

# Light and Life in the Bush

BUSH LIGHT

Case study 29

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



## About this case study

This case study is about Mt Theo outstation, a community that is helping to change the lives and future of many young people in the region. As a rehabilitation centre, Mt Theo has brought empowerment and healing to many Warlpiri youth who were involved in substance misuse and other "at risk" behaviours. For the past three years, Bushlight have been working with Mt Theo residents to provide them with reliable 24 hour power so they can continue to operate and expand as a successful respite centre for Warlpiri youth.



Some visitors and carers of Mt Theo Outstation in May 2006

## Background

Mt Theo is an outstation 160km North West of Yuendumu (460km North West of Alice Springs). It was first settled in the 1980's as part of the homelands movement. In 1993 traditional owner Peggy Brown and Johnny Miller established Mt Theo as a rehabilitation centre for petrol sniffers from

Yuendumu. The program, predominantly funded by the Office of Aboriginal and Torres Strait Islander Health (OATSIH), has been very successful ever since. Due to its success, the program has expanded and now takes people from other communities in the region. It assists young people to overcome a range of problems such as substance misuse, violence and other anti-social behavior. Clients are now referred to the program via the justice system and police as an alternative to conventional correctional procedures.

The success of the program is embedded in the fact that it is run by Warlpiri elders. The elders lead the young participants to a healthy and sustaining recovery by undertaking cultural and recreational activities with them. Through the activities and cultural excursions they learn many skills such as hunting, cooking, music and art. The days are interwoven with story telling by the elders, informal counselling and healing discussions about life issues. The young Warlpiri people feel empowered as their cultural identity within the wider Warlpiri community is strengthened.



One of the shelters at Mt Theo

## Bushlight's Community Energy Planning Model

Bushlight's objective is to improve livelihood choices for remote communities by increasing their access to reliable energy services. To do so, Bushlight works directly with community members to provide them with independent advice and information about choosing which energy services are best for them, and advice on demand side management, and energy conservation. Using a range of pictorial resources, Bushlight invites communities to consider how they use energy and how much it costs them; and with them, look at what options are available for improving their access to reliable energy services.

Through workshops and community mapping exercises, Bushlight works with residents to prepare Community Energy Plans (CEPs). These plans detail the community's current energy needs as well as any future livelihood aspirations. The CEP documents an agreement between Bushlight and the community by setting out household energy budgets and the roles and responsibilities of the community in using and looking after their solar power system. The responsibilities of Bushlight, the community's service agency, and the system installer are also laid out.

After the initial CEP meetings and completion of the system design, Bushlight coordinates the installation of the RE equipment. Following installation Bushlight provides education and training in system operation and maintenance over several visits during the course of the first year. Bushlight's approach elaborates on the typical RE industry process by involving the community in all key activities and decisions.

### National Recognition

In August 2007, in recognition of the outstanding success of the Mt Theo program, founders Peggy Brown and Johnny Miller, were awarded the highest honour given to Australian citizens, Order of Australia Medals. This was a great honor for all people involved in the Mt Theo Program and a great incentive for them to keep the program going in to the future.

### Pre Bushlight energy services

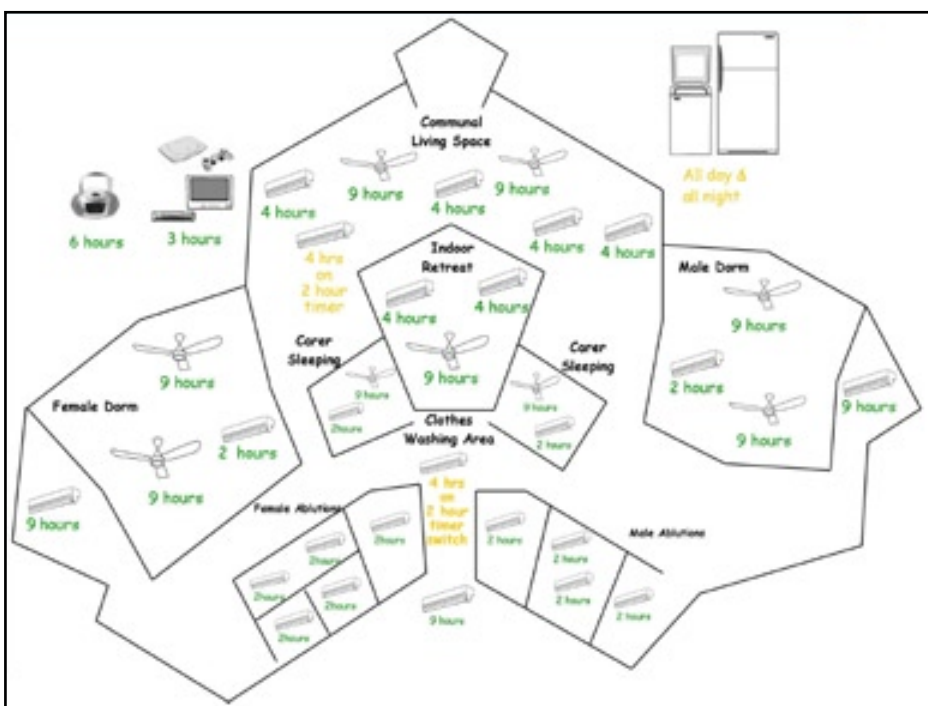
Prior to the Bushlight System being installed in March 2006 the Mt Theo residents relied on a Synergy 5000 wind turbine system with a 10 kVA generator for power when diesel was available and when the generator was working. Estimated diesel cost per

year was \$3848. A very small amount of energy was also provided by a 1.92 kVA solar array which has now been incorporated into the Bushlight system.

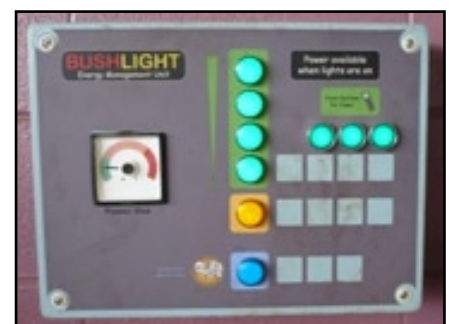
### The Bushlight RE System

The RE system installed at Mt Theo is a 48V community solar RE system that provides a maximum daily AC load of 26.1 kWh/day. This power is distributed via overhead reticulation to three houses and the new dormitory through Bushlight's Energy Management Units (EMUs). The system is comprised of the following major components:

- PV array - ground mounted with a capacity of 7.68kWp.
- Battery bank - Capacity of 2400Ah @ 48VDC



The layout of the new dormitory showing the energy



An Energy management Unit (EMU) is installed in each building



The new Bushlight RE system at Mt Theo



providing 2 days of storage at 23% average daily depth of discharge

- Inverter – 5kW @ 40°C

The Bushlight system at Mt Theo is unique in that it incorporated an existing wind turbine in to the system. This is the first time this had been done, and Bushlight took the opportunity to evaluate its worth.

The wind turbine system only supplies a very small amount of energy, and only when the wind is blowing strongly. Any energy it supplies is additional to that allocated for daily energy budgets. The wind turbine requires a high level of maintenance because of its mobile nature. It is hard to service as it has to be lowered to the ground each time. Bushlight staff decided that, due to the very small and intermittent contribution the wind turbine makes to the energy supply, and the difficult nature of its maintenance, they would not incorporate wind turbines in to systems in the future.



Wind Turbine connected to Bushlight solar system

The total project cost was \$351,385. This included system mobilisation and installation, two service visits in the first year and additional works such as reticulation, installation of ceiling fans and replacing switchboards with EMUs. The Northern Territory Government Renewable Energy Rebate Program provided a rebate of \$131,319 on the total cost. The Mt Theo Program also contributed \$45000 to the project through OATSIH funding.

### Bushlight and Mt Theo

Bushlight's relationship with Mt Theo outstation started when they were approached by architect Richard Layton. He had been employed by Mt Theo to design a new dormitory for the Mt Theo program participants to stay in. He thought Bushlight might be able to help Mt Theo by providing power for the new building.

Bushlight visited Mt Theo three times in the Community Energy Planning phase of the project to talk to residents about their energy needs. Bushlight planned to provide power to 3 houses and the new

dormitory. Residents talked about which appliances they use and how long they use them for each day. This helped Bushlight design the best system to suit their needs. They also talked about which appliances should be run on the solar energy, and which ones should be run using generator power.

Unfortunately for Mt Theo residents, their generator was broken for many months after they had the solar system installed. They had to manage their energy use wisely to ensure they didn't run out of power. They reported sometimes running out of discretionary power in the mornings, before it was topped up at midday. The generator has now been fixed, and Bushlight sent out a contractor to synchronise it to the Bushlight system. Now when the generator runs it will charge the solar system batteries, while also providing additional energy to use energy hungry appliances without depleting the solar energy budget.



Central Regional Manager, Marteena McKenzie from Bushlight talks to Mt Theo residents about the Bushlight RE system

### Training

Mt Theo poses some unique challenges for Bushlight. It is a highly transient community as the program participants come and go, and the carers change regularly. It is difficult to conduct training at Mt Theo to capture all the carers at one time. The result has



The boys at Mt Theo were enthusiastic to learn about the Energy Management Unit (EMU)

been that only some people know how the system works and how to manage the energy budgets well. To address this, Bushlight is conducted a special training course, in addition to the usual training undertaken, aimed at all Mt Theo staff. Bushlight provided additional resources, designed especially for Mt Theo. These posters will help new staff and residents at Mt Theo to become familiar with the Bushlight system and how it works.

Another challenge of having a Bushlight system in such a transient community is that, because the clients are only there on a temporary basis, they don't always understand the system and the services it provides. When the system was first installed, there was a problem with stones being thrown at the array and damaging it. To address this issue Bushlight with the help of residents produced a poster to put in the dormitory telling people to be careful with the system. These days, the carers talk to newcomers about the system and how it works and they have responded positively.



Bushlight & Mt Theo residents produced this poster to try and minimise damage to the system arrays.

### Community Outcomes

The Traditional Owners and carers at Mount Theo are very happy with the Bushlight system, despite the challenges incurred by the high turnover of people and difficulties around continuity of knowledge about the system. Overall, having a reliable source of energy has brought positive changes to the community and the Traditional Owners and carers reported that life is easier now at Mt Theo. Below are a couple of stories that demonstrate how the program is running more effectively and efficiently now.

Before the Bushlight system was installed, Mt Theo did not have reliable refrigeration. The support workers had to drive back to Yuendumu (160km), as often as every second day, to buy more perishable food such as meat, eggs and milk. Now they have reliable

fridges and freezers where they can store their food. In addition to the health benefits and convenience of these changes Mt Theo also saves a lot of money on fuel and there is now more time to spend with the young people they are there to help.

With more stability and time that comes with reliable 24hour energy, Mt Theo carers have created new activities to engage the program participants.

One of the carers, Scotty, is a keen musician and he decided he would like to share his passion for music with some of the clients. They converted one of the tin sheds into a recording studio and hooked up a range of recording equipment including amplifiers and microphones, plus musical instruments such as the keyboard and guitar. They produced and recorded their very own CD. With the generator now connected to the solar system, there is more flexibility to undertake these activities without depleting the daily solar energy budget. This kind of activity brings a range of benefits to program participants. Not only do they learn new skills, it also builds their confidence, assists in the healing process and brings more work opportunities.



Mt Theo clients recording music

The Traditional Owners and managers of the Mt Theo program, Peggy Brown and Johnny Miller are dedicated to continuing to expand the program. They want to keep helping more and more young people to overcome their challenges and to strengthen the Warlpiri community as a whole.

Bushlight will continue to work with Peggy and Johnny and the Mt Theo Program staff to ensure the energy needs of this important and expanding venture are met.





Mt Theo Manager, Johnny Miller OAM, participating in the CEP process



Mt Theo Manager, Peggy Brown OAM, holding the community map created during CEP