Light and Life in the Bush

BUSH LIGHT

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Munget

The Setting

Munget is a small homeland overlooking the Southern end of Pender Bay on the Dampier Peninsula, 170 kilometres north of Broome. Standing on the veranda of the main family house at Munget, the view takes in the pristine beauty of a unique landscape. Startlingly red pindan cliffs give way to white sand and the deep blue waters of the bay, a favourite spot for humpback whales and their calves to rest on their way south. Maintaining their pristine environment is a high priority for Munget residents.

The Dampier Peninsula is scattered with around fifty small Indigenous homelands, many are on the coast, and many residents are harnessing the stunning beauty of their country by creating livelihood opportunities in the tourism industry. Servicing a tourist venture requires reliable 24-hour power. If this need is met using diesel there is a very high cost to the community. One alternative to diesel is solar power. Currently four communities on the peninsular have Bushlight solar power systems providing low-cost power with a further four scheduled for completion by the end of 2007.

Lennie O'Meara and Jacinta Monck with their four young children are the permanent residents at Munget, with other family members and friends having come and gone over time. When Lennie and Jacinta moved permanently to Munget in 1999 they had a block of bushland and a spectacular view but nothing in the way of infrastructure. Their first house at Munget was a small self-built dwelling made from bush timber and recycled corrugated iron sheeting. After two years with no power, residents bought a small portable Honda 4 kVA generator.

In July 2005, the Department of Housing and Works (WA government) funded the construction of Munget's first certified dwelling (4 bedrooms). By good luck, this funding coincided with Bushlight's Derby regional team conducting its Regional Energy Planning to develop a list of priority communities to work with throughout the Kimberley region.

Jacinta Monck and Lennie O'Meara and youngest Munget resident Marlu, with David D'Antoine from Bushlight (centre), May 2007

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.

Munget's Pre-Bushlight Energy Services

In May 2004, Mamabulanjin (the community's Essential Service Provider, based in Broome) upgraded Munget's power by installing a 9kVA diesel generator. This meant that each shelter could access power by running extension leads to the house or meter boxes for lights and appliances.

Prior to the installation of the Bushlight system the community used this generator for an average of 15 hours a day in the dry season and 24 hours a day in the wet season (4 months/year). At this time diesel cost $1.20/L which equated to the community spending on average $190 a week to run its lights, fridge, freezer, fans and kitchen appliances. Gas was used for cooking.

Since the Bushlight system was installed, Munget residents have spent an average of $70 a week (at the time of writing the price of diesel is around $1.50/L) to run the generator (the generator is now used only for running power tools, except in situations of power loss as discussed below) making a cost saving of up to $120 per week.

The original house at Munget

Aspirations identified at CEP, 2004:

Munget's vision is to achieve economic sustainability and continue to preserve the coastal and bushland environments in the surrounding area. Plans are underway to set up Eco-Tourism ventures that take in activities like whale watching, camel treks, bush treks and Aboriginal arts and crafts. Eco-tourism will also incorporate developing camp sites that will be environmentally friendly to the area. Also plans to develop a market garden to provide vegetables within the local region.

Energy Service Goals & Community Aspirations

At the time of the initial Community Energy Planning meetings in late 2004, Munget residents identified many aspirations and had many plans for the future of the homeland including developing its tourism venture and reducing greenhouse gas emissions by reducing diesel consumption.

System Specifications & Costs

The Bushlight solar system was installed in September 2005 and connected to the new main house, four bush shelters, and an ablutions block. The maximum daily AC load on the system is 19.4kWh.

The total project cost of the Bushlight system at Munget was $266,705. This included system installation, two service visits in the first year and additional works including reticulation and construction of a concrete slab and shelter. Bushlight

The Bushlight shed and arrays at Munget

also replaced old inefficient appliances with new efficient ones, including lights and three old fridge/ freezers. The Western Australia Government Aboriginal Community Remote Power Supply Rebate Program supplied a $121,767 rebate on the total cost.

The data downloaded from the Bushlight system at Munget suggests that the system is performing well with batteries consistently reaching float.

After a death in the family, residents decided to knock down one of the dwellings and transfer its power box and energy budget to the site next to where the camels are now penned. This was carried out as an 'in good faith' arrangement between Bushlight and the community.

Bushlight systems work by dividing a community's electrical loads into two categories: essential and non-essential, or discretionary. A certain amount of energy (an energy budget) is then allocated to each household each day at 12 noon with a certain amount of the energy set aside for loads on essential circuits (fridges and freezers, smoke alarms, security lights) and the rest being available for appliances on discretionary circuits (lights, fans, and TV's, etc.). If the allocated power is used up before 12 noon the next day the power will be lost to that circuit. The energy budgets are designed in such a way that essential circuits - which are regular and consistent - would never run out.
This 'daily energy budget' approach protects the system from overuse, increasing its life, reducing system maintenance costs and improving overall system sustainability.

Community Outcomes

Last year Munget residents realised some of the aspirations they spoke about with Bushlight in 2004. Foremost was the development of a tourist venture focusing on camel rides. In 2006, Lennie and Jacinta purchased seven camels (Millibinyarri, Molly, Sweetlips, Pumpkin, Alice, Jalma & baby Ti Tree). They have made up flyers and business cards to promote themselves, and tourists come from nearby Middle Lagoon Resort to be taken on one hour camel rides from the bush to the beach, sometimes including a picnic lunch. As the camels carry people through the beautiful scenery, Lennie and Jacinta teach them about bush tucker and local Aboriginal history in the area, as well as telling stories and identifying shells on the beach.

Munget residents are in the process of establishing networks with several tour companies and visitor centres around WA to build a higher profile and attract visitors from further a-field. In fact the day before the project review visit, Munget had been visited by tourism representatives from the Broome, Derby, Perth and Fremantle Visitors Centres. Lennie and Jacinta want to build on their existing short walks and host treks over a three day period.

Munget community also has well established horticultural plots, growing papaya trees and some vegetables. They are helped in this and other work by visiting Wwoofers (Willing Workers on Organic Farms) who come and stay and work in exchange for their food and board. This relationship with the WWOOF network was established in 2006.

Jacinta told Bushlight at the 12 month review in May 2007 that one of the biggest changes since having reliable 24-hour power is that they have not had to throw out so much food. Food wastage can be a big issue for communities running fridges and freezers off generator power as they are often switched off at night. This is an important outcome in Munget particularly given that it is home to four young children and it is a long drive to get to a shop.

Jacinta said that the Bushlight system "has meant the difference between being able to live here and not really", particularly given recent changes to Indigenous policies that are impacting on homeland residents. Lennie and Jacinta also said that they have saved lots of money, and they would encourage other homelands to switch over to renewable energy.

Community Issues

Also reported to Bushlight during the May project review, was the fact that recently and for the first time since installation, the community had been losing discretionary power before 12 noon when their energy budgets are topped up. Residents identified the reason for this as being the unseasonably warm weather in May meaning greater fan use for this time of year, particularly at night to get the kids to sleep. In addition, the higher temperatures may be putting a heavier load on the fridge and freezer.

Munget residents with Bushlight Regional Manager & Contractors at installation

Another possible reason for losing power is the increased use of the computer and printer. There are two reasons for this. Firstly, Oseyahn, the oldest child at Munget has begun her primary school education from home through Kimberley School of the Air. Secondly, as the community business develops, the computer and printer are in greater use.

As a result of this loss of power residents have been running the generator for a couple of hours a day to charge the batteries and when extra washing had to be done.

Having access to reliable 24 hour power enables communities to build enterprises and livelihoods, and in many cases attracts more residents to move permanently to a community. Identifying future aspirations during the energy planning process and building a system designed to accommodate the expected increased demand over time is an integral element of Bushlight's approach.

The increased demand and loss of discretionary power experienced in Munget initially suggests that the system may not have been designed properly, however, an analysis of the design shows that the system capacity remains sufficient to meet their needs; what needs to be revisited is the allocation of energy between the different dwellings to account for the actual usage of each dwelling - the population and energy demands.

The Future

Despite all they have achieved, Lennie and Jacinta have further plans in the pipeline. Foremost is their desire to establish a café and gallery situated within the community overlooking the bay. The building has been designed and they are currently seeking funding to for its construction. If funding is secured, visitors will be in for a treat. The café will house local Aboriginal art and incorporate a residence for artists to come and stay and paint. Lennie and Jacinta have worked with Indigenous Business Australia to develop their business plan for the community enterprises, and are patiently working towards their goals as they look after the more immediate concerns such as raising their four children (all under the age of six). Having access to reliable RE power has helped Munget residents stay on their country and to develop their livelihood opportunities.

Perhaps the biggest threat to fulfilling further livelihood plans at Munget is the naming of the Pender Bay as one of the proposed sites for a gas plant. Residents all along the coast here are concerned about the impact this would have on the environment as well as on the fledgling tourism industry.

Munget's camels

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