MOOR ROAD

ENERGY AND MEP STRATEGY STATEMENT FOR PLANNING

Ref: Moor Road

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REPORT AMENDMENT RECORD SHEET

Date	Description	Revision	Checked By
29.01.2024	Initial Issue for review	P1	LD
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1.0 GENERAL

The scheme at Moor Road is multi occupancy residential development incorporating 16 units with some communal space at ground floor incorporating office, laundry and accessible WC.

The development is presented as 2 blocks linked with a ground floor corridor. The front car park is accessed from the top access road which runs in the front of the building at ground floor level which allows for secure gated access. The construction is modern and clean and is expected to have a positive impact on the area.

This document provides some commentary on the sustainable aspects of the development in terms of items that can be reviewed by the client moving forward and details of any monitoring aspects that the client wishes to instigate.

The requirements of the new building regulations (2022) in terms of energy, ventilation, overheating and electric vehicle charging are also reviewed.

A review of the relevant planning policy is provided, and suggestions made as to how the developer can address those that have implications to the scheme.

2.0 RELEVANT PLANNING POLICY / DOCUMENTS and ENERGY HIERARCHY

The move towards Net Zero and the Future Homes and Building Standard (2025) resulted in the revision to the Building Regulations in June 2022. These updated regulations made uplifts in areas such as part L, conservation of fuel and power, part F, ventilation, part O, overheating, Part R, data infrastructure and part S, electric vehicle charging. These uplifts to the building regulations move the building requirements towards the Future Homes and Building standard and it is proposed that this development will be designed and constructed to meet the Building Regulations (June 2022).

The application of the Building Regulations requirements will be demonstrated for confirmation to the relevant Building Control body or Approved Inspector in the form of drawings and / or reports during the design stage and by the as fitted EPC and as installed construction information. It is not intended to apply for Breeam or equivalent monitoring standards at this stage.

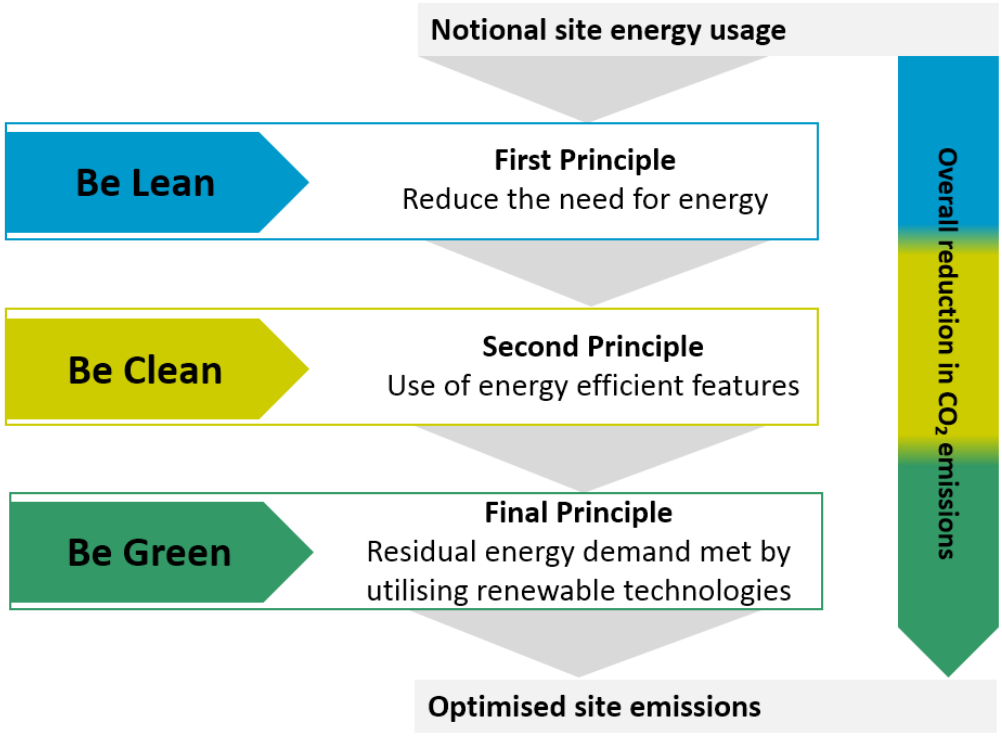
This document will support the submission in showing the development meets the objectives for the Manchester Core Strategy policies EN4, EN6, and EN8, with adherence to the latest building regulations superseding the targets identified in EN6, table 12.1 and 12.2.

These policies identify the following:

- All development to follow the principle of the Energy Hierarchy
    - To reduce the need for energy through design features that provide passive heating, natural lighting and cooling.
    - To reduce the need for energy through energy efficient features such as improved insulation and glazing
    - To meet residual energy requirements through the use of low or zero carbon energy generating technologies
- 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 refurbishment schemes.

2.1 METHODOLOGY



2.1.1 First Principle - Reduce the need for energy (Be Lean)

The energy strategy at Moor Road is to maximise the first principle of reducing the need of energy. Examples of some of the 'Be Lean' measures are listed below and are to be incorporated within the design wherever possible:

Enhanced U-values for roof insulation
Maximise useful Daylight
Energy efficient LED lighting systems;
Heat recovery integrated into ventilation, where applicable;
Presence detection on lighting controls in common areas:
Centralised control systems within units with time schedules and set points

2.1.2 Second Principle - Use of energy efficient features(Be Clean)

In order to undertake this analysis reasonable high efficiency system efficiencies have been assumed at this stage.

The equipment efficiency measures include:

High efficiency artificial lighting with controls
The efficiency performance of mechanical has been carefully assessed and selected to exceed Part ADL1:2021 minimum compliance requirements.
Use of smart meters
User Guide for occupants and will contain recommendations on how to reduce unregulated energy consumption through the procurement of energy efficient equipment.

2.1.3 Third Principle - Maximise the use of Renewable Energy Sources (Be Green)

All commercially available Low and Zero Carbon options have been reviewed with respect to the development, in line with MCC Policy EN4. These technologies have been considered within the constraints of the prevailing environmental conditions, building operation, loads, integration within the concept building services, viability, architectural design, capital and maintenance costs with associated payback and overall effective carbon dioxide reduction.

The development will include feasible renewable energy technology to provide to reduce the development's CO_2 emissions once passive design and energy efficiency measures have been considered.

The following summary table sets out the complete list of potential renewable technologies along with their concluding viability at this design stage of the development. Further details of each technology and their associated assessment in relation to the development are provided on the subsequent sections:

Design approach	Feasible	Notes	Included within the proposals?
Photovoltaics	Yes	Photovoltaic (PV) panels convert the suns energy into electricity. The scheme has the potential to adopt PV panels subject to existing roof structural weight capability. An initial scheme has been developed for the Stage 2 report and is detailed in section 3.2.	Yes
Combined Heat and Power	No	A Combined Heat and Power (CHP) plant integrates the production of heat and power into a single, highly efficient process. CHP is considered feasible where the heating requirement of a scheme brings together many small intermittent loads to form a substantial base load demand for heat. For this reason CHP is generally suitable for schemes which link residential to large commercial buildings ranging from hotels, offices, hospitals, and leisure centres. As the development consists of school teaching areas, and therefore has low base load demand and intermittent heat demand, CHP was not considered a technically feasible and cost effective option.	No
Solar thermal	Yes	Solar thermal panels convert the suns energy into hot water and are typically used to pre heat domestic hot water systems. Solar thermal systems are renowned to be major contributors in the summer however, it is questionable whether they can sustain the demands through the months where the solar resource is at its weakest, and when the DHW demand is at its highest. For this reason, the building makes it more favourable to utilise roof space to install photovoltaic panels (PV) in lieu of solar thermal.	No

Design approach	Feasible	Notes	Included within the proposals?
Biofueled heating	No	There are currently a number of environmental concerns regarding the use of bio-fuel in buildings. These include, fuel transportation / storage issues, potential air quality impact and resulting flue structure, plant space / storage requirements & maintenance requirements. It is not considered that the bio fuel market has developed sufficiently to resolve the above concerns and is not considered viable for this development due to environmental issues surrounding this fuel type	No
Ground/Water source heat pump	No	Ground source heat pumps make use of the relatively stable ground temperatures to improve the efficiencies of the heat pumps compared to an air source option. GSHP was not considered a technically feasible and cost effective option.	No
Air Source Heat Pump	Yes	Air source heat pumps (ASHP) are similar to ground source heat pumps but pump heat from the ambient air rather the ground. The efficiency of air source heat pumps is generally slightly lower than ground source heat pumps.	Yes
Wind power	No	There is considerable evidence of urban wind turbines failing to perform to manufacturer's output estimates. Significant planning and integration issues also exist and consequently wind turbines are not viable	No
Rainwater Harvesting	No	The increased requirements on cleaning and maintenance for the system and the capital cost associated with the tank and pipework installation may make this option unsuitable for this building.	No

3.0 SUSTAINABILITY

The following areas are key to the developing building services engineering design and the building sustainability strategy:

- Operational performance
- Health and wellbeing
- Energy use and co2 emissions
- Managing pollution from building services
- Adapting to climate change
- Water use
- Materials and resource use

The following publications will inform the outgoing design process in terms of sustainability:

- Sustainability CIBSE guide L: 2020

- RIBA plan of work 2020
- RIBA sustainable outcomes guide 2019

The following table taken from the CIBSE Guide L reviews the items identified in the above list and shows how these elements can be reviewed and demonstrated. The developer is reviewing which of these elements is most appropriate for this building during the early stages to planning to determine which elements will / can be incorporated into the scheme.

Issue	**Typical design and construction objective**	**Example indicators (examples only, not an exhaustive list)**	**Example performance standards (examples of how to translate indicators into targets; not necessarily recommended levels, which will be location- and project-specific)**
Health and wellbeing	Provide a safer, more accessible, healthy and comfortable environment	Air quality (e.g. PPM) Acoustic performance (NR and dB LAeqt) Lighting, daylight and views	Acoustic performance: combined background noise and unoccupied noise ratings for building services and external intrusion to meet recommended residential guidelines. Air quality - potential to use filtration via MVHR and overheating offset strategies
Energy and CO_2	Reduce predicted CO_2 emissions by applying passive design and energy efficient design principles and utilizing low or zero carbon technologies. Operational energy use assessment undertaken (based on CIBSE TM54 (CIBSE, 2013)	Total CO_2 emissions: kgCO_2/m^2 per year Energy use: kW·h/m^2 per year for electricity, fossil fuels and other energy sources Air permeability index: m^3/h per m^2 at 50 Pa	UK buildings — new-build and major refurbishments (RIBA, online; LETI, online): Target on total energy use, e.g. for offices: Display Energy Certificate (DEC) A or B rating, or total energy use of 70 kW·h/year per m^2 of NLA, or 55 kW·h/year per m^2 of GIA; for residences: 35 kW·h/year per m^2 of GIA AND Target on space heating demand: e.g. below 15 kW·h/year per m^2 AND Heat to be supplied from low-carbon sources, aiming for no fossil fuel combustion on site Air permeability: 3 m^3/h per m^2 at 50 Pa or less
Transport	Increase the use of sustainable modes of transport when the building is in use	Percentage of trips by each mode of transport (%)	Site location and design measures equivalent to credits in BREEAM, LEED or other schemes, which take account of a range of factors including public transport accessibility, cycling and walking facilities etc.

Issue	Typical design and construction objective	Example indicators (examples only, not an exhaustive list)	Example performance standards (examples of how to translate indicators into targets; not necessarily recommended levels, which will be location- and project-specific)
Water	Reduce predicted water use by integrating water efficient plant, appliances and fittings	Non-domestic: m3/person per year or litre/person per day Dwellings: m3/bedspace per year or litre/person per day	BREEAM calculator: less than 1.5 m^3/person per year or RIBA 2030 Climate Challenge (RIBA, online): less than 10 litre/person per day Dwellings: 105 litre/person per day (minimum target) or RIBA 2030 Climate Challenge: less than 75 litre/person per day Calculate water use based on BREEAM Wat01 water calculation and achieve 12% improvement target Recycled content greater than 10% (claims must comply with BS EN ISO 14021 (BSI, 2016) Type II Self-declared Environmental Claims)
Materials	Reduce the embodied lifetime environmental impacts by selecting on the basis of environmental preference, e.g. recycled content	Percentage achieving preference criteria (%) Embodied carbon target (kgCO2eq/m2) Tonnes of waste produced.	RIBA 2030 Climate Challenge for new buildings and major refurbishments: embodied carbon target of 300 $kgCO_2eq/m^2$ (domestic buildings) or 500 $kgCO_2eq/m^2$ (dwellings), measured according to the RICS methodology, modules A–C The product has an Environmental Product Declaration (based on the relevant document product category rules (PCR) and the life cycle assessment (LCA) performed according to BS EN ISO 14040 (BSI, 2006) and independently verified according to BS EN ISO 14025 (BSI, 2010) Achieve total waste arising targets less than or equal to 13.3 m^3 per 100 m^2 (gross internal floor area)
Waste	Reduce construction and demolition waste to landfill and enable in use recycling by following the waste hierarchy	Percentage diverted from landfill, differentiating between the hierarchy of routes for landfill diversion, i.e. (1) re-use, (2) recycling, (3) energy from waste	Diversion of 95% of (non-hazardous) construction waste and 100% of demolition waste from landfill
Ecology and biodiversity	Protect existing ecology on site and enhance the ecological value and biodiversity of the site by protecting existing assets and by introducing local new habitats and/or species Aim for a net-positive impact on biodiversity Increase the number and populations of priority species Provide new and enhanced habitats Compensate for any unavoidable loss of biodiversity Habitat losses and gains Losses and gains of features used by priority species	Ecologist to undertake a desk-based biodiversity assessment before site is cleared and ensure existing ecology is protected Enhance biodiversity by creating new habitats for a BAP species based on recommendations from ecologist Achieve net positive biodiversity score using DEFRA biodiversity metric or equivalent system	

Issue	Typical design and construction objective	Example indicators (examples only, not an exhaustive list)	Example performance standards (examples of how to translate indicators into targets; not necessarily recommended levels, which will be location- and project-specific)
Pollution	Reduce unavoidable building related emissions and the risk of accidental pollution	Global warming potential (GWP) of refrigerant or whole life mgNO_x /kW·h of delivered energy	Assess viability of using refrigerants with GWP <10 in all systems over 6 kg charge. Target for whole life warming potential, taking account of emissions in operation (including leakage rate and cooling system operational efficiency as well as the refrigerant GWP itself)
Flood risk	Mitigate the risk of flooding (and design for flood resilience)	Where at risk of flooding, use appropriate flood resistant and resilient construction techniques	Follow BS 85500 (BSI, 2015)
Sustainable drainage	Reduce run-off from the site	Run-off rate (peak and volume) Sustainable drainage systems can provide multiple benefits so, ideally, this should complemented with other indicators, especially as ecology/biodiversity	Achieve greenfield run-off rate
Adapting to climate change	Improve the capacity of the building to operate successfully under the different and demanding conditions predicted in future	CIBSE overheating criteria Flooding resilience and resistance criteria to take account of climate change	For homes, compliance with CIBSE TM59 (CIBSE, 2017): (a) For living rooms, kitchens and bedrooms: the number of hours during which ΔT is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3 per cent of occupied hours. (CIBSE TM52, Criterion 1: Hours of exceedance). (b) For bedrooms only: to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26 °C for more than 1% of annual hours. (*Note*: 1% of the annual hours between 22:00 and 07:00 for bedrooms is 32 hours, so 33 or more hours above 26 °C will be recorded as a fail)
Social issues	Reduce crime and adverse effects on neighbours throughout the lifetime of the development through design and practice in construction and operation *Note*: broader issues such as community involvement and socioeconomic factors would be paramount to the project but typically led by others and therefore not covered here	Accessibility Considerate construction Opportunities for apprenticeships and training Creation of local jobs	Achieve Secured by Design 'Developer's Award' *X* number of apprenticeships offered as part of the project *X* number of local jobs created as part of the project 'Considerate Contractor' score of at least 32 Creation of construction training centre for the duration of construction (on larger projects)

3.0 BUILDING REGULATIONS PART L, F, 0, R AND S

The new build residential properties will be constructed to meet the new building regulations standards June 2022. These include:

- Part ADL1 – Conservation of Fuel and Power in dwellings (see below)
- Part F – Ventilation (refer to section 12.0)
- Part O – Overheating (refer to section 9.0)
- Part S – Infrastructure for charging electric vehicles (refer to section 8.0)
- Part R – Physical infrastructure for high-speed electronic communications networks (refer to section 7.0)

The client and design team fully support the move to improve standards to improve energy efficiency.

The following u values / details for thermal elements etc. taken from ADL1 will be used as a baseline moving into the design and are considered by the team to be minimum values.

Table 1.1 Summary of notional dwelling specification for new dwelling[1]

Element or system	Reference value for target setting
Opening areas (windows, roof windows, rooflights and doors)	Same as for actual dwelling not exceeding a total area of openings of 25% of total floor area[2]
External walls including semi-exposed walls	U = 0.18 W/(m²·K)
Party walls	U = 0
Floors	U = 0.13 W/(m²·K)
Roofs	U = 0.11 W/(m²·K)
Opaque door (less than 30% glazed area)	U = 1.0 W/(m²·K)
Semi-glazed door (30–60% glazed area)	U = 1.0 W/(m²·K)
Windows and glazed doors with greater than 60% glazed area	U = 1.2 W/(m²·K) Frame factor = 0.7
Roof windows	U = 1.2 W/(m²·K), when in vertical position (for correction due to angle, see specification in SAP 10 Appendix R)
Rooflights	U = 1.7 W/(m²·K), when in horizontal position (for correction due to angle, see specification in SAP 10 Appendix R)
Ventilation system	Natural ventilation with intermittent extract fans
Air permeability	5 m³/(h·m²) at 50 Pa
Main heating fuel (space and water)	Mains gas
Heating system	Boiler and radiators Central heating pump 2013 or later, in heated space Design flow temperature = 55 °C
Boiler	Efficiency, SEDBUK 2009 = 89.5%
Heating system controls	Boiler interlock, ErP Class V Either: – single storey dwelling in which the living area is greater than 70% of the total floor area: programmer and room thermostat – any other dwelling: time and temperature zone control, thermostatic radiator valves
Hot water system	Heated by boiler (regular or combi as above) Separate time control for space and water heating
Wastewater heat recovery (WWHR)	All showers connected to WWHR, including showers over baths Instantaneous WWHR with 36% recovery efficiency utilisation of 0.98
Hot water cylinder	If cylinder, declared loss factor = 0.85 × (0.2 + 0.051 $V^{2/3}$) kWh/day where V is the volume of the cylinder in litres
Lighting	Fixed lighting capacity (lm) = 185 × total floor area Efficacy of all fixed lighting = 80 lm/W
Air conditioning	None
Photovoltaic (PV) system	For houses: kWp = 40% of ground floor area, including unheated spaces / 6.5 For flats: kWp = 40% of dwelling floor area / (6.5 × number of storeys in block) System facing south-east or south-west

NOTE:
1. For a dwelling connected to an existing district heat network, an alternative notional building is used. See paragraph 1.8 and SAP 10.
2. See SAP 10 for details.

4.0 EXTERNAL LIGHTING AND NIGHT- TIME ENVIRONMENT

Amenity lighting will be provided to the scheme along with car park lighting to meet the relevant road lighting standards with due regard to upward light ratios and nuisance lighting to neighbours and residents. The scheme will allow for nighttime use between the hours of 11 and 7 for security / safely only for those elements of the external lighting where that is possible.

5.0 SITE SECURITY

The scheme will be designed based on secured by design principles wherever possible.

6.0 EXISTING AND NEW UTILITIES (EXCLUDING BELOW GROUND DRAINAGE)

The developer will provide suitable routes and ducting arrangements for the new services to the site as needed. The developer has options for providing space for an electric substation should it be required (and is currently expected).

The developer will review the options with Openreach for providing high speed communications to the site and will ensure that the in-ground ductwork distribution and internal services will cater for this to be installed either during the development or in the future when it becomes available locally.

7.0 ELECTRIC VEHICLE CHARGE POINTS

Under the details contained within approved document S, as a minimum requirement, all associated residential parking spaces should be provided with the cable routes to facilitate the future installations of electric vehicle charge points. The document requires that where the installation can be provided within the cost threshold identified (£3600 per point) then car charging points shall be provided to all associated car parking spaces for new build developments. Where the threshold cannot be met then the minimum provision of cable routes shall be provided.

This development has limited onsite parking and will include for cable ways for future provision as well as chargers for 2 spaces. All EVC's are required be smart chargers and include load balancing to prevent conflict of use or overloading of the network. The chargers will be dual post chargers rated circa 7kw each and should be associated with a low night rate electricity tariff for use by residents. Chargers will likely be installed by a third-party with a third-party billing platform, subject to further review.

8.0 OVERHEATING

The criteria set out in approved document O, is applicable to residential rooms, shared communal rooms and common spaces. For this development the residential units will be reviewed under the overheating criteria.

Compliance with this approved document will be demonstrated by using the simplified method detailed within the approved document and not by dynamic thermal modelling, unless required once initial calculations are reviewed.

The developer will determine which overheating offset strategy shall be implemented should overheating outside of the allowed criteria is determined. The options usually available for offsetting are:

1. Openable windows

2. Mechanical purge ventilation either by increased ventilation rates from infiltration ventilation or by separate mechanical measures.
3. Passive wall or window ventilators
4. Comfort cooling

The developer will commission a report to determine the most appropriate method of offsetting for this development following a review of the calculations and any noise assessment that may affect the options available.

The current expectation is that openable windows will be an acceptable method of offsetting overheating

9.0 DAYLIGHTING

Daylighting shall be demonstrated to meet or exceed minimum building regulations requirements via calculation at the next design stage.

10.0 PHOTOVOLTAICS

The provision of roof mounted PV'S to offset energy use is under review as part of the initial design stages for Part L compliance and may be implemented subject to the next design stage.

11.0 OUTLINE SERVICES STRATEGY

An initial review of the services strategy has been undertaken and due account of the requirements for vertical distribution and plant spaces has been made within the GA plans provided by the architect for planning.

Suitable automatic fire detection systems with links to any smoke venting will be provided as recommended by the fire consultant and reviewed with building control or approved inspector.

The requirement for any sprinklers / dry risers / smoke venting is under review and will be incorporated into the design if determined to be a requirement by following the fire strategy review. Currently it is expected that natural smoke venting may be required with a "stay put" policy to evacuation which will inform the fire systems design at later stages.

The preferred ventilation solution for the individual accommodation units to meet the requirements of Building Regulations Part F is decentralised continuous mechanical extract with trickle vents for make up air on windows. However, the option of MVHR will be considered as the part L calculations and acoustic requirements for the development are reviewed.

The options for heating and hot water are still being considered. It is likely that the scheme will go down the route of ASHP hot water systems with electric panel radiators individual to each unit. Where feasible and affordable the option of utilising roof mounted, or wall mounted PV's will be considered to offset electrical energy use. However, the developers recent experience has been with the installation of gas fired combination boilers and this option may also be considered, with the systems designed to operate at maximum 55 degrees c to allow for the future installation of low carbon technologies. If this is the case the developer will ensure that the overall building will comply with the current requirements of part L by introducing other technologies or improved thermal elements to offset.

Lighting and emergency lighting systems will be provided via low energy LED lighting selected suitable for the various areas of the building and will be combined with suitable controls to ensure that the lights are not left on in common areas.