



RIDGE

ROBERT STREET, MANCHESTER ENVIRONMENTAL STANDARDS STATEMENT

10/04/2026

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Prepared for

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1. INTRODUCTION

Ridge & Partners LLP have been appointed by Rani Investments Limited to complete an Environmental Standards Statement for the proposed residential development at Robert Street, Manchester.

This Environmental Standards Statement has been produced to support the full planning application for the development by demonstrating that careful consideration has been given to the context of the site, local planning policy and the 2021 Building Regulations in the development of the proposed energy and sustainability strategy. The primary objective of this report is to contribute to the development of a low carbon and sustainable strategy for the site which will be carried through to detailed design, construction and operation.

2. DEVELOPMENT PROPOSALS

2.1. Site Overview and Development Proposals

The site is located within the Manchester City Council administrative area, in an area known as Strangeways. The surrounding land uses comprise predominantly of light-industrial/warehouse and commercial use.

The site is bound by Robert Street to the east and Dutton Street to the south. The site is currently occupied by Pure Padel Manchester, an indoor sports venue.



Figure 1 - View of the existing site and location of the Robert Street Development (Source: Tim Groom Architects)

The proposed development comprises the demolition of existing structures and the erection of a part 10, part 11, part 14 and part 20 storey residential building comprising 189 apartments (Use Class C3) with associated residents' amenity space, servicing and public realm.



Figure 2 – GA Plan of the proposed Robert Street Development (Source: Tim Groom Architects)

3. POLICY CONTEXT

3.1. National Planning Policy Framework

A revised National Planning Policy Framework (NPPF) was published in December 2023 which sets out the government's planning policies for England and how they are expected to be applied. This framework confirms on page 5 that:

'*the purpose of the planning system is to contribute to the achievement of sustainable development*.'

This highlights sustainability as a critical issue that runs throughout all of the planning policies. The National Planning Policy Framework (NPPF) defines sustainable development in agreement with the U.N. definition of "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The NPPF outlines how three overarching objectives need to be pursued in mutually supportive ways in order to achieve sustainable development. These objectives are outlined below:

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

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

c. An **environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural

resources prudently, minimising waste pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

3.2. Places for Everyone Joint Development Plan Document 2022 to 2039

Places for Everyone (PFE) is the joint development plan for nine boroughs in Greater Manchester including MCC. The plan was adopted in March 2024, and includes notable environmental policies which will help to achieve the sustainability goals as part of Greater Manchester's ambition of becoming a leading green city region by 2038. Notable policies from this document which pertain to the proposed development are listed below:

Policy JP-S1: Sustainable development

'To help tackle climate change, development should aim to maximise its economic, social and environmental benefits simultaneously, minimise its adverse impacts, utilise sustainable construction techniques and actively seek opportunities to secure net gains across each of the different objectives. In preparing plans, authorities should make as much use as possible of suitable previously-developed (brownfield) land and vacant buildings to meet development needs. In bringing forward previously developed sites for development, particular attention will be paid to tackling land contamination and stability issues, ensuring that appropriate mitigation and remediation is implemented to enable sites to be brought back into use effectively.'

Addressing Climate Change

'Greater Manchester's Vision is to be at the forefront of action on climate change and to make its fair contribution to international commitments by becoming a carbon neutral city region by 2038. In acknowledgment of climate change, by 2020, all 10 districts and the Greater Manchester Combined Authority have declared a climate emergency. To support this vision a 5 Year Environment Plan was launched in 2019 to identify the urgent actions that are needed to ensure Greater Manchester can follow the required pathway for carbon neutrality.
To meet our carbon commitments we will need to:

- *Be carbon neutral by 2038*
- *Hold cumulative carbon dioxide emissions to within our carbon budget*
- *Initiate a programme of mitigation to reduce emissions including by:*
    - *Significantly upscaling solar photovoltaic energy;*
    - *Reducing heat demand in homes*
    - *Moving away from carbon intensive gas as the primary source of heat;*
    - *Reducing heating and cooling demand for public and commercial buildings;*
    - *Increasing biofuel use;*
    - *Enable sustainable choices for travel and decarbonise transport;*
    - *Significantly upscaling building retrofit; and o Increase the delivery of nature-based solutions and biodiversity net gain*

In supporting our ambitions, climate change is a key theme running throughout the plan, rather than being reduced to a single policy, and it is only through this combination of actions that it can be properly addressed. In particular we set out:

- *Methods to de-carbonise the city region through new and existing development, effective land management and through the provision of infrastructure and new technologies Policy JP-S2 'Carbon and Energy';*
- *The delivery of renewable and low carbon energy schemes Policy JP-S3 'Heat and Energy Networks';*

- *Water based measures to adapt and reduce the impacts of climate change Policy JP-S4 'Flood Risk and the Water Environment'; and*
- *Measures to help achieve a circular and zero-waste economy Policy JPS6 'Resource Efficiency'...'*

Policy JP-S2: Carbon and Energy

'The aim of delivering a carbon neutral Greater Manchester no later than 2038, with a dramatic reduction in greenhouse gas emissions, will be supported through a range of measures including:

1. *Promoting the retrofitting of existing buildings with measures to improve energy efficiency and generate renewable and low carbon energy, heating and cooling;*
2. *Promoting the use of life cycle cost and carbon assessment tools to ensure the long-term impacts from development can be captured;*
3. *Taking a positive approach to renewable and low carbon energy schemes, particularly schemes that are led by, or meet the needs of local communities;*
4. *Increasing the range of nature-based solutions including carbon sequestration through the restoration of peat-based habitats, woodland management, tree planting and natural flood management techniques;*
5. *An expectation that new development will, unless it can be demonstrated that it is not practicable or financially viable;*
   a. *Be net zero carbon which applies:*
      - *from adoption– to regulated operational carbon emissions;*
      - *from 2028 - to all emissions 'in construction'.*

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

   Development proposals should set out how this has been achieved in an energy statement in accordance with the energy hierarchy, which in order of importance seeks to:
      i. *Minimise energy demand;*
      ii. *Maximise energy efficiency;*
      iii. *Use renewable energy;*
      iv. *Use low carbon energy; and*
      v. *Utilise other energy sources*

From 2025 any residual carbon emissions that cannot be fully mitigated on-site should be offset, in agreement with the relevant local planning authority through a financial contribution to a carbon offset fund. As an interim measure, development should be consistent with the 2022 Part L Building Regulations unless superseded by changes to building regulations and/or national or local planning policies.

   b. *Incorporate adequate electric vehicle charging points, in line with Part S of the Building Regulations, unless superseded by relevant Local Plan policies, to future proof for the likely long-term demand, taking account of the potential maximum energy demand for the site;*
   c. *Where practicable, prioritise connection to a renewable energy/heating/cooling network in the first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date;*
   d. *In residential developments, achieve energy demand reductions in terms of space heat demand; hot water energy demand and the delivery of on-site renewable energy generation…'*

Policy JP-S3: Heat and Energy Networks

'The provision of decentralised energy infrastructure is critical to the delivery of our objectives for low carbon growth, carbon reductions and an increase in local energy generation. The following measures will help to achieve this:

1. *Delivery of renewable and low carbon energy schemes will be supported with particular emphasis on the use of decentralised energy networks in areas identified as "Heat and Energy Network Opportunity Areas". These have been identified where:*
   a. Existing heat/energy networks are operational or have been commissioned;
   b. Proposals for new heat networks/energy networks are being progressed, or future opportunities have been identified in city-region master planning;
   c. Sufficient density of existing heat demand occurs; and
   d. Significant future development is proposed at the strategic development locations.
2. *Within the identified "Heat and Energy Network Opportunity Areas", unless it can be demonstrated that there are more effective alternatives for minimising carbon emissions or such connection is not practicable or financially viable, it is expected that:*
   a. New residential developments that are '10 dwellings or more' or other developments over 1,000 m2 floorspace shall:
      i. Connect to an existing or planned heat/energy network or be designed to enable future connection (where within 500m of such a network); and/or
      ii. Install a site-wide or communal heat/energy network solution.
   b. An expectation that new industrial development will demonstrate that opportunities for using waste heat locally have been fully examined, and included in proposals
   c. An expectation that where publicly-owned buildings and assets adjoin new major development sites, opportunities for these buildings and assets to connect to site-wide proposals will be considered; and
   d. An expectation that any site-wide networks will be designed so as to enable future expansion to adjoining buildings or assets as appropriate…'

Policy JP-S4: Flood Risk and the Water Environment

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

1. *Returning rivers to a more natural state, where practicable;*
2. *Working with natural processes and adopting a natural flood management approach to slow the speed of water drainage and intercept water pollutants;*
3. *Locating and designing development so as to minimise the impacts of current and future flood risk, including retrofitting or relocating existing developments, infrastructure and places to increase resilience to flooding;*
4. *Expecting developments to manage surface water runoff through sustainable drainage systems and as close to source as possible. Development should achieve greenfield run-off rates unless it is demonstrated to be impracticable. District local plans should consider setting more detailed surface water drainage policies to reflect local circumstances, including alternative surface water discharge rates, such as in areas with critical drainage issues;*
5. *Ensuring that sustainable drainage systems:*
   i. Are designed to provide multifunctional benefits wherever possible, including for water quality, nature conservation and recreation;
   ii. Avoid adverse impacts on water quality and any possibility of discharging hazardous substances to ground;

iii. Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and

iv. Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.

6. *Securing the remediation of contaminated land and the careful design of developments to minimise the potential for urban diffuse pollution to affect the water environment; and*
7. *As a minimum, residential development should meet the mandatory water efficiency standard of 125 litres/person/day as set out in Building Regulations. District local plans may and should consider setting a tighter water efficiency standard of 110 litres/person/day where there is a clear local need with reference to national guidance on housing optional technical standards…'*

Policy JP-S5: Clean Air

'A comprehensive range of measures will be taken to support improvements in air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:

1. *Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;*
2. *Determining planning applications having regard to the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;*
3. *Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data so that adverse impacts on air quality can be fully assessed and development only permitted where they are acceptable and/or suitable mitigation can be provided;*
4. *Restricting developments that would generate significant point source pollution such as some types of industrial activity and energy generation;*
5. *Significantly expanding the existing commercial network of electric vehicle charging points, both for public and private use, including as part of new developments;*
6. *Implementing the Clean Air Plan and associated measures;*
7. *Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;*
8. *Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;*
9. *Controlling traffic and parking within and around schools, early years sites and other locations that are particularly sensitive to air quality;*
10. *Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and*
11. *Development should be located in areas that maximise the use of sustainable*
12. *travel modes and be designed to minimise exposure to high levels of air*
13. *pollution, particularly for vulnerable users…'*

Policy JP-S 6: Resource Efficiency

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

1. *Development and implementation of the Resource Strategy for Greater Manchester which promotes overall reduction in the level of waste produced and supports resource efficiency within the Plan area in order to gain the maximum value from the things we produce;*
2. *Ensuring the design of all new development incorporates storage space to facilitate efficient recycling and where appropriate, processing of waste on site;*
3. *Recognition of the role of existing infrastructure in managing our waste and protecting such facilities to ensure adequate waste management capacity is maintained; and*
4. *Using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof to the impact of climate change, reduce and recycle waste and minimise water use.'*

Policy JP-H4: Density of New Housing

'New housing development should be delivered at a density appropriate to the location, reflecting the relative accessibility of the site by walking, cycling and public transport and the need to achieve efficient use of land and high-quality design...'

Policy JP-G6: Urban Green Space

'To ensure there is an appropriate scale, type, quality and distribution of accessible urban green space that can support a high quality of life and other important green infrastructure functions:

- *existing urban green space will be protected and enhanced in balance with other considerations; and*
- *we will work with developers and other stakeholders to deliver new high quality urban green spaces.*

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

Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity

'Through local planning and associated activities a net enhancement of biodiversity resources will be sought, including, where relevant, by:

1. *Increasing the quality, quantity, extent and diversity of habitats, particularly priority habitats identified in national or local biodiversity action plans and those that support priority species;*
2. *Improving connections between habitats, to protect and enhance the provision of corridors, ecological networks (including Nature Recovery Networks) and steppingstones that enable the movement of species, especially as the climate changes;*
3. *Enhancing the management of existing habitats, including through habitat restoration, avoiding habitat fragmentation and combating invasive species;*
4. *Protecting sites designated for their nature conservation and/or geological importance, with the highest level of protection given to international and then national designations;*
5. *Facilitating greater access to nature, particularly within urban areas;*
6. *Supporting the development and implementation of the Great Manchester Wetlands Nature Recovery Network; and*
7. *Safeguarding, restoring and sustainably managing our most valuable soil resources, tackling soil degradation/erosion and recovering soil fertility, particularly to ensure protection of peat-based soils and safeguard 'best and most versatile' agricultural land.*
   Development will be expected to:
   a. Follow the mitigation hierarchy of:
      i. Avoiding significant harm to biodiversity, particularly where it is irreplaceable, through consideration of alternative sites with less harmful impacts, then

ii. Adequately mitigating any harm to biodiversity, then
iii. Adequately compensating for any remaining harm to biodiversity

b. Avoid fragmenting or severing connectivity between habitats;

c. Achieve a measurable net gain in biodiversity of no less than 10%

d. Make appropriate provision for long-term management of habitats and geological features connected to the development;

e. Where appropriate, development should: mitigate air pollution impacts on Manchester Mosses SAC; mitigate urban edge, functionally linked land and recreation disturbance impacts on the South Pennine Moors SAC/SPAs; and assess and potentially mitigate boat movement, water pollution, and light spillage and shading impacts on the Rochdale Canal SAC; and

f. Development proposals should be informed by the findings and recommendations of the appropriate biodiversity/ecological assessment(s) in the PfE evidence base and/or any updated or appropriate biodiversity/ecological assessments submitted as part of the planning application process.'

Policy JP-P1: Sustainable Places

'We aim to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:

1. *Distinctive, with a clear identity that:*
   a. *Conserves and enhances the natural environment, landscape features, historic environment and local history and culture;*
   b. *Enables a clear understanding of how the place has developed; and*
   c. *Respects and acknowledges the character and identity of the locality in terms of design, siting, size, scale and materials used*
2. *Visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design*
3. *Socially inclusive:*
   a. *Responding to the needs of all parts of society;*
   b. *Enabling everyone to participate equally and independently;*
   c. *Providing opportunities for social contact and support; and*
   d. *Promoting a sense of community*
4. *Resilient, capable of dealing with major environmental events*
5. *Adaptable, able to respond easily to varied and changing needs and technologies*
6. *Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained*
7. *Resource-efficient with*
   a. *Low carbon footprint;*
   b. *Efficient use of land;*
   c. *Minimised use of new materials;*
   d. *High levels of recycling*
8. *Safe, including by designing out crime and terrorism, reducing opportunities for anti-social behaviour and by ensuring that developments make appropriate provision for response and evacuation in the case of an emergency or disaster.*
9. *Supported by critical infrastructure, such as energy, water and drainage and green spaces*
10. *Functional and convenient, enabling people and uses to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage*
11. *Incorporating inclusive design within all spaces with support for tackling inequality and poverty to form part of creating sustainable places*

12. *Legible, being easy to understand and navigate, with the protection and enhancement of key views and new development well-integrated into the place*
13. *Easy to move around for those of all mobility levels, particularly by walking and cycling, with enjoyable routes free from obstacles and disorienting stimuli, and with places to rest*
14. *Well-connected to other places, particularly by public transport and digital infrastructure enabling everyone to take advantage of the employment, cultural and leisure opportunities across Greater Manchester and beyond*
15. *Comfortable and inviting, with indoor and outdoor environments:*
    a. *Offering a high level of amenity that minimises exposure to pollution; and*
    b. *Addressing microclimate issues such as sunlight, indoor air quality, overheating, shade, wind and shelter*
16. *Incorporating high quality and well managed green infrastructure and quality public realm, with:*
    a. *Opportunities for recreation and outdoor play for children, and interaction between the generations;*
    b. *Public and private spaces clearly distinguished;*
    c. *Development clearly defining, and promoting activity within, public spaces;*
    d. *High quality landscaping with schemes*
17. *Well-served by local shops, services and amenities, including education and health facilities'*

3.3. Manchester Local Plan

The Manchester Local Plan is the Adopted Development Plan for Manchester City Council. With respect to climate change and sustainability considerations, the following policies are included within the Manchester Local Plan Core Strategy (2012). Relevant extracts are provided below.

This policy requires all development to have regard to a number of development principles for which more detailed guidance may be given within a supplementary planning document.

Policy EN4: Reducing CO_2 Emissions by Enabling Low & Zero Carbon Development

This policy requires 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*
- *to meet residual energy requirements through the use of low or zero carbon energy generating technologies'*

It also states that:

- *'Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.*
- *Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.*
- *Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.*
- *The use of building materials with low embodied carbon in new development and refurbishment schemes.'*

Policy EN5: Strategic Areas for low and zero carbon decentralised energy infrastructure

'Within Manchester it is considered that the following strategic areas, indicated on the key diagram, will have a major role to play in achieving an increase in the level of decentralised, low and zero carbon energy supplies available:

- *The Regional Centre, which also includes the Oxford Road Corridor and Eastlands*
- *District Centres and associated major development sites*
- *Airport Strategic Site*
- *Strategic housing location*
- *Strategic employment locations*

Within these areas new development, regeneration and retrofit projects, will be expected to take place in the context of more detailed proposals for decentralised low and zero carbon energy infrastructure in the form of energy proposals plans. The Council will work with all relevant stakeholders, which may include developers, landowners, residents, community groups, private sector partners, utilities companies, neighbouring authorities and other public sector bodies, as appropriate, to bring forward such plans.

Where investment or development is being undertaken into or adjacent to a public building / asset or district heating network, full consideration shall be given to the potential role that these can have in providing an anchor load within a decentralised energy network or in creating opportunities for CO_2 reduction funded by contributions.'

Policy EN6: Target Framework for CO_2 reductions from low or zero carbon energy supplies

'Applications for residential development of 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO_2 emissions for all phases of the development.

Developments smaller than the above threshold but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- *Target 1 Network development areas: locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).*
- *Target 2 Electricity intense areas: location where 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 CO_2 emissions reduction targets

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

Target 3: Micro generation area	+ 15% increase on Part L 2010

Non-domestic CO_2 emissions reduction targets

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target 2: Electricity intense buildings (Applies to commercial uses with 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

'Where the CO_2 emissions reduction required under any future revision to Part L of the building regulations becomes greater that the '% Minimum requirement', the reduction required under building regulations would apply.

Where the Council identifies an 'allowable solution', for example within an energy proposals plan, that would produce higher carbon reductions at no extra cost than that of achieving the '% Minimum requirement' (or required under building regulations if greater) the higher percentage reduction will be required. The cost comparison is based on the cost of incorporating the 'allowable solution' at design stage.

The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO_2 mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.'

Policy EN 8: Adaptation to Climate Change

This policy requires all new developments *'to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:*

- *Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rainwater permeability*
- *Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways*
- *The need to control overheating of buildings through passive design*
- *The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation*

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

Policy EN 14: Flood Risk

This policy states that:

- *'In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this*

should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).

- *In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.*
- *All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure.*
- *Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.*
- *The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.'*

Policy EN 15: Biodiversity and Geological Conservation

This policy states that *'the Council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to:*

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

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

- *the Manchester Biodiversity Strategy, which provides further details of priority habitats within Manchester and opportunities for biodiversity enhancement including corridors such as the Mersey, Medlock and Irk river valleys, the canals and disused railway lines and areas of managed greenspace particularly in parks;*
- *the Green Infrastructure Framework for Greater Manchester, which encompasses an ecological framework that seeks to guide and inform habitat creation and repair, including identifying large 'biodiversity opportunity areas' including the Moston Brook Corridor and Nutsford Vale;*
- *the Open Space, Sport & Recreation Study, which identifies areas where there is a deficit of natural and semi-natural greenspace, opportunities for green corridors and other linkages;*
- *Manchester's Climate Change Action Plan;*
- *the Strategic Flood Risk Assessment (SFRA) for Manchester;*
- *the Habitats Regulations Assessment (HRA) for Manchester, which gives detailed consideration to Special Areas of Conservation (SACs), including the Rochdale Canal SAC just outside the district boundary;*
- *the River Basin Management Plan for the North West;*
- *the Manchester Tree Strategy.*

Any adverse impacts on biodiversity will need to be justified against the wider benefits of the proposal, assessed against other LDF policies. Where adverse impacts are unavoidable, developers will be required to provide appropriate mitigation and/or compensation.

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

Policy EN 16: Air Quality

This policy states that *'the Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.*

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas'.

Policy EN 19: Waste

This policy states that the Council will:

- *'Require all developers, including those of new waste management facilities within the District, to demonstrate the proposal's consistency with the principles of the waste hierarchy (prevention, reduction, re-use, recycling/composting, energy recovery, final disposal)*
- *Require all developers to submit a waste management plan to demonstrate how both construction and demolition waste will be minimised and recycled on site wherever possible and how the sustainable waste management needs of the end user will be met.*
- *Promote the development of innovation and technological advancement within the sustainable waste management industry, aiming to achieve a closed-loop waste management system.*
- *Require waste management practices to have full regard to the environmental, social and economic impacts of such development and encourage long-term benefits in improving the environment, the regeneration of areas in need of investment and co-location with other employment uses where appropriate.*
- *Encourage communities to take responsibility for the waste they create through the provision of accessible facilities.'*

3.4. Guide to Development in Manchester Supplementary Planning Document

The Guide to Development in Manchester Supplementary Planning Document (SPD) was adopted in April 2017. The SPD is a material planning consideration for applications; however, it is not part of the development plan. While it references policies from the old Local Plan (UDP) which have been superseded it is still useful as a general guide to development. It includes a section on environmental standards, with sub sections on energy efficiency, renewable energy, environmental design, water management and weather resilience, waste management, construction management, biodiversity and waterways.

3.5. Manchester Climate Change Framework 2020–25

In June 2019, the UK Government committed the country to a legally binding target of net zero carbon emissions by 2050. Following this, a month later, Manchester City Council (MCC) adopted a motion to declare a climate emergency which commits the Council to action to combat climate change. The Council have set out their aim of making Manchester a zero-carbon city by 2038 or before.

The Manchester Climate Change Framework 2020–25 is MCC's high-level strategy for meeting their commitment on climate change that builds on the Draft Manchester Zero Carbon Framework 2020-38 and the declaration of a climate emergency in July 2019. This was endorsed by MCC at the Executive meeting in March 2020 and will 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. This involves taking action in the following relevant areas:

- *'Direct CO_2 emissions: staying within our 15 million tonne carbon budget for 2018-2100, including reducing the CO_2 emitted from our homes, workplaces and ground transport by at least 50% during 2020-25.*
- *Indirect CO_2 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. This will require the adaption of *'the city's buildings, infrastructure and natural environment to the changing climate and increasing the climate resilience of our residents and organisations.'*

Objective 3 – Health and wellbeing. This aims to improve the *'health and wellbeing of everyone in Manchester through actions that also contribute to our objectives for CO_2 reduction and adaption and resilience'*.

Objective 4 – Inclusive, zero carbon and climate resilient economy. This aims to 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'*.

4. RESPONSE TO CLIMATE CHANGE

4.1. Introduction

This section of the report details how the proposed development will address the issue of climate change, in line with Manchester City Council's policies identified in Chapter 3. In particular this section looks to address Manchester Local Plan policies EN 4, EN 6 and EN8 as well as the Manchester Climate Change Framework and the Places for Everyone Joint Development Plan document.

4.2. Carbon Reduction

Carbon reduction is key to tackling climate change. The term "carbon", in relation to climate change, covers all greenhouse gas emissions, and is measured in terms of CO_2 equivalent. The carbon emissions associated with the development include embodied carbon, construction related carbon, and operational carbon. Operational carbon is associated with the energy used to heat, cool, light and ventilate the building, known are "regulated energy", and also the energy associated with unregulated systems, such as plug-in equipment. A further, and indirect, source of operational carbon emissions are associated with people's transport to, from and within the development. In addition, there are also significant carbon emissions associated with the construction of the building, including embodied carbon within the materials used for construction.

This section outlines the steps taken to reduce construction and operational emissions.

4.2.1. Construction-Related Carbon Emissions

An assessment of the embodied carbon associated with the proposed development has been undertaken by Buro Happold and is detailed in their ES Climate and Greenhouse Gas (GHG) Chapter. A Greenhouse Gas Emissions Assessment has been produced in accordance with the IEMA GHG Guidance to address the GHG emissions associated with the whole life of the development, identified as 60 years within the study in accordance with BS EN 15978. The metric for assessing the climate change impacts of GHG emissions in the assessment is Global Warming Potential (GWP). This was expressed in units of CO_2 equivalent (CO_2e) over 100 years, and addresses carbon modules A1–A5, B1–B7, and C1–C4.

Embodied carbon benchmarks have been used in the calculation of GHG emissions of the development based on maximum floor areas and building uses. The GHG emissions arising from the construction and operation of the proposed development calculated within the ES Chapter are presented in the Table below.

Table 1: GHG emissions arising from the construction and operation of the proposed development broken down by lifecycle stage

Lifecycle stage	Total GHG emissions (tCO_2e)
Product stage (A1-A3)	13,263
Construction process stage (A4-A5)	825
In-use stage embodied carbon (B1-B5)	13,411
Operational energy use (B6)	8,877
Operational water use (B7)	645
Operational transport	7,700
End-of-life stage (C1-C4)	580
Total	**45,301**

The total GHG emissions associated with the construction of the proposed development have been calculated. As shown in Table 1 above, they are approximately 14,088 tonnes of carbon dioxide equivalent (tCO_2e). It is considered that the proposed development is consistent with applicable existing and emerging net zero policy requirements for projects of this type. Therefore, in line with the IEMA GHG Guidance, the construction phase is considered to give rise to a minor adverse effect that is not significant.

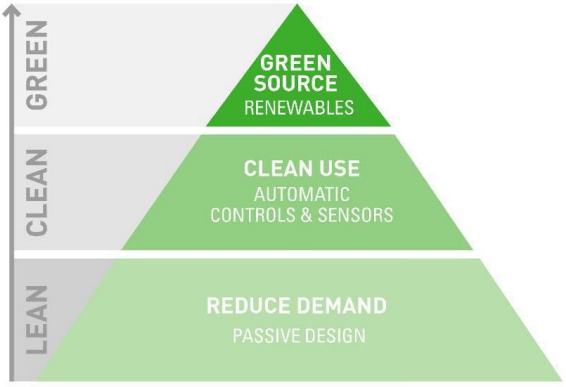
The total GHG emissions associated with the operation of the proposed development and its end of life have been calculated to be approximately 31,213 tonnes of carbon dioxide equivalent (tCO_2e). It is considered that the proposed development is consistent with applicable existing and emerging legislation and policy requirements for projects of this type. Therefore, in line with the IEMA GHG Guidance, the operational phase is considered to give rise to a minor adverse effect that is not significant.

A Climate Change Risk Assessment (CCRA) has also been produced to assess the climate change resilience of the proposed development. It has concluded that, with the incorporation of the proposed mitigation, the residual risks related to climate change are in line with typical expectations for urban developments of this nature in the UK. Nevertheless, due to the nature of many hazards exacerbated by climate change, some level of residual risk remains.

4.2.2. Operational Carbon and Energy

The development will aim to minimise operational CO_2 emissions from the development and the associated impact upon climate change by adhering to the energy hierarchy below, demonstrating compliance with Policy EN 4 'Reducing CO_2 Emissions by Enabling Low & Zero Carbon Development' and the Places for Everyone Framework Policy JP-S2. Ridge & Partners have produced an 'Energy Strategy Report' which includes full details on this.

The "Energy Hierarchy" methodology provides a design framework which was used to develop the proposed low carbon energy strategy. The approach described by this methodology provides a staged process: LEAN, CLEAN and GREEN (Illustrated below) to assess design measures.

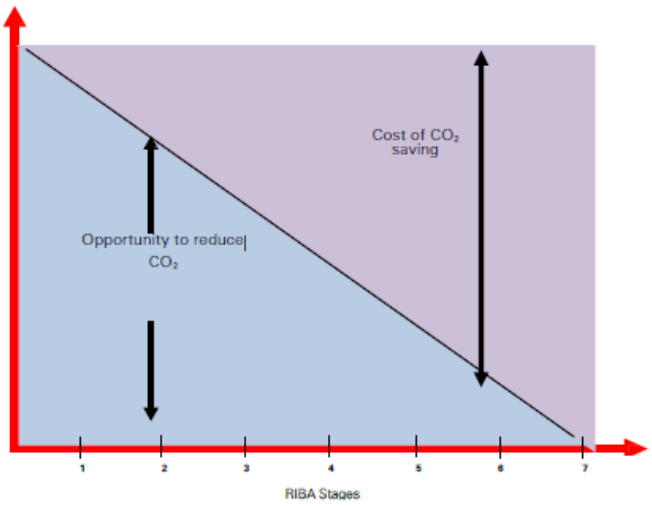


Lean - Main aim is to reduce the buildings energy demand through "passive measures".

Clean - Meet the reduced energy demand in the most efficient way possible using "active measures".

Green - Assess the technical feasibility of incorporating a low or zero carbon technology to further reduce the CO_2 emissions.

Note that the above measures are sequential and iterative i.e. only after the "Lean" measures have been exhausted should "Clean" measures be examined and so forth. This approach has been widely accepted across the industry as the methodology for reducing carbon emissions in design. The strategic approach outlined, follows a specific appraisal of technologies at each stage of design and to achieve the overall goal of CO_2 reduction. As on the whole it becomes more expensive to implement carbon reduction measures the further along the design process as the opportunities to reduce demand diminish.



In this first instance it is therefore essential that the buildings **'passive measures'** are optimised and the design teamwork in close collaboration with the Client to consider the future fit out demands.

The next stage is to adopt **'efficient technologies'** such as heat recovery, variable speed drives and occupancy sensors etc. to meet the demand efficiently.

The final approach looks at applying **'renewable and low carbon'** technologies accordingly.

Full details are provided in the Energy Strategy Report produced by Ridge & Partners, with a summary provided below.

4.2.3. Passive Measures – Lean

These measures focus on passive design principles to reduce the overall energy demand for the building. Examples of the passive design that have been explored and applied where possible for the proposed development include:

- "Fabric First" approach – minimising heat losses by improving the performance of the fabric with uplifted U-values and improving air tightness.
- Natural daylighting – reducing the artificial lighting demand.
- Natural ventilation – reducing the required energy load for mechanical ventilation and air conditioning.
- Passive solar control – using building orientation, layout, form, and thermal mass and limit solar gain.
- Low energy fit out – reducing energy demand through highly efficient goods and appliances.
- Sub-metering- allows energy consumption to be recorded and reviewed.

The team have maximised passive measures where possible to reduce the initial load of the building in terms of heating and anticipated lighting loads. The scheme will use U-values and air permeability rates that exceed minimum Building Regulation Standards 2021 Part L2 as demonstrated within the Tables below;

Table 2: Target U Values for the amenity and residential areas for the proposed development

Residential Areas

Building Fabric Element	Limiting U-Value (w/m^2K)	Target U-Value (w/m^2K)	% Betterment
Walls	0.26	0.18	30.8%
Floors	0.18	N/A	-
Roofs	0.18	0.15	16.7%
Windows	1.6	1.2	25%

Amenity Areas

Building Fabric Element	Limiting U-Value (w/m^2K)	Target U-Value (w/m^2K)	% Betterment

Walls	0.26	0.18	30.8%
Floors	0.18	0.15	16.7%
Windows	1.6	1.2	25%
Personnel Doors	1.6	1.2	25%

Table 3: Target Air Permeability for the proposed development

Residential & Amenity Areas

Air Permeability	Limiting Air Permeability	Target Air Permeability	% Betterment
M3/(h.m^2) at 50 Pa	8	3	63%

The window and façade strategy has been designed to maximise the amount of natural daylight entering occupied spaces of the proposed development, the size and orientation of the windows has been optimised with a focus on providing north facing windows, to reduce the need for artificial lighting.

A G-Value of 0.6 has been adopted for the proposed design to limit the amount of unwanted solar gain entering habitable rooms this will aid in preventing overheating, thereby mitigating the need for artificial cooling as far as possible.

Meeting Demand Efficiently – Clean

The following Energy efficiency measures have been established to meet the energy demand of the building; these will be further explored at the next stage of design for the proposed development:

- Mechanical Ventilation Heat Recovery (MVHR) will be installed within all apartments and communal spaces. MVHR provides filtered air into a building whilst retaining most of the energy that has already been used in heating the building. The re-use of the heat in the mechanical ventilation systems could provide a significant step towards reducing CO_2 emissions.
- LED Lighting will be utilised to minimise energy consumption and CO_2 emissions associated with lighting in the proposed development.
- High efficiency/Low specific fan power (SFPs) ventilation fans will be used to reduce the energy consumption of the proposed development's air handling systems.
- Demand Operated Systems will be used where the ventilation, lighting, heating, and cooling is provided in spaces that may not always be in use in the form of occupancy sensors. To reduce energy consumption, these will shut down the systems serving these spaces when they are not required and turn them back on instantly when they are required.
- Variable Speed operation of mechanical plant: All pumps and fans will be provided with variable speed motors to allow the modulation of energy systems during periods of lower demand to conserve energy.
- Power Management: allocation of spare plant space will be made for future introduction of power factor correction into the proposed development to allow users to control the amount of electrical power consumed by devices, this will follow a survey undertaken after 6 months of operation.
- Building Management Systems (BMS) will be considered for installation for the Development to optimise the function of the ventilation, heating, and cooling systems within the amenity areas to minimise energy use.

Renewable & Low Carbon Technologies – Green



The final aspect of the design has been to establish what renewable and low carbon technologies can be adopted. A review of possible technologies has been completed. Air Source Heat Pumps (ASHP) will be used to generate hot water to the individual apartments as well as heating and cooling to the amenity areas of the proposed development.

Variable Refrigerant Flow (VRF) heat pumps are proposed to provide heating and cooling in the amenity areas of the proposed development. The VRF condensers will serve indoor fan coil units in a VRF refrigerant system typically providing CoPs in the region of 3-4 depending on the season and internal loads.

Fan coil units are proposed to provide heating and cooling for the amenity spaces, working in conjunction with localised MVHR units.

By including the technology, this ensures the proposed development is in compliance with policies EN 4 'Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development' and EN 6 'Target Framework for CO_2 reductions from low or zero carbon energy supplies'.

The feasibility of connection to a decentralised energy and heating network has been explored. It has been determined that there is a lack of a developed decentralised network in the vicinity of the site, however there is scope for the scheme to connect to a new decentralised energy network should one develop in the vicinity in the future.

Predicted Carbon Emissions

Preliminary energy performance calculations have been undertaken utilising government approved software to verify the Building Regulations Part L compliance of the proposed strategy and indicate the impact of the incorporation of the proposed low carbon renewable technologies.

The SAP and BRUKL results summarised in the table overleaf relate to the RIBA Stage 2 design that will be subject to further development at the next stage of design in accordance with the planning requirements of Manchester City Council.

Table 4: Part L results for the amenity and residential areas of the proposed development

	TER	**BER /DER**	**% Betterment over Part L 2021**
Residential Areas (SAP)	13.89	5.35	61.5%
Amenity Areas (BRUKL)	3.27	3.21	2%

Since the current Proposal passes the Part L: 2021 Target emission rate, this automatically translates to compliance with the requirements of Policy EN 6 'Target Framework for CO_2 reductions from low or zero carbon energy supplies' (which requires a betterment of 15% on Part L 2010).

The Energy Strategy Report also identifies that the scheme is compliant with Part L 2021 (published in 2022), and therefore the scheme complies with the interim measure set out within the Places for Everyone Framework Policy JP-S2.

4.2.4. Daylight & Sunlight

A Daylight, Sunlight and Overshadowing Assessment has been produced by Buro Happold to assess the proposed and neighbouring sites in accordance with BRE Guidelines.

The effect of the daylight levels on neighbouring properties as a result of the development have been assessed using the Vertical Sky Component test (VSC), a measure of the amount of sky visible from a given point. A large majority of the 539 windows assessed met the guidelines as detailed by the BRE, concluding an 85% pass rate.

The affect posed by the development on daylight distribution within the rooms of the neighbouring properties were assessed using the No Sky Line (NSL) method. Of the 348 rooms evaluated, 305 met the requirements as per BRE Guidelines, equating to an 87% pass rate. The overall magnitude of NSL daylight change on the neighbouring properties is therefore considered to be small.

The Probable Sunlight Hours (APSH) method was applied to assess that amount of sunlight that a given window is projected to be provided with over a period of a year. All the neighbouring rooms assessed complied with the criteria, which translates to a 100% pass rate.

The impact of the proposed development on neighbouring buildings has been assessed and overall, the development will have insignificant residual effects on neighbouring properties, therefore no mitigation measures are considered necessary.

4.2.5. Transport

An Interim Travel Plan and Transport Assessment have been prepared by SK for the planning application, which includes a review of the site with regards to transport to and from the site, including by car, public transport, walking and cycling. The site is located at the northern edge of Manchester City Centre in an area of high public transport accessibility and has a Greater Manchester Accessibility Level (GMAL) score of 8 which is the highest level of accessibility in Greater Manchester. The site is also within walking distance of all city centre amenities.

There are numerous public car parks within a very short walk of the site. Since the Development operates as a 'car free' scheme no parking provision is proposed, which encourages use of more sustainable forms of transport and reduces dependence on car use. Localised Traffic Regulation Order (TRO) modifications are proposed on Robert Street to allow the provision of disabled parking bays.

The site is well served by the existing public transport services. The proposed development is located within 300m walking distance from bus stops located on Cheetham Hill Road and 350m from the bus stops on Great Ducie Street. The nearest tram stops and train station to the site are within walking distance of the site (450m) and located at Manchester Victoria. The Metrolink tram services connect the site to other areas of the City Centre, Altrincham, Eccles, East Didsbury, Media City, Ashton, the Airport, Rochdale, Bury, Salford Quays and the Trafford Centre. The mainline train services at Victoria station offer coverage of Greater Manchester and further afield.

The Development is served by onsite bicycle parking at a rate of one space per unit, in addition to external cycle parking allocated to visitors and localised footway networks.

An assessment of the trip generation provides quantification of the traffic flows associated with the proposed development. The findings of the survey demonstrated that the proposal does not result in a significant increase in traffic flows during peak hours.

A review of the Transport for Greater Manchester database, undertaken to analyse the road safety patterns, found that no collisions at the site access junctions occurred during the 5-year study period assessed. As reflected in the traffic forecasts and road safety evaluation the proposed development will have no impact on the highway operation and road safety of the surrounding area of the proposed site.

4.3. Climate Change Adaptation

As the scheme design develops, the team will ensure that the effects of climate change on the development are mitigated wherever possible as directed by Policy EN8 'Adaptation to Climate Change'. The change in climate will be considered when designing both the external envelope and the building services and the buildings will be future proofed where reasonably possible.

The potential impacts of climate change considered include:

- Increased temperatures (including the heat island effect)
- Flood risk
- Increased weather volatility
- Impacts on water resources
- Changes in ground conditions

The heat island effect occurs when a development is significantly warmer than surrounding rural areas. Sustained high temperatures can have impacts on health, local microclimate/weather conditions and energy use (for cooling).

An Overheating Assessment has been produced by Ridge & Partners to analyse the performance of the proposed development against a future climate change environment, with a target to ensure the relevant thermal comfort criteria is met as future temperatures continue to rise.

The proposed design will utilise a summer bypass mechanical ventilation heat recovery (MVHR) system for each of the dwellings. The MVHR system will operate if the air temperature is greater than 16 Degrees Celsius and the outside air temperature is less than the room temperature, to prevent habitable rooms within the dwellings from overheating.

Based on the results of a full thermal dynamic model analysis conducted for the development, in accordance with 'CIBSE AM11 Building Energy and Environmental Modelling', all habitable rooms comply with the thermal comfort criteria as set out in CIBSE TM59:2017.

Rising sea levels and increases in average winter precipitation, as well as a general increase in the frequency, duration and intensity of rainfall may result in flood risks. Methods for adapting to increased flood risk include, but are not limited to:

- Flood resilient buildings and materials
- Managing flood pathways
- Use of sustainable drainage systems

It is thought that extreme weather events may occur as a result of climate change, including storms, high winds, cold events, and heatwaves. The confidence level in predictions for these is low and there are a number of diverging projections. However, it is important to ensure the Development is designed so that it will be resilient against future extreme weather wherever possible. This will be taken into consideration when specifying materials and structural detailing.

The above has been considered as part of the Flood Risk Assessment and Drainage Strategy report produced by Ridge & Partners, which confirms that the site is located in flood zone 1. This means the site is located within an area of low probability of flooding from all sources. The report indicates that no flood water flows will be affected, and no flood water will be displaced. Additionally, safe access and egress can be gained to and from the proposed building up to the 1000-year return period.

In accordance with the requirements of the NPPF, a surface water drainage strategy has been developed for the proposal to demonstrate that surface water runoff can be effectively managed within the site without increasing the risk of flooding to the site and elsewhere. Surface water drainage from the site will be managed with infiltration via cellular storage to the private courtyard and public realm, this will be designed to provide sufficient capacity during all events up to and including a 1 in 100 year plus 45% climate change event whilst infiltration occurs.

Permeable paving will be utilised in the public realm to provide drainage to reduce risk of blockages downstream. The use of tree pits in the outdoor amenity areas as another method of attenuation source control, in addition to associated amenity and biodiversity benefits, will be investigated.

Surface water runoff post development will be restricted to a maximum of 5.0l/s post development in accordance with CIRIA 753 and Manchester City Council, this will be achieved through the specification of a hydrobrake situated at the downstream end of the surface water network.

Undertaking infiltration testing and a CCTV survey for the Proposed Site is recommended to assess the existing drainage of the Proposed Site.

The long-term maintenance of the drainage infrastructure proposed will be the responsibility of the private management company appointed at build completion, this includes undertaking annual inspections and clearance of drainage gullies and petrol interceptors. A site management health and safety plan will be prepared to address the as built development, this document will encompass the maintenance regime for the on-site drains and drainage facilities.

A Foul Water Drainage Strategy has been developed for the scheme and has been designed in accordance with BS EN 752:2008 and Building Regulations Part H Guidance.

The risk of pollution associated with discharge from the site post-development has been identified as low due to the residential use if the site and the associated avoidance of exposure to pollutants.

The drainage strategy has demonstrated that with the application of site-appropriate SuDS techniques the surface water runoff will not increase from the pre-development regime, this ensures that the proposed development will therefore not increase the flood risk onto its locality up to and including the 100-year plus 45% increase in rainfall allowance due to climate change event. In consideration for the careful design of the drainage elements no residual flood-related risk will remain after the Development is completed.

5. OTHER AREAS OF ENVIRONMENTAL & SUSTAINABILITY PERFORMANCE

5.1. Introduction

Sustainability measures that consider the site as a whole are proposed to be integrated into the final design solution, in line with the requirements of national, regional and local planning policy.

5.2. Materials and Waste

A Circular Economy (CE) Statement has been developed to address how the proposed development will sustainably source, conserve and increase the efficiency of resources, in addition to exploring how waste will be managed sustainably and eliminated as far as possible.

A detailed design analysis was undertaken to identify opportunities to develop an efficient and lean design to minimise the quantity of materials used. The efficiency of the structural frame will be scrutinised to avoid over specification and the building weight will be minimised through the application of the following:

- Piled foundations have been prioritised over pad foundations as they typically use less material;
- The size and number of piles have been optimised to reduce material usage;
- Lightweight internal partitions will be specified;
- Lightweight finishes and limited screed will be used where possible.

Sustainable use of resources includes both efficient use of materials and minimisation of waste. The Development will be designed to be durable and resilient to increase the longevity of the building. This will help to reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape. Examples explored by the design team include the selection of brick as the material for the façade design and the high-corrosion resistance provided by aluminium specified for the window systems.

The proposed development will seek to minimise as much municipal waste as much as possible in line with best practice efficiency benchmarks and through the provision of a centralised residential waste storage area, with dedicated space for recyclable and general waste. This waste facility will be designed to demonstrate compliance with Policy EN 19 'Waste' of the MCC Core Strategy and Policy JP-S7 'Resource Efficiency' of the JDMP.

The proposed development will seek to minimise construction waste as much as possible, resource efficiency targets are to be developed and set for the waste generated during construction. This will be delivered through the creation of a project-specific Construction Management Plan that covers on-site construction waste, off-site manufacturing waste and accurately records waste arisings and waste management practices.

5.3. Construction Management

The main contractor will be required to have an Environmental Management System (EMS) certified under ISO14001, and will where possible source local materials from suppliers with EMS certifications, prioritising those with BES 6001 and/or Cares certifications. The main contractor will be encouraged to register with the Considerate Constructor's Scheme to minimise impact on local businesses and residents, and to monitor construction impacts such as energy, water and transportation of materials / waste. On site construction monitoring encourages consumption reduction and ensures accountability of materials and emissions. A

schedule of commissioning will be carried out on relevant building services, meeting building standards such as CIBSE and BSRIA.

5.4. Biodiversity

An Ecological Survey and Assessment has been undertaken by ERAP to assess the ecological, biodiversity and natural conservation status of the proposed site.

No rare or invasive plant specifies were identified as present on the site, in addition there were no irreplaceable, semi-natural or Priority Habitats on site, and none are likely to be affected by the development proposal. The planting of species that can become invasive and pose a risk of reducing the biodiversity, without intensive management on the site will be avoided.

In accordance with best practice guidelines, a preliminary roost assessment was undertaken to assess the presence of bats on the existing structures of the proposed site. During the examination, no evidence of bats was detected, furthermore, the existing warehouse building is not considered to provide opportunities for roosting bat use at any given time of the year.

The building and hardstanding on the site were surveyed to assess the presence of nesting birds. The result of this evaluation found that the likelihood of nesting birds on site was considered low. To enhance opportunities for use by nesting birds at the site, the installation of bird boxes within trees and structures on the proposed site is recommended.

The Survey Report includes a number of recommendations which will be taken forward as part of the scheme. These include the provision of tree planting at ground level including the use of coniferous species, rain gardens, the creation of habitats using 'fallen'/stepping logs, introducing areas of hard landscaping to provide habitat niches for native species, and the inclusion of alpine species on the planting schedule for the roof gardens.

The planting of native and non-native species will be carefully considered and selected to prolong the availability of feeding opportunities for invertebrate species on the re-developed site.

The biodiversity enhancements recommended, in conjunction with the extensive planting proposed for the scheme will aim to secure a measurable gain for the biodiversity within the city centre environment, this satisfies the requirements of the NPPF, CIEEM 2016 and best practice guidelines.

The survey and assessments have concluded that the redevelopment proposals at can be achieved with no adverse effect on designated sites for nature conservation, ecologically valuable habitats and roosting bats.

5.5. Air Quality

An Air Quality Assessment has been completed by Redmore Environmental which addresses the potential air quality impacts during both the construction and operational stages of the proposed development.

The potential for air quality impacts associated with fugitive dust emissions during the construction phase of the proposed development were assessed in accordance with the IAQM methodology. Assuming the site-specific dust control measures identified are implemented accordingly, the potential for air quality impacts from dust generated by demolition, earthworks, construction and trackout activities are considered insignificant.

Operation phase impacts are expected to be negligible. Heating, cooling and hot water for the proposed development will be provided by air source heat pumps powered by electricity. Based on these conditions, the emissions from this source are not anticipated to be significant.

The assessment has demonstrated that exposure of existing receptors and future occupants to poor air quality is unlikely. No exceedances of the annual mean NO_2, PM_{10} or $PM_{2.5}$ objectives were predicted at any modelled receptor points in any modelled scenario. Since all modelled NO_2 values are below 60 μ g/m^3, exceedance of national short-term NO_2 objectives is unlikely at all modelled receptors.

It is anticipated that the impact of the operation phase on existing receptors and future site users is likely to be negligible, and therefore no mitigation measures are required. Under these conditions, it is anticipated that the exposure of future occupants to poor air quality will be unlikely, and no additional mitigation measures will be required.

Based on assessment results and the good practice measures recommended, air quality is not considered a constraint to the proposed development.

5.6. Noise and Acoustics

A Noise Impact Assessment has been produced by Jameson Acoustics to assess the impact of the construction of the proposed development on the surrounding area.

The whole-house MVHR heat recovery systems proposed to provide ventilation to each apartment as part of the overheating design strategy will be sized to mitigate reliance on openable windows.

The ambient noise levels were assessed to provide recommendations for the glazing strategy of the development. The recommended enhancements to the double glazing, in addition to the ventilation strategy proposed, should enable the proposed development to achieve the low frequency sound reduction requirements required for dwellings.

Based on the assessment of the noise levels of the outdoor amenity areas, the results show that the majority of the shared terrace space is expected to achieve the 'ideal' target in accordance with BS 8233 guidelines.

An assessment of the plant noise has been undertaken in line with BS 4142. Plant noise emission limits have been proposed for achievement; this is to ensure future plant locations do not pose an adverse impact on the locality.

The noise levels from the operation of the residential amenity spaces have been considered. To mitigate the risk of detrimental noise impacts, suitable noise criteria are recommended to be achieved for the development. To mitigate the noise impact risk arising from the adjoining dwellings and the communal lounges, provisions have been made to enhance the internal building fabric construction.

With the application of the appropriate façade elements, in addition to ventilation and overheating mitigation solutions an acceptable internal noise level within the new dwellings can be achieved.

5.7. Geo-Environmental

A Ground Investigation and Desk Top Study report has been produced by Ridge & Partners to provide an assessment of the materials present beneath the site and report on the findings with respect to potential ground contamination.

The proposed development is not located within a Radon Affected Area; therefore, the application of Radon Protective Measures is considered unnecessary for the site.

In accordance with good practice guidance provided in CIRIA C552, an assessment of the status of the site and the likelihood of a pollutant linkage for each identified potential combination of contaminant, pathway and receptor has been made.

To mitigate the acute risks associated with the development works compliance with all relevant Health and Safety procedures during the enabling and construction works is recommended, in addition to appropriate PPE to be worn by contractors on site.

Subject to appropriate assessment and testing, material re-use on the Site will be investigated where feasible. Upon further analysis, the use of the topsoil and sub-soil generated during earthworks is considered possible as part of the clean cover layer required within new soft landscaped areas.

The potential risk posed by Unexploded Ordnance (UXO) has been assessed as 'moderate'. The findings of a Pre-Desk Study Assessment indicate a detailed desk study should be commissioned.

Undertaking a contamination-specific ground investigation is recommended, in conjunction with the production of a Phase 2 Geotechnical Ground Investigation to align the BS10175, BS5930, CIRA C665, RB17 and BS8485 Code of Practices. These assessments will determine the nature of the Made Ground beneath the site and examine the potential ground gas risk for the site.

6. CONCLUSION

When reviewing the energy and sustainability strategy for this Development, careful consideration has been given to the context of the site, local planning policy and the 2021 Building Regulations.

An assessment of the embodied carbon associated with the proposed development has been undertaken. The findings of the assessment concluded that the development is consistent with applicable existing and emerging legislation and policy requirements for projects of this type. Therefore, in line with the IEMA GHG Guidance, the construction and operational phase of the development is considered to give rise to a minor adverse effect that is not deemed significant.

The approach taken for the proposed energy strategy for the development has followed a sequential approach. The Energy Hierarchy has been adopted - assessing in turn the feasibility of reducing the energy demand of the building, using energy more cleanly and finally applying renewable technologies.

A number of passive design measures are to be implemented including optimising the thermal performance of the building envelope beyond the minimum U value and air infiltration standards set out in Part L of the Building Regulations. Key proposed energy efficient building services systems include LED lighting installations, occupancy sensing controls and low energy mechanical ventilation systems.

A feasibility assessment has been undertaken into the applicability of renewable technologies. Air source heat pumps with heat recovery identified were as the most appropriate form of LZC technology for application to the scheme.

Preliminary energy performance calculations have been undertaken utilising government approved software to verify the Building Regulations Part L compliance of the proposed strategy and indicate the impact of the incorporation of the proposed low carbon renewable technologies. An assessment of overall operational carbon emissions has been undertaken showing that the development complies with Building Part L standards, which automatically translates to compliance with the requirements of Policy EN 6 'Target Framework for CO_2 reductions from low or zero carbon energy supplies'. The scheme also meets the interim measure set out within the Places for Everyone Framework Policy JP-S2.

Wider sustainability aspects are also proposed for the scheme, these include a strategy for the key issues of material and waste efficiency.

It is considered that the scheme has maximised the opportunities for sustainable improvement and decarbonisation on the site compared to and within the constraints of the existing area and proposed end use.



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