



ENERGY STATEMENT

NORTH END ROAD, YAPTON

JSP SUSTAINABILITY LTD
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EXECUTIVE SUMMARY

- The proposed Redrow Homes residential development off North End Road, Yapton includes the construction of 45 no. homes.
- Policy ECC SP2 of the Arun Local Plan requires the provision of renewable energy technologies capable of generating 10% of the site's predicted energy requirement.
- PV arrays capable of generating 31,626.19kWh/year will be installed on the roof slopes of a number of properties.



1 INTRODUCTION

JSP Sustainability Ltd has been commissioned by Redrow Homes to prepare an Energy Statement in response to condition 21 of the planning approval for the residential development off North End Road, Yapton. The approved development includes the construction of 45 no. dwellings, landscaping and associated highway works. For completeness the condition is included below;

“At least 10% of the energy supply of the development shall be secured from decentralised and renewable or low carbon energy sources (as described in the glossary at Annex 2 of the National Planning Policy Framework, March 2012). Details and a timetable of how this is to be achieved for each phase or sub phase of development, including details of physical works on site, shall be submitted to and approved in writing by the Local Planning Authority before any development in that phase or sub phase begins. The development shall be implemented in accordance with the approved details and timetable and retained as operational thereafter, unless otherwise agreed in writing by the Local Planning Authority.”

Condition 21

This Statement will detail the energy strategy proposed by Redrow Homes, including the energy efficiency and renewable energy measures to satisfy condition 21. A number of documents have been used to complete this Statement. These include;

National Planning Policy Framework (NPPF) includes a presumption in favour of sustainable development. The Framework expands upon the guiding principles and objectives of a successful planning system. These include the building of a strong and competitive economy, delivering high quality housing, requiring good design and meeting the challenges of climate change.

Approved Document L1A sets fabric efficiency standards and together with SAP, establishes a maximum CO₂ emission rate for new build residential properties. The Approved Document is the Government's sustainable design benchmark in England.

Arun Local Plan includes policy ECC SP2 which requires all new major development to produce 10% of the energy requirement onsite from renewable and low carbon energy sources. The policy notes that energy efficiency measures will be taken into account when establishing the total energy requirement.



2 ENERGY STRATEGY

2.1 Proposed Strategy

Redrow Homes proposes to construct each home to an efficient construction specification and install photovoltaic arrays on the roof slopes of a number of properties, such that 10% of the energy requirement of the development will be sourced from renewable energy sources.

2.2 Establishing a Baseline

Before expanding on the strategy proposed by the developer, it is first necessary to calculate the development's Part L compliant emission rate and energy requirement. This task was achieved through house type modelling in SAP 2012. Table 1 below summarises the baseline calculations for the re-planned area of the site.

Table 1 – Part L Baseline Energy Requirement & Emission Rate

House Type	Target Emission Rate (kg/year)	Energy Requirement (kWh/year)
Henley	9,994.15	42,901.31
Oxford	18,976.32	81,237.50
Stratford	13,162.38	55,979.27
Amberley	7,892.95	33,805.29
Warwick	1,758.04	7,472.63
Letchworth	9,348.86	39,486.56
Tavy	5,495.50	23,067.65
Dart	5,972.61	24,989.22
Brosgrave	6,409.52	26,898.54
TOTAL	79,010.33	335,838.98

Table 1 confirms a Part L1A energy requirement of 335,838.98kWh/year and associated target emission rate of 79,010.33kg/year.



2.3 Energy Efficiency Measures

Redrow Homes exposure to the marketplace has confirmed that purchasers demand energy efficient homes with low operating costs and technologies. As such the Group's current construction specification has been tailored to these demands and incorporates many of the lean and clean measures of the Energy Hierarchy. Listed below are some of the measures that will be incorporated into the detailed design of the scheme;

- The construction specification of every home will include high levels of insulation in the ground floor, external walls and roof spaces.
- Each of the house types elevations has sufficient glazing provision to the principal living rooms to allow each home to benefit from solar gain. This reduces the space heating and lighting requirement of each home;
- The site plan confirms that many of the homes have a south easterly to south westerly facing elevation. This is not a universal provision;
- The detailed house type designs will incorporate the thermal bridging guidance produced by Constructive Details and the Government, thereby reducing a significant source of heat loss.
- An efficient gas condensing boiler will be installed in each property. The heating designs of each house type will include dual zone controls with delayed start thermostats.
- Energy efficient lamps will be installed in every light fitting.
- Each property will be naturally ventilated using efficient decentralised extract fans to ensure the internal living environment will be healthy and comfortable. Occupants will have the ability to ventilate their home via openable windows during summer homes to prevent overheating (purge ventilation). As part of the Building Regulations assessment all of the proposed house types will show a low risk of summer overheating.
- Each entrance will be illuminated with an energy efficient external light or provision will be made for a purchaser to install such a fixture.
- The white goods installed in each property or offered to purchasers will be energy efficient with an A+/A rating.

The table overleaf provides a summary of the energy efficiency standards targeted in the design and construction of each home;



Table 2 – Specification Summary

Element	Part L	Enhanced Specification
Wall	0.30W/m ² K	0.28W/m ² K
Party Walls	0.20W/m ² K	0.00W/m ² K
Cold Roof	0.20W/m ² K	0.11W/m ² K
Floor	0.25W/m ² K	0.12W/m ² K
Glazing	2.00W/m ² K	1.20W/m ² K
Door	2.00W/m ² K	1.40W/m ² K
Air Permeability	10 m ³ /(h.m ²) @ 50 Pa	5.0 m ³ /(h.m ²) @ 50 Pa



2.4 Performance of the Energy Efficiency Measures

The specification summarised overleaf was modelled in SAP to determine the anticipated energy requirement of the site and the reductions over Part L1A. The table below summarises the results calculated.

Table 3 –Energy Requirement & Emission Rate

House Type	Emission Rate (kg/year)	Energy Requirement (kWh/year)
Henley	9,800.59	42,005.20
Oxford	18,739.12	80,139.33
Stratford	12,944.82	54,972.05
Amberley	7,278.46	30,960.40
Warwick	1,621.97	6,842.69
Letchworth	8,429.57	35,230.56
Tavy	4,914.87	20,379.56
Dart	5,235.78	21,577.96
Brosgrave	5,816.72	24,154.10
TOTAL	74,781.89	316,261.90

The calculations confirm that the site has a forecasted energy requirement of 316,261.90kWh/year, representing a saving of 5.83% over Part L1A. To comply with policy SP2, photovoltaic panels capable of generating 31,626.19kWh/year of electricity must be installed across the site.



2.5 Renewable Technologies

Photovoltaic panels convert sunlight into electricity for use within a property. A PV cell usually consists of 1 or 2 layers of a semi-conducting material such as silicon. PV systems can come in different forms. The most popular are modules which can either sit on the roof or be integrated into it. The technology is most efficient when oriented due south. However, panels orientated south of east or west are suitable.



To generate 31,626.19kWh/year of electricity, the SAP Appendix M methodology estimates that PV arrays totalling 36.80kWp must be installed on the southerly roof slopes of a number of properties. Note however that the Microgeneration Certification Scheme method of calculation will determine a lower kWp figure for the same level of generation. The installed arrays will also offset a further 16,413.99kg/year of CO₂.



3 EVALUATION

This Statement accompanies the planning application for the proposed residential development off North End Road, Yapton. Policy SP2 of the Arun Local Plan and condition 21 of the planning approval requires Redrow Homes to install renewable technologies capable of generating 10% of the site's predicted energy requirement. [JSP Sustainability](#) was instructed by the developer to review their proposed strategy and confirm compliance with policy SP2 and condition 21. Following a review and detailed calculation we can confirm;

- Each home will be constructed to an efficient fabric and building services specification.
- PV arrays capable of generating 31,626.19kWh/year of electricity will be installed on the roof slopes of a number of properties.
- The installed arrays will offset 16,413.99kg/year of CO₂.
- The constructed development will have a net emission rate 26.13% better than Part L1A of the Building Regulations.

In conclusion the strategy advanced by Redrow Homes will comply with policy ECC SP2 of the Arun Local Plan and condition 21 of the planning approval. We therefore recommend the approval of these measures by Arun District Council.