

FOR:
LAND AT HEYWOOD BUSINESS PARK,
HEYWOOD

A PROJECT FOR:
INDURENT MANAGEMENT LTD

AUTHOR:
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EXECUTIVE SUMMARY

1. MBA Consulting Engineers Ltd. has been commissioned by Indurent Management Ltd to produce an Outline Energy and Sustainability Strategy report to support of the Outline Planning Application for the proposed development known as land at Heywood Business Park, Heywood.
2. The planning application proposes:
“Outline planning application for the development of land within Use Classes E(g)(iii) (industrial processes), B2 (general industrial), B8 (storage and distribution) and removal of existing structures and hard standing and associated works. All matters reserved for subsequent approval.”
3. This report provides a review of the sustainability and efficiency key features and strategies for the scheme and sets out targets for the development in terms of both sustainability and energy. An overview of different sustainability and energy-efficiency technologies that are likely to be appropriate for the development are also included in this statement.
4. As the design progresses, the strategies outlined in this report will be further developed and subjected to detailed designs. The environmental strategies and options outlined in this report are based on the current information available and are likely to evolve with the design.
5. To comply with planning policy and client requirements, the following targets have been established for the development:
 - Net Zero Carbon in line with national targets and Policy JP-S2 Carbon and Energy within PfE
 - Maximise energy efficiency and minimize energy demand
 - Reduce CO₂ emissions through the use of renewable and low carbon decentralised energy technologies and networks.
 - Achieve EPC A+
 - Achieve BREEAM “Excellent target”, in line with Policy JP-S2 Carbon and Energy within PfE
6. The principal objectives are to reduce the site contribution to the causes of climate change by reducing the developments energy demand and by providing a portion of the demand through clean, renewable sources.
7. To further quantify the positive impact of the proposed sustainability measures the development is currently aiming to achieve a BREEAM rating of “Excellent”.



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1.0 INTRODUCTION

1. MBA Consulting Engineers Ltd. has been commissioned by Indurent Management Ltd to produce an Outline Energy and Sustainability Strategy report to support of the Outline Planning Application for the proposed development known as land at Heywood Business Park, Heywood.
2. The proposed development is described as:
“Outline planning application for the development of land within Use Classes E(g)(iii) (industrial processes), B2 (general industrial), B8 (storage and distribution) and removal of existing structures and hard standing and associated works. All matters reserved for subsequent approval.”
3. A detailed description of the proposed design can be found within the Design and Access Statement prepared by UMC Architects. The sections within this report outline the proposed energy and sustainability strategy for the development.
4. The proposed Outline Energy Strategy has been developed in accordance with the following complimentary local Borough planning documents and policies:
 - Rochdale Core Strategy (adopted October 2016)
 - Policy G3: Renewable and low carbon energy developments
 - Climate Change Adaption SPD , adopted June 2012
 - Places for Everyone Plan, adopted March 2024
 - Policy JP-S1– Sustainable Development
 - Policy JP-S2 – Carbon and Energy
 - Policy JP-S3 – Heat and Energy Network
5. The principal objectives are to reduce the site contribution to the causes of climate change by reducing the energy demand and by providing a portion of the demand through clean, renewable sources.

2.0 PLANNING POLICY AND LEGISLATION

1. For a major development, it is key to adopt the Energy Hierarchy (Be Lean, Be Clean, Be Green) and to meet Building Regulation Part L2.
2. Details of the national, regional and local planning policies that are relevant to this development in terms of energy and sustainability are detailed below.

2.1 National Planning Policy Framework (NPPF)

1. The National Planning Policy Framework (NPPF), updated on December 2023, sets out government’s planning policies for England and how these should be applied.
2. The NPPF supports the transition to a low carbon future in a changing climate, accounting for flood risk, coastal change. It helps shape places in ways that contribute to radical reductions in greenhouse gas emissions, encourages the reuse of existing resources, including conversion of existing buildings, and supports the use of renewable resources and low carbon energy and associated infrastructure.
3. Paragraph 159 states that new development should be planned for in ways that:
 - avoid increased vulnerability to the range of impacts arising from climate change. When a new

development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

- can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

4. Paragraph 161 states that local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

5. Paragraph 162 states that in determining planning applications, local planning authorities should expect new development to:

- comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

6. Paragraph 163 states that when determining planning applications for renewable and low carbon development, local planning authorities should:

- Not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to significant cutting greenhouse gas emissions; and
- Approve the application if its impacts are (or can be made) acceptable.

7. The key focus of the NPPF is to support local and regional planning authorities.

2.2 Building Regulation Part L2 (2021 edition incorporating 2023 amendments)

1. Whilst is not a planning policy, the Building Regulations set out the requirements for energy and carbon performance. Periodic updates to these national regulations will drive the energy efficiency and carbon reduction improvements.

2. To comply with UK building regulations, all buildings on the site must show compliance at design stage with the following criteria from Approved Document L, Conservation of fuel and power, Volume 2: Buildings other than dwellings (2021):

- The Building Primary Energy Rate (BPER) must not exceed the Target Primary Energy Rate (TPER), i.e. $BPER \leq TPER$.
- The Building Emission Rate (BER) must not exceed the Target Emission Rate (TER), i.e. $BER \leq TER$.
- Building fabric, airtightness and HVAC systems have a minimum specified performance
- Limits to Solar Gain: any zone in the actual building that is an occupied space is subject to further analysis to mitigate the risk of overheating
- Lighting has a minimum specified average luminaire efficacy
- Where a building is erected, it must be a nearly zero-energy building

3. Building Regulations Part L does not require that high-efficiency alternative systems or other low or zero carbon systems are installed. Regulation 25A is met in a new building by analysing the feasibility of installing high-efficiency alternative systems.
4. Reasonable provision shall be made for the conservation of fuel and power in buildings by:
 - Limiting heat gains and losses through thermal elements and other parts of the building fabric; and from pipes, ducts and vessels used for space heating, space cooling and hot water services.
 - Providing fixed building services which are energy efficient to a reasonable standard; have effective controls; and are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power than is reasonable in the circumstances.
5. For each space in the building that is occupied or mechanically cooled, the solar gains through the glazing should be no greater than would occur through the relevant reference glazing systems with a defined total solar energy transmittance (g-value) calculated according to BS EN 410. In this context, an occupied space means a space that is intended to be occupied by the same person for a substantial part of the day. This excludes circulation spaces and other areas of transient occupancy, such as toilets.

2.3 Energy Performance Certificates (EPCs)

1. EPCs are an asset rating and a measure of building quality: the higher the rating the worse the building is, and the greater the opportunity to reduce carbon emissions and improve the building itself. However, the asset rating provides no information about how the building is operated in practice. An asset rating models the theoretical, as-designed energy efficiency of a particular building, based on the performance potential of the building itself (the fabric) and its services (such as heating, ventilation and lighting). The building quality (provided by the asset rating) has a large impact on the total emissions but does not explain all emissions. Other factors such as unregulated loads (e.g. IT, plug-in appliances) or building user behaviour also create emissions, which are reflected in the operational energy usage. The asset rating is intended to inform people on first occupancy, i.e. at the point of construction, sale or rent, in order to help purchasers or occupiers in selecting the right building. EPCs are for compliance and as a result have “standard driving conditions”, such as occupancy patterns and densities; set points etc., to allow them to be compared.
2. The EPC will be completed prior to the implementation of the Minimum Energy Efficiency Standards (MEESs) but it is not currently rated an F or G so is unaffected at this present time and going forward the proposed central government rating of B by 2030.

2.4 Rochdale Core Strategy, adopted October 2016

1. The Rochdale Core Strategy, adopted in October 2016, forms the basis for planning policy on this project. The relevant policies that cover and address energy requirements, and those that touch on the wider sustainability objectives are provided below.
2. Policy G3 – Renewable and low carbon energy developments
 - The council will promote renewable, low and zero carbon energy generation developments.

2.5 Places for Everyone Joint Development Plan (2022 to 2039), adopted March 2024

1. The Places for Everyone Joint Development Plan (2022 to 2039), adopted in March 2024, forms the basis for planning policy on this project. The relevant policies that cover and address energy requirements, and those that touch on the wider sustainability objectives are provided below.

2. Policy JP-S1– Sustainable Development

- Addressing Climate Change
 - Be Carbon neutral by 2038
 - Upscaling solar photovoltaic energy
 - Reducing heating and cooling demand

3. Policy JP-S2 – Carbon and Energy

- New development will be net zero carbon
- Developments proposals should use the energy hierarchy, which in order of importance seeks to:
 - Minimise energy demand;
 - Maximise energy efficiency;
 - Use renewable energy;
 - Use low carbon energy; and
 - Utilise other energy sources.
- Incorporate adequate electric charging points, in line with Part S.
- Where practicable, prioritise connection to a renewable energy/heating/cooling network in first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date.
- For non-residential developments, achieve at least BREEAM excellent standard (or equivalent) for the ‘Ene 01 – reduction of energy use and carbon emissions’ category rising to ‘BREEAM outstanding’ equivalent for ENE 01 from 2028.
- Developments should maximize reductions in carbon emissions in line with relevant policy targets, including the minimisation of overheating risks and appropriate measures for post occupancy evaluation.

4. Policy JP-S3 – Heat and Energy Network

- Within the identified “Heat and Energy Network Opportunity Areas”, unless it can be demonstrated that there are more effective alternatives for minimising carbon emissions or such connection is not practicable or financially viable, it is expected that developments over 1000m² floorspace shall:
 - Connect to an existing or planned heat/energy network or be designed to enable future connection (where within 500m of such a network); and/or
 - Install a site-wide or communal heat/energy network solution.

3.0 ENERGY STRATEGY SCOPE

1. In accordance with best practice, the energy strategy will be developed through the application of an energy hierarchy approach. In doing so, the energy strategy will demonstrate how the proposed development can meet the planning requirements and Building Regulations Part L2 (2021 Edition incorporating 2023 amendments).
2. To comply with planning policy and client requirements, the following targets have been established for the development:
 - Net Zero Carbon in line with national targets and Policy JP-S2 Carbon and Energy within PfE
 - Maximise energy efficiency and minimize energy demand
 - Reduce CO₂ emissions through the use of renewable and low carbon decentralised energy technologies and networks.
 - Achieve EPC A+
 - Achieve BREEAM “Excellent target”, in line with Policy JP-S2 Carbon and Energy within PfE

3. The energy hierarchy describes a set of principles to guide design development and decisions regarding energy, balanced with the need to optimise environmental and economic benefits. The energy hierarchy for England is:

- Be lean: use less energy.
- Be clean: supply energy efficiently.
- Be green: use renewable energy.
- Off set.

These guiding principles can be summarised as follows:

- Using less energy, in particular by adopting sustainable design and construction measures; and
- Utilise low and zero carbon energy.

4. Key features affecting sustainability that will be applied to the development include:

- High thermal performance building fabric: low U-values and air permeability to ensure heating and cooling demand and resulting energy costs are controlled for end users
- The use of air source heat pumps to generate thermal energy efficiently
- Use of both natural and mechanical ventilation to provide the most efficient means of providing fresh air suitably for the conditions
- An array of photovoltaic panels on the roof, to generate clean electricity for the development and help to reduce its carbon footprint

5. Dynamic simulation models will be constructed to calculate the regulated energy use associated with the proposed development, and the energy hierarchy steps will be applied sequentially to demonstrate the carbon reductions achievable at each stage.

6. In accordance with the energy hierarchy a range of energy efficiency measures will be implemented at Be Lean Stage, which encompasses the adoption of a fabric first approach (passive design measures) and energy efficient building servicing (active design measures).

3.1 Passive Design Measures

1. The proposed development will be designed to reduce CO₂ emissions at Be Lean Stage, as far as practicable, through utilising passive and active design measures within the design. The active and passive design measures that are proposed to be incorporated in the design are detailed below.

- Efficient building envelope with enhanced U-values beyond the Part L2 (2021 England incorporating 2023 amendments)
- Enhanced air permeability to reduce heating demand in the winter months, and reduce heat losses through infiltration further
- Consideration for the extent of glazed area, balanced between factors such as thermal efficiency, overheating and daylighting.
- Glazed façades throughout to provide natural daylighting and reduce reliance on artificial lighting.
- Solar control glazing
- Balanced g-value for translucent elements to ensure optimised internal conditions in the winter and summer months.
- Solar shading to be incorporated wherever possible

3.2 Active Design Measures (Energy Efficient Services)

1. To ensure that planning targets and Building Regulations are met and exceeded, the proposed development will be designed and constructed to operate with a very high level of energy efficiency, and consequently a low level of carbon emissions. The design and installation of the mechanical and electrical services will make a significant contribution towards this.
2. Approved Document Part F (Ventilation, 2021, English edition) has introduced a minimum fresh air rate per m², and the requirement to ventilate common parts such as corridors and lobbies in commercial buildings.
3. The following active design measures will be incorporated into the design:
 - High efficiency LED lighting to reduce electrical consumption and heat gains from lighting.
 - Passive Infra-Red (PIR) presence detection and daylight dimming control for lighting within the office core and warehouse space.
 - Energy sub-metering to BREEAM standards to enable monitoring of energy usage.
 - High efficiency hybrid ventilation with heat recovery and free cooling to office accommodation
 - Variable speed pumps and fans to be used to promote lower operating costs and help match energy usage with the operating profile and occupancy of the building.
 - Zoning of the mechanical ventilation systems.
4. In terms of mechanical services to be included within the design, the below will be proposed:
 - Ventilation: Dedicated high efficiency Mechanical Ventilation Heat Recovery (MVHR) systems in the office areas. Zonal or Local Extract system for toilet areas.
 - Space Heating and Cooling: ASHP with reverse cycle to provide heating/cooling (VRF) in the office areas
 - Domestic Hot Water: via Air Source Heat Pump or electric point of use

4.0 COOLING HIERARCHY AND OVERHEATING RISK

1. Dynamic overheating modelling using CIBSE guidance (TM52 in this case) is required as part of the submission of the energy strategy and should account for the limits that Approved Document Part O (2021, English edition) places on the choices available when undertaking a CIBSE assessment. Part O applies to new residential buildings only and so is not applicable in this case.

The following interactions with Part L will be considered:

- Solar gains in winter can reduce the amount of space heating required to be delivered by the heating system. Reducing summer overheating by limiting glazing areas will impact winter solar gains and therefore increase the need for space heating.
 - Poorly insulated pipework, particularly in community heating schemes, can be a major contributor to overheating. Control of heat losses from pipework is dealt with under Part L of the Building Regulations and the guidance in Approved Document L should be followed.
2. Approved Document Part F (Ventilation, 2021, English edition) has introduced a minimum fresh air rate per m², and the requirement to ventilate common parts such as corridors and lobbies in commercial buildings.
 3. To reduce the risk of overheating the following measures will be considered as part of the design.

- For mechanically ventilated areas (primarily main office accommodation), ensure that the ventilation system allows for a bypass function to mitigate the impact of excess heat recirculation in warmer periods.
- The glazing will have solar control to ward off excess sunlight, glare and heat from the sun.
- Internal blinds might need to be provided to the office areas.
- Solar shading to be incorporated wherever necessary.
- Within warehouse areas, a combination of roof lights and wall lights might be utilised to achieve a balance between limiting overheating potential and maximising the benefit of natural daylighting.

5.0 RENEWABLE ENERGY

1. The last stage of the energy hierarchy relates to the generation of on-site low carbon renewable energy to further reduce carbon emissions.
2. A reduction in carbon emissions through the use of on-site renewable energy may be achieved through several technologies to generate heat or power. In determining the most suitable technology consideration has been given to:
 - Carbon reduction effectiveness.
 - Cost feasibility.
 - Practicality.
 - Planning restrictions.
 - Site related constraints and
 - User desirability.
3. A feasibility assessment of the Low and Zero Carbon (LZC) technologies will be conducted to determine the suitability and feasibility for use within the development.
4. The assessment will give an indication of the technologies that would be feasible for the site. The assessment will include consideration for wind turbines, solar thermal collectors, biomass heating and ground source heat pumps.
5. At this stage, it is considered that roof mounted solar photovoltaic (PV) panels will be the most appropriate technology considering the availability of suitable roof area.
6. Additionally, highly efficient air source heat pumps with a low GWP refrigerant are considered suitable technology to serve the space heating and hot water demands of the proposed development.
7. Consideration will be given to the site electrical infrastructure and the feasibility to facilitate battery storage of surplus power generated by PV will be explored.

6.0 CONCLUSION

1. The energy strategy outlines the key measures to be incorporated within the design in regard to sustainability, carbon emissions, renewable energy and the environmental impact of the development, in accordance with the relevant national regulations, regional and local policy.
2. The principal objectives are to reduce the site contribution to the causes of climate change by reducing the developments energy demand and by providing a portion of the demand through clean, renewable sources.

3. To comply with planning policy and client requirements, the following targets have been established for the development:
 - Net Zero Carbon in line with national targets and Policy JP-S2 Carbon and Energy within PfE
 - Maximise energy efficiency and minimize energy demand
 - Reduce CO₂ emissions through the use of renewable and low carbon decentralised energy technologies and networks.
 - Achieve EPC A+
 - Achieve BREEAM “Excellent target”, in line with Policy JP-S2 Carbon and Energy within PfE
4. The results that will be produced by the draft energy modelling will demonstrate that the proposed development complies with all the relevant policies addressed within this document and will be able to achieve carbon and energy reductions through the inclusion of energy efficient measures and Low and Zero Carbon (LZC) technologies.
5. A feasibility assessment of the Low and Zero Carbon (LZC) technologies will be conducted to determine the suitability and feasibility for use within the development.
6. To further quantify the positive impact of the proposed sustainability measures the development is currently aiming to achieve a BREEAM rating of “Excellent”.