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By Olivia.Rickman at 12:29 pm, Nov 24, 2021

- ❖ The design of the proposed shepherd's hut staff accommodation, is basic, yet sturdy, built of Larch shiplap timber around a strong ribbed wooden carcass mounted on a steel chassis, supported on steel wheels. The shiplap timber will blend into the environment of trees and hedges and provide visual continuity with the barns located a few meters away on the access lane. Shiplap timber has several advantages over the alternative metal clad designs. Chiefly, the façade may be easily repaired in the future, should it suffer storm or other damage, by the replacement of individual wooden strips. Damaged wood is easily recycled through shredding. Metal panels, by contrast, may no longer be available in a size to match. Damaged metal panels are not readily recycled and may become a waste management issue. The longevity of the barns located along the lane are testimony to the ability of such structures to withstand the sometimes harsh environment found on these islands.
- ❖ Roof is a standard coated, curved corrugation, form. Steel has been found the best surface to support water harnessing for filtration and cleansing for potability as little adheres to the surface by way of lichen, for example, that may enter the filtration system resulting in blockages. Any damage is more readily repaired and is not in a visual eyeline.
- ❖ The carcass is wrapped in a breathable waterproof membrane prior to cladding and the internal sections insulated after internal plumbing and wiring are installed. The interior finish is pine tongue and groove boarding finished in a sympathetic colour scheme. All apertures are wooden and double glazed.
- ❖ Bathroom, kitchen and service facilities are all proven, top performing, low carbon footprint appliances and fittings.

Specifically:

- Concrete slab footings for wheels, 30x30x15cms laid above MOT Class 1 substrate
- Steel wheels and chassis support treated cross members and insulated and treated OSB floor panels above an additional waterproof membrane
- Ribbed carcass built from 3X2 treated timber
- Larch shiplap cladding screw fixed over breathable dampproof membrane
- Sheep's wool, earth wool, cork and recycled wood are used as the primary wall and roof insulants being more environmentally friendly and efficient

1: Staff Accommodation: Design Concepts

a. Shepherd Hut Planned Construction Specifications

Shepherd Hut Planned Construction Specifications (continued)

- Outer walls clad with Larch shiplap to blend with existing barns on situated along the shared access track
- Windows are timber double-glazed set either side of the entrance doors providing light to the bedroom and kitchen. Additional single windows are located in the toilet and bathroom to provide light and ventilation. A further single narrow north facing awning will be positioned to enable through ventilation to the main room and periods of non-occupancy. The windows would be predominantly south facing providing ample light and views of the garden area but sheltered by the pittosporum trees to the south of the plot.
- The timber double glazed doors provide the entrance to the huts and will be outward opening to avoid restrictions to internal floor space and provide stronger resistance to the prevailing strong southerly winds of late summer, autumn and winter.
- The curved roof is made of dark grey corrugated metal sheet panels with a small overhang to provide drip clearance and water harvesting into guttering which diverts to potable quality water butts.
- Wooden steps and a small platform provide access to the hut and space for the swing of the outward opening doors.
- An enclosed double-bed room with south facing window and views to the garden.
- The toilet room contains a proven Separett® waterless, composting toilet (Villa 9020 model) which discharges through the floor into removable collection container. This conforms to Building Regulations 2010, Part G 4.19;

‘Chemical toilets or composting toilets may be used where: a. suitable arrangements can be made for the disposal of the waste either on or off the site; and b. the waste can be removed from the premises without carrying it through any living space or food preparation areas (including a kitchen)’

The toilet has an automatic concealing screen and a 12vDC fan to vent the odours from the facility, whilst speeding the drying of the waste material. Urine is separated and collected in a different receptacle for disposal in a septic tank. Solid waste would be kept in a composting receptacle located in the wooded section of the field, to the west of the huts, where, after an appropriate time (9-15 months), it may be used to fertilise the trees and the various flower beds.. Whilst the under hut storage has the capacity for 30-40 days waste storage, the containers will be refreshed on a weekly basis.

A men's urinal will be placed in the toilet facility to reduce the risk of urine leakage through the screened area of the Separret® toilet bowl due to the differing ergonomics of male and female urination positions.

- A kitchen area including a sink with running hot and cold water; an induction hob; and a work surface/food preparation area. The kitchen will be provisioned with:
 - Filtered potable fresh water
 - Instant water heater
 - Multi fuel cooking facilities
 - Multi-function 'Instapot®' cooker
 - Microwave
 - A multi fuel fridge/freezer
 - Suitable recycling and waste disposal units
- A separate shower facility shall be connected to the instant water heater and grey water disposal facility. This room will have some capacity for hanging laundry on wet days
- A small multi voltage 12vDC/230 vAC twin tub washing machine will utilise the filtered grey water from the sink and shower waste in the first instance. It will then pump to a further grey water receptacle for secondary filtration to provide water for the garden and hydroponic growing containers. Grey water in excess of horticultural requirements may require a small soak away located at a convenient site to the north of the huts. The use of grey water is well researched in terms of health and efficient waste management of water. Recent research papers are attached as appendix 2 & 3
- There is a small a small 'service facility' located between the two previously approved huts on the north side. The service facility will contain the water butts and other required utilities for all huts. There is an ample supply of previously excavated rocks and boulders in the field that can be used to build a suitable dry wall to screen the service facility. This wall will, in turn, be planted with local elm and pittosporum to eventually grow and screen the wall itself and appear a normal feature of the locality.

- Lighting throughout the huts will be 12vDC LED
- DC power will be 5, 12 and 24vDC to service various low voltage appliances and mobile devices
- 240vAC will be via a standard 3.5KV solar supply system through conventional inversion
- Internet will be provided via low voltage 'ee® mobile sim modem' providing 4G unlimited connectivity
- Flooring will be wood effect tile planking with solar powered underfloor heating. Tiling will be more durable in a sandy environment and conducts the heat more effectively than wood.
- Internal walls are pine tongue and groove, sympathetically coloured and allowing the ready fixing of internal shelving and décor. At this point it is worth noting that the larch shiplap will be marked to identify panels that may be easily removed to gain access to plumbing or wiring runs should an exigency arise in the future. This will preserve the interior from major and costly disruption.
- There will be a small utility area to locate the internal water connections, and house electricity consumer units and safety devices
- A range of internal cupboards, wardrobe and small storage units will provide additional capacity for the guests to keep their possessions
- Internal fittings will be completed with an extending dining table, folding chairs, comfortable seating area and curtains

The following sections illustrate typical designs and finishes to assist visualisation of the design concepts.

1: Shepherd Hut: Design Concepts

b. Exterior Design



Typical chassis construction for the shepherd's huts. Steel framed and steel wheels, coated, primed, undercoat and painted black in colour.



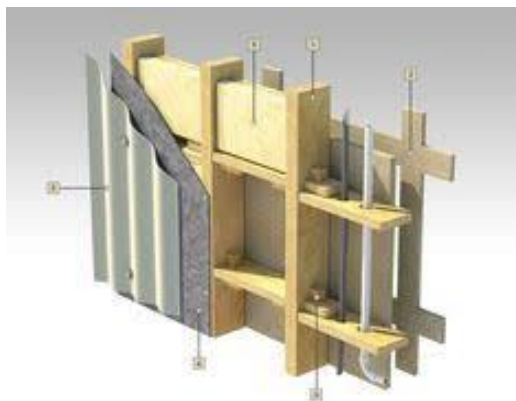
Typical carcass construction showing floor and ribs mounted a chassis and the basic form and structure of the roof curvature.

1: Shepherd Hut: Design Concepts

b. Exterior Design



Typical roof profile and overhang to accommodate guttering and water harvest facilities on site.



Typical weatherproof membrane prior to cable and plumbing insulation & typical insulation cross section for carcass prior to tongue and groove internal fitment.

1: Shepherd Hut: Design Concepts

b. Exterior Design



Painted exterior of a typical shepherd's hut that is sympathetic to its surroundings, whilst contrasting the frames and cladding.



Natural larch shiplap finish that is in keeping with the barns located along the access track to the shepherd's huts. Profiles such as these blend easily with the tree and hedge surroundings.

1: Shepherd Hut: Design Concepts

c. Interior Design Finishes and Features



Typical floor plan showing separate double bedroom, living, kitchen and bathroom areas.



Typical shepherd hut kitchen layout with utilities including microwave.

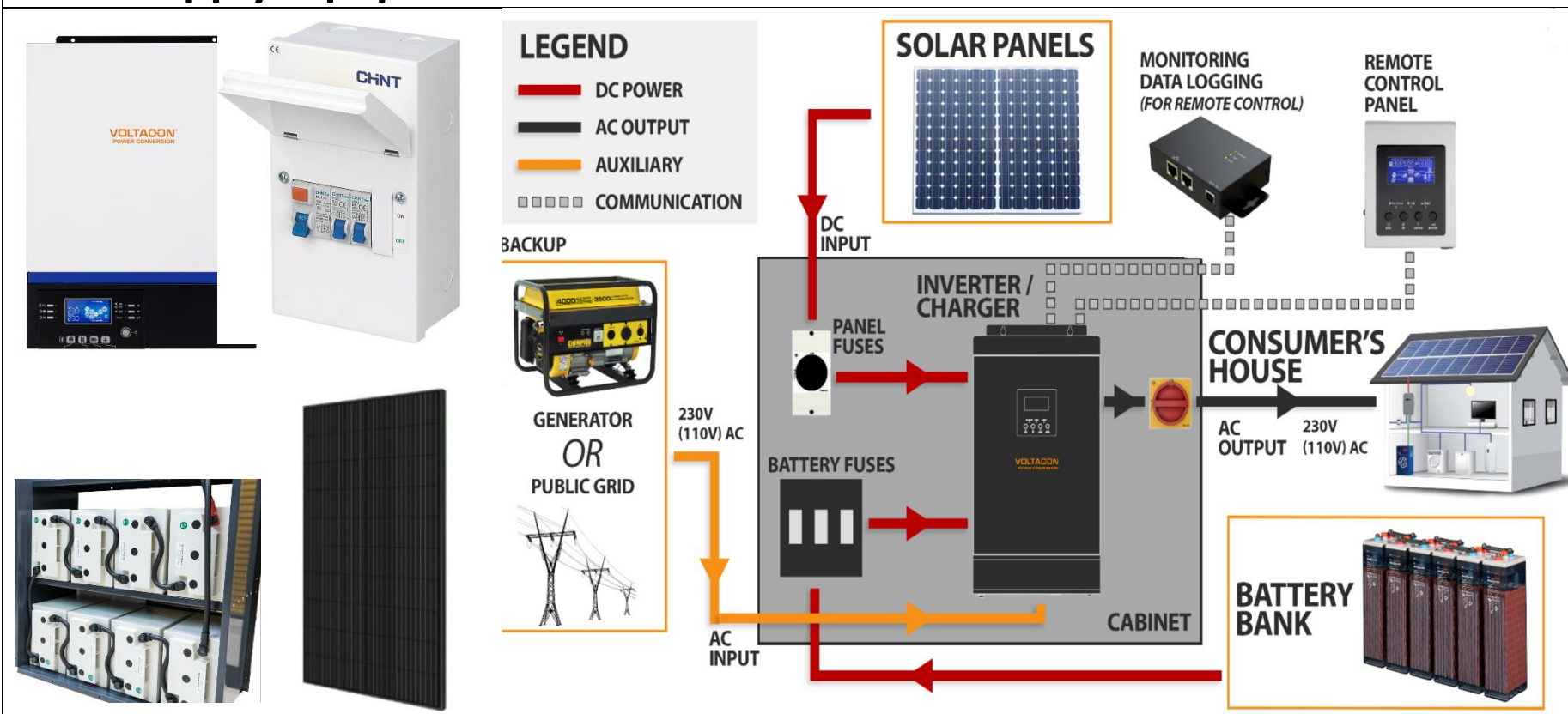


Typical interior showing the Separret® toilet, shower base and folding table and chairs for the living area.

1: Shepherd Hut: Design Concepts


d. Technical Specifications

This section of the document illustrates the likely deployment of equipment to service the shepherd’s huts in order to provide a low carbon off grid holiday experience for the visitors, as well as the minimal impact on existing island resources. All the equipment proposed is tried and tested and used globally in similar circumstances. They are proven to be both efficient and reliable as well as conforming to environmental standards expected of new technologies that support low consumption and low emissions and low production of waste.

Solar Supply Equipment	Comment
	<p>The solar power for each hut will be a 3.5 Kva system with battery storage, inverter/control panel, consumer unit, isolator and safety cut off RCCD. The power is via 10X 330w solar panels of latest efficient design and deep cycle GEL batteries with a 25 year life span to reduce risk of high turnover of difficult waste materials for disposal. The schema opposite shows a typical means of connectivity and distribution.</p>

1: Shepherd Hut: Design Concepts

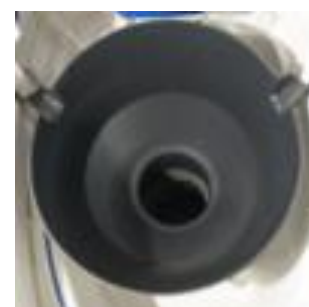
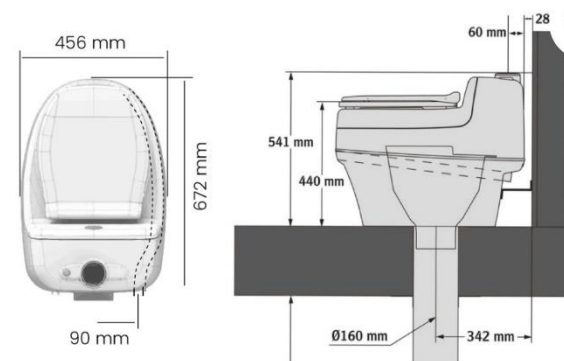
d. Technical Specifications

Water: Harvesting, Filtration, & Grey Waste Management	Comment
 <p>The diagram illustrates the water management system for the Shepherd Hut. It shows the flow of water from harvesting to various uses and treatment stages. The system includes a header tank (1), a 3-stage carbon filter (2), a potable quality water tank (1), a grey water tank (4), a particle filter (5), a washing machine (6), and a final grey water tank (7). The flow is as follows: Rainwater is harvested from the roof, front and back. The distribution and use are as follows: 1) Water is dual filtered and debris and leaves removed to the grey water tank at 4, whilst the clear water enters the potable quality water tank at 1. 2) Water is pumped to the hut header tank via a 3 stage carbon filter that produces drinking quality water. 3) Water for the sink and hot water pass directly from the header tank. Drinking water is further filtered through the Berkely Bear system at, 3 to produce 99.99% pure water devoid of all harmful bacteria and other metals and chemicals. 4) Grey wastewater enters the butt at 4. 5) Grey water passes through a particle filter to the washing machine. 6) Grey water then enters the final grey water butt. 7) Grey water is finally used for the vegetable beds and hydroponic circulation (see section 2.c.ii below).</p>	<p>Comment</p> <p>Rainwater is harvested from the roof, front and back.</p> <p>The distribution and use are as follows:</p> <ol style="list-style-type: none"> 1) Water is dual filtered and debris and leaves removed to the grey water tank at 4, whilst the clear water enters the potable quality water tank at 1 2) Water is pumped to the hut header tank via a 3 stage carbon filter that produces drinking quality water 3) Water for the sink and hot water pass directly from the header tank. Drinking water is further filtered through the Berkely Bear system at, 3 to produce 99.99% pure water devoid of all harmful bacteria and other metals and chemicals. 4) Grey wastewater enters the butt at 4 5) Grey water passes through a particle filter to the washing machine 6) Grey water then enters the final grey water butt 7) Grey water is finally used for the vegetable beds and hydroponic circulation (see section 2.c.ii below).

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Composting Toilet, Shower & Waste Disposal



Comments

Separret 9020 is one of the world's most widely used composting toilets. It provides efficient urine and solid waste separation to self-contained receptacles. The waste is passed through the building floor and wall negating the need to carry waste through the building in accordance with building regulations. Fluid waste will be disposed of through the existing septic tank whereas the solid waste will be stored in a composting vessel for use in late winter/early spring on the flower beds and to mulch the trees.

The Separret® 9020 has a 12vDC fan that directs air across the waste matter to dry it rapidly and reduce odours which are vented through a screened duct at the rear of the huts. The toilets use 0% water.

The pumped shower will be restricted to 25 litres of water over a 5 minute period to reduce waste. All soaps will have 0% environmental negative impact.