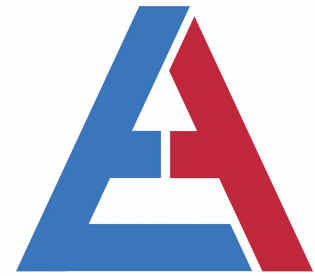


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## Energy Statement for 2 new dwellings at Bronsley & Bedevere, Bodinnick Road, St Tudy, Bodmin - Planning Policy SEC1

### Executive Summary

This Energy Statement and its attached documents has been prepared in support of a planning application for the proposed new development at Bodinnick Road, St Tudy. The Energy Statement includes an energy demand assessment illustrating how selected energy efficiency, low carbon and renewable energy measures have been considered and deemed appropriate for the scheme.

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## 1. Introduction

Energy Access was formed in May 2006 and has evolved significantly during this period of time, to become a market leader in the South West within their field.

Primarily the core business of Energy Access is On Construction Domestic Energy Assessments (SAPs), Energy Performance Certificates (EPCs) and Air Tightness/Pressure testing and the Code for Sustainable Homes.

Qualifications held by Energy Access include a Fellowship of the Royal Charter of Building Engineers (CABE), On Construction Domestic Energy Assessors (Elmhurst), members of The Air Tightness Testing and Measurement Association (ATTMA) & Code for Sustainable Homes Assessor through Stroma.

## 2. Planning Policy

Policy SEC1 Part 2b states that The Climate Emergency DPD will Guide Cornwall Council in addressing climate change within planning decisions. Policy SEC1 Sustainable Energy and Construction Part 2b focusses on the energy use of new-build homes in a drive towards net zero operational demand. In Summary, the three elements of this are

- A) a space heating energy threshold –30kWh/m<sup>2</sup>/year
- B) a total energy threshold –40kWh/m<sup>2</sup>/year
- C) a renewable energy requirement –equal or greater than the total energy demand

## 3. Executive Summary

We have been commissioned by **Knightley Architecture** to assist with the proposed development of 2 new dwellings at **Bodinnick Road, St Tudy** in calculating and documenting the energy efficiency of the proposed development in support of a Planning Application. This statement includes an energy demand assessment showing how selected energy efficiency, low carbon and renewable energy measures have been considered and those deemed most appropriate for the development.

SAP calculations have been used to show compliance with the Planning requirement for Policy SEC1. These have been prepared for the development based upon the construction specification listed in this report either enclosed or annexed herein.

In accordance with CEDPD Policy SEC1, the data from the SAP calculations were inputted into the required tool (Energy Summary Tool SAP) and below are the findings

CEDPD Policy SEC1 Version 2	Space Heating Demand kWh/m <sup>2</sup> /year Less than 30	Total Energy Use kWh/m <sup>2</sup> /year less than 40	Renewable Energy Generation Percentage of total Greater than 100%
Bronsley (LH Plot)	29.5	23.6	155
Bedevere (RH Plot)	29.3	23.6	155
<b>Compliance</b>	Pass	Pass	Pass

## 4. Sustainable Energy Strategy

### 4.1 Passive Design

The Energy performance of a building is affected by its design, construction, use - whilst the occupant behaviour exceeds the remit of this report. In the first instance the design team has provided a very well insulated building fabric to actually reduce the energy needed to condition the environment thus reducing the heat loss and therefore the use of energy in the form of space heating. This “fabric first” approach is highly recommended in today's construction methodology along the lines of the Passive Design principle.

The following U values have been proposed for the dwellings

- The floor will achieve a U value of 0.12W/m<sup>2</sup>k
- The walls will achieve a U value 0.15W/m<sup>2</sup>k
- The roofs will achieve a U value of 0.13W/m<sup>2</sup>k
- The windows will be triple glazed units with an average U value of 0.9W/m<sup>2</sup>k
- A target air permeability rate will be 0.95 AP50



- Thermal bridging values (PSI) have been based upon the ROI Building Regulations Accredited details
- A MVHR (Mechanical Ventilation and Heat Recovery Unit) will be used within the dwellings
- An Air Source heat pump will be used to condition the internal environment of the development.
- Low energy lighting installed throughout the project

The dwellings have also been oriented to make the most of the useful solar gains possible from its environment, with openings to capture the day and evening sun and fill the house with solar gains. Adopting the “Passive House” standards the high levels of insulation to the fabric along with the positive solar gains, will actually mean that the buildings should require little heating throughout the year.

Furthermore, the high levels of insulation will help retain heat and release it back into the dwellings. This will greatly assist the “passive” heating of the dwellings and further reduce the requirement of the heating system and therefore reduce the CO<sub>2</sub> load.

With regards to the M&E a Low and zero carbon feasibility assessment with regards to high efficiency alternative heating systems for the development has been carried out

The developer has incorporated low and zero technology in the dwellings in the form of an air source heat pump to condition the internal environment.

Items such as wind and hydro were dismissed on the grounds of applicability for the location.

Solar thermal was investigated, but the returns were not high enough to make it viable.

The most logical solution alternative, was to provide a PV array to each house which would give a better reduction in CO<sub>2</sub>, and this has also been adopted by the developer within the design.



#### ***4.2 Overheating Mitigation***

Approved Document O of the Building Regulations stipulates the requirements that every new dwelling must be subject to and pass an overheating assessment.

In this instance a Dynamic Thermal Model will be used to confirm compliance and this will; be done at the Building Regs stage

#### ***4.3 Water Efficiency Measures***

Sanitary appliances and whitegoods have not been specified at this early stage of the project. Therefore for the purposes of this assessment, water efficiency has been deemed as meeting the requirements.

Rainwater harvesting will be used in the development, in the form of water butts with the purpose of external irrigation.

### **5. Energy Efficiency**

The proposed scheme has been thermally modelled and assessed within the SAP software (output sheets enclosed) which compares the proposed dwellings performance against a minimum set of targets that are set by the Building Regulations standards. The results have been used as a means of determining the energy target and dwelling results using the approved modelling software Elmhurst SAP 10.

#### ***5.1 Space Heating Demand***

On the basis of the aforementioned specification, when the out put figures are inputted in to the Councils SAP Energy Summary Tool, it achieves the following result

CEDPD Policy SEC1 Version 2	Space Heating Demand kWh/m <sup>2</sup> /year Less than 30
Bronsley (LH Plot)	29.5
Bedevere (RH Plot)	29.3
<b>Compliance</b>	<b>Pass</b>

As the results are less than 30 kWh/m<sup>2</sup>/year then the scheme complies with the Councils requirement.

### *5.2 Total Energy Use*

With the air source heat pump as the primary heating system, when the output figures are inputted in to the Councils SAP Energy Summary Tool, it achieves the following result

CEDPD Policy SEC1 Version 2	Total Energy Use kWh/m <sup>2</sup> /year less than 40
Bronsley (LH Plot)	23.6
Bedevere (RH Plot)	23.6
<b>Compliance</b>	<b>Pass</b>

As the results are less than 40 kWh/m<sup>2</sup>/year then the scheme complies with the Councils requirement.

### *5.3 Renewable Generation*

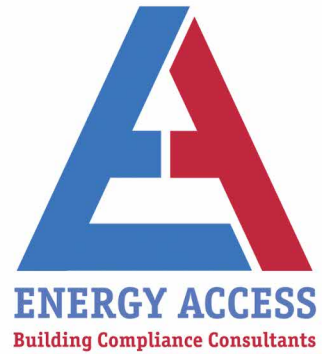
A PV array will be provided to the development in order to generate electric within the dwellings. On this basis, when the output figures are inputted in to the Councils SAP Energy Summary Tool, it achieves the following result

CEDPD Policy SEC1 Version 2	Renewable Energy Generation Percentage of total Greater than 100%
Bronsley (LH Plot)	155
Bedevere (RH Plot)	155
<b>Compliance</b>	<b>Pass</b>

Compliance has been shown without the use of energy storage however this may be something that is considered either by the client or end user and will only further improve the scheme.

### *6. Energy Summary Tool Worksheet*

CEDPD Policy SEC1 Version 2	Space Heatir Demand kWh/m2/year Less than 30	Total Energy Use kWh/m2/year less than 40	Renewable Energy Generation Percentage of total Greater than 100%
Bronsley (LH Plot)	29.5	23.6	155
Bedevere (RH Plot)	29.3	23.6	155
<b>Compliance</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>



## 7. Conclusion

In conclusion, it has been demonstrated that this development will be highly efficient (both passively and through the low and zero carbon M&E) to the location and significantly benefit its environment.

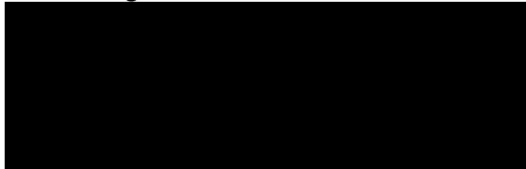
The scheme has also been demonstrated to satisfy all the criteria of the Policy SEC1 Part 2b of The Climate Emergency DPD

No off-set payment is considered needed for this development as the renewable energy generation target has been met.

I trust the above and enclosed gives a coherent perspective of the likely environmental impact of this property.

Please do not hesitate to contact me if I can help further

Kind Regards



Stuart Thomas BSc(Hons) C.Build E FCAB

Enclosures

- *SAP Design calculation output sheets*
- *Policy SEC1 Calculations - energy-summary-tool-sap*

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