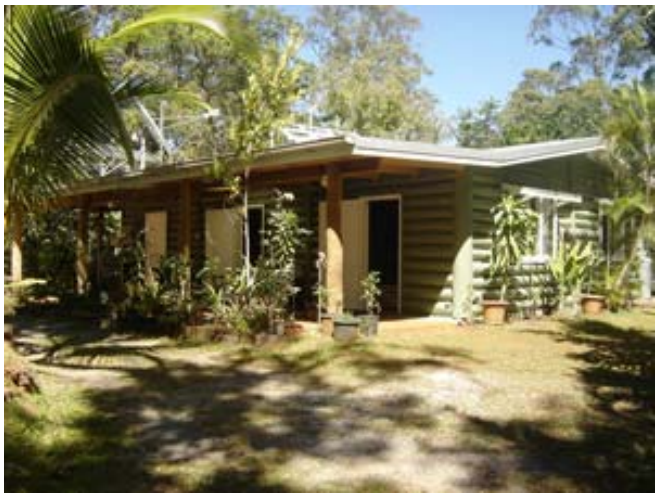
TROPICAL SUSTAINABLE DESIGN CASE STUDIES

Julatten Log Home

Project type: Residential

Location: Julatten, QLD, Australia
Year completed: 1985

- **Simplicity, ingenuity and use of locally available materials and resources**
- **The house is energy and cost efficient**



OVERVIEW

This project was initiated in 1984 and completed in 1985. It was not originally conceived as an ecological or sustainable dwelling. However, the open design, the use of readily available materials on the property, and the topographical location resulted in the construction lending itself to be upgraded to an efficient sustainable and comfortable house design.

PLANNING AND MANAGEMENT

Over a period of time the owners managed their own renovation and retrofitting project. Custom designed systems and innovation were key to the success.

A new roof was built that included insulation throughout. Timber ceilings were added to the verandas and eaves. All of the log construction was re-sealed. Screens were installed throughout.

The owners custom designed and installed their own PV system, donkey wood hot water system and grey water recycle filter system.

SITE

The house site is located on the highest buildable location available on the 14.45 Hectare undulating property. The land falls away from the house site for around 300º allowing a nice outlook and enhancing the natural airflow and natural cooling during the summer months.

DESIGN

The original design for a two bedroom house has been maintained. The house faces North and South with two three- metre verandahs covering the full length of the house on the eastern and western sides.

The two bedrooms are situated on the southern side. The bathroom and toilet is on the west, and the kitchen, dining and lounge open design completes the simple interior layout.

MATERIALS

Exterior walls and structure are hardwood logs. Interior double walls are sawn 100mm wide planed Kauri Pine planking.

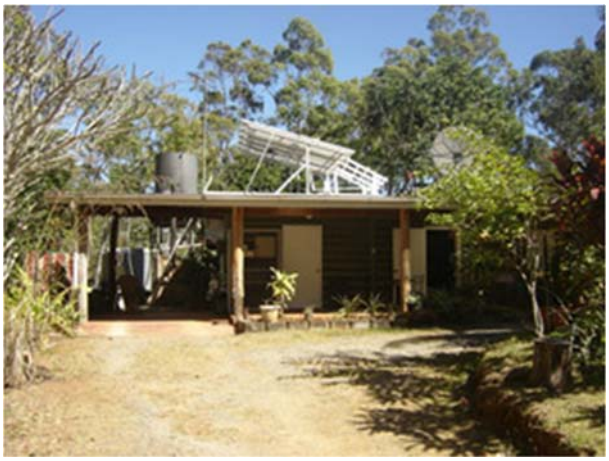
The floor is concrete. The master bedroom, bathroom and kitchen floors are tiled; the remainder is linoleum.

The roof is galvanised sheet over batt insulation. Doors are solid double planked Kauri Pine.

Interior and exterior paints are water based excluding verandas posts and beams which are treated.

ENERGY

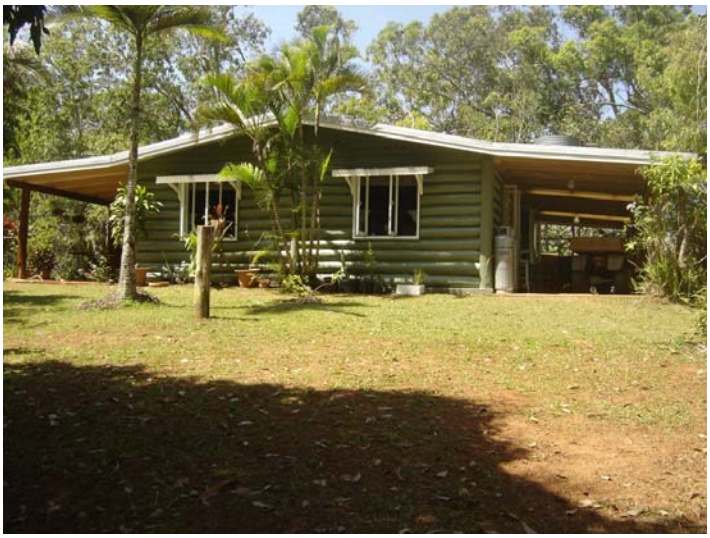
Gas is used for cooking and running one refrigerator. A donkey wood hot water system has capacity for a two day supply on one firing.
The electrical system is a standalone 1500W PV system with 1500 Amp battery storage. A 5KVA backup generator is also available, but never required even during long spells of wet weather. The main purpose for the generator is for running machinery when undertaking repairs or building maintenance.



WATER AND WASTE

The services water for this residence is derived from the Mowbray River via petrol driven positive displacement pump. An overhead 4000 litre water tank feeds the house and gardens using gravity. Water is also harvested from the roof into another 4000 litre tank. During the wet season, water is seldom pumped from the river as the rain water from its tank can be transferred to the gravity tank by a small electric pump. Rainfall collection during the wet season is generally sufficient to supply household needs for up to 5 months of a given year. On average petrol used for pumping from the river would not exceed 30 litres annually. A custom designed grey water recycle filter system for irrigation is also installed.

OWNERS/USERS STATEMENT



"In one word: 'simplicity'. The house affords excellent insulation. During winter we regularly register a difference of up to 12ºC higher temperature inside against outside without any additional heating. Just by closing the windows and doors as the sun starts setting and temperature dropping.
In summer it works in reverse though only to about 6ºC to 7ºC. The log construction also offers good sound insulation. The climate obviously contributes, but we do not require air conditioning or heating. We do have a single small floor stand fan which at most we have used three or four times in a year and some years never. The house is energy efficient and cost efficient.
Maintenance is very low due to the robust construction. It was constructed to cyclone standards. We have no power or water bills and we are very comfortable. The house also offers numerous opportunities to further improve sustainability. It has twice featured in Sustainable house day." Brian Lambert

PROJECT TEAM

Designer and builder: Robert Luis
Photographs courtesy of Brian Lambert

For more information visit: **www.jcu.edu.au/tsd**
www.greenbuild.com.au

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