

Land to the North East of;

Staple Street, Hernhill, Kent.

Energy & sustainability strategy for the
development of 8 new affordable homes for local people

November 2021



S.E.A. Building Compliance Ltd

Residential Building Compliance Consultants

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Energy & Sustainability Strategy Statement

Introduction

S.E.A Building Compliance Ltd were appointed to produce an Energy Statement to support the planning application for the proposed construction of 8 new affordable homes on Land North East of Staple Street, Hernhill, Kent. **The planning application, ref 20/500858/FULL was subsequently approved.**

This document provides an updated statement that outlines the measures taken to reduce Co2 emissions to address planning condition No.3.

This revised statement has been prepared to address the lack of capacity in the electrical supply network that serves Staple Street and surrounding area. **As a result of the capacity deficit, it has been determined through discussion with UKPN that it is currently not possible to install air source heat pumps, due to the large electrical demand required to operate the units.**

This statement demonstrates what measures are proposed in lieu of air source heat pumps, whilst considering the **sensitive location of the site** and **running costs for residents** of these affordable homes for local people.

Swale Borough Council planning condition No.3:

No development beyond the construction of foundations shall take place until details have been submitted to and approved by the Local Planning Authority, which set out what measures have been taken to ensure that the development incorporates sustainable construction techniques such as water conservation and recycling, renewable energy production including the inclusion of solar thermal or solar photo voltaic installations, and energy efficiency. The approved details shall be incorporated into the development.

Sustainable construction techniques

This development will take on a "fabric-first" approach to reduce the dwelling's CO2 emissions. This approach uses fabric improvements to reduce the energy demand. This approach allows the building to do the work rather than relying solely on Renewable technologies to reduce the CO2 emissions.

Taking this approach will minimise the unnecessary loss of energy from a poorly designed fabric, with improved u-values for all thermal elements combined with greater airtightness the dwellings will retain the heat generated removing the risk of unnecessary energy use.

Proposed U-values and Fabric Standards

	Proposed	Minimum Standards
Floor	0.12w/m2K	0.25w/m2K
Walls	0.21w/m2K	0.30w/m2K
Roof	0.10w/m2K	0.20w/m2K
Windows	1.00w/m2K	1.8w/m2K
External Doors	1.40w/m2K	3.0w/m2K
Air-Permeability	5.0m ³ /hm ²	10.0m ³ /hm ²

- Attention will be paid to minimise thermal bridging and air-leakage at junctions by adopting the appropriate approved Accredited Construction Details.
- Materials used within this development where possible will be from renewable sources, this will reduce the impact on the environment both short term and long term.
- Orientation of the dwellings and the location and aperture of the windows will maximize solar gain to reduce heating requirements where possible

Water conservation and recycling

All dwellings will fall within the 110Ltr per person per day as set out in Part G. Dual flush toilets along with water saving showers and low flow rate taps to the bathrooms and kitchens. This will reduce the impact on the environment by reducing the water consumption within each dwelling.

Each dwelling will be fitted with a water butt for external water use, harvesting rain water will reduce the amount of water consumed by each dwelling.

Renewable energy production

All dwellings will be fitted with Vaillant EcoTEC Exclusive Green IQ boilers, the benefits of these boilers include Built in Heat Recovery the latest renewable technology available in the Vaillant boiler range.

With the addition of this renewable technology each dwelling will benefit from the following:

- Increased boiler efficiency with an ErP rating of 95%
- Dramatically reduced fuel consumption and energy bills
- Optimized running cycles resulting in lower Gas consumption
- Space heating to have advanced heating controls including zoned time and temperature controls.

Each dwelling will also benefit from:

- 100% of new internal fixed lighting and external lighting will be low energy.
- Where provided, all white goods will be A-rated energy efficient.
- Each dwelling will be supplied with a 'Solo Smart Charger' for electric vehicle charging. By installing EVCP points to each dwelling this will make the switch from petrol/diesel to electric vehicles more viable and in turn reduce the carbon footprint of each dwelling

Health and Wellbeing

System 3 ventilation will be installed to all dwellings ensuring the correct ventilation rates are met in each dwelling, this will lead to better health and wellbeing of its occupants.

Cycle storage will be provided to promote cleaner less energy intensive alternatives to transport and will promote a healthier lifestyle and wellbeing.

Conclusion

With the above measure being incorporated into SAP each dwelling is showing the following improvements over current building regulations:

Dwelling	TER	DER	% Improvement over current Part L1a 2013
Plot 1	19.1	16.66	12.8
Plot 2	18.89	16.52	12.5
Plot 3	19.45	16.76	13.8
Plot 4	18.96	17.4	8.2
Plot 5	18.48	16.65	9.9
Plot 6	17.35	15.85	8.6
Plot 7 (Flat)	20.81	18.58	10.7
Plot 8 (Flat)	19.5	17.47	10.4

By incorporating a fabric first approach, dramatically reduced fuel consumption Vaillant Green IQ boilers along with the additional measure stated above, this development and the construction phase will be built with sustainability in mind, where possible locally sourced trades and materials will be used. By reducing CO2 emissions and reduced water consumption, this will promote Health & Wellbeing within its occupants, and will lead to a sustainable development.

Additional Information/Analysis:

S.E.A have done a lot of work with English Rural Housing Association to ensure their tenants are provided with sustainable and affordable dwellings to live in, as a result we look at each scheme that goes to site and work through the best way forward to achieve this.

As a result we have carried out a comparison of SAP running costs and EPC ratings for both the proposed option above and an ASHP for each unit. The comparison has been based on the identical fabric proposed above.

The below statement from English Rural Housing Association outlines their approach to maintaining affordable living in the most sustainable way to ensure their tenants don't fall into fuel poverty. Developments are future proofed to allow ERHA to incorporate ASHP once running costs come down making it more viable for its tenants.

English Rural are a not-for-profit registered provider of affordable rural homes for local people. Our residents are at the heart of what we do, and we aim to provide them with sustainable, beautiful and comfortable homes that are affordable to rent and affordable to run. Where there is no mains gas supply and where capacity of the available electricity network allows, we install air source heat pumps (ASHP) to provide domestic heating and hot water. We have carried out extensive research with independent consultant energy assessors into the running costs of ASHP vs mains gas boilers. Under the current method of calculating running costs, tied to EPC ratings, SAP 2012 and fuel factors, we have found that homes that are provided with ASHP are generally in excess of £100 per annum more expensive for residents. Although ASHP return anywhere up to 3.5 times the amount of energy used, electricity

costs are four times that of mains gas. During the coldest months of the year the return can actually drop to about 2 times, meaning that residents may struggle to achieve a comfortable room temperature without some form of additional heating, potentially pushing residents into fuel poverty. We actively look to prepare our homes for a greener, low carbon future by providing a well insulated fabric and include measures such as providing oversized radiators to allow less disruptive future installation of ASHP, when running costs eventually become comparable with mains gas. Despite our efforts, where the existing network is already running at capacity, such as in Staple Street, we are unable to install ASHP. In these cases, we look to reduce the running costs for residents and the impact on the environment with other sustainable measures.

Comparison of SAP running cost's:

Table 1 – Running costs and EPC ratings based on the proposed specification above.

Dwelling	SAP EPC Rating	Annual Running Cost £
Plot 1 - Staple Street - SAP's	B 84	448.4
Plot 2 - Staple Street - SAP's	B 84	446.2
Plot 3 - Staple Street - SAP's	B 84	368.7
Plot 4 - Staple Street - SAP's	B 83	374.2
Plot 5 - Staple Street - SAP's	B 84	371.4
Plot 6 - Staple Street - SAP's	B 84	407.7
Plot 7 - Staple Street - SAP's	B 83	291.7
Plot 8 - Staple Street - SAP's	B 83	311.3

Table 2 – Running costs and EPC ratings based on the above Fabric and ASHP.

Dwelling	SAP EPC Rating	Annual Running Cost £
Plot 1 - Staple Street - SAP's	B 83	637.9
Plot 2 - Staple Street - SAP's	B 83	633.3
Plot 3 - Staple Street - SAP's	B 83	540.8
Plot 4 - Staple Street - SAP's	B 82	544.6
Plot 5 - Staple Street - SAP's	B 83	539
Plot 6 - Staple Street - SAP's	B 84	575.6
Plot 7 - Staple Street - SAP's	B 81	456.4
Plot 8 - Staple Street - SAP's	B 82	470.3

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