

Pilot Project for Community Engagement in Water Conservation at Ali Curung

Final report: Key Findings, Recommendations and Options
Power and Water Corporation



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Power and Water Corporation
PO Box 37471, Winnellie, NT 0821
Australia: 1800 245 092
International: +61 8 8923 4681
www.powerwater.com.au

Researched and developed by Live & Learn Environmental Education Inc.
Authors: Jess Abrahams & Robbie Henderson

Live & Learn Environmental Education
18 Warburton St (corner of Lindsay Ave.)
PO Box 2796
Alice Springs, 0871
Northern Territory, Australia

Tel: +61 (0)8 89523924
Website: www.livelearn.org

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Introduction

Live & Learn Environmental Education was contracted by Power and Water Corporation to design a community water conservation program for a program in Ali Curung. The overall aim of the project was to design effective methods to engage and empower Indigenous communities to manage demand for water and to achieve tangible savings. Ali Curung was the second highest water user among remote Aboriginal communities in the Northern Territory and thus an ideal candidate for a water conservation program.

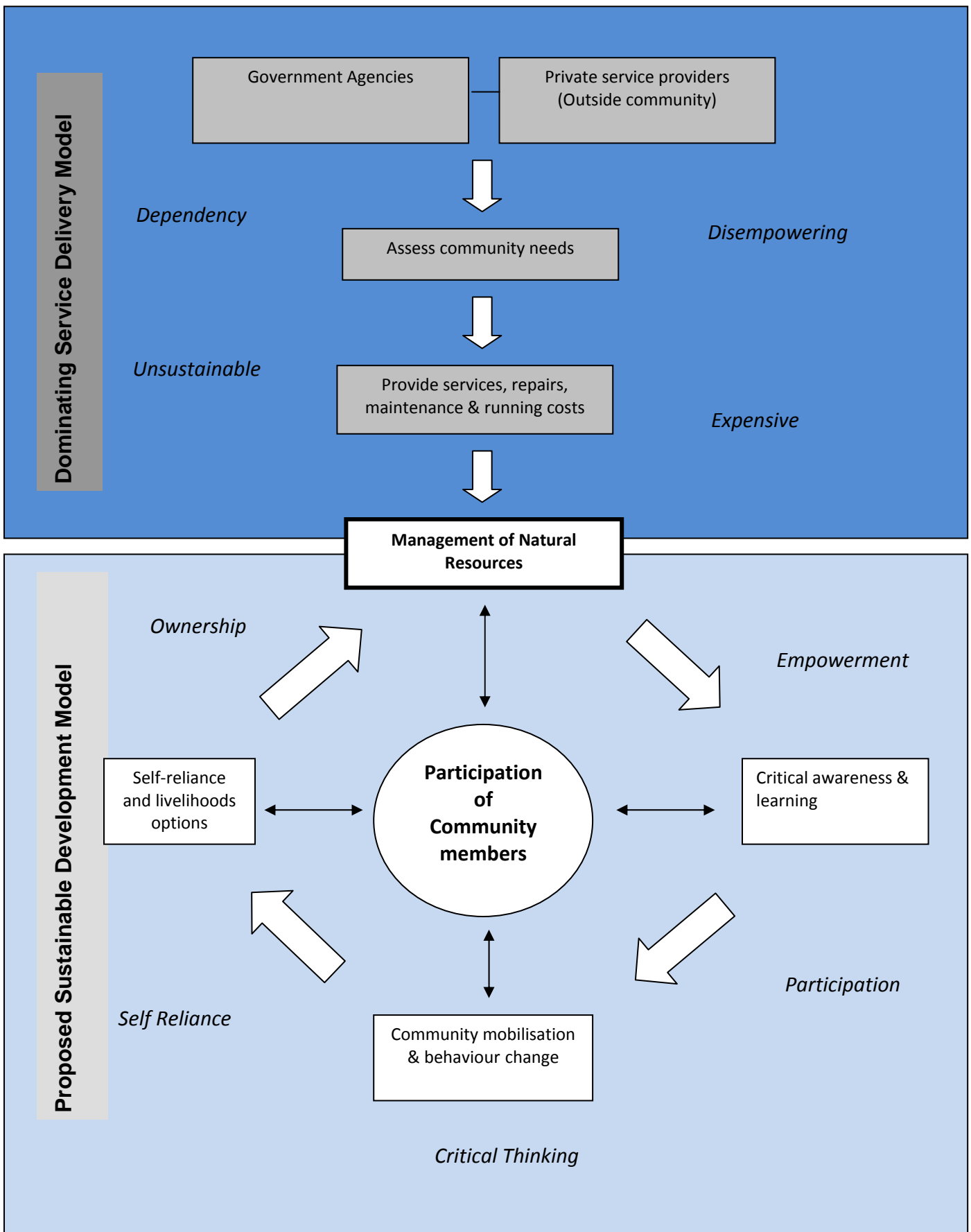
Live & Learn has designed the community water conservation program by employing the principles of our 'Sustainable Development Model' (SDM). The basic premise of the SDM is to enable and empower communities to achieve greater self-reliance in meeting their own needs through increased participation, ownership and development of relevant knowledge and skills. This approach contrasts with a 'service delivery model,' which is the current Northern Territory standard in terms of how services are accessed and provided in remote communities. The difference between the SDM and a service delivery approach are described further in Diagram 1.

The Sustainable Development Model is not an *outcome* of this consultancy. However the principles of the model are integrated into the design of the water conservation program, and are evident in the process and thinking employed in its development. For example, the proposed water conservation program focuses on employing and developing the capacity of local Aboriginal people to implement water conservation activities within their own communities. An alternative (and more typical) approach would have been to design a comprehensive water conservation program that a water conservation expert from outside the community would implement. In some respects this would have been easier, as there would be less challenges to overcome in terms of staff capacity, and the start-up costs of such an approach would be less. However the expectations of a lasting change in lowering water usage would be quite low from this approach. The sustainable development approach has many advantages including building local capacity for change, which has the potential to go further, be seen as more legitimate from a community perspective and be longer

lasting. In the medium to long term it is also likely to be more cost effective as the need to buy in external expertise is reduced.

This report is organised into three parts. Part A summarises the key findings of the Research of Aspirations and Perceptions (RAP) study, which was undertaken with men and women in Ali Curung. The study focused on community perceptions, knowledge, capacity, strengths and barriers relevant to water conservation and related work. Part B draws from the RAP findings to make a series of recommendations for the design and management of a water conservation program for Ali Curung, which would potentially be suitable for replication in other communities. Part C provides an outline of a Water Conservation Program which has been designed for a pilot phase and forms appendices to the main document.

Darwin 1: Sustainable Development Model



Executive Summary

Core findings contained in this report are as follows:

- Water conservation is a low priority for residents in Ali Curung, although community members can readily recognise where water is being wasted. Participants could identify few if any short or long term serious consequences of wasting water.
- The financial consequences for water wasting in Ali Curung are far greater for Power and Water than they are for Indigenous residents or the Barkly Shire.
- Leaks from Power and Water water supply infrastructure are a major contribution to high water consumption in Ali Curung. Outdoor residential and community water use (e.g. lawn watering and wasteful water play by children) are also contributing factors.
- Barkly Shire CDEP management staff are an ideal community group to facilitate and administer a water conservation program in Ali Curung
- CDEP workers were identified as the group best placed to mobilise (via top-up employment) to carry out water conservation work, with support from community Elders.
- Water saving activities that water conservation workers could focus on include:
 - Undertake auditing, make minor repairs and retrofits within residential dwellings and workplaces
 - Improve efficiency of water use in parks and gardens
 - Undertake auditing and improve reporting and response time to residential and community leaks.
- A percentage of the savings in water production costs to Power and Water from measurable improvements in water conservation could be re-invested in the local water conservation program to ensure the savings are ongoing. A percentage of the savings could also be returned to the community to help fund a community aspiration project, providing an attractive community incentive to continue water conservation.

Based on the core findings, Live & Learn have developed 15 recommendations for the design and development of a community water conservation program.

In summary the recommendations are as follows (explained in detail in the body of the report):

Summary of recommendations

1. Power and Water take advantage of the significant financial opportunity that currently exists to invest in water conservation in Ali Curung. We estimate that savings in the order of \$106,000 per year in avoided production costs are possible.
2. A 10 per cent or 20 per cent reduction in daily consumption is a realistic objective for a water conservation program in Ali Curung.
3. We recommend that the highest priority for the use of savings from reduced supply costs is to reinvest a portion in providing on-going funding to the water conservation program.
4. We recommend that re-investing savings from reduced supply costs into innovative, shared 'community wide' incentives to further save water would be a worthwhile option to motivate behaviour change.
5. We recommend that savings made by Barkly Shire in reduced water bills be re-invested back to the local community to help fund the costs associated with the program.
6. A stable, locally based institution or organisation is required to manage on-ground delivery of a water conservation program.
7. Community Water Rangers are provided with relevant training. There is a range of funding support, existing programs and opportunities available that could be utilised.
8. Community Water Rangers wear a uniform with a dedicated badge or logo to help establish community recognition of the program and the role of a Ranger.
9. Effective monitoring is essential to measure program outcomes and create opportunities for learning and strengthening a program.
10. The Power and Water Community Engagement Officer South position could have a key role in the implementation of this project.
11. Elders could support, mentor and offer valuable legitimacy to a water conservation project.
12. That local families could help in supporting workers with cultural and social issues.
13. Pilot or pre-test a community water conservation program that could potentially be 'scaled-up' or replicated.

14. Reference case or 'business as usual' water use should be measured over the period of the pilot and results be monitored and evaluated after the trial.

The findings and recommendations described in this report were used to design a 'Community Water Ranger' program. A Community Water Ranger pilot project manual has been developed and contains guidance to project managers on how to establish, support and operate a Community Water Ranger program. The manual includes; (i) program objectives; (ii) approaches for achieving water savings; (iii) structure of the program, including governance, roles and responsibilities; (iv) methods to provide orientation, support and empower employees; (v) training; (vi) project management tools; (vii) monitoring and evaluation methods; and (viii) detailed instructions and tools for the activities (daily tasks) that Community Water Rangers would perform.

The program is in its design phase, and hence the program guide developed is just that, a guide. It is envisioned that this guide would be updated and improved by implementation of the pilot program, monitoring and evaluating the pilot and using these learnings to refine the design of the Community Water Ranger program.

Part A: Research of Aspirations and Perceptions (RAP)

RAP Methodology

Live & Learn endeavors to design community development programs with participation of community members. The Research of Aspirations and Perceptions (RAP) approach provides a rapid assessment of social, cultural, economic and environmental factors within a community. The findings are used to guide the design of programs to increase relevance, respond to needs and aspirations, and create an empowering environment by building upon existing strengths.

The goal of the RAP is to enable program designers and managers to: (i) start the program from where communities and institutions 'are at;' (ii) develop an understanding of how the social, economic, cultural and environmental systems are inter-related and dependant on each other; (iii) identify gaps in community and institutional capacity to implement a water conservation program; and (iv) provide a foundation for the building of partnerships. The RAP is a practical tool that was used to inform the detailed design of the water conservation program.

In December 2009, 11 women of various ages including key community Elders, participated in a two day women's RAP workshop. In February 2010, 13 men of various ages, predominantly involved in the Community Development Employment Program (CDEP), participated in a two-day men's RAP workshop. A youth RAP was not undertaken separately because young people (aged 20 to 25) were adequately represented in the men's and women's workshops. Semi-structured interviews were also conducted with Power and Water and Barkly Shire staff. Informal discussions with other Shire staff and community members have also informed the RAP process, as has an initial presentation to the Ali Curung Local Board.

The RAP process was guided by a number of key research questions organised within four themes, as presented in Table 1. The RAP workshops are implemented using highly participatory facilitated activities to critically explore answers to the research questions. The activities are designed to encourage deep thinking and to remove barriers to participation, such as literacy, or social barriers such as culture or gender.



RAP participants examine barriers that prevent people from succeeding in work and identify strategies to overcome such barriers.

Table 1: Research themes and key research questions

Theme	Key research questions
Perceptions of the importance of water in daily life	<i>How important is water as an issue or concern relative to other issues and concerns affecting community life?</i>
	<i>What does the community aspire to use water for?</i>
	<i>What are the consequences of 'wasting water'?</i>
Perceptions on decision-making and responsibility for water in the community	<i>Who currently makes decisions and/or takes responsibility for water (at the residential and whole community scale)?</i>
	<i>Who should be responsible for water (at the residential and whole community scale)?</i>
Perceptions about work (paid and voluntary)	<i>What are the social and economic benefits of work (paid and voluntary)?</i>
	<i>What are the barriers to work?</i>
	<i>What are the motivators to work?</i>
Perceptions of community strengths, organisation & capacity	<i>What are the community's strengths and assets (individual, community and natural / physical resources)?</i>
	<i>Which groups or individuals would be most likely to participate in a water conservation program?</i>

Note: Limitations of the RAP approach should be noted when interpreting the findings. The RAP does not represent comprehensive social research, but rather provides a cursory study to assist with project design. Care should be taken when extrapolating the findings to groups beyond those participating in the RAP.

RAP Findings

The findings of our research on the Ali Curung community's aspirations and perceptions of water conservation are summarised below under the four theme headings and research questions.

Theme 1: Perceptions of the importance of water in daily life

How important is water as an issue or concern relative to other issues and concerns affecting community life?

The RAP phase of the project has clearly identified that water conservation is not a high priority in everyday life at Ali Curung. In fact 'Not Wasting Water' was consistently ranked last or near last in comparison with other issues including 'Cultural Business', 'Jobs', 'Health Care', etc in both men's and women's RAP workshops. Table 2 summarises participants ranking of issues.

Table 2. RAP participants ranking of importance of issues

Water being wasted (highlighted in blue) was ranked low or of lowest importance by most groups, except young women.

Older women	Younger women	Older men	Middle aged men	Younger men
# 1 Cultural business	# 1 Paying for electricity	# 1 Cultural business	# 1 Health care	# 1 Cultural business
# 2 Health care	# 2 Water being wasted	# 2 Health care	# 2 Cultural business	# 2 Jobs
# 3 Jobs	# 3 Jobs	# 3 Jobs	# 3 Jobs	# 3 Paying for electricity
# 4 Sport and recreation	# 4 Health care	# 4 Water being wasted	# 4 Paying for electricity	# 4 Health care
# 5 Paying for electricity	# 5 Sports and recreation	# 5 Paying electricity	# 5 Sport and recreation	# 5 Sport and recreation
# 6 Water being wasted	# 6 Culture	# 6 Sport and recreation	#6 Water being wasted	# 6 Water being wasted



Female RAP participants debate the importance of local issues (presented as pictograms) and rank them according to importance.

Despite the lack of concern about wasting water, the discussions we had with residents clearly demonstrated that people in Ali Curung can and do, understand and appreciate the importance of water conservation. When asked ‘where is water being wasted?’ residents readily identified a number of key areas:

- **Leaking and burst pipes** – Participants and Shire staff said that the ageing and unmapped water infrastructure is difficult to maintain with underground pipes regularly leaking and bursting.
- **Excessive watering of lawns and trees** – Participants in the RAP were proud of Ali Curung’s green public parks and lawns, however above ground sprinklers often run 24/7. (One public park does actually have pop-up sprinklers, which water the lawn effectively on a timer system.)
- **Children’s water play** – Men and women consistently identified children as wasters of water. Children wanting to cool down in the summer heat are known to swim in rubbish (wheelie) bins filled with water and to turn on fire hydrants, but not turn them off again. One male participant reported bathing in an old freezer.
- **Tank overflow** – Both male and female participants reported that water overflows from the town’s water tower header tank on a regular (weekly) basis, although the Essential Services Operator didn’t believe this was the case.
- **Running taps** – Some male participants agreed taps being left on was a cause of water wastage while others didn’t believe it was the case. As researchers, we witnessed taps left running in gardens and school toilets, as well as the Art Centre’s evaporative air-conditioner running 24/7 with excessive bleed (about 15 L/min).
- **Domestic leaks** – Participants also reported leaking toilets and taps in people’s houses, and while there is a housing maintenance service to repair leaks, it was unclear how effective reporting and response rates are. Some participants said that leaks were fixed promptly when reported, while others said that it sometimes took a long time and depended on how busy the plumber and other service providers were. When questioned, participants agreed that slow response times to reported problems could affect the motivation of residents to report problems in the future.

What does the community aspire to use water for?

The RAP phase clearly identified the following aspirations. As we did not explicitly ask participants to rank these in order of importance, and participants represent a small cross section of the community, the following should not be considered a comprehensive representation of community aspirations. That said, from the conversations held, we were able to roughly gauge the relative importance of the following aspirations by how many people, and with how much enthusiasm, they communicated to us. This is reflected in the comments below:

- **Swimming pool** - Community members reiterated over and over again their strong desire for a swimming pool in Ali Curung, for the social, recreational and health benefits. Another popular option was a water play park like the one in Katherine, which is thought to be safer and more water efficient than a pool. Residents argued children wouldn't waste water in play if they had a proper pool/water park to visit. The Shire Services Manager said the Shire apparently has funding to build a water park, but not for its ongoing operational costs. This is a popular and significant aspiration in Ali Curung.
- **Green parks and gardens** - A less ambitious but still important aspiration, (more for female participants, but also mentioned by some male participants), was for Ali Curung to maintain and enhance their existing public parks and lawns with more shade trees, and according to some women Elders, flower, bush tucker and medicine gardens. Importantly, a significant concern identified by the community was a fear that they may lose some of this green amenity if water conservation is strictly pursued in Ali Curung. We were quick to respond to these concerns and reassure participants that a water conservation project would not take away amenity, but would rather aim to maintain and even enhance it, but with improved water efficiency.
- **Lawn on footy oval** - Another important aspiration for the Ali Curung community is to restore the grass on their football oval. The oval was apparently previously watered with pop-up sprinklers from a dedicated header tank. Since the tank came down in a storm, the oval has gone to dirt, impacting heavily on community sport and recreation.
- **Community farm** - Ali Curung formerly had a working farm, which is still held in high regard. Older residents can clearly remember the dripper irrigation system that was used to water crops as well as the windmill that was used to

pump water for the pig farm. Centrefarm's recent proposal to re-establish the farm in conjunction with a horticultural training centre has good support amongst the community members we spoke with.

What are the consequences of 'wasting water'?

Participants identified few if any short or long term serious consequences of wasting water in Ali Curung. When asked directly about the consequences of wasting water, participants in the women's workshop made comments like:

- "Kids come home from school and want to swim in puddles created by water waste. This might cause them to become sick."
- "Mosquitos might breed around the grassy areas that have grown from leaks" however it was then agreed that mosquitos aren't actually a problem in Ali Curung.
- "If a sprinkler has been left on all night it might cause the tap to jam so that it can't be turned off. In this case someone would need to tell CDEP staff to fix it."

None of these comments really demonstrate significant implications for the community or its water supply from wasting water. The only comment that hinted at the sustainability of the water supply was:

- "People might get dehydrated if the water runs out."

However this statement is likely referring to water supply being temporarily unavailable (as it often is during maintenance) rather than running out altogether. The reason for a lack of concern about the long-term sustainability of the water supply is likely due to the widely known and appreciated fact among community members that the region has an abundant and regularly replenished groundwater supply.

Male participants were not directly asked questions regarding the consequences of wasting water due to a lack of time, and the difficulty of running this activity successfully in the Women's RAP. Semi-structured interviews and general

conversation we had with residents and Shire staff did however touch on these issues. Their answers have informed the following findings.

- The costs that Power and Water faces in supplying and treating water in Ali Curung are unknown to and essentially unrecognised by the community in Ali Curung. As the public has no access to Power and Water's internal costings, this lack of knowledge is totally understandable.
- Houses in Ali Curung, like those in other remote communities, do not have water meters, and so residents do not pay for the water they consume. There is therefore no financial consequence for wasting water or incentive for saving water domestically as there is for electricity, which is metered and paid for using 'power cards'. Even if water was paid for, water in the NT is inexpensive (\$1.14 /kL for government customers at July 2010).¹
- Under the Strategic Indigenous Housing Infrastructure Program (SIHIP) new houses will have water meters installed. Upon hearing this news, residents expressed some concern that they would now have to pay for water. A comment made both at the local Board meeting and at the women's workshop was 'If it is our water from under our country, why do we have to pay for it?' Again this illustrates a lack of understanding of the costs incurred in supplying the service.
- According to Power and Water however, residents will not be charged directly for water, but Housing NT who is responsible for the houses may be charged.
- Shire properties including public parks and gardens are metered and therefore the Shire does face financial consequences for wasting water as well as an incentive to conserve water. Shires (and government departments) are charged the NT uniform tariff of \$1.14 plus service fee per kilolitre, (the service fee is based on a fixed daily charge which is dependent on the size of the connection, an average connection on the community would attract a daily charge between \$0.45 and \$1.80). However until recently, the reach of the metering was limited and only a small amount could be charged. Expansion of metering in 2009 to all

¹ Power and Water (2010), How much Does it Cost for Power, Water & Sewerage? Accessed October 2010 online: www.powerwater.com.au/__data/assets/pdf_file/0016/1582/2009-2010_tariff_July2009.pdf

government and business water users combined in Ali Curung was completed. Barkly Shire will increasingly feel the financial cost of water wastage and this will indirectly impact on the community long term through a reduction in operational expenses and therefore funds available for other uses.

- School water use is also metered and paid for, and therefore the school also faces financial consequences for wasting water. However it is unclear whether savings made in water costs can be made available for use in other expenditure.



Examples of inefficient water use such as sprinklers left running, are easily observed in Ali Curung.

- The consequences for wasting water in Ali Curung are probably greatest for Power and Water. In 2008-09, combined operational and capital costs for water production in Ali Curung were \$529,896. About 14 per cent or \$74,185 of these costs was recovered in billing. Recovery rates have improved in recent history and will continue to do so as Power and Water improve metering infrastructure in the community. Nonetheless there are clearly significant cost savings to be made for Power and Water from improved water conservation in Ali Curung. If water consumption could be reduced by a conservative 20 per cent, savings of nearly \$105,979 a year could be made.²
- In 2011 Ali Curung will see an infrastructure upgrade as Advance Water Treatment technology installed. This will see a significant per KL production cost increase. The new production rate is estimated to be \$4.0/KL. Based on this potential increase in production costs, if water consumption could be reduced by a conservative 20 per cent, savings of nearly \$205,785 a year could be made.

In summary, the abundance of supply and lack of direct financial consequences for residents wasting water provide little incentive for water conservation in Ali Curung. Therefore, for a water conservation program to be successful, other incentives for saving water need to be identified.

² Please note that the 2009/2010 production costs were not available at the time of writing this report and as such production costs are based on 2008/2009 data.

Theme 2: Perceptions on decision-making and responsibility for water in the community

Who currently makes decisions and/or takes responsibility for water (at the residential and whole community scale)? Who should be responsible for water (at the residential and whole community scale)?

It was difficult in the RAP workshops for facilitators to make the distinction clear to participants between ‘who *is* responsible’ and ‘who *should be* responsible’ when engaging with participants to answer the above research question.

A number of different water wasting scenarios were presented to workshop participants. In most of these, householders were identified as being responsible for water on the residential scale, although the local contract plumber was identified as the person who would actually fix things. When asked about differences of responsibility between women and men, women in their workshop said it was equally the responsibility of women and men to save water inside the house. The men however suggested it was more a men’s responsibility to fix plumbing leaks than women’s – although some women may still try. Participants, especially women, acknowledged a lack of expertise with repairing domestic plumbing faults.

On a community scale, there was a belief that everybody should be responsible for conserving water but in reality it seems that that nobody really is responsible. ‘Andrew’ the ESO was identified as being responsible for preventing water wastage on a community scale. The CDEP parks and gardens crew were identified as being responsible for sprinklers left on in parks. The high level of water use in Ali Curung (1,172 litres per person, per day in 2009/10) indicates that these responsibilities are not being adequately attended.

Theme 3: Perceptions about work (paid and voluntary)

What are the social and economic benefits of work (paid and voluntary)?

Some of the social and economic benefits of work included:

- Keeping busy and active
- Getting out of the house
- Making money to pay bills
- Staying fit and physical
- Socialising
- Contributing to the community
- Keeping the mind occupied
- 'Keeps young fellas busy otherwise they will be off at the pub'

What are the barriers to work?

Workshop participants not only identified the barriers to work but also strategies to overcome them. These included:

- **Cultural issues** - The often-cited example was time off for sorry business interfering with work requirements. Abuse of sorry business as an excuse to take time off was also mentioned. An effective strategy to meet this challenge was identified as involvement of family to ensure good and honest communication between employee and employer to ascertain authentic cultural needs.
- **Social issues** - Jealousy came up repeatedly as a social issue that can interfere with successful employment. Participants said their partners were jealous of them going to work as they might have an opportunity to meet other partners. The strategy identified to overcome this was good communication between partners to develop trust.
- **Drinking** – As with many communities, excessive drinking of alcohol can be an issue in Ali Curung, with workshop participants identifying it as a barrier to successful employment. Avoiding scheduling work on Fridays (payday is Thursday) is one strategy. Another might be teaming the role with an Elder in a positive role model/mentoring role.

What are the motivators to work?

- For male CEDP workers, higher rates of pay were both a motivator to work and a shared aspiration.
- For younger women, the main motivator was also earning money.
- For older women the motivator for work was more about making a contribution to the community.

Theme 4: Perceptions of community strengths, organisation & capacity

What are the community's strengths and assets (individual, community and natural / physical resources?)

The RAP process identified the following community resources:

- **Abundant groundwater** - Ali Curung is blessed with an abundant groundwater resource from the Davenport Basin. However the size of this resource and the ease of supply offered by modern infrastructure has created an obvious degree of complacency in regard to its conservation.
- **Strong CDEP** - Ali Curung appears to have a well functioning CDEP program with strong and effective leadership from Shire staff. CDEP staff arrive at work early, dressed in appropriate clothing and footwear, completed timesheets, and were generally well organised. The CDEP manager commented that having Aboriginal managers was another important element of the program's success.
- **On site-plumber** - Unlike many remote communities, Ali Curung has a plumber employed by the Shire, who lives on site, and is able to respond to plumbing needs.
- **Centrefarm project** - In the 1970s Ali Curung had a highly successful farm that not only supplied produce to residents of Ali Curung but to Tennant Creek supermarkets as well. Centrefarm now has funding to establish a horticultural training centre as well as re-establish the community farm.
- **Respected Elders** - Ali Curung has a strong pool of respected Elders who have a positive influence on the community.
- **Supportive Shire Services Manager** Ali Curung's new SSM is very supportive and understanding of the need to improve water conservation in Ali Curung. He has been pro-active in repairing major leaks and is supportive of a pilot water conservation project.
- **Willingness to work** – Community members we spoke to showed a real willingness and interest in work, especially in jobs that have a wider community benefit and in roles that offer good pay.
- **Literacy** – Most workshop participants, both young and old, demonstrated a good level of English literacy.

Which groups or individuals would be most likely to participate in a water conservation program?

Male and female RAP participants were asked to analyse the suitability of groups or individuals' to be involved in a water conservation program. The results were recorded slightly differently, but on the whole men and women shared similar views. (See Tables 3 and 4)

Table 3. Analysis of groups for involvement in a water conservation program (Men's RAP)

The groups highlighted in blue were identified by men as most suitable for involvement in the water conservation project.

Group	Would they want to be involved?	Is it like what they already do?	Could they do it? (Skills & resources)	Do they have time to do it?
Shire employees	✓	✓	✗	?
Electrician	✗	✗	✓	✗
CDEP workers	✓✓	✓	?✓	✓✓
Heath workers	✓	✗	✗	✗
Power and Water Corporation	✓✓	✓✓	✓✓	✓✓
Essential Services perator	✓	✓✓	✓✓	?✓
Plumber	✓✓	✓✓	✓✓	?
Men	✓	✓	?✓	✓✓
Women	?	✗	?✓	✓
Senior school students	✓	✓	✗	✗
Police	✗	✗	✗	?

Legend

✓ = 'yes'

✓✓ = 'strong yes'

✗ = 'no'

? = uncertain

Table 4. Analysis of groups for involvement in a water conservation program**(Women's RAP)**

The groups highlighted in blue were identified by women as the most suited to being involved in a water conservation project.

Group	Would they want to be involved?	Is it like what they already do?	Could they do it? (Skills & resources)	Do they have time to do it?
Shire employees	✓	No	Staff	Busy already.
CDEP workers	✓	Partly; they manage parks (sprinklers etc), so they do some work like this at certain times of the day.	Already do parks, do all the work anyway, equipment (sprinklers etc).	Too busy and tied up with other things. Need to find a link to make it happen.
Health workers	✗	No		No
Housing officer (Shire)	✓	Current focus inside houses and not on the outside. Valda commented that they need to start focusing on the outside like landscaping and gardening.	Not sure. He might be able to get staff to help with the work.	He's too busy managing staff. Maybe his staff could do it (Shire workers).
Power and Water Corporation	✓	Yes, they talk about water saving, activities etc.	Usage, management. They need to get out there a lot and talk to the community.	Some time to support, not time to do all the work.
Essential Services Operator	✓	Yes, he is a service provider.	He's got skills. He's been keeping things moving and he's already providing a service to the community.	He fixes small jobs quickly like when taps break down.
Plumber	✓	Yes	Fixing pipes, taps, leaks.	Busy? The women weren't sure.
Older women	✓	No	Cultural knowledge, they are able to teach and tell kids to look after water (authority).	The older women have some time (in between other jobs) to do some teaching.

Group	Would they want to be involved?	Is it like what they already do?	Could they do it? (Skills & resources)	Do they have time to do it?
Young women	✓	No	They need to learn from older women.	Some time
Older men	✓	No	Knowledge about water dreaming, Jukurrpa. Jeffery Small used to be a plumber.	'They'll have time if you organise them.'
Young men	✓	No	Strength for shovelling, use their muscles!	Same (need to organise them).
Senior school students	✓	No	There could be a School community project about the garden.	Make it part of their learning.

Men and women in Ali Curung therefore share the view that CDEP workers, Power and Water Corporation, the Essential Services Operator and the Plumber are the groups most likely and most suited to be involved in water conservation.

The women's RAP also identified that both older men and women have important traditional Cultural knowledge about water and that they might be able to lend that knowledge and their authority to the water conservation message, helping to teach the younger people to look after water.

Lessons learned from the RAP workshop process

- The quality of participation in RAP workshops was relatively high. Both men and women seemed to enjoy the activities and became fully engaged after only a short period. Most activities did not require a high degree of English writing skills, however most participants seemed to be able to write well.
- Getting participants along to the workshop was always challenging. It is important to gain support from local people to assist to get participants along. Other incentives should also be examined, such as providing a BBQ. Effort should also be made in ensuring there are no clashes between the workshop and other community events / activities that could impact on attendance.

- Concentration levels in the women's RAP workshop were poor after lunch, which meant it was challenging to get quality participation in some activities. The men's workshop was restructured in response to the lessons learned from the women's workshop. Additional activities included in the women's workshop to facilitate group interaction and energise participants were omitted or modified for the men's workshop, leaving the core activities that could be covered in two mornings.



Participants generally enjoyed the RAP and the opportunity to express their ideas and opinions. Fun and engaging activities helped to ensure that participants returned for day two.

Discussion of shared, community-wide incentives

Recommendation four (above) identifies innovative, shared ‘community wide’ incentives for saving water as a suggested option to motivate behaviour change. Potential options for incentives were explored in more detail.

One option for a shared incentive, identified repeatedly by residents and Barkly staff in the RAP as an important ‘need’ or aspiration, was a community pool and/or ‘water park’. Investing a percentage of water production cost savings into the operational costs of a pool/water park could be a powerful motivator for water conservation in Ali Curung. This concept was strongly supported by RAP workshop participants who felt that it would be a good motivator.

According to the Ali Curung Government Business Manager, there may be opportunities with the Federal Government to build the community a water park on the condition that the Barkly Shire takes responsibility for the estimated \$7 to \$12,000 annual running costs.³ Indeed annual running costs for a water park are estimated to be substantially less than annual running costs for a pool, in part because they do not require lifeguard staff. Our background research on pools in remote Aboriginal communities in Central Australia found that total running costs range from an estimated \$100,000 to \$250,000 per year.⁴ Electricity, chlorine chemical and water costs, were a relatively small component of the overall cost, ranging from \$40 to \$80,000 per year. The bulk of pool running costs are in staff wages as a public pool requires a qualified Pool Operator to manage pool hygiene as well as trained life guards on duty when the pool is open.

A water park is expected to be significantly cheaper to run for the simple reason that with no standing water, a qualified pool operator and life-guards are not necessary, removing expensive labour costs. The amount of water that requires treatment is likely to also be much smaller, therefore reducing water, electricity and chlorine costs. One disadvantage of a water park, identified by Katherine Town Council who installed one at their pool, is that maintenance in their case was difficult and maintenance costs ran high due to various reasons that, in hindsight, may or may not have been avoidable.

³ GBM Ali Curung (2010). Pers. comm.

⁴ MacDonnell SSM, Santa Teresa SSM, Yuendumu Pool Manager, Katherine Pool & Water Park Manager (2010). Pers. comm.

One possible incentive for community action in water conservation could be linked to the installation of a water park as an incentive to save water. Power and Water could offer funds to Barkly Shire in order to contribute to the annual running costs of a water park, the funds put toward the water park annually would be based on a performance-based incentive for saving water. Such an offer requires further consideration from Power and Water as to the design, and how success in water conservation would be measured. Also if the community were not successful in saving water then if and how the water park would be turned off, and how public perception may treat this?

An alternative incentive to a pool also identified in the RAP as an aspiration, may be for Power and Water to support the community to restore grass to the community football oval. Again the issue here is a lack of infrastructure. The water header tanks that supplied water to the oval sprinklers in the past have collapsed, and the cost of resurrecting them may be high, and again dependant on Barkly Shire. Another disadvantage is that a grassed oval, even one watered by water efficient sub-surface irrigation, installed by trained community 'Water Rangers', is likely to be a significant consumer of water and somewhat counter-productive to attempts to reduce overall water consumption.

Exactly which incentive to use and how best to use it, remain unclear at this stage. Indeed an incentive may not even be necessary to facilitate changed water use. Therefore incentives should be considered later in a pilot implementation phase, after the impact of other activities can be determined.

Part B – Recommendations

Recommendations for a Water Conservation Program

Drawing on the key findings of the RAP phase, we make the following recommendations for a Water Conservation Program at Ali Curung:

1. Invest in water conservation

Power and Water should take advantage of the significant financial opportunity that currently exists to invest in water conservation in Ali Curung. Savings in the order of \$106,000 to 206,000⁵ per year are possible.

While recovery rates will rise as the recent improvements in metering are felt by bill owners, it is widely accepted that the full cost of water supply could never be fully recovered. Rather, this report argues that opportunities for cost savings through water conservation are substantial and provide the best opportunity for improving production cost recovery.

As previously mentioned Power and Water plans to upgrade water treatment at Ali Curung, with Advance Water Treatment technology, potentially doubling the cost of drinking water production to \$4kL. As this project is still in design, it is still unclear what the capital costs will be and what impact this will have on overall supply costs. The rate charged for water at Ali Curung cannot rise beyond the regulated, Territory wide uniform tariff. Therefore, increasing water production costs provide an even greater rationale for the introduction of an effective water conservation program.

2. Significant water savings are possible

A 10 per cent or 20 per cent reduction in daily consumption is a realistic objective for a water conservation program in Ali Curung. Ali Curung residents used an average of 1,172 litres per person per day in 2009/10. This is significantly higher than the average daily consumption for remote Northern Territory Aboriginal communities. While Ali Curung is known as being 'greener' than most communities with its parks and lawns, and there have been some significant

⁵ pre and post the installation of advance water treatment technology

leaks fixed through an increase in regular inspections, there are no other obvious factors to explain such a high level of consumption.

Even if Ali Curung cut its water use in half, it would still be using 20 per cent more than the average remote community. Our observations of water lost in leaks, over watering, taps left on and water play etc suggest that 10 or 20 per cent savings could easily be made on 2009 consumption levels. A 10 – 20 per cent reduction is conservative compared to recommendations made by Hoyal and Marshall (2006) in their reports on Water Auditing and Conservation in Santa Theresa and Gunbalanya⁶.

3. Reinvest savings from water conservation to provide ongoing funding to the program.

We recommend that the highest priority for the use of savings from reduced supply costs is to reinvest a portion in providing on-going funding to the water conservation program. While the ongoing running costs of this program are yet to be ascertained, a six-month pilot would assist to provide a good indicator of cost. An additional amount, if it is available, should be set aside to fund a potential community incentive to motivate the continued saving of water. This concept is discussed further in recommendation 4 below. Remaining funds could be retained by Power and Water helping to improve their bottom line. With substantial cost savings potentially available, the total amount to be reinvested in the community to fund the program and a possible incentive should be capped at an appropriate point.

Reducing water consumption by 10 or 20 per cent in the first year will be relatively straightforward, but making an additional 10 or 20 per cent saving on top of the previous years saving will become increasingly difficult. Instead, to justify savings over a number of years, a projected future water supply cost should be set based on a business-as-usual scenario, so that financial savings from reduced water consumption three years into a successful program are not measured against the previous 'conservative' years costs, but against a projected cost had no program been introduced.

⁶ Sarah Hoyal and Glenn Marshall, Centre for Sustainable Arid Towns (2006) "Water audits of residential premises in Gunbalanya community", report undertaken for Indigenous Essential Services, Department of Planning and Infrastructure

4. **Reinvest savings from water conservation to fund innovative incentives**

We recommend that innovative shared 'community wide' incentives for saving water would be a worthwhile option to motivate behaviour change. Residents currently perceive that the community has an abundant supply of groundwater, and there is a lack of financial consequences for residents who waste water. However rewarding individuals in Ali Curung for water conservation would be very difficult for a number of reasons. Houses are not individually metered therefore it would be very difficult to measure and reward individual or household water conservation efforts without expensive individual auditing. Moreover, from our initial observations, water wastage appears to occur as much if not more in community spaces like parks and streets, than inside houses and residential gardens, although this requires further investigation at the implementation stage. Water conservation is thus a shared, community wide issue as much as it is an issue for individual households.

Another consideration is that a shared community incentive may be more culturally appropriate in an Aboriginal community setting than an individual reward, although this has not been validated. Finally, as the community water conservation program has been designed as a pilot, there is an opportunity to test innovative methods. A shared incentive for community benefit would be a great tool to use in other communities if it proved successful in Ali Curung. Please refer to the 'discussion of shared, community wide incentives' (pp. 28) for further information.

5. **Barkly Shire should also reinvest savings in the program**

There is a strong case for suggesting that savings made by Barkly Shire in reduced water bills should be returned to the local community to help fund the costs associated with the program. However, Barkly Shire is likely to be still discerning future water costs as recent metering improvements will change the amount paid for water. Barkly is also likely to incur some additional cost if they were to be involved in the delivery of a water conservation program. These costs will be best ascertained in a pilot. Ideally, Barkly should consider these costs as in-kind support for a program that ultimately benefits the community and the Shire's bottom line.

6. A stable, locally based institution or organisation will be required to manage on-ground delivery of a water conservation program.

Power and Water currently does not have the local community presence required to manage day-to-day delivery of a Water Ranger-style water conservation program in Ali Curung. This is because this style program will require local supervision, mentoring, and periods of targeted training. Therefore it will be necessary to contract or partner with another organisation with local presence and capacity to deliver the program. This will also assist to create local ownership and make use of local knowledge, assets and resources.

In the context of Ali Curung, Barkly Shire CDEP has suggested that they have the potential to partner with Power and Water to deliver a pilot program. As identified in the RAP, the Community Development Employment Program is a suitable group to mobilise action for a pilot program. Young men who participated in the Men's RAP showed a particular interest, however a number of them have gone on to find work outside the community. Recruitment of staff to the program as 'Water Rangers' may therefore have to come from outside the group who participated in the RAP process. Nonetheless, CDEP management and the Shire have illustrated a willingness to provide a good, pre-existing organisational platform to launch and support the water conservation project, although, like many remote organisations, they do suffer from high staff turnovers. CDEP could offer in-kind administrative services, provide operational resources like tools and potentially use of a vehicle, as well as contribute management and supervision. They could also potentially support the project financially through various funding programs available.

It is further recommended that Power and Water explore the potential to deliver a pilot via a six-month 'work experience' position utilising funding from the Department of Education, Employment and Workplace Relations' Work Experience Subsidy. Power and Water could then contract Barkly to deliver the program on their behalf as a means to create the necessary financial arrangements. Julalikari Remote Employment Services (JRES) could potentially access additional funding for Water Ranger training, uniforms, etc. Given the interest shown by Barkly Shire and JRES, we recommend three 6 month 'Water Ranger' Work Experience roles are created to take part in a pilot program.

7. Provide Water Rangers with relevant training

There are a number of possible training providers and also funding for training available. Training for Water Rangers in skills and knowledge in the installation of water efficient irrigation skills could come either from the new Centrefarm training centre or with the horticultural department of Charles Darwin University who have previously been involved in a water efficient school garden project in Ali Curung. Training in practical plumbing skills (e.g. fixing leaks, repairing taps, installing and maintaining water efficient showerheads) could potentially be gained through a combination of a working alongside the Ali Curung plumber and through dedicated basic plumbing training. A range of appropriate organisations, e.g. DesertSMART COOL mob who undertake water-auditing activities in Alice Springs, could potentially source training in domestic water auditing skills.

8. Water Rangers should have a uniform with a dedicated badge or logo

We recommend the Water Ranger position include a uniform to address perceived barrier to going to work of ‘shame at not having clean or appropriate clothes,’ and the perceived incentive of ‘pride of having a meaningful role.’ As indicated above, JRES can access funding to provide these resources. We would also like to add prestige and identity to the role by developing a Water Ranger logo to feature on uniforms, materials, signs, etc. To ensure local ownership, this logo could be developed by artists from the art centre drawing on local water story iconography, if culturally appropriate.

9. Effective monitoring with accurate data is essential

This study has mostly relied on observational and consultative assessments of where water is being wasted. A pilot program should more thoroughly utilise quantitative data to accurately measure demand from a bulk and individual users perspective.

The program will need to develop effective communication mechanisms to relay water consumption figures back to the community as feedback on water saving success. This could be in the form of an adjustable scaled sign updated each week, easily understood diagrams on the community notice board, monthly reports back to Local Board meetings, and announcements at community water awareness events. With a clear understanding of exactly how much water they are consuming, the costs involved, and the benefits from a potential incentive, remote communities like Ali Curung will have a greater understanding of the need means to conserve water. Quantitative data measuring the quarterly or annual averages for water production could then be linked to payments

towards the community incentive. Realistic and achievable targets for water conservation should be set.

Meeting targets should be celebrated and the work of the Water Rangers recognised. If targets aren't reached, a process is required for Water Rangers to try and identify where additional water was used, whether or not it was necessary or 'wasted', and if so wasted, what could be done to prevent similar wastage in the future.

10. The Community Engagement Officer South should be the Power and Water liaison

The Power and Water Community Engagement Officer South could have a key role in the implementation of this program. Their role could include monitoring success of program, receiving reports from the Water Rangers and the Barkly Shire, ensuring targets are being met, supporting educational and community engagement activities, reporting on the program to Power and Water, etc.

11. Elders should support, mentor and lend legitimacy to a water conservation project

Workshop participants said the likelihood of achieving success through the program would be increased if the program were linked to traditional culture. Elders consulted confirmed that they could help facilitate this connection. We therefore recommend that, if culturally appropriate, an element of the Water Rangers training should be a suitable 'cultural orientation' with Elders on traditional water stories and business. Program managers should also seek to develop a mentoring program between key Elders and Water Rangers that would include regular meetings to discuss program progress, challenges, opportunities and cultural issues.

12. Families can help with cultural and social issues

Workshop participants suggested that potential cultural and social barriers to successful employment could be better dealt with if family members were involved in supporting the employment of individuals who take on Water Ranger roles. By identifying parents, relatives or appropriate Elders as go-to figures at the initial employment stage, it will be possible to clarify authenticity of cultural needs like time off for 'sorry-business', for example.

13. Reference case or 'business as usual' water use should be measured from a date prior to the commencement of this consultancy

Our research and presence in Ali Curung since the first visit in October 2009 appears to have already led to increased awareness and action related to water conservation. The annual bulk water consumption fell from 252,973 kL in 2008/09 to 213,658 kL in 2009/10. Early water savings can likely be attributed in part to the increased focus on water conservation brought about through the process of consulting and designing this program. However, Power and Water have been more active in fixing leaks since November 2009, and climate may also have an impact on consumption. Notwithstanding difficulties in attributing savings to impacts from this program to date, we believe there is sufficient merit in establishing a business as usual (reference case) for water consumption based on historic water use prior to this program design intervention.

14. Pilot or pre-test a community water conservation that could potentially be 'scaled-up' or replicated

Opportunities for scaling-up or replicating a water conservation program should be considered when developing the Community Water Rangers Pilot Program. If a pilot program proves to be effective in meeting its objectives, there would be a strong case for mainstreaming the approach into other communities. However, every community is different, therefore a flexible approach should be taken that allows local Aboriginal people and stakeholders to have input into the design to foster local relevance and ownership.

We recommend that part of the role for the Power and Water Community Engagement Officer South include overseeing implementation of a pilot water conservation program in Ali Curung. The program model should be strengthened based on learning's from a pilot activity. If the pilot program is effective and efficient in achieving its aims, the Community Engagement Officer South could be responsible for managing the roll out of a mainstreamed program in multiple locations.

Part C – Water Conservation Program

A detailed water conservation program, entitled ‘Community Water Rangers’ is provided as a separate but companion document to this report. The program is described in the format of a manual entitled the “*Community Water Rangers Pilot Project Guide*,” which can also be used as a resource independent to this report.

The manual is written in generic terms (i.e. it does not focus on Ali Curung), and hence could potentially be used to guide implementation of a pilot program in other communities.

Conclusion

This consultancy has demonstrated that delivery of a pilot water conservation program in Ali Curung is highly likely to provide positive economic, social and resource management outcomes for Power and Water, the Ali Curung Community and other stakeholder groups. In summary:

- There are obvious water and financial savings to be made from a water conservation program at Ali Curung
- A significant subsidy is available to fund some wages and the training required for a six or twelve month pilot
- A suitable local partner organisation (Barkly Shire) is interested in administering and coordinating a pilot program in the community
- Local Aboriginal people have demonstrated interest in being involved in the program (e.g. applying for positions as Community Water Rangers)

The Research of Aspirations and Perceptions (RAP) study was used to develop recommendations regarding the design of a water conservation program, which would respond to community perceptions, needs, strengths and capacity. A detailed Community Water Ranger Pilot Program Manual was designed to guide program managers in implementation of a pilot program.

What is now required is agreement from Power and Water, Barkly and JRES or other local partners to enter arrangements for delivery as well as endorsement from members of the Ali Curung community. Having achieved these things, a pilot program could enter the implementation stage.

A pilot program should be monitored and evaluated for effectiveness and efficiency against its stated economic, social and resource management goals. Program managers should learn from pilot activities and use the lessons learned to strengthen the program. If successful, the program should be considered for replication within Power and Water's ongoing work in Northern Territory Aboriginal communities.



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