P/20/090/FUL C11

Tregarthen's Hotel – Eco Lodges
C11 – Sustainable Design – Water and Energy Saving

Solar Photovoltaic & Solar Thermal Installation

Each lodge will be fitted with solar photovoltaic and thermal panels.

The PV panels shall be split across the lodges to lie on the roof faces to blend in with the roof light windows. Panels shall be "in roof" to provide a low profile visual impact. The overall installation will comprise 11 panels (23.1m²) to generate 4.66kWh peak. The usable electricity generated available for onsite use will be 4.34kWh.

The annual yield of the installation is expected to achieve 929.15 kWh/kWp.
This shall offset approximately 1,301kg/year of CO^2.

Each lodge will also have a flat plate solar thermal collector on its southern elevation roof. This panel shall provide heating to serve the lodge's hot water cylinder. Panels shall be "in roof" to provide a low profile visual impact

Solar collector to be Worcester Bosch Solar-Lifestyle (TBC) in roof model. Collector area to be 2.18m². Collector to be connected to unvented slimline hot water cylinder via proprietary pump group and controller.

Cylinder to be Gledhill StainlessLite Plus Slimline (TBC) 140 litre unvented cylinder.
Expected solar yield is 800kWh/year/lodge. Total yield = 4000kWh/year
This shall offset approximately 188/year of CO^2/lodge. Total savings = 940kg/year of CO^2

Electrical Installation

The electrical supply to the lodges will be derived from the main hotel building. A new supply shall run from the main distribution board to a new local board for distribution to each lodge.

The electrical supply to each lodge is controlled by a key-card energy switch. This provides complete isolation of the electrical supply to all of the lodge circuits (except the emergency lights). Switch to be MK K14324-WHI 240V.

The Lodges are fitted with a single ring main serving standard domestic socket layouts. A further ring main serves the lighting circuit. All lighting is LED based. Fittings are a mix of fixed 3W & 8W LED downlights. Supplementary lighting is provided by LED bulbs fitted to table lamps and a pendant.

- Type A Lights – 8W IP65 White Bezel LED downlight
- Type B Lights – JCC JC50306 3W Emergency downlight
- Type D Lights – 3W Mini IP65 downlight with white bezel

Shower room lighting is PIR controlled.

Water Calculation

- Showers – Mira Assist Mixer Thermostatic – 8 litres/min
- WC - Grohe Bau Rimless Close Coupled Toilet. Dual flush 6/3 litre
- WHB – Grohe Bau 550mm 1TH Basin & Full Pedestal – Tap Grohe Bau Edge Mono Basin Mixer 5.7 litres/ min
- Kitchen Tap – Grohe BauEdge Kitchen Sink Mixer 8 litres/min

Appendix A – Calculation

The Water Efficiency Calculator

Installation	Unit of Measure	Capacity Flow Rate	Use Factor	Fixed Use (litres/person/day)	Litres/person/day
WC Dual Flush	Flush Volume (Full) litres	6	1.46	0.00	8.76
WC Dual Flush	Flush Volume (Part) litres	3	2.96	0.00	8.88
Shower	Flow Rate litres/min	8	4.37	0	34.96
Kitchen/Utility Room Sink Taps	Flow Rate litres/min	8	0.44	10.36	13.88
Total Calculated Use					**66.48**
Normalisation Factor					0.91
External Water Use					5
Total Water Consumption (litres/person/day)					**72.39**

Hot water is generated and stored within a Gledhill StainlessLite Plus Slimline 120 litre unvented cylinder.

Rainwater Harvesting - Water Butt

Each lodge shall have 2x 110 litre water storage butts. Each butt will serve the gutter on each side of the lodge.

Water storage butts to be Water Butts Direct Slimline 110 Polybutt in black (121cm H x 43cm W). Each lodge downpipe to have guttermate diverter and debris strainer fitted.

The total storage capacity will be 1100 litres. This stored water will be used for site cleaning/washing and irrigation purposes.