STANSTY CHAIN ROAD, WREXHAM

Application Ref: P/2019/0923

RENEWABLE ENERGY STATEMENT

July 2025

Introduction

This report has been prepared by Award Energy Consultants on behalf of Castle Green Homes in relation to a proposed development of 380 dwellings at Stansty Chain Road, Wrexham. This statement has been produced to address Condition 27 of Planning Application Ref: P/2019/0923 and Wrexham Local Development Plan Policy RE1. It highlights the key sustainability features to be incorporated into the development to reduce carbon emissions through an enhanced fabric specification and the use of renewable technology in the form of Photovoltaic panels and Air Source Heat Pumps.

Policy Context

The following documents were considered:

Approved Document Part L1 2022 - as newly constructed dwellings, Part L1 is of particular note. Part L1 sets out guidance for meeting the energy efficiency requirements of the Building Regulations. Whilst the dwellings are designed with the Future Homes Standards in mind, the consultation has not yet concluded and software is not yet available to demonstrate compliance

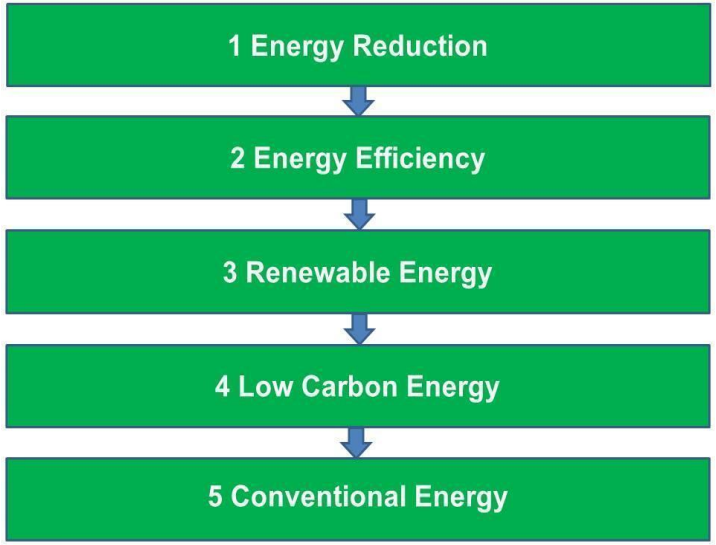
National Planning Policy Framework 2024 - strengthens the emphasis on sustainable development and requires new developments to secure the highest viable resource and energy efficiency and reduction in emissions by considering Government and other national standards

Wrexham Local Development Plan Policy RE1: Development and Renewable Energy/Low Carbon Technology: requires developers to incorporate schemes which generate energy from renewable and low carbon technologies

Condition 27 of Planning Application Reference P/2019/0923: No dwelling shall be occupied until a scheme of low and zero carbon technology has been implemented in accordance with a scheme that shall have first been submitted to and approved in writing by the Local Planning Authority. Thereafter the measures installed in accordance with the scheme shall be retained.

Energy Hierarchy

Award Energy have been instructed to assess the potential energy efficiencies and carbon emission reductions that can be achieved through aligning with the Government's Energy Hierarchy as encouraged by Wrexham County Borough Council's climate change policies. Design teams are required to apply the following steps to reduce carbon emissions through the steps outlined below:



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 where possible 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
- 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 gas boilers or Air Source Heat Pumps will be installed in each house and will include appropriate controls to maximise the efficient use of the system
- The design team propose using natural ventilation via background/trickle ventilation, opening windows and wet room extraction.
- Electric Vehicle Charging Points or Bollards will be provided for each dwelling

Fabric Specification

In line with Steps 1 & 2 of the Energy Hierarchy, Castle Green Homes propose an enhanced construction specification as detailed in Table 1 below.

Table 1

Element	Value required by AD Part L1 2022 (u-value)	Enhanced specification (u-value)
Walls (w/m²k)	0.18	0.18
Party Walls (w/m²k)	0.20	0.00
Roofs (w/m²k)	0.13	0.10
Floors (w/m²k)	0.15	0.10/0.11
Windows (w/m²k)	1.4	1.3
Doors (w/m²k)	1.4	1.2
Design air pressure test ($m^3/h/m^2$)	8	4.5

Step 3 – Renewable Energy

Award Energy have analysed the different available forms of renewable energy technology, as detailed in Table 2 below.

Table 2

Technology	Evaluation
Photovoltaics (PV)	**Solar photovoltaic panels are technically feasible, easily understood by potential purchasers and provide significant occupier benefits and therefore Photovoltaic Panels are recommended and the approximate amounts shown in Table 3 will be included in the design of the Part L1 2022 dwellings. Panels will also be included in those dwellings falling into the Future Homes Standards, although the precise amounts are unknown at the time of writing**
Combined Heat & Power	It is considered that the development infrastructure is not adequate to provide centralized heating and hot water from CHP across the site due the need for an energy centre and the corresponding space considerations
District Heating	There are no available District Heating Networks for the development at this stage
Solar Hot Water	Solar Hot Water panels could not provide a sufficiently effective contribution to offset energy requirements for hot water within the dwellings due to the excellent efficiencies within the proposed heating systems.
Biomass Heating (including Biomass CHP)	Biomass boilers are not technically feasible due to lack of space for storage of pellets
Air Source Heat Pumps (ASHPs)	**Air Source Heat Pumps are proposed for any plots falling into the Future Homes Standards**
Ground Source Heat Pumps (GSHPs)	GSHPs are not a suitable technology for due to lack of suitable ground space for the necessary horizontal coils
Wind Turbines	Wind Turbines are not suitable for this development due to the impact on noise and visual amenities
Micro Hydro	There is no capacity for micro hydro on this site since there are no local watercourses available.

Table 3

Dwelling Type	Photovoltaics Per Plot for Plots under Part L1 2022 (approximate kWp)
Apartments (Average)	1.76
Detached	4.40
Semi-Detached/End-Terrace	3.08
Mid-Terrace	2.20

Carbon Reduction Calculations – Plots 1-51

As the timing of the Future Homes Standard is not yet known, Award Energy have assumed that the first 51 plots will fall into Part L1 2022 and compared the specification that will achieve minimum compliance with Part L1 2022 with the intended enhanced specification as shown in Table 1 plus gas boilers and Photovoltaic Panels. Table 4 below shows the predicted Carbon Emissions for the proposed dwelling types.

Table 4

Dwelling Type	Carbon Emissions ($KgCO_2/Year/m^2$) Baseline specification	Carbon Emissions ($KgCO_2/Year/m^2$) Enhanced specification	% Reduction in Carbon Emissions over Part L1 2022
Apartments (Average)	12.51	12.13	3.04%
Detached	9.86	9.51	3.55%
Semi-Detached/End-Terrace	10.36	10.04	3.09%
Mid-Terrace	9.41	9.24	1.81%

*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

Table 5 below shows the predicted Carbon Emissions for each dwelling type (as defined by the SAP conventions), weighted to represent fairly the mix on site. The predicted baseline weighted carbon emissions for the site are **10.08 $KgCO_2/Year/m^2$** (with all properties meeting the minimum requirements of Part L1 2022). The average predicted carbon emissions with the design team's enhanced specification are **9.78 $KgCO_2/Year/m^2$**, representing a **3.01%** reduction in site-wide carbon emissions over Part L1 2022.

Table 5

Dwelling Type	Number	Weighted Average Carbon Emissions ($KgCO_2/Year/m^2$) Baseline specification	Weighted Average Carbon Emissions ($KgCO_2/Year/m^2$) Enhanced specification
Apartments (Average)	4	0.98	0.95
Semi-Detached	23	4.45	4.29
Mid-Terrace	12	2.44	2.36
Detached	12	2.21	2.17
Total	51	10.08	9.78
Weighted Average Carbon Emission Reduction above Part L1 2022 = 3.01 %			

*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

Carbon Reduction Calculations – Plots 52-380

It is assumed for the purposes of this Report that the remaining plots will fall under the Future Homes Standards and require Air Source Heat Pumps to be installed. In the absence of software to prove the Future Homes Standard, Award Energy have compared the specification that will achieve minimum compliance with Part L1 2022 with the intended enhanced specification as shown in Table 1, with the inclusion of Air Source Heat Pumps. As the precise number of Photovoltaic panels required for compliance with the FHS is unknown at this point, these have not been included in the calculations. Table 6 below shows the predicted Carbon Emissions for the proposed house types.

Table 6

Dwelling Type	Carbon Emissions ($KgCO_2/Year/m^2$) Baseline specification	Carbon Emissions ($KgCO_2/Year/m^2$) Enhanced specification	% Reduction in Carbon Emissions over Part L1 2022
Apartments (Average)	11.87	3.88	67.31%
Detached	9.41	3.16	66.42%
Semi-Detached/End-Terrace	9.72	3.52	63.79%
Mid-Terrace	8.81	3.11	64.70%

*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

Table 7 below shows the predicted Carbon Emissions for each dwelling type (as defined by the SAP conventions), weighted to represent fairly the mix on site. The predicted baseline weighted carbon emissions for the site are **9.45 $KgCO_2/Year/m^2$** (with all properties meeting the minimum requirements of Part L1 2022). The average predicted carbon emissions with the design team's enhanced specification are **3.26 $KgCO_2/Year/m^2$**, representing a **65.47%** reduction in site-wide carbon emissions over Part L1 2022.

Table 7

Dwelling Type	Number	Weighted Average Carbon Emissions ($KgCO_2/Year/m^2$) Baseline specification	Weighted Average Carbon Emissions ($KgCO_2/Year/m^2$) Enhanced specification
Apartments (Average)	4	0.14	0.05
Semi-Detached	190	5.43	1.82
Mid-Terrace	92	2.72	0.98
Detached	43	1.15	0.41
Total	329	9.45	3.26
Weighted Average Carbon Emission Reduction above Part L1 2022 = 65.47 %			

*calculated using SAP10 software. Award Energy can, upon request, provide reports from SAP10.

Conclusion

High standards of building fabric, passive design and energy efficient mechanical and electrical elements ensure that many sustainability measures are built into the development of 380 dwellings at Stansty Chain Road, Wrexham and therefore offer ongoing resilience against the future effects of climate change. This strategy is predicted to reduce site-wide average Carbon Emissions by **65.47%** over Part L1 2022, through the use of enhanced fabric and the introduction of renewable technology in the form of Photovoltaic Panels and Air Source Heat Pumps, in line with Condition 27 of Planning Application Ref: P/2019/0923.

Caveat

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