



**Moojeeba—Top Camp**



**Theethinji—Bottom Camp**

## Port Stewart

### About this case study

This Case Study looks at the establishment of two Bushlight renewable energy (RE) systems at Port Stewart and how this has helped residents to pursue their livelihood aspirations. Two very similar systems have been installed in the Port Stewart area; one at Moojeeba and one at Theethinji; two settlements just a few kilometres apart.

Bushlight began their relationship with Port Stewart in May 2004 with a series of Community Energy Planning (CEP) meetings. Based on these discussions and the information collected during them, the systems were designed and eventually commissioned in December 2005. Since then both communities have continued to grow, with more people staying for longer periods of time.

### Background

Port Stewart is situated near the mouth of the

of the Lama Lama people, it is predominantly Aboriginal Freehold title with a mixture of national parks and public access areas. Port Stewart is known as Yintjingga (sea eagle) in the local language.

As well as living on country and maintaining their traditional links to the land, residents of Port Stewart have been involved in various livelihood activities including cattle and tourism enterprises.



*Community Energy Planning at Moojeeba*



*Keith and Vera with their Bushlight system at Theethinji.*

Stewart River on the northern shores of Princess Charlotte Bay, Cape York Peninsula in Far North Queensland. Port Stewart is the traditional land

Until recently, all essential and municipal services to Port Stewart were provided by Coen Regional Aboriginal Corporation (CRAC). However, since 2007 CRAC has been under administration and its future operations remain unclear.

During the time of Bushlight's CEP visits in 2004, the core population of both camps was 20 permanent residents with an additional 15-20 residents moving in and out periodically. In total, there are six dwellings (a mix of sheds and houses); a safari-style camp area for tourists, and two community buildings: the 'school house' and 'ranger station'.

**Theethinji**, the 'bottom camp', is one of the two

camps of Port Stewart community. Prior to the Bushlight system being installed the community ran their Kubota 8kVa diesel generator for 8 hours a day, at an annual cost of approximately \$4,700.

**Moojeeba**, the 'top camp', is situated only 3 kms away. Prior to the Bushlight system being installed the community ran their Kubota 8kVa diesel generator for 7 hours a day, at an annual cost of approximately \$5000. All of the fuel was purchased and transported by residents, equating to a considerable cost.

At the time of the CEP, the 'school house' and 'ranger station' were not included in the Bushlight design as these buildings were not in regular use. Now however, with an increase in tourism enterprises and natural resource management responsibilities, the buildings require a more permanent energy solution. Bushlight is working with residents to identify suitable options for improving these services.

**Community Energy Planning (CEP) at Port Stewart**

During the CEP meetings in 2004, the residents of Port Stewart thought about their goals and ideas for the future and how energy services might help.

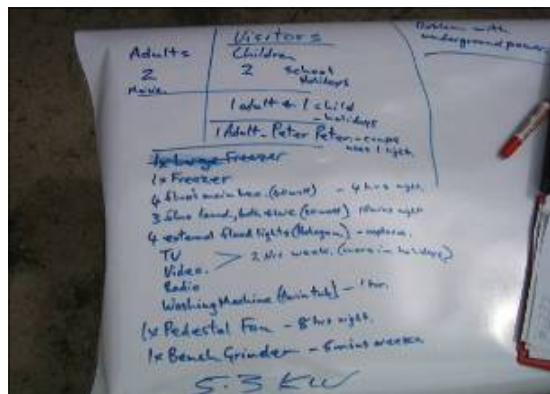


*New camping Facilities at Port Stewart*

Many plans were made for the future of Port Stewart and having power and water was identified by residents as crucial for the success of these plans. The aspirations articulated to Bushlight were:

- More Lama Lama families, including young people, would like to spend their time living and working on country.
- The community would like to expand these tourism enterprises with the inclusion of some camping facilities.
- Natural Resource Management (NRM) was also high on the agenda.

It was clearly recognised by residents that reliable power would contribute towards these



*Energy Planning at Moojeeba*

plans by allowing the community to live comfortably at their homelands as well as powering office appliances to help manage their enterprises.

**Aspirations achieved since CEP, 2004**

At the CEP meetings with Bushlight the vision identified by both 'camp' residents was to build a comfortable place to live where family can visit and stay for longer periods of time. Despite setbacks with cyclone and flood damage in 2006, the homelands have re-established gardens and fruit trees and continue to maintain comfortable bush living.

Tourism enterprises are high on the agenda: there are number of camping sites available around Port Stuart and nearby Silver Plains. These sites are mainly targeted for small groups and/or individuals and have minimal facilities. Some new camping areas were established in 2007. The School House continues to accommodate tour groups who's main activities are fishing and hunting. Some 120 visitors per year have been staying there.

NRM activities have recently been funded by the QLD state Government, as part of a recent handover of more Lama Lama country. The funding will allow the establishment of various Ranger programs. The 'ranger house' was bought for the purpose of those programs some time ago. The office will be equipped with items such as computers, phones and fax to facilitate administration and as a hub for ranger activities.

Lama Lama people have been involved in the cattle industry for many years. Currently, nearby Silver Plains is the hub of this industry and with the inclusion of more land, there are real opportunities for employment and economic sustainability.

A Bushlight Renewable Energy system was installed at Silver Plains in December 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.

### Port Stewart RE Systems

#### Moojeeba

The RE system installed at Moojeeba is a Bushlight 48VDC system that provides a maximum daily AC load of 16.4 kWh/day. This power is distributed via underground reticulation to two houses, a shed and an ablution block through Bushlight Energy Management Units (EMUs).



*Preparing the site at Moojeeba*

The system is comprised of the following major components: PV arrays; PV charge controller; battery bank; inverter and battery charger.

#### Theethinji

The RE system installed in Theethinji is also a 48VDC system. It provides a maximum average daily AC load of 11.9 kWh/day. The power is distributed via underground reticulation. Major components of the system are similar to Moojeeba. Each dwelling has an EMU to assist



*Cleaning the Solar arrays in Moojeeba*

residents in managing their energy.

#### Load demand

At the time of installation, it was apparent to Bushlight staff that future occupancy levels were not well defined. As such the systems were designed to take into account variations in demand.

The design has allowed for the future addition of energy efficient refrigerators (200 litre capacity). It was also determined that the system would meet the full demand load from RE and that generator usage would be limited to powering heavier appliances and during extended periods of cloud cover.

To date, generator usage has been limited to only few hours at both homelands.



**Training, Servicing and Support**

Both systems are operated and principally maintained by community residents. The community and their resource agency (CRAC), have also signed the Community Service Agreement (CSA). User contributions have been collected via Coen's Family Income Management Program.

CRAC has provided limited support and maintenance to date; primarily due to a lack of 'on-ground' resource agency staff. Key staff members and management have always offered support to the Bushlight program as needed. The systems have been insured by CRAC and two insurance claims have been made as a result of extreme flooding and cyclone damage in 2006.

The service and maintenance regime on all Bushlight systems is comprised of a three tiered approach.

Community residents make up the first tier of the regime, supported by their resource agency (who own the hardware), in turn supported by suitably qualified electrical contactors.



*Gavin Bassini looking at some Bushlight resources*

To build up the capacity of both residents of Port Stewart and CRAC's staff, Bushlight provided ongoing Level 1 training, plus two programs of Level 2 training undertaken in 2005 and 2006. Level 2 training covered key areas including: basic electrical concepts; RE system components and what they do; basic maintenance tasks; troubleshooting; managing energy use and working safely with RE equipment.

Unfortunately, due to CRAC having been put under administration in 2007 all regular services

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 (light, fans, and TVs 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 of power.



*Level 2 training at Port Stewart*

have ceased. The Port Stewart Bushlight installations are currently being supported and maintained primarily by residents, Bushlight staff and electrical contractors. Due to the robustness of the RE systems, and the good care of Port Stewart residents the quality or reliability of the power supply has been sustained.

All permanent and some mobile residents of Port Stewart participated in the training delivered by Bushlight regional team staff at system commissioning and in a number of subsequent visits.

This training was delivered to residents with the aid of a picture-based User Manual and hands-on interaction with their Bushlight system. This training includes system operation and maintenance, basic troubleshooting and managing energy use.



*Bushlight's Energy Management Unit*

Since commissioning, the communities have managed their power well and performed all necessary maintenance tasks. Residents have thus reached a high level of confidence in their Bushlight RE system and their capacity to operate and maintain it. It should be noted however, that this basic training can't be delivered by Bushlight to all future visitors. However, some residents are comfortable in carrying out their own training to visitors on good energy use practices.

## Community Satisfaction

Records from all post-installation visits to Port Stewart note that both communities' RE systems were reasonably well looked after and only minor issues were reported. Community satisfaction was high and residents reported no trouble with power even during school holidays and the wet season when the system is under a heavier load.

Moojeeba residents, David and Rex Liddy indicated during a 12 month review conducted by Bushlight staff, that the Bushlight system has made it easier to stay at the community, that the system is very easy to use and that not much money is now needed for fuel, freeing up some community funds to be spent on other things. In addition Port



*Level 1 training in Port Stewart*

Stewart residents find the Energy Management Unit (EMU) easy to use and helpful in budgeting power; the Bushlight systems means that they have refrigeration all the time. Residents also state that they are enjoying the quiet environment, now that they don't have to use the generator.

Homelands such as those at Port Stewart often host large numbers of family members and other visitors at various points in the year. Some of the older residents admitted that when visitors come and ask them questions about the system, they find it hard to express their knowledge but for younger residents this is not a problem. Residents are assisted by the Bushlight resources that are left in each community including user manuals, CEP books and appliances posters, each of which is laid out in a user-friendly, picture-based format. It is also noted that visitors often make positive remarks about the system and how wonderful it is that power is now available all the time.

It is clear now that all the permanent residents are happy to stay in Port Stewart all year around. Of course, this also depends on water levels but the RE system has made wet season habitation a possibility that didn't exist prior to installation.

## Community Livelihood Developments

Both communities at Port Stewart have continued to establish a comfortable place to live. This was identified to Bushlight staff as a key vision for the communities during the CEP. The permanent residents of Moojeeba and Theethinji welcome other family members who often come to visit and stay for longer periods of time.

During the dry season, many tourists visit the area of Port Stewart. Participants of organised fishing and camping tours stay at the 'school house', a community building next to Moojeeba. Port Stewart also hosts independent self-drive tourists. These activities have the potential to create more local jobs as well as revenues to further establish infrastructure such as improved water service and roads.



*Bushlight staff conducting regular monitoring in Moojeeba*



*Rex Liddy*

In July 2008 a hand-over ceremony was conducted that saw more land south of Port Stewart being transferred to the Lama Lama people. This agreement provides an opportunity to further establish the plans for a Ranger group to start using the 'rangers house', an office near Moojeeba. Natural Resource Management is high

on the agenda for people of the area and the Bushlight systems are, and will remain a major factor in attracting people to stay and work at Port Stewart.

The Lama Lama people have come a long way with their aspirations for living and working on country. Their commitment to their lands has led to an increase in resources and infrastructure over recent years. Their plans continue to develop with time and the scope for the development of sustainable livelihoods in the Port Stewart area is great. Having access to reliable 24 hour power is a major factor in helping residents achieve their goals.

The association between Port Stewart residents and Bushlight has demonstrated to locals and outsiders alike what can be achieved with good will and collaboration between community, government agencies and non government organisations.



*Port Stewart family members*