



Complete Compliance for Property Professionals

ENERGY & SUSTAINABILITY STATEMENT

Land Opposite,
1-35 Bentley Street, Rochdale,
OL12 6EU

**Dream Developments Northwest
Ltd**



LAND OPPOSITE 1-35 BENTLEY STREET, ROCHDALE, OL12 6EU (PREAPP/00047/23)

Summary

The proposal is for the erection of two residential apartment blocks of 2-3 storeys comprising of 23 apartments (14 x 2 bed apartments and 9 x 1 bed apartments), together with associated parking and landscaping. The development is being built at Land opposite 1-35 Bentley Street, Rochdale, OL12 6EU.

Rochdale is a large town in Greater Manchester, England, situated at the foothills of the South Pennines on the River Roch. Historically, it was part of Lancashire. The town has a rich history that spans several centuries, from its early beginnings to its prominent role in the Industrial Revolution and its notable place in the development of the cooperative movement.

Rochdale's origins date back to at least the 11th century, as mentioned in the Domesday Book. The town grew significantly during the medieval period due to its wool trade. Rochdale's market, which was granted a royal charter in 1251, became a central hub for local commerce.

Rochdale is surrounded by picturesque countryside, including the Pennine Hills and the Rochdale Canal, which offer recreational opportunities. The town has a diverse population, with a mix of different ethnic and cultural communities contributing to its vibrant social fabric.

Rochdale is well-connected by road, rail, and public transport. The M62 motorway links it to major cities like Manchester and Leeds. Rochdale railway station provides regular services to Manchester, Leeds, and other destinations, making it a commuter town for people working in nearby urban centres.

Overall, Rochdale is a town with a rich historical heritage and a dynamic present, playing a significant role in both the local and broader contexts of England's development.

This Energy Assessment has been compiled to demonstrate a Condition for Planning Permission (Reference Number – PREAPP/00047/23) by Rochdale Borough Council. This report outlines the key energy measures to be incorporated on this development in accordance with 'Places for Everyone' (Joint Development Plan Document incorporated by Greater Manchester), especially Policy JP-S2.





To meet the carbon commitments, we will need to:

- Be carbon neutral by 2038
- Hold cumulative carbon dioxide emissions to within the carbon budget
- Initiate a programme of mitigation to reduce emissions including by:
 - Significantly upscaling solar photovoltaic energy
 - Reducing heat demand in homes
 - Moving away from carbon intensive gas as the primary source of heat
 - Reducing heating and cooling demand for public and commercial buildings
 - Increasing biofuel use
 - Enable sustainable choices for travel and decarbonise transport
 - Significantly upscaling building retrofit
 - Increase the delivery of nature-based solutions and biodiversity net gain

In supporting the ambitions, climate change is a key theme running throughout the plan, rather than being reduced to a single policy, and it is only through this combination of actions that it can be properly addressed. In particular we set out:

- Methods to de-carbonise the city region through new and existing development, effective land management and through the provision of infrastructure and new technologies **Policy JP-S2 'Carbon and Energy'**
- The delivery of renewable and low carbon energy schemes **Policy JP-S3 'Heat and Energy Networks'**
- Water based measures to adapt and reduce the impacts of climate change **Policy JP-S4 'Flood Risk and the Water Environment'**

Sustainable development is an approach to building homes and communities that is environmentally, socially, and economically responsible. The goal of sustainable development is to create housing that meets the needs of current and future generations without compromising the ability of future generations to meet their own needs.

Here are some key principles of sustainable development for a housing development:

- **Environmental responsibility:** Sustainable housing development prioritizes the protection of natural resources, including air, water, and soil. This can be achieved through strategies such as energy-efficient building design, use of renewable energy sources, and implementation of green infrastructure such as green roofs and rain gardens.
- **Social responsibility:** Sustainable housing development should also promote social equity and community well-being. This can be achieved through design features such as walkable neighbourhoods, access to public transportation, and the provision of green spaces and community amenities.
- **Economic responsibility:** Sustainable housing development should be economically viable and promote long-term financial stability. This can be achieved through strategies such as energy-efficient building design, incorporation of sustainable materials and practices, and the provision of affordable housing options.
- **Long-term planning:** Sustainable housing development should also take a long-term approach to planning, ensuring that homes and communities are designed for longevity and adaptability. This can include consideration of factors such as climate change and the potential for natural disasters.

By incorporating these principles into the design and construction of a housing development, it is possible to create sustainable homes and communities that are environmentally, socially, and economically responsible. This approach can benefit not only current residents but also future



generations, by creating housing that meets the needs of all while preserving natural resources and promoting community well-being.

SAP Calculations, Air Tightness Testing, Extract Testing and EPCs will be provided at stages to show the energy demand and carbon dioxide emissions covered by Building Regulations Part L. The calculation of the estimated annual energy costs to the occupants will be provided with an EPC (Energy Performance Certificate).

The following energy saving technologies will be incorporated where possible to minimise the development's energy requirement:

- Improved U-values
- A-Rated Low E double glazing
- Low Air Permeability of façade
- Highly Efficient (A-Rated) Electric Combi Boilers
- Energy efficient lighting

As the development requires a reduction in energy, water use, pollution and over-heating, we will take a look at these in more detail as part of the Building Regulations Part L.

For each of these apartments, a fabric first approach to the design of each property will be used. This will include improved insulation U-values to the wall, floor and roof constructions.

Lower U-values in construction can help to save energy by reducing the amount of heat that is lost through the building envelope, which includes walls, roofs, windows, doors, and other building components.

U-value is a measure of a material's thermal conductivity, or how easily heat can flow through it. The lower the U-value, the better the material's insulating properties and the less heat that is lost through it.

By using building materials with lower U-values, the building envelope can be made more thermally efficient, which can help to reduce the amount of energy needed to heat the building in winter and cool it in summer. This can result in significant cost savings on energy bills over the life of the building.

Overall, reducing U-values in construction is an important strategy for improving the energy efficiency of buildings, which can help to reduce greenhouse gas emissions, save money on energy bills, and create more comfortable living and working environments.

Low emissivity (Low-E) double glazing is designed to reduce the amount of solar heat gain that enters a building. It does this by reflecting some of the solar radiation back outside while allowing visible light to pass through. This is achieved by applying a thin, transparent coating of metal oxide to the surface of the glass.

This can help to keep the interior of the building cooler and more comfortable during hot summer months, and can also reduce the amount of energy needed to cool the space, which can lead to cost savings. Additionally, Low-E coatings can also help to reduce the amount of ultraviolet (UV)



radiation that enters a building, which can help to prevent fading and damage to interior furnishings and fabrics.

Reducing solar gain when designing a house is an important consideration for improving energy efficiency and creating a comfortable living environment. Here are some strategies we have considered for reducing solar gain in the development:

- **Orientation:** Orienting the house to minimize solar gain can be an effective strategy. In hot climates, the house should be oriented to minimize the amount of direct sunlight that enters the house during the hottest parts of the day. In cooler climates, the house should be oriented to maximize the amount of sunlight that enters the house during the winter.
- **Shading:** Shading is an effective strategy for reducing solar gain in a house. External shading devices, such as awnings, canopies, or louvers, can be used to block direct sunlight from entering the house. Internal shading devices, such as blinds, curtains, or shades, can also be used to block or diffuse direct sunlight.
- **Glazing:** Choosing the right type of glazing for windows is important for reducing solar gain. Low-e coatings, tinted glass, or reflective coatings can be used to reduce the amount of solar radiation that enters the house through windows.
- **Insulation:** Proper insulation can help to reduce heat gain in the house. Insulating the roof, walls, and floors can help to prevent heat from entering the house, reducing the need for air conditioning.
- **Ventilation:** We have used a natural ventilation approach to reduce heat gain in the house. Cross-ventilation, where windows on opposite sides of the house are opened, can help to draw cool air through the house and reduce the need for air conditioning.
- **Landscaping:** Landscaping can also be used to reduce solar gain. Trees, bushes, or other vegetation can be used to shade the house from direct sunlight and reduce the amount of heat that enters the house.

By using a combination of these strategies, we have designed the dwellings to reduce solar gain and improves energy efficiency, creating a comfortable living environment while also reducing energy costs and greenhouse gas emissions.

Also, a Part O Calculation (Overheating) will be used on each dwelling to tackle the overheating risk.

A low air permeability in a house can help to reduce energy use by minimizing the amount of air leakage in and out of a dwelling. Air leakage occurs when there are gaps or cracks in the building envelope, such as around windows, doors, and other openings, which can allow air to pass through.



When air leaks in and out of a dwelling, it can cause temperature fluctuations, which can increase the amount of energy needed to heat or cool the house. In winter, cold air can enter the dwelling through gaps in the building envelope, causing the indoor temperature to drop and requiring more energy to heat the house. In summer, warm air can enter the dwelling, causing the indoor temperature to rise and requiring more energy to cool the dwelling.

By reducing air permeability and minimizing air leakage, it is possible to create a more thermally efficient building envelope, which can help to maintain a more consistent indoor temperature and reduce the amount of energy needed to heat or cool the dwelling. This can result in significant energy savings over the life of the dwelling and can help to reduce greenhouse gas emissions associated with energy consumption.

One way to achieve low air permeability in a dwelling is through proper sealing of the building envelope, including the use of air barriers and caulking to seal gaps and cracks. Building materials with high insulation values and low air permeability, such as insulated concrete forms or structural insulated panels, can also be used to create a more energy-efficient building envelope.

Overall, reducing air permeability in a house is an important strategy for improving energy efficiency, reducing energy costs, and creating a more comfortable living environment.

Highly efficient electric boilers can offer several benefits that make them an attractive option for heating and hot water systems in residential and commercial properties. Here are some key advantages:

Energy Efficiency, Electric combi boilers convert nearly 100% of the electrical energy into heat, making them highly efficient. Unlike gas boilers, there are no energy losses due to flue gases or the combustion process.

Environmentally Friendly, Electric boilers produce no emissions during operation, helping to reduce the carbon footprint of the property. This is particularly beneficial in areas where electricity is generated from renewable sources.

Safety, Electric boilers are generally safer than gas boilers because there is no risk of gas leaks, carbon monoxide emissions, or explosions. This makes them a preferred choice for locations where safety is a paramount concern.

Space Saving, Electric combi boilers are typically compact and wall-mounted, requiring less space than traditional gas boilers. This makes them suitable for smaller properties where space is at a premium.

Versatility, Electric combi boilers can be installed in a variety of locations, including places where gas supply is not available. They can also be used in off-grid properties when paired with renewable energy sources like solar panels.



Low Maintenance, With fewer moving parts and no combustion process, electric boilers tend to require less maintenance than gas boilers. This can result in lower maintenance costs and fewer service interruptions.

Instant Hot Water, Electric combi boilers provide hot water on demand, eliminating the need for a separate hot water cylinder and ensuring a continuous supply of hot water.

In summary, electric combi boilers offer high efficiency, safety, ease of installation and maintenance, and environmental benefits, making them a viable option for modern heating and hot water needs.

Solar photovoltaic (PV) systems can help to reduce energy use in dwellings by generating electricity from the sun's energy, which can be used to power appliances, lighting, and other electrical devices in the home.

When a solar PV system is installed on a dwelling, it typically includes solar panels mounted on the roof or on a nearby structure. These panels convert sunlight into direct current (DC) electricity, which is then converted to alternating current (AC) electricity through an inverter and fed into the dwelling's electrical system.

By generating electricity on-site, solar PV systems can offset some or all of the energy that would otherwise be purchased from the grid. This can help to reduce the amount of electricity consumed from non-renewable sources, such as fossil fuels, and lower greenhouse gas emissions associated with electricity generation.

Additionally, many solar PV systems are designed to be grid-connected, which means that any excess electricity generated by the system can be fed back into the grid for use by other customers. This can help to reduce strain on the grid during periods of high demand, and can provide a source of income for the homeowner through net metering programs.

Overall, solar PV systems can be an effective way to reduce energy use in dwellings by generating clean, renewable electricity on-site and reducing dependence on non-renewable energy sources.

This development will be using highly efficient electric combi boilers (A-Rated) for space heating and DHW (Domestic Hot Water) with a 13.80 KW Solar PV Array System for all 23 apartments to reduce energy and the total CO2 emissions.

Table 1.3 (below) shows the Code Levels for Mandatory Maximum Standards in Indoor Water Consumption.

Table 1.3: Code Levels for Mandatory Maximum Standards in Indoor Water Consumption	
Code Level	Maximum Indoor Water Consumption in Litres per Person per Day
Level 1 (★)	120
Level 2 (★★)	120
Level 3 (★★★)	105
Level 4 (★★★★)	105
Level 5 (★★★★★)	80
Level 6 (★★★★★★)	80

A new dwelling can be designed to reduce water usage by incorporating water-efficient features and practices. Here are some strategies that are being considered for reducing water usage by design:

- **Low-flow fixtures:** Installing low-flow fixtures, such as toilets, faucets, and showerheads, can significantly reduce water usage in the home. Low-flow fixtures use less water without sacrificing performance or functionality.
- **Water-efficient appliances:** Choosing water-efficient appliances, such as dishwashers and washing machines, can also help to reduce water usage in the home. Look for appliances with the ENERGY STAR label, which indicates they meet or exceed energy efficiency and water efficiency standards.
- **Greywater systems:** Greywater systems can help to reduce water usage by recycling water from sinks, showers, and washing machines for use in irrigation or toilet flushing. Greywater systems can significantly reduce the amount of potable water used in the home.
- **Rainwater harvesting:** Harvesting rainwater for use in irrigation can also reduce the amount of potable water used in the home. A rainwater harvesting system collects rainwater from the roof and stores it for later use in the landscape.

By incorporating these strategies into the design of a dwelling, it is possible to significantly reduce water usage and create a more sustainable living environment.

This development will be looking to achieve Code Level 3 & 4 of 105 litres per person per day. This will be evidenced with a Water Calculation once the development has decided on fixture and fittings of bathrooms, WCs, Kitchen's and Utility rooms.

For Greater Manchester to meet its carbon neutrality commitments there has to be an increase in renewable energy generation. The advantages of increasing renewable and low carbon energy capacity will need to be balanced against any potential impacts such as on residential amenity, local environment and landscape character, sites of conservation and heritage value, telecommunications and aviation equipment and air quality.

Based on the evidence which has informed the 5 Year Environment Plan and achieving net zero carbon in new development, this has shown that there will need to be a significant increase in photovoltaic technology.

Therefore, this Energy Statement for planning applications for residential developments will follow best practice thresholds in relation to reducing energy demand and onsite renewable energy generation. The thresholds set out in the table below are consistent with the Greater Manchester Five Year Environment Plan.

-	Space Heat Demand ²⁵	Hot Water Energy Demand ²⁶	Renewable Energy Generation Targets
2021 - 2025	Houses (30kWh/m ²) Flats (25kWh/m ²)	20% energy demand reduction in the total heat required for water heating	*Photovoltaic installation: 20% ground floorspace
2025 - onwards	Houses (20kWh/m ²) Flats (15kWh/m ²)	^20% energy demand reduction in the total heat required for water heating	*Photovoltaic installation: 40% ground floorspace
*Ground floorspace used as a proxy for available roof area.	-	-	-
^will need to be reviewed with Future Homes Standard 2025 to determine if savings already embedded.	-	-	-

Development Land opposite 1-35 Bentley Street	Space Heat Demand	Hot Water Energy Demand	Renewable Energy Generation (20% Ground Floor Space) 20% of 758m ² = 151.60m ²
Ground Floor	19.43 (kwh/m ²)	Instantaneous	6144 kW/yr
First Floor	14.60 (kwh/m ²)	Instantaneous	6144 kW/yr
Second Floor	24.29 (kwh/m ²)	Instantaneous	3072 kW/yr
Total Average	19.44 (kwh/m ²)	Instantaneous	Total – 15360 kW/yr
Compliance Met	YES	YES	YES

Table A shows how Part L compliance has been achieved by improving the u values of the fabric of the buildings.

Table A- Baseline Specification

Showing the minimum specification required to achieve Part L compliance

Category	Item	Specification /U-Value	
		Limit	Actual
Building Fabric (W/m2K)	Ground Floor / Exposed Floor	0.18	0.10
	Roof / Exposed Ceiling	0.16	0.11
	Wall Construction	0.26	0.18
Fenestration (W/m2K)	Solid Door	1.60	
	Glazed Door	1.60	
	Window/Rooflight	1.60	1.40
Thermal Bridging (y-value)	Accredited Psi Value Details	Yes	
Ventilation	Air Permeability (m3/hm2)	8.00	4.00
	Mechanical Ventilation	Intermittent extractor fans	
Heating	Primary Heating System	A-Rated) Condensing Electric Boiler	
	Controls	Time and temperature zone controls	
	Heat Distribution	Radiators	
	Water Heating	From Main Heating System	
	Other Heating System	None	
Additional Features	Low Energy Lighting	100% (LED)	
	Renewables	0.60kW Solar PV System on each apartment	

Table B shows how Part L compliance has been achieved by using renewable and low carbon technologies.

Table B- Renewables and low carbon technologies – considerations

Technology	Requirements	Suitable for project?	Appropriate?
Photovoltaic panels (PV)	Roof facing north to south (or flat roof)	Yes	YES
	Little/no or modest over shading	Yes	
	Flat roof or pitched roof no greater than 45 degrees	Yes	
	Any size development	Yes	
Solar thermal	All requirements as for photovoltaic panels	Yes	NO
	water tank (not suitable for instantaneous hot water)	No	
Air source heat pumps (ASHP)	Sustainable external wall	Yes	YES
	Aesthetic considerations	Yes	
	Noise impact	Yes	
	Any size development	Yes	
Ground source heat pumps	External space for horizontal trench or vertical borehole	No	NO
	Medium to large sized development	Yes	
	Archaeology	Unknown	
	Best suited for underfloor heating	Yes	
Biomass	Space needed for plant, fuel storage and deliveries	No	NO
	Medium to large size development	Yes	
	Minimal impact on residents (air quality, deliveries)	No	

Selected Low Carbon Technology – **Solar PV**

Table C – Total Reduction of CO₂ of Development

Average Emissions per Block	Carbon dioxide (Tonnes CO ₂ per annum)	(CO ₂) Carbon dioxide savings (%)
(Block A) Target CO ₂ Emissions Rate (TER) kg CO ₂ /m ² .annum	167.36	
(Block A) Building CO ₂ Emissions Rate (BER) kg CO ₂ /m ² .annum	79.40	53%
(Block B) Target CO ₂ Emissions Rate (TER) kg CO ₂ /m ² .annum	105.30	
(Block B) Building CO ₂ Emissions Rate (BER) kg CO ₂ /m ² .annum	45.57	57%

Total Emissions for development Land opposite 1-35 Bentley Street	Carbon dioxide (Tonnes CO ₂ per annum)	(CO ₂) Carbon dioxide savings (%)
Target CO ₂ Emissions Rate (TER) kg CO ₂ /m ² .annum	272.66	
Building CO ₂ Emissions Rate (BER) kg CO ₂ /m ² .annum	124.97	54.17%

The site has exceeded Building Regulations 2022 Part L and has saved an extra 147.69 kgCO₂/yr/m²

Conclusion

This development will be well designed to mitigate against the effects of climate change and it has been demonstrated that they have exceeded the Building Regulations (2022) Part L with a further 54.17% reduction in CO₂ emissions.

The development has met the criteria of Policy JP-S2, JP-S3, JP-S4 of the joint development plan document 'Places for Everyone'.