



PROPOSED RESIDENTIAL DEVELOPMENT

SMITHY BRIDGE ROAD, LITTLEBOROUGH,
ROCHDALE

ENERGY REPORT

Taylor
Wimpey

February 2024

Draft v1.0

Introduction

This Energy Report has been prepared by Award Energy Consultants on behalf of Taylor Wimpey UK Ltd ("Taylor Wimpey") in relation to a development of 199 dwellings, associated access, drainage, and the provision of public open space and landscaping at Smithy Bridge Road, Littleborough, Rochdale.

This report considers the issues surrounding sustainable construction and, in particular, it considers and evaluates the measures incorporated into the design of the development to reduce the predicted energy usage and carbon emissions of the site.

Policy Context

The following documents were considered:

Building Regulations Part L 2021 - Part L sets minimum standards for fabric and energy efficiency for new build dwellings. It is anticipated that most of the dwellings at Smithy Bridge Road will be built under Part L1 2025, however the Future Homes Standard has not yet completed the consultation stage and software to demonstrate performance is not yet available. Under the FHS, dwellings will be required to be zero carbon ready in anticipation of the decarbonisation of the grid, with carbon reductions in the region of 44% above Part L1 2021 achieved

National Planning Policy Framework 2023 - strengthens the emphasis on sustainable development and requires new developments to secure the highest viable resource and energy efficiency and reduction in emissions by considering Governments and other national standards

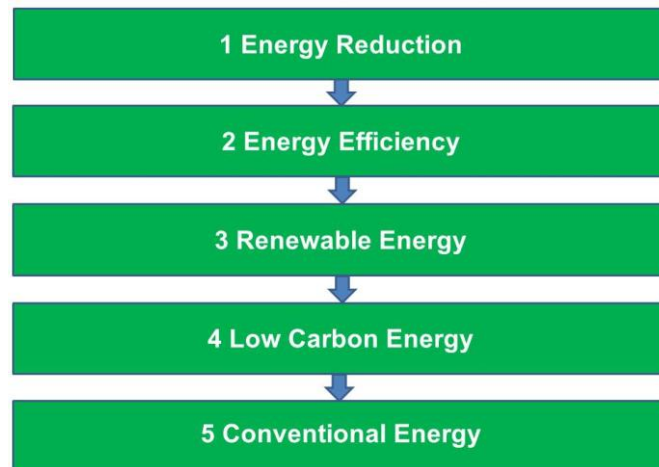
Greater Manchester Combined Authority Places for Everyone Policy JP-S2: Carbon and Energy – pathway to achieving a carbon neutral Greater Manchester no later than 2038. Contains an expectation that new development will, unless it can be demonstrated that it is not practicable or financially viable;

- Be net zero carbon with respect to regulated operational carbon emissions
- Incorporate adequate electric vehicle charging points
- Achieve energy demand reductions for residential development in terms of space heat demand, hot water energy demand and the delivery of on-site renewable energy generation, in accordance with Table 5.1 below

	Space Heat Demand Requirement	Hot Water Energy Demand Requirement	Renewable Energy Generation Targets
2021 -2025	Houses (30kWh/m ²)	20% energy demand reduction in the total heat required for water heating	Photovoltaic installation: 20% ground floor space

Proposal

Taylor Wimpey have appointed Award Energy to use SAP 10 to analyse the potential energy efficiencies that can be achieved through an enhanced fabric specification and design before the introduction of renewable technologies in the form of Air Source Heat Pumps and Photovoltaic panels. This strategy aligns with the Energy Hierarchy, as shown below, and detailed in Policy JP-S2.



Step 1 - Energy Reduction

The first step of the hierarchy requires developments to use less energy through passive design measures including the maximisation of solar heating and reducing heat loss and meeting the requirements to reduce energy consumption and introduce energy efficiency.

- The development layout has been designed to maximise a north-south orientation to allow for passive design whereby dual aspect dwellings enable views, good daylighting and cross ventilation
- Internally, the accommodation has been laid out to maximise the internal space and light afforded, with primary habitable rooms benefitting from a southern orientation. Each of the principal living rooms will have sufficient glazing to allow natural light to penetrate the rooms, reducing the need for artificial lighting
- The construction specification of every home will include high levels of insulation in the ground floor, external walls and roof spaces and all fabric elements will have u-values lower than those required by Part L 2021, including high performance triple glazing
- High levels of air tightness to be achieved within the construction of the dwelling to reduce unnecessary heat loss; all dwellings will be tested for air leakage
- All dwellings will meet the requirements of Approved Document Part O: Overheating, utilising an appropriate glazing specification and opening areas to minimise solar gain and allow purge ventilation
- All houses will benefit from a garden or private space for recreation, thus allowing external space for recreation and clothes drying

Step 2 - Energy Efficiency

- Energy efficient lamps will be installed in every light fitting. Each entrance will be illuminated with an energy efficient external light with appropriate controls to avoid unnecessary use
- Highly efficient Air Source Heat Pumps are proposed to provide space and water heating. These will be accompanied by thermostatic controls, zoned heating and programmers to ensure that heating is optimally controlled to use the least amount of energy
- The design team propose using natural ventilation via background/trickle ventilation, opening windows and wet room extraction, with MVHR being considered on appropriate plots
- Electric Vehicle Charging Points or Bollards will be provided for each dwelling

Step 3 – Renewable Energy

Taylor Wimpey propose the use renewable technologies in the form of Air Source Heat Pumps and the installation of Photovoltaic panels as outlined in Table 1 below, though the precise amounts will be finalised at the detailed design stage.

Table 1

House Type	Ground Floor Area	Minimum PV required 20% of GFA kWp	Proposed PV Per Plot (approximate) kWp
Mid-Terrace	36.12	1.111	1.215
Semi-Detached	45.13	1.389	3.645
Detached	58.15	1.587	1.62

Fabric Specification

Within the enhanced specification, all heat loss elements have been insulated beyond requirements and regulated u-values for external walls, floors and roofs have been surpassed.

Table 2

Element	Value required by AD Part L1 2021 (u-value)	Enhanced specification (u-value)
Walls (w/m ² k)	0.26	0.25
Roofs (w/m ² k)	0.16	0.11
Floors (w/m ² k)	0.18	0.15
Windows (w/m ² k)	1.6	0.86
Doors (w/m ² k)	1.6	1.2
Design air pressure test (m ³ /h/m ²)	8	4.5 (3 for MVHR plots)

Space Heating Demand

Policy JP-S2 requires that houses achieve a space heating demand of no more than 30 kWh/m². Table 3 below outlines the performance of a typical example of each dwelling type, with Mechanical Ventilation with Heat Recovery proposed where appropriate.

Table 3

Dwelling Type	Space Heating Demand Requirement kWh/m ²	Space Heating Demand Achieved kWh/m ²
Mid-Terrace	30	17.41
Semi-Detached	30	24.78
Detached	30	20.54

*calculated using SAP10 software

Water Heating Demand

Policy JP-S2 requires that houses achieve a water heating demand of no less than 20% of the Notional dwelling. Table 4 below outlines the performance of a typical example of each dwelling type, with Diverters included where appropriate.

Table 4

Dwelling Type	Water Heating Demand Notional kWh/yr	Space Heating Demand Proposed kWh/yr	% Reduction in Water Heating Demand
Mid-Terrace	2237.29	1476.00	34.03%
Semi-Detached	2437.19	1507.35	38.15%
Detached	2582.67	1755.81	32.02%

*calculated using SAP10 software

Carbon Emissions

Policy JP-S2 requires that houses achieve zero carbon for regulated carbon emissions. As the Future Homes Standard consultation is not yet complete, it is impossible to evaluate the dwelling types with the appropriate software. Table 4 below outlines the performance of a typical example of each dwelling type, using the proposed specification detailed in Table 2, the anticipated PV outlined in Table 1, Air Source Heat Pumps with Diverters and Mechanical Ventilation with Heat Recovery units included where appropriate. As shown, all dwelling types are significantly above the level required for zero carbon once the grid is decarbonised.

Table 5

Dwelling Type	Carbon Emissions (KgCO ₂ /Year/m ²) Baseline	Carbon Emissions (KgCO ₂ /Year/m ²) Enhanced specification	% Reduction in Carbon Emissions over Part L1 2021	% Reduction in Carbon Emissions over Part L1 2025 (estimated)
Mid-Terrace	10.20	2.05	79.09%	35.09%
Semi-Detached	10.43	1.08	89.65%	45.65%
Detached	10.60	1.80	83.02%	30.02%

*calculated using SAP10 software

Conclusion

In accordance with the sustainability requirements within Places for Everyone, this Energy Report demonstrates that the proposed enhanced fabric specification plus the application of renewable technologies reduces space heating demand, water heating demand and carbon emissions in line with Policy JP-S2.

Caveat

This document has been prepared for the titled project, or named part thereof, and should not be relied upon or used for any other project or part as the case may be, without an independent check being made on it. Award Energy shall not be liable for the consequences of using this document other than for the purpose for which it was commissioned, and any user and any other person using or relying on this document for such other purpose, agrees and will be such use or reliance be taken to confirm this agreement to indemnify Award Energy for all loss of damage resulting therefrom.