



PERSIMMON

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THE HAMPTONS, PHASE 5 - LITTLEHAMPTON



ENERGY & SUSTAINABILITY STATEMENT

27th May 2021

ARUN DISTRICT COUNCIL LU/206/21/RES
SEC/cs/ESS- 3668/-



About Southern Energy Consultants Ltd

Southern Energy Consultants Ltd are a construction consultancy specialising in sustainability, energy conservation, the application of renewable technologies and statutory utilities infrastructure design and management. As a consultancy we do not sell or have financial interest in any products so are able to take an objective view of developments to assist developers with incorporating cost effective and practical solutions.

Our services include Planning Energy Statements, energy calculations for Building Regulation compliance, Code for Sustainable Homes assessments and utilities design and management. Our team of consultants include registered SAP, SBEM and Code for Sustainable Homes assessors, Planning Specialists, Renewable Energy Specialists, CAD Specialist, Utilities Specialists and Civil Engineers.

Within SEC Ltd we have over 25 years experience working with and for National Developers, Construction and Design and Build Contractors we apply our expertise not only to assist with developers understanding of new energy and sustainability obligations but also in a way that ensures that the needs and responsibilities of all stakeholders are wholly respected.

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Contents

1.0	Introduction	3
2.0	Emissions Baseline and Energy Efficiency Proposals	5
3.0	Layout, Access and Landscaping	18
4.0	Materials	20
5.0	Noise and Dust Pollution	21
6.0	Recycling and Waste Management	21
7.0	Avoiding Flooding and Water Use	22
8.0	Conclusion	22
Appendix		23
	Solar PV Panel Location Plan	
	Viridian Solar – Solar PV Emissions Reduction Calculation	
	Internal potable water efficiency – Part G calculation	

1.0 Introduction

- 1.1 This Energy and Sustainability Statement has been commissioned by Persimmon Homes (the Applicant) and carried out by Southern Energy Consultants as part of a comprehensive analysis of available opportunities to reduce carbon dioxide emissions and energy consumption across Phase 5 of their development at Littlehampton. The site falls under Arun District Council jurisdiction and Phase 5 includes 260 dwellings of mixed type and tenure (20% affordable).
- 1.2 The Littlehampton site obtained outline planning permission (Application Reference: LU/47/11) in 2013, which was subsequently amended under a S73 Application (Application Reference: LU/182/15/PL). The outline consent include approval for up to 1,260 dwellings and various non-residential buildings, including schools, community centre and a commercial hub. The Phase 5 application covers an area of approximately 8 hectares and is located on land immediately to the east of the proposed Central Wetland Area.
- 1.3 This Statement's main focus is to provide a response to Planning Condition 31 of the Outline Consent (LU/47/11). Condition 31 is entitled 'Energy' and states the following:

"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."

Strategy and Planning Background

- 1.4 The Applicant intends to deliver a 10% reduction in site-wide carbon dioxide emissions, with respect to the standard set by Part L1a of Building Regulations, through the adoption of best practice energy efficiency measures and installation of renewable energy technologies. The Applicant's proposed approach for minimising greenhouse gas emissions from the new dwellings in Phase 5 of the Littlehampton development is supported by national planning policy guidance and will help to

reduce fuel bills for future occupants. At a national level, planning policy guidance is stimulated by the Climate Change Act (2008) and fully espoused within the National Planning Policy Framework (2019) (NPPF). The Climate Change Act requires the UK Government to “ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline”. This legal commitment sets the overriding objective for sustainable energy provision in the UK: the reduction of carbon dioxide emissions.

1.5 In 2019, the revised NPPF was published. This document asserts that:

“At the heart of the NPPF is a presumption in favour of sustainable development which should be seen as a golden thread running through both plan-making and decision-taking. For decision-taking this means:

- *Approving development proposals that accord with the development plan without delay; and*
- *Where the development plan is absent, silent or relevant, policies are out-of-date granting permission unless*
 - *Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits when assessed against the policies in this Framework taken as a whole; or*
 - *Specific policies in this Framework indicate development should be restricted.”*

1.6 The NPPF proceeds to state that:

“To support the move to a low carbon future, local planning authorities should:

- *Plan for new development in locations and ways which reduce greenhouse gas emissions;*
- *Actively support energy efficiency improvements to existing buildings”*

Objectives

1.7 In the light of the requirements set by Planning Condition 31 and the NPPF, this Statement will set out an array of best practice energy efficiency proposals and renewable energy installations, sufficient for the 260 dwellings proposed across Phase 5 of the Littlehampton development to deliver reductions in carbon dioxide emissions of 10% compared to a Part L1a (2013) compliant baseline.

Structure

- 1.8 Section 2 of this Statement calculates the carbon dioxide emissions baseline using the Standard Assessment Procedure (SAP), outlines the Applicant's energy efficiency measures for complying with and bettering the baseline standard, considers the most suitable renewable energy technology for the site, and finally demonstrates how renewable energy technologies will deliver the sought after 10% reduction across Phase 5 of the Littlehampton development. Sections 3 to 7 of this Statement then articulate the Applicant's general commitments with respect to maximising the overall sustainability performance of the scheme.

2.0 Emissions Baseline and Energy Efficiency Proposals

Building Regulations (2013) Baseline

- 2.1 In order for an energy assessment to be conducted, a Building Regulation (2013) baseline for carbon dioxide emissions must first be calculated for the 260 dwellings. The predicted emissions for the dwellings include all sources from hot water, space heating and fixed electrical items. The baseline has been calculated by an accredited energy assessor using SAP (2012) methodology and Elmhurst approved software. This baseline will then be used as a standard to demonstrate the reductions that will result from energy efficiency measures and renewable energy technologies. The Building Regulation (2013) baseline for the development identifies predicted carbon dioxide emissions, relative to each dwelling type's Target Emission Rate, of **407,605 kgCO₂/year**. Table 1 below sets out the baseline emissions for each dwelling type and in aggregate, with detailed examples of SAP calculations provided in the Appendix to this Statement.

Table 1: Baseline Carbon Dioxide Emissions (kgCO₂/year) for Phase 5, Littlehampton

	Number of Dwellings	Emissions (kgCO ₂ /year)	Total Emissions (kgCO ₂ /year)
Private			
Alnmouth	6	1,142	6,852
Danbury	11	1,392	15,312
Wareham	19	1,467	27,873
Sherwood	22	1,531	33,682

Charnwood	41	1,704	69,864
Saunton	42	1,731	72,702
Ashdown	8	1,755	14,040
Greenwood	2	1,996	3,992
Whiteleaf (+ bay)	9	2,044	18,396
Whiteleaf	10	2,035	20,350
Kielder	2	2,179	4,358
Marylebone	2	2,299	4,598
2B FOG	1	1,311	1,311
2B3P flat (average)	9	1,167	10,503
2B4P flat (average)	24	1,244	29,856
Sub-total		208	333,689
Affordable			
3B4P House	16	1,509	24,144
2B3P flat (average)	6	1,198	7,188
2B4P flat (average)	12	1,244	14,928
2B4P House	16	1,481	23,696
4B5P House	2	1,980	3,960
Sub-total		52	73,916
TOTAL		260	407,605

- 2.2 In accordance with the Applicant's intentions set out in the Introduction, this Statement will now continue by detailing the range of best practice energy efficiency measures and renewable energy technologies to deliver a reduction of at least 10% compared to the baseline scenario. This amounts to a required reduction of at least **40,761 kgCO₂/year**.

Best Practice Energy Efficiency Measures

- 2.3 As a first energy efficiency measure, the proposed dwellings will incorporate sufficient insulation in the building envelope (walls, roofs, floors and glazing) to achieve average U-values considerably better than the limiting standards demanded by Part L1a of 2013 Building Regulations. Table 2 below illustrates the proposed U-values and the limiting area-weighted values set by Part L1a of 2013 Building Regulations.

Table 2: Insulation Enhancement Proposals for Main Thermal Elements

Thermal Element	Maximum Area-Weighted U-value (W/m²K) Allowable Under 2013 Building Regulations	Applicant's Proposed U-value (W/m²K) Required To Meet 2013 Building Regulations Baseline	% Improvement On 2013 Allowable U-Value Standard
Main external walls (houses)	0.30	0.28	6.67
Main external walls (apartments)	0.30	0.26	13.33
Roof (joists)	0.20	0.15	25.00
Roof (rafters)	0.20	0.19	5.00
Ground floor	0.25	0.16-0.18	28.00-36.00
Windows	2.00	1.40	30.00

- 2.4 The Applicant intends to meet the U-value performance standards detailed in Table 2 through the following construction specification for the main thermal elements:

Table 3: Fabric Enhancement Construction Specification

Thermal Element	Proposed U-value (W/m²K) required to Meet 2013 Building Regulations Baseline	Construction Measures
Main external walls (houses)	0.28	Space 4 timber frame construction including mineral wool insulation, plus either a reflective breather membrane or reflective vapour barrier.
Main external walls (apartments)	0.26	Masonry construction, including outer leaf or 100mm brick or external cladding on medium density blocks, 100mm cavity fully filled with Knauf Supafil 34 insulation ('k' value of 0.034),

		100mm aircrete blocks ('k' value of 0.19).
Roof (joists)	0.15	One layer of 100mm mineral wool insulation ('k' value of 0.044) quilt laid between ceiling joists and one layer of 200mm mineral wool ('k' value of 0.044) laid over to provide a total thickness of 300mm.
Roof (rafters)	0.19	Space 4 cassette roof system.
Ground floor	0.16-0.18	Beam and block construction to include 75mm Kingspan Thermawall TF70 insulation ('k' value of 0.022).
Windows	1.40	BFRC, PVC-U double glazed, soft-coated with 'g' value of 0.260.

Heating and Controls

- 2.5 The Applicant proposes the installation of Ideal Logic Combi ESP1 35 gas boilers, which possess a SEDBUK (2009) efficiency of 89%. All dwellings will benefit from efficient heating controls, including Time and Temperature Zone Controls and optimum start thermostats. Due to the former, it will be possible for the future homeowners to co-ordinate the heating performance of at least two distinct zones within their property. Thermostatic radiator valves will be provided to all radiators as a form of localised heating controls.

Ventilation and Air Tightness

- 2.6 Ventilation to all dwellings will be provided via highly efficient intermittent extract fans. Air tightness standards will be improved by the Applicant adopting a mixture of 'Space4' (houses), Aircrete Product Association (apartments) and Accredited Construction details for non-repeating thermal bridges, which are typically far superior to the default psi value standards assumed by SAP (2012). Each dwelling's design air permeability will be reduced from 10 m³/hm² to 5 m³/hm² to further lower space heating requirements.

Internal Lighting

- 2.7 All of the Applicant's internal lighting throughout the development will be of the dedicated low energy type. Although not assessed within the Building Regulations calculation, external lighting will

also be low energy and some will be controlled through PIR sensors or daylight cut-off devices to minimise use and promote the security of the development.

Emissions After Energy Efficiency Proposals

- 2.8 The energy efficiency measures detailed in Paragraphs 2.4 to 2.8 will reduce the predicted carbon dioxide emissions at the Littlehampton, Phase 5 development from **407,605 kgCO₂/year** to **399,045 kgCO₂/year**. This is a reduction of **8,560 kgCO₂/year**, or **2.10%**. A further reduction in emissions of at least **32,201 kgCO₂/year** must be secured via the installation of renewable energy technologies in order to deliver a 10% reduction compared to the baseline case.

Feasibility of Renewable Energy Technologies

- 2.9 This section of the Statement conducts a thorough review of the renewable energy and low carbon technologies that could theoretically be applied to Phase 5 of the Littlehampton development. Renewable energy is defined as *“those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of oceans, from the sun and also from biomass”* (London Plan, 2008). This definition has been widened by the UK Government through the use of the term ‘Low or Zero Carbon Technologies’ (LZC), which include heat pumps and gas-fired CHP – technologies not always considered as being renewable. The technologies to be evaluated in this Statement are as follows:

- Combined Heat and Power
- Biomass
- Heat pumps (ground source and air source)
- Hydroelectric power
- Wind energy
- Solar thermal panels
- Solar photovoltaic panels

Combined Heat and Power

- 2.10 CHP is a form of decentralised energy generation that generally uses gas to generate electricity for local consumption, reducing the need for grid electricity and its associated high carbon dioxide emissions. As the CHP system is close to the point of energy demand, it is possible to use the heat that is generated during the electricity generation process. As both the electricity and heat from the