

SUSTAINABLE DESIGN STATEMENT

SEA VIEW, MCFARLAND'S DOWN, ST MARY'S

INTRODUCTION

The Isles of Scilly Planning policy recognises the role of building regulations as the primary means of ensuring energy efficiency in buildings but states support should be given through the planning process to developments that exceed current building regulation standards.

A detailed construction design has not been prepared at this stage of the planning process. However, the approach to the design of these homes is that of a “fabric first”. This approach to building design maximizes the performance of the components and materials that will be used to construct the dwelling before considering “bolt on” heating and microgeneration to compensate for lack of insulation and excessive air leakage. This method will capitalize on heat generated through occupation included appliances such as cookers and electronics devices and retains as much of this energy as possible through control of air tightness and ventilation and insulation of the thermal envelope.

Energy consultants have reviewed the design and it is possible that these dwellings can surpass modern building regulations (which are already more stringent than most homes). The target emission rates and the proposed emission rates for the various plots are outlined below:

Plot	Target Emission Rates (KgCO ₂ /yr/m ²)	Dwelling Emission Rates (KgCO ₂ /yr/m ²)
Plot A	27.24	13.62
Plot B	26	13.06
Plot C	23.1	9.43

The table above shows that a 50% percent reduction in carbon emissions can be achieved from the target prescribed by Building Regulations with the designs. This is without any Solar PV array factored into the calculations.

ORIENTATION

The orientation of the building is east west and these are the elevations where the majority of window openings are found. This will give early morning sun to the front elevations and evening sun to the rear. There are no windows on the south elevation and this is shaded by other buildings. This will temper overheating by solar gain whilst providing thermal mass to store and release heat over time. Window openings are small; consistent with cottage style of the homes. This will help prevent overheating due to solar gain.

MATERIALS

It is intended that the insulation standards of these properties will surpass the requirement of building regulations. This will likely to include PIR insulation to sloped first floor ceilings, quilt insulation above flat ceilings and PIR insulation to the walls and floor. Detailing the insulation with tapes and seals will be important to obtain thermal continuity. Thermal mass will be found in the outer skins of blockwork and render which are

dense materials. Internal skins of timber frame would give thermal insulating properties but would be much less dense.

WATER

Following part G of the Building Regulations it is intended to achieve a consumption of wholesome water of 110 litres per person per day through low flow taps, showers and outlets and dual flush low consumption WCs. Rainwater harvesting for use in gardens can be installed in the form of simple external water butts. Rainwater harvesting for use in the dwelling would require localised treatment and would detract from water allowed to percolate through the surface water drainage which into the aquifer which is the safest way to store water in the long-term without the risk of legionnaires or pathogenic bacteria.

RECYCLING

Provision for the storage for recycling will be made through hard standing areas at the side and rear of the properties for lidded wheeled containers with a path to bring them through to the front of the property. Within the splay of the gateways there is space to place waste for collection without impeding onto the highway.

TRANSPORT

Whilst there is a seasonal bus service which is accessible within 200m of the plots, provision for electric vehicles will be made through following the latest version of 18th edition of the electrical regulations which ensure new electrical installations of dwellings can cater for future requirements of electric vehicle charging.

MICROGENERATION

A solar PV array has been shown on the plans to Plot C over the detached garage. The array is at a lower height which will ease cleaning and maintenance and the pitch is shallower than the dwelling and is orientated to south to better capture the energy from the sun.