



ENERGY STATEMENT

KERESFORTH ROAD, DODWORTH

JSP SUSTAINABILITY LTD
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EXECUTIVE SUMMARY

- The proposed residential development at Keresforth Road, Dodworth site includes the construction of 146 no. homes.
- Policy CSP 5 of the Local Development Framework Core Strategy 2011 requires the inclusion of renewable technologies capable of offsetting 20% of the site's CO₂ emissions.
- The fabric efficiency measures included in Persimmon Home's proposals will shrink the site's emission rate by 4.23%.
- Photovoltaic panels capable of generating 66,845.37kWh/year of electricity will be installed on the roof slopes of a number of properties.



1 INTRODUCTION

JSP Sustainability Ltd has been commissioned by Persimmon Homes to prepare an Energy Statement to accompany the planning application for the proposed residential development off Keresforth Road, Dodworth. The application proposes the construction of 146 no. homes, landscaping and associated highway works.

This report details the energy efficiency and renewable energy measures proposed by Persimmon Homes to address policy CSP 5 of the Local Development Framework Core Strategy 2011. A number of documents have been used to complete this report. 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.

[Barnsley Metropolitan Borough Council Local Development Framework \(LDF\) Core Strategy 2011](#) includes Policy CSP 5 which requires residential development of 10 or more dwellings to incorporate renewable or low carbon technology capable of offsetting 20% of the site's forecasted CO₂ emission.



2 ENERGY STRATEGY

2.1 Sustainable Development Proposals

Policy CSP 5 requires the constructed development to include renewable technologies capable of shrinking the site's forecasted CO₂ emissions by 20% subject to financial and technical viability. To address the policy, Persimmon Homes proposes to construct each home to an efficient construction specification and install photovoltaic panels on the roof slopes of a number of properties such that a 20% reduction in CO₂ emissions is achieved.

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. This task was achieved through house type modelling in SAP. SAP, or Standard Assessment Procedure, is the Government's approved methodology for the calculation of a residential property's energy requirement and corresponding emission rate. Table 1 below summarises the baseline calculation.

Table 1 – Keresforth Road Part L Baseline

House Type	Target Emission Rate (kg/year)
Lumley	7,481.40
Winster	17,719.70
Chedworth	5,701.45
Kendal	13,775.30
Roseberry	19,868.11
Clayton	12,153.96
Hatfield	19,612.15
Rufford	36,511.27
Souter	12,822.05
Bickleigh	15,528.34
Hanbury	33,140.90
Alnwick	25,665.12
TOTAL	219,979.76

Table 1 confirms a Part L Target Emission Rate of 219,979.76kg/year. Policy CSP 5 therefore requires the constructed development to emit no more than 175,983.80kg/year.



2.3 Energy Efficiency Measures

Persimmon Home's exposure to the marketplace has confirmed that purchaser's demand energy efficient homes with low operating costs and familiar user-friendly technologies. As such the proposed 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.
- 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.
- 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 below 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	0.25W/m ² K
Cold Roof	0.20W/m ² K	0.11W/m ² K
Floor	0.25W/m ² K	0.22W/m ² K
Glazing	2.00W/m ² K	1.30W/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



The targeted u-values go beyond the minimum standards of Part L. This will ensure the thermal envelope of each home will be energy efficient, thereby reducing energy consumption and CO₂ emissions.



2.4 Performance of the Energy Efficiency Measures

The specification summarised overleaf was modelled in SAP to determine the anticipated CO₂ emission rate and hence the reduction achieved. The table below summarises the results calculated.

Table 3 – Keresforth Road Energy Efficient Baseline

House Type	Calculated Emission Rate (kg/year)
Lumley	7,272.72
Winster	17,282.91
Chedworth	5,437.43
Kendal	13,213.20
Roseberry	19,450.53
Clayton	11,567.92
Hatfield	18,934.78
Rufford	35,171.93
Souter	12,130.82
Bickleigh	14,328.68
Hanbury	31,761.52
Alnwick	24,124.13
TOTAL	210,676.55

Table 3 confirms an energy efficient emission rate of 210,676.55kg/year, representing a saving of 9,303.20kg/year of CO₂ or 4.23% over Part L.



2.5 Photovoltaic Panels

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. The greater the intensity of sunlight, the more electricity is generated. 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.



Persimmon Homes proposes to install PV panels capable of offsetting 34,692.75kg/year of CO₂, thereby delivering a 20% saving over Part L1A. To offset 34,692.75kg/year of CO₂, PV panels capable of generating 66,845.37kWh/year of electricity will be installed on the roof slopes of a number of properties. SAP Appendix M estimates that PV arrays totalling 78kWp installed in a southerly direction will meet this target. However the MCS method of calculation will result in a more accurate figure for the same level of generation.



3 EVALUATION

Persimmon Homes has devised an Energy Strategy for the proposed Keresforth Road, Dodworth development which includes energy efficiency measures in the construction of every home and the installation of roof mounted PV arrays on a number of properties. [JSP Sustainability](#) was instructed by Persimmon Homes to review this strategy and confirm the percentage betterment over Part L of the Building Regulations. Following a review we can confirm the following;

- Each property will be constructed to a specification which betters the minimum standards of Part L.
- The proposed fabric efficiency measures will shrink the site's emission rate by 4.23%.
- PV arrays capable of generating 66,845.37kWh/year of electricity will be installed on the roof slopes of a number of properties.
- The constructed scheme will have a regulated emission rate of 175,983.80kg/year. This represents a saving of 20% over Part L.

We can conclude that the proposals advanced by Persimmon Homes are sustainable. As such we recommend the adoption of the strategy by the developer and its approval by Barnsley Metropolitan Borough Council.