

Design and Access Statement

Summary

This application is for retrospective permission for alterations to the original plans (P21/102/COU and P075/COU) that were made, after consultation with the Duchy, to improve service supply and more efficient disposal of waste and effluent. The project is 3 years in development with a functional site attracting visitors. The remaining aspects of the project are underway with an expected completion timeline of the next 18 months to arrive at a mature and fully functioning project. The application relates to;

- 1) Repositioning of the huts
- 2) Improved waste and effluent plant, and the waste water removal from site

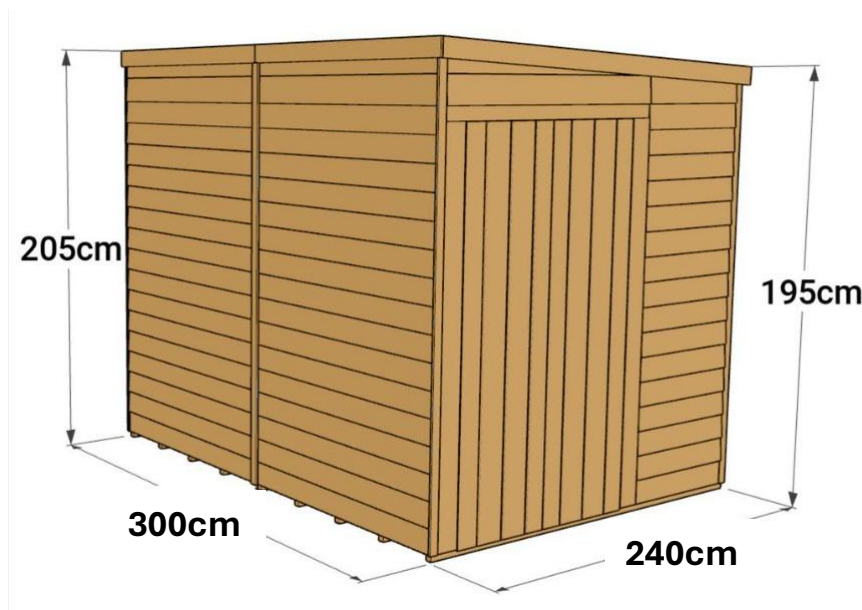
The Proposal

The huts were originally permitted in individual locations on the site. They are now in a slight curved line, as shown on the site plan. This is to provide a more efficient alignment for the distribution of services to the huts and the removal of effluent to the treatment plant.

The original concept proposal had been for toilets with the waste conveyed to 'WooWoo GT' composting vessels that have an annual emptying regime, with the waste water conveyed to the AppleTree reserve cesspit. After consultation with the Duchy this has been replaced with a more efficient 'BioPure' system. This is designed, primarily, for off grid sites that require waste disposal for part of the year, whilst the treatment continues out of season. The 'BioPure' is a bio solution that degrades the waste through microbiological breakdown and continual aeration delivered through a small powered aqua pump, to promote bacterial consumption of waste matter. The 'BioPure 3' installed, requires emptying on a 5 to 7 year regime and clarifies the removed water to required BS Standards. The resultant volume of air composted waste is therefore much smaller in volume.

Service Shed

A small shed, 3x2.4mts, as shown on the site diagram, that was originally used to house construction equipment, is retained to house services to the site.



Water

Is provided, as previously stated, by the pre-existing water supply to site and the increasing volume of harvested water captured by the huts. The harvested water is held in recycled, food grade IBCs (intermediate bulk containers) provided by the on-island distillery. This is currently 6,000 litres, increasing to a total capacity of 10,000 litres harvested on site, as more IBCs are installed. Water for human consumption is passed through a 3 level filtration system, including UV treatment. Larq water filters are available in the huts for further filtration as desired. These remove polyfluoroalkyl substances, chlorine, mercury, cadmium, copper, lead, benzene, pharmaceuticals, asbestos, arsenic and HAA5 traces from the water whilst, improving the taste of the water also.

Power

Currently, the major supply is renewable sourced power via the mains. The previously approved solar array coming into effect on completion, to provide a 5-7.5 KW supply: work on the installation has begun. A renewable source mains connection was supplied by Western Power under delegated powers and a wayleave arrangement with the Duchy. Lower consuming devices such as water distribution pumps for harvested water, recharging of landscaping power tools and the pond water circulation come from a solar system that is currently operating in the ecology zone of the site.

Access

Access to the site and the boundaries remain unaltered.

Fire

A 30mt swinging, automatic, 25mm fire hose has been installed to support any exigency and is available to support the adjacent shepherd hut site also. Other aspects remain as previously approved.

Environmental Aspects

Water harvesting, a pond, and self-sufficiency vegetable beds are installed. Solar powered, automatic watering systems, activated by soil sensors, are installed and operative. Bat boxes are installed along with a solar powered, 'trailcam', to monitor fauna visitations and bat activity around the bat box location. There is also a solar powered, web-based, weather station providing regular local weather data.

Various fruit trees, border plants, native flowers and hedgerow have been planted and this will continue for at least two more seasons.

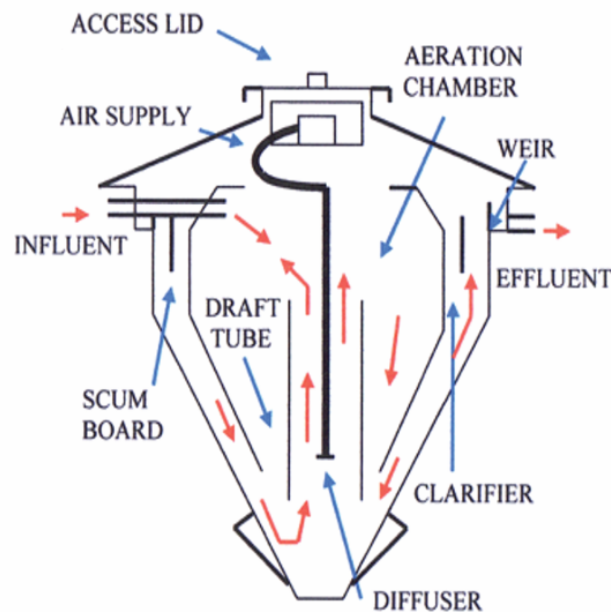
To encourage visitor interaction with off grid living we have registered with the British Science Association for delivery of CREST Awards. These are STEM based activities that carry certification with activities across the 3-19 age range, including Level 3 awards and support for home tutored pupils. We are developing activities linked to solar, water, food production, weather and local ecology to be included in the CREST award scheme. This will be supported by the site handbook and our soon to be launched ecology website. Numerous visitors, this year, left with details of the water harvesting and automatic watering systems intending to investigate its use at home.

Landscaping

The excavation for the huts, as before, was for 8 concrete pads to support the wheels of each hut. The planting of borders and other environmental improvements to include; Bat Boxes, Pond, Water Harvesting, Solar Power and Self-sufficiency Vegetable Boxes, is unchanged and mainly in place. The final phase for the huts' solar array is under way, with the panels on site ready for installation in the new season 2026.

Appendices

Bio-Pure 3 Suitable for 5-13 People on Annual Basis



PERFORMANCE RESULTS	
We Build It Ltd Kingsnordley Farm, Kingsnordley Nr. Alveley, Bridgnorth, WV15 6EU Shropshire, United Kingdom EN 12566-3, Annex B "Small wastewater treatment systems for up to 50 PT" Small wastewater treatment system Bio-Pure biological aeration system	
Nominal organic daily load	0.25 kg/d
Nominal hydraulic daily load	0.80 m³/d
Material	Glass reinforced plastic (GRP)
Treatment efficiency (nominal sequences)	
COD _{Cr}	92.1 %
BOD ₅	96.2 %
SS	94.9 %
NH ₄ -N*	81.4 %
Electrical consumption	1.3 kWh/d
* determined for temperature > 12°C in the bioreactor.	
Performance tested by: PIA - ProfInstitut für Abwassertechnik GmbH (PIA GmbH) Hergersdorfer Weg 30 D-52074 Aachen	
Certified according to: ISO 9001:2000	
Notified body number: 1738	
This document replaces earlier versions for the purpose of conformity with the CE marking.	
Elmer Lenzke June 2018	

The Bio-Pure is a fibreglass conical shaped tank containing a circular aeration chamber, a centre draft tube with an air diffuser located in the centre through which air is continuously forced by means of a blower motor.

Raw sewage enters the Bio-Pure through the inlet pipe flowing into the centre aeration chamber. Air released through the diffuser at the bottom of the draft tube causes an upward flow of fluid ensuring continuous combining of oxygen with sewage. This allows for growth of various aerobic organisms that biologically degrade the sewage contaminants.

Any remaining aerated solids settle to the bottom of the tank where they are drawn back up through the draft tube repeatedly until thoroughly cleansed.

As more sewage enters through the inlet and into the aeration chamber it displaces the treated effluent into the outer tank, any remaining solids will settle to the base and return back to the aeration chamber. The treated effluent will flow over the weir and out of the outlet where it can be disposed of through a water course or soak away.

The Bio-Pure is 96% efficient, thus allowing long intervals before de-sludge is required. The waste water is cleaned to a standard of 20 mg/l biological oxygen demand and 30 mg/l suspended solids, meeting the usual discharge level requirement.

Larq Filter Incorporating UV Light



Innovative plant-based filters are independently tested to NSF/ANSI 42, 53, and 401 standards against a wide range of pollutants.

	LARQ Pitcher Advanced Filter
Improves taste (chlorine)	✓
PFAS (PFOA/PFOS)	✓
Lead	✓
Copper	✓
BPA	✓
Pharma & Pesticides	✓
HAAs/TTHM	✓
Self-cleaning	✓