

Sustainable House Day:

Lot 7, Solar Village, Humpty Doo

“Our home is self-sufficient for power and water use, and the design of the house means that it doesn’t need huge amounts of power anyway. The house was designed to maximise passive cooling with excellent cross ventilation, shading from the sun, high pitched roofs and orientated so as to minimise sunlight directly entering the house” – David Evans, home owner

Energy –

- There are 24 Photovoltaic (PV) solar panels on a tower. This is a 2.6 kWh non-grid connected photovoltaic array. The solar panels can be manually adjusted/tilted each season, to make sure they are receiving the most amount of sun
- The tower was purposefully built above the tree line to make sure they are never in the shade.
- There are an additional 5 panels on the house roof that were installed after the current owners moved in. These power the pool pump during the middle of the day. Extra power from these is used in the mornings and afternoon.
- The panels on the roof receive a little shade in the late afternoon, and particularly in the Wet, but this hasn’t been too problematic in terms of energy use.
- The solar system is backed up by a diesel generator



Water –

- The property is not connected to town water.
- All water used on the property and in the home is from 2 bores (1 is currently not in use). This is for drinking, showering, washing, filling the pool and watering the lawn.
- The bore is a low yield bore for all water use purposes, and is relatively shallow (flow rate is 0.2 L / second)
- The garden is watered by sprinklers, however most of it is a dry zone of native species, making the garden largely ‘Dry season tolerant’
- Water is stored in the tank on the tower. It is elevated to maintain header pressure.

Inside The House

Tropical Design –

- The orientation of the house minimises direct sunlight on the walls and windows, minimising heat gain
- The main shade rood is angled up, to catch and channel breezes entering the balcony area and into the house. The wide veranda/balcony also ensures that the north facing wall is shaded all day. The additional shade can be manually tilted as needed (for example, as the sun is setting)
- The house is an open plan, with the living room and main bedroom in the same space. These are separated by a large



bookshelf

- The roof is high pitched with no ceiling cavity, assisting ventilation
- Ceiling fans come down the height of the room, meaning they are not just circulating the warm air trapped against the ceiling and the resulting airflow can be felt. There are also ceiling louvers to make sure hot air is not trapped against ceiling.
- The roof and walls are light weight corrugated iron construction. These materials cool down quickly at night
- The house is semi elevated and catches seasonal breezes
- The bathroom, toilet and laundry are located outside and open to the yard.

Temperature Control

- All windows are louvered and kept open all the time. They line the walls from the floor up to the roof. The main sliding door is also left open, so there is good cross ventilation and breezes can enter the house
- While there are 2 air conditioners (one in the storage room of the second bedroom (which used to house lots of computers and machines from the original owner) and in the existing 'office' (which is a shipping container converted into an office), these are not used.
- The second bedroom has windowed walls. The native vegetation around the house (and in particular the second bedroom) also creates an envelope of cool air.

Household Choices -

- Compact Fluorescent Lighting (CFL) is used throughout the house, using significantly less energy than other lighting types such as halogen down lights.
- All fans, lights and appliances are always switched off when not in use (especially because they rely on their own power production)
- The floors are made out of 16mm marine ply, which has heat, humidity and moisture resistant properties.

