CWC

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M1 Developments Ltd

Store Street | 73No. Apartments



Planning Report | Energy Statement

Date: 24.11.25
Ref: 3588-CWC-XX-XX-RP-N-0005 Store St Planning Report - Energy Statement C01

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Revision Record

Date	Reference	Revision	Prepared By	Checked By	Authorised By
24.11.25	3588-CWC-XX-XX-RP-N-0005 Store St Planning Report - Energy Statement C01	C1	Connor Culleton	Gareth Rowlands	Gareth Rowlands
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Glossary of Key Terms

Abbreviation	Details	Abbreviation	Details
CIBSE	Chartered Institute of Building Services Engineers	Continuous operation	Uninterrupted running of a mechanical ventilation device, such as continuous mechanical extract ventilation or mechanical ventilation with heat recovery. The air flow rate provided by mechanical ventilation need not be constant but may be varied, under either manual or automatic control, in response to the demand for the removal of pollutants or water vapour
HVAC	Heating Ventilation and Air Conditioning	Ventilation	The supply and removal of air (by natural and/or mechanical means) to and from a space or spaces in a building. It normally comprises a combination of purpose-provided ventilation and infiltration
Whole dwelling ventilation (general ventilation)	Nominally continuous ventilation of rooms or spaces at a relatively low rate to dilute and remove pollutants and water vapour not removed by extract ventilation, purge ventilation or infiltration, as well as to supply outdoor air into the dwelling.	Dwelling	A self-contained unit designed to accommodate a single household
DPER	Dwelling Primary Energy Rate	TPER	Target Primary Energy Rate
DFEE	Dwelling Fabric Energy Efficiency	TFEE	Target Fabric Energy Efficiency
DER	Dwelling Emission Rate	TER	Target Emission Rate
Background ventilator	A small ventilation opening designed to provide controllable whole dwelling ventilation	Extract ventilation	The removal of air directly from an internal space or spaces to the outside. Extract ventilation may be by natural means or by mechanical means (e.g. by an extract fan or a central system).
C/MEV	Continuous Mechanical Extract Ventilation Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.	Purge Ventilation	Manually controlled ventilation of rooms or spaces at a relatively high rate to rapidly dilute pollutants and/or disperse water vapour. Purge ventilation may be provided by natural means (e.g. an openable window) or mechanical means (e.g. a fan).
MVHR	Mechanical ventilation with heat recovery A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside.	Natural Ventilation	Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation

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1.0 Introduction

Crookes Walker Consulting has been appointed by M1 Developments Ltd to provide Building Services Consultancy advice and planning support with respect to the proposed new residential development referenced as Store Street, Manchester, M1 2WD

This report has been prepared to outline the proposed Building Services Energy strategy and support the project planning application. The report aims to summarise the following key elements pertaining ventilation systems:

a) Outline the national, regional and local planning policies applicable for the proposed development
b) Summarise the approach to energy efficiency and low carbon buildings
c) Assessment of appropriate Low/Zero Carbon Technologies for the development
d) Proposed Ventilation strategies for each area of the building
e) Proposed Overheating Risk Mitigation strategies

The strategies outlined in this report will need to be developed as and when the scheme moves into the developed and detail design stages. To ensure optimum solutions are provided, the final designed solutions may differ from the outline proposals contained herein. However, the design criteria and basis for design will be maintained.

This Energy Statement has been prepared to illustrate the proposed building services designs. It addresses the building regulation requirements described within Approved Document Part L, 2021 in terms of the approach to energy efficiency and low carbon development for the various facets of the proposed development.

The statement also highlights the need to provide complete, energy efficient, fully working and building services systems that can: -

- Meet the legislative requirements in terms of Building Regulations and Planning etc Deliver sufficient outdoor fresh air to occupants.
- Simple to use operate and maintain
- Provide suitable comfortable habitable dwellings in terms of temperature and ventilation in accordance with the Building Regulations.

2.0 Project Background

An overview of the project is summarised below. Full details of the development can be found within the main suite of documents issued as part of the planning submission.

2.1 The project

The proposed project development comprises the following buildings:

- Tower Block – 16-storey residential development with associated ancillary accommodation and amenity spaces. (Fifteen floors above ground comprising 73No. dwellings.

The development also includes a small amount of external landscaping and facilities including bin store and external cycle store facility. There are no internal or external car parking facilities nor basement areas proposed on the site.

2.2 The Site

The site itself is a brownfield site situated off Store Street with apartment blocks and commercial premises in the vicinity plus the Ashton Canal running nearby.

The site itself is located in mixed use setting with adjacent to industrial warehouse units to the southwest. To the east-southeast lies domestic residential dwellings and townhouses along with Ashton Canal. Directly opposite the site to the north there are further residential dwellings apartments.



Figure 1: Site Location Plan (Source Google Maps)

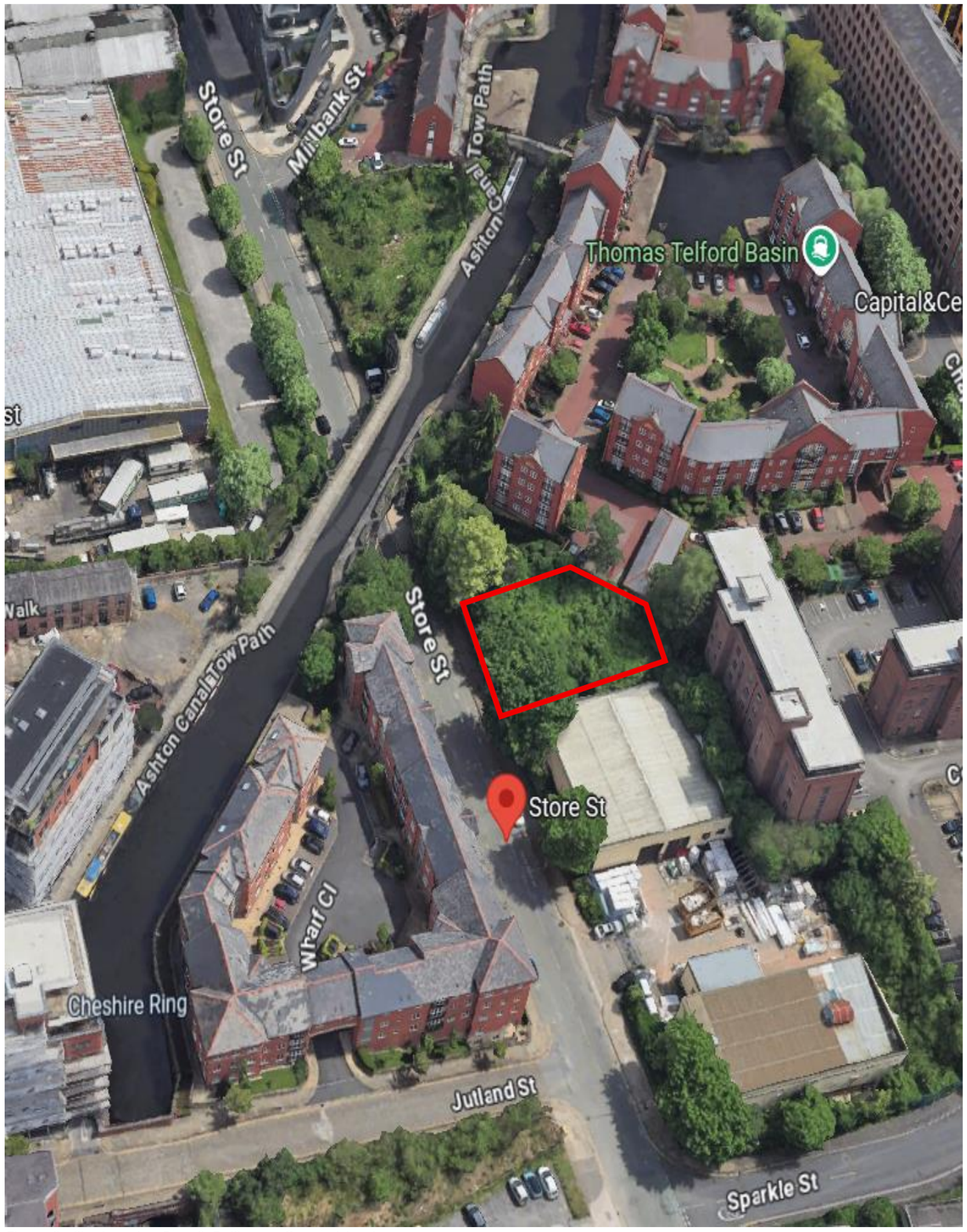


Figure 2:: Site Location Plan 3-D (Source Google Maps)

3.0 Planning Policy Review

Strategic national, regional and local key policies to meet the climate change emergency are summarised below. These policies set the context and drivers for pursuing net zero operational carbon buildings.

3.1 UK Building Net Zero Carbon Definition

The net zero carbon buildings framework, used by the UK Green Building Council, sets out definitions and principles around two approaches to net zero carbon, which are of equal importance:

Net zero carbon – construction

"When the amount of carbon emissions associated with a building's product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy."

Net zero carbon – operational energy

"When the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset."

These definitions will form the basis of the report although embodied carbon does not form of the report scope of works.

3.2 National UK Strategic Policy – the Climate Change Act 2008

The Climate Change Act 2008 is the legal basis, passed by parliament, for the UK's approach to tackling and responding to climate change. It requires that emissions of carbon dioxide and other greenhouse gases are reduced and that climate change risks are adapted to. The Act also establishes the framework to deliver on these requirements. The Act supports the UK's commitment to urgent international action to tackle climate change. The legislative details from the Act are provided below:

(1) It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least [100%] lower than the 1990 baseline.

(2) "The 1990 baseline" means the aggregate amount of—

(a) net UK emissions of carbon dioxide for that year, and

(b) net UK emissions of each of the other targeted greenhouse gases for the year that is the base year for that gas.

How the Climate Change Act works

Through the Climate Change Act, the UK government has set a target to significantly reduce UK greenhouse gas emissions by 2050 and a path to get there. The Act also established the Committee on Climate Change (CCC) to ensure that emissions targets are evidence-based and independently assessed. In addition, the Act requires the Government to assess the risks and opportunities from climate change for the UK, and to adapt to them. The CCC's Adaptation Committee advises on these climate change risks and assesses progress towards tackling them.

The 2050 target

The Climate Change Act commits the UK government by law to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. This includes reducing emissions from the devolved administrations (Scotland, Wales and Northern Ireland), which currently account for about 20% of the UK's emissions. The 100% target was based on advice from the CCC's 2019 report, 'Net Zero – The UK's contribution to stopping global warming'.

The path to 2050: 'Carbon budgets'

The Climate Change Act requires the government to set legally-binding 'carbon budgets' to act as steppingstones towards the 2050 target. A carbon budget is a cap on the amount of greenhouse gases emitted in the UK over a five-year period. Budgets must be set at least 12 years in advance to allow policymakers, businesses, and individuals enough time to prepare. The CCC advises on the appropriate level of each carbon budget. The budgets are designed to reflect a cost-effective way of achieving the UK's long-term climate change objectives. Once a carbon budget has been set, the Climate Change Act places an obligation on the Government to prepare policies to ensure the budget is met.

3.3 Manchester City Council Policy

Planning policy in the local is set out in MCC Local Development Plan (LDP) adopted 11th of July 2012. It represents the statutory Local Development Plan for Greater Manchester and covers a period of 15 years from 2012 to 2027 and describes Manchester today as well as outlining the Council's vision for Manchester in 2027 along with the planning policies which will be used to deliver that vision. Manchester's Local Development Framework is a collection of planning documents and also includes:-

- The Local Development Scheme, the programme for document production.
- The Statement of Community Involvement which sets out how consultation will be undertaken and in what format
- Development Plan Documents (to be developed following adoption of the Core Strategy), for example on Houses in Multiple Occupation
- Supplementary Planning Documents (SPDs) which give more detail to policies in the Core Strategy or in any other future Development Plan Documents

Reviewing the LDP indicates the following key relevant strategic and detailed policies. The following key areas have been identified from an initial review of the LDP:

- Policy EN 2 Tall Buildings
- Policy EN 4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
- Policy EN 5 Strategic Areas for low and zero carbon decentralised energy infrastructure
- Policy EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies
- Policy EN 7 Energy Infrastructure opportunities
- Policy EN 8 Adaptation to Climate Change

Policy EN 2 Tall Buildings

Tall buildings are defined as buildings which are substantially taller than their neighbourhoods and/or which significantly change the skyline. Proposals for tall buildings will be supported where it can be demonstrated that they

- *Are of excellent design quality,*
- *Are appropriately located,*
- *Contribute positively to sustainability,*
- *Contribute positively to place making, for example as a landmark, by terminating a view, or by signposting a facility of significance, and*
- *Will bring significant regeneration benefits.*

A fundamental design objective will be to ensure that tall buildings complement the City's key existing building assets and make a positive contribution to the evolution of a unique, attractive and distinctive Manchester, including to its skyline and approach views.

Suitable locations will include sites within and immediately adjacent to the City Centre with particular encouragement given to non-conservation areas and sites which can easily be served by public transport nodes.

Elsewhere within Manchester tall building development will only be supported where, in addition to the requirements listed above, it can be shown to play a positive role in a coordinated place-making approach to a wider area. Suitable locations are likely to relate to existing district centres. The height of tall buildings in such locations should relate more to the local, rather than the City Centre, urban context.

By their very size tall buildings can have a significant impact on the local environment and its micro-climate.

It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment. It will be necessary for the applicant/developer to demonstrate that proposals for tall buildings are viable and deliverable.

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 CO2 emissions, and rising fossil fuel prices, through the following actions: All development must follow the principle of the Energy Hierarchy, being designed: o reduce the need for energy through design features that provide passive heating, natural lighting and cooling to reduce the need for energy through energy efficient features such as improved insulation and glazing to meet residual energy requirements through the use of low or zero carbon energy generating technologies

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

Policy EN 5 Strategic Areas for low and zero carbon decentralised energy infrastructure

Within Manchester it is considered that the following strategic areas, indicated on the key diagram, will have a major role to play in achieving an increase in the level of decentralised, low and zero carbon energy supplies available: The Regional Centre, which also includes the Oxford Road Corridor and Eastlands District Centres and associated major development sites Airport Strategic Site Strategic housing location Strategic employment locations Within these areas new development, regeneration and retrofit projects, will be expected to take place in the context of more detailed proposals for decentralised low and zero carbon energy infrastructure in the form of energy proposals plans. The Council will work with all relevant stakeholders, which may include developers, landowners, residents, community groups, private sector partners, utilities companies, neighbouring authorities and other public sector bodies, as appropriate, to bring forward such plans. Where investment or development is being undertaken into or adjacent to a public building/asset or district heating network, full consideration shall be given to the potential role that these can have in providing an anchor load within a decentralised energy network or in creating opportunities for CO2 reduction funded by contributions

Policy EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies

Applications for residential development of 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable.

This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO2emissions for all phases of the development. Developments smaller than the above threshold but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement. The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows

- *Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).*
- *Target 2 Electricity intense areas: Locations where the predominant building type has an all-electric fit-out such as retail units and leisure complexes.*
- *Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical. Domestic CO2 emissions reduction targets*

Table 12.1

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target 2: Electricity intense buildings	+15% increase on Part L 2010
Target 3: Micro generation area	+15%increase on Part L 2010

Policy EN 7 Energy Infrastructure opportunities

There will be a general presumption in favour of low and zero carbon decentralised energy schemes, subject to the following considerations:

- *That any new generating plant capable of producing heat and cooling as well as electricity should be located in a way that facilitates future connection to a local distributed energy system.*
- *That any energy centre, including generating plant, standby/boiler plant and substations, shall be located and designed to a high quality so as to integrate with and contribute to the townscape.*
- *Biofuels should be obtained from sustainable sources and processes and in a way that minimises transport impacts, following a sequential approach in order to minimise CO2 emissions – firstly prioritising local and regional sources, followed by national, European and international.*
- *Consideration should be given to biofuel delivery by rail and waterways where possible. Where large-scale fuel or feedstock delivery is required by road the energy centre must be located in or adjacent to light industrial, industrial or leisure uses with any impact on local residential amenity minimised.*
- *The cumulative impact of energy schemes will be taken into account when considering applications, to include modelled impacts on air quality and landscape character, with reference to Policy EN16.*
- *Flood risk, through the Manchester-Salford-Trafford Strategic Flood Risk Assessment.*

In determining proposals for development, consideration will be given to the need to safeguard strategic energy sites and network routes, both proposed or existing, where these have been identified as having strategic significance for the delivery of low or zero carbon energy infrastructure or, would be required in order to achieve the successful regeneration of an area in line with targets for reducing carbon emissions.

Policy EN 8 Adaptation to Climate Change

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

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

The Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance. Opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation

4.0 Proposed Energy Strategy

The proposals around ventilation provision within the buildings is outlined below:

4.1 General Approach

The general approach to the building services of each residential block is as follows:

- Low energy design and operation typically following the fabric first approach. The building services will be based primarily on all electrical services provision throughout with heating and hot water generated via electric means.
- Simple-to-use and maintain systems that offer innovation whilst overring value for money to the Client
- Meet all current relevant standards and regulations

The Energy Hierarchy Approach have been followed in this context is described below:

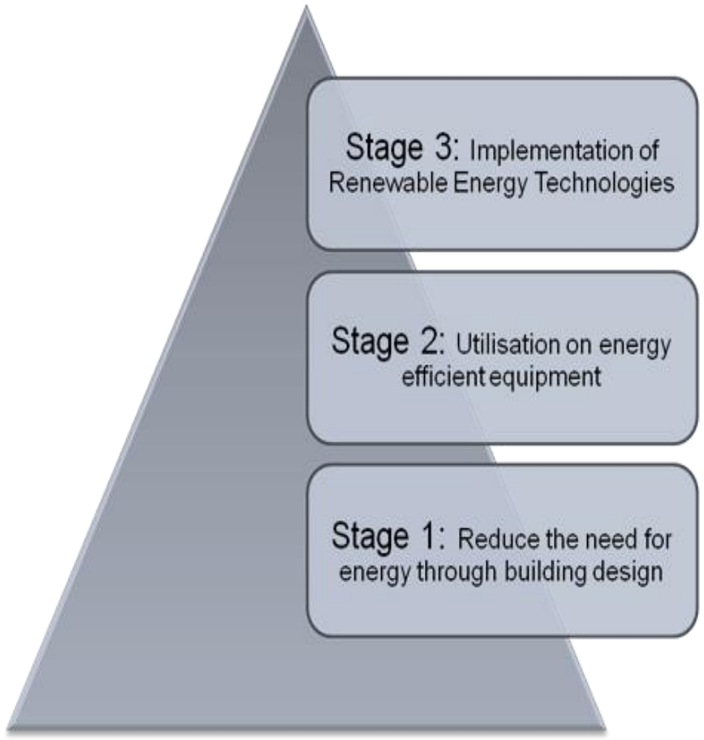


Figure 3: Sustainable Design and the Energy Hierarchy Approach

The following sections below detail the proposed specific approach to integrated sustainable building design for the scheme outlining the strategy for following each of the stages indicated in the figure above.

- Stage 1 – Passive, fabric first approach with high performance façade and fenestration with excellent air tightness. Exposed thermal massing such as concrete soffits or similar techniques to be provided to reduce the risk in terms of overheating in summer months
- Stage 2 – Highly efficient plant including low energy LED lighting & controls, underfloor heating, high efficiency MVHR and specifying plant with low specific fan powers (SPF's). BMS will provide enhanced controls and monitoring of energy and plant performance
- Stage 3 – On-site LZC and renewable technology

Any remaining emissions would need to be offset through allowable measures such as Power Purchase Agreements or similar.

The strategic approach outlined will be used for each of the options under review as the basis for targeting net zero operational carbon.

4.2 Reduce Demand

The building "fabric" (e.g. façade, roof, windows etc) have been designed in a manner that exceeds the minimum requirements which are defined within Approved Document Part L1a.

To meet the fabric first requirements a high-performance upgraded façade and fenestration will need to be specified to minimise energy consumption and demand requirements.

Element	Building Regulations max Limiting U-Value*	Proposed Construction Elements U-Value (Area weighted average)
Wall	0.26 W/m^{2}K	0.16W/K/m^2
Windows	1.6 W/m^{2}K	1.2 W/K/m^2 g-value 0.44 LVT 0.7
Roof	0.18 W/m^{2}K	0.12 W/K/m^2
Ground Floor	0.18 W/m^{2}K	0.12 W/K/m^2
Air tightness	8 m^3/h @ 50 Pa	<3 m3/hr/m^2 @50 Pa

New building elements will need to be specified to meet the enhanced requirements to meet the new onerous requirements of Part L V2 England 2022/23.

Other key elements that will need to be included in the passive design are summarised below:

Element	Details
Daylight	Balancing daylighting and overheating – optimise glazing specification with high LTV (65-70%) and low g-value (c0.4). Consider north lights and wall lights to key aspects.
Windows	Manual opening for purge vent and temperature control when moderate conditions – interlock with cooling systems to disable mech cooling/heating when window open

4.3 Limitation of Overheating Riks

CWC have created a dynamic thermal model to assess the risk of overheating as defined within Building Regulations Part O.

The fabric improvements noted above along with suitable window openings to outside have resulted in a passively cooled building design working in conjunction with the apartment MVHR systems.

4.4 . Meet Demand Efficiently

The development is not in close proximity to existing city centre heat networks. Therefore, standalone apartment solutions are proposed based on fabric first approach.

In line with the UKGBC framework for net zero carbon buildings, the strategy the development has been to reduce the energy demand of the building and design the building in such a way that will benefit from grid supplied electricity, which is continuously becoming "greener" (i.e. less CO2 per kWh). The proposed development looks to achieve the principles set out within the UKGBC framework by:

- Selecting space and water heating technologies which are electrically powered (i.e. no fossil fuels on site) such that the building can benefit from the ongoing trend of greener electricity supplied form the grid,
- Make use of energy efficient fabric and building services systems to significantly reduce the demand for energy on site (described within this report in detail), and
- Provide on-site energy generation from renewables so far as is reasonably and economically practical.

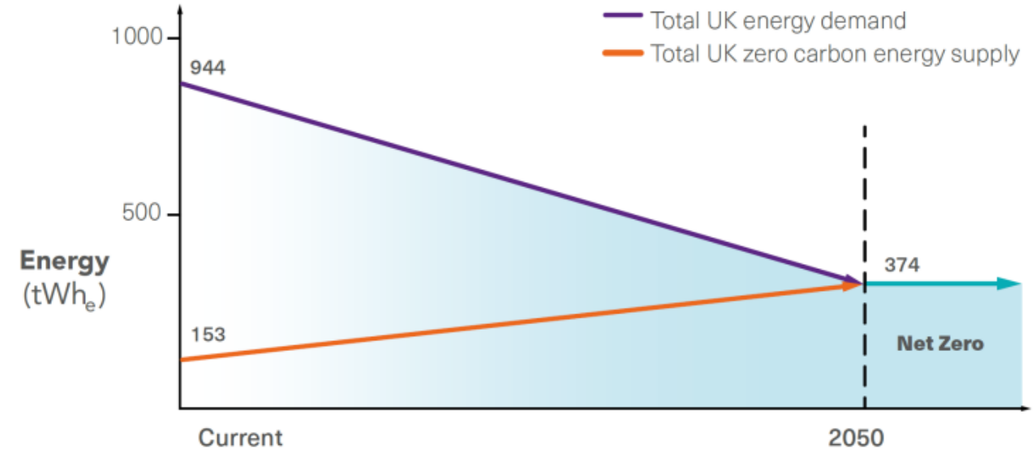


Figure 4: Figure 3 - In 2050, the UK's total energy demand will need to be supplied by low carbon energy ('Paris Proof' Targets)

An overview of the proposed sustainable and low energy design solutions is described Below is the approach for servicing the building in terms of key mechanical and electrical building services:

Element	Details	Proposed Systems
Heating	Provision of local electric panel heaters with WIFI controls to enable occupiers to utilise phone based apps to set and control heating remotely	Local Electric Panel Heaters
Hot Water	Each apartment to be provided with individual indoor combined heat recovery hot water storage heat pump cylinders.	COP ~3.5 Very low Storage losses <1.7 kwh/24hr
Internal Lighting	New High-performance LED with local switching and occupancy controls where applicable	LED lighting with efficacy >80LL/W
Cooling	. No cooling envisaged.	Review overheating risk via modelling and passive techniques.

Element	Details	Proposed Systems
Ventilation	Hybrid ventilation via opening windows with mixed mode ventilation and heat recovery. MVHR to be used throughout with occupancy controls.	SPF <1.5 W/l/S Heat recovery >85%
External Lighting	High performance LED with automatic daylight on/off controls	LED lighting with efficacy >110LL/W

4.4.1 Electric Heating

Occupier Comfort is guaranteed by virtue of local electric panel heater heating system that can react quickly to heat demand within the dwellings. Furthermore, electrical panel heating generates a reduced overheating potential – electric space heating delivers virtually instantaneous heating at the location it is required. Unlike a 'wet system' 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. Operation of the heating systems is simple to understand and reacts easily to user demands. The billing process will include individual electricity smart meters for each apartment.

The UK government is committed to reducing the countries emissions and has legislated to do so within the Climate Change Act. As the UK's grid becomes less carbon intense over time the car-bon emissions associated with full electric heating will become less. Space heating to apartments is to be achieved via direct electric panel radiators. As these do not rely on the storage or distribution of hot water there is no wasted heat and as such, they provide a very energy efficient design solution in comparison to wet system (i.e. boiler system). There is also less embodied carbon associated this solution, as there is far less material involved with the installation works compared to typical alternatives (e.g. central boiler system).

It is proposed the panel heaters are capable of Wi-Fi connectivity, to allow residents/tenants remote control of each panel heater via an Android or iPhone App. App control can allow for the following control features for the residents/tenants:

- Viewing of current temperature readings
- Setting of desired temperature
- Day and night temperature settings
- On/off control of each panel heater
- Daily and weekly time scheduling

The panel heater will be capable of being controlled without the use of an App, through manual adjustment of the thermostat at the panel heater.

Panel heaters shall include smart adaptive functions to recognise the time the space takes to heat up and also recognise when a window is open in order to switch off automatically to prevent wasting energy.



Figure 5 App Controllable Radiator (Example shown is Adax Neo)

4.4.2 Hot Water Heat Pump

Hot water generation will be local to each apartment using dedicated heat pump with combined heat recovery with hot water storage cylinder. The HWHP comprise integral controls and high efficiency fans compressor and high performance COP's provide local low carbon hot water generation to each apartment.

The HWHP's are provided with a large-surface condenser that heats water up faster due to its larger heat transfer surface. This can optionally be augmented with an electric heater upgrade where required.

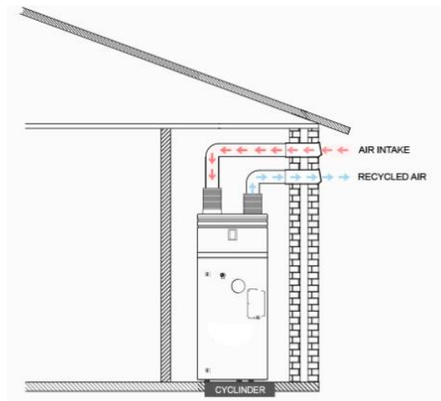


Figure 6: Example Apartment HWHP Arrangement

The integral design of the HWHP means no requirement for an external condenser thus providing a compact solution whilst meeting the hot water requirements of the apartments.

4.4.3 Mechanical Ventilation with Heat Recovery

It is proposed that each apartment is provided with a 'mechanical ventilation with heat recovery' (MVHR) unit. This has several benefits from a sustainability perspective as follows.

In the majority of domestic bathrooms and kitchens, a local dedicated fan is provided which exhausts warm air to the outside; this is essentially "dumping" useful room heat to outside and is thus wasted energy.
The MVHR systems will provide a healthy living environment and include a summer by-pass facility to maintain a pleas-ant internal environment within the dwelling.

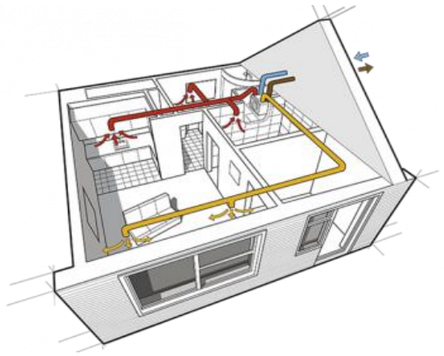


Figure 7 Example of MVHR System (Image Courtesy of Xpelair)

With the proposed MVHR unit, circa 85% of the heat extracted from bathrooms and kitchens will be captured (during colder months) and used to heat the incoming supply air. As such this is a very energy efficient solution relative to alternative solutions. This strategy is the same strategy for dwellings complying with the widely recognised Passivhaus standard.

The MVHR unit is also provided with an intelligent integral control system which enables the heat recovery device to be bypassed during the warmer months.

The MVHR unit flow rates can be increased during the summer months to also provide "free cooling".

4.4.4 Intelligent Lighting

Low energy LED luminaires are proposed throughout the scheme for landlord areas and apartments.

All landlord areas, with the exception of plantrooms, will make use of lighting presence detectors and / or daylight dimming controls to keep lighting energy use to a minimum.

4.4.1 Metering Strategy

CWC propose all apartment utility meters are located within the apartment and in a location that is easily accessible to the tenants (e.g. within the utility store, on the wall). This will enable tenants to monitor their ongoing energy / water usage and consider how to better manage their consumption.

In a similar manner, all landlord supplies shall be meters and made easily accessible.

4.5 Provide On-site Low or Zero Carbon Technology

4.5.1 On-site renewable option appraisal

As part of the scheme design it is proposed to incorporate suitable on-site Low or Zero Carbon (Renewable) technologies where appropriate to further reduce the building demand as part of the energy hierarchy approach to the design and installation procurement.

This section of the document sets out the analysis and option appraisal as part of determining the most suitable and optimum on-site LZC technologies for integration within the building services solution.

To this end a systematic approach has been utilised assessing each of the standard industry recognised LZC renewable technologies for commercial buildings. The methodology for LZC assessment in the initial stages has followed the CIBSE TM38 approach to ensure only the most appropriate technologies are explored as part of the assessment. Following this assessment, the remaining feasible technologies have been investigated further to determine the most appropriate solution that offers the optimum solution in terms of energy demand reduction, whilst working within the Clients capital expenditure budgets and maintenance regime.

Figure 8: Summary Assessment Results from CIBSE TM38 Renewable Assessment Tool

The key drivers in line with CIBSE TM38 initial assessment criteria for the assessment of as follows:

0 - Energy/$C0_{2e}$ savings
1 - cost effectiveness
2 - Technology Risk
3 - Image and Marketing

The table below outlines the justification for discounting renewable energy technologies as part of the design process and renewable appraisal:

Technology	Initial Viability Appraisal	Justification / Notes
Biomass	☒	Site Constraints and limited space for fuel store make this option unviable.
On Shore Wind Turbine	☒	Local wind not usually viable due to the sheltered nature of the site. Wind speeds may be an issue as partially sheltered by local topography as well as planning issues for the residents and town itself.
Solar Thermal	☒	Unlikely sufficient hot water demand to offer benefit
Ground/ Air Source Heat Pump (GSHP/ASHP)	☑	ASHP appears to be a viable solution based on an individual apartment basis due to the restriction of external plant space. GSHP does not appear to be a viable solution due to the space required for borehole array.
Combined Heat and Power (CHP)	☒	Limited high temperature heat demand/run hours throughout the year mean this system would not be recommended
Ground Water Cooling	☒	Limited space and building cooling requirements mean that this technology is not suitable for this scheme.
Photovoltaics (PV)	☒	Building Orientation is positive in terms of available solar irradiance etc however available roof space once roof plant such as life safety equipment including fans and generators etc are taken into accountF, there will be limited remaining space available for a roof mounted PV Array,
Solar Wall	☒	Limited opportunity for solar wall on south or southeast facing aspects due to orientation of building and other site constraints such as other exiting buildings is close proximity.

The table below undertakes a further assessment of the LZC technologies considered viable from the initial CIBSE TM38 assessment. This assessment comparatively assesses key influences factors such as cost effectiveness, reliability, and maintenance as well as energy/$C0_{2e}$ impact.

Technology	Cost Effectiveness	Reliability	Maintenance Requirements	Energy / C02 savings	Final Viability Appraisal
Air Source heat pump	Medium	Medium	High	Medium	☑

The hot water heat pump solution will be based on an individual apartment solution as described in section 4.4.2 above.

4.6 Forecast Energy Targets

Initial energy assessments have been undertaken for the development based on the servicing strategy outlined in this report. Headline results are indicated below based on block compliance approach at present until the full detailed design is completed for the development. The assessment has been undertaken against the latest Building Regulations Part L V1: Dwellings 2021 + A2023. This latest update is more onerous than the 2010 version in term of minimum standards.

Part L2 Criterion	Ave DER (kgC02/m2)	Av TER (kgC02/m2)	Improvement against 2021 min requirements	Requirement Achieved ?
DER Vs TER	2.92	11.64	74.92%	✓
Part L2 Criterion	**Ave DFEE (kwh/m2/yr)**	**Ave TFEE (kwh/m2/yr)**	**Improvement against 2021 min requirements**	**Requirement Achieved ?**
DFEE vs FTEE	20.10	23.22	13.86%	✓
Part L2 Criterion	**Ave DFEE (kwh/m2/yr)**	**Ave TFEE (kwh/m2/yr)**	**Improvement against 2021 min requirements**	**Requirement Achieved ?**
DPER Vs TPER	31.02	63.61	51.24%	✓

The assessment is a preliminary assessment based on a sample approach to apartments.

5.0 Conclusion

The report has outlined the proposed approach to energy strategy against the Manchester City Council planning policies as summarised below:

- Policy EN 2 Tall Buildings
  - The report has demonstrated the positive approach proposed to sustainability that the development will offer providing simple to use and maintain systems that meet the contemporary requirements of tenants/occupiers.
- Policy EN 4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
  - The report has demonstrated that the proposed development follows the energy hierarchy approach to sustainability using a fabric first approach as outlined in section 4.1
  - An 'enhanced' thermal envelope specification is proposed for the new buildings. This fabric specification will deliver an energy efficient development that achieves the target emission rate reduction and fabric energy efficiency performance required for compliancy as outlined in section 4.2
  - The Target 2: Electricity Targets have been achieved based on the sample of Apartments assessed at this stage as outlined in section 4.6.
- Policy EN 5 Strategic Areas for low and zero carbon decentralised energy infrastructure
  - The development is not in close proximity to existing city centre heat networks. Therefore, standalone apartment solutions are proposed based on fabric first approach.
- Policy EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies
  - The development is proposed to exceed the minimum targets set in EN 6 for C02 reduction as outlined in section 4.5. An enhanced metric has been used to demonstrate compliance based on the Building Regulations 2021 (+A 2023).
- Policy EN 7 Energy Infrastructure opportunities
  - The development is proposed to be standalone and not connect to any heat networks. Apartments will be individually heated and ventilated along with energy efficient hot water generation.
- Policy EN 8 Adaptation to Climate Change
  - The development will continue to adopt a passive design approach for overheating risk assessment to ensure no mechanical cooling is employed in the apartments thus reducing the energy consumption and C02e emissions in operation. The scheme will follow the prescriptive requirements of Building Regulations Part O.