



Sustainability Assessment

Land south of St Stephens Church, Hamsland,
Horsted Keynes.

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1.0 – Introduction

This report explores the sustainability standards to be utilised in relation to the proposed development of 30 dwellings (30% affordable) at land south of St Stephens Church, Hamsland, Horsted Keynes.

The report sets out to satisfy the requirements of Mid Sussex District Plan 2014-2031 Policy DP39 (Sustainable Design and Construction).

Policy DP39 states that 'All development proposals must seek to improve the sustainability of development and should where appropriate and feasible according to the type and size of development and location, incorporate the following measures:

- Minimise energy use through the design and layout of the scheme including through the use of natural lighting and ventilation.
- Explore opportunities for efficient energy supply through the use of communal heating networks where viable and feasible.
- Use renewable sources of energy.
- Maximise efficient use of resources, including minimising waste and maximising recycling/re-use of materials through both construction and occupation.
- Limit water use to 110 litres/person/day in accordance with Policy DP42: Water Infrastructure and the Water Environment.
- Demonstrate how the risks associated with future climate change have been planned for as part of the layout of the scheme and design of its buildings to ensure its longer term resilience.'

2.0 – Meeting Policy Requirements

The development has been carefully designed to balance the special character and appearance of the village, the high quality landscape (High Weald AONB) along with the requirements of the Horsted Keynes Neighbourhood Plan Policies.

The layout minimises energy use wherever possible through the design of house types and orientation to make the best use of natural lighting and ventilation.

The site is located within a sensitive landscape being located within the High Weald AONB. In addition, Horsted Keynes is a characterful Sussex village which when combined with the landscape presents a sensitive architectural challenges when designing new housing. As such, a fabric first approach has been adopted as the renewable sources of energy potentially available for use at the site, such a solar photovoltaic and wind turbines could have a detrimental impact upon the sensitive landscape.

This statement should be read in conjunction with the Site Waste Management Plan submitted with the application, which includes demonstration of the requirements of the Site Waste Management Plan Regulations 2008 and beyond are satisfied. In addition, the application has been accompanied by a refuse and recycling plan which outlines the locations of refuse and recycling for all plots and their accessibility by large refuse vehicles.

As explained in chapter 4 of this report, the use of water would be limited to 110 litres/person/day in accordance with Policy DP42: Water Infrastructure and the Water Environment;

The development deals with the issue of resilience and minimises the risks associated with future climate change in several means.

- The site is within a highly sustainable location, having good access to services within the village and having excellent accessibility to the national rail network, reducing the reliance upon private transport.
- The site is located in Flood Zone 1 and has minimal risk of flooding.
- The development has been designed with a sustainable urban drainage system (SUDS) which collects the run off from development and envelope of the site, provides adequate storage to 40% above climate change standard and throttles discharge of the water to 4.5l per second before discharging the water to the nearby water course. This eradicates the risk of surface water flooding on the site and reduces the risk of surface water flooding on properties/land adjacent.
- The new dwellings have been designed to incorporate a high standard of accessibility and adaptability for the needs of the users across their lifetime (with 20% of the development's dwellings being Approved Document M4(2) compliant, as required in policy DP28) and improve the housing stock for village in this regard.
- The new dwellings are capable of housing future renewable energy systems should the owners/occupiers of the dwellings obtain planning permission into the future.
- 50% of Market Housing is specified with Electric Vehicle Charging Points, supporting a move to zero emission vehicles and reducing the reliance on the combustion engine and fossil fuels.

3.0 - Water Efficiency

The development will utilise devices to reduce water consumption to current Building regulations Standards, which is set at 105 Litres/per person/per day.

The following measures can be applied to the development:

- Low capacity dual flush toilets (6/4 litre)
- Low capacity baths (190 litre)
- Low flow rate showers (6 litres/minute)
- Low flow rate taps (4 litres/minute) aerated with restrictors
- Rainwater butts for external watering
- Low energy and low water consumption appliances

If fed into a water calculation sheet, it would show that in the 105l/h/d as required by Building Regulations will be achieved.

4.0 – Energy and Sustainable Construction

The dwellings on the development will be subject to the amended energy reduction measures noted in the 2010 building regulations.

The largest proportion of energy demand of a typical house is from space and water heating. Before any plug in technologies are considered it is good practice to reduce the overall energy demand of a dwelling by using low energy design techniques.

Low energy design involves the consideration and implementation of measures that will reduce the energy requirement of a dwelling. This can be achieved by:

- Improving levels of insulation to reduce heat loss through the fabric of the building.
- Use of low-energy technologies, e.g. low-energy lighting, energy efficient boilers & appliances.
- Use of passive solar design.

When designing a building it is advisable to follow an energy hierarchy. The primary aim is to make the building as energy efficient as possible in order to reduce the demand for energy, and thus the demand of energy from renewable sources.

Building Regulations 2010 Part L aims to reduce CO₂ emissions from new buildings by 25% compared to those built to 2006 regulations. This can be achieved by making improvements to the fabric of the building by increasing levels of insulation, increasing air tightness and the use of efficient heating & appliances.

- Use less energy – energy efficient measures, passive solar, low energy design

Areas of consideration in order to improve the efficiency of the fabric of a dwelling:

- Increased insulation to main elements (roof, walls, floor, glazing)
- Reduced thermal bridging
- Improved air tightness

Other areas for improvement:

- Efficient heating & hot water systems
- Improved heating & lighting controls
- Controlled ventilation
- Energy efficient lighting
- Energy efficient appliances (cooker, washing machine, fridges, etc)

Material selection is another key area of sustainable construction and where viable, we will use materials from sustainable or managed sources, including PEFC, FSC, EMAS and EMS. One example of this is the use of lightweight aggregate blocks for the inner skin of the external wall. These are manufactured using up to 80% pulverised fuel ash (PFA), a by-product from coal burning power stations, which is both stable and environmentally friendly. Using these blocks helps to achieve an 'A' rating under the BRE 'green guide to specification' for the external wall construction. 'A' ratings are also achievable for the floors and roofs.

In addition we seek to use locally sources materials, trades and business partners to minimise transport energy use.

Alongside energy efficiency, the dwellings will also incorporate measures to reduce the demand for water. This can be achieved by using low flow rate taps & showers, reduced capacity toilets and baths. All units on the development will be subject to water reduction measures noted in the building regulations, 2010.

To following are some requirements that could assist in achieving the updated energy requirements of the building regulations 2010 as per the Interim Statement policy requirements:

Part L – Requires 25% reduction in CO₂ emissions equal to the former Code level 3 of the CfSH:-

The measures below are examples of how this requirement will be achieved:

- Fabric u-values: Walls = 0.24, Floors = 0.21, Roofs = 0.11, Glazing = 1.4
- Efficient (min 91%) condensing boilers
- Low energy lighting to 100% of the dwelling
- Efficient thermal controls (zone control, weather compensation, etc)
- Natural ventilation or MVHR (mechanical ventilation heat recovery)
- Low air permeability (5m³/h/m² at 50pa minimum)