

BEECHFIELD
CONSULTING ENGINEERS

Mechanical, Electrical & Energy Consultants

Energy & Sustainability Statement

Hebert Street

Elizabeth Street and Hebert Street, Manchester

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Appendix A – Block Compliance Report

1. INTRODUCTION

Beechfield Consulting Engineers have been commissioned by Studio Tashkeel Architecture Ltd to review the sustainability performance of the Proposed Development at Herbert Street, Manchester.

The purpose of this Statement is to summarise the relevant policy background and requirements of Manchester City Council (hereafter referred to as the council) and demonstrate the ways in which 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.

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

2. DEVELOPMENT PROPOSALS

2.1 Development Site Description

The proposed development site is located on the corner of Herbert Street and Elizabeth Street and is currently occupied by a derelict building. The plot is bound by roads to the north, south and east with a driving test centre to the west of the application site. The wider area comprises mostly residential homes as well as some community and educational facilities and commercial uses. The proposed development site is approximately 0.28ha. in size and is not situated within a conservation area.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The proposals include for the demolition of the derelict building that currently sits within the site and the erection of a high-quality residential development. The proposed site will consist fourteen three-storey houses providing a mixture of detached, semi-detached and terraced houses (see Figure 2.2)

Each house will have access to private amenity space in the form of front and rear gardens and the development is to be provisioned with newly planted trees to replace any that are removed to facilitate the development. Table 2.1 details the proposed accommodation schedule for the entire development.

Table 2.1 – Accommodation Schedule

Dwelling Types	Number of Units
Detached	5
Semi-detached/ End-terrace	6
Mid-terrace	3
Total	14

Figure 2.2 – Proposed Site Layout



Figure 2.3 – Proposed Elevation (Front – Elizabeth Street)



Figure 2.4 – Proposed Elevation (Front – Alderglen Road)



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.

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

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

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

Table 3.1 – Policy EN6 CO₂ 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

The emission reductions targeted within policy EN6 relate to Building Regulation Part L 2010. As a consequence of the aggregate reduction in emission rates required by current building regulations (Part L, 2013) relative to Part L 2010 (which the Policy EN6 targets are based upon), the revised equivalent target CO₂ emission reductions for the residential element of this scheme is presented below:

- Residential -9% dwelling emission rate reduction over Part L1A (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 11th April 2007 and supports and enhances the ongoing shaping of the City by providing a set of reasoned principles which will guide developers, designers and residents. These principles include a number of environmental standards, and includes the following categories which are identified in the SPD:

- Energy efficiency;
- Renewable energy;
- Environmental design;
- Water management 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, set minimum space standards, and ensure 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 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 to date in the city's Green and Blue infrastructure over the next 10 years (by 2025). Four objectives have been established to enable the vision to be achieved:

1. Improve the quality and function of existing green and blue Infrastructure, to maximise the benefits it delivers.
2. Use appropriate green and blue infrastructure as a key component of new developments to help create successful neighbourhoods and support the city's growth.
3. Improve connectivity and accessibility to green and blue infrastructure within the city and beyond.
4. Improve and promote a wider understanding and awareness of the benefits that green and blue infrastructure provides to residents, the economy and the local environment.

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. The council has agreed the following:

- To deliver the 2038 target and determine if an earlier target can be possible.
- Encourage involvement in all wards by April 2020 through meetings as part of the Our Manchester strategy.
- Review all policies, processes and procedures to ensure the council can become carbon neutral. Present an action plan by March 2020 detailing how the city can stay within its carbon budget.
- Make climate breakdown and the environment, an integral part of activity throughout the council, including all decision making, ensuring key decisions take into account the impact on achieving the zero-carbon target.
- Investigate measures to ensure future procurement is carbon neutral. Increase the percentage of social value with an additional environmental element.
- Work with suppliers to green their supply chains and support local production.
- Investigate and introduce measures to help reach domestic zero carbon levels including addressing fuel poverty and retrofitting existing homes.
- Investigate ways to ensure that future local plans place a mandatory requirement for all new development to be net zero carbon by the earliest possible date.

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 has set out four objectives to facilitate this:

Objective 1 – Staying within our carbon budgets. This involves taking action in following relevant areas:

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

Objective 2 – Climate adaptation and resilience 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.
- Respond to these risks by incorporating adaptation and resilience within our plans and strategies, and acting to make necessary changes to our buildings, infrastructure and our natural environment.

Objective 3 – Health and wellbeing aims to improve the health and wellbeing of everyone in Manchester through actions that also contribute to our objectives for CO₂ reduction and adaption and resilience:

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

Objective 4 – Inclusive, zero carbon and climate resilient economy 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 16m² 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;
- 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 Planning Targets

This application responds to the following applicable planning targets within this statement:

- **CS Policy EN 4** – Following the principles of the Energy Hierarchy to reducing CO₂ Emissions
- **CS Policy EN 6** - Residential -9% dwelling emission rate reduction over Part L1A (2013)
- **Emerging Policy GM - S 2** - 19% carbon reduction against Part L of the 2013 Building Regulations in response to the declared Climate Emergency
- **Approved Document L1A** will guide the compliance standards for energy demand and carbon dioxide emissions from buildings.

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

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

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

4.1 Energy

In order to limit energy demand and carbon dioxide (CO₂) 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

Energy Strategy -

- The proposed approach to emissions reduction for the new build dwellings will be through a fabric led energy strategy, in accordance with the principles of the energy hierarchy;
- The enhanced material specification will be supplemented with efficient mechanical and electrical systems including heat recovery systems and photovoltaics; and,
- The proposed space heating strategy for the building will be provided by high efficiency, low Nitrogen Oxide (NOx) emission, gas-fuelled condensing combi boilers.

Further details of the proposed approach to reducing the energy demand and associated carbon dioxide emissions of these houses are presented in the Sections 5 (Energy Strategy) and Section 7 (Climate Emergency).

4.1.2 General Principles

- Provision of A and A+ rated white goods (where applicable);

- Provision of EU energy efficiency labelling scheme details to assist in the purchasing of energy efficient white goods;
- 100% low energy and/or LED internal lighting;
- All external space lighting to be provided by dedicated energy efficient fittings and controls; and,
- At least fourteen secure cycle storage spaces (one per dwelling) will be provided to encourage the use of sustainable modes of transport.

4.2 Water

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

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

4.3 Resource Management and Pollution

4.3.1 Efficient Use of Land

- The proposals include for the redevelopment of a previously developed, brownfield site as promoted by national and local planning policy; and,
- The 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 Main 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. Furthermore, a noise impact assessment has been prepared by Y Acoustics Ltd. which recommends that measures are taken to mitigate against the noise arising from the surrounding road traffic. Y Acoustics recommend that facade solutions are considered with windows closed and therefore, provisions for background ventilation and overheating will need to be made. These measures will reduce the impact of sound pollution for the occupants within the dwellings.

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:

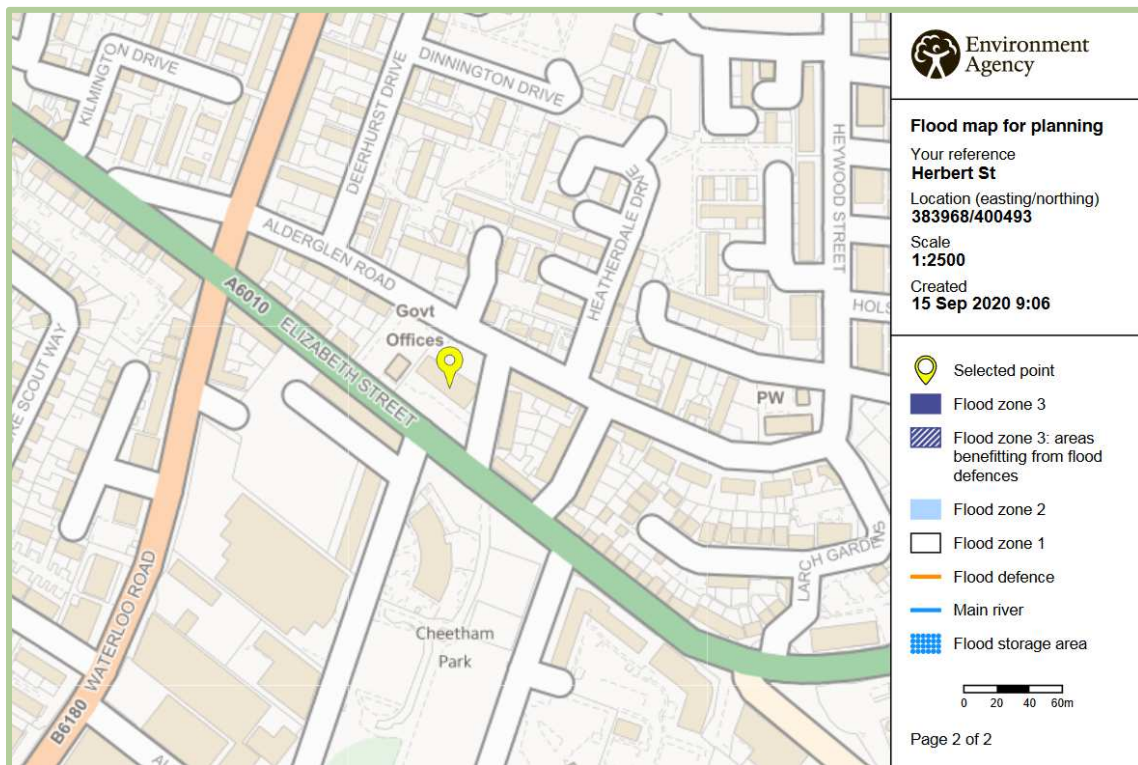
- Materials with low environmental impact throughout their lifecycle will be selected;
- Materials responsibly sourced from suppliers operating an Environmental Management System or procuring timber from FSC and PEFC sources, for example will be prioritised;
- Consideration will be given to local sourcing of construction materials where feasible and viable, which will minimise the impact of carbon dioxide emissions associated with the transportation of materials; and,
- Robust materials will be utilised for hard landscaping that reflect the local vernacular therefore, minimising the frequency of replacement and maximising materials optimisation.

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, a site-specific Drainage Strategy and Flood Risk Assessment has been prepared LK Group Ltd. which confirms the following:

- The proposed residential development will be designed to reduce the post development surface water run-off by utilising attenuation storage. It has been suggested to discharge the surface water is into the surrounding public combined water sewer. The drainage strategy will also incorporate the use of Sustainable Drainage Systems (SuDS) where appropriate throughout the site.
- To achieve the restriction in peak rates of surface water runoff from the developed site, it is anticipated that the total proposed discharge rate will not exceed 5 L/s. This will also be designed to withstand a 1 in a 100-year storm event plus an allowance for climate change.

4.4.3 Construction Waste

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

- A target of >85% of waste to be diverted away from landfill will be established for the construction phase of the development; and,
- This scheme will promote the minimisation of waste on site and seek to maximise the use of recycled materials in construction.

4.4.4 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:

- A waste management strategy will be developed, ensuring that adequately sized bin storage areas for each residential dwelling will be designed into the development at an early stage of the design; and,
- Private bin storage provisions would enable residents and building users 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.

4.5 Health and Wellbeing

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

- Good levels of natural day lighting will be achieved within the dwellings. This will provide a good quality of life for the occupants and reduce the need for energy to light the dwellings;
- The security needs of the development have been considered through a Crime Impact Statement and the site will adopt crime prevention measures to assist in reducing the opportunity for, and fear of crime. The development will also be considered to achieve Secure by Design accreditation;
- The landscaping proposals have been designed to enhance social interaction between residents while allowing occupants to also enjoy their private garden space; and,
- Home User Guides will be provided to each house containing information on:
 - Energy and water efficiency information pack
 - Recycling facilities and refuse collection
 - Utility suppliers
 - Local transport services
 - Local organisations and community groups
 - Environmental technologies installed in the dwellings
 - Local amenities

4.6 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, measures to protect water courses, as well as to prevent impacts upon the local area in terms of dust and noise pollution during construction works.

4.7 Biodiversity

A Tree Survey has been undertaken by Arbtech Ltd in order to analysis the existing trees, hedges and major shrubs at the proposed development site. All trees of significance are to be retained and protected. Any trees that are not in optimal condition will be replaced like for like.

Arbtech Ltd also prepared a Preliminary Ecological appraisal ad Preliminary Roost Assessment of the site. This report concluded that no protected species was found on site however it is recommended that a number of bird and bat boxes are installed on onsite. Measures to enhance the sites suitability for hedgehogs were also recommended such as creating gaps in fences as well as incorporating hedgehog houses.

To further enhance the value of the site both ecologically and aesthetically, the planting provision will be designed to provide planting and shrubs of local progeny that support blossoms and fruit to attract insects (pollinators) and in turn birds and bats. Furthermore, the existing trees will assist in offsetting CO₂ with additional benefits in terms of shading and reduced local temperatures as a result of evapo-transpiration.

4.8 Transport

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

To enhance the sustainability credentials of the proposed development, transport planning consultancy services were sought from SCP Ltd. They concluded that 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 with access by tram and train found slightly further afield:
 - Bus – The nearest bus stops are located along Elizabeth Street, with one stop just 160m from the development site and further bus stop along Waterloo Road; all within approximately 250m from the site. These bus stops provide regular services to a variety of destinations across Greater Manchester including Moston and Piccadilly Gardens.
 - Rail – The nearest railway station is Victoria Station which is approximately 1.8km to the south of the development site. The station provides regular services to Rochdale, Southport, Manchester Airport, Liverpool other regional locations.
 - Metrolink – The Metrolink can also be accessed through Victoria Station and provides regular services into Rochdale Town Centre, East Didsbury, Manchester Airport and Bury.
 - Cycle - The area is accessible by bike with particularly strong links to employment opportunities in the city centre areas such as Salford and Manchester; and,
 - Pedestrians – The site is in a sustainable location with basic facilities that can be accessed from the development via foot or public transport.

- Fourteen cycle spaces will be provided in a secure, accessible location and a total provision of fifteen car parking spaces.

Local Amenity Access -

- Residents are able to walk to local amenities and shops along Waterloo Road; and,
- Local amenity space and recreational facilities are located close to the site, such as:
 - Recreational Space – Cheetham Park and Bingor Street Park are located just a five-minute walk south and north of the development. Larger areas of green space such as Albert Park and the wetlands surrounding the River Irwell are around a twenty-five minute walk from the proposed development; and,
 - Education – There are a range of education facilities surrounding the proposed development site including Tiny Tigers Nursery, St Chad's RC Primary School and Unity Community Primary School. All of these institutions are within 450m of the site and the various Universities homed within Manchester and Salford can be easily accessed via public transport links.
 - Cultural – The site is positioned only a short bus journey away from a multiplicity of cultural institutions such as the Science and Industry Museum, numerous theatre and art venues and Manchester's City Library.

4.9 Manchester City Councils Green and Blue Infrastructure Strategy

The redevelopment of this brownfield site will serve to enhance biodiversity within the development.

- The location of the site offers a constraint as to the impacts that can be made to Manchester's Blue infrastructure. However, planting and retention/replacement of the existing trees throughout the Herbert Street development will be designed as such to make a positive contribution towards Manchester's Green Infrastructure. This will provide a private, natural setting for residents to enjoy from the comfort of their garden space; and,
- Pollution Prevention Guidance will be adhered to by the main contractor in respects to air (dust) and water (ground and surface) pollution during the demolition and construction phase to prevent any degradation of existing waterways and blue Infrastructure.

5. ENERGY STRATEGY

Details of the proposed energy strategy for the Herbert Street development, which include an enhanced 'fabric led' approach to dwelling emission rate reduction combined with efficient mechanical and electrical servicing are reviewed below.

Priority is given to achieving the target carbon emission reductions required by Manchester City Council adopted planning policy 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 CO₂ Emissions by Enabling Low and Zero Carbon Development requires all development to follow the principle of the Energy Hierarchy, being designed:

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

CS Policy EN 6 - Target Framework For CO₂ Reductions From Low or Zero Carbon Energy Supplies 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 CO₂ emission reductions for the residential elements of this scheme are now deemed to be - 9% dwelling emission rate reduction over Part L1A 2013.

The Greater Manchester Spatial Framework 2019 (Draft) 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 comply with the following:

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

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, plus heat recovery systems will

achieve compliance with the emission reduction targets stipulated by Manchester City Council's Core Strategy.

The standard measurement of heat transfer through a given building material or construction type is the U-value ($\text{W/m}^2\text{K}$). 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 will be incorporated to limit heat loss and ensure efficient operation of the proposed buildings.

Table 5.1 – Proposed Building Specification

Item	Specification
Ground Floor	$U=0.11\text{W/m}^2\text{K}$
External Wall	$U=0.16\text{W/m}^2\text{K}$ (Masonry Construction)
Party wall	$U=0.0\text{W/m}^2\text{K}$ (full fill and seal)
Roof	$U=0.11\text{W/m}^2\text{K}$
Windows and Glazed Doors	$U=1.6\text{W/m}^2\text{K}$; $g=0.72$ (uPVC, double glazed, low E)
Solid Doors	$U=1.8\text{W/m}^2\text{K}$;
Air Permeability	$5.0\text{m}^3/\text{hm}^2$ (@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, 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 $5.0\text{m}^3/\text{hm}^2$ (@50Pa.) is targeted for all house types in order to minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort (in combination with the proposed mechanical ventilation strategy). Focus on the quality of the build is vital to deliver airtight buildings;

- **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 significantly beyond the requirements set by building regulation Part L1, (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	Mechanical Ventilation with Heat Recovery (<i>Sentinel Kinetic Advance S, SFP – 0.46</i>)
Lighting	100% 'Low E' or LED
Space Heating	Gas condensing combination boilers (<i>Ariston Clas HE 24</i>)
Water Heating	From combi
Heating Controls	Time and temperature zone control
Renewables	Photovoltaic panels (<i>installed at a 30° tilt on the roof of each house in a south east orientation</i>)

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 significantly beyond the requirements set by building regulation (Part L, 2013). The dwelling performance will also exceed the targets established within Manchester City council's Core Strategy while providing the following benefits:

- **Mechanical ventilation with heat recovery (MVHR)** systems will be specified in each dwelling to maintain a healthy living environment and further reduce the heat losses and the energy demand of the dwellings. The proposed MVHR system can recover over 90% of heat from the extracted stale air from the dwelling by using a counter flow heat exchanger which 'pre-heats' cool incoming, fresh air. The outgoing and incoming air pass next to each other, but do not mix. The design air permeability of 5.0m³/hm² (@50Pa.) for the dwellings will reduce uncontrolled ventilation and ensure that the majority of the expelled stale air will pass across the heat exchanger, thereby boosting the energy reduction potential of these systems. This ventilation system will also feature a summer bypass mode to limit the propensity of the houses to overheat in summer.
- **No mechanical cooling** is required for the dwellings. The dwellings are not considered to be at risk from overheating due to the orientation of the buildings and mechanical ventilation with heat recovery (featuring summer bypass) systems.

- **Low energy and LED lighting** will be specified throughout both the residential development in order to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs. This means that about c.90% of the electrical energy is converted to light, rather than wasted heat as in conventional bulbs.
- **Gas fuelled, condensing boilers** will ensure space and water heating is delivered efficiently;
- **Sophisticated controls** ensuring the efficient delivery of heat from the condensing boilers will further reduce the dwellings' energy demand;

5.4 Low and Zero Carbon Energy Provision

The enhanced fabric specification will be supplemented by renewable energy technology as part of the site wide energy strategy to optimise the on-site dwelling emission rate reductions, as sought by the Manchester City Council. To ensure the selection of the most appropriate solution, several renewable energy technologies have been considered for this site, including:

- Solar Hot Water (SHW);
- Photovoltaics (PV);
- Wind;
- Ground Source Heat Pumps (GSHP);
- Air Source Heat Pumps (ASHP); and,
- Biomass heating.

A review of the development proposals and site location concludes that only one of these options is feasible for this scheme, as detailed below:

✗ **Solar Hot Water** utilises the energy in sunlight and diffuse daylight to heat water for use in buildings. The main component of any solar water heating system is the collector, which absorbs the radiant energy of the sun and converts it to heat energy. This technology is not considered to be a feasible option for this site due to limited roof space. Furthermore, these solar thermal technologies only make a relatively limited contribution to reducing the building's energy demand and carbon dioxide emissions. Available roof space would be better utilised for PV panels which offer a better energy yield and emissions reduction per pound (£) of capital expenditure.

✓ **Photovoltaic (PV)** panels harness solar thermal energy and convert it into electricity which can then be used within a building. The panels may be roof mounted and orientated in a southerly, easterly, and westerly direction to enable this technology to operate efficiently. This technology is considered to be a feasible option for this site.

✗ **Ground Source Heat Pumps** collect low-grade heat from the ground to supply useful heat for space and water heating requirements. By applying additional energy input (in the form of electricity), it is possible to raise the temperature of the source heat to the temperature required. Such technology is considered unsuitable for this site due to insufficient area (based upon indicative layouts) to install a horizontal ground collector and the prohibitive costs of installing vertical boreholes.

✗ **Air Source Heat Pumps** collect low-grade heat from the air to supply useful heat for space and water heating requirements. They operate in the same way as a ground source heat pump, by applying additional energy input (in the form of electricity), it is possible to raise the temperature of the source

heat to the temperature required. Such technology is considered unsuitable for this site due to prohibitive costs per dwelling rendering this solution unviable.

✗ **Wind Turbines** are considered unsuitable for this site due to a poor wind resource. In order to operate efficiently a wind speed of at least 6m/s is typically required. The NOABL wind speed database records a wind speed of approximately 4.5m/s at 10m above ground level for this site (see Figure 5.2) for this site, postcode M8 0DG.

Figure 5.2 - Wind Speed Data for the Proposed Development Site

Wind speed at 10m above ground level (m/s)		
4.7	4.4	4.3
4.6	4.5	4.4
4.5	4.6	4.5

✗ **Biomass heating** would be capable of delivering the target CO₂ emission reductions but is considered inappropriate for this type of development in such a location due to the need for a large fuel storage facility and frequent, large fuel deliveries combined with regular maintenance.

5.5 Proposed Renewable Energy Solution

Photovoltaic Array

Photovoltaic (PV) arrays are therefore selected as an appropriate renewable energy technology to contribute to the CO₂ emission reduction target. PV arrays are relatively straightforward to install, benefit from low maintenance costs and will reduce the operational cost of the building. The use of PV in general would provide the following benefits:

- Reducing the building's electrical energy grid load;
- Simple installation and commissioning;
- Low maintenance; and,
- Reliable, proven technology.

Proposed System Details -

It is proposed that PV panels be mounted upon the pitched roofs of each house in tilted arrays and orientated due south east in order to optimise the operating efficiency of the system in addition to some south westerly facing arrays.

- The residential development will be allocated with an anticipated total installed capacity of 13.95kWp, apportioned between the fourteen properties. The PV arrays mounted upon each roof will be connected to the dwelling's electricity meter and arranged in a suitable orientation.
- An array of this capacity will require an overall area of approximately 112m² (plus an allowance for access and avoidance of over shading - as per installer approval). This PV array can be accommodated within the available roof areas of the fourteen dwellings.

Land use -

- There are no land use issues associated with PV technology at this site.

Local Planning Issues -

- There are no planning policy issues associated with this technology. PV is covered under permitted development for existing dwellings and encouraged at all tiers of planning policy.

Noise Issues -

- PV is silent in operation.

Whole life cost and lifecycle impact -

- Current installed costs for PV are approximately £1,500 / kWp installed.
- Additional costs throughout the system's 30-year lifecycle are limited to:
 - Cleaning of the arrays;
 - Potential vandal damage to the arrays; and,
 - Replacement of the DC / AC inverter unit which typically have a lifespan of around 10 years.
- With an assumed life expectancy of 30 years, 87% to 97% of the energy that PV systems generate will be 'clean' zero carbon energy.

PV arrays will be more fully reviewed in the following Energy Demand Calculation section to demonstrate how these may contribute to reducing the carbon dioxide emissions for this development.

The Smart Export Guarantee is a mechanism to pay people who generate small amounts of renewable energy for the electricity they export to the grid. It applies to people installing a renewable energy generating system using one of the following technologies:

- Solar PV panels,
- A domestic wind turbine,
- Hydro,
- Anaerobic digestion, and,
- Micro combined heat and power.

Following the closure of the Feed-in Tariff scheme to new applicants in March 2019, the government recognised the need to pay small-scale renewable energy generators for the electricity they export to the grid. Therefore, the Department for Business, Energy and Industrial Strategy (BEIS) is introducing the Smart Export Guarantee (SEG). The Smart Export Guarantee will come into force from 1 January 2020. Licensed suppliers with more than 150,000 domestic customers will need to provide at least one export tariff which must always be above zero. Exported power must be metered, with a meter capable of reporting exports on a half hourly basis. It must also be registered for settlement under the Balancing and Settlement Code. To benefit from the SEG, projects must be compliant with relevant consumer protection standards, and those using anaerobic digestion must meet relevant sustainability criteria and feedstock requirements.

5.6 Energy Performance Calculations

5.6.1 Emissions Reduction Targets

In order to demonstrate the environmental benefits associated with the energy strategy for this site, approved SAP 2012 software (Design SAP 4.12r02) has been used to generate the energy demand models for all dwellings at the Herbert Street development.

5.6.2 Regulated Energy Demand and Emission Calculations

SAP 2012 software calculates the regulated energy demand of the dwellings and associated carbon dioxide emissions, in accordance with the requirements of Building Regulation, Part L1A (2013) that this development will be constructed in compliance with. These calculations determine the regulated energy demand and dwelling emission rate reductions achieved by the enhanced material specification, efficient mechanical and electrical servicing, and renewable technology.

SAP software (Design SAP 2012 4.12r02) has been used to generate the energy demand models to provide a complete data set for all 14 residential units within the scheme. Details of the average emissions performance and thermal envelope energy efficiency are presented in Table 5.3 and 5.4. The SAP software output reports and data for each dwelling are provided in the appendix.

Table 5.3 – Average Regulated Dwelling Emission Rate

Average Dwelling DER (kgCO ₂ /m ² /yr.)	13.30
Average Dwelling TER (kgCO ₂ /m ² /yr.)	16.45
% DER Reduction over Part L 2013	19.1

The calculations demonstrate that the dwelling emission rate (DER; carbon dioxide emissions) reduction for this residential scheme is expected to be at least 19% better than Part L1A (2013) compliance requirements in accordance with MCC's requirements.

Table 5.4 – Average Fabric Energy Efficiency

Average Dwelling DFEE (kWh/m ² /yr.)	51.42
Average Dwelling TFEF (kWh/m ² /yr.)	54.59
% DFEE Reduction over Part L 2013	5.8

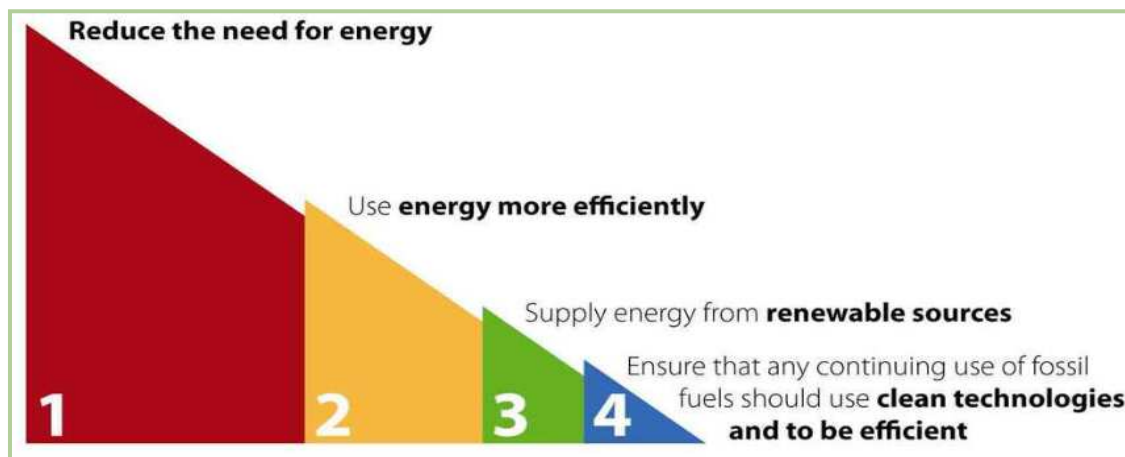
The Dwelling Fabric Energy Efficiency reduction for the scheme is at least 5.8% relative to the Part L compliance criterion with the provision of enhanced fabric plus heat recovery systems and renewables.

These indicative SAP calculations demonstrate that the dwelling emission rate (DER) reduction for the Herbert Street scheme provides a significant improvement over the Part L1A (2013) compliance standard as a consequence of the proposed enhanced fabric specifications, efficient mechanical and electrical systems and renewable technologies.

6. ENERGY HIERARCHY

The Energy Hierarchy provides a framework to guide energy policy and decision making to achieve practical and cost-effective carbon emission reductions. The hierarchy prioritises demand-side activities to reduce wastage and improve efficiency (see Figure 6.1).

Figure 6.1 – The Energy Hierarchy



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

First Principle

The buildings will be constructed with a material and design specification which far exceeds minimum Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand. The proposed 100% low energy lighting provision and sophisticated control systems for the space and water heating within the dwellings will ensure the energy consumed by the dwellings is used efficiently. Furthermore, the design air permeability target for the residential units is $5.0\text{m}^3/\text{hm}^2$ (@50Pa.). This low air permeability target will assist to limit the heat loss through the structure of the building.

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.

Third Principle

Mechanical Ventilation with Heat Recovery systems are specified within each house and a 13.95kWp photovoltaic array will be apportioned and integrated onto the roofs of the dwellings. This will reduce

the energy demand and thus 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 will be met by high efficiency, low Nitrogen Oxide (NOx) emission, gas-fuelled condensing combination boilers meeting the space and water heating loads within the houses. This will ensure that fossil fuels consumed by the dwellings 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.

7. CLIMATE CHANGE EMERGENCY

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

- An energy strategy that delivers the current Core Strategy carbon dioxide emission reduction and renewable energy generation targets:
 - In significantly exceeding compliance with the current, stringent building regulation Part L targets, a commitment is made to construct a high quality, energy efficient thermal envelope thereby minimising demand side energy loads – in accordance with the energy hierarchy.
- 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.
- The development will demonstrate further resilience to potential climate change effects through the management of surface water:
 - The drainage strategy will incorporate the use of Sustainable Drainage Systems (SuDS) where appropriate;
 - This system will be designed to withstand a 1 in a 100-year storm event plus an allowance for climate change; and,
 - The landscaped areas and trees will serve to increase the short-term water storage within the site and attenuate the rate and volume of surface water movements off-site, thereby relieving potential for flash flood risk and pollution within the water catchment.
- 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 buildings will benefit from recycling facilities to enable the local authority waste reduction targets, diverting more materials away from landfill and reducing the occupants' carbon footprint further.

- The site's location will enable a 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, rail 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;
 - The fit-out specification of the dwellings will seek to minimise water demand. Water efficiency measures (such as dual flush toilets, flow restrictors and reduced volume baths) will limit potable water demand to <105litres/person/day. This will reduce water heating energy loads and also cut the process energy required to supply clean drinking water; and,
 - Mechanical Ventilation with Heat Recovery systems will passively recover waste heat energy from the expelled stale air, reducing heating energy loads in the dwellings.

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.

8. CONCLUSION

The Statement has reviewed the environmental performance of the proposed development site at Herbert Street, 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 taking into consideration the emerging GMSF policies and MCC's declaration of a Climate Emergency. These are as follows:

- Minimising the impacts of climate change is a key element of the proposed design. The proposed energy strategy will incorporate an enhanced 'fabric led' material specification, along with high quality design and construction standards to improve the energy efficiency of the buildings. These proposals will deliver a scheme that is inherently efficient and cost-effective during occupation and that accords with the adopted Core Strategy Policy EN 4, EN6 and the Supplementary Planning Document (SPD) criteria;
- The development will be designed and specified in accordance with the principles of the energy hierarchy in line with the adopted Core Strategy Policy EN 4;
- The proposed scheme has been demonstrated to be aligned with the energy efficiency requirements and carbon dioxide emission reduction targets within the Core Strategy policies EN4, EN6 and emerging GMSF policy GM - S 2 Carbon and Energy:
 - A commitment is made to reduce the average Dwelling Emission Rate (DER) of the site by at least 19% over Part L1A (2013) through fabric measures, energy efficient mechanical and electrical systems and renewable technology;
 - The Dwelling Fabric Energy Efficiency (DFEE) reduction for the residential scheme is at least 5.8% better than the Part L1A (2013) compliance standard through enhanced fabric measures; and,
 - Heat recovery systems form part of the energy strategy in addition photovoltaic panels. The development will be allocated with a total installed capacity of 13.95kWp of PV, apportioned between the fourteen properties.

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 site drainage strategy will be designed to reduce the post development surface water runoff rates through SuDs and/or onsite attenuation.

- 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 buildings. 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. Mechanical Ventilation with Heat Recovery is specified to mitigate against road traffic noise by eliminating the need to open windows.
- The redevelopment will provide an opportunity to provide an enhancement to the aesthetic and ecological value of the site. The landscaping scheme will be designed to attract wildlife and will incorporate the recommendations of the Ecological Appraisal to include measures such as bird and bat boxes.
- The site is well located in terms of non-car modes of transport with basic facilities all within easy walking distance of the site. The residents will have access to cycle storage spaces (1 per house) to encourage more sustainable modes of transport in addition to fifteen car parking spaces.

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

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

- The proposal includes the redevelopment of a previously developed site and represents a very efficient use of land;
- Construction practices that minimise adverse impacts on the environment will be adhered to including a waste management strategy to reduce the quantity of waste generated, and to increase re-use and recycling, a commitment will be made to minimise waste and pollution; and,
- Exceeding the regulatory compliance criteria (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 at Herbert Street, Manchester will deliver an energy efficient scheme, providing a quality development that accords with the guidance provided within the Manchester City Council's adopted policies.

Appendix A – Block Compliance Report

BLOCK COMPLIANCE

Calculation Type: New Build (As Designed)

Block Reference	Herbert Street	Issued on Date	
Block Name			
Assessor Details		Assessor ID	H367-0001
Client			

Block Compliance Report - DER

Block Reference: Herbert Street		Block Name:		
Property-Assessment Reference	Multiplier	Floor Area (m²)	DER (kgCO₂/m²)	TER (kgCO₂/m²)
Herbert St - Plot 1-001	1	162	13.31	16.43
Herbert St - Plot 8-001	1	155.6	13.47	16.66
Herbert St - Plot 2-001	1	130.86	12.87	15.92
Herbert St - Plot 6-001	1	130.86	12.87	15.92
Herbert St - Plot 7-001	1	130.86	13.85	17.12
Herbert St - Plot 14-001	1	130.86	13.40	16.56
Herbert St - Plot 13-001	1	130.86	13.30	16.43
Herbert St - Plot 11-001	1	130.86	12.30	15.23
Herbert St - Plot 9-001	1	130.86	12.44	15.36
Herbert St - Plot 3-001	1	100.31	13.59	16.82
Herbert St - Plot 4-001	1	100.31	13.59	16.82
Herbert St - Plot 5-001	1	100.31	13.59	16.82
Herbert St - Plot 10-001	1	100.31	14.11	17.46
Herbert St - Plot 12-001	1	100.31	14.11	17.46
Totals:	14	1735.17	186.80	231.00
Average DER = 13.30 kgCO₂/m²			PASS	
Average TER = 16.45 kgCO₂/m²				

BLOCK COMPLIANCE

Calculation Type: New Build (As Designed)

Block Compliance Report - DFEE

Block Reference: Herbert Street		Block Name:		
Property-Assessment Reference	Multiplier	Floor Area (m²)	DFEE (kWh/m²/yr)	TFEE (kWh/m²/yr)
Herbert St - Plot 1-001	1	162	56.30	60.97
Herbert St - Plot 8-001	1	155.6	56.92	61.27
Herbert St - Plot 2-001	1	130.86	49.63	52.65
Herbert St - Plot 6-001	1	130.86	49.63	52.65
Herbert St - Plot 7-001	1	130.86	54.15	58.98
Herbert St - Plot 14-001	1	130.86	51.44	56.20
Herbert St - Plot 13-001	1	130.86	50.86	55.52
Herbert St - Plot 11-001	1	130.86	46.37	49.25
Herbert St - Plot 9-001	1	130.86	46.95	49.94
Herbert St - Plot 3-001	1	100.31	50.23	50.81
Herbert St - Plot 4-001	1	100.31	50.23	50.81
Herbert St - Plot 5-001	1	100.31	50.23	50.81
Herbert St - Plot 10-001	1	100.31	52.15	54.46
Herbert St - Plot 12-001	1	100.31	52.15	54.46
Totals:	14	1735.17	717.24	758.78
Average DFEE = 51.42 kWh/m²/yr			PASS	
Average TFEE = 54.59 kWh/m²/yr				