

# CLIMATE CHANGE & SUSTAINABILITY STATEMENT

## **Proposed development:**

Annex, 14 Rushmoor Lane, Backwell, Bristol BS48 3BN  
Statement and Part L1A calculations prepared by:  
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## **1/ Introduction**

The aim of this Energy Statement is to demonstrate compliance with North Somerset's Core Strategy Policy CS1 & CS2: Delivering Sustainable Design and Construction.

The proposed is the construction of an Annex at 14 Rushmoor Lane, Backwell, Bristol, BS48 3BN to replace an existing garage.

This Statement and calculations have been completed in line with Part L1A 2013 and the requirements of the Policy as above.

Please refer to the Application drawings submitted with the planning application.

## **2/ Building Regulations**

No Building Regulations submission has been made in respect of the proposed development.

### **Important Notice:**

This Statement and accompanying SAP calculations are for the purpose of a Planning Application ONLY and must not be used for Building Regulations purposes. We accept no responsibility for errors arising if these calculations and statement content is used for Building Regulations compliance.

### *Part L1A Calculation – Methodology*

The building was assessed using SAP2012 to establish a baseline energy use and CO2 emissions, the Notional dwellings, and to determine the same for the Proposed dwellings. The Proposed must be lower than the Notional to demonstrate a pass. In addition, to satisfy North Somerset's Core Strategy Policy requirements, normally a minimum reduction of 10% in energy use should be met through on-site renewables.

SAP 2012 was also used to calculate the additional 10% reduction in energy use should be met through on-site renewables.

## **North Somerset's Core Strategy Policy CS2: Delivering Sustainable Design and Construction.**

### **Land use ecology:**

The existing site is a garden adjacent to an existing dwelling. The existing trees and hedgerows will be retained and protected.

### **Siting and orientation:**

The dwellings will be sited on an East/West axis, with appropriate solar shading on the West elevation. Adequate daylighting and passive solar gain is provided by appropriately sized windows to each orientation.

The roof design allows the possibility of solar panels in either the South or West facing roofs with no shading.

The rear garden faces West allowing for washing to be dried naturally outdoors, thereby reducing the need to use energy intensive tumble driers.

The kitchen is to the front of the dwelling; however, the rural/low density urban environment, and the vicinity of the main dwelling, would not require natural surveillance on to the street as would be the case perhaps in a more urban environment.

### **Passive design:**

Windows and glazed doors are situated for maximum daylight and to provide natural ventilation.

There are adequate possibilities for cross ventilation through openable windows and doors without any security risk to the occupants.

The initial SAP calculation indicates there is no significant risk of overheating in the warmest summer months – June to August.

### **Thermal mass:**

The thermal mass of the proposed dwelling has not been calculated at this stage. However, the SAP calculation has been input as a medium thermal mass due to the masonry construction.

In addition, thermal bridges are to be mitigated using Accredited Construction detailing of all thermal bridge junctions.

### **Surface water run-off:**

The proposed development will ensure surface water run off rates are adequately attenuated; the design of the most appropriate measure is yet to be undertaken.

However, a preference will be the application of best practice Sustainable Drainage Systems to reduce the impact of additional surface water run-off from the new dwelling.

The existing site is not in a Flood Risk Zone, according to the Environment Agency flood map.

**Water use:**

Internal water use will be reduced by low flush W/C's, and low flow rate taps and showers.

Internal Water Use will be a maximum of 110 ltrs/ per person/per day.

Water Butts may be part of the Surface Water run off strategy if appropriate.

**Energy use:**

A hierarchy of minimising energy requirements, controlling what is used and then off setting by incorporating renewables has been adopted.

The Proposed Dwelling Fabric Energy Efficiency (kWh/m<sup>2</sup>/year) shows a 14.91% improvement over the Target Fabric Energy Efficiency (kWh/m<sup>2</sup>/year). This clearly indicates that a fabric first approach has been applied in the design of this dwelling.

Electric is the main fuel to the site and will be used for all heating and hot water needs.

The new dwelling elements will exceed current Building Regulations maximum requirements as indicated in the following table:

<b>Element</b>	<b>Part L Maximum</b>	<b>Proposed</b>
External Wall U Value	0.35	0.18
Roof U Value	0.25	0.13
Ground floor U Value	0.25	0.13
Window & glazed door U Value	1.8	1.4
Air Permeability	10	5

The proposed Heating throughout is from electric underfloor heating. This will include a control system appropriate to the system, including time and temperature zone controls.

Hot water is to be provided by an electric immersion to a DHW cylinder.

Ventilation strategy is for natural ventilation and will be designed to meet the requirements of Building Regulations Part F Section 5 in full.

Lighting is 100% LED low energy.

Energy monitors will be installed to measure mains electricity use.

Compliant Fire & CO detection & alarm systems will be provided.

The Table below details the Energy use from the proposed compared to the Notional, and the proposed with additional Solar PV

<b>Dwelling</b>	<b>KWh/yr</b>	<b>% +/-</b>
Notional	8738	
Proposed	5823	-33.36%
Proposed with PV	5224	-10.28%

The proposed, with the measures outlined above, achieves a 33.36% improvement for energy, and a further 10.28% energy use reduction from the addition of solar PV.

### **Renewable energy generation:**

#### **PV**

The proposed South facing pitched roof area provides space available that can be utilised for a PV system. A system of approximately 2.8 kWp, using panels of 400W each, will amount to an array area of approximately 11.2m<sup>2</sup>.

#### **Solar Thermal**

The preferred option is for a solar PV system, which will provide the required minimum 10% energy from renewables. It is possible that should a solar thermal system wish to be added in the future, there is some roof space for this.

#### **Heat Pumps**

Installing a heat pumps is possible, however due to the overall small size of the dwelling and electric underfloor heating system is preferable. The installed PV will therefore be more useful in offsetting the electricity used by the occupants.

#### **Biomass**

This has been ruled out mainly because of the fuel storage considerations and the overall energy use will be low in comparison to other larger buildings where biomass would be more appropriate. A sustainable wood supply is also a consideration and currently unknown. Wood logs on a much smaller scale will however be the fuel for the secondary heating, a wood burner in the living room.

#### **Mechanical heat recovery systems**

The ventilation strategy is for natural cross ventilation via openable windows and doors. The open site supports this strategy. Local extract fans in the bathroom, WC, and kitchen will be provided to ensure unwanted moisture is removed from the dwelling effectively.

#### **Domestic/micro Combined Heat and Power systems (CHP).**

Although this is a possible option, and a mains gas powered CHP with additional electricity generation is not likely to be a cost-effective option for a single dwelling, and as such the preferred option is a gas boiler and solar PV. A CHP system would also need some form of back up heating source for main system maintenance.

Other renewable systems - CHP, Hydropower, Wind Turbine, Anaerobic Digestion are inappropriate for this dwelling.

### **Materials use:**

All new Materials will be Green Guide Rated and locally sources where possible.

All new Insulation will have a low or zero GWP.

### **Waste management:**

There will be demolition of an existing garage to make way for the proposed.

There will be a Construction Site Waste Management plan followed during construction work, and recycling of materials identified and reused where possible.

A policy of monitoring and diverting from landfill will be adopted throughout the construction period. There is adequate site space to store materials before disposal.

The site will be subject to the Considerate Constructors Scheme.

The proposed will have both internal and external waste & recycling provision.

### **Cycle Parking and Storage:**

The proposed will include off-street parking to the site. Secure cycle storage can also be provided on site.

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### **Attachments:**

SAP Worksheets for the proposed and the proposed plus PV