

# Light and Life in the Bush

**BUSH** LIGHT

Case Study 18

June 2006

[www.bushlight.org.au](http://www.bushlight.org.au)



## Gunbah

### The Setting

Gunbah, meaning “big country” was established about 10 to 15 years ago. Gunbah is a small outstation on Mornington Island. The entrance to Gunbah country is marked by “Turtle Story” a part of Gunbah creek, which is accessible travelling from Gununa to Gunbah.

Its sole house is occupied mainly on weekends as the residents need to stay in town for their employment. At various times in the past, community residents have lived at Gunbah on a permanent basis and some have indicated they have plans to move back there and stay throughout the dry season.

The wet season on Mornington Island made it impossible for the family to occupy the outstation from January to April 2006 due to significant road damage making it inaccessible during this period.

### Bushlight’s Approach

Bushlight has established a process for use with homeland communities to plan and manage their energy services.

This process involves a series of participatory workshops called the Community Energy Planning Model (CEPM). Bushlight regional staff work with community residents through this process.

The process informs residents and helps them to choose and manage energy services that are best for them and that will contribute to their community aspirations.

Residents are provided with technical and other information so they can choose sustainable – that is, affordable and reliable – Renewable Energy (RE) services that will meet their current and future energy needs.

In making decisions about energy services, residents take into account the technical and financial limitations that are associated with their various energy service options.

Twelve months after installation Bushlight undertakes a Community Energy Plan (CEP) Review with the community to obtain feedback on Bushlight

services and assess community outcomes.

### Energy Service Goals

During the CEP residents at Gunbah listed several goals they would like to achieve by obtaining 24 hour RE power. These goals included:

- Improve community living by reducing their dependence on diesel (cost of fuel and transport reduced).
- Using the direct saving's from fuel and transport to further the planned community development.

The residents also stated that Gunbah is a peaceful place to live and that people would like to improve basic services to make living there more comfortable.

### Pre Bushlight Energy Services

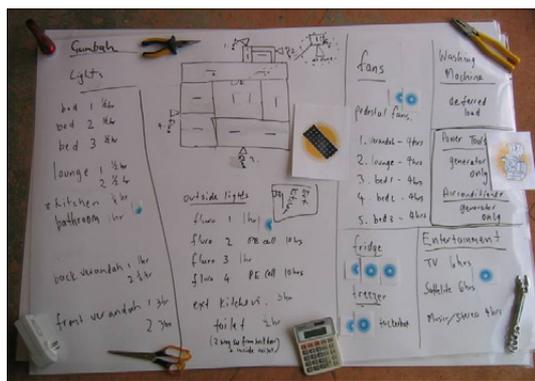
An FG Wilson Lister 10kVA diesel generator was in place in the community prior to the Bushlight system installation. This same generator is now used as a



back up to their Gunbah's generator solar energy.

Gunbah residents agreed on the following:

- To use the generator for power tools, on cloudy days and when they need to use the air conditioners.
- To use firewood for cooking and keeping warm.
- To use the washing machine only when there is plenty of energy available, when the batteries in the Bushlight Solar Power System are full and it's a sunny day.



Community Energy Planning at Gunbah

### Energy Services Planning

During the Energy Services Planning stage of the CEPM, Bushlight provides education about energy service options and finds out about the community's energy needs and issues, social structures, mobility, permanent household members and daily activities. Bushlight looks at all the energy sources available to the community in order to assist people with making decisions about what would be the best energy options for their homeland.

The end result of this process is a Community Energy Plan (CEP), a document that details the most appropriate sources and uses of available types of energy and includes details of the proposed RE system.

Bushlight developed Gunbah's CEP in consultation with the community and Mornington Island Resource Centre.

### Major System Component Specifications

PV Array	2.89kWp (34x 85W)
Battery Bank	1700Ah @ 24VDC
Inverter	2.2kW @ 40°C
Charge Controller	2 x 60A @ 24VDC

### System Specifications

A Bushlight BL1 household RE Solar Power System was commissioned on 21st June 2005 and is designed to provide an average daily load of 6.4 kWh. The main system enclosure is installed under

the



Bushlight Energy Management Unit

veranda at the house. A cement slab and skillion veranda were extended from the buildings west wall to protect the system. These works were contracted out as part of the installation and were carried out by Coen Regional Aboriginal Corporation (CRAC). The PV array is ground mounted in a nearby open area.

Bushlight systems power non-critical appliances via “discretionary” circuits and critical appliances via “essential” circuits. To attempt to ensure continuous power to critical appliances (like fridges and freezers), power to discretionary circuits is cut when the battery charge drops below a predefined level.

### Costing Information

The total installed cost of the RE system was \$106,994. This figure includes costs associated with two service visits in the first year and additional works, i.e. reticulation connecting the generator, additional house wiring and lighting, energy management fittings, construction of the concrete slab and extension of the veranda. The Queensland Government Renewable Energy Diesel Replacement Scheme provided a rebate of approximately \$53,497 on the total cost.

The equivalent actual fuel savings for running the generator at the community is 4874 Litres per year. This equates to an annual cost saving of approximately \$7,554 and the abatement of ~14.3 tonnes per year of greenhouse gases.

### Community Service Agreement

The Community Service Agreement (CSA) is an agreement between the community, its support or resource agency (the agency funding maintenance of essential services) and Bushlight where each party agrees to work together, in a spirit of cooperation, to maintain and sustain the energy services. The CSA clearly articulates the roles and responsibilities of each party as well as describing maintenance and repair arrangements.

As of the 1 July 2006 Bushlight is responsible for the maintenance and repairs of all Bushlight RE

Systems, however, the actual delivery mechanism will be determined by local circumstances. Existing CSAs will be renegotiated to include this new arrangement.

The CSA also covers the collection of user contributions to pay for future maintenance carried out by the Resource Agency. At Gunbah the community are happy to pay user contributions. However, residents wanted to wait until some issues with the local council to whom the contributions would be paid were resolved.

### Post Installation Community Training

Community Training was delivered to Gunbah residents with the aid of a pictorial based User Manual and hands-on interaction with their Bushlight system. This training included system operation and maintenance, basic troubleshooting and energy use management. Bushlight training is designed to be broken into stages to allow time to experience system use and operation. Due to the resident’s not living on homelands permanently it has been a challenge to make a time for training with the community.



Mornington Islanders being trained by Bushlight’s Ken Turner

The occupants also have a large family and are often called away for family commitments for periods of time and at short notice. Due to these factors it has hindered the training process.

In October 2005 Bushlight delivered its Level II Training to the electrician from the Resource Agency. Key areas of training delivered include: basic electrical concepts; RE system components and what they do; basic maintenance tasks; common problems and how to fix them; managing energy use and working safely with RE equipment.

## Service and Maintenance

Three weeks after installation on the 13th of July 2005 a fault was reported by a community member to Bushlight where after a series of phone calls the RE engineer from Bushlight went to the community to investigate further.

The problem was found to be a faulty component which was replaced and since then the system has operated as normal.



Gunbah residents with their new Bushlight system

Unfortunately due to the damage done to the roads by the recent cyclones as well as work and family commitments, the Bushlight system has not been fully utilised on a day to day basis, but the family do manage to get out there on weekends and enjoy the time they have when on their homelands.

At the time of the CEP review, residents were faced with the prospective demolition of their house in town. The RE system at Gunbah meant that moving to the outstation during the dry season was now a viable alternative.

## Community Outcomes

The community have expressed joy and happiness over their new RE system, they have found the system very easy to use and have stated they especially like that they don't have to go out and mess around with the generator when they get home at night. They are also enjoying the quiet around the community now that they are not using the generator as much.

With fuel now being \$1.60 per litre on the island they are happy they are saving money. As one community member said "the system makes being on the homelands much easier and cheaper". In addition, residents said that the timers on the energy management units were very good with children as they often forget to turn off lights and fans.

### Contact Bushlight

Bushlight Administration  
PO Box 8044, ALICE SPRINGS NT 0871  
Tel (08) 8951 4344, Fax (08) 8951 4333  
[enquiries@bushlight.org.au](mailto:enquiries@bushlight.org.au)