



ELEMENT
SUSTAINABILITY

ALBANY ROAD, CHORLTON

ENERGY STATEMENT

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ELEMENT SUSTAINABILITY

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1. INTRODUCTION

Element Sustainability has been commissioned by Bowsall Developments Ltd. to review the energy performance of the proposed residential development to the Land at Autometers Systems, 4B Albany Road, Chorlton, Manchester, M21 0AW.

The purpose of this Energy Strategy is to summarise the relevant planning policy background and requirements of Manchester City Council (hereafter referred to as the Council) and to demonstrate the ways in which these policy aims are to be met.

Having briefly described the development proposals, the relevant planning policies are reviewed along with the requirements of the regulatory framework appropriate for new build dwellings. This statement details those features of the design and specification which will be integrated within the dwellings in order to contribute to effective energy demand and carbon dioxide emissions reduction at this development.

A technical assessment of the development proposal is included using representative Standard Assessment Procedure (SAP 10; domestic energy demand model) calculations. These calculations will serve to demonstrate how the Council's emission reduction targets may be achieved.

This report is intended to support the planning application for this development and therefore, establishes an approach to the delivery of this scheme which meets the criteria outlined by the Council that the developer commits to implement at the site.



2. DEVELOPMENT PROPOSALS

2.1 Site Description

The application site is situated in Chorlton, and currently comprises a commercial building and car park associated with Autometers Systems. This brownfield site is situated within a suburban area north of Chorltonville and is surrounded by other commercial units and residential properties.

The plot is bound by the Quadrangle residential block to the north, a railway line to the east and Albany Road Trading Estate, which comprises two large commercial buildings split up into fifteen units and associated parking, to the south. Albany Road also runs parallel to the western perimeter of the site.

The proposed development site is not considered to be in a designated conservation area and there is minimal vegetation within the site boundary.

Figure 2.1 – Existing Site Plan



Figure 2.2 – Site Plan

2.2 Development Proposals

The proposed development comprises a four-storey residential block providing forty residential apartments, parking and landscaping.

Figure 2.3 – Proposed Front Elevations

Figure 2.4 – Proposed Side Elevation

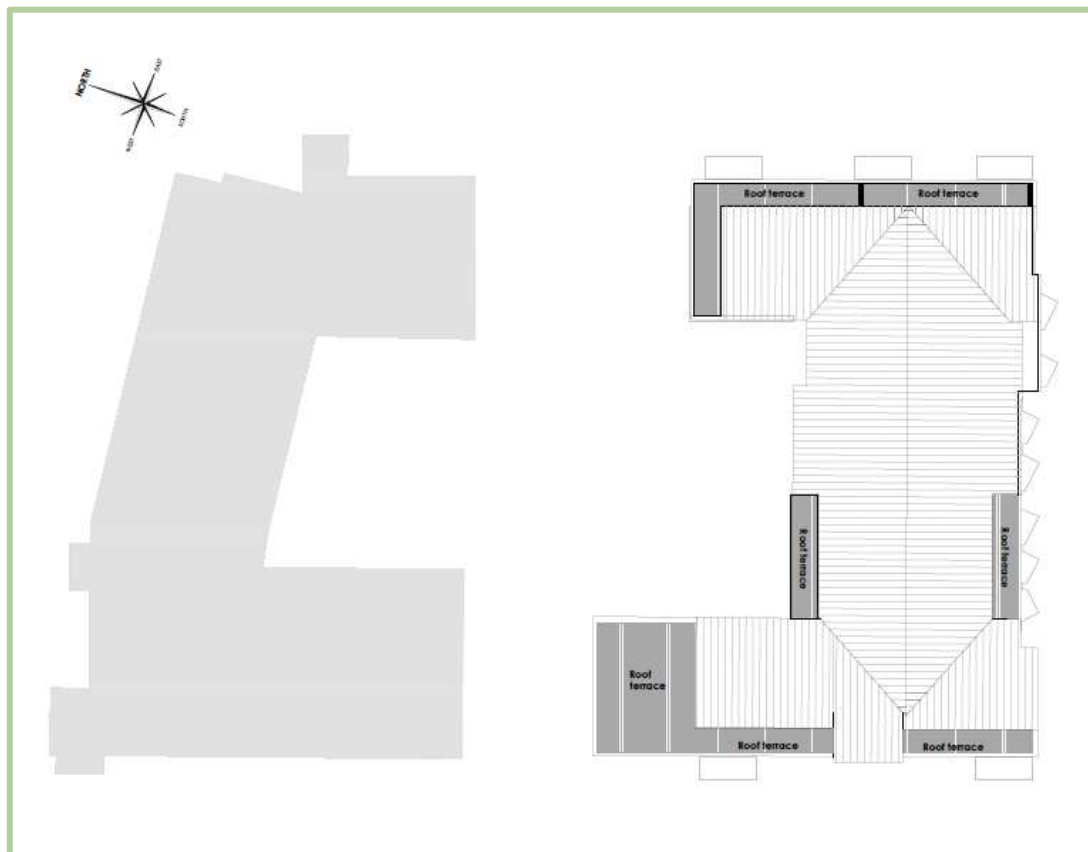


Figure 2.5 – Proposed First Floor Plan



Figure 2.6 – Proposed Second Floor Plan*Figure 2.7 - Proposed Third Floor Plan*

Figure 2.8 - Proposed Roof Plan



3. POLICY REVIEW

3.1 National Planning Policy

The National Planning Policy Framework (NPPF) 2021 states that the planning system should play an active role in guiding development to sustainable solutions. At the heart of the 2021 updated NPPF lies the ‘presumption’ in favour of sustainable development. 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 beautiful and safe places, 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 dimensions are considered to be mutually dependent with the NPPF, in its entirety, defining sustainable development. The NPPF states that ‘the purpose of the planning system is to contribute to the achievement of sustainable development’ (paragraph 7). It summarises the objective of sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their needs. It goes on to state that at a similarly high level, members of the United Nations – including the United Kingdom – have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being, and environmental protection.

3.2 Local Planning Policy

3.2.1 Manchester Core Strategy

Manchester’s Core Strategy was adopted on the 11th July 2012 and remains the key document in the adopted Manchester Local Plan. It sets out the long-term strategic policies for Manchester’s future development and will form the framework that planning applications will be assessed against.

CS Policy EN 4 - Reducing CO₂ Emissions by Enabling Low and Zero Carbon Development: The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in carbon dioxide (CO₂) emissions, and rising fossil fuel prices, through the following actions:

- All development must 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 using low or zero carbon energy generating technologies.
- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.
- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.
- The use of building materials with low embodied carbon in new development and refurbishment schemes.

CS Policy EN 6 - Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies requires applications for residential development of ten or more units and all other development over one thousand metres squared to meet, as a minimum, the targets shown in the tables below, unless unviable.

Table 3.1 – Policy EN6 Domestic CO₂ Emissions Reduction Targets

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 buildings¹	+15% increase on Part L 2010
Target Three: Micro generation area	+15% increase on Part L 2010

3.2.1 Guide to Development in Manchester, Supplementary Planning Document

Manchester's 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 several 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.

¹ The proposed development falls under the Target Two criteria. The scheme will be specified and constructed to comply with current Building Regulations Part L, Approved Document Volume 1 (2021). Therefore, the scheme will significantly improve upon the minimum requirements stipulated in Policy EN6 which is based upon the outdated Part L (2010) building regulation compliance standard.



3.2.2 Climate Emergency

On 10th July 2019, a motion asking Manchester City Council (MCC) to formally declare a climate emergency was unanimously agreed. The motion declares that climate change is a serious risk to Manchester's future, and Manchester is committed to embedding the issue as an integral part of council decision-making – ensuring that all key decisions are taken with the city's target of becoming zero-carbon by 2038 in mind. The council has agreed the following:

- To deliver the 2038 zero carbon 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; and
- 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.

In March 2020 the Executive adopted the Manchester Climate Change Framework 2020-2025. The five-year framework sets out measures that Manchester City Council will take in order to reduce carbon emissions from its buildings, energy use and transport. Measures include retrofitting buildings to improve energy efficiency, increasing the use of electric vehicles, and seeking one hundred percent renewable energy. Whilst this has also not been formally adopted into planning policy, it is a key consideration for future development proposals.

3.3 Emerging Policies

3.3.1 Places for Everyone

The Draft 'Places for Everyone' (PfE) Plan is a new long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. It has been prepared by the Greater Manchester Combined Authority on behalf of the nine districts.

The Draft Plan will determine the kind of development that takes place across the city-region, maximising the use of brownfield land and urban spaces while protecting green belt land from the risk



of unplanned development. It will also ensure all new developments are sustainably integrated into Greater Manchester's transport network or supported by new infrastructure.

On 1st March 2022, the Secretary of State appointed three planning inspectors to conduct an independent examination of the Places for Everyone Joint Development Plan document. Examination hearings concerning the plan commenced on Tuesday 1st November 2022 and are expected to run until Thursday 30th March 2023.

It is therefore considered that the plan is in an advanced stage of preparation.

3.4 Regulatory Framework

Building Regulations, Part L - Conservation of Fuel and Power sets the compliance standards for energy demand and carbon dioxide emissions from buildings. Guidance on how to meet the requirements of this regulation is provided within a number of approved documents. The relevant document is referenced below:

Approved Document Volume 1: Dwellings (2021 Edition) - standards came into effect in June 2022 and are subject to a twelve-month transitional arrangement period. Part L 2021 standards reduce dwelling carbon emissions by thirty one percent in relation to Building Regulations Part L1A (2013).

The minimum energy performance requirements shall be approved and expressed in accordance with the methodology for:

- a) New dwellings, in the form of target CO₂ emission rates;
- b) New dwellings, in the form of target fabric efficiency rates; and
- c) New dwellings in the form of target primary energy rates.

The dwelling primary energy rate, dwelling emission rate and dwelling fabric energy efficiency rate must not exceed the target primary energy rate, target emission rate and target fabric energy efficiency rate, respectively.

Building Regulations, Part O – Overheating sets the compliance standards for overheating in buildings. Guidance on how to meet the requirements of this regulation is provided within Approved Document O. The relevant document is referenced below:

Approved Document O addresses overheating in new dwellings. Part O (2021) requires all newly constructed dwellings to comply with the O1: Overheating Mitigation requirements. The aim of requirement O1 is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. O1 is met by designing and constructing the building to achieve both of the following:

- a) Limiting unwanted solar gains in summer; and
- b) Providing an adequate means of removing excess heat from the indoor environment.

Compliance with requirement O1 can be demonstrated by using one of the following methods:

- a) The simplified method for limiting solar gains and providing a means of removing excess heat, as set out in Section 1 of the Approved Document; and
- b) The dynamic thermal modelling method, as set out in Section 2 in the Approved Document.



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 the Albany Road scheme:

- **Manchester Core Strategy:**
 - **CS Policy EN 4** – Reducing CO₂ Emissions.
 - **CS Policy EN 5** - Strategic Areas for low and zero carbon decentralised energy infrastructure.
 - **CS Policy EN 6** – Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies;
- **Manchester Climate Change Emergency**
- **Building Regulations**
 - **Part L** - Approved Document Volume 1
 - **Part O** - Approved Document O.



4. ENERGY STRATEGY

The energy strategy for this development prioritises an enhanced 'fabric led' solution combined with 'full electric' servicing provision. An enhanced building fabric specification throughout the scheme allied to efficient servicing and controls, plus renewable energy technology will achieve compliance with the new build carbon dioxide emission reduction, primary energy and fabric energy efficiency targets stipulated by Building Regulation, Part L 2021 Approved Document Volume 1.

Details of the proposed energy strategy are presented below.

4.1 Build Fabric and Thermal Performance

The standard measurement of heat transfer through a given building material or construction type is the U-value ($\text{W/m}^2\text{K}$). The lower the U-value, the more slowly heat transfers and is lost out of a building. In buildings, heat loss generally occurs through the following main areas and elements of the construction:

- Ground Floor;
- External Walls;
- Roofs;
- Doors and windows;
- Thermal bridging; and
- Uncontrolled ventilation.

The proposed material specification that will be incorporated throughout the block to limit heat loss and ensure efficient operation of the dwellings is presented in Table 4.1.

Table 4.1 – Proposed Fabric Specification

Item	Specification
Ground Floor	$U=0.11 \text{ W/m}^2\text{K}$
External wall	$U=0.18 \text{ W/m}^2\text{K}$
Windows	$U=1.20 \text{ W/m}^2\text{K}$, $g=0.30$
Roof	$U=0.11 \text{ W/m}^2\text{K}$
Air Permeability	$3.00\text{m}^3/\text{hm}^2$ (@50Pa.)
Thermal Bridging	Bespoke Details & Psi values

This enhanced material specification and design will provide the following benefits:

- **High performance thermal insulation** will ensure low U-values for all heat loss elements and will minimise heat loss through the building's thermal envelope;
- **Thermally efficient, 'A' rated, double glazed windows** will be specified with argon gas fill and low emissivity coatings to limit heat loss through the pane. Thermal breaks will be incorporated within the frames of the vision panels to further limit heat loss. The glazing g value will be specified to optimise beneficial solar gains but limit the propensity for the dwellings to overheat.
- **Low air tightness** (design air permeability targeting $3.00\text{m}^3/\text{hm}^2$) will minimise uncontrolled ventilation. This will reduce heat losses and provide high levels of occupant comfort;



- **Efficient Form** – residential blocks, as proposed for this scheme, are an inherently efficient form of construction, both in terms of the materials required to build the dwellings and the ongoing heat energy demand. This is a result of relatively low areas of external heat loss elements associated with such layouts which enhance the energy efficiency of the dwellings and guarantees low energy demand throughout their occupation; and,
- **Improved cold bridging junctions** will significantly improve the emission rate of the dwellings through the provision of insulation, limiting heat losses that occur at the junctions between building elements and around openings. 'Bespoke' psi values have been used to achieve a low y-value, thus minimising heat loss through cold bridge junctions.

This enhanced fabric specification will deliver a Building Regulation, **Part L 2021 Volume 1 compliant scheme**. It ensures an inherently energy efficient development, focussing upon limiting demand side reductions in accordance with the energy hierarchy.

4.2 Building Services

The proposed mechanical and electrical specification that will be incorporated to ensure efficient servicing of these dwellings is presented in Table 4.2.

Table 4.2 – Proposed Mechanical and Electrical Specification

Item	Specification
Ventilation	Kitchen Energy Recovery System (KERS Heat Pump) Mechanical Ventilation Heat Recovery W230
Lighting	100% 'Low E' / LED
Space Heating	Electric Panel Heaters
Water Heating	Kitchen Energy Recovery System (KERS) Mechanical Ventilation Heat Recovery W230
Heating Controls	Programmer and appliance thermostat

The mechanical and electrical specification will provide the following benefits:

- **Low energy and LED lighting** will be specified throughout the site in order to maximise operational efficiencies and the 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.
- **Kitchen Energy Recovery System (KERS) MVHR** systems will be specified in each apartment unit to maintain a healthy living environment. This will further reduce the heat losses and the energy demand of the apartments.

KERS MEV is a combined heat recovery, hot water heat pump and MEV system coupled with a high efficiency storage cylinder. The system actively converts excess waste heat energy from kitchens and bathrooms to low cost, renewable hot water.



- The low design air permeability of $3.00\text{m}^3/\text{hm}^2$ (@50Pa.) for the apartments will virtually eliminate uncontrolled ventilation and ensure that the majority of the expelled stale air will pass across the heat exchanger, thereby boosting the energy reduction potential of these systems.
- **Electrical panel heating** is 100% efficient at the point of consumption. It generates a reduced overheating potential – electric space heating delivers virtually instantaneous heating at the location it is required, unlike a ‘wet system’ associated with communal gas boilers, which inherently have a long lag time for the heat to be generated and then dissipated when no longer needed. This lag time can lead to the dwellings overheating as the hot water remains in the radiators for a considerable time after the heat demand is required; and,
- **Sophisticated heating controls** including appliance programmer and room thermostats will ensure the efficient delivery of heat from electric panel heaters to further reduce the dwellings’ energy demand.



5. ENERGY PERFORMANCE CALCULATIONS

In order to demonstrate the environmental benefits associated with the energy strategy for the proposed apartments, approved SAP 10 software has been used by an accredited On-Construction Domestic Energy Assessor (OCDEA) to generate representative energy demand models for the development. SAP software calculates the regulated energy demand and associated carbon dioxide emissions in accordance with the requirements of Building Regulations, Part L Approved Document Volume 1 (2021) that this development will be constructed in compliance with.

All apartment types have been assessed to accurately reflect the proposed scheme and the results have been reported to demonstrate building compliance as an overall block. Details of the assessed units are below:

Table 5.1 – Representative units modelled

Unit Type	Floor
1 Bed ET	Ground, mid and top
1 Bed MT	
2 Bed ET	
2 Bed MT	

5.1 Regulated Energy Performance Calculations

Table 5.2 below presents a summary of the results, which show the dwelling emission rate and energy demand performance associated with the proposed energy strategy for the block.

Table 5.2 – Calculated Regulated Dwelling Emission Rates

	Albany Road – Block Compliance
Dwelling DER (kgCO ₂ /m ² /yr.)	5.09
Dwelling TER (kgCO ₂ /m ² /yr.)	11.91
% DER Reduction over AD: Volume 1 (2021)	57.22%
Dwelling DPER (kWh/m ² /yr.)	53.06
Dwelling TPER (kWh/m ² /yr.)	63.44
% DPER Reduction over AD: Volume 1 (2021)	16.37%
Dwelling DFEE (kWh/m ² /yr.)	23.63
Dwelling TFEE (kWh/m ² /yr.)	23.82
% DFEE Reduction over AD: Volume 1 (2021)	0.79%



The proposed development has the potential to **secure a minimum carbon dioxide reduction rate of 57.22%**, thereby significantly improving upon current Part L Volume 1 (2021) requirements and Manchester City Council's Core Strategy Policy EN6 emission reduction targets.

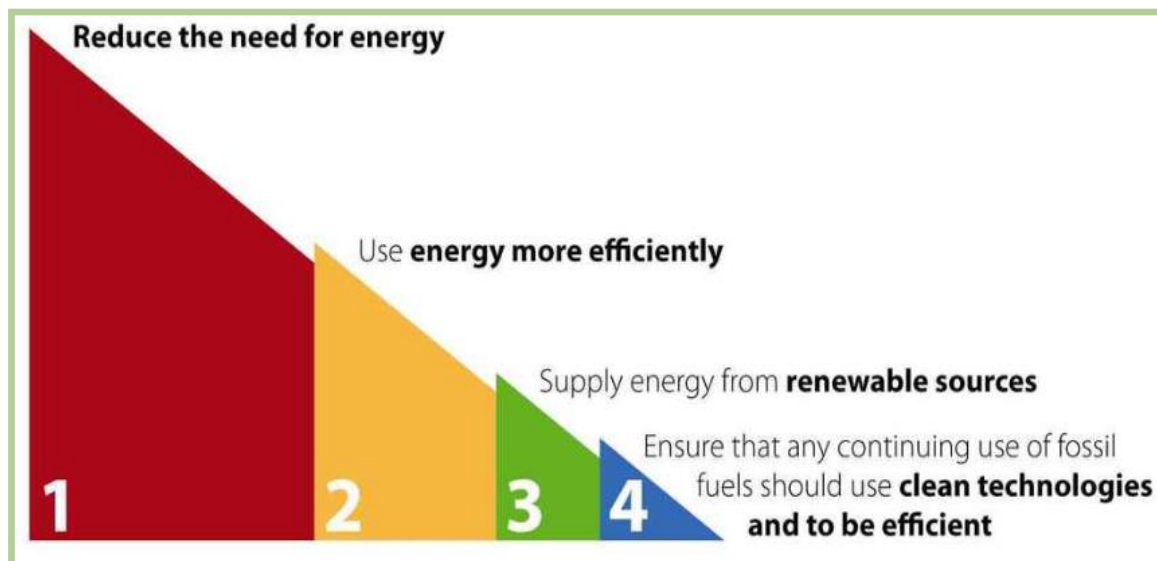
The development will incorporate an enhanced material specification along with high quality design and construction standards, in order to improve the energy efficiency of the block through a 'fabric led' energy strategy, allied to efficient mechanical and electrical systems.

This proposed material specification, coupled with the proposed mechanical and electrical specification, improves upon the minimum compliance stipulated under Approved Document Volume 1: Dwellings (2021) fabric and primary energy targets by a minimum of 0.79% and 16.37% respectively.

5.2 Energy Hierarchy

The Energy Hierarchy has been used as a framework to guide this energy strategy to achieve practical and cost-effective carbon emission reductions. It is intended that the construction, design and specification proposed for this scheme will deliver dwellings that are inherently efficient and cost-effective during occupation. The hierarchy prioritises such demand-side activities to reduce wastage and improve efficiency (see Figure 5.3).

Figure 5.3 – The Energy Hierarchy



First Principle

The development will benefit from a material and design specification that is aligned with Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand, including:

- ✓ High performance u - values;
- ✓ Reduced thermal bridge heat losses;
- ✓ Efficient form of construction, limiting heat loss areas; and,



- ✓ Low design air permeability target.

The g value of the glazing ($g=0.30$) has been selected to ensure occupant comfort, allowing useful solar gains to enter the properties whilst mitigating overheating risk. This, allied with high specification thermal insulation, cold bridge details and low air permeability, limits the heat transfer through the build fabric, and has consequently omitted the requirement for active cooling within the dwellings, further lowering the energy demand of the scheme.

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

Second Principle

100% low energy and LED lighting provision and sophisticated control systems for the space and water heating will boost the operational efficiency of the dwellings.

Additionally, the heat recovery ventilation systems within the KERS ensures that energy consumed for space heating is managed efficiently, with 'waste' heat captured and recycled back into the dwelling hot water system where upon it is stored within a high efficiency storage cylinder. These design features are in accordance with the second principle of the Energy Hierarchy.

Third Principle

The KERS MEV indoor heat pump is a combined hot water, heat recovery and MEV system with storage cylinder. It converts waste heat energy from bathrooms and kitchens to low cost renewable hot water.

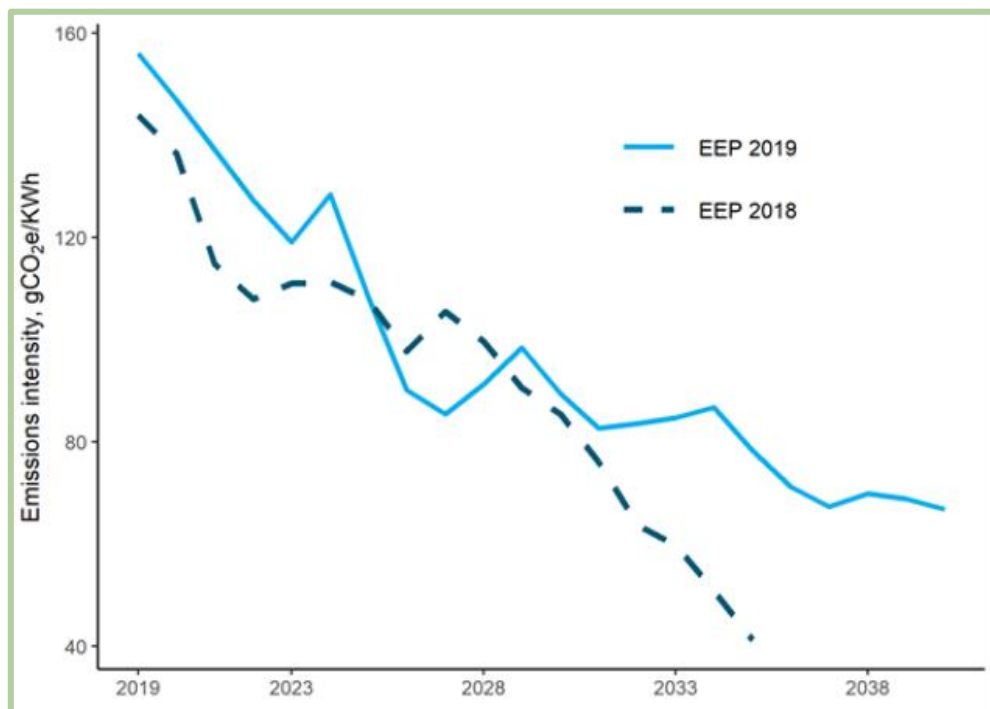
Fourth Principle

The remaining space heating demand of the dwellings will be met by direct acting, 100% efficient electrical systems.

The use of electric panel heaters will ensure that fossil fuels converted and distributed through the National Grid as electrical energy for heating purposes will be consumed cleanly and efficiently.

Furthermore, as the UK electricity grids' CO₂ footprint continues to improve, so too would the carbon dioxide emissions associated with the operational phase of the proposed scheme which benefits from a 'full electric' energy strategy.



Figure 5.4 - Energy and Emissions Projections 2020 (BEIS)

6. OVERHEATING ANALYSIS

Building Regulations, Part O

Overheating sets the compliance standards for overheating in buildings. Guidance on how to meet the requirements of this regulation is provided within Approved Document O. The relevant document is referenced below:

Approved Document O addresses overheating in new dwellings. Part O (2021) requires all newly constructed dwellings to comply with the O1: Overheating Mitigation requirements below:

- I. Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel (“residences”) to:
 - i. limit unwanted solar gains in summer;
 - ii. provide an adequate means to remove heat from the indoor environment
- II. In meeting the obligations in paragraph (1):
 - i. account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and
 - ii. mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.

The aim of requirement O1 is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. O1 is met by designing and constructing the building to achieve both of the following:

- c) Limiting unwanted solar gains in summer; and
- d) Providing an adequate means of removing excess heat from the indoor environment.

Compliance with requirement O1 can be demonstrated by using one of the following methods:

- c) The *Simplified Method* for limiting solar gains and providing a means of removing excess heat, as set out in Section 1 of the Approved Document; and
- d) The dynamic thermal modelling method, as set out in Section 2 in the Approved Document.



In order to demonstrate compliance with the requirements of *CIBSE Technical Memorandum 59: Design methodology for the assessment of overheating in homes: 2017 (TM59)*, an overheating assessment was undertaken by an experienced, accredited Non-Domestic Energy Assessor. Compliance with this guidance is widely recognised as the benchmark for assessing if overheating is likely to occur within buildings.

TM59 methodology requires that the following criteria are met, in this case with specificity to homes that are predominantly ***mechanically*** ventilated:

- For homes with restricted window openings, the CIBSE fixed temperature test must be followed, i.e. all occupied rooms should not exceed an operative temperature of 26°C for more than 3% of the annual occupied hours (CIBSE Guide A (2015)).

Section 4.1 of CIBSE TM59 defines homes that are predominantly mechanically ventilated as those which have either no opportunity or extremely limited opportunities for opening windows (e.g. due to noise levels or air quality). Any room with a window opening less than 1/20th of the room floor area is considered severely restricted.

This assessment will determine the thermal comfort performance of occupied areas against the performance requirements of CIBSE TM59 for predominantly mechanically ventilated homes.

6.1 Sample Units Assessed

A representative sample of units has been selected for analysis based on the selection of a range of unit types and locations, and their perceived risk of overheating.

These are based on the following criteria:

- The amount of glazing present;
- The location of the unit within the development (top floor is generally more vulnerable);
- The presence of shading;
- The exposure to solar gain;
- Whether the units are single or dual aspect; and,
- The provision of ventilation openings.

The selection of sample units assessed provides a robust analysis of the overheating potential from a range of different apartments, demonstrating that the potential for overheating has been addressed across the scheme.

6.2 Weather Data

As required by Section 3.2 of the CIBSE TM59 methodology, developments should refer to the latest CIBSE design summer year (DSY) weather files and be required to pass using the DSY1 file most appropriate to the site location. It is required that the weather file that is selected relate to the 2020 high emissions, 50% percentile scenario.

The site is located in Chorlton, and therefore the weather file used in this study is the CIBSE DSY1 2020's, high emissions 50th percentile for Manchester.



6.3 Results

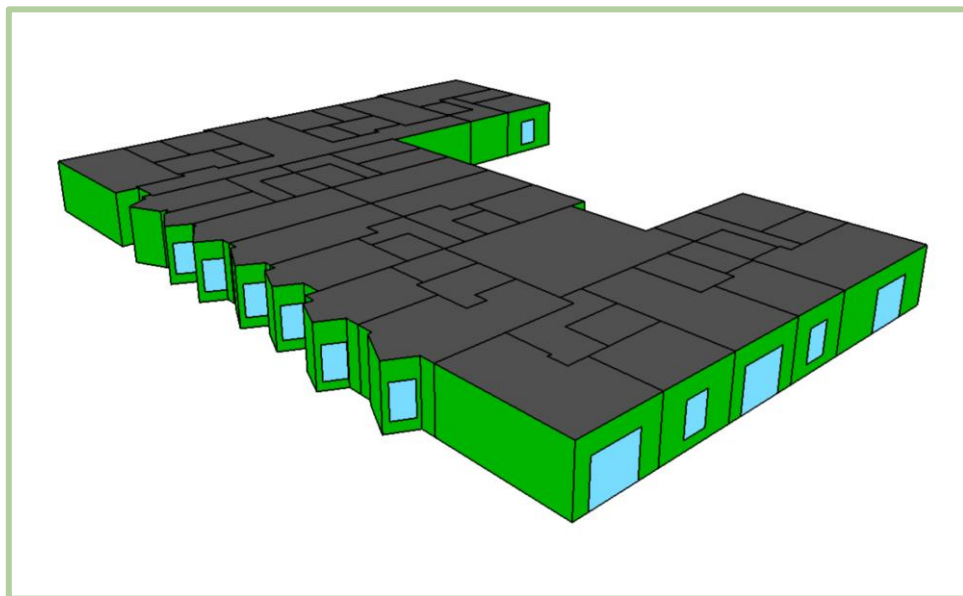
The analysis demonstrates that all dwellings in the representative sample are TM59 compliant, meeting the requirements stipulated by Building Regulations, Part O – Overheating, based upon the following criteria:

- A g-value of 0.30;
- The mechanical ventilation providing 1.5 ACH;
- Openable windows to be restricted to 100mm and ADO opening schedules; and,
- CIBSE Technical Memorandum 59 'Design methodology for homes that are predominantly mechanically ventilated.

The results of the TM59 can be viewed in Appendix A of this report.

Figure 6.1 below presents the three-dimensional building model generated for the development based on the architectural drawings and data received from the design team. As with any modelling exercise, some approximations have had to be made, but care has been taken to ensure the scale and internal dimensions of the model are as close as practicable to the design drawings.

Figure 6.1 – External View, Thermal Analysis Model 3D Rendering



7. CLIMATE CHANGE EMERGENCY

A Climate Emergency was declared by Manchester City Council in July 2019, with a target to make Manchester zero-carbon 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 CO₂ emission reductions and renewable energy generation in line with the Energy Hierarchy and Manchester City Council Core Strategy Policy EN6:

- In securing compliance with the current, stringent building regulation Part L targets, a commitment is made to construct high quality, energy efficient residential properties which will minimise demand side energy loads
- A commitment is made to achieving at least a 57% improvement in the emission rate reduction relative to the onerous Part L Approved Document Volume 1 (2021) compliance standards.

The proposed development will demonstrate resilience to potential climate change effects through cycle storage facilities and access to local sustainable modes of transport:

- This is facilitated by:
 - Secure cycle storage provision;
 - Local access to transport nodes for bus and rail; and,
 - Local amenities that are within easy walking distance of the site, enabling residents to support local businesses with a reduced need to travel.

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

- Low energy lighting; and,
- Sophisticated time and temperature controls.

These commitments will assist Manchester City Council in meeting their Climate Change Emergency objectives.



8. CONCLUSION

This Energy Strategy has reviewed the energy performance of the proposed Albany Road scheme against national and local planning policies. The conclusions that can be drawn from the review are as per the following:

The focus is on reducing the demand for energy, by limiting heat losses through the building fabric. This is achieved via an **enhanced material specification** beyond the regulatory compliance requirement.

The **enhanced building fabric specification**, allied to an **efficient mechanical and electrical servicing strategy plus renewable energy technology** will achieve compliance with the emission reduction targets stipulated by Building Regulation, Part L 2021 Volume 1.

Kitchen Energy Recovery System (KERS) MVHR systems will be specified in each apartment unit to maintain a healthy living environment. This will further reduce the heat losses and the energy demand of the apartments.

The proposed development has the potential to secure a **minimum carbon dioxide reduction rate of 57%**, thereby exceeding the CO₂ emissions reduction targets stipulated in the Manchester City Council Core Strategy Policy EN6 and the current Building Regulations, Part L Approved Document Volume 1.

The development will benefit from an **all-electric energy strategy** that is 100% efficient at the point of consumption. Therefore, as the UK's electricity grid decarbonises, the building's operational emissions will also reduce over time.

A dynamic thermal model, in accordance with *CIBSE TM59 methodology*, was undertaken in order to demonstrate compliance with requirement O1 of **Approved Document O – Overheating**. The assessment demonstrated that the representative sample, selected based on a range of unit types and locations, is TM59 compliant, meeting the requirements stipulated by Building Regulations, Part O – Overheating. Additionally, compliance with this regulation has been met without the need for active cooling, further lowering the energy demand of the scheme.

The proposals reviewed within this statement for the Albany Road residential scheme will consequently deliver a highly energy efficient and sustainable scheme, providing a quality development that accords with the guidance provided within the aforementioned adopted planning policies.



Appendix A – TM59 Results

Criteria for predominantly mechanically ventilated homes

Block	Zone	% Hours Exceeded	Pass/Fail
2F	U01XBed1	1.17	Pass
2F	U01XBed2	1.31	Pass
2F	U01XLDK	2.3	Pass
2F	U02XBed	1.54	Pass
2F	U02XLDK	2.26	Pass
2F	U03XBed	1.6	Pass
2F	U03XLDK	2.65	Pass
2F	U04XBed	1.42	Pass
2F	U04XLDK	2.37	Pass
2F	U05XBed	1.47	Pass
2F	U05XLDK	2.36	Pass
2F	U06XBed1	1.11	Pass
2F	U06XBed2	1.35	Pass
2F	U06XLDK	2.36	Pass
2F	U07XBed1	1.49	Pass
2F	U07XBed2	1.89	Pass
2F	U07XLDK	2.98	Pass
2F	U08XBed1	1.51	Pass
2F	U08XBed2	1.89	Pass
2F	U08XLDK	2.85	Pass
2F	U09XBed1	1.31	Pass
2F	U09XBed2	1.37	Pass
2F	U09XLDK	2.41	Pass
2F	U10XBed1	1.07	Pass
2F	U10XBed2	1.18	Pass
2F	U10XLDK	2.07	Pass
2F	U11XBed	1.12	Pass
2F	U11XLDK	2.05	Pass

