



RJ Architectural Design Ltd

Initial Energy and Sustainability Assessment

Industrial and Warehousing Units Land off Graphite Way, Hadfield

Date: November 2024

1. Introduction

This Energy and Sustainability Assessment has been prepared to support the planning application for the proposed development of seven industrial and warehousing units at [insert location]. The aim of this document is to assess the energy consumption, carbon emissions, and overall sustainability of the proposed development, in line with local planning policy and relevant national standards. This report considers energy efficiency measures, renewable energy integration, sustainable design principles, and the development's overall environmental impact.

2. Development Overview

The proposed development comprises the construction of seven industrial and warehousing units, designed to accommodate modern business and logistics operations. The total gross external floor area is approximately 960 m². The units will be constructed with a focus on functionality, while also incorporating measures to minimise energy consumption, reduce carbon emissions, and enhance the sustainability of the development.

3. Policy Context

This assessment is based on the following planning and sustainability policies:

- **National Planning Policy Framework (NPPF):** The NPPF promotes sustainable development and emphasises the need to reduce carbon emissions and improve energy efficiency in new developments.
- **Local Development Plan:** Local planning policies related to sustainability, energy use, and climate change mitigation
- **Building Regulations (Part L):** Requirements for energy efficiency and carbon emissions in building design.

4. Energy Strategy

The energy strategy for the proposed development is based on the principles of reducing energy demand through passive design measures, incorporating renewable energy technologies. The strategy includes the following key components:

4.1 Energy Efficiency Measures

- **Building Fabric:** The development will incorporate high-performance insulation materials in the building envelope to minimise heat loss and reduce the demand for heating. The roof and external walls will be designed to meet the minimum U-values specified in Part L of the Building Regulations.
- **Windows and Glazing:** The units will feature double-glazed windows with low-emissivity coatings to reduce heat loss while maximising natural daylighting. Solar shading devices will be considered if required to prevent overheating in the summer months.
- **Heating and Cooling Systems:** Depending on the end user, if heating systems are required, a highly efficient heating system (e.g. air-source heat pumps or low-energy gas boilers) will be installed, to minimise energy consumption.
- **Lighting:** LED lighting will be installed throughout the development, with motion sensors and daylight sensors to further reduce energy use.

4.2 Renewable Energy

To meet the sustainability targets and reduce the carbon footprint of the development, the following renewable energy technologies are proposed:

- **Solar Photovoltaic (PV) Panels:** Roof-mounted PV panels will be considered for each of the industrial and warehousing units. These systems will generate on-site renewable electricity, contributing to the building's energy needs and reducing reliance on grid electricity.
- **Electric Vehicle (EV) Charging Points:** EV charging infrastructure will be installed to encourage the use of electric vehicles and support the transition to low-carbon transportation for site users and visitors.

4.3 Energy Monitoring

An energy management system comprising of smart meters giving real-time data on energy consumption to support efficient building operation and allow for ongoing energy performance optimisation.

5. Sustainability Measures

The development will integrate a range of sustainability measures to minimise its environmental impact and enhance the wellbeing of occupants.

5.1 Water Efficiency

- **Water-Efficient Fixtures:** Water-saving fixtures, such as low-flow taps, and water-efficient toilets, will be installed to minimise water consumption.
- **Rainwater Harvesting:** A rainwater harvesting system (water butts) could be implemented to collect and store rainwater for non-potable uses such as landscape irrigation, reducing the demand on the local water supply.

5.2 Sustainable Materials

- **Building Materials:** Sustainable and locally sourced materials will be used where possible, including recycled content, low-VOC paints, and finishes, and timber from certified sustainable sources (e.g., FSC-certified timber).
- **Waste Management:** The development will incorporate waste segregation and recycling facilities to encourage the recycling of construction waste and depending on the end use, ongoing waste management during the operation of the units.

5.3 Transport and Accessibility

- **Cycling Facilities:** Secure cycle parking will be provided to encourage cycling as an alternative mode of transport to the site.
- **Sustainable Transport Options:** The site will be well-served by public transport links, reducing reliance on private vehicles. A travel plan has been developed to encourage employees and visitors to use sustainable transport options.

5.4 Ecology and Landscaping

- **Biodiversity Enhancements:** The development will incorporate ecological enhancements such as planting native species in the landscaping and creating green roofs to enhance biodiversity on-site. See BNG Assessment.
- **Green Infrastructure:** Landscaping will include green spaces and permeable surfaces to manage surface water runoff, improve local air quality, and contribute to the well-being of employees and visitors.

6. Carbon Emissions

6.1 Estimated Carbon Emissions

An SBEM assessment of the estimated operational carbon emissions of the proposed development will be carried out at detailed design stage, based on energy demand and the proposed energy efficiency measures. The key features will be:

- The total predicted CO2 emissions
- The proposed renewable energy generation (e.g., solar PV) that will contribute to a further reduction in carbon emissions by offsetting grid electricity consumption.

7. Summary of Sustainability Benefits

The proposed development of seven industrial and warehousing units demonstrates a strong commitment to sustainability, with a focus on reducing energy consumption, minimising carbon emissions, and enhancing the environmental performance of the site. Key sustainability benefits include:

- A reduction in energy consumption through passive design and energy-efficient systems.
- The integration of renewable energy technologies, including solar PV panels, to generate clean on-site electricity.
- Water efficiency measures and a rainwater harvesting system to reduce the demand on local water resources.
- Sustainable construction practices and the use of environmentally friendly materials.
- Measures to promote sustainable transport and reduce the environmental impact of transportation.

8. Conclusion

This Energy and Sustainability Assessment confirms that the proposed development of seven industrial and warehousing units will be designed and built to meet the highest standards of energy efficiency and sustainability. By integrating energy-saving technologies, renewable energy systems, and sustainable design principles, the development will reduce its environmental impact and contribute to the overall goal of reducing carbon emissions and promoting sustainable development in the region.

Prepared by:

Richard Jagger - Chartered Building Engineer, C.Build E, MCABE, MCIAT
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