

**Proposed New Passivhaus  
Sidelands, 40 Ham Green,  
Pill, Bristol, BS20 0HA  
Planning Energy Statement**

**Introduction**

This statement has been prepared to accompany the planning application for the construction of a new house at the above address. This document supports the planning application by, Jerry Evans, which provides details of the proposed design.

This energy statement explains how the designs comply with North Somerset Council policies CS1 and CS2.

The new house will be designed and constructed as a Certified Passivhaus. This will ensure that the design complies with Policy CS1 paragraphs 1) and 3) and CS2 paragraph 1.

Renewable electricity will be generate at least 10% of the regulated energy demand of the house, which will ensure compliance with policy CS2 2).

**About Passivhaus**

Piers Sadler Consulting has been appointed to act as Passivhaus Consultant to the project and has been working closely with the architects from the outset to ensure that the designs and construction are compliant with the standard. Piers Sadler Consulting will also act as the liaison with the independent Passivhaus Certifier to provide all the evidence required for certification. Piers Sadler is a Certified European Passivhaus Designer.

Passivhaus is a fabric first low energy building standard which relies on high levels of thermal insulation, airtight construction, thermal bridge free detailing, triple glazed windows and heat recovery ventilation to provide buildings with very low heating energy demand. Passivhaus buildings have an annual heat demand of less than 25% of a typical new build to 2013 Building Regulations.

The Passivhaus Standard is defined as much by comfort as by energy, so that the standard delivers buildings with no draughts, no cold surfaces, no condensation (mould) and limited summer over-heating, whilst the ventilation systems always delivers fresh air. Passivhaus buildings are inherently healthy places to live and work.

Passivhaus certification is subject to a very high standard of quality control which ensures that the buildings are constructed as designed and perform as intended. Passivhaus buildings do not suffer from the same energy 'performance gap' suffered by other low energy building standards.

Passivhaus is the world's most stringent building energy standard with a proven track record and is establishing itself in the UK as the leading standard for low energy buildings. According to the Passivhaus Trust, over 1000 Passivhaus dwellings have now been certified in the UK with a similar number in the pipeline.

Locally Passivhaus is gaining momentum with a recently completed certified Passivhaus Plus scheme in Nailsea, two completed certified projects in Somerset and a number of housing projects in development in Bristol. Piers Sadler Consulting was the Passivhaus Consultant for the Nailsea project as well as 9 certified Passivhaus apartments in Bristol.

### **The proposed new house**

The proposals for Sidelands have been reviewed by Piers Sadler Consulting to assess suitability for Passivhaus and to advise on how to make this as cost effective as possible whilst maintaining the architectural character of the building. This review has resulted in evolution of the designs to ensure Passivhaus compatibility.

The orientation of the plot favours a west facing building, which, whilst not ideal for Passivhaus is perfectly possible provided due care is taken to avoid over-heating. The glazing is mainly west and south facing in the direction of the views whilst the north and east elevations have minimal glazing. The form of the building is compact and simple to maximize floor area, minimize heat loss area and eliminate the need for complex structure. The walls are of sufficient thickness to allow super insulation.

There are no complex junctions requiring difficult or expensive airtightness or thermal bridging detail. Building features such as balconies, brise soleil and overhangs are all externally supported so that there are no cantilevers and no structure running through the fabric.

The designs show preliminary proposals for shading, which will be optimized to the orientation as the project develops, so that beneficial winter solar gain is maximized whilst unwanted summer solar gain is limited.

The layout of the house allows for placement of the heat recovery ventilation unit in the services loft and routing of ductwork around the house. The layout also allows reasonably short pipe runs to all hot taps, thus minimizing distribution heat losses from the pipework.

As the project continues we will consider whether or not to apply for the new (2015) Passivhaus Plus or Premium certificates which take into account the energy generated by the roof mounted PV array. There are no Passivhaus premium buildings in the UK at present.

### **Renewable Energy**

The house has been designed to provide suitable south facing roof space for a PV array to generate at least 10% of the regulated energy demand. The required demand to meet policy CS2 2) has been calculated using FSAP 2012. Piers Sadler is an accredited On Construction Domestic Energy Assessor (sometimes known as a 'SAP Assessor') accredited with Stroma Certification.

The predicted regulated energy demand of the house as designed is 6388Kwh/yr. To meet 10% of this with PV would require a south facing array of 0.74kW to generate 639kWh per year. This would typically be met with 3 PV modules (depending on type). The intention is to have more than this, but compliance can be achieved with a minimum of 0.74kWp PV array.

### **Conclusions**

This energy statement demonstrates that the proposed designs meet North Somerset Council policies CS1 and CS2 through adherence to the very stringent Passivhaus Standard as well as by inclusion of at least 0.74kW of PV on the south facing roof.