OAKLAND ENERGY

ENERGY STATEMENT

Client: Julie Bonollo

Project: Sonander, Tredragon Road
Mawgan Porth, NEWQUAY, TR8 4DF

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EXCELLENCE IN ENERGY ASSESSMENT

INTRODUCTION

This report has been prepared by Oakland Energy LTD, under instruction from Julie Bonollo to accompany the planning application for 1no. Replacement dwelling at Sonander, Tredragon Road.

Cornwall Council has set an ambitious target of becoming net zero by 2030. Policy SEC1 of the Climate Emergency Development Plan Document requires the highest standards of sustainable construction with energy hierarchy as its core principle. This means improving fabric standards, energy efficiency and minimising space heating requirements, before installing renewable energy and then offsetting residual energy if required.
Policy extract showing requirement

2b) **New Development – Residential**

Residential development proposals will be required to achieve Net Zero Carbon and submit an 'Energy Statement' that demonstrates how the proposal will achieve:

- Space heating demand less than 30kWh/m2/annum;
- Total energy consumption less than 40kWh/m2/annum; and
- On-site renewable generation to match the total energy consumption, with a preference for roof-mounted solar PV.

Where the use of onsite renewables to match total energy consumption is demonstrated to be not technically feasible (for example with apartments) or economically viable renewable energy generation should be maximised as much as possible; and/or connection m a d e to an existing or proposed low carbon district energy network; or where this is not possible the residual energy (the amount by which total energy demand exceeds the renewable energy generation) is to be offset by a contribution to Cornwall Council's Offset Fund.

Where economic viability or technical constraints prevent policy compliance, proposals should first and foremost strive to meet the space heating and total energy consumption thresholds. Proposals must then benefit as much as possible from renewable energy generation and/or connection to an existing or proposed low carbon district energy network. As a last resort, any residual energy is to be offset by a contribution to Cornwall Council's Offset Fund, as far as economic viability allows.

5 **Water**

All dwellings (including conversions, reversions and change of use) should achieve an estimated water consumption of no more than 110 litres/person/day through the incorporation of water saving measures where feasible.

Requirements of section 6 of the policy SEC1 will be covered in the Design & Access Statement.

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RENEWABLE & LOW CARBON TECHNOLOGIES

Decentralised Energy – Energy generated off the main grid and produced close to where it will be used rather than at a large plant and sent through the national grid. It can include micro renewables, heating and cooling.

District Heating – is a system for distributing heat generated in a centralised location through a system of insulated pipes for residential and commercial heating requirements.
There are no networks near to the site.

Electricity generating technologies – solar pv, wind turbines, hydroelectricity and micro-CHP.

Solar PV – These modules convert sunlight into electricity for use in the home or to export to the grid. This is one of the simplest technologies to install and provides a reasonable payback (if roof orientation is suitable).

Wind Turbines – These are an effective renewable energy option in terms of energy output but the best sites require an average annual winds speed of at least 5metres per second with an unobstructed flow of wind thus making it inefficient for the most developments.

Micro-CHP - is a heating technology which generates heat and electricity simultaneously from the same energy source. This is a low carbon technology.
Hydroelectricity generate electricity from running water, usually a stream. Very site specific and impossible for most sites.

Heat generating technologies – solar water heating, biomass heating systems and heat pumps.

Solar Water Heating – solar collectors use free heat from the suns rays to warm domestic water which is stored in a hot water cylinder. Low maintenance option subject to the correct roof orientation.

Biomass heating – This is considered renewable as the co2 emitted during combustion is offset by that absorbed during growth. It is typically a boiler fired by wood pellets or chips and is a good option for developments that have no access to natural gas as a fuel. It does however require sufficient space on site for the boiler and fuel storage.

Heat Pumps - This moves heat energy from one place to another – such as from the ground or air to your central heating system and from a lower to a high temperature. Heat pumps use some electricity but they generate more heat energy than the electrical energy they use. These are a good option when there is no access to gas.

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FIGURES EXPLAINED

The energy consumption figures are taken from SAP 10.2.
The TER is the figure required to comply with SAP & Building Regulations.
The DER shows the actual heating demand and co2 emissions produced by the proposed dwelling.

NEW DWELLING

- Proposed gross internal floor area: 319.85m²

FABRIC FIRST STRATEGY

- Wall U Value – 0.15W/m²K
- Roof U Value – 0.15W/m²K
- Floor U Value – 0.10W/m²K
- Glazing U Value – 0.80W/m²K
- Air permeability of 1 or lower.

HEATIING STRATEGY

- Air Source Heat Pump

VENTILATION STRATEGY

- Mechanical ventilation with heat recovery

OVERHEATING MITIGATION

- Low g values

RENEWABLE ENERGY

- Solar PV Panels – 4kW Peak southwest; 4kW Peak northeast

WATER EFFICIENCY

The requirement of 110l/person/day will be met by using the following:
WC – 6/3 dual flush
Shower – 8l/min
Bath - 180l to overflow
Basin taps 4l/ min
Sink taps – 6l/min
Dishwasher – 1.25l/ per place setting
Washing machine – 8.17l/kg

CONCLUSION

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The thresholds of the Climate Emergency DPD Policy have been met.

	DPD Policy kWh/m²/yr	Proposed Dwelling kWh/m²/yr
Space Heating Demand	<30	26.2
Predicted Total Energy Use	<40	18.3
Renewable Energy Generation	> Total Energy	104.00%
Annual Renewable Energy Deficit		0kWh/yr

The proposals are therefore compliant with the Climate Emergency DPD.

Report completed on 13th December 2023.
By Sophie Oakland - Accredited Assessor EES/011881.

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3 - INPUT SAP (10.2) DATA

CORNWALL COUNCIL Etude

SAP Conversion Tool V2.1

Climate Zone: 4 South West England

↓ INSERT INFORMATION HERE ↓

	Results				Inputs - general						
	Space heat demand	Total energy use	Renewable generation	Renewable deficit	Quantity	Plot Name	Bedrooms	Number of storeys	SAP Floor Area	Volume	Site Exposure
	kWh/m²TFA/yr	kWh/m²GIA/yr	% total energy	kWh/year					m2	m3	
	Required values:				Box numbers from SAP calculation printout --->				[4]	[5]	
	<30	<40	100%	0							
EXAMPLE	***29.4***	***33.4***	***108%***	***0***	***1***	***EXAMPLE - Semi Detached House***	***3***	***2***	***93.2***	***235***	***Normal***
	26.2	18.3	104%	0	1	house	5	4	319.85	897	Normal
			Total	0							

↓ INSERT INFORMATION HERE ↓

*excluding internal partition elements

Inputs - Space Heating Demand																		
Air permeability @50Pa	Total area external elements	Total area party elements*	Ventilation system	Heat recovery	Thermal mass	Fabric heat loss	Solar gains											
m3/m2/hr	m2	m2		%	kJ/m2/K	W/K	W											
[17]	[31]	[32]+[32a]+[32b]		[23c]	[35]	[37]	[83]											
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	***193***	***39***	***MVHR***	***79%***	***124***	***55.6***	***91***	***139***	***203***	***285***	***322***	***357***	***307***	***287***	***238***	***162***	***106***	***77***
1	648	0	MVHR	84%	108	180.1	597	1043	1498	1975	2320	2351	2246	1982	1662	1172	720	508
				0%														
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Inputs - Total Energy Use										Inputs - Renewables
Space heat source	Heating efficiency	Space heat source	Heating efficiency	Fraction of heat	Domestic hot water source	Water heating efficiency	Hot water storage losses	Pumps and fans energy	Lighting Efficacy	Renewable Generation
(Primary)		(Secondary)					kWh/day	kWh/year	Lumen/Watt	kWh/year
	[206]		[207]	[201]		[216]	[48]	[231]		[233]
Heat pump - air to water	***311%***				***Heat pump - air to water***	***189%***	***1.4***	***189***	***100***	***-3160***
Heat pump - air to water	319%				Heat pump - air to water	192%	2.1	1217	100	-5756

↓ INSERT INFORMATION HERE - WHERE APPLICABLE ↓

Water Heating Reductions - where applicable											
Inputs only required for: waste water heat recovery, solar hot water and flue gas heat recovery											
kWh											
Sum of [63 a, c and d]											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = [(1)x(2)] + (3) (4)
WC (single flush)	Flush Volume (litres)		4.42	0.00	0
WC (dual flush)	Full flush Volume (litres)	6	1.46	0.00	8.76
	Part flush Volume (litres)	3	2.96	0.00	8.88
WC (multiple fittings)	Average effective flushing Volume (litres)		4.42	0.00	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	4.00	1.58	1.58	7.90
Bath (where shower also present)	Capacity to overflow(litres)	180.00	0.11	0.00	19.80
Shower (where bath also present)	Flow Rate(litres / minute)	8.00	4.37	0.00	34.96
Bath Only	Capacity to overflow(litres)		0.50	0.00	0
Shower Only	Flow Rate (litres/minute)		5.60	0.00	0
Kitchen/Utility room sink taps	Flow rate (litres/minute)	6.00	0.44	10.36	13.00
Washing Machine	(Litres/kg dry load)	8.17	2.1	0.00	17.16
Dishwasher	(Litres/place setting)	1.25	3.6	0.00	4.50
Waste disposal unit	(Litres/use)	☐ Present	3.08	0.00	0
Water Softener	(Litres/person/day)		1.00	0.00	0
	(5)	Total Calculated use (litres/person/day) =SUM(column 4)			114.96
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			104.61
	(10)	External water use			5.0
	(11)	Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)			109.6

Installation Type	Make/Model (mandatory)	Litres/Person/Day
WC (dual flush)	6/3 dual flush	17.64
Taps	4l/min	7.90
Baths (shower(s) present)	180l to overflow	19.80
Showers (bath(s) present)	8l/min	34.96
Kitchen Taps	6l/min	13.00
Washing Machines	8.17l per kg	17.16
Dishwasher	1.25l per place	4.50

Terms and Conditions
System Requirements