LAND AT 50 AMOS AVENUE, MANCHESTER

CONDITION 11 ENVIRONMENTAL STANDARDS STATEMENT

May 2024

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1. INTRODUCTION

This report has been written to review the sustainability performance of the proposed residential scheme at Land at 50 Amos Avenue, Manchester.

The purpose of this Statement is to summarize the relevant policy background and requirements of Manchester City Council (hereafter referred to as the council) and demonstrate the ways in which the design team have sought to address these aims through the scheme proposals, ensuring measures have been taken in order to provide a sustainable development at this site. Submission of this statement will also aid in the discharge of Condition 11 of planning reference 137928/FO/2023.

This statement reviews the sustainable design features and appraises the energy strategy of the proposed development. Details of the design attributes, specifications and characteristics of the scheme are appraised in order to demonstrate how the proposals contribute to sustainable development in Manchester and seek to mitigate the environmental impacts of the scheme.

2. DEVELOPMENT PROPOSALS

2.1 Development Site Description

The application site is located at 50 Amos Avenue and is currently vacant. The remainder of the site is currently vacant. The proposed development site is bound by Amos Avenue and Verona Drive residential properties plus associated gardens/ (see Figure 2.1).

The wider area contains mostly residential properties as well as some community and educational facilities, and commercial uses. The proposed development site is not located within a conservation area.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The proposals includes the construction of one two-storey detached residential property.

The development proposes creating a total of two car parking spaces together with access alterations, landscaping and boundary treatment.

The proposed site plan and elevations are displayed in Figures 2.2 and 2.3 below.

Figure 2.2 – Proposed Site Plan

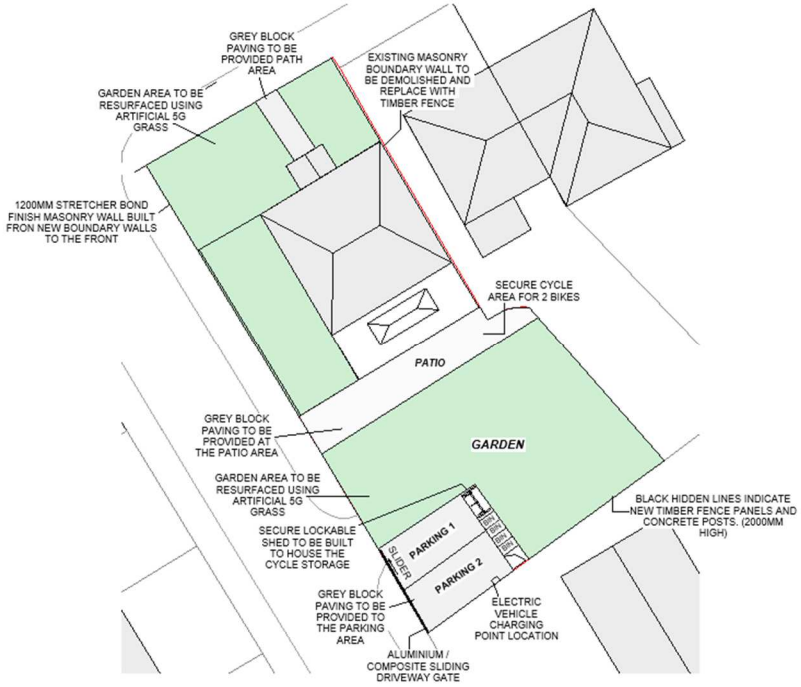


Figure 2.3 – Proposed Front Elevation



Proposed Front Elevation / Street View
1 : 50

3. POLICY REVIEW

3.1 Local Planning Policy

3.1.1 Manchester Core Strategy

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

CS Policy DM 1 - Development Management requires all development to have regard to a number of development principles. Subject to scheme viability, developers will be required to demonstrate that new non-domestic development to achieve a BREEAM Rating of 'Very Good' or for domestic development to achieve the Code for Sustainable Homes standard[1].

CS Policy EN 4 - Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development requires all development to follow the principle of the Energy Hierarchy, being designed:

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

Further details of the building regulation requirements are provided in the section below.

CS Policy EN 6 - Target Framework For CO_2 Reductions From Low or Zero Carbon Energy Supplies requires applications for residential development of ten or more units and all other development over 1,000m^2 to meet, as a minimum, the targets shown in the tables below, unless unviable.

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.

Table 3.1 – Policy EN6 CO_2 Emissions Reduction Targets; Domestic

Target	*% Minimum Requirements*
Target One: Network development area	CHP/District heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target Two: Electricity intense buildings	+15% increase on Part L 2010
Target Three: Micro generation area	+15% increase on Part L 2010

[1] On the 25th March 2015 the Government issued a Written Ministerial Statement setting out the conclusion of the Housing Standards Review. The statement set out a new policy on the application of technical housing standards that applied immediately to all local planning authorities and qualifying bodies. This had a direct effect on the application of existing Code policies, and the setting of new Code policies. The Government elected to remove the Code for Sustainable Homes and incorporate new additional optional Building Regulations on water and access, and a new national space standard.

The proposed development site is deemed to be located within Target 3: Micro generation area and must comply with Part L1A (2013).

The emission reductions targeted within policy EN6 relate to Building Regulation Part L 2010. As a consequence of the reduction in emission rates required by current building regulations (Part L 2013) relative to Part L 2010, the revised equivalent target CO_2 emission reductions for the residential scheme is presented below:

- Residential - 9% dwelling emission rate reduction over Part L 2013.

Further details of the building regulation requirements are provided in the section below.

3.1.2 Guide to Development in Manchester, Supplementary Planning Document

The Core Strategy requires that all new residential developments should accord with the design guidance set out in the Supplementary Planning Documents (SPD). The Guide to Development in Manchester SPD was adopted on 11thApril 2007 and supports and enhances the ongoing shaping of the City by providing a set of reasoned principles which will guide developers, designers and residents. These principles include a number of environmental standards, and includes the following categories which are identified in the SPD:

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

3.1.3 Manchester Residential Quality Guidance

This document provides guidance for building new build dwellings in Manchester. The residential quality guidance demands design excellence in all new housing built in the city, sets minimum space standards, and ensures high environmental standards. The guidance includes nine components:

Make it Manchester – developers must understand the city's unique character, heritage old and new, density and scale in various parts of the city and appreciate how new homes will fit in to what's already there.

Make it bring people together – new homes must encourage a sense of community and neighbourliness, offering a mix of tenures to promote a mix of people.

Make it animate streets and spaces – understand the relationship between new homes and its environment and create public space.

Make it easy to get around – make sure developments have good transport links, along with good walking and cycling provision.

Make it 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.

3.1.4 Manchester's Great Outdoors

A Green and Blue Infrastructure Strategy for Manchester aims to invest in the city's Green and Blue infrastructure over the next 10 years (by 2025). Four objectives have been established to enable the vision to be achieved:

1. Improve the quality and function of existing green and blue Infrastructure, to maximise the benefits it delivers.

2. Use appropriate green and blue infrastructure as a key component of new developments to help create successful neighbourhoods and support the city's growth.

3. Improve connectivity and accessibility to green and blue infrastructure within the city and beyond.

4. Improve and promote a wider understanding and awareness of the benefits that green and blue infrastructure provides to residents, the economy and the local environment.

3.1.5 Climate Emergency

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

Manchester Climate change Framework 2020 – 25 is Manchester's high-level strategy for meeting their commitment on climate change that builds on the Draft Manchester Zero Carbon Framework 2020-38, which was published in February 2019, and Manchester City Council's 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 contains the following relevant objectives:

Objective 2 – Climate adaptation and resilience 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. This includes:

- 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.

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

- Adapt the city's built and natural environment and prepare 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, which are essential to help get 38,000 Manchester households out of fuel poverty.

Objective 4 – Inclusive, zero carbon and climate resilient economy looks 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.

Priority Areas

Six priority areas have been established in order to help meet the above objectives and include:

1. Buildings (existing and new)
2. Renewable energy
3. Transport and flying
4. Food
5. The things we buy and throw away
6. Green infrastructure and nature-based solutions

Urgent Climate Change Framework Actions Identified to Help Meet the Commitments:

- New Buildings – To ensure that new developments in the city don't eat into the limited carbon budgets and add to the already significant retrofit challenge developments need to be built and operated to zero carbon standards as soon as possible.

    - The ideal way to do this is through UK Government *establishing a national zero carbon definition* and methodology for its implementation, and for Manchester City Council to implement this standard as quickly as possible through the local planning system.
    - This should include applying zero carbon standards to all developments where the Council has additional influence, with a view to all new development needing *to be zero carbon from 2023 at the latest.*

- Renewable Energy – The National Grid has been decarbonising in recent years; we need this to continue but at an accelerated rate, with a view to being fully decarbonised as soon as possible.

    - At least 50% of all homes should have the equivalent of 16m^2 of solar PV panels by 2024.

- Gas – The following actions are needed to help reduce the reliance on natural gas:

    - Improve the energy efficiency of our buildings as far as possible to reduce our demand for gas.
    - Replace our natural gas-based heating systems with renewable energy-based heating technologies as soon as possible.
    - Work with Government to ensure that moving to electricity-based heating systems is affordable and doesn't push even more people into fuel poverty.

3.2 Emerging Policies

The Greater Manchester Spatial Framework 2019 (Draft) will set out how Greater Manchester should develop up until 2037 and is currently on hold. However, it contains the following relevant emerging policies:

Policy GM - S 2 Carbon and Energy aims to deliver a carbon neutral Greater Manchester no later than 2038, with a dramatic reduction in greenhouse gas emissions. There is an expectation that new development will:

a) Be zero net carbon from 2028 by following the energy hierarchy (with any residual carbon emissions offset), which in order of importance seeks to:

I. Minimise energy demand;
II. Maximise energy efficiency;
III. Utilise renewable energy;
IV. Utilise low carbon energy; and,
V. Utilise other energy sources.

With an interim requirement that all new dwellings should seek a 19% carbon reduction against Part L of the 2013 Building Regulations including:

b) Incorporate adequate electric vehicle charging points to meet likely long-term demand; and,

c) Where practicable, connect to a renewable/low carbon heat and energy network.

3.3 National Planning Policy

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

The NPPF states that the planning system should play an active role in guiding development to sustainable solutions. There are three dimensions to sustainable development, as stated within the NPPF: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

An economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

A social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high-quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and

An environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

These roles should not be undertaken in isolation, because they are mutually dependent. Economic growth can secure higher social and environmental standards, and well-designed buildings and places can improve the lives

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

Pursuing sustainable development requires careful attention to viability and costs in plan-making and decision-taking. To ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, enable the development to be deliverable.

At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development - for decision-taking this means approving development proposals that accord with the development plan without delay.

3.4 Regulatory Framework

3.4.1 Building Regulations

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

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

I. The predicted rate of carbon dioxide emissions from the dwelling (the Dwellings Emission Rate DER) is not greater than the Target Emissions Rate (TER). Additionally, the Dwelling Fabric Energy Efficiency (DFEE) is not greater than the Target Fabric Energy Efficiency (TFEE);

II. The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document;

III. The dwelling has appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer;

IV. The performance of the dwelling as built is consistent with the DER, including site checking that the air permeability is within reasonable limits; and

V. The necessary provisions for energy efficient operation of the dwelling are put in place including operating and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

3.5 Applicable Targets

Based upon a review of relevant planning policy requirements, legislative drivers, and client priorities, the following list provides a brief precis of the key criteria that should be targeted for this development:

- CS Policy EN 4 - Following the principles of the Energy Hierarchy to reducing CO_2 Emissions;
- CS Policy EN 6 - Residential - 9% dwelling emission rate reduction over Part L 2013; and,
- Approved Document L1A will guide the compliance standards for energy demand and carbon dioxide emissions from this building.

4. ENVIRONMENTAL PERFORMANCE

This section provides an appraisal of the development proposals and details the specific approach, design features and specifications which will contribute to reducing the environmental impact of the proposed scheme. This section outlines those commitments that have been made by the client to ensure this development contributes to sustainable development, meets the council's current policies, and examines the following categories identified in the Guide to Development in Manchester, Supplementary Planning Document (SPD):

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

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

4.1 Energy

In order to limit energy demand and carbon dioxide (CO_2) emissions from the operation of the new dwellings, the following design features will be integrated within the scheme. These will enable the occupants to lead a low-impact lifestyle:

4.1.1 Energy Efficiency Strategy

- The proposed approach to emissions reduction at this site will be through a fabric led energy strategy and efficient servicing in accordance with the principles of the Energy Hierarchy;
- The proposed energy strategy will provide improvements in the energy performance of the building above national building regulations Part L1A (2013) criteria in relation to heating energy demand, primary energy consumption and carbon dioxide and will incorporate the following measures:
    - Enhanced building fabric specification; and,
    - Renewable energy technology.

Further details of the proposed approach to reducing the energy demand and associated carbon dioxide emissions of these dwellings are presented in the Sections 5 (Energy Strategy) and Section 6 (Climate Emergency).

4.1.2 General Principles

- White goods are graded on a scale from G (the least efficient) up to A++ (the most efficient) under the EU energy efficiency labelling scheme. There will be the provision of A and A+ rated white goods (where applicable);

- Provision of EU energy efficiency labelling scheme details to assist in the purchasing of energy efficient white goods;

- 100% low energy and/or LED internal lighting;

- All external space lighting to be provided by dedicated energy efficient fittings and controls; and,

- On-site, secure cycle storage will be provided to encourage the use of sustainable modes of transport.

4.2 Water

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

- A water efficiency strategy will be determined for the development. This will include 'A' rated appliances (where provided);

- Specification of efficient water fixtures throughout the scheme including low flow taps and showers, dual flush WCs and low volume baths. In order to reduce the demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <105litres/person/day; and,

- The landscaped areas of the development will be irrigated solely by precipitation throughout all seasons of the year to reduce unregulated water consumption. Private landscaped areas will be irrigated with water from individual water butts to further reduce potable water consumption and promote the recycling of rainwater.

4.3 Resource Management and Pollution

4.3.1 Efficient Use of Land

- The re-use of land in a highly accessible, urban location will provide much-needed homes, and a development that inherently supports a sustainable community.

4.3.2 Pollution Control

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

- Insulating materials that have a GWP of less than 5 throughout the development to reduce the construction phase impact of this scheme 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;

- Where necessary, temporary drainage and pollution prevention measures will be in place on site, this may include, for example, bunded areas and spill kits to prevent harmful chemicals/materials from draining to natural watercourses; and silt traps to ensure that suspended solids are removed from the drainage water;

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

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. Excess noise can have a significant impact on local ecology as well as human physical and psychological health therefore, a Noise Impact Assessment (NIA) has been prepared by Miller Goodall Limited. The assessment confirms that measured noise levels have been used to determine specifications for glazing and ventilation to ensure internal criteria for living spaces is achieved. Furthermore, the landscaping proposals include for the retention and planting of new trees and shrubbery around the site borders and property boundaries. These measures will help to further buffer any noise generated by the development and the adjacent road.

4.3.3 Materials

This development will contribute towards making more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction. This is demonstrated by the selection of:

- Materials with low environmental impact throughout their lifecycle will be selected;

- Materials responsibly sourced from suppliers operating an Environmental Management System or procuring timber verified by either the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification standard (PEFC); will be utilised in accordance with the criteria of Condition 15;

- Construction materials will be selected to match the existing building on the site, as well as the housing stock of the area, so as to contribute to the retention of the local housing characteristics. This will include traditional red brick, artstone heads and cills plus grey roof tiles and wood grain UPVC doors and windows; and,

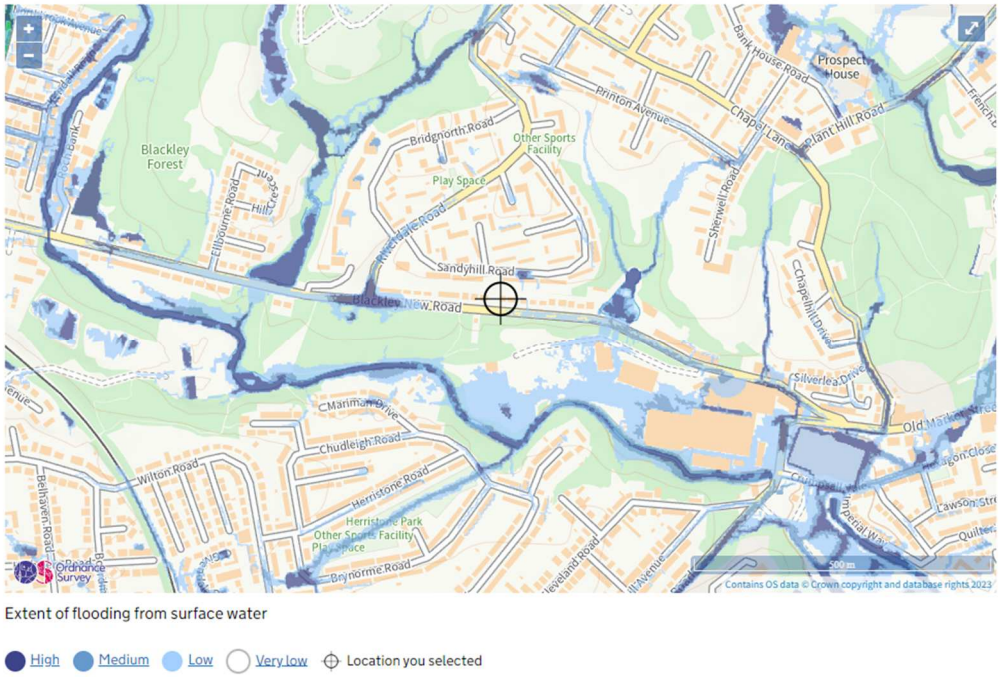
- Robust materials will be utilised for hard landscaping that reflect the local vernacular therefore, minimising the frequency of replacement.

4.4 Surface Water Run-off

4.4.1 Flood Risk

The proposed site is located within Flood Risk Zone 1 and therefore has a low probability of flooding. Data provided on the Environment Agency website confirms the Flood Risk Zone classification for the site (see Figure 4.1).

Figure 4.1 – Flood Risk Map



4.4.2 On Site Surface Water Management -

To minimise the risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage, the drainage strategy will ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) will be no greater for the developed site than it was for the pre-development site.

4.5 Construction Waste

Best practice techniques to prevent and minimise waste arising during the design and construction phases of the development will be adopted in accordance with the criteria described in Condition 7, as follows:

- Prior to commencement of the above ground construction phase, a site waste management plan (SWMP) will be produced by a waste management contractor, containing procedures for waste minimisation, as well as optimisation of waste recovery and recycling in accordance with the Waste Hierarchy. This SWMP will limit the on and off-site environmental impacts of construction and will detail:

    - Recycled and secondary materials;
    - Waste reduction;
    - Waste segregation;
    - Waste recovery; and,
    - Waste disposal.

- A SWMP will identify opportunities to minimise waste generation and will help to divert at least 95% of construction waste from landfill. Skips will be provided on site to segregate waste into the following streams:

    - Timber;
    - Metal;
    - Plasterboard; and
    - General Waste.

- Procedures for monitoring waste will include:

    - Topsoil / spoil – copies of the tickets from the carrier will be retained on site to identify the quantities of material leaving site; and,
    - Other waste – skips will be sent to a licenced recycling centre who will provide reporting as to the various waste streams and recycling rates.

- This scheme will promote the minimisation of waste from the site development and seek to maximise the use of recycled materials in construction. Procedures for minimising waste (both hazardous and non-hazardous) are as follows:

    - Design stage:
        - Standardise construction details wherever possible;
        - Coordinate sizes in line with standard material sizes (i.e. plasterboard, blockwork);
        - Do not specify hazardous materials where there is a non-hazardous alternative available; and,
        - Early contractor and/or subcontractor involvement to review buildability.

    - Construction phase:
        - Ensure material correctly stored on site to prevent damage;
        - Protect finished works to prevent damage;
        - Segregate waste to maximise recycling;
        - Correctly store and dispose of hazardous waste materials; and
        - Request deliveries made to site with minimal packaging and that items such as pallets are returned to suppliers.

- As a result of the waste minimisation procedures, a 10% improvement on the following benchmarks are targeted:

    - Inert spoil offsite - 55 m^3 per 100 m^2;
    - Recycled waste - 0.54 tonnes per 100 m^2; and,
    - Waste to landfill - 0.03 tonnes per 100 m^2.

4.6 Domestic Waste

The development will provide infrastructure and facilities that meet the need of the residents for segregated waste storage, thereby optimising the ability to recycle waste in accordance with the criteria of Condition 7:

- A waste management strategy will be developed, ensuring that adequately sized bin storage areas for the dwelling will be designed into the development at an early stage of the design; and,

- Private bin storage provisions will enable residents to make full use of Local Authority recycling services. The strategy will allow for storage of general waste, recyclable materials and food waste in order to optimise the recycling rates achieved by Manchester City Council.

4.7 Health and Wellbeing

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

- Good levels of natural daylighting will be achieved within the dwelling. This will reduce the need for energy to artificially light the dwelling; and,

- All dwellings will comply with National Space Standards, to ensure that all dwellings are of a sufficient size, provide flexibility and comfort for the future occupants.

4.8 Management

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

- Construction site impacts will be minimised and measures implemented to protect water courses, as well as to prevent impacts upon the local area in terms of dust and noise pollution during construction works; and,

- The security needs of the development will be considered, and the site will adopt crime prevention measures to assist in reducing the opportunity for, and fear of crime including:

    - 1.8m high fencing to 3 sides of the development with edge planting of a similar height;
    - A low wall of approximately 0.6m in height that will incorporate low-level wrought iron decorative fencing; and,
    - Intruder alarms will be installed as standard together with CCTV fittings to be connected as required by residents to local receivers,

4.9 Biodiversity and Land Use

Land Use -

The proposal for five residential dwellings makes effective use of a small plot of vacant land in meeting the urgent need for homes.

Biodiversity -

The landscaping proposals will include the planting of shrubs and trees of local progeny that support blossoms and fruit. This will support invertebrates and in turn, encourage foraging birds and bats. Bounding walls and planting to the front boundary will be limited to 0.6m in height to enable vision splays to be formed in accordance with highways recommendations and requirements for highway safety.

4.10 Transport

The proposed development is located within approximately 4 Miles of Manchester city centre, which is one of the most sustainable locations in Manchester, particularly in relation to key pedestrian, rail, Metrolink and bus transport routes.

The site is well located in terms of non-car modes of transport with basic facilities all within easy walking distance of the site.

Transport Links -

The site benefits from good sustainable access opportunities and is well connected by existing walking and cycling routes to key trip attractors. Buses can also be used to easily access the site as well as Metrolink stops:

- Bus – The nearest bus stops are located immediately to the front of the site on both sides of Blackley New Road. The bus stops provide regular services into Bury, Shudehill, Rochdale, Manchester Royal Infirmary and Piccadilly Gardens.

- Rail – The nearest railway station is Moston and is located 0.8 miles away (or a 4 minute walk) away from the proposed development site. This station services the Pink Line.

- Metrolink – The nearest Metrolink station is Crumpsall and is located 1.4 miles away(or a 19- minute walk) away from the proposed development site. This station services the Pink Line and provides regular services to East Didsbury and Rochdale.

- Cycle - The area is accessible by bike with particularly strong links to employment opportunities in the city centre areas such as Salford and Manchester which can be accessed easily via public transport. Cycle storage will also be provided in a secure, accessible location in accordance with local authority guidelines.

- Pedestrians – The site is in a sustainable location with basic facilities that can be accessed from the development via foot or public transport.

The proposals include for the enhancement of the existing parking provisions to provide a total of six car parking spaces.

Local Amenity Access -

- Residents are able to walk to local amenities and shops along Blackley New Road; and,

- Local amenity space and recreational facilities are located close to the site.

Disability Access -

- Disabled access provision within the scheme itself will be in accordance with Building Regulation, Part M criteria as far as possible.

5. ENERGY STRATEGY

Details of the proposed energy strategy for the Blackley New Road development, which includes an enhanced fabric approach to dwelling emission rate reduction combined with efficient mechanical and electrical servicing, are reviewed below.

Priority is given to achieving a reduction in carbon emissions by means of on-site measures and applying the principles of the energy hierarchy.

5.1 Local Planning Policy Targets

Manchester's Core Strategy (CS) includes the following relevant policies:

CS Policy EN 4 - Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development requires all development to follow the principle of the Energy Hierarchy, being designed:

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

CS Policy EN 6 - Target Framework for CO_2 Reductions from Low or Zero Carbon Energy Supplies includes emission reductions targets which relate to Building Regulation Part L 2010. As a consequence of the reduction in emission rates required by current building regulations (Part L 2013) relative to Part L 2010, the revised equivalent target CO_2 emission reductions for the scheme are presented below:

- Residential - 9% dwelling emission rate reduction over Part L 2013.

5.2 Build Fabric and Thermal Performance

A combination of enhanced building fabric specification (significantly beyond the regulatory compliance standard), efficient mechanical and electrical systems, and controls, will achieve compliance with the emission reduction targets stipulated by Building Regulations Part L1A (2013).

The standard measurement of heat transfer through a given building material or construction type is the U-value (W/m^2K). In buildings, heat loss generally occurs through the following areas and elements of the construction:

- Ground Floor;
- External Walls;
- Roofs;
- Doors and Windows;
- Thermal (cold) Bridging (heat loss through construction joints); and,
- Uncontrolled Ventilation.

The lower the U-value, the more slowly heat transfers and is lost out of a building. Table 5.1 presents the proposed material specification that could be incorporated to limit heat loss and ensure efficient operation of the dwellings.

Table 5.1 – Proposed Building Specification

Item	Specification
External Wall	U=0.19W/m^2K *(Masonry construction)*
Dormer Cheeks	U=0.27W/m^2K
Loft Wall	U=0.24W/m^2K *(Timber stud wall)*
Party wall	U=0.0W/m^2K *(full fill and seal)*
Roof	U=0.11W/m^2K *(Pitched roof insulated at ceiling)*
Roof	U=0.16W/m^2K *(Pitched roof insulated at rafter)*
Roof	U=0.16W/m^2K *(Flat dormer roof)*
Roof	U=0.13W/m^2K (Pitched dormer roof insulated at ceiling)
Windows and Roof Lights	U=1.3W/m^2K; g=0.76 (*uPVC, double glazed, low E)*
Solid Doors	U=1.4W/m^2K;
Air Permeability	4.0m^3/hm^2 (@50Pa.)
Cold Bridge	Accredited Construction Details

These specifications and design attributes will provide the following benefits:

- High performance thermal insulation will ensure low U-values for all heat loss elements;
- Thermally efficient, 'A' rated double glazed windows will be specified with argon gas fill and low emissivity coatings to limit heat loss through the panes. Thermal breaks will be incorporated within the frame to further limit heat loss. The glazing g-Value will be specified to optimise beneficial solar gains but limit the propensity for the dwellings to overheat;
- Low air permeability of 4.0m^3/hm^2 (@50Pa.) is targeted for the dwellings in order to minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort. Focus on the quality of the build is vital to deliver airtight buildings; and,
- Attention to cold bridging junctions including the provision of insulation to reduce heat and limit heat losses that occur at the junctions between building elements and around openings and will significantly improve the emission rate of the dwellings.

This specification will help to deliver an energy efficient development that achieves an emission rate reduction and fabric energy efficiency performance beyond the requirements set by building regulation Part L1A, (2013).

5.3 Building Services Specification

Table 5.2 presents the current proposed mechanical and electrical specification that is anticipated to be part of the design to ensure efficient and comfortable operation of the dwellings.

Table 5.2 – Proposed Mechanical and Electrical Specification

Item	Specification
Ventilation	Natural ventilation
Lighting	100% 'Low E' or LED
Space Heating	High efficiency, gas-fired condensing boilers
Heating Controls	Time and temperature zone controls with delayed start-stat and boiler interlock
Water Heating	High efficiency immersion heaters *(180l. / 1.33 kWh/day standing losses)*
Renewables	2.7kWp total photovoltaic array *(south facing, 30^{o} tilt)*

In combination with the build fabric, this specification will deliver an energy efficient development that achieves a carbon dioxide emission rate reduction and fabric energy efficiency performance beyond the requirements set by building regulation (Part L, 2013). The specification will provide the following benefits:

- No mechanical cooling is required for the dwellings. The buildings are not considered to be at risk from overheating due to the orientation of the buildings and openable windows therefore, natural intermittent extract fans are specified throughout;
- Low energy and LED lighting will be specified throughout the scheme in order to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs. This means that about c.90% of the electrical energy is converted to light, rather than wasted heat as in conventional bulbs;
- High efficiency hot water storage will be specified within the dwellings with immersion cylinders providing low standing losses to reduce energy demand from the systems. To further limit energy demand for hot water, dwellings would be provided with water-efficient fixtures and fittings, to limit overall water consumption to <105 liters per person per day; and,
- Sophisticated heating controls including time and temperature zone controls will ensure the efficient delivery of heat from the gas-fired condensing boilers to further reduce the dwellings' energy demand.

5.4 Renewable Energy Feasibility

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

- District Heating;
- Solar Hot Water;
- Photovoltaics (PV);
- Wind;
- Heat Pumps; and,
- Biomass heating.

A review of the Rochdale Road proposals and site location has been completed to determine the appropriate option(s) for this development, as detailed in Table 5.3 below.

Table 5.3 – Renewable Energy Feasibility Study

Technology	Description	Advantages	Limitations	Feasibility
Combined Heat and Power (CHP)	CHP is effectively an on-site, mini power plant providing both electrical power and thermal heat energy. It is an energy efficient, low carbon measure rather than a renewable energy technology.	✓ Buildings with high heat / hot water demands and constant power demands lend themselves to CHP. ✓ Can be linked to a district heating scheme. ✓ Efficient use of fuel and excess electricity can be exported to the grid.	× Only viable for buildings with high heat / hot water demands and constant power. × Plant space required. × Maintenance intensive.	**No** - Given there will be low space heating for around half of the year the contribution from CHP will be limited to a proportion of the hot water load only, therefore the commercial viability of this type of system cannot be proven.
District Heating	District Heating systems provide multiple buildings or dwellings with heat and hot water from a central boiler house, or 'energy centre'. The system can provide heating or cooling which is transferred from the energy centre through a network of highly insulated pipes to each dwelling.	✓ Efficient use of fuel. ✓ Eliminates the need for gas to be installed.	× Relies upon the installation of nearby heat networks.	**No** - It has been determined that there are no existing or proposed heat networks/energy centres within a moderate radius from the development and there are no existing networks local to the site.
Solar Hot Water	The solar collector absorbs the radiant energy of the sun and converts it to heat energy for use as hot water in buildings.	✓ Feasible for small scale developments. ✓ Low maintenance.	× Panels ideally facing south at 30° tilt for optimum efficiency.	**Potentially -** Solar thermal is considered to be a technically feasible option for the residential buildings but is discounted on the grounds of viability. Available roof space would be better utilised for PV panels which offer a better energy yield and emissions reduction per pound (£) of capital expenditure.

Photovoltaics (PV)	PV panels harness solar thermal energy and convert it into electricity which can then be used within a building. The panels may be roof or floor mounted.	✓ Low maintenance. ✓ Easy to integrate into building design. ✓ Cost of PV is constantly dropping.	× Panels ideally facing south at 30° tilt for optimum efficiency. × Overshadowing will reduce performance. × Can require significant roof space.	**Yes** – This technology is considered to be a feasible option for this site and will be considered in more detail below.
Biomass Heating	Biomass boilers typically burn wood chips or pellets as fuel to provide space heating and hot water.	✓ Almost a carbon neutral technology.	× Frequent and large fuel deliveries. × Large fuel store required. × Regular maintenance. × Air quality issues in urban areas.	**No** – This technology would be capable of delivering the target CO_2 emission reductions but is considered inappropriate for this type of development due to the need for a large fuel storage facility and frequent, large fuel deliveries combined with regular maintenance.
Wind	Wind generation equipment harness the wind to turn a propeller and in doing so, drive an alternator to generate electricity. The turbines may be pole or roof mounted.	✓ Low maintenance. ✓ Excess electricity can be exported to the grid. ✓ Vertical Axis Turbines able to operate at wind speeds as low as 2m/s.	× A wind speed of at least 6m/s is typically required for traditional turbines to operate efficiently. × Visual and noise impact risk.	**No** – The NOABL wind speed database records a wind speed of approximately 4.8m/s at 10m above ground level for this site. In order to operate efficiently a wind speed of at least 6m/s is typically required. Furthermore, there are potential planning issues and perceived safety concerns with this technology.
Ground Source Heat Pumps (GSHP)	GSHPs collect low-grade heat from the ground to supply useful heat for space and water heating requirements by applying additional energy input (in the form of electricity).	✓ Flexible installation methods - vertical ground collector boreholes can used when space is more limited. ✓ Can provide both heating and cooling as well as hot water.	× Full ground survey required to determine suitability/ geology. × Large area required for horizontal ground collector loops. × Prohibitive costs.	**No** – Such technology is considered unsuitable for this site due to prohibitive costs and technical complexity of installing the vertical ground collector boreholes within the site boundary.
Air Source Heat Pumps (ASHP)	ASHPs collect low-grade heat from the air to supply useful heat for space and water heating requirements by applying additional energy input (in the form of electricity).	✓ Highly efficient method of producing heat. ✓ Can provide both heating and cooling as well as hot water.	× Prohibitive costs. × Internal and external unit space required. × Potential noise issues from external plant.	**No** – This technology is technically feasible for this site and would ensure significant energy demand and emissions reductions for the dwellings. This technology has however been discounted on viability grounds.

5.5 Energy Performance Calculations

5.5.1 Methodology

Approved SAP 2012 software (Design SAP 2012 4.14r16) has been used to calculate *representative* energy demand models for all dwellings within the scheme based on available plans. The calculations demonstrate the environmental benefits associated with the 'fabric led' approach to energy demand and emissions reduction, which has been implemented in conjunction with efficient mechanical and electrical systems and on-site micro generation.

SAP software calculates the regulated energy demand of the dwellings and associated carbon dioxide emissions, in accordance with the requirements of Building Regulation, Part L1A (2013) that this development will be constructed in compliance with. A block compliance (multi dwelling) SAP report has been applied to demonstrate that each dwelling meets Part L1A (2013) compliance requirements within one collective report (see Appendix A).

5.5.2 Regulated Energy Demand and Emission Calculations

The calculated Dwelling Emission Rate reduction over Part L1A (2013) and thermal envelope Fabric Energy Efficiency performance associated with the proposed 'fabric led' specifications for each house type are presented in Tables 5.4 and 5.5 respectively.

Table 5.4 – Average Regulated Dwelling Emission Rate

House Type	Detached	Semi-detached
Dwelling DER ($kgCO_2/m^2/yr.$)	13.2	14.1
Dwelling TER ($kgCO_2/m^2/yr.$)	14.6	15.5
% DER Reduction over Part L 2013	9.2	9.1

The above calculations demonstrate that the Dwelling Emission Rate (DER; carbon dioxide emissions) reduction for each house type is expected to be at least 9.1% better than Part L1A (2013) compliance requirement.

Table 5.5 – Average Fabric Energy Efficiency

House Type	Detached	Semi-detached
Dwelling DFEE (kWh/m²/yr.)	49.2	43.0
Dwelling TFEE (kWh/m²/yr.)	54.5	47.6
% DFEE Reduction over Part L 2013	9.6	9.6

The Dwelling Fabric Energy Efficiency for each house type within the scheme is expected to achieve a 9.6% betterment relative to the Part L compliance criterion.

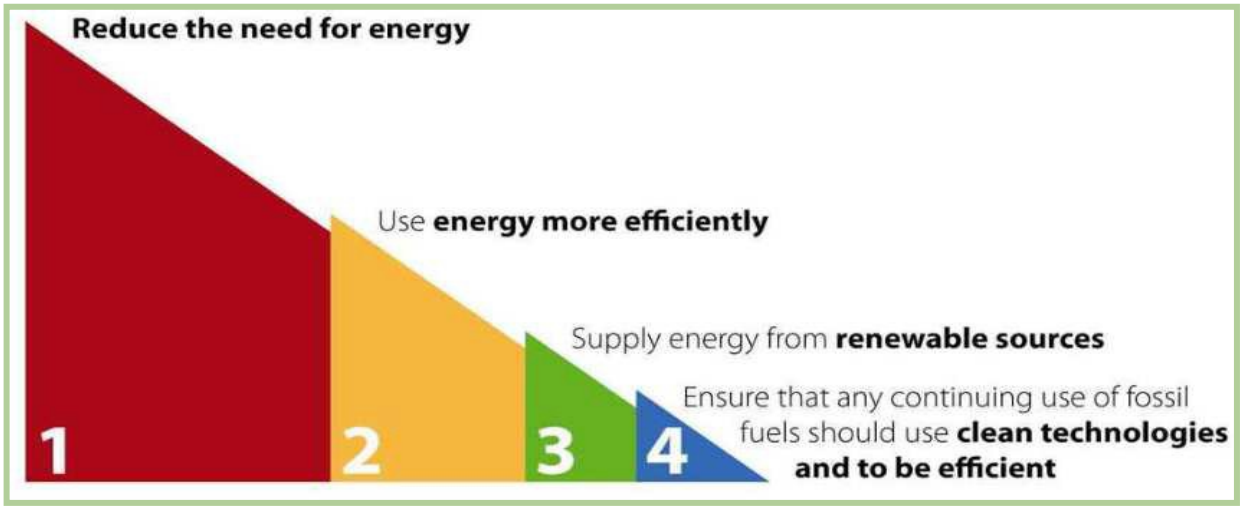
This indicative SAP calculation demonstrates that the Dwelling Emission Rate (DER) reduction for the Rochdale Road scheme will provide a significant improvement over the Part L1A (2013) compliance standard as a consequence of the proposed enhanced fabric specification, efficient mechanical and electrical systems plus renewable technology.

5.6 Energy Hierarchy

The scheme will incorporate an enhanced material specification along with high quality design and construction standards in order to improve energy efficiency through a 'fabric led' energy strategy. The construction, design and specification proposed for this scheme will deliver dwellings that are inherently efficient and cost-effective during occupation.

The Energy Hierarchy provides a framework to guide energy policy and decision making to achieve practical and cost-effective carbon emission reduction strategies. The hierarchy prioritises demand-side activities to reduce wastage and improve efficiency (see Figure 5.2).

Figure 5.1 – The Energy Hierarchy



First Principle

The following efficiency measures are designed to reduce heat losses and minimise energy demand:

- The dwellings will be constructed with a material and design specification which exceeds minimum Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand, including very good levels of insulation and low u values;

- The design air permeability target for the residential units is 4.0m^3/hm^2 (@50Pa.). This low air permeability target will minimise any uncontrolled ventilation and assist to limit heat loss through the structure of the build; and,

- The g value of the glazing will be optimised to control solar gain in the summer months and allow beneficial gains in the winter season so as to minimise the overheating risk and limit the heating energy demand within the properties.

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

Second Principle

Combined heat and power technology does not form part of this energy strategy. As per the second principle of the Energy Hierarchy:

- Sophisticated control systems for the space and water heating will ensure that energy consumed by the dwellings is used efficiently;

- Hot water in the dwellings will be separately programmable and high efficiency cylinders with low standing losses will be specified;

- The dwellings will be designed to not require active cooling; and,

- 100% LED provision and sophisticated control systems will be incorporated throughout the development. Photocell and automatic presence control of the lighting will be specified in order to further improve the efficiency of the lighting system within the communal zones.

Third Principle

Photovoltaic arrays will be integrated onto the roofs of each dwelling to reduce the carbon dioxide emissions associated with the proposed development, as per the third principle of the Energy Hierarchy.

Fourth Principle

The space and water heating demand of the dwellings and retail units will be met by high efficiency, low Nitrogen Oxide (NOx) emission, gas-fuelled condensing boilers. This will ensure that fossil fuels consumed by the buildings for heating purposes will be burnt cleanly and efficiently.

The development proposals are therefore aligned with the energy hierarchy promoted within the Manchester Guide to Development and Core Strategy Policy EN 4.

6. CLIMATE CHANGE EMERGENCY

A Climate Emergency was declared by Manchester City Council on 10th July 2019, with a target to make Manchester carbon neutral by 2038. In support of this, the developer wishes to highlight the following measures that will form part of the specification of this development:

- An energy strategy that aligns with current planning policy in relation to carbon emissions and minimising energy consumption:
    - In securing compliance with the current, building regulation Part L targets, a commitment is made to construct a high quality, energy efficient thermal envelope thereby minimising demand side energy loads – in accordance with the principles of the Energy Hierarchy; and,
    - A commitment is made to achieving at least a 9% improvement in the emission rate reduction relative to the current Part L1A (2013) compliance standards for the residential dwellings.

- Unregulated energy demand (that is, the energy demand associated with appliances and cooking) typically accounts for over half of the total carbon dioxide emissions from modern residential developments such as this. To limit this:
    - The integrated white goods will have as a minimum an A+ energy rating; and,
    - A welcome pack will be provided to all residents to encourage selection of green energy providers to enable them to make informed decisions.

- There is a limit to fabric enhancements such as increased insulation and improved air tightness as this generates a higher overheating risk and, as a consequence, the building would generate cooling loads. The design of the dwellings will balance both requirements and incorporates a building specification intended to avoid cooling requirement and the associated wasted energy in producing cooled air. Thus, through the integration of passive design measures such as the specification of the window g-value, the dwellings will not require active cooling, which further limits the energy demand of the development.

- Waste is a misuse of natural resources and also contributes a large proportion of the UK's carbon footprint;
    - Waste minimisation during construction will reduce raw materials demand, thereby reducing the building's embodied carbon footprint; and,
    - During occupation, the building will benefit from recycling facilities to enable the local authority waste reduction targets, diverting more materials away from landfill and reducing the occupant's carbon footprint further.

- The site's location will enable low carbon, sustainable lifestyles. Located minutes away from several bus stops, the residents have the option to utilise various sustainable modes of transport. This is facilitated by:
    - Basic infrastructure provided such as secure cycle storage on site;
    - Travel options, including local access to transport nodes for bus, train and Metrolink; and,
    - Local amenities that are within easy walking distance of the site, enabling residents to live local with a reduced need to travel.

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

    - The lighting provision will include active sensors; and,
    - The fit-out specification of the dwelling will seek to minimise water demand. Water efficiency measures (such as dual flush toilets, flow restrictors and reduced volume baths) will limit potable water demand to <105litres/person/day. This will reduce water heating energy loads and also cut the process energy required to supply clean drinking water.

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

7. CONCLUSION

This statement has reviewed the environmental performance of the proposed development site at 50 Amos Avenue, Manchester against national and local policies. The material specification and servicing strategy for the scheme and the building (carbon dioxide) emission rates have also been reviewed.

Energy Strategy –

Full compliance with the key criteria of the Manchester Core Strategy have been achieved by the proposed energy strategy while responding positively to MCC's declaration of a Climate Emergency, as follows:

- Minimising the impacts of climate change is a key element of the proposed energy strategy. In line with adopted Core Strategy Policy EN 4, EN 6 and the Supplementary Planning Document (SPD) criteria, the energy strategy includes an enhanced fabric approach to emission rate reduction combined with efficient servicing plus zero-carbon technology.

- The development will be designed and specified in accordance with the principles of the energy hierarchy in line with the adopted Core Strategy Policy EN 4 and will achieve the following:

    - The Dwelling Fabric Energy Efficiency (DFEE) reduction for the residential scheme is at least 9.6% better than the Part L1A (2013) compliance standard through enhanced fabric measures;
    - The indicative SAP calculation shows that the building specification is expected to achieve at least a 9.1% betterment in dwelling emissions over Building Regulation Part L1A (2013), in accordance with Core Strategy Policy EN 6; and,
    - Zero-carbon energy generation form part of the proposals and a total installed capacity of 2.7kWp photovoltaic array is allocated to the development.

- These proposals will deliver a scheme that is inherently efficient and cost-effective during occupation.

Sustainability Performance -

The key issues of Manchester City Council's Supplementary Planning Document (Environmental Standards) in accordance with the Core Strategy Policy DM 1 have been achieved by the proposals. These are as follows:

- Water consumption of the development will be minimised. The internal water strategy will exceed the regulatory standard specified to achieve a calculated daily consumption of <105litres/person/day through the specification of efficient water fixtures.

- The development site is located within Flood Risk Zone 1. The drainage strategy will ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) will be no greater for the developed site than it was for the pre-development site.

- Waste arising during construction and occupation/operation will be minimised. A site waste management plan will be adopted during construction and a comprehensive waste management plan for the site will accord with the local authority recycling scheme ensuring that adequately sized bin storage areas for the site are provided.

- Construction site management procedures will minimise adverse impacts on the environment and control pollution generated during the construction phase. These include a waste management

strategy to reduce the quantity of waste generated, and to increase re-use and recycling of materials. A commitment will be made to minimise waste and pollution.

- The impact of sound associated with the development will be mitigated by the design/specification of the building. Sound insulation will be specified to comply with acoustic performance compliance standards, and mitigation measures will be implemented, where required, to reduce the noise arising from the residential development.

- The planting provision will be designed to provide an enhancement to the aesthetic and ecological value of the post-developed site. Biodiversity enhancement measures such as the planting of shrubs and trees of local progeny and the provision of bird and bat boxes will provide a contribution to the enhancement of the borough's natural environment and biodiversity.

- The site is located in a highly sustainable location with basic facilities all within easy walking and/or cycling distance of the site therefore, reliance upon traditional methods of transport such as the car will be reduced.

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

- Construction practices that minimise adverse impacts on the environment will be adhered to including a waste management strategy to reduce the quantity of waste generated, and to increase re-use and recycling, a commitment will be made to minimise waste and pollution; and,

- Exceeding the regulatory compliance criteria (Part L1A) will assist in mitigating the impact of climate change and its environmental impact.

In conclusion, the proposals reviewed within this statement for the scheme 50 Amos Avenue, Manchester will deliver a high-quality development that accords with the guidance provided within the Manchester City Council’s adopted policies.