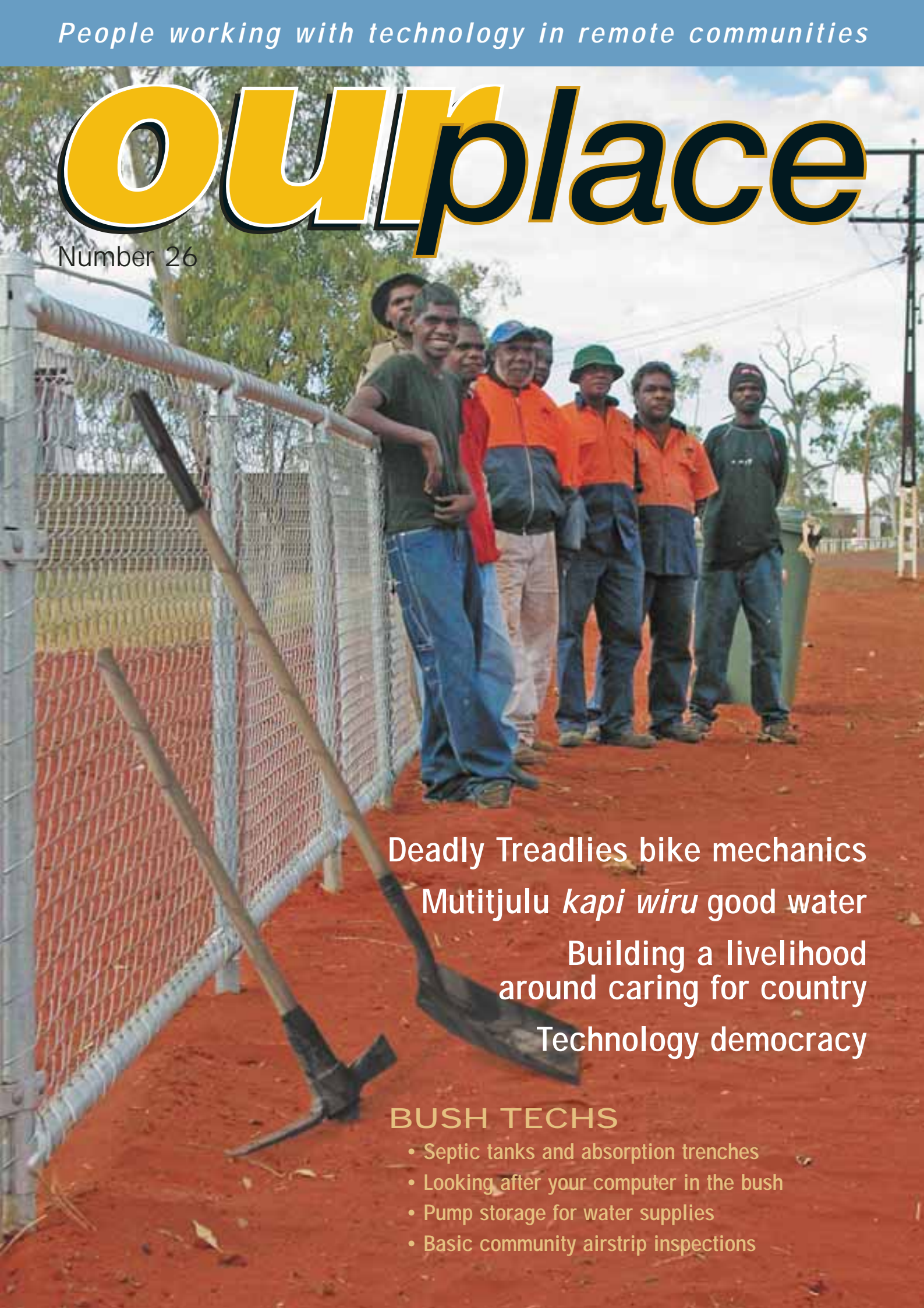


ourplace

Number 26



Deadly Treadlies bike mechanics

Mutitjulu *kapi wiru* good water

Building a livelihood
around caring for country

Technology democracy

BUSH TECHS

- Septic tanks and absorption trenches
- Looking after your computer in the bush
- Pump storage for water supplies
- Basic community airstrip inspections

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In issue 26 we have a number of articles that deal with water. Robyn Grey-Gardner reports on the completion of the Mutitjulu rainwater harvesting project, the problems that were encountered and the solutions that went into the design of the final project on page 12. Hot water systems are the focus of an article by Alyson Wright. In it she discusses the pros and cons of solar, electrical and heat pump systems. There are no easy answers and maintenance costs, installation costs as well as the purchase price need to be considered before making a decision on the type of system to purchase. And while on the subject of hot water systems, take a look at the CAT alternative, the CAT Chip Heater, which features on the back cover. The Chip Heater is practically maintenance-free and was designed specifically for people living in remote communities. In our BUSH TECH #29 we explore the intricate process of "Pump selection and

storage for water supplies". Other BUSH TECHS deal with Airstrip inspections, computer care and septic tanks.

Elsewhere, on page 14, we report on the trials and tribulations of the Cavanagh family as they follow their dream of establishing a successful enterprise on country they returned to in 1997. At the time of writing the dream is still evolving, but the signs are very promising. For an uplifting moment, you can't go past the article by Kelly Allen on the "Deadly Treadlies" in Alice Springs on page 6. This bicycle maintenance and restoration project, which is specifically aimed at both town and community youth, is inspirational in its aims as well as results already achieved. On page 16, Steve Fisher gives us food for thought in his exploration of "technology democracy" and its implications for communities. I hope you enjoy this issue.

Narelle Jones, Publications Officer



Front Cover

A job well done! The Ali Curung team of fence builders lean on their accomplishment, a beautifully aligned fence. Left to right: Gabriel Driver, Gregory Kelly, Reginald Nelson, Joseph Thompson, Lance Brown, Braden Thompson, Randall Murphy, Andrew Nelson.

Our Place

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Tel: (08) 8951 4311
Email: ourplace@icat.org.au

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Keeping the water and power working

Essential Services Officers are an integral part of community life in remote Central Australia.

Often it is costly to employ contractors to carry out maintenance on generators and to monitor production bores. Some communities have felt that they need cheaper alternatives to keep their places running. In an effort to address this problem, the Power and Water Corporation (Remote Operations) in Alice Springs has been providing Essential Services Officer (ESO) Familiarisation Courses to identified people in communities to carry out maintenance and monitoring work. The courses have been very successful, with around 15 Indigenous people attending in the past, and further “up-grading” courses have been scheduled for later in the year.

Two people identified for ESO positions are James Glenn, who lives in the remote location of Ti Tree and Kyle Dunn from

the Engawala community. James Glenn is employed by Anmatjere Community Government Council based at Ti Tree. As their ESO, James looks after communities such as Ti Tree, Laramba, Wilora, Alyuen, Mulga Bore and Angkula and shares responsibility with Kyle Dunn at Engawala. Kyle is employed through the CDEP program at Engawala, with top-up for his work coming from Power and Water Corporation.

James Glenn wears two hats. As well as working as the ESO for Power and Water, James also looks after community solar installations. He explains what his work involves. “I look after the outstations’ solar power and solar bores. This includes checking for problems like leaking water and broken pipes. I also act as translator because the outstation owners explain their problems in Anmatjerr”.

There are two Hino generators at Engawala with a smaller stand-by generator for back-up. The Hino generators need to be serviced every 300 hours and this is carried out by either Kyle or James. As well as dropping the sump oil, changing all filters and replacing the oil, Kyle and James will perform battery checks and attend to other routine service items as



James Glenn.

required. All waste oil is stored in 44 gallon drums to be carried back to Alice Springs at a later date. There is absolutely no spillage, due to hoses and valves strategically placed on each generator. Daily checks and monitoring are phoned through to Ti Tree from Engawala, which keeps James updated constantly of readings at Engawala. James arrives fortnightly on his rounds from Ti Tree, but is looking to extend this to monthly trips in the near future, as Kyle will be able to take over from James then. All the equipment and parts supplied by Power and Water, are stored on location in the Powerhouse facilities, and stocks are updated constantly. The generators at Engawala also service the successful Alcoota cattle station, which needs to have a reliable source of power and water to keep running efficiently.

Kyle and James work closely together. According to Kyle: “This week we had a major problem with the power system, and I was able to talk with James, who talked me through the problem over the phone. We still couldn’t fix it so I rang Power and Water in Alice first and then Darwin, and they were able to get our power back online through the phone.”



Top: Alyuen outstation, generator.
Above: Ti-Tree, generator.
Right: Kyle at Engawala, Power House.



system. This was a good result for all of us; now if anything like this should happen again, I know what to do”.

Another part of Kyle's weekly work involves the monitoring of bores and sewerage pumps in the Engawala community. There are two production bores used to service both the community and Alcoota station, and this is where it is important to have local people involved. Kyle feels that the knowledge he has gained from this type of work has given him reason to believe that one of the bores may be slightly forking (running out of water). Although not serious yet, this could have implications for future planning.

Now that community people are involved in these types of employment opportunities, it has opened other doors for extra work. When large projects, such as housing up-grades or sewerage installations are commissioned, Kyle works alongside contractors either labouring or operating machinery. In this way he can top up his CDEP and he enjoys the benefits gained from this type of work. Because he was involved in the sewerage installations, he understands the system, and informs community members of the perils of placing unwanted objects into toilets. This helps the whole community understand environmental health issues that affect their day-to-day lives. This type of knowledge and information would be lost to the communities, if contractors or outside people were used solely to carry out this work. ●

Peter Renehan

*Centre for Appropriate Technology,
Alice Springs*



Ron Talbot receives top art award

Ron Talbot is the Education and Training Development Co-ordinator at CAT. Ron plays an important part in looking at where the direction of the Education and Training Group of CAT is going, its future programs and future developments. “I will take advice, take those ideas away and develop them into curriculum or into programs or into full re-accreditation programs”.

Outside of work Ron has a passion for painting. “I have been painting for four years, after I decided to give myself a go at art classes at Charles Darwin University.” It is hard to believe that in the space of four short years, Ron has won “First Time Entrant Award” at the annual *Advocate Central Australian Art Awards* and has had his painting exhibited in the USA. To top it off, this year Ron won first prize in

the *Advocate Central Australian Art Awards* for his painting titled “Mitjili”. The painting features an elderly Aboriginal woman standing in a claypan in the Western Desert. Ron says, “I don't know too much about her. She is originally from Kintore and here she is returning to her country, standing on the edge of this vast salt lake, with the wind blowing through her hair, in these really colourful clothes and you feel that she is happy to be back on her land...but I know that there is a certain sadness too”. The painting was immediately purchased by Araluen Gallery and Ron is now busy painting for an exhibition he wants to hold later in the year.

Congratulations Ron! We at CAT are very proud to have such a prodigious talent on our staff.



Left to right: Levi Gomes; Joanic Armindo; Krish Seewraj; Bushlight; Estanislau Saldanha.

Representatives of the Dili Institute of Technology visited CAT in May with an interest in forming a working relationship with CAT. The visit was sponsored by the Rotary Club of Glenferrie. The delegation had three members; Estanislau de Sousa Saldanha (Deputy Director),

Dili visits CAT

Ernesto Levi Gomes (Lecturer in Engineering) and Joanic Armindo Ximenes Monteiro (Student)

The Dili Institute of Technology (DIT) is a non-government, community-based, education provider that delivers vocational training and higher education in East Timor to address the needs of youth, veterans of the resistance and their children, as well as specific community demand. It is committed to assist the nation in developing a workforce capable of meeting the growing demands of business, the public service and community sectors.

Jenny Kroker and Robyn Ellis of CAT prepared a program for the visit that stimulated discussion on the contrasts and the commonalties between the experience of remote communities in Australia and those in East Timor. This gave the DIT

delegates an insight into CAT's work and the challenges facing Indigenous people and also provided a structure to help us look at building a relationship.

The delegates were delighted with the visit to the Gloria Lee Environment Centre where Olive Veverbrandts showed typical hospitality with stories and afternoon tea. Other highlights for the delegates were a visit to the Batchelor Institute and to the Alice Springs Desert Park.

The visit concluded with an agreement that both CAT and DIT will consider how they can work together. Drawing on the information gained about “Bushlight”, the delegates felt that training in renewable energy systems and training in automotive skills and metal fabrication, especially orientated to small workshops in East Timor, may be feasible joint projects.



A project to develop online content

Recently CAT staff worked with Ngkarte Mikwekenhe Association and community members from Black Tank, Corkwood Bore, Mt Undoolya, Pantharrpilenhe and William Well outstation on a Community Online Project. The project was funded by the Department of Communication, Information Technology and the Arts. The aim was to develop a website for Ngkarte Mikwekenhe Community Inc. and Irrkerlantye Learning Centre that represented the plans and priorities of the organisations, the community and the outstations. The Ngkarte Mikwekenhe Community and Irrkerlantye Learning Centre website was launched on the 26 March, 2005.

The website includes pages on:

- Corporate Information
- Health and Well-being
- History
- Work and Enterprise
- Language and Culture
- Community Development
- Education and Training
- News and Events



Community aspiration, corporate values, Indigenous Arrernte history and developing community enterprises are displayed throughout the pages.

Deborah Maidment, director of Ngkarte Mikwekenhe Community Inc. says,

“ The website has created an opportunity to improve communications between us and the rest of the world. Now they can see our story; what we do, who we work with and how we contribute to development and well-being of Central/Eastern Arrernte people”

In addition to the website, the community has suggested that other benefits have arisen.

These include:

- People interacting with computers for the first time
- Community members and staff undertaking IT training at CAT
- Increased interest from institutions and agencies

wanting to work with Ngkarte Mikwekenhe community

- Revitalisation of story telling in the communities
- Continual development of community aspirations.

This supports the idea that enhancing ICT development is an essential part of community development. A website is one way of achieving improvements in ICT but developing appropriate online content is not an easy task. The variety in the website reflects the diversity of stakeholders who were involved in the project. The website will be progressively updated and maintained by Ngkarte Mikwekenhe staff.

The website can be visited at <http://www.nmi.org.au>.



Left to right: Bill Stanton, US consul general; Metta Young; Pat Farmer, secretary PM and Cabinet (right).

Metta Young wins fulbright award

Metta Young, CAT's Corporate Project Officer, will be based at the University of Arizona in the USA to study the social and economic development of Indigenous Americans after winning a prestigious Fulbright Professional Award in Vocational Education and Training. In line with much of CAT's work, Metta hopes to “spark some decent debate and thinking” about the current policy framework surrounding Indigenous Australians. Whilst there are certainly differences geographically, politically and socially between these cultures, there is still much that may be applicable to our context.

The award will allow Metta to study the Harvard Project on American Indian Economic Development. She is particularly interested in looking at how the Australian national training system can better support partnerships between Indigenous people, governments and industry. Metta will spend four months in US and she will present papers and reports on her findings at conferences and in future *Our Places* on return.

Deadly Treadlies is a bike mechanics project run as part of the Alice Springs Youth Accommodation and Support Services (ASYASS).

Deadly Treadlies



Ian Sweeney

Since its establishment in 2003, Deadly Treadlies have run hundreds of bike fixing workshops with children who are disadvantaged, at-risk, or who live in remote areas. This relatively small Alice Springs project is proving to be incredibly successful and has already received national acclaim for its unique and innovative approach, and its tangible outcomes.

Workshops

The Deadly Treadlies project began in January 2003 with one workshop a week, run out of the ASYASS centre. Just over two years on and the Deadly Treadlies team of two are now providing regular workshops in town camps, drop-in centres, schools and in remote communities. The workshops involve kids being assisted and trained to fix up or build second-hand bikes which they can then keep as their own. So far it is estimated that well over 900 different young people have accessed the Deadly Treadlies program, with over 1000 bikes being built.

Workshops are run at the Alice Springs Reconnect and ASYASS drop-in centres, and at schools like Yipirinya and Irrekerlantye. Workshops run in the town camps, as opposed to workshops in drop-in centres and schools, have the added benefit of being able to involve the whole community in the program. The Deadly Treadlies co-ordinators love to run workshops at the town camps and they believe that it is important that service providers are not reluctant to do this.

Deadly Treadlies co-ordinators have currently worked with around fourteen remote communities, including communities in the APY Lands, Walpiri country, Arrernte country and Western Desert. The remote community work usually involves providing workshops in one week blocks, and has one of the Deadly Treadlies priority activities.

Training

Along with learning about bike mechanics, kids involved in workshops develop skills in teamwork, planning, enterprise development and resource conservation.

In most instances the bike mechanics training is undertaken casually. The co-ordinators direct the level of difficulty kids will be faced with, or what individual skills will be taught, by selectively choosing which bikes they take out to communities. Kids develop teamwork while undertaking the workshops in a group situation and by sharing the tools they are using and the bikes that they have worked on. Planning and problem solving skills are developed through activities which include listing the problems with a bike and listing all the tools and parts needed to fix it up.

Deadly Treadlies also provide paid employment opportunities for young people to build bikes which are sold at the Bowerbird Tip Shop. Young people undertaking this activity develop enterprise experience and planning skills generally, through their involvement in the program, as well as through activities like completing a basic cost analysis to see whether they can make a profit.

Apart from the obvious sustainable outcome of the program being a decreased reliance on fossil fuel related transport, some communities participating in the program are also beginning to adopt a resource conservation approach to bicycle parts. They are sending fewer broken bikes and parts to the tip and keep them for fixing up the current bike stock.

Above:

Left: Timmy Haines using the tool pole. Centre: Donovan Williams, Leon Dixon, Ian Sweeney. Right: Laurence Dixon.

Since its commencement Deadly Treadlies have also been involved in the provision of special event short courses and workshops. One of these occurred during National Youth Week in 2003 when they teamed up with CAT to provide welding and art workshops. These workshops gave kids the skills to design and build a bike sculpture, which can be seen over the ASYASS fence from Undoolya Road. The arts are also a regular part of Deadly Treadlies remote workshops. In the remote communities film-making and photography workshops are held in conjunction with the bike mechanics workshops, with participants producing a full length DVD which is usually screened on the last night of the workshop block. The Deadly Treadlies have produced an award winning promotional DVD compiled from footage taken by kids during three remote community workshops.

Support

Deadly Treadlies have received several awards for their program which include winning the 2004 Ethical Investor Awards, Givewell Best Charity Project and the 2005 Ministerial Award for Crime Prevention. More regularly, they obtain financial support from the Northern Territory Government, the Office of Crime Prevention and the Department of Health and Community Service. The project receives donated second hand bike parts from the Alice bike shops Penny Farthing as well as the Northern Territory and South Australian Police. The Bowerbird Tip Shop has been invaluable to the program providing salvaged bikes, parts, a sales point area, and other materials. Deadly Treadlies would like to thank these organisations as well as the Cabrini Hospital for their generous support.

Technology

Because of the pioneering nature of the program, the Deadly Treadlies team have devised appropriate technological solutions to the challenges that they have faced. These solutions include the development of a tool pole, "fun" bikes alterations and "bush hardy" bike alterations.

Deadly Treadlies developed the concept of a tool pole, in order to provide kids on remote communities with safe and available tools so that they could keep fixing their bikes long after the workshop block is over. The tool pole consists of a large metal pole which has tools attached to it on chains (see photo on page 6). The pole is either cemented into the ground or welded to a steel wheel rim so that it can be transported. So far they have been very successful and all of the remote communities that have participated in the workshops now own one.

Over the course of the program the Deadly Treadlies co-ordinators have developed ways to make their recycled bikes "bush hardy", that is, make them safer, longer lasting and easier to maintain. Some of the alterations that have achieved this include;

- removing derailleurs and shortening chains to create single speed bikes
- lining tyres with old tubes to prevent punctures
- replacing calliper brakes with back pedal breaks and
- selecting robust bikes with thick forks (BMX's were found to be the most robust).

However, a favourite with the kids is the Deadly Treadlies

A DEADLY TREADLIES STAR MECHANIC



Gary Turner says "it's fun fixing bikes", Gary is 14 years old and lives in Alice. Gary has been involved with the Deadly Treadlies drop-in centre programs since they first began in 2003 and has fixed more bikes than he can remember. Gary enjoys taking off tyres and chains and fixing cranks, and hopes to one day become a qualified mechanic.

"fun" bike modification. For example, they regularly modify and weld together two bikes to create a side-car bike. A recumbent three wheel go-cart was also built with kids for an Alice Springs Festival Parade and there are plans to join with Tangentyere's circus workshops to create circus bikes which might include tandems, side-car bikes and BMX's with pegs.

Social outcomes and successes

Although the Deadly Treadlies program demonstrates measurable successes such as the high number of kids accessing the program or building bikes, it can be argued that a huge number of the benefits of the program are far reaching and perhaps immeasurable. Such benefits may include;

- the confidence gained by kids who are tapping into a skill they may have not been aware of
- healthy lifestyle promotion
- provision of transport which leads to mobility, independence, and an increased ability to access town services, recreation, family, education and training.

The program is also often participants' first point of contact with ASYASS. This means that Deadly Treadlies staff have the opportunity to facilitate kids' introduction to the Job Placement Education and Training (JPET) workers or other case management services.

The co-ordinators have found that quite often kids, who are not engaged in traditional education, excel at fixing bikes.

The Deadly Treadlies co-ordinators believe that the success of the program is due to its development in conjunction with participants, its ongoing nature and the positive relationships that have been established with the kids. They enjoy watching kids' mechanical skills improve, and seeing bikes that have been well maintained by past workshop participants.

The future

Deadly Treadlies are inspiring, assisting and supporting the development of similar remote bike mechanics programs in Queensland, through the Carpentaria Shire Council, and in South Australia through Bike SA.

Currently there is a great demand for the workshops, especially in town camps and remote communities. The program, however, is limited by resources and infrastructure. For example, they are in need of a bigger shed, a computer upgrade, a diesel vehicle for driving in communities with substance abuse, and a sustainable supply of bikes. ●

Kelly Allen

Can you or your organisation donate bikes, bike parts, or provide any other kind of support? Do you want the Deadly Treadlies to come out to your Community? Contact Ian Sweeney or Michael Klerck on 08 8953 4200 or email deadlytreadlies@ozemail.com.au.



*Remains of sacrificial anode.
Photographs courtesy of Alison Munroe.*

Getting hot water out bush

Have you ever stepped into a shower expecting a steamy flood of hot water to run down your back and been shocked to discover a trickle of icy cold water instead?

Once a luxury, today hot water is considered an essential part of housing developments and has some clear environmental health benefits. This article updates and revisits some of the issues surrounding the reliability of hot water heaters in remote areas. This work is the result of a survey conducted with maintenance personnel from around twenty remote Central and Northern Australian communities of Indigenous people. The survey looked at hot water heating systems reliability, maintenance issues and efficiency. It was initiated because of the lack of current information available from the user's perspective and a need for documented pros and cons of differing systems. In the article, we have concentrated on the most commonly used water heaters: electric, solar and heat pump. Additionally, we draw on previous research at CAT on hot water units.

Background

In 1997, researchers at CAT conducted an investigation of hot water supplies in remote communities, which involved the installation of a range of different hot water systems and the monitoring of hot

water consumption rates using data logging equipment. This research found that the average daily hot water consumption was around 240 L/household/day, but that "there was significant variability in consumption rates". The research formed the 2000 report, "Hot water use and water heating systems in remote Indigenous communities" and was distributed widely throughout remote areas. This article draws on elements of the report; it updates and extends some of the report's findings.

System types

Electric

The basics of electric hot water systems involve water being heated by electrical elements inside an insulated tank. The electrical elements are controlled by thermostats which switch the elements on and off to keep the water at a constant temperature. Most communities participating in the survey that had electric household hot water systems have tanks ranging from 30 to 120 litre capacity, and the most common brands were Rheem or Hardie Dux.

Solar

The most common type of solar hot water heater used in the surveyed communities is a "heat exchanger". This system involves black plated glass panels, which are mounted on a roof, through which a glycol anti-freeze fluid is circulated (Glycol antifreeze is mixed with water, Solahart recommends 1 part glycol to 4 parts water). This fluid becomes heated by the sun's rays and passes from the panels to around a storage tank, where it heats up the potable water inside by direct heat transfer. The storage tank usually contains an electric element which acts to "boost" the water temperature if the panels are not working at their maximum capacity, e.g. at night or on a cloudy day. The most widespread solar hot water heater on remote communities is Solahart systems, with the tank's storage volume of 180 or 300 litre.

Heat Pump

The "heat pump" is a relatively new type of hot water heater developed by Quantum Energy. The system consists of three components: compressor, evaporator and a condenser. The evaporator

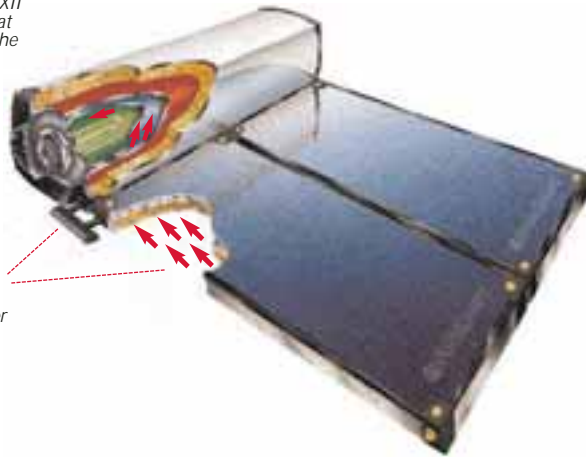
Solar

The Solahart J, K and BC XII models use an internal heat exchanger to ensure that the potable water supply is isolated from the absorber plates to prevent freezing and clogging

HARTGUARD™ heat exchange fluid circulates around the closed circuit using the Thermosyphon principle. As it passes around the storage cylinder heat is transferred to the stored water.

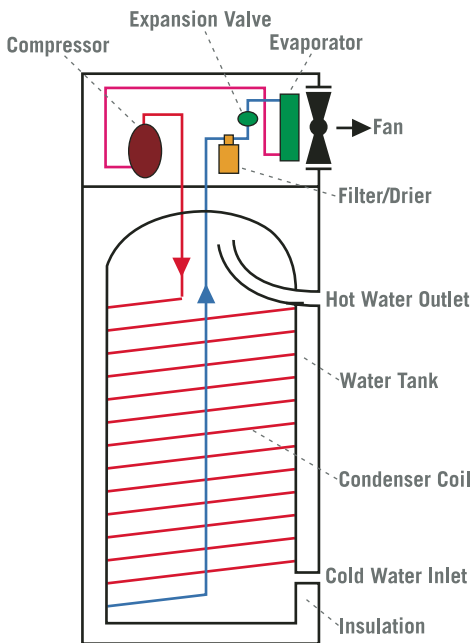


Solahart's Multiflow™ absorber design increases the fluid to surface contact ratio.



http://www.solahart.com.au/files/factfiles/Solahart_FF_001.pdf

Quantum



<http://www.quantum-nergy.com.au/Products/CompactHeatPumpExplained/tabid/264/Default.aspx>

absorbs heat from the air and uses it to vaporise the refrigerant. The vapour is then compressed, increasing its temperature. It is then passed through coils on the outside of the water tank causing it to cool and convert back into a liquid. Through the condensation process heat is given off and the water in the tank is heated.

Even though this system is taking its heat out of the atmosphere it still performs efficiently in cold temperatures. These systems are also eligible for Government solar system rebates. The tank size most common in remote communities is around 300 litres.

Purchase and running costs of hot water units

When purchasing a new hot water unit, the cost of the system is the essential factor, although the other issues noted below are also critical. All of the three hot water systems documented require electricity for running; however the primary fuel for the solar systems and heat pumps is the free heat energy from the sun. The 2000 CAT report outlined the fuel cost of each of the three systems; comparing subsidised and unsubsidised electricity prices (table 1).

Table 1 shows that the heat pumps were the cheapest to run, the electric boosted solar were slightly more expensive and the electric systems were twice as expensive as the solar. Table 2 provides the current cost to purchase the units.

These tables show that initial costing for electric units are significantly less than the more energy efficient units. However, the on-going running costs of these units often reduce the benefits of the money saved on installation. It is also worthwhile to consider the life span of the unit, which can be highly variable. In the communities we surveyed the life span was: Electric 6 months to 15 years, Solar 2 years to 20 years and Quantum 1 year to 15 years (Note: 15 years is according to Quantum suppliers and has not been tested in any remote areas). Whilst cost and efficiency is an important issue it is worthwhile considering some of the other factors noted below.

11

Table 1 Fuel costs of different hot water units (Lloyd et al 2000)

System type	Estimated Average Fuel Cost (\$/100 L)	
	Subsidised \$0.16/kWh	Real 1.00/kWh
Electric	0.80	5.00
Solar (electric boost)	0.40	2.30
Heat pump	0.30	1.96

Table 2 Current costs of different hot water units

Type	Brand	Volume (l)	Cost (\$)	Rebate eligible
Electric	Hardie Dux	50	465	No
Electric	Rheem	125	684	No
Solar (electric boost)	Solahart	300	3348	Yes
Heat pump	Quantum	270	3100	Yes

(Note: Prices were correct at time of Lloyd publication)

Other factors affecting hot water systems

Water Hardness

The hardness of water is an issue in electric and solar units but is less of a problem in heat pump units. Calcium can build up in systems with electric elements and electric boosted solar units. The life span of these systems is usually proportional to the amount of calcium in the water, that is, the harder the water the shorter the units life span. One way of tackling this issue is through regular preventative maintenance (example 1).

Solar systems are most affected by hard water, when hard water is used in mix with glycol. Panels filled with hard water are prone to leaks as the calcium corrodes the fittings, joints and seals (example 2). Solahart recommends a mixture of 1 part glycol and 4 parts water. In areas where water is highly mineralised, distilled water or rainwater is a preferable option to mix with the glycol fluid.

Although the heat pump systems are relatively new in remote areas, there have been reports that up until now there has been virtually no wear on the sacrificial anodes (a rod inside the tank which protects it from corrosion). Similarly, a 2000 CAT report on the trial of several heat pump systems stated that there is little likelihood of these systems having problems with calcium build-up.

Example 1

Maintenance of electric units

Electric hot water systems are the preferred system on a community with high calcium levels, south of Alice Springs. The maintenance personnel have a dedicated routine of cleaning the calcium out of the systems and replacing the elements and thermostats. Electric heaters are still the preferred systems in this location because the maintenance is relatively straight forward and they are more robust in comparison to other units.

Example 2

Glycol leaks in panels and tanks

A community in eastern Western Australia has recently had issues with leaking solar hot water units. David Hewitt, employee of the community, has reported that 7 out of the 22 Solar systems in the community had glycol leaks in both the tanks and panels. This means the systems are only operating on the electric element.

David suggests that the quality of the water may have something to do with the high failure rate, suggesting the glycol be mixed with distilled, demineralised or rainwater.

QUICK TIPS! WHEN DECIDING ON A HOT WATER SYSTEM, YOU SHOULD CONSIDER...

- Quantity of water: Household demand for hot water
- Power availability: The type of power sources available in the community
- Quality of water: Hardness of the water source
- \$\$\$\$\$: Installation costs, ongoing servicing and maintenance
- Transportation and Installation: Systems that are lightweight and easy to install are often preferred
- Warranty only covers from service centre 25-50 km away
- Vandalism: Some parts within units are prone to vandalism

Availability of technicians

Technicians need to be available to communities for the installation, maintenance and servicing of hot water systems. The availability of technicians can be influenced by a community's distance from a service centre and the ability of a community to employ the range of technicians needed. The technician needs for each of the systems are described below.

Electric

Both an **electrician and plumber**, or a plumber with limited electrical licence is required for installation of electric units. Dux recommends that a 5 year service needs to be undertaken by a **licensed plumber**. This service will involve the replacement of the pressure and temperature release valve, and replacement of the sacrificial anode.

Note:

Other more frequent maintenance may need to be performed if systems are installed in areas where the water is hard (see example 1). This can often be undertaken by a housing or municipal officer.

Solar (electric boost)

Solar units require a **J licensed plumber** for installation. Solahart recommends that every 5 years a **J licensed plumber** replaces the following items: glycol liquid in the panels, sacrificial anodes, temperature and pressure release valves, cold valve, O-Rings, PR6 valve (releases the closed circuit fluid pressure) and remove any sediment build up.

Note:

Often this type servicing does not occur in remote areas because of the costs associated getting a plumber onto the community, but housing officers also play an important role in maintenance and up-keep of the units.

Heat Pumps

Heat pumps require a licensed plumber during installation. Quantum recommends that a 5 year service be performed on the systems by a licensed plumber. This involves replacing the pressure and temperature release valve, replacing the sacrificial

anode, flushing the system, and checking the thermostats, refrigeration system, and the digital and electrical components.

Refrigeration mechanics: Many of the surveyed communities who have used heat pumps reported faults in the refrigeration unit which required a refrigeration mechanic to repair. This can be an issue because it is often hard to source a refrigeration mechanic who works remotely and additionally, the rates of charge for remote refrigeration mechanics can be expensive.

Warranty

Although most of the systems had warranties of various lengths, most of them did not cover systems which are over 25 or 50 km away from a service centre.

Note:

During the survey we found that most communities were conducting their own preventive maintenance of the hot water units and additionally, regular servicing was occurring more frequently than every 5 years. This was particularly the case for areas with hard water.

Common faults in hot water heaters

Electric

- Dysfunctional temperature valves
- Sacrificial anode breaking
- O-Rings wearing out
- Leaks in the tanks
- Elements wear out or fail
- Scale builds up in parts of the unit

Solar (with boost)

- Inefficient panels due to dirt or shade or vandalism
- Glycol leaks in panels and tanks (see example 2)
- Leaks in the element seals and resultant corrosion
- Failures in the element
- Incorrect mix of glycol and water used
- Dysfunctional temperature valves
- O-Rings wearing out
- Scale builds up in parts of the unit
- Sometimes during installation, the hot water valves discharge on to the roof and over time rust out the corrugated roof sheeting

Quantum

- Problems with refrigeration system
- Dysfunctional temperature valve
- Sacrificial anode breaking
- Digital and electrical components not functioning

Climate and environmental factors

Communities in the northern parts of the NT reported that their houses probably used less than average volumes of hot water due to their year round warm climates. This may mean that they are suited to systems with smaller storage tanks.

Solar hot water systems in some communities have become inefficient when too much dust has built up on the panels (this was especially the case in communities with unsealed roads) or when trees had grown up to shade the panels. A decrease in the panel's efficiency usually resulted in the water being heated primarily by the electric element this can be costly for some communities, as the solar tanks are usually quite large (180 to 300 L). In these areas, regular spraying with water and wiping clean with a rag on the solar panels to remove dust or cutting back shade trees will increase the efficiency of the panels.

Vandalisation

The most vandalised systems reported in the survey were the solar systems; damaged by rocks or other implements being thrown onto roofs. By installing a stone guard over solar panels, residents can reduce the damage to panels. The best guards use a light 12 mm mesh supported by a mesh of around 100 mm. This can often reduce the efficiency of the panels but is the only option in some communities. The guards should be easily removable so that the panels can be cleaned of leaves that get caught.

The Quantum units are usually located on the sides of houses and certain parts are prone to vandalism. The fan and evaporator at the top is covered by a light guard where sticks or metal could be pushed through. These parts need air circulation but may be protected by fine mesh guards.

Conclusion

There are no easy answers when choosing a hot water system to suit your community. The survey revealed that different units are preferred over others for a variety of reasons. The variety of stories and feedback that was taken during this survey was particularly interesting. It is something CAT would like to hear more of, so we can better inform other communities on the options out there.

Lastly, thanks to all the people surveyed during this work, your contribution is invaluable to our work. ●

Alyson Wright and Kelly Allen
Centre for Appropriate Technology,
Alice Springs



Building fences

In issue 20 of *Our Place* magazine we reported on a fence building training programme undertaken by members of Imanpa community. A similar course was organised by CAT, on behalf of Ali Curung Council, in order to improve community housing facilities. The aim was to utilise CDEP workers at Ali Curung to build fences around five community houses and the community school in an effort to tidy up the surrounds. In this instance CAT decided to use "Advance Training Services" as the education provider to teach community members the intricacies of professional fence building. Eight men from Ali Curung took part in the training, which

was run by Ian Chamberlain, over an eight-week period.

Professional fencing requires accurate measurement, calculating distances and materials required, using a spirit level to get posts aligned vertically, welding, the use of numerous small tools like pliers, spades, levers as well as cement mixers, pipe cutters, generators and drop saws. This exercise was an example in applied training, which paid tangible results. At the end of the course, the eight participants had constructed fences around the designated five houses and the community school. The team were adamant that they would continue working together and would like the opportunity of taking part in further courses of a practical nature. They all spoke very highly of the enthusiasm and dedication displayed by their trainer.

When CAT went to Ali Curung after the completion of the training program, the course participants were proud to show their achievements. The fences had been meticulously built despite some very difficult terrain, which required delicate adjustment of fence post heights amongst other considerations. The Ali Curung team of fence builders indicated that they were on the lookout for further opportunities to put their skills to use and were ready to tender for any fencing projects that may come up in their part of the world.



Photos by Advance Training Services



MUTITJULU

kapi wiru

good water



Celebration

A celebratory BBQ was cooked up at Mutitjulu in June. The celebration was to acknowledge the success of the Rainwater Harvesting Project with the Anangu from the Mutitjulu community, CAT staff and other people and agencies involved in the project. The BBQ featured *kapi wiru* means "good water", speeches by representatives and lots of chicken legs and steaks.

The BBQ also marked the completion of the Rainwater Harvesting and Point of

Use Treatment System Trial; the official point at which the Mutitjulu community will use the training, resources and support from CAT to carry out the ongoing maintenance of the systems on seven houses in the community.

The occasion was a good opportunity for the community to express their thoughts about the project. In general, the Anangu community at Mutitjulu are pleased with the rainwater systems and are keen to include them in future housing projects.

Plenty of good rainwater to drink!

The Rainwater Harvesting Project has been an action research project initiated by CAT, Cooperative Research Centre for Water Quality and Treatment (CRCWQT) and ATSIC. The project aimed to design a robust rainwater harvesting system using a community participatory approach and evaluating its effectiveness using water quality monitoring, system checks and evaluating maintenance requirements. The outcome is a robust and effective rainwater harvesting design suitable for remote Indigenous communities.

Design

The design for the rainwater harvesting system was prepared in consultation with the householders, the Community Council, architects and water quality specialists. In response to difficulties encountered in previous rainwater harvesting schemes on communities, this project trialled an innovative design utilising a 500 litre settling tank to perform the function of a first flush device. The success of this design at

Mutitjulu has led to further improvement of the design to include two screens that sit neatly between the corrugations in the tank. The screens lower the risk of the water being contaminated by bacteria, dust and rubbish from the roof.

The settling tank is accurately sized to wash first flush from the entire roof area (roof area is 250m²) and stores enough water to be diverted for other useful purposes, such as the garden. Specifics of the design are outlined in *Our Place* number 20.

Water and system monitoring

Water quality and infrastructure monitoring indicate that the rainwater harvesting system is robust and provides water of high quality with low health risks.

The water quality samples taken during the project show the bacteriological quality of the rainwater. The rainwater quality results were taken at intervals during 2003-04. There was an absence of *E. coli* bacteria in the water quality results. *E. coli* is the indicator organism to show whether the water has had any faecal contamination.

There are a couple of reasons why the water is uncontaminated compared to tanks situated in other regions. The absence of *E. coli* may be due to the roof reaching very high temperatures. It is possible that the bacteria is killed before it washes into the storage tank. It may also be possible that the water in the tanks, which are situated in the sun may reach temperatures high enough for the bacteria to die.

There should always be plenty of rainwater at Mutitjulu to drink. There is a storage capacity of approximately 12000 litres and the tanks have been sized to provide 100 litres per day of water.

Challenges

There were two main challenges with the project. The first was ironing out the problems with the infrastructure and the second was identifying the best approach for sustained maintenance.

There were two specific issues with the infrastructure. The pump selected did not meet the specifications which required modifications and the hydraulics of the rainwater harvesting system were compromised by the preference to locate the tanks 2 metres from the house, with underground pipes.

The nature of the problems were not particularly serious however the identification of the causes was prolonged because of an extended time without rainfall. The functionality of the system consequently could not be adequately tested.

Identifying the best approach for ongoing management was an integral and

challenging part of the project. The maintenance capacity building and responsibilities were originally intended for the householders. This approach was based on early participatory processes established with the householders and an understanding that working at a householder level leads to sustainable management outcomes. It does not suggest that all responsibility or negotiations should be conducted exclusively with householders, but it does indicate that the householders should have comprehensive understanding of the water supply system and know the basic operation. Changes in household occupancy at Mutitjulu however had a significant impact on participation during the project and the effectiveness of the training program.

Training and resources produced during the project were designed to support the Mutitjulu community to be fully informed of the maintenance requirements of the rainwater harvesting system. Maintaining contact with the householders, was a constant challenge since the people resident in households in remote Indigenous communities often fluctuate. Frequent population movements, or mobility, such as between outstations or communities are a feature of remote community life. Mobility is fundamental to Indigenous lifestyle and is also a feature of employment patterns in remote regions.

At the time of handing over the mainte-

nance responsibilities, the Mutitjulu Community Council decided that the ongoing maintenance in recognition of the changing house occupancy, would become the responsibility of the housing maintenance crew. With this agreement, the Council asked for a manual for the housing crew and an indication of the costs of keeping the system working.

The cost for running the system annually is \$107. This includes replacing filters and other parts and also includes the cost of power to run the pump. This is a minimum cost for simply maintaining the system and does not include any damage or large breakdowns.

The cost of keeping the system running for the two years after installation is summarised (table 1 and graph 1). The majority of costs are related to design and installation problems rather than wear-and-tear.

What next?

Methods to engage end users to maintain infrastructure in communities with high mobility have yet to be established. They are fundamental to the sustainability of infrastructure and essential services in larger communities.

The relationship between the Mutitjulu Community, CAT and the CRCWQT will continue. It is envisaged that a follow up project will monitor temperature profiles of rainwater tanks. Temperature profiling

of the stored water will enable an assessment of whether the bacteria is effectively killed off by high temperature peaks. It would also be an opportunity to determine whether the water temperature in the tanks during summer and winter periods is maintained in a favourable range to allow the growth of bacteria other than *E. coli* (e.g. *Legionella* species). In future, the results of this research could lead to using temperature to manage the water quality of rainwater – rather than relying on water quality testing.

In addition to understanding the range of water temperatures in Mutitjulu rainwater tanks, further tests are planned to compare rainwater tank water temperatures in different coloured rainwater tanks. The temperatures in beige compared to black tanks may differ significantly which could have an impact on bacterial loads in the water. This information may be important for technology choice in rainwater harvesting system design.

Conclusion

The need to secure and manage groundwater sources is vital for the future social and economic sustainability of small remote communities. Shifting the potable water supply from groundwater to rainwater in strategic locations will reduce the demand on ancient aquifers and eliminate the need for expensive and sophisticated water treatment.

This project provides important information for many remote communities to secure a sustainable supply of drinking water. The relationship between the community and the research organisations is strong and provides the foundation for further cooperation.

Acknowledgments

This project has been a collaborative effort of the Mutitjulu community, Government agencies and water industry participants. Mutitjulu community initiated the research project by identifying a need for rainwater tanks to be included in a housing project. ATSIC funded the infrastructure and appointed Tangentyere Design as the project managers. GHD provided design specifications. CRCWQT funded the research staff and water testing. Power and Water Corporation, provided water meters and funded minor repairs. CAT, provided on the ground negotiation, research and logistical leadership. Mutitjulu community participated in the planning, training and evaluation processes and made an on-going commitment to management. ●

Robyn Grey-Gardner

Centre for Appropriate Technology,
Alice Springs

Table 1 Rectification costs

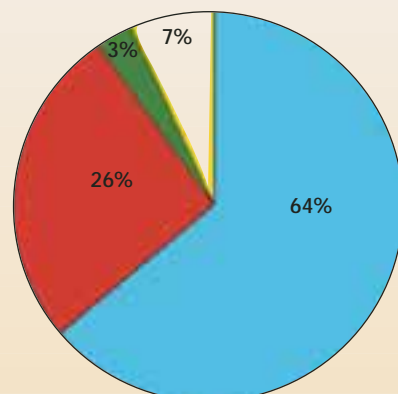
Damage to infrastructure part	Cause	Cost of repair
Leaking pump pipes	Poor installation	330
Broken pipes	Car accidents*	1500
Water treatment system	Vandalism	100
Cages for treatment system	Poor installation/design faults	1000
Gutters and fixtures	Poor installation	2400
Mosquito vectors	Vandalism	100
Taps	Removed	400
TOTAL		\$5830

Table 1 represents the costs incurred for the infrastructure rectifications required during the project.

* Car accidents describe the accidental damage caused to downpipes and outlet pipes when parking cars in the backyard. This occurred in three of the houses.

Graph 1 Direct expenditure for rainwater harvesting system rectifications

Poor installation & design faults	64%	■
Car accidents	26%	■
Vandalism	7%	■
Poor maintenance	3%	■



Building a livelihood around caring for country



In 1997, John Cavanagh and family returned to their homeland “Pantharrpilenhe”, 123 kilometres east-north-east of Alice Springs, with a dream. This dream involved establishing a place for his family to live and creating a successful enterprise to economically support returning to their country.

In the beginning, there was very little infrastructure at the Pantharrpilenhe homeland. A small soak provided the only water which had to be carted; there was a bore but no pump and no houses, no school and no electricity. Many achievements have been made since John and his family returned to country: establishing housing, infrastructure and cultivating bush foods.

Planning your aspirations

Turning a dream into reality requires planning. This was certainly a key to the successful establishment of Pantharrpilenhe outstation. Right from the very beginning, the family sat down and mapped out the community. This included obtaining the essential services (housing, water, electricity), plus other ideals (gardens, schooling). The family sought advice from organisations in Alice Springs, such as Central Land Council, CAT and Tangentyere during planning stages, but it was their aspirations, ideas and dreams that played the pivotal role in determining their community.

Accessing materials and resources

Moving back to country also requires resources and materials for construction of houses and other infrastructure. In Pantharrpilenhe, some very practical ideas went into to obtaining

resources for infrastructure and material in their community. This included collection of materials from lawn sales, community landfills, second hand shops and the Tip Shop in Alice Springs.

Additionally, carpentry and construction experience helped in making use of products and materials collected. Many of the residents at Pantharrpilenhe are graduates of CAT’s ATWORK program. This provided them with practical knowledge on carpentry and construction when using limited and local resources. One example of the resourcefulness, is using a old caravan to house the school of the air.

Setting up an enterprise

With the basic infrastructure and plans in place, John’s other vision was to set up a bush food business. With the help of Tangentyere Landcare, the first seeds were sown in a bush food trial project. Unfortunately, this trial was not very successful, poor soil conditions and frost killed of many of the young seedlings.

Despite this set back, the Pantharrpilenhe community were determined to grow bush foods. With help from Tangentyere and horticulturists from the Centralian College, soil testing was conducted and another group of plants was sown. A walk around Pantharrpilenhe today reveals regeneration of bush foods. These



Left: John, Marilyn, Seraphina, Makita.

include bush raisins, bush bananas, bush cucumbers, bush tomatoes, bush yams, bush potatoes and bush oranges. Bush foods are harvested and sent to a company in Melbourne who package the product. The products are then distributed throughout agencies in the Alice Springs district:

- Afgan Traders
- Health shops
- Community stores – Santa Teresa
- Tourist Places – Desert Park, School of the Air
- Restaurants

Aside, from the physical work, book work is an essential part of this enterprise. General accounting is required to calculate sales, income, taxes, etc.

The future

John's primary concern is his family. He says; "I want to plant more crops, to create more jobs for my family and get them out of town". He is also interested in setting up tourism operations and creating his own store in Alice Springs to market the bush food products independently. He would like to live on the outstation full time and not have to worry too much about coming into town.

Many of the family who work at Pantharrpilenhe are paid through Community Development Employment Program (CDEP) arrangements. By growing more products, tapping into larger markets, and setting up a tourism operation, the vision is to help family members to "get them off CDEP and on to real wages". This explains John is where the future lies.

Lessons learned

There is much that other communities and outstations can learn from the establishment of Pantharrpilenhe. What was required? This next section provides a brief overview of some of the important elements.

- 1 HARD WORK** A lot of hard work, research and patience were required in setting up Pantharrpilenhe outstation. John is adamant that there is still a lot more work involved. In the last seven years, they have established housing, source of reliable water, power and set up a small bush food enterprise. John's vision is to now turn this enterprise into something bigger and to get all his family living at their homeland on a full-time basis.
- 2 SEEKING OUT HELP** The community contacted many people and organisation for advice and support throughout the establishment of outstation. Knowing who to contact and what to contact them about, was particularly important in gaining an insight into the options available.
- 3 DETERMINATION** Whilst, John and his family have sought help from various organisations in Alice Springs, the hard work and determination was an influential force in the success of Pantharrpilenhe. The homeland is becoming successful through John and his families own desires, dreams and hard work. Despite many step backs along the way the community has risen above the challenges.
- 4 EXPRESSING ASPIRATIONS** Family and country were two of the most important elements in the planning of Pantharrpilenhe community. Through the community members expressing these aspirations, they have created a vibrant outstation; culturally, socially, environmentally and economically.
- 5 BUILDING ON ASSETS** Throughout the planning and development of Pantharrpilenhe, the community built on existing assets. For example, the community invested in areas which built on skills, knowledge, resources and experience of community members for the construction of infrastructure.
- 6 CREATING A MARKET** A successful enterprise needs a market. Through research and networking, the Pantharrpilenhe community were able to find an accessible market for their bush foods. It started with making lollies from bush foods and selling these to community stores. They now distribute their products to many stores within Alice Springs.
- 7 TRIAL AND ERROR** As is always the case, nothing went perfectly smooth the first time round. The Pantharrpilenhe community have taken account of the lessons and documented the event along the way and continue to make improvements. Small but well-thought out steps are leading to better outcomes for the Pantharrpilenhe community.

What this all means?

In John's own words, it is about "creating a future for your family, your children and your country". The efforts of community at Pantharrpilenhe serve as a reminder that a healthy future is created around vibrant dreams, solid planning, hard work, resourcefulness, knowledge and determination. ●

Alyson Wright

Centre for Appropriate Technology,
Alice Springs

Creating space for change

Technology democracy and its relevance for remote communities.

As the tide of change in Indigenous Affairs washes around us again, many communities, organisations and individuals are trying to read the signs and to work out what the new arrangements mean for them.

The recent discussions in the media and in many community meeting places across the country about regional bodies, shared responsibility agreements, trial sites, home ownership and policy mainstreaming has given an opportunity for some key issues to be aired again.

Trying to rise above all this is hard, especially when so much is at stake, but one key issue is to work out the extent to which Indigenous people living in remote communities will be able to play an active part in developing their own future, regardless of the policy and political changes that result from current developments in Indigenous affairs.

The Centre for Appropriate Technology has a wide network of contacts and associates across communities, government and the private sector. We have many conversations with a range of people about the implementation of plans for their housing and infrastructure. Often, the discussion centres on how the improvements will be introduced. People want to talk about whether CDEP will be involved, how tenders will be let and who will be eligible, whether the community council will have the final say and a host of other concerns. Quite often, it is the *process* by which people participate in change that concerns them rather than the change itself.

The byline of this magazine is “people working with technology in remote communities”. Yet too often people see themselves as recipients or even victims of someone else’s technology. Think about the computer printer at a bush community that nobody can get to work properly, the planned sports facility that didn’t meet the users’ expectations, the constant dust problem, the road that remains washed out, the barge that failed and is now



Marc Seidel of CAT discussing local community access roads with Harold Bidwee at Oombulgurri.

slowly deteriorating by the barge landing. The enduring question is about how people can maximise their involvement in tackling issues that concern them.

A valuable contribution to this subject is a paper produced by an international non-government organisation called ITDG (recently renamed “Practical Action”) entitled “*Democratising technology; reclaiming science for sustainable development*”. The paper is available through the reference provided at the end of this article. Technology democracy is an emerging consensus that technologies only work for people if they are allowed to play an integral part in the development and application of any new or existing technology.

Democratising technology provides examples of diverse cases from around the world where individuals and organisations have democratised technology through the way that they have influenced its development and impact on their lives. One of the most interesting and relevant to our own concerns in remote communities in Australia comes from the Sudan and is summarised in the box below.

The Shambob brickmakers

In Sudan, brick-making is one of the main rural alternatives to farming, employing 5000 people around Kassala. But most are kept in real poverty because they produce bricks which are bought by middlemen on behalf of wealthy merchants. Shambob village, where 80 per cent of the families derived their living from brick making, was so poor in 1998 that many of the men could not afford to marry, while the village had no services.

ITDG helped the villagers to form and legally register a co-operative, and trained them in the necessary management skills. Women as well as men are accepted as co-operative members, each of whom makes a basic cash contribution. Throughout the process ITDG representatives deferred to the indigenous knowledge of the workers to help them find the most appropriate way forward.

They started to experiment with new moulding and drying methods, so improving brick quality. The brick makers’ incomes rose by 20 per cent in the first year and 67 per cent in the second. They now produce one million bricks a year, and demand is still rising. A big part of Shambob’s success was to cut out the middlemen and enable the villagers to run their own business. Equally important was the energy efficiency resulting from the co-operative’s successful experiments with alternative fuels to replace expensive wood. (Source: ITDG, 2004)



One common element to all the case studies is that they shown how marginalised people have gained a greater measure of control from decision-makers who had previously evaded accountability.

A shortcoming for many people working with remote communities in Australia is the lack of a precise language that defines suitable processes for making decisions on these subjects. We talk about participatory planning, effective governance or community development, but struggle to know exactly what are best examples of these when we see them. The paper goes on to pose some questions that help us to assess a decision-making process. Below, I offer a response to three questions that are most relevant to our circumstances, drawing on the experience of CAT.

Is the objective of the process to give participants opportunities to take control of issues that concern them fundamentally?

A complaint often heard from Indigenous leaders in Australia is that research usually serves someone else's agenda, providing data that researchers and policy-makers use but which offers no short-term gains to Indigenous people. Indigenous issues are likely to remain as attractive topics for researchers for the foreseeable future and so the tension between community priorities and the goals of researchers will remain.

The existence of ethics committees certainly offers some checks and balances on the quality and processes involved in that research but the challenge is to achieve convergence between the priorities of both groups especially where researchers arrive at community meetings with a set of skills and interests that may not align with community interests or where communities do not necessarily see research as having any contribution to make.



An arts centre is much more than a building. The design of improvements to Yuendumu Arts Centre took into account many factors.

Better practice in this area involves creating a space where Indigenous people and families themselves can fully understand research options, have their concerns heard and play an active role in designing the research itself. This is complicated and expensive, which is why it doesn't happen very much. Central to effective work at this demanding interface is for specialist language to be made accessible to non-specialists. Some of the work of the Desert Knowledge CRC shows promise in this area and will be featured in *Our Place in the future*.

Is adult literacy necessarily a pre-condition in the short term?

Targets derived from mainstream Australia for training outcomes or for the adoption of computer technology in Indigenous communities are often unrealistic in places where literacy levels are low. CAT remote lecturers, working on a weekly basis in Central Australia, often find that students are not "train-ready" because their competency in reading and writing is not far enough advanced.



Cardboard models of kitchen components were used by this Queensland community to work out the design for their outdoor kitchens.

So adult literacy may be a pre-condition for formal mainstream training curricula, but it should not be an insurmountable barrier to effective planning for renewable energy, water and other services. In these cases, a number of visual techniques are available that create the space for community to make choices and then take responsibility for those choices. CAT's Bushlight program has worked extensively across the northern half of the country, undertaking community energy planning in 56 locations, all of them involving decisions on technical subjects using language and images that are suitable for non-specialists.

The point here is that strengthening the capacity of people to be active participants in processes affecting them, especially

those involving specialist subjects, calls for creativity around the basis for the conversations that will take place and the tools and techniques available to gain the most from the dialogue. Better literacy helps, but is not essential.



The viability bicycle developed by CAT through a Desert Knowledge project provides a basis for discussing a complex subject by breaking it down. Each part of the bicycle represents an aspect of settlement viability.

Are there safeguards against domination by the agendas of a single stakeholder?

In the shifting environment of Indigenous policy, the answer to this question is still to play for. In multiple stakeholder meetings held at numerous communities over the last year, a real tension has existed between the urgency to "make something happen" for communities and the desire for everyone to be in the room or under the bough shelter and to be contributing fully. So while attempts at technology democracy may be genuine, there is also a danger of consultation-fatigue as whole-of-government approaches have led to large meetings at which participants have not been able to discern a tangible and achievable outcome at the end.

The introduction of "solutions brokers" within Indigenous Coordination Centres is another opportunity to speed up the process of change so that the range of stakeholders can see some momentum being generated and some value from the forty shared responsibility agreements that are now in place.

Technology democracy; does it help us?

Democratising technology assesses the various case studies presented in the paper against the extent to which each process was able to:

- Link knowledge and power;
- Ensure the competence of the process; and
- Create alliances for change.

These are fine words and we have heard them before in different guises. But the three questions that I have addressed in this article do have practical value for people working with remote communities, particularly in drawing our attention to whose agenda is taking precedence when a community group or organisation is planning a project. The work of achieving effective dialogue between government, local organisations and community people themselves lies at the heart of achieving true "shared responsibility".

But there are difficulties in applying the concept of technology democracy in our context. To most of us, democracy at its most basic level is the process of putting a slip into a ballot box. It is compulsory for people to vote in Australia and so we all associate democracy with the act of voting. This being the case, the phrase "technology democracy" carries the connotation of voting for or against a technology option.

The processes that lead to people choosing technology are about much more than an implied yes or a no. We might make a clear choice about whether or not to buy any number of technologies designed to save work or improve the way we obtain information, but the process of a group of people living in a remote location working out their best way forward is more complex than that. It involves letting senior people lead the way, deferring some decisions until later, accepting change imposed from elsewhere and making the best of what they have.

Democratising technology offers us some valuable principles and tools, so long as we understand the limitations and the compromises required in the Australian Indigenous context. ●

Steve Fisher

*Centre for Appropriate Technology,
Alice Springs*

References

Background material on technology democracy is available at <http://www.itdg.org>, including the proceedings of the conference "Public Good or Private Gain" held in London in November 2004.

The discussion paper "Technology democracy; reclaiming science for sustainable development" is available at the following internet address: http://www.itdg.org/docs/advocacy/democratising_technology_itdg.pdf

Our Place Radio

Our Place Radio show is now in its fourth year. Adrian Shaw produces a twenty minute report each fortnight, which presents the voices and perspectives of Indigenous people along with commentary on a technology theme. The major themes are; energy planning, communication, health, housing, water, training and transport.

Our Place Radio is broadcast on community radio stations across mainland Australia and in the Torres Strait Islands.

- CAAMA 8KIN FM (100.5 FM), Alice Springs
- Radio Larrakia (93.7 FM), Darwin
- Walpiri Media, Yuendumu
- 6AR, Perth
- Nggaayatjarra Media, Wingellina
- Mulba Radio, Port Hedland
- 6GME (99.7 FM), Broome
- 6FX (936 AM), Fitzroy Crossing
- 6PRK (98.1 FM), Halls Creek
- 6WR (693 AM), Kununurra
- 3CR (855 AM), Melbourne
- 3KND, Melbourne
- Gadigal Information Service (93.7 FM), Sydney

- 4AAA (98.9 FM), Brisbane
- 4CLM (98.7 FM), Cairns
- 4K1G (107.1 FM), Townsville
- 4MOB (100.9 FM), Mt Isa
- 5UV Radio Adelaide (101.5), Adelaide
- 5UMA (89.1 FM), Port Augusta
- 5NPY Media Umuwa (101.3 FM), Pitjatjantjara Lands

BRACS stations in the Top End via TEABBA (Top End Aboriginal Bush Broadcasting Association); in the Pilbara and Kimberley via PAKAM (Pilbara and Kimberley Aboriginal Media Association); in the Torres Strait Islands on Moa Island, Yam Island and via TSIMA (TSI Media Association).

Other stations pick up the show via the National Indigenous Radio Service and TAPE, the Aboriginal Program Exchange.

BUSH TECH POSTERS

- #1 How to look after your bore
- #2 When it's time to change the oil

BUSH TECHS

BUSH TECHS tell you what we've learnt about working with technology in remote communities.

Many are fact sheets. Some summarise emerging issues.

BUSH TECHS are published in each issue of *Our Place*.

- #1 Hot water
- #2 Renewable energy
- #3 Stormwater harvesting
- #4 Rainwater harvesting
- #5 Gas fittings
- #6 Carbon farming
- #7 Feasibility of gas and dual fuel
- #8 How to get a telephone
- #9 Disinfecting a rainwater tank
- #10 Creek crossings
- #11 Maintaining your air conditioner

- #12 Choosing the right door
 - #13 Choosing a landfill method
 - #14 Dust control
 - #15 Choosing the right toilet
 - #16 House warming
 - #17 Landfill design
 - #18 Pit toilets
 - #19 Maintaining your tip
 - #20 Local radio networks
 - #21 Water bores
 - #22 Used oil
 - #23 Waterless composting toilets
 - #24 Managing liquid fuel risk
 - #25 How to get a wheelchair
 - #26 Maintaining roads
 - #27 Septic tanks and absorption trenches
 - #28 Looking after your computer in the bush
 - #29 Pump selection and storage for water supplies
 - #30 Basic community airstrip inspections
- For a free copy of a BUSH TECH, TECH POSTER, telephone CAT on (08) 8951 4311.

Country, Kin and Culture

The central theme of “**Country, Kin and Culture**” is that Aboriginal society has endured because of its adaptability and an inherent strength that Western colonisers and policy makers have never comprehended. According to the author, Claire Smith, who is a Flinders University academic and President of the World Archaeology Congress, the “*history of contact between Aboriginal and European Australians has been a history of struggle over culture*”. She retraces that history ranging from early contact and conflict, through protectionism and assimilation, including the Stolen Generation years, to the present day of gradual self-determination and reconciliation. During all these phases, European policy has been premised on the assumption that Aboriginal culture is somehow inferior and doomed to become extinct. Drawing on her intimate knowledge of the Barunga-Wugularr community, geographically located near Katherine in the Northern Territory, the author demonstrates the complexity and sophistication of the local social system and how it has adapted to genocide, paternalism, assimilation and neglect over the past 150 years. While the book does have some of the trappings of an academic anthropological treatise, dealing with the intricacies of the local kinship systems, skin groups and moiety, it is essentially an informative and insightful social history. The ethnographic discourse does however serve to illustrate

a very important point: “...that the *social, cultural and intellectual complexity of Indigenous Australian groups far exceeded that of European cultures, either then or now*”.

Cultural adaptation is clearly a work in progress and at present it is uncertain how Aboriginal culture will cope with a



social environment in which unemployment, poverty, suicide, alcoholism, drug abuse, domestic violence and poor health are endemic to many communities. The cause for this deplorable state of affairs is squarely laid at the feet of misguided, and sometimes genocidal, government policies over the decades. “*Deprivation of politi-*

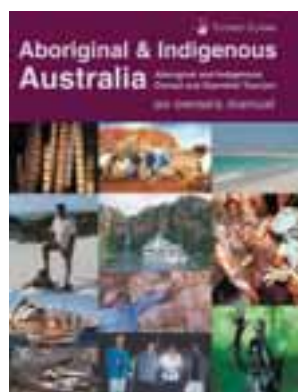
cal and economic power to control their own lives” is seen as the main underlying problem, which has led to the present woeful state of Aboriginal community life, in Barunga-Wugularr and elsewhere.

The author is at pains to point out that Aboriginal society is not, and never has been, a passive victim of colonisation and misconceived government policies. “*Indigenous societies are dynamic and flexible, possessing a creative ability to generate new variants of cultural practices and to transform their cultures in strategic ways.*” According to the author, the adaptability of Aboriginal culture is demonstrated by an historical example where Aboriginal mine workers negotiated the terms on which they would continue their work at the Maranboy tin mine in 1919. Similarly the murder of several *mununga* whitefellas, in retribution for the sexual abuse of local Aboriginal women, was a demonstration of Aboriginal justice being enforced.

Today, the very existence of a “Kriol” lingua franca in northern Australia, as well as the strength of the Aboriginal art industry, are further examples of a dynamic and living cultural heritage. Kriol, while it uses a largely English vocabulary, nevertheless retains a grammar, which reflects traditional Aboriginal language structures. Spoken by some fifteen thousand people, development of this language, was necessitated by the population movement of many different language groups, as well as whitefella incursion. Similarly Aboriginal paintings are an adaptation, whereby previously secret and often sacred knowledge has been commercialised. According to an Aboriginal artist, culture has been kept intact by the fact that the secret is in the story not in the image. “That picture you can see but that story him secret”.

The book ends on an optimistic note. “*While there have been significant changes, the fundamental social structures and cultural laws, clearly grounded in Aboriginal systems of knowledge, have endured.*” It is debatable whether recent history or the present day situation of Aboriginal community life, as described by the author, merits any optimism. Nevertheless one cannot disagree with the observation of one elderly Aboriginal survivor “**We still here yet**”.

Claire Smith
COUNTRY, KIN AND CULTURE
Wakefield Press, \$24.95 pb, 208pp
ISBN 1 86254 575 8
Reviewed by Narelle Jones



Aboriginal & Indigenous Australia an owners manual

Aboriginal & Indigenous Australia: an owners manual is a beaut idea. Squarely aimed at the tourist market, the book is a listing of indigenous owned and operated tourism enterprises throughout Australia. The compendium is very comprehensive – there are descriptions of over two hundred enterprises, ranging from “mum-and-dad” mud crabbing tours to \$5000 plus adventure packages on luxury boats. While the

degree of Indigenous ownership of some of the businesses is questionable, the manual is a very useful and sufficiently detailed guide to Aboriginal tourism ventures, which should serve to boost the economic well being of the enterprises described. It deserves to be included in every traveller’s survival package, alongside the ubiquitous Lonely Planet Guides, from which it clearly draws its inspiration.

Ian Crawshaw
ABORIGINAL & INDIGENOUS AUSTRALIA
Cactus Media Publishing, \$15.95 pb, 176pp
ISBN 0 9757305 0 9

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