

## Local and innovative partnering in addressing large-scale, chronic community water usage issues

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Firstly, let me acknowledge the Yirrganydji people, the local traditional owners of the place in which we meet today. I also acknowledge the Elders past and present and acknowledge their leadership and wisdom.

Thank you for the opportunity to speak with you today regarding the topic of my presentation, which is 'Local innovative partnering in addressing large-scale chronic, community water usage issues'.

This project came about as a result of at least eight different groups and agencies acknowledging a pressing and chronic need and coming together to find a way to meet that need for the sake of people living in remote communities.

I'm am going to tell the story by describing:

- the situation,
- who the players were, and
- the outcome, or what happened.

The story is about a small remote town-based community called Irrungadji. Irrungadji is located next to a small Pilbara town in the Shire of East Pilbara, which is the largest local government area in Australia. Irrungadji has less than 60 people living there. It has a total of 17 houses, at least two of which are not occupied. The housing is self-managed by the community.



The community:

- has its water supplied from the nearby town's water supply, which is managed by WA's Water Corporation, and there was a single master water meter in place for the entire community
- had historically high water consumption patterns, especially over the period 2012/13 to 2015/16
- has 2015/16 water consumption that was almost double that of the previous year and was about 70% higher than the total water consumption of the nearby town of Nullagine for the same period

The Water Corporation had installed water data loggers in 2015 to establish a 'water use profile' for each house. In April 2016, Empower Education, a Registered Training Organisation (RTO), was engaged by Ashburton Aboriginal Corporation, the local and regionally based Community Development Program (CDP) provider, to deliver a 10-week Certificate II Aboriginal Environmental Health training course based in Irrungadji. Irrungadji had an existing significant and rising debt to Water Corporation for the supply of its water

It is important to note that this project demonstrated that water meters have benefits. Before the meters were installed, no-one knew what was happening in terms of water usage patterns. Meters and associated data loggers can help identify where and how much of a problem there is, which helps then in identifying potential solutions. It is important to recognise that meters are not just about charging for water consumption. Water, especially in remote communities, is a precious resource that is not to be wasted. It needs to be managed properly, due also to its role as a potential vector and transmitter of disease.

The Western Australian Plumbing Regulations had not been changed at the time of this project. However, the dramatic and successful outcome of this project may have contributed to the eventual changes that came into being in December 2016.

The partnerships in this project included at least eight different groups of people and agencies. They were:

1. Ashburton Aboriginal Corporation - CDP
2. Pilbara Meta Maya Region Aboriginal Corporation – Department of Health contracted Aboriginal Environmental Health Service Provider
3. Empower Education - RTO
4. Irrungadji community members
5. Trainees
6. Plumber
7. Water Corporation, and
8. WA Health Department's Environmental Health Directorate.

The RTO was one of the key players in this project. Having Empower Education based in the community and delivering the Certificate II course helped put a spotlight on Irrungadji's water and plumbing-related issues and provided an effective rallying point that brought together the various project partners, which in turn led, over a short period of 4-6 weeks, to an improvement in the community's situation.

For the number of people living in Irrungadji, the water consumption rates were historically high - see Figure 1 below. Data loggers confirmed multiple major leaks, some of which were greater than 20 litres/minute. The average community water consumption was 87,312 litres per day. Water consumption in 2015/16 increased dramatically by about 70% more than the previous already high average rates.

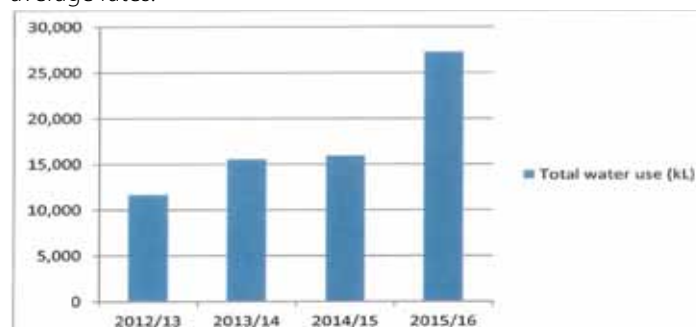


Figure 1. Historic water consumption at Irrungadji

For context and comparison, the daily use for one person in WA is approximately 340 litres, or 900 litres per household per day. Given the totals in Figure 1 are for a total of about 15 occupied houses in Irrungadji, this means that the average water consumption for the whole community should or could have been closer to about 13,500 litres per day (i.e. 900 litres/day x 15 houses = 13,500 litres per day). Irrungadji's water consumption rate was in fact about 6 ½ times the WA state average. Irrungadji's water consumption was high because of multiple major plumbing problems that were not going to be fixed anytime soon. The community was already in major debt to the Water Corporation and there was no chance of it being paid down in either the short or medium term.

Empower Education (Greg McConkey is the Director and sole trainer in this RTO) identified that there were two types of plumbing issues:

1. Issues that his trainees could fix as part of their training, and
2. Issues that were plumber-only repairs because of the complexity and technical difficulty.

Examples of plumbing jobs that could be completed by Aboriginal environmental health trainees are shown below.



At the time of the project, WA's Plumbing Regulations did not allow trained Aboriginal Environmental Health Workers (EHWs) to undertake any plumbing repairs. That situation changed in December 2016. In short, EHWs that are now employed by an agency contracted to the Department of Health, and who have completed a Certificate II in Aboriginal Environmental Health (including the requisite plumbing and water units), can perform a limited number of 'permitted' basic and emergency works in nominated remote Aboriginal communities.



Examples of plumber-only repairs.



The water units in the Certificate II qualification cover the following:

- provide basic repairs and maintenance to health hardware and fixtures
- monitor and maintain sewage systems
- monitor and maintain water supply
- monitor and maintain septic on-site systems.

'Permitted Work' includes:

- replacing leaking tap washers, spindles, handles and shower roses (except where additional plumbing is required)
- replacing P-trap's and S traps in readily accessible locations (i.e. sinks, basins, troughs)
- replacing leaking hose taps and hose vacuum breakers
- replacing leaking cistern inlet and outlet washes and valves
- capping a burst water main, damaged waste pipe or sanitary drain for the purpose of preventing a risk to human health or safety or significant waste of water
- replacing general covers (e.g. missing or broken inspection mounds, gully mounds, grates and vent cowls)
- clearing blocked waste pipes and drains by the use of plungers, flexible hand rods or handheld water hoses only
- unblocking toilets, showers, basins, troughs, sinks and baths by the use of plungers, flexible hand rods or hand-held water hoses only
- other work approved by the Plumbers Licensing Board (WA).

Below is an example pictorial story of the work carried out by the trainees as part of their training and this project.

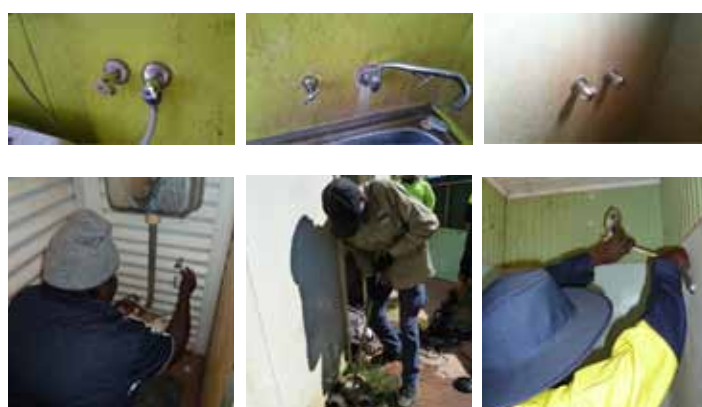




Figure 2 below shows water consumption (blue bars) and flow rate (blue line) for the 21-day period before and just after the project's plumbing intervention.

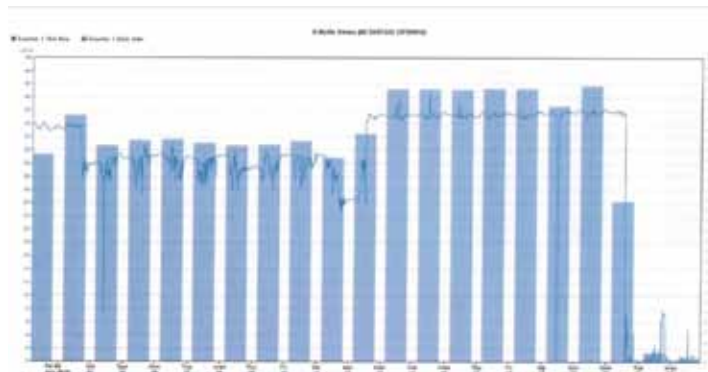


Figure 2.

Data logger installed on house number 6 at Irrungadji Community

The third last bar on the right represents the date of the intervention and shows a dramatic reduction in water use. Note the bars before and after and especially immediately after.

Table 1 below shows daily use rates for whole of the community before and after the intervention.

	Before	After
<b>Overall Water Use</b>		
Average Daily Use (L/day)	87,312	10,672
Maximum Daily Use (L/day)	160,000	16,000
Minimum Daily Use (L/day)	30,000	10,000
<b>Sites with leak identified</b>		
Number of Sites with major leaks (>3L/minute)	5	0
Average Leak (L/minute)	20L/minute	0

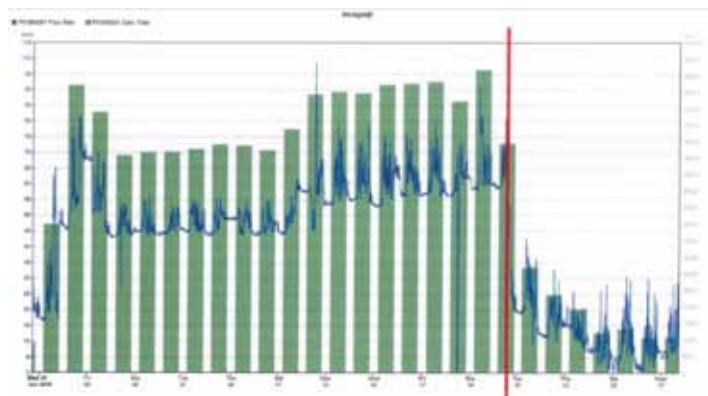
Table 2: Water use before and after plumbing repairs

Table 1.

Water use before and after plumbing repairs

It shows that there was a dramatic ~90% reduction in water usage from 87,000 to 10,700 litres per day.

The water usage rates dropped dramatically on 20 June 2016 (Figure 3) and continued to drop over the next 4-5 days of work undertaken by the Aboriginal Environmental Health trainees and the plumber who was supervising them.



Note: Daily water use and flow rate before and after plumbing repairs (indicated by the red line)

Irrungadji is considered a Class 5 community for the purposes of water costs and charging and, as such, was being charged \$7.434 for each kilolitre of water consumed over 750kL. The reduction of 76,640 litres measured by data loggers meant a saving on their water bill of:

- \$540 per day
- \$3780 per week, and
- \$16,200 per month.

It should be noted that the Department of Health's Environmental Health Directorate's investment of \$12,000 (towards the cost of the plumber and plumbing consumables) was more than recouped by the community in savings in their water usage charges in a period of less than 23 days.

The other important outcome of this project was that there was an 'eight-way win':

1. A win for the householders and tenants
2. A win for community
3. A win for the trainees in attainment of new skills and confidence in applying those skills, combined with huge local kudos and credibility
4. A win for Empower Education (the RTO)
5. A win for the plumber and his relationship with the community
6. A win for the Ashburton Aboriginal Corporation (CDP) in the successful training of participants
7. A win for the Department of Health and in particular the Environmental Health Directorate - we got a good positive result and great outcome for the community, including a marked immediate improvement in the water-related health risks in and around community members' homes, and
8. A win for the Water Corporation in some of the debt issues being dealt with and less water being wasted.

The shared good news is that even if a community is not on the list of communities whose plumbing is able to be serviced by Aboriginal EHWs, they can still work with and under plumbers to achieve a similar result.

The lesson here for everyone, including other states and territories, where plumbing regulations do not allow non-plumbers to do plumbing-related work, is that they too can add value to and multiply a plumber's availability by working with and under them.

Thank you.

#### For more information

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#### Glossary

AEHW Aboriginal Environmental Health Worker  
CDP Community Development Program  
RTO Registered Training Organisation