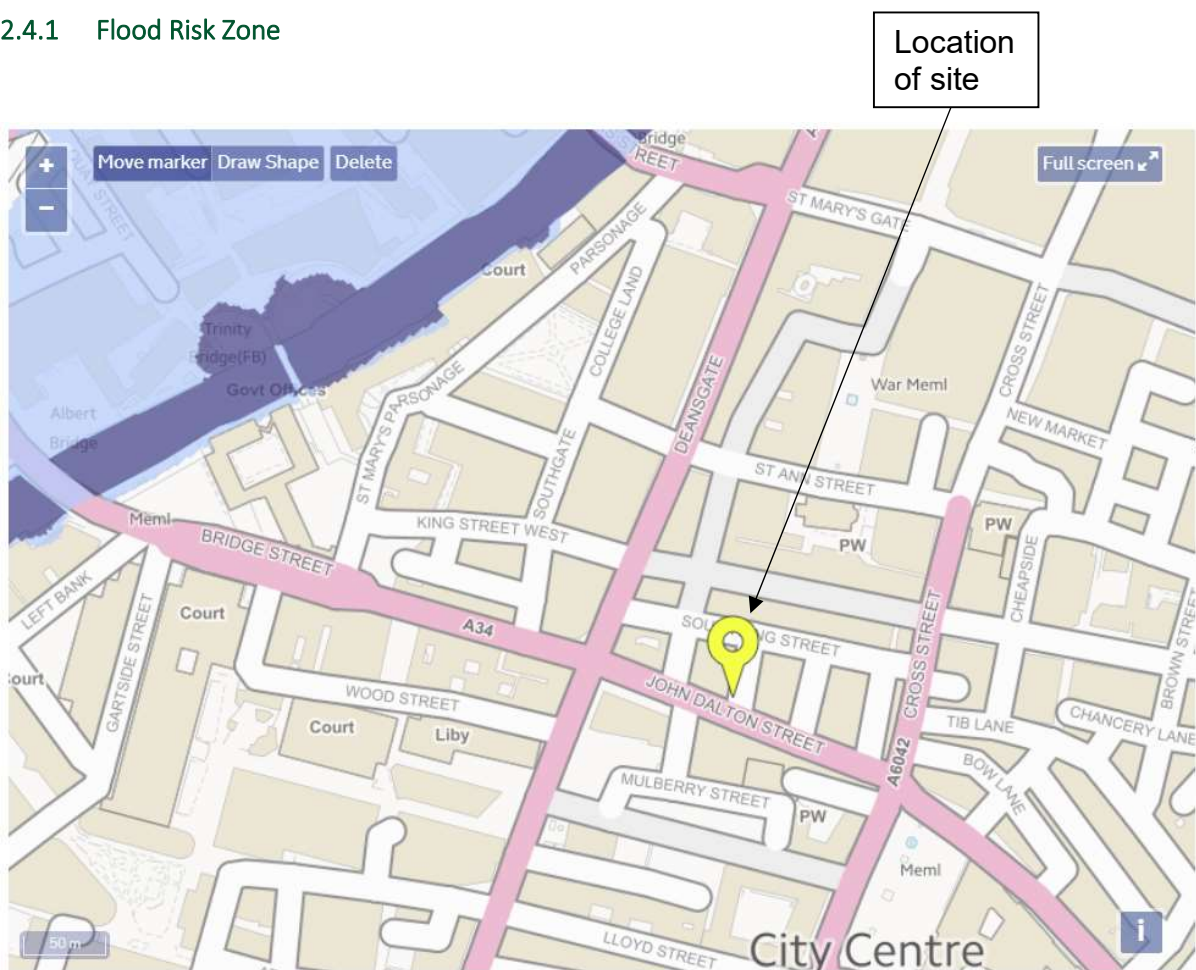


Fig 4: Flood Risk Map

The above map and snippet have been taken from a Government licences flood risk map for central Manchester. It can clearly be seen that the site is located within flood risk zone 1 and therefore has minimal to no risk of flooding.

2.4.2 Green & Blue Infrastructure

2.4.2.1 Sustainable Drainage Systems (SUDs)

Even though it has been shown that the proposed scheme is located on a site with a low to zero flood risk, it should not detract from the need to ensure that the levels of surface water run-off do not increase from the existing development to the proposed. Therefore a SUDs strategy should be determined by a suitably qualified professional at the earliest stage possible and then implemented throughout construction and beyond.

By incorporating SuDs, flood risk can be managed and mitigated. Section 1.1 of the SuDs Manual (Ciria C753) states the following:

“Sustainable drainage systems (SuDS) can deliver multiple benefits.

Surface water is a valuable resource, and this should be reflected in the way it is managed and used in the built environment. It can add to and enhance biodiversity, beauty, tranquillity and the natural aesthetic of buildings, places and landscapes and it can help make them more resilient to the changing climate.”

The general concept of SUDs is to manage the flood and pollution risks in developed areas. This is done by efficiently managing surface water run-off by either slowing down the surface water run-off, or by reducing the quantity of surface water run-off. There are different methods to achieve this such as:

- Harvesting – capturing rainwater and facilitate its use within the development
- Infiltrating – rainwater infiltrates into the ground
- Storing – capturing rainwater and control the flow through the means of storing and releasing it slowly i.e. attenuation
- Conveying & treating – capturing rainwater and removing any contaminants, then convey the flow towards a downstream system

The SuDS Manual describes the four pillars of SuDS design as Water Quality, Water Quantity, Amenity and Biodiversity as illustrated in Figure 3 below:

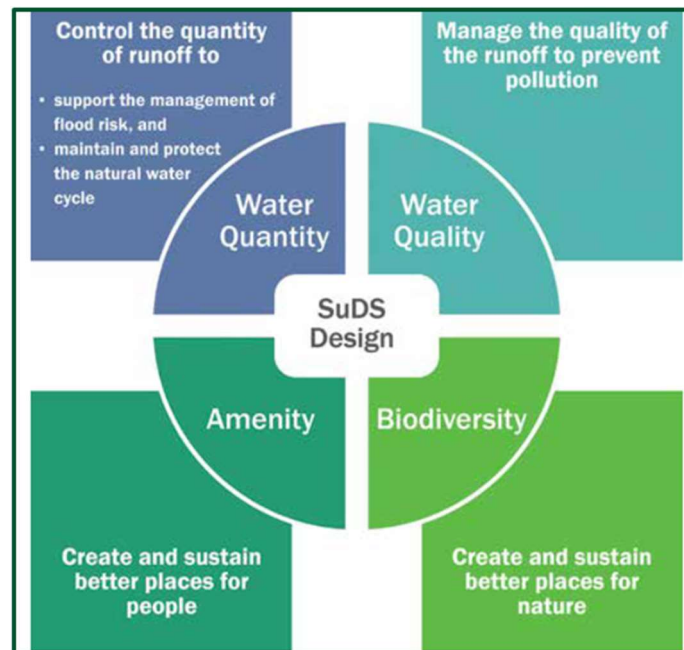


Fig 5: Representation of figure 2.1 of the SUDs Manual

SuDS are increasingly gaining popularity as a holistic solution to a wide range of pressing issues including flood risk, water pollution, groundwater depletion, biodiversity loss and urban decline.

Drainage Hierarchy

To alleviate pressure on existing sewer networks and to address issues of climate change the following hierarchy has been developed and implemented from a planning perspective.

The Planning Practice Guidance, states that:

“generally, the aim should be to discharge surface run-off as high up the following hierarchy of drainage options as reasonable practicably:

1. Into the ground (infiltration)
2. To a surface water body
3. To a surface water sewer
4. To a combined sewer”

The “Building Regulations Approved Document H” refer to this discharge hierarchy.

Description	Benefit
Flood risk management	SuDS aim to have an attenuating affect by slowing down and storing surface water run-off
Drainage resilience	Future proofing designed to be resilient against climate change
Natural flow regime protection	Mimic natural drainage arrangements to emulate natural flow
Water quality	Filter out pollutants and discharge cleaner water
Water reuse	Can be strategically placed to clean and capture water for reuse
Biodiversity and ecology	SuDS use vegetation and natural landscape to support biodiversity and ecology
Amenity	Improve visual integrity and desirability of the site by implementing green and blue features
Carbon reduction	SuDS can reduce carbon use throughout the life cycle including construction, maintenance, and demolition
Microclimate	Aim in reducing heat island effects
Education	Educate and engage the general public about surface water management

Table 6: Outline of types of green/blue infrastructure and associated benefit

2.4.2.2 Biodiversity & ecology

Similarly, to the previous section on SUDs, the nature of the proposal: including the demolition of an existing building and potential change in area of impermeable surface, there could be adverse impacts on the surrounding ecology as well potential for the enhancement. Therefore in order to ensure that any existing ecology on or near the site is adequately protected and to determine the possibility of new habitat creation, planting schemes, and green walls and or roofs should be considered.

Reference should be made to the preliminary ecological appraisal report prepared by Middlemarch Environmental (Report No: RT-MME-151575-02) and Preliminary Bat Roost Assessment report (RT-MME-151575-01). The key recommendations from the report have been summarised below:

The ecological mitigation hierarchy should be applied when considering development which may have a significant effect on biodiversity. The ecological mitigation hierarchy, as set out in the National Planning Policy Framework (NPPF), and the National Planning Practice Guidance (NPPG) should follow these principles:



- Avoidance – development should be designed to avoid significant harm to valuable wildlife habitats and species.
- Mitigation – where significant harm cannot be wholly or partially avoided, it should be minimised by design or through the use of effective mitigation measures.
- Compensation – where, despite whatever mitigation would be effective, there would still be significant residual harm, as a last resort, compensation should be used to provide an equivalent value of biodiversity.

Protected / Notable Species

To ensure compliance with wildlife legislation and relevant planning policy, the following recommendations are made:

Nesting Birds: Building clearance should be undertaken outside the nesting bird season. The nesting bird season is weather dependent but generally extends between March and September inclusive (peak period March-August). If this is not possible then any buildings to be removed or disturbed should be checked by an experienced ecologist for nesting birds immediately prior to works commencing. If birds are found to be nesting, any works which may affect them should be delayed until the young have fledged and the nest has been abandoned naturally.

Roosting of bats. The following summarises the proposals regarding the conservation of bats in relation to the scheme.

Old Colony (B1), 5 Ridgefield (B2) and Grange House (B3)

These buildings were considered to have negligible potential for roosting bats. The survey data obtained for the site is valid for 24 months from the survey date. If development works to the surveyed structure have not commenced within this timeframe it will be essential to update the survey effort to establish if suitable features have developed and if bats have colonised the structures in the interim. In the unlikely event that a bat is found during demolition works all works must immediately cease and a suitably qualified ecologist should be contacted.

Habitat Enhancement

In line with the National Planning Policy Framework, the development should aim to enhance the site for biodiversity. Where possible, bat boxes could also be installed to provide roosting habitat for species such as pipistrelle.



2.4.3 Internal Water Efficiency

To achieve water efficiency and reduction the consumption per occupant, water efficient fittings proposed should have low flow rates, capacities, effective flush volumes etc. Example targets for these to achieve the required internal consumption are as follows. This may be achieved by selection of low flow sanitary ware or the use of flow restrictors.

Appliance	Unit of measure	Amount (litres)
WC (Dual flush)	Full flush volume	4
WC (Dual flush)	Part flush volume	2.6
Taps (excluding kitchen)	Flow rate l/min	5
Kitchen taps	Flow rate l/min	6
Showers	Flow rate l/min	8

The use of solenoid “shut-off” valves installed in WC may be considered for the reduction of water leakage. A water leak detection system will be employed to monitor the water meters and alert building managers to a potential water leak.

Table 7: Internal Water Efficiency Flow Rates

The specifying of ‘A’ rated appliances should be prioritised where possible.



2.4.4 Waste Management

2.4.4.1 Occupational Waste

Manchester City Council's Waste Storage and Collection Guidance for New Developments 2017 encourages all new developments to incorporate a waste management strategy into the build at the earliest stage possible.

Bin storage has been allocated at the ground floor level.

All office/commercial units will be provided with the required bins to cover all types of waste and recycling that Manchester City Council offer.

2.4.4.2 Construction Waste

A target of at least 90% of waste generated on site, throughout the construction stage of the development, to be diverted from landfill will be included as part of a Construction Environmental Management Plan (CEMP) to be agreed with MCC. A CEMP framework is provided at Section 7 of the SPS.

The proposal will also endeavour to maximise the use of recycled materials on site, whereby further promoting the minimising of waste production.

2.4.5 Materials

The construction of new buildings and building elements has a large environmental impact in terms of both, energy and embodied carbon of new materials. Therefore, Manchester Council, through Policy E1.6 of the Unitary Development Plan (UDP) have required all new developments to use environmentally friendly materials, where possible, and encourages the use of recycled building materials. This information should also be incorporated into the SWMP mentioned in the previous subsection (Waste Management) as a means of promoting the re-using and recycling of materials.

Where new materials are to be used, careful consideration of their environmental impact should be taken. This can be achieved by ensuring that only materials that score well under The Green Guide to Specification. This useful online tool can be used as a reference that provides guidance on the relative environmental impacts for a wide range of different building specifications. The BRE's Environmental Profile Methodology determines the Life Cycle Assessment (LCA) of materials, which is what the Guide's specifications are based on.

In order to take full advantage of low impact materials, elements key to the scheme should be specified to achieve ratings of between A+ and C under The Green Guide's ratings. Insulation materials that are specified will also have a global warming potential (GWP) of 5 or less, with an ODP of 0. Additionally, 100% of all timber used as part of the scheme will be responsibly sourced from suppliers that are either Forest Stewardship Council (FSC) accredited, Programme for the Endorsement of Forestry Certification accredited, or a similar recognised accreditation body.



To further promote embodied energy and carbon savings, the scheme will first prioritise the reusing of any demolished materials within the site, however if this is not possible secondary priority must be given to the redirecting from landfill; in line with the waste hierarchy.

Finally, in addition to the above policy points, the development is also recommended to register with the Considerate Constructors Scheme, or a similar approved scheme.

2.4.6 Pollution Control

To reduce emissions of gases with high global warming potential (GWP) and nitrogen oxide (NOx) into the atmosphere, new buildings will be specified with insulating materials that have a GWP of less than 5. This will follow throughout the development to reduce the impact that the construction phase has upon climate change.

Additionally, the following measures will be implemented:

- 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 development Site is within the locality of the River Irk. Where necessary, temporary drainage and pollution prevention measures should be introduced to 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.
- Dust suppression measures will also be put in place as part of the Main Contractor's Environmental Management Plan, this will reduce the potential risk to local watercourses (River Irwell) and neighbouring properties.

Sound insulation will be specified to achieve Building Regulation Part E compliance standard (this will be verified by pre-completion testing) in addition to meeting the requirements of the council. This will reduce the impact of sound pollution for the occupants within adjoining dwellings.

2.4.7 Health & Wellbeing

A full daylight and sunlight analysis assessment has been carried out for the proposed development to ensure that compliant levels of vertical sky component (VSC), no sky line (NSL) and annual probable sunlight hours (APSH) are achieved. Refer to the Daylight & Sunlight Amenity Report prepared by Avison Young (March 2021) for further details.



In addition to having this assessment completed, the following measures will also be incorporated:

- High performance mechanical ventilation and cooling system, with fresh air delivered by air handling units and cooling via air source heat pump/VRF for office areas. This system will provide comfortable internal temperature conditions, and a continuous supply of fresh, filtered air to ensure occupant comfort expectations are met.
- Enhancing the green infrastructure of the site by introducing biodiversity enhancements such as bird nesting features such as swift boxes therefore improving the physical and mental wellbeing of residents, visitors, and workers.
- Secure by Design accreditation will be sought which will incorporate the adoption of crime prevention measures to further prevent crime and promote a safe environment.

The above findings and technology will all help to promote healthy housing for residents which has been identified by the World Health Organisation (WHO) as an increasingly important factor in increasing quality of life, preventing disease and illness, and mitigating climate change.

2.4.8 Sustainable Transport

A key message from all climate change adaptation plans (as mentioned in section 2.2), specifically Our Manchester Strategy 2016-2025, The Zero Carbon Framework (formulated by the Manchester Climate Change Board) and Manchester City Council's Core Strategy 2012-2027, is the need to increase the proportion of cycling, walking and public transport journeys. This is due to it providing both environmental and social benefits through the reducing of emissions, improving air quality and promoting a more active lifestyle.

The proposed development acknowledges the benefits associated with these forms of sustainable transport and is therefore providing cycle storage at basement level, thereby encouraging all employees to commute in a sustainable manner.

Further to providing significant cycle provision, the site is located close to central Manchester and is directly adjacent to John Dalton Street, which has multiple bus stops and is directly in the centre of Manchester. St. Peter's square Tram stop is approximately 5 minutes' walk from the site, meaning trams can be taken to both Manchester Victoria and Manchester Piccadilly train station. This proximity to a plethora of transports node with such a range of travel possibilities further reduces the reliance on cars and the negative environmental impacts associated.

Transport Links

Further to providing significant cycle provision, the site is located within central Manchester and therefore has excellent sustainable transport links:

- **Train:** The closest train station to the site is Manchester Victoria, which is located approximately 0.5 miles north of the site, taking roughly 10 minutes to walk to. This station provides access to all other both additional Manchester stations, Manchester Airport, Leeds and other regional and national destinations.



- **Bus:** The nearest bus stops are located on John Dalton Street which is directly in front of the site. These will provide frequent services to Bury, Middleton, Oldham, Shudehill and Rochdale, in addition to links to Piccadilly Gardens, where further buses can be caught to more regional destinations.
- **Metrolink:** The closest Metrolink station to the site is the St. Peter's square Tram Stop. This provides an additional means of public transport to locations within central Manchester and also further afield to Altrincham, Bury, Eccles, East Didsbury, Rochdale, Ashton-Under-Lyne and Manchester Airport.

Local Amenities

- Parsonage gardens, St. John's gardens & Piccadilly gardens are all situated within a 10-minute walk from the site; providing excellent recreational space for residents, visitors and workers.
- The site is also in the centre of Manchester where a multitude of shops and amenities can be accessed.
- Manchester Metropolitan and Manchester University are both less than 2 miles from the proposed development providing good access to higher education. In addition, there are several schools and colleges easily accessible from the transport links described above.
- Due to its proximity to the centre of Manchester, the site has excellent access to music, theatre and art venues, places of religion and Manchester's City Library.



3. Feasibility Assessment of Renewable Energy and Low Carbon Technologies

Solar Hot Water (Thermal)

Solar water heating systems are one of the more familiar renewable technologies used at the moment. They use the energy from the sun to heat water, most commonly for hot water needs. Solar heating systems use a heat collector that is usually mounted on a roof in which the sun heats a fluid. This fluid is used to heat water that is stored in either a separate hot water cylinder or in a twin-coil hot water cylinder (the second coil is used to provide additional heating from a boiler or other heat source).

Solar hot water panels could be used however, due to the relatively low hot water demand from the development, the energy savings would be lower as compared with alternative technologies.

Renewable Technology Not Chosen.

Photovoltaic Panels (PV)

Photovoltaic modules convert sunlight directly to DC electricity. The solar cells consist of a thin piece of semiconductor material, in most cases of silicon. Through a process called doping, very small amounts of impurities are added to the semiconductor, which creates two different layers called n-type and p-type layers.

Certain wavelengths of light are able to ionize the silicon atoms, which separates some of the positive charges (holes) from the negative charges (electrons). The holes move into the positive or p-layer and the electrons into the negative or n-layer. These opposite charges are attracted to each other, but most of them can only re-combine by the electrons passing through an external circuit, due to an internal potential energy barrier. This flow of electrons produces a DC current.

A PV array can be mounted on the available roof space. An array with total area of total of 270m² with a modular efficiency of at least 20% and peak output of 34kWp will be provided, orientated south at an inclination of 30° to the horizontal is required. This array would provide carbon emission savings of 8% compared with baseline emissions.

Chosen Renewable Technology



Ground Source Heat pumps

A heat pump is a device that takes up heat at a certain temperature and releases it at a higher temperature. The essential components of a heat pump are heat exchangers (through which energy is extracted and emitted) and a means of pumping heat between the exchangers. The effectiveness of the heat pump is measured by the ratio of the heating capacity to the effective power input, usually known as the coefficient of performance (COP). Ground-source heat pumps (GSHP) extract heat from the ground. They are classified as either water-to-air or water-to-water units depending on whether the heat distribution system in the building uses air or water. Ground source heat pumps either use long shallow trenches or deep vertical boreholes to take low grade heat from the ground and then compress it to create higher temperatures.

Ground source heat pumps would not be suitable due to the lack of land space, high capital cost and long payback period which would be longer than the life of the unit.

Renewable Technology Not Viable

Air Source Heat pumps

Air source heat pumps absorb heat from the outside air. This is usually used to heat radiators, underfloor heating systems, or warm air convectors and hot water in your home. An air source heat pump extracts heat from the outside air in the same way that a fridge extracts heat from its inside.

The system performs down to air temperatures of -20°C which means that they are more than suitable for installations within the UK. Hot water and Heating can be provided 365 days a year. The hot water is produced without the aid of electrical immersions and at 55°C is more than hot enough for baths and showers.

There are two main types of air source heat pump system:

- An air-to-water system distributes heat via your wet central heating system. Heat pumps work much more efficiently at a lower temperature than a standard boiler system would. So they are more suitable for under-floor heating systems or larger radiators, which give out heat at lower temperatures over longer periods of time.
- An air-to-air system produces warm air which is circulated by fans to heat your home. They can also be used to provide hot water.

Air Source heat pumps are a suitable option to provide heating and cooling. ASHPs are therefore being incorporated into the design proposals and will be implemented as follows:

- VRF systems transfer heat from one location to another using refrigerant and will be utilised for the office areas, ground floor reception, and ground floor retail units and basement gym unit fit-out team's heating and cooling strategy.



- Domestic hot water will be provided to the basement showers via ASHP and will utilise high temperature refrigerant, such as CO₂, which operate efficiently at the high temperatures that DHW generation demands.

These heat pump systems will enable significant emissions savings over a conventional gas boiler heating system, particularly when factoring in the decarbonisation of the electrical grid. This air source heat pump system is expected to provide carbon emission savings of 7% compared with baseline emissions.

Chosen Renewable Technology

Biomass Heating

Biomass is any plant-derived organic material that renews itself over a short period.

Biomass energy systems are based on either the direct or indirect combustion of fuels derived from those plant sources. The most common form of biomass is the direct combustion of wood in treated or untreated forms. The use of biomass is becoming increasingly common in some European countries.

The environmental benefits relate to the significantly lower amounts of energy used in biomass production and processing compared to the energy released when they are burnt. This can range from a four-fold return for biodiesel to an approximate 20-fold energy return for woody biomass. Biomass-fuels can be used to produce energy on a continuous basis (unlike renewables such as wind or solar energy) and it can be an economic alternative to fossil fuels as it is a potential source of both heat and electricity.

However, Biomass systems have particular design management and maintenance requirements associated with sourcing, transportation and storage and are therefore more commonly used in commercial developments rather than domestic installations. It can be less convenient to operate than mains-supplied fuels such as natural gas and are more management intensive and require expertise in facilities management. Sources of biomass can also fluctuate, so boilers should be specified to operate on a variety of fuels without risk of overheating or tripping out.

A biomass heating system would not be suitable due to the lack of land space. In addition, the high capital cost and payback period would be longer than the life of the unit.

Renewable Technology Not Chosen

Wind

Wind turbines convert the kinetic energy in wind into mechanical energy that is then converted to electricity. Turbines are available in a range of sizes and designs and can either be free-standing, mounted on a building or integrated into a building structure. The wind speed in the area is under the advised minimum and the built-up area means that a wind turbine would not be feasible.

Renewable Technology Not Viable



4. Conclusion

This statement has assessed the proposed development and an assessment has been made against the relevant climate change and sustainability policies and targets, as outlined within the following documents: The Manchester City Council Core Strategy (July 2012), Our Manchester Strategy, Manchester: A Certain Future and The Zero Carbon Framework, through the following of the energy hierarchy, the modelling of the building using appropriate software and addressing all aspects of a sustainable development. In addition, the proposal has been assessed against national sustainable design definitions to determine how it can be classified.

As part of this process, the development was designed with a fabric first approach; with U-values, design air permeability and building services efficiencies all significantly exceeding Building Regulations Part L 2010 standards. This approach demonstrates a holistic low energy design concept, involving very low limiting values and thus led to high-energy performance targets and being defined as a low carbon development.

Furthermore, an LZC feasibility assessment has been carried out, with all viable technologies investigated for their suitability to the site and development.

The chosen technologies are a solar photovoltaic (PV) array and air source heat pump system for domestic hot water and heating/cooling. The combined predicted carbon emissions savings of these two LZC technologies is 15%.

The development will also be adapting to climate change by incorporating sustainable drainage measures, protecting existing ecology, enhancing biodiversity where possible & providing cycle storage provision.

In addition to the following of the energy hierarchy through the efficient design and renewable technology measures mentioned and meeting all relevant Manchester City Council carbon targets the proposal will include a large number of sustainability measures throughout construction and once completed, which will contribute significantly to the development's sustainability performance and accord with the requirements of the NPPF. The key measures to be included and therefore can be taken from this report include:

- The proposal sits within Flood Risk Zone 1 and therefore has minimal to no risk of flooding.
- A SUDs strategy will be produced to outline all measures to be incorporated that will ensure any additional surface water is collected, treated and removed.
- The development will incorporate green infrastructure in the form of a green roof that will instil a sense of wellbeing whilst also assisting with offsetting carbon dioxide and balancing local temperatures through evapotranspiration.
- Internal water efficiency will be prioritised by ensuring that efficient water fixtures are utilised and 'A' rated appliances will be specified where possible.
- Waste minimisation will be targeted from throughout construction and occupational phase.



- In addition to targeting Secure by Design accreditation through adoption crime prevention measures, the site layout promotes busy spaces and routes and facilitates natural surveillance. These will therefore reduce the fear of crime and subsequently improving mental health of residents, visitors and workers.
- Prioritising reusing existing materials and locally sourced materials for construction to reduce waste and transportation to landfill in addition and promote a low embodied carbon development.
- When new materials are specified that are not locally attainable then only those that score well on the BRE: The Green Guide to Specification are to be used; to further encourage the use of sustainable materials and reductions in embodied carbon.
- The buildings has had a daylight and sunlight analysis carried out to assess available sunlight and daylight in the proposed spaces. The report shows that any impact on daylight and sunlight received by surrounding properties will be of limited practical significance.
- The proximity of the Manchester City Centre to the proposed site is highly sustainable in terms of transport and local amenities as it is in close proximity to a number of public transport nodes including: St. Peter's square Metrolink Station, multiple bus stops and additional Metrolink stations, as well as a multitude of shops and other local amenities.
- The development will also include significant cycle storage provision.

As a result of all the above, the proposed sustainable design and energy strategy allows the development to comply with Manchester City Council's planning policy requirement and is in line with all targets put forward in their planning documents.

