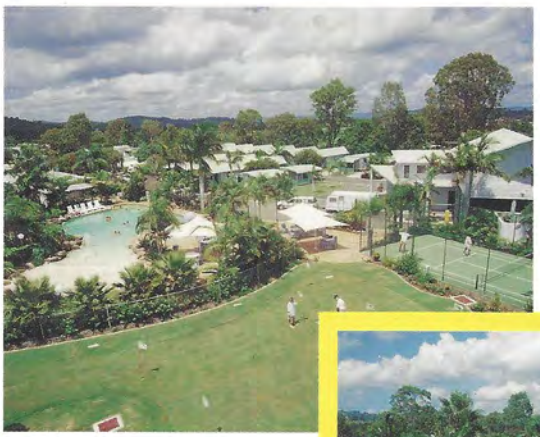
WaterWise Information Guide

WATER CONSERVATION IN CARAVAN PARKS



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Gold Coast

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WaterWise Information Guide Water Conservation in Caravan Parks

by

Sally MacKinnon
BA (Comm), Grad DipEd, M App Sci
Wet Paper Consultant to the
Gold Coast City Council WaterWise Program

Gold Coast City Council

NATURAL RESOURCES

Wet Paper
MARINE EDUCATION

WATERWISE
Gold Coast

Contents

Enclosed

Feedback form, promotional materials

WATERWISE
QUEENSLAND

Message from the Mayor of the Gold Coast City Council

Potable water is one of the mainstays of life - and here on the Gold Coast it is also one of our most important social and economic resources.

The City's image as a key tourism destination and a desirable residential area is greatly enhanced by its ability to offer a plentiful and high quality supply of fresh water. We are, indeed, fortunate to live in a relatively high rainfall area, leading many people to believe that fresh water is an abundant and readily renewed resource.

Thanks to the foresight of previous local governments, the City Council has the capacity, through its water supply and treatment facilities to adequately service the existing resident and visitor population. However, we are a rapidly growing region, and it is estimated that by the year 2005, it will be necessary for the Gold Coast to expand its treatment facilities to cope with increased demand. This is an expensive process, with ratepayers shouldering much of the cost.

Water conservation is, therefore, not only a social responsibility but an economic necessity. Through WaterWise practices, we can conserve our precious water reserves and extend the life of our existing water infrastructure. All sectors of the community, both private and commercial, can contribute to and benefit from water conservation.

I warmly welcome initiatives from the caravan park industry to reduce water consumption. This guide is part of the Council's comprehensive WaterWise program which is part of a national objective to reduce water consumption by 20 per cent by the year 2000. The guide offers practical advice on WaterWise practices specific to caravan parks, and is the second of its kind produced by the City Council for local industry. A similar manual distributed in 1996 to the hotel and resort industry has already prompted considerable water savings for many of the City's resorts, hotels and motels.

Figure 4.1 Mayor Gary J Baildon

It is anticipated that the guide will be readily embraced by the caravan park industry, which has already shown a willingness to become involved in water conservation. Much of the information contained in the guide was gathered at the WaterWise Caravan Industry Expo, held in March, 1997, and involving more than 100 South East Queensland caravan parks, a major trade display and relevant workshops.

Both the expo and the guide are 'firsts' for the Queensland caravan park industry. The guide is designed to be accessible and practical, offering advice on how to be WaterWise, without sacrificing service levels and the comfort of visitors.

I would like to thank in advance all those who will use this document to benefit their business and the City as a whole.

Gary J Baildon

Mayor

Message from Caravan Industry Australia

WaterWise is a project which has the total support of Caravan Industry Australia (Queensland) and one which can save operators and the community countless thousands of dollars.

As every caravan, camping and relocatable home park operator knows, water is a major operational cost and waste of water by tenants is a major problem.

Anything which we can do to bring this to the attention of operators and guests will lead to at least a partial alleviation of the problem.

Perhaps water is something we all take for granted. Perhaps we don't fully consider or appreciate the short or long term ramifications of a dripping tap, a leaking cistern or an underground pipe breakage.

It's not just what it can cost your park directly but it's part of the broader picture of infrastructure costs to provide water to an expanding community.

Every park has a part to play in lessening these costs and reducing the need for rapid infrastructure expansion. We need to be responsible citizens.

We applaud Gold Coast City Council for their enterprise in initiating this project and WaterWise Queensland for becoming a joint venture partner. We thank them for recognising our industry as an important part of the project and process.

We look forward to your support as WaterWise and Caravan Industry Australia (Queensland) progress and co-operate with this important initiative.

Ron Chapman

Executive Director

Message from WaterWise Queensland

Australia is the driest continent on earth, yet the amount of water we use has increased dramatically over the past 20 years. The simple truth is if we continue this trend, we simply will not have enough water to sustain our future populations.

WaterWise is a long term strategic campaign designed to increase public awareness about water issues and to encourage more efficient use of water. The primary focus of WaterWise is to educate the community of the economic and ecological benefits of reducing water consumption. The long term goal of WaterWise Queensland is to reduce overall water consumption by 20 percent.

This will save the Queensland Government $40 million in infrastructure development costs, save local government $40 million per year in water treatment and pumping costs and help to preserve our natural environment.

I am sure that you will find this WaterWise Caravan Park Information Booklet to be of immense benefit to your business. It really is easy to be WaterWise. Common sense, allied with water efficient technologies will enable your caravan park to dramatically reduce its water consumption and thereby save money and help to preserve the natural environment.

Remember, the WaterWise Queensland team is here to help. If you have any questions at all about WaterWise and how you can save water, save money and save the environment, please call myself or David Wiskar on (07) 3224 2716.

John Clowes

Manager, WaterWise Queensland

Acknowledgements

WaterWise Gold Coast thanks the following organisations and people for their assistance and expertise:

Caravan Industry Australia - Ron Chapman, Treasure Island Holiday Village - Ray Bristow, Ashmore Palms Caravan Park - Ria and Frank Illich, Gold Coast City Council Tourist Parks - John Tilton, Mt Warning Caravan Park - Preen family, Rental Management Services - Simon Lee, Stradbroke Island Tourist Village, Currumbin Sanctuary - Shane Holborne, Trinity Lutheran College - Bob Cray, All Saints College - Maurie Hansell, Expert Plumbers Advice - Allan Archie, Water and Energy Saving Systems - Don Arms, Con-Serv Corporation - Bryan Nothling, Why Wait Plumbing - Gary Mays, Blue Lagoon - Ken Peuker, Greening Australia - Phil Watts, WaterWise Queensland - John Clowes and David Wiskar, Gold Coast City Council - Councillor Daphne McDonald, Darren Hayman and Graham Walker, Wet Paper Publishers and Consultants - Bob and Mark Moffatt, Flying Fox Consultants - Christine Lane, Bookera Services – Rosemary Lancaster. Belview Park Plumbing - Don Ponti.

Introduction

About WaterWise Gold Coast

WaterWise Gold Coast is a public and school education program funded by the Gold Coast City Council and run by a team of consultants appointed on an annual basis.

In 1992, it was predicted that the Hinze Dam (local water supply for Gold Coast City) would need to be extended in the year 2007, as shown by the graph below, at an estimated cost of $40 million.

Since the introduction of the WaterWise education program, this extension has been put back to the year 2020.

More importantly, by 1996, water consumption had dropped by 12 per cent though the population of the Gold Coast had increased. The savings in water treatment costs for this increased population has been estimated at $1.7 million. The aim of the program is ultimately to reduce water consumption in the region by 20 per cent.

This WaterWise information guide for caravan parks is the result of a combined WaterWise Gold Coast (Gold Coast City Council), WaterWise Queensland and Caravan Industry Australia Caravan Park Expo, held in March 1997 (see Figure 8.1).

A number of sections have been adapted from Expo presentations and workshops, while others are from interviews with caravan parks and related businesses in South-east Queensland.

'The savings in water treatment costs for this increased population has been estimated at $1.7 million.'

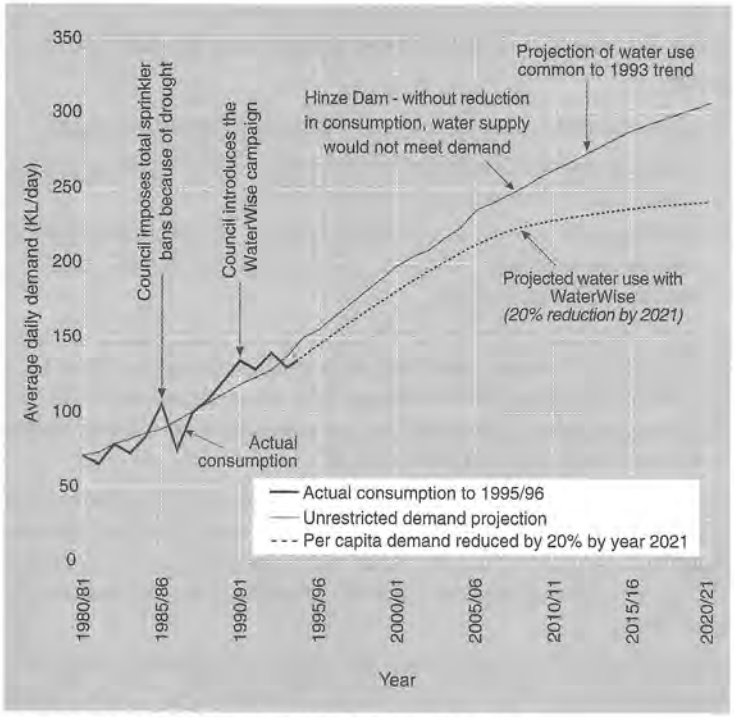

Figure 7.1 An update on the effect of the WaterWise campaign

Why we need to conserve water

Increasing population

- Queensland has a rapidly increasing population as between 1000 and 1500 people move into this State every week. All these people use water.

Increasing per capita use

We have a rapidly increasing per capita water use and a rapidly increasing population.

- In 1934, Queenslanders on average used 220 litres of water per person, per day.
- By 1954, this had risen to an average of 350 litres of water per person, per day.
- In 1997, the average use was 635 litres of water per person, per day.

High cost of water supply system

The Queensland Government estimates we have $9.3 billion invested in water supply infrastructure – $15,000 for every home in Queensland. On top of that are the system's running costs. Approximately one-third of each household's rates goes towards running the water supply and sewerage systems.

Preserve our natural environment

Our future is bleak without water. We need to maintain clean water systems and preserve our valleys and natural ecosystems – not flood them for dams.

Water is a precious resource – we must conserve and protect it!

Figure 8.1 WaterWise participation in the Caravan Industry Expo, 1997

How to start a WaterWise program in caravan parks

You can conserve water in your caravan park by these strategies.

- Changing people's habits so they do things differently, for example, taking shorter showers and turning off the tap.
- Installing and using water-saving technology like flow control systems, shower roses, infra-red urinals, dual flush toilets and front-loading washing machines.

In the caravan industry, water-saving technology is a key factor because while time can be spent educating visitors, they are only visiting for a short time and getting them to change their water use habits is difficult. Water-saving technology means you can conserve water without having to rely on how people choose to use it.

Water-efficient products can help you to save money, save energy and save water. As businesses, many caravan parks are also paying trade waste and sewerage charges. Water into your premises costs money and so does water going out. Reduce the water in and you reduce the water out.

It can cost money to save money via water conservation, particularly the installation of water-saving devices. If your budget is tight, retrofit your park progressively over months or years. Work out an installation

plan and payback projections which start small and build up over time. Reductions in water and related charges will still occur.

The first step towards reducing your park's water use is to know how much water it is using right now. In various sections in this guide, you can read about how to conduct your own water audit or how to have a WaterWise master plumber audit your park (page 37), how to monitor your water use (page 9), how water meters can help you (pages 15 and 16) and how to detect leaks (page 17).

You will also find six examples of water-saving technologies and products in this guide. They are reviewed to give you ideas about how you can use technology appropriate to your park to save water, energy and money. Where possible, we have selected caravan industry examples; where industry case studies have not been available, we have written about related industries. You will find information on flow control systems in the Gold Coast City Council's tourist parks (page 19), shower roses and a wastewater treatment system at Mt Warning Caravan Park (page 21), infra-red urinals at Queensland University of Technology and Sunnybank Hills State School (pages 23 and 24), water conserving landscaping at Currumbin Sanctuary (page 26) and Trinity Lutheran College (page 29), front-loading washing machines (page 25) and meters at Stradbroke Island Tourist Park (page 16). As well, there are short examples of innovations and ideas being undertaken by industry.

This is just a start. We suggest you take the ideas which are relevant to your park then research further and adapt them to fit your situation. If you would like to know more about each case study, there is a contact list at the back of this guide and you are invited to contact relevant people and talk to them personally about their experiences with water conservation.

How water conservation can save your business money

In 1995/96, the Hyatt Regency Resort Sanctuary Cove installed 9 litre per minute water-conserving shower roses in its 247 guest rooms. The engineer responsible for this calculated the hotel's savings and payback for this installation. To assist your own calculations, the Hyatt's information is detailed in Figure 9.1 on this page.

Worked example from Hyatt Regency Hotel

- One person @ one 10 - minute shower per day with old 27 litre showers
  = 270 litres.
- One person @ one 10 - minute shower per day with new 9 litre per minute showers
  = 90 litres, which is one - third of the original consumption.
- 70 per cent occupancy for one year
  = approx. 63 100 double rooms and potentially 107 000 guests.
- Each guest @ one 5 - minute shower per day using the existing shower roses
  = 14 445 kilolitres of water.
- Each guest @ one 5 - minute shower per day using the 9 litre shower roses
  = 4 820 kilolitres, a saving of 9 625 kilolitres.
- With basic water and trade waste costs @ $1.60 per kilolitre, this becomes a saving = $15,400 per annum (not including energy savings).
- To purchase and install the shower roses for each guest room, the Hyatt Regency is calculating less than a one year payback.

Figure 9.1 An example used by a chief engineer to calculate a five star hotel's payback details for the installation of water conserving shower roses throughout guest rooms.

Know your caravan park water monitoring

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by Graham Walker, Co-ordinator Assets Performance, Gold Coast City Council.

How much do you know about the water usage within your park?

Know where the water pipes run throughout your park

If you do develop leaks and you see a wet area on the ground, you will know whether it is coming from a water pipe, or if it is a drainage problem or soakage due to other causes.

Consistently read your water meter

Very few residents in an average household read their meter regularly, how about you? Water meters are not difficult to read most simply read in straight kilolitres (kL).

The benefits of regular readings were highlighted when The Islands, a group title subdivision at Currumbin, solved a major problem with their water consumption. They produced a series of graphs, not just outlining weekly water use, but daily water use.

They monitored a six-month period on a half-daily basis (day and night) and found a very high usage during the night, which is usually a low water-use time.

Eventually they found they didn't have a leak, but that several residents were leaving sprinkler systems on all night. Those systems use a lot of water if they are just left to run. They were easily able to rectify the problem with sprinkler controls.

Figure 10.1 Graham Walker, Gold Coast City Council

Know your water consumption

Before you even think about purchasing water-saving equipment for your caravan park, find out what your water consumption is and where the water is going in your park. This can be done simply by doing graphs yourself.

If you do read your meter on a regular basis, you will know that when your consumption suddenly jumps, there is something wrong and you will need to look for a cause.

Installing check meters

Installing check meters in strategic locations in your park is very useful if your system allows you to do that. You may need to make some minor changes in the internal lines round your park so you know which lines are mostly for irrigation, which are servicing the amenities blocks and which lines are leading to on-site cabins. Rather than initially installing meters on each and every caravan, you can work in bulk in this way and gradually move towards individual metering.

If you want to manage the water in your park, you need to understand where that water is going. If something goes wrong, you can then find the source of the problem quickly.

Benchmark your usage

If you decide to install water-saving equipment in your caravan park, first benchmark your usage so you at least know if you are getting some results. Before you start to install water-saving devices, decide which areas you are going to change and find out what your current usage is in these areas. Once you do this initial benchmarking, you will know when you are getting results from water-saving equipment.

The first step is to understand your park's water use habits. Once you know that, you can start to think about how you can change these habits to conserve water.

Graham Walker of Gold Coast City Council can be contacted at:

PO Box 5042, Gold Coast Mail Centre, Qld, 9729

Phone: (07) 55 816 000

Water Usage Record (example only)

Date	Meter reading	Amount used	Comments
1/6/97	1234.567	0	1st reading
1/7/97	1273.367	38.8 kL	no rain
1/8/97	1294.967	21.6 kL	rain 4 days
1/9/97	1311.447	16.48 kL	installed shower roses

Figure 10.2 An example of a Water Usage Record

Water auditing caravan parks – two examples

Allan Archie is a WaterWise plumbing trainer and consultant with Expert Plumbers Advice. After the WaterWise participation in the Caravan Industry Expo in March 1997, Allan was asked to conduct water audits on two caravan parks one on the Gold Coast, the other in Brisbane.

The following two case studies detail Allan's water audits: how they were done and the calculated savings from the installation of water-saving devices like shower roses, flow controls, dual flush toilets and electronic urinals. Each case study shows the present water use rates and the potential use rates as a result of installing water-saving technology.

Gold Coast caravan park case study

This caravan park had a total of 182 sites:

- 96 permanent sites
- 8 weekender sites
- 24 on-site cabins
- 17 camping sites
- 37 tourist sites

Showers – present water use

Allan collected the following data in his audit:

- Present flow rate is 24 litres per minute
- Estimated average shower time is 4 minutes per shower
- Total showers per day (based on average occupancy) is 130 for 365 days per year

Calculation of present water use is:

24 x 4 x 130 x 365 = 4 555 200 L (4555 kL) per year

Showers – potential water use

If the potential flow rate could be reduced to 12 litres per minute and using the same data and calculation as above:

- Estimated average shower time is 4 minutes per shower
- Total showers per day (based on average occupancy) is 130 for 365 days per year

Calculation of potential water use is:

12 x 4 x 130 x 365 = 2 277 600 L (2277 kL) per year

Showers – savings

Allan's calculations on the potential savings in showers is:

4 555 200 L - 2 277 600 L = 2 277 600 L (2277 kL)

Savings in showers totals approximately 2 million litres or 2000 kL per year.

'Savings in showers totals approximately 2 million litres or 2000 kL per year.'

Gold Coast caravan park	
Savings in shower	2000 kL
Savings in basins	385 kL
Savings in urinals	1200 kL
Savings in toilets	38 kL
Savings (permanent sites)	2000 kL
Total water savings	5600 kL
Total hot water savings	1000 kL
Energy savings per year	$2,810
Water savings per year	$4,100
Total financial savings per year	$6,900

Brisbane caravan park	
Savings in showers	5700 kL
Savings in basins	1000 kL
Savings in toilets	1400 kL
Total water saved	8100 kL
Total hot water saved	1000 kL
Energy saved per year-	$3,300
Water saved per year	$7,000
Total financial savings per year	$10,300

Figure 11.1 Results from water audit

'Savings in basins total approximately 385 000 litres or 385 kL per year.'

Basins – present water use

Present flow rate is 18 litres per minute

Estimated use (based on average occupancy rates and length of time taps are used by each person) is 88 minutes per day for 365 days per year

18 x 88 x 365 = 578 160 L (578 kL) per year

Basins – potential water use

Potential flow rate is 6 litres per minute

Estimated use (based on average occupancy rates and length of time taps are used by each person) is 88 minutes per day for 365 days per year

6 x 88 x 365 = 192 720 L (192 kL) per year

Basins – savings

578 160 - 192 720 = 385 440 L (385 kL)

Savings in basins total approximately 385 000 litres or 385 kL per year.

'Savings in urinals total approximately 1.2 million litres (1200 kL).'

Urinals

One urinal only in the park, a unit which flushes 12 litres per minute, every five minutes, 24 hours per day, 365 days per year.

Average daily water use is 3 456 litres (3.5 kL)

Average annual water use is 1 261 440 litres (1 261 kL)

Below are the savings possible through the installation of an AAA electronic urinal, which flushes a maximum of 12 litres per flush, set to flush every hour only if used, with an average of 12 - 13 flushes in a 24-hour period, 365 days per year.

Average daily water use is 156 litres (15 kL)

Average annual water use is 56 940 litres (56 kL)

Urinals – savings

1 261 440 - 56 940 = 1 204 500 L (1200 kL)

Savings in urinal total approximately 1.2 million litres or 1200 kL per year.

'Total savings in toilets based on occupancy are: 38 000 litres (38 kL) per year.'

Toilets

Current toilet operates at 12 litres per flush

Dual flush toilet operates at 9/4.5 litres per flush

Calculations based on one full flush and 2.5 half flushes per woman per day, one full flush per man per day.

Total savings in toilets based on occupancy are 38 000 litres or 38 kL per year.

Permanent sites

Based on 100 per cent occupancy, the water saving calculations focus on the average domestic situations of showers, toilets, bathroom basins and kitchen basins.

With the installation of water-saving shower roses, dual flush toilets,

and flow control devices, this park can expect to save 2 million litres (2000 kL) in water in permanent sites per year.

Total water savings

Based on the above calculations, this park could expect to achieve water savings of approximately 5.6 million litres or 5600 kL per year.

Hot water savings

Research indicates that 40 per cent of total water use is hot water in showers and hand basins. Calculations are based on the heating of 1 litre of water to 50 degrees centigrade.

With the installation of water-saving shower roses/flow control, potential hot water savings are approximately 1 million litres or 1000 kL per year.

Energy savings per year

Based on the tariff being paid by the park for electricity kWh and gas costs.

Total potential savings are $2,810.

Water savings per year

Based on the current commercial water charges from the council, the park could expect potential savings of $4,100.

Total financial savings per year

Energy savings $2,810 + water savings $4,100 = $6,910.

'Energy savings $2,810 + water savings $4,100 = $6,910.'

Brisbane caravan park case study

This study involved one caravan park with a total of 42 site units with ensuites and four amenities blocks with 10 basins, 16 showers and 6 toilets each (totalling 40 basins, 64 showers, 24 toilets).

Showers present water use

Present flow rate is 21 litres per minute

Estimated average shower time is 4 minutes per shower

Total showers per day (based on average occupancy) is 330 for 365 days per year

Calculation of present water use is:

21 x 4 x 330 x 365 = 10 117 800 L (10 117 kL) per year

Showers potential water use

Potential flow rate is 9 litres per minute

Estimated average shower time at 4 minutes per shower

Total showers per day (based on average occupancy) is 330 for 365 days per year

Calculation of potential water use is:

9 x 4 x 330 x 365 = 4 336 200 L (4336 kL) per year

Showers savings

10 117 800 L - 4 336 200 L = 5 781 600 L (5781 kL)

'Savings in showers totals approximately 5.7 million litres or 5700 kL per year.'

Would you like to do a basic water audit of your caravan park?

Use the work sheets at the rear of this booklet on pages 38 to 43 or contact your WaterWise master plumber.

Savings in showers totals approximately 5.7 million litres or 5700 kL per year.

Basins – present water use

Present flow rate is 18 litres per minute

Estimated use (based on average occupancy rates and length of time taps are used by each person) is 247.5 minutes per day for 365 days per year

18 x 247.5 x 365 = 1 626 075 L (1626 kL) per year

'Energy savings $3,300 + water savings $7,000 = $10,300.'

Basins – potential water use

Potential flow rate is 6 litres per minute

Estimated use (based on average occupancy rates and length of time taps are used by each person) is 247.5 minutes per day for 365 days per year

6 x 247.5 x 365 = 542 025 L (542 kL)

Basins – savings

1 626 075 - 542 025 = 1 084 050 L (1 084 kL)

Savings in basins total approximately 1 084 050 litres or 1084 kL per year.

Toilets

Current toilets operate at 12 litres per flush

Dual flush toilets operate at 9/4.5 litres per flush

Calculations based on one full flush and 2.5 half flushes per woman per day, one full flush per man per day.

Total savings (based on occupancy) are 1 4000 000 litres or 1400 kL per year.

Total water savings

Based on the above calculations, this park could expect to achieve water savings of approximately 8.1 million litres or 8100 kL per year.

Hot water savings

Research indicates that 40 per cent of total water use is hot water in showers and hand basins. Calculations are based on the heating of 1 litre of water to 50 degrees centigrade.

With the installation of water-saving shower roses/flow control, potential hot water savings are approximately 1 million litres or 1 000 kL per year.

Energy savings per year

Based on the tariff being paid by the park for electricity and gas costs, total potential savings are $3,300 per year.

Water savings per year

Based on the current commercial water charges from the Council, the park could expect potential savings of $7,000 per year.

Total financial savings per year

Energy savings $3,300 + water savings $7,000 = $10,300

Financial payback

By July 1997, this caravan park had retrofitted one of its four amenities blocks at a cost of $1,590 and saved $2,100 in energy and water costs. The payback period for the retrofit was nine months

Metering – water meters can save water and dollars

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by Gary Mays of Why Wait Plumbing.

I'm going to look at things from a plumber's perspective.

From your point of view, water meters are either something that will cost you a lot of money or that you can make money from. It's really going to depend on the choices you make further down the track.

'Water meters are either something that will cost you a lot of money or that you can make money from.'

Everything revolves around the water meter because that is what Gold Coast City Council (and most other local governments) base their charges on. Although everyone loves to blame the water meter when they have a high water bill, plumbers rarely find the water meter is at fault.

We usually find that people are using the sprinkler every day although they are only supposed to use it three days a week. Then, when we look through the property, we see water wasted everywhere. People will only start conserving water when they are hit in the hip pocket.

We have installed water meters throughout the Oasis Shopping Centre and now the sort of water usage we are seeing there is absolutely mind boggling. Some individual restaurants are using something like 300 000 litres (300 kL) of water per month.

We have installed fairly sophisticated meters at the Oasis (not that expensive) which work on radio transmitters. They are in restaurants and anywhere that has heavy water usage in the shopping centre. We have been monitoring the meters for about four to five months and every time we give shop owners their spreadsheets and show them how much water they are using, they treat these things as their enemy.

In the end though, they are looking at it from the wrong perspective because everyone is using too much water and the reason they are using too much is because they are wasting it. It has taken the installation of water meters in that shopping centre to drive home to people how much water they are wasting.

Figure 15.1 Don Arms and Gary Mays

There is one particular restaurant there which produces a lot of meals, but has also used 367 000 litres (365 kL) every month for the last five months. That is an awful lot of water. When you walk into the kitchen the hot water taps are running all the time, flat out. That is generally the type of thing we see in commercial operations. The employees don't look at it as their water, so they don't care. What they forget is that in the end it matters to us all. They waste water shockingly and it's a matter of retraining people to understand that water is not a resource we can waste, it really is very important. That is probably why we have to look at the user pays system. We are used to it with electricity. With water we are all too used to turning on the tap and it is there we don't think about it.

In caravan parks, putting water meters on every site, for example, sounds expensive and it is probably not something worth contemplating without a fairly extensive pilot study. Using the example of the Oasis Shopping Centre though, the cost of the water meters and

'Since we put in the water meters, we know where the water is going and those using it are going to start paying for it.'

– we are talking about a computer-operated system with radio transmitters – will be recovered in just over one year. There are very few instances where you can say your capital costs will return to you within one year to 18 months, yet those are the sort of figures we are looking at in this case.

The shopping centre was used to writing off $30,000 to $40,000 every year in water charges. Since we put in the water meters, we know where the water is going and those using it are going to start paying for it. Suddenly, where before the 200 tenants were paying one 1/200th of the water bill, the people who are using it are now paying for it. That has made the likes of the people who own the shoe shop happy because they only use the water for making a cup of coffee. The only people who are unhappy are the people who are wasting the water and they are the ones we have to retrain.

In the end, education is the only way to change people's habits and we need to hit them in the hip pocket. The water meter will have to be used as an aid to educating and charging people for the cost of the water they use.

Gary Mays can be contacted at:

Why Wait Plumbing, 55 Lake Shore Drive, Monterey Keys, Q 4210. Phone: 0411 222 497.

Water meters in a caravan park

The information in this section comes from an interview with the owners of the Stradbroke Island North Tourist Park.

The Stradbroke Island North Tourist Park is a family-owned and operated park, located at Point Lookout. It has approximately 60 sites, 50 of which are permanent or permanent casual sites. It has one amenities block with five showers and five toilets each in the men's and women's bathrooms. The park is on four hectares of land.

Meter installation

The owners of the park are currently installing water meters on each of their 50 permanent and permanent-casual sites. At the same time, they will meter the showers and toilets in the amenities block, the laundry, shop, swimming pool and irrigation system.

Their reason for undertaking this program is simple: they want to save water. In order to save water, they want to monitor their water use, detect leaks and, in the end, reduce their water rates.

According to the park owner, they had been thinking about the need to monitor and conserve water for about 12 months, when they attended the WaterWise Caravan Industry Expo in March 1997. During the Expo, they gathered information and inspiration and since then have purchased their meters and installed them between June and August 1997.

While originally prepared to purchase the meters at $150 each, the owners hunted around and were able to strike a bargain on a bulk purchase.

Figure 16.1 Water meter with remote monitoring computer

Their plan was to inform residents about the meters prior to their installation. In the initial stages at least, they will not charge residents for their water use based on individual meter readings, but will work with residents to monitor their water use. They will also discuss how to conserve water in basic ways.

The meters will be read weekly.

The owners expect the metering project to assist residents, guests and staff in the park to make considerable gains in water conservation in both the short and long term.

Other initiatives

Since purchasing the park eight years ago, the owners have embarked on a comprehensive upgrading program. One of their next plans is to set up a bore for irrigation in the next 12 months. Ultimately, they are hoping to link their toilet system to the bore and to use this water instead of potable water for their toilets.

For further information about the metering project contact park manager Brian Mitchell at:

Stradbroke Island North Tourist Park, Dickson Way, Point Lookout, Q 4183. Phone: (07) 3409 8127.

Figure 17.1 Water meter

Meter tips

- Most if not all water meters on the market are constructed to Australian Standards.
- While it is difficult to know how long a water meter will last, 4000 kL is generally accepted as a typical lifespan for a 20 mm meter. Most meters are guaranteed for seven years. (When meters pass their 'use-by' date they will tend to run slower by approximately 57 per cent)
- When purchasing a meter or meters, first decide what your specific needs are (for example whether they are vandal proof) and then discuss details with a variety of suppliers. Also ask suppliers for an accuracy curve and performance indication at different flow rates and usage levels.

Leak detection in caravan parks

The information in this section comes from an interview with Simon Lee, Director of Rental Management Services.

Rental Management Services operates four major caravan and relocatable home parks throughout the Gold Coast: Casino Village Caravan Park, Riverside Home Park, Burleigh Town Village and Tweed Broadwater Village.

For a number of years, leak detection has been an important aspect of these parks' maintenance programs. This simple procedure has paid dividends in reducing excess water costs.

'Rental Management Services has reduced water consumption by at least 12.5 per cent...simply by implementing a residents watering system.'

Water monitoring

Every day, at each of the four parks, the main water meter is read (at present, there is only the one main meter at each park).

Spreadsheets on water use are kept, with daily figures detailed and recorded alongside rainfall and other variables.

Simon Lee reads the spreadsheets every few days and notes carefully the average daily water use figures. If there are any large or dramatic changes in this area, he will check the recorded rainfall figures for the same period of time.

If, for example, there has been high rainfall in the period of increased water use (in high rainfall water consumption should decrease), he immediately begins the leak detection procedure.

Leak detection

This simple process involves one staff member checking the water meter and recording its readings every 15 minutes from midnight to 5 a.m. over one morning. The assumption behind this monitoring is that water use will be minimal at this time and the meter should therefore move in very small increments of approximately 1020 litres or not at all.

If significant readings occur through the night, the director knows there is probably a leak at the park. He then organises a leak detection company to visit the park with sonar equipment to check the pipes for major leaks. This usually costs $180 and, according to the director, is well worth the expense in order to detect major leaks early.

Because some water mains can have silent leaks, the maintenance program also has a basic leak detection process which can be done by the parks themselves. This involves the following steps.

1. Notifying vans and homes about the leak detection test and requesting they stop using water for a particular 10-minute time frame.
2. Turning off all water stopcocks throughout the park.
3. Recording the water meter reading.
4. Filling a 9 litre bucket with water.
5. Reading the meter again and checking if only the 9 litres have been recorded.
6. If more has been used, calling in the leak detection company to find and fix the leak.

In early May 1997, 2500 litres (2.5 kL) of water were being used every hour during the night at one park. All efforts at leak detection by Mr Lee and the leak detection company had failed. His conclusion was that garden sprinklers were being used at night. He walked through the park during the night to find the nocturnal irrigators with success.

Other water-saving initiatives

Rental Management Services has reduced water consumption by at least 12.5 per cent at Tweed Broadwater Village in the past year, simply by implementing a residents' watering system. Like the general

Figure 18.1 Casino Village Caravan Park

community, they are permitted to water their gardens every second day (for one hour morning and night) according to their home numbers. There is no watering at all on Mondays and no timers are permitted.

In another of the parks, all the tap washers and 150 toilet cisterns were replaced in early 1997. As most of the relocatable homes in the park were 15 to 20 years old, it was assumed that most of the cisterns no longer worked as efficiently as possible and should be replaced.

The cost of this exercise and payback period have yet to be calculated by Simon Lee but he is confident that when the new Gold Coast City Council water pricing strategy is implemented, the park will quickly come out ahead financially.

Simon Lee of Rental Management Services can be contacted at:

Casino Village Caravan Park, PO Box 6595, Gold Coast Mail Centre, Q 4217. Phone: (07) 55 944 188.

Figure 19.1 Casino Village Caravan Park

Leak detection tip

Don Arms from Water and Energy Saving Systems estimates that one toilet leaking 1 litre of water per minute will add up to 1.5 kL per day and 547 kL per year. At current Gold Coast City Council water charges of 99c per kL, that adds up to $541 per year for one toilet with one leak. Even if it costs $50 to repair, you are still $491 ahead.

Flow control systems in caravan parks

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by John Tilton, Tourist Park Controller, Gold Coast City Council.

We originally looked at water consumption in the Gold Coast City Council's tourist parks because the shower hot water systems were not coping with demand in peak periods. We needed to fix the problem either by getting new shower hot water systems in place or reducing the amount of water consumed because in peak periods we were simply being barraged with complaints about lack of hot water in the bigger parks.

The first questions were 'Where do we start? What do we put in? Do we put shower roses in? Do we put restrictors in?' I spoke originally to WaterWise in Brisbane and they gave me some initial advice and references to speak to, for example, the Tweed District Hospital and Royal Pines Resort. These were major companies that had installed flow control systems, whereas many companies were using shower roses, all of which were recommended by WaterWise but for various levels of use.

We felt we'd give a couple of the flow control systems a go, trial them and see which one worked, before we went into our seven parks.

Primarily, our problems were: running out of water and people wanting good showers. We are in the service industry and I don't think a lot of these sales people really understand that there is more to a purchase

Figure 19.2 Burleigh Heads Tourist Park

choice than just buying a shower rose. We have got to weigh that item of equipment's performance up against the quality we provide and the dollars we might lose as customers go out the door to the place down the road that has not got flow control or shower roses in place.

We also looked at the balancing effect at the same time as the sinks and the urinals, because this was another major problem in our parks. 'Fred' would be in one shower and 'Joe' would go into another and the next minute they'd be trying to balance the pressure and temperature of their showers. That was an ongoing issue if more and more people came in, they'd spend more time in their showers trying to fix them, annoying them and annoying us and using more water.

'We felt we'd give a couple of the systems a go – trial them – and see which one worked, before we went into our seven parks.'

After checking with WaterWise, we went on to trial the Platypus system and since then we have tested the Jemflo system. They are flow control systems which are placed behind the taps so you can install whatever type of shower rose you like. They control the flow of water. You can get different sized controls to restrict water to whatever levels you wish and they can be placed on the basins and showers to do that job.

The other benefit with these systems is that you can use cheap shower roses. When I say cheap, I mean that our shower roses are stolen or vandalised in public amenity blocks or Council caravan parks so there is no point in installing the more expensive water-saving roses. In cabins, I think there could be a use for shower roses, or in areas where you know who's been in there last, so if the shower rose is stolen you know who's responsible.

In a public place such as the amenity block, I've never seen them work. We have already outlayed about $700 in eight months since the Main Beach park re-opened. A mistake was made there and water-saving shower roses were installed instead of the flow control system, which had been specified in our redevelopment. In the eight months since, I've spent $700 on replacement shower roses.

We will soon be getting rid of the roses and installing a flow control system.

The advantages include a substantial cost saving. In heating I estimate after six months we saved 20-25 per cent in heating costs and I have now turned off one of the burners in the larger parks. We had two burners in our amenities block and I've turned one off for a lot of the time and we bring it back on in peak times. So not only are we not having to put another system in, we are actually reducing and turning off the ones we have got there.

Figure 20.1 Kirra Tourist Park

We have also saved approximately 25-30 per cent in water. We don't run out of water, customers are happy, there has not been one complaint about the system in place. The only thing I stress with this flow control system is that it works better with a shower rose where the water falls rather than something than comes out of the wall. People can't see any difference in water flows then. We haven't received any complaints about the showers.

The only comments we have had back are from people a lot happier now that they don't get scalded or end up with a cold shower when the bloke next door comes in and turns his shower on.

The up front installation cost is about $50 per shower or tap. So with the cost of an ordinary universal shower rose at $20, you are up for around $70 total, but you also get the advantage of balancing as well as restrictions. The cost to us for one amenity block with about 30 showers and 15 basins was approximately $3,000 up front. I expect that cost to be recovered within a couple of years.

John Tilton can be contacted at :

Gold Coast City Council, PO Box 5042, Gold Coast Mail Centre, Q, 9729. Phone: (07) 55 816 000.

(Editors note that Con-serv has developed the Vanguard shower rose, a heavy duty brass shower which is highly theft and vandal resistant. The fixed shower angle has no moving parts and is virtually impossible to remove without specialised tools.)

Shower roses in a caravan park

The information in this section comes from an interview with the Preen family, owner/operators of the Mt Warning Caravan Park.

Mt Warning Caravan Park is located in the foothills of Mt Warning in northern NSW.

It has 94 sites: 15 permanent, 41 powered holiday sites, 32 tent sites (with an overflow camping area) and six self-contained cabins.

It has one amenities block in the centre of the park with four showers and toilets in the men's bathroom, four showers and six toilets in the ladies' bathroom, as well as a laundry.

The water system is a bore down to 80 metres with two 45 500 litre tanks.

All the plumbing in the park is over 20 years old and will be replaced and upgraded in stages over the next two years.

The current owners have been operating the park since December 1996 and in that time have installed water-saving shower roses and an integrated wastewater treatment and irrigation system.

When the owners bought the park it was under order of closure partly because of sewerage runoff into the neighbouring creek. This situation has now changed because of the new wastewater treatment system.

Because of the age of the park's plumbing, the owners have experienced between six and eight major mains breakdowns in the five months they have been operating the park. Prior to installing the water-conserving shower roses, these breakdowns meant large water losses from the bore water tanks. Water was then pumped from the creek to refill the system because the bore alone could not maintain water stores.

The previous owner originally had the park connected to the Murwillumbah water system known in the local area as the Mt Warning line. Maintenance and upkeep were neglected by the park and they regularly drained the line at night leaving neighbouring properties without water. Hence the shift to its own bore water system.

'Prior to installing the water - conserving shower roses ... breakdowns meant large water losses from bore water tanks.'

This was the rather difficult environment and infrastructure the current owners purchased in 1996.

Shower roses

The original shower roses at the park were large, silver-chrome models. According to the owners, 'everyone loved the roses because there was so much water. People would turn the showers on and water would flow out from under the cubicle doors.'

'They have received requests from guests about where they can buy the rose.'

Like many people, the owners had only experienced the early water-conserving shower roses, which they found stung particularly sunburnt bodies! Because of these experiences, they didn't think seriously about installing water-saving roses.

Yet in emergencies including leaks, breakdowns or a full park, they were pumping a tank's worth of water from the creek, just for showers and toilets. The bore water system could not maintain the supply.

They tried guest signs asking people to save water with short showers to no avail. They thought about installing solenoids in the showers and limiting showers to three minutes, but found the cost $700 a shower prohibitive. They said, 'for that price we could put an extra bore and tank in and we wouldn't have to restrict showers.'

In March 1997, a guest who worked in water conserving products stayed at the park. He discussed shower roses with the owners and set up a trial to demonstrate his product: a 6 litres per minute, $12 a shower rose.

The owners were impressed with the quality of the shower and the water savings, and purchased and installed the roses in every shower.

Results

The owners have not received a single complaint about the showers since the water-saving roses were installed. Instead, they have received queries from guests about where they can buy the same rose.

The bore system now maintains its supply even in peak periods and breakdowns just from the water savings in the showers.

The park uses gas for heating the shower water. Since the shower roses were installed, the gas bill has halved from $240 to $120 a fortnight. Over a year, approximately $3120 will be saved on gas alone.

The park's location attracts bushwalkers, birdwatchers and families and they have found vandalism and theft are generally not an issue.

They are therefore confident that the roses will remain intact over time and have been without problems so far.

Figure 22.1 Mt Warning Caravan Park

Problems

According to the owners, the only problem pressure fluctuation in the showers occurred when the roses were initially installed. They quickly had their pump system altered and since then have had no problems with the system.

Next steps

Soon after the new shower roses were installed, the owners had an integrated sewerage, wastewater treatment and irrigation system installed at the park at a cost of approximately $50,000.

They plan to extend their garden and revegetate other park land,. irrigating it with the treated water from the system. Their only concern now is that they won't have enough water to supply their landscaping needs!

The Preen Family can be contacted at:

Mt Warning Caravan Park, Mt Warning Rd, via Murwillumbah, NSW 2484. Phone: (066) 795 120.

Infra-red urinals

The information in this case study was supplied by Ken Peuker from Blue Lagoon. It was reviewed in a workshop at the WaterWise Caravan Park Expo in March 1997.

Queensland University of Technology case study

In 1994, the Queensland University of Technology (QUT) carried out a trial of infra-red urinals at its Kelvin Grove campus. The test period was 43 days and the product was the Zip Flushmatic Water Management System for Urinals.

According to QUT, the results were as follows.

- Flushmatic urinal flushed 16 times over each 24-hour period.
- Standard automatic cistern flushed 144 times over the same period.
- Water usage on a fully automatic cistern without Flushmatic was calculated to be 788 400 litres (788 kL) per year.
- Water usage with Flushmatic fitted was calculated to be 87 600 litres (87.6 kL) per year, flushing on demand with a 15 minute delay after use.
- No odour problems were noticed.

Figure 23.1 Infra-red unit in public toilet

'QUT estimated they would conserve 700 800 litres (700 kL) per urinal cistern per year.'

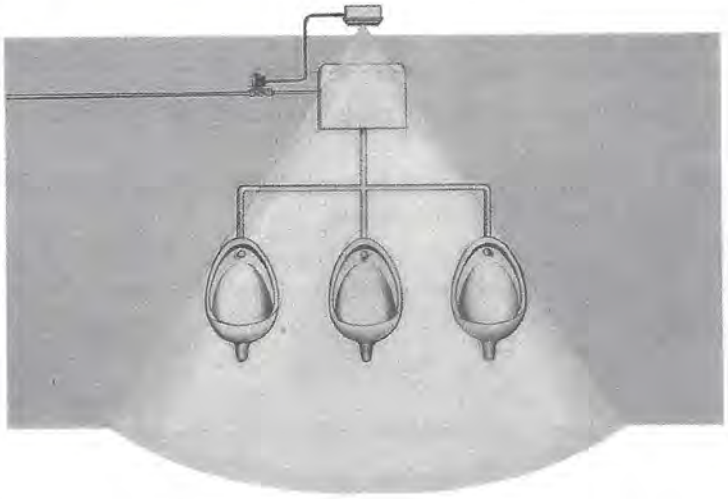

Figure 23.2 Automatic urinal flusher

QUT estimated they would conserve 700 800 litres (700 kL) per urinal cistern per year.

With 25 urinals currently installed at Kelvin Grove QUT campus, estimates calculated it would be possible to conserve a 'staggering' 17.5 million litres of water annually.

'This represents a saving of 226 000 litres (226 kL) for this one urinal (using two cisterns) for the two weeks.'

Favourable comment was also made about the minimal servicing required on the Flushmatic units compared to conventional cisterns.

Ken Peuker can be contacted at:

Blue Lagoon, 25 Jaguar Drive, Evandale Waters, Q, 4217. Phone: (07) 55 392 828.

Sunnybank Hills State School case study

The following letter describes the savings a Brisbane state school made through the installation of an infra-red urinal in the boy's toilets.

Although not an example from the caravan park industry, the similarities between school and park situations is clear.

'We have recently conducted a water usage test on one automatic flush urinal designated to our Years 1 and 2 boys. We found that this urinal, using two cisterns, used 230 000 litres (230 kL) over a 14-day period.

'With a Zip Watersaver installed we used only 4000 litres (4 kL) over the next 14-day period.'

'This represents a saving of 226 000 litres (226 kL) for this one urinal (using two cisterns) for the two weeks.'

'At all times the urinal was flushed to a satisfactory standard.'

'I intend installing Zip Watersavers on my remaining automatically flushed urinals.'

'Thank you for introducing me to this product.'

'John Kelly, Principal'

The water use figures for the school's old urinal are astounding yet the school principal, in discussions with WaterWise Gold Coast, explained the urinal was a long trough which flushed every two minutes, 24 hours a day, seven days a week.

Because of its age, the urinal was also constantly running water and leaking.

Since Sunnybank Hills State School installed their infra-red urinals, the school has grown by 150 children.

However after the school installed the infra-red urinal system in the male toilets, they estimated they have now saved $4000 in water charges.

Front-loading washing machines

If every household in Australia converted to a front-loading washing machine, the saving would be approximately 100 billion litres of water a year, according to the Front Load Washers Association.

The association is an industry group which formed in 1994 to publicise the energy, resource and water conservation features of front-loading washing machines.

Thirteen companies are represented by the association, including Whirlpool, Miele, Bendix Appliances, Hoover, Simpson, Bosch, Blanco, General Electric, Omega, Smeg, Asko Appliances, Eurotech and Thor.

The association says washing machines are the biggest users of water inside Australian homes.

Water consumption in top-loading machines can exceed 200 litres for every wash, while front loaders use between 64 and 80 litres per wash. Because they use less water, up to 50 per cent less detergent needs to be used in front loaders.

Front-loading machines also use approximately 30 per cent less energy than top-loading machines and many carry the official five star energy rating.

'Research commissioned by the Front Load Washers Association concluded that if all Sydney homes installed front-loaders, the city would save 38.6 billion litres of water and over 260 kWh of power per year,' said the association's president Ken Evans.

These figures are backed up by the fact that Sydney Water, the Queensland Energy Authority, WaterWise Queensland and Melbourne Water all recommend front-loaders to consumers.

Under the national Water Conservation Rating and Labelling Scheme, most front-loaders have the highest possible AAA rating.

According to a 1996 Lever Rexona survey, the average domestic wash is 2.5 kg (dry) with eight loads per week per family.

Perhaps relevant to caravan parks, one commercial-sized front-loading machine is currently sold in Australia. This is the Bendix WMB.1062 M Maxi Washer. It is AAA rated and its features include:

- 6kg wash load capacity;
- 90 litres water consumption per wash (this is 40 per cent less than equivalent top-loading machines;
- 500/1000 rpm spin-speed;
- cycles for all types of garments;
- automatic safety door interlock;
- connects to hot and cold or cold water only;
- heavy duty, six point suspension system;
- dimensions of 85 h x 60 w x 60 d (centimetres); and
- 2 years comprehensive warranty, 5 years motor, 10 years stainless steel.

'Water consumption in top-loading machines can exceed 200 litres for every wash...'

Figure 25.1 Front-loading washing machine

Disadvantages of front-loaders for caravan operators may be:

- longer cycle times; and
- wash cycles cannot be interrupted.

For further information about the Front Load Washers Association, contact:

Ken Evans, Major Electrical Appliances (MEA), Showroom 5, 107 Ferry Rd, The Brickwork Shopping Centre, Southport, Q 4215. Phone: (07) 55 91 3379.

Water-conserving landscaping for caravan parks

The gardens and lawns of caravan parks can be water guzzlers. Ensuring your landscaped areas are attractive to guests and residents is crucial yet at the same time it is possible to make them WaterWise too.

The two case studies presented here are both from service industries, not from caravan parks, but their practices are worth noting. (If your park has some great WaterWise practices, do let us know we would like to spread the word!)

The Currumbin Sanctuary and Trinity Lutheran College both encounter similar issues to caravan parks. They aim to look good, to withstand high public traffic and exuberant youngsters, and to be cost effective. The messages they carry about WaterWise landscaping will certainly be relevant to your park too.

Water-conserving landscaping – case study 1

This section has been written from an interview with Shane Holborn, Horticulture Manager, Currumbin Sanctuary. An extended case study is found in the Manual of best practices for large hotels and resorts available from WaterWise Queensland, Wet Paper or the Gold Coast City Council (see addresses on pages 46 - 48)

The Currumbin Sanctuary is a major Gold Coast tourist attraction which exhibits a wide range of native flora and fauna. It also operates an education centre which caters for schools and colleges.

The Sanctuary is located on 29 hectares of land at the southern end of the Gold Coast. To date, approximately 18 acres have been developed and used by the Sanctuary for public access. It is owned by the National Trust of Queensland.

Figure 26.1 Trinity College landscaping

In 1994, the Sanctuary attracted approximately 510 000 visitors. Over the next five years they expect visitor numbers to increase to around one million people per year.

The Currumbin Sanctuary's main priority is the preservation of native flora and fauna. In line with this is a commitment to simulate natural conditions for animals and to exhibit them in an educational manner. The Sanctuary aims to preserve the site's existing flora and expand on that stock by reintroducing species that are endemic to the area as well as species which are listed as rare and endangered.

The Horticulture Manager has now been at the Sanctuary for six years and in that time has focused on the operation's mission of 'preserving and promoting our natural heritage.' He receives assistance from the Department of Environment which now lists the Sanctuary as a safe haven for rare and endangered plants. He believes there is a great need to preserve the flora of the South-east Queensland bioregion because of ongoing urban development and related land clearing. 'We have a moral obligation to bring these species back from the brink,' he said.

Reclaimed water for irrigation

Over the past six years, approximately 85 per cent of the Currumbin Sanctuary's grounds have been irrigated with reclaimed water.

The horticulture section worked with the Gold Coast City Council to bring the water to the edge of the Sanctuary property. From there, horticulture staff laid 63 mm pipe around the perimeter of the grounds and tapped lines off that to irrigate most of the gardens and lawns.

The majority of irrigation occurs at night when the public is not on site and evaporation rates are lowest.

The Sanctuary undertook the reclaimed water scheme when they realised that to provide ideal growing conditions for their landscapes, they would have to supplement their current irrigation system. Potable water irrigation alone was wasteful of both a precious natural resource and money.

The reclaimed water for irrigation utilises two processes.

- The Gold Coast City Council uses high pressure pumps at night to pump water from its Elanora treatment plant on to Benowa. While this occurs, the lines to the southern Gold Coast are also pressurised and so the Currumbin Sanctuary is able to take advantage of this to irrigate all its public areas at night without using its own pump. Sprinklers are placed near pathways and public access areas and energy is saved by not having to use its own pump at this time.
- The Sanctuary has a reclaimed water pump which lifts pressure during the day. This is run on all gardens and non-public areas during the daytime. The pump is on an automatic timer and cuts off before evening.

Sanctuary staff have found reclaimed water is excellent for the gardens and lawns because of its high levels of nitrogen and phosphorus.

Initially, only lawns were irrigated with the reclaimed water to test its effectiveness. It was then tried on gardens and seemed to have no ill effects, in fact very good growth rates were recorded for many plant species.

The entire irrigation system operates on timers. While the Sanctuary recognises that it is usually better to water heavily once a week, they now prefer to water more often and lightly in order to prevent irrigation runoff. They therefore irrigate for 3060 minutes once a night or every second night depending on the garden area and its location to lagoons.

Total cost for the irrigation system was $45,000 including the high pressure pump, main irrigation lines and subsidiary lines.

Figure 27.1 Landscaping with mulch

'Over the past six years, approximately 85 per cent of the Currumbin Sanctuary's grounds have been irrigated with reclaimed water.'

This cost is balanced by an earlier annual excess water bill of $10,000, so the system more than paid for itself in five years. There is no cost for the reclaimed water.

Ongoing maintenance of the system is minimal, with filters cleaned weekly. It is believed the lift pump will eventually wear out though it has a life span of at least 10 years. In its five years of operation it has never broken down.

'To ensure the safest possible standards, the Sanctuary has put the reclaimed water irrigation on a separate tap system to the operation's potable water.'

Small areas of the Sanctuary do continue to be irrigated by potable water, but these are high profile, public areas adjacent to cafes and seating.

One of the initial concerns about the reclaimed water irrigation system was the possible effect on staff who handle pipes and sprays. However, after six years of operation, there have been no discernible health problems.

To ensure the safest possible standards, the Sanctuary has put the reclaimed water irrigation on a separate tap system to the operation's potable water. It operates on a plunger system and is inaccessible to anyone but horticulture staff.

Because the Sanctuary is constantly using the irrigation pipes, the lines are automatically kept clean. In periods of rain when irrigation does not occur, the irrigation valves are turned off so water cannot stagnate in the lines. The horticulture staff also flush the lines before using them after a break.

Native planting and landscapes

The Currumbin Sanctuary is an official haven for native flora and fauna. The only exotic plants in the area are those originally planted by the Sanctuary's founder Alex Griffiths. Since the Currumbin Sanctuary became a National Trust of Queensland property in 1974, no exotic species have been planted and any exotics that self-germinate are removed.

Figure 28.1 Drip irrigator

There are many benefits in developing and maintaining native landscapes for the Sanctuary. These include:

- minimisation of labour;
- minimal use of fertiliser;
- uniquely Australian landscaping which attracts birds and fascinates visitors;
- water savings; and
- cost savings.

The horticulture section undertakes a propagation program in order to have native plants which can cope with the wet, sub-tropical conditions of the Gold Coast and flower simultaneously.

The Sanctuary's horticulturalists are constantly searching for rare and endangered plant species and have found that despite the challenges, both horticultural staff and visitors delight in the successes they have in obtaining, propagating, planting and maintaining unusual and indigenous plants.

In 1996, the Sanctuary produced and distributed a botanical guide to its grounds. It details approximately 100 species most of which are native, though some mature exotic species planted by Alex Griffiths are also described. The ideal growing conditions of the native plant species are described as well as their traditional Aboriginal use.

When asked about native landscapes for Gold Coast accommodation houses, the Horticulture Manager suggested that many guests are keen to see and stay in Australian environments. He discussed the benefits of native landscapes for these establishments as attractive to birds and cost effective native gardens are renowned for their self management qualities.

'...The system more than paid for itself in five years. There is no cost for the reclaimed water.'

With some substantial mulching, native gardens will produce pleasing aesthetics, be appreciated by visitors and conserve water (and cost). With the Sanctuary's success in native landscaping, a further benefit they have identified is high staff motivation.

Shane Holborn can be contacted at:

The Currumbin Sanctuary, 28 Tomewin St, Currumbin, Q 4223. Phone: (07) 55 341 266.

Water-conserving landscaping – case study 2

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by Bob Cray, groundsman, Trinity Lutheran College.

The correct amount of water is one of the most important aspects of maintaining a good garden. If you stand there watering with a hose all day long, you will use lots of water to get your park's grounds looking lovely and this is a terrible waste.

We all know if you take pride in your gardens you will find that the people who come to stay at your caravan parks (as I find with the students at school) will start to take pride in your gardens too. When they see things flowering and doing well, they tend not to walk through them any more, they tend to admire them.

If you are from the Gold Coast you probably have the same problems, the school has shale. What can you grow in shale? Not a lot, but what I do is get a backhoe in and dig a trench. I put about four or five inches of coarse river sand in the bottom and that is my drainage so the water can sit in there. Then I put a good organic composting soil on top and on top of that I put newspaper mulch which (a) helps retain moisture and (b) attracts worms which really go through the garden and make everything nice and healthy.

'There are many benefits in developing and maintaining native landscapes.'

You can also buy a mulcher and use trees and branches from your own site for mulch. It will pay for itself and if you don't want to spend that sort of money, you can hire a mulcher to come in and do your mulching. Mulch keeps the moisture in our soils and helps our gardens to grow.

We have a rose garden at the College which is nice and healthy. We use micro-irrigation to water it, with the black pipes and little sprinklers

with a very fine spray. You really only need it on for 15 to 20 minutes, then we feel the soil for dampness. If it is damp enough, we stop irrigating. The easiest way to monitor the moisture though, is to watch the leaves. If you start to see your plants going yellow, you know there is not enough water or they are lacking in a nutrient. Usually it's water. If you see good healthy growth, you know you're doing the right amount of watering. You can experiment and start turning down your watering system as you go so you can get to that fine line where you just have enough water. Of course that amount will differ in summer and winter.

Some staff at our College buy a rose bush which we plant and maintain for them. As they grow, we give them the flowers for their desk and that helps us green our environment. In caravan parks, the front office is a lovely place for a good display of roses you will get people talking about the flowers and taking an interest in them.

If you have nice plants, you will have happy people in your caravan park and if you do it right, you won't have to spend a lot of time gardening it should be fun and not constant work. If you mulch, you won't have many weeds at all. Go for native plants if you want to save water they'll survive on rainwater. You will find that if you do your landscaping preparation properly and go overboard with your mulch and newspapers, you will have very little watering to do at all. If you plan your landscaping, you can save a lot of money.

'With some substantial mulching, native gardens will produce pleasing aesthetics, be appreciated by visitors and conserve water (and cost)'

We make a lot of our own mulch. We have special bins at school which are for food scraps, with special sections for paper. We get our food scraps, paper and cuttings to make our mulch. We may buy in a truckload or a couple of metres of soil . We put it in a big pile of mulch and turn it, then put it all into specific garden areas which are protected a little from the students.

The only areas we do water are special lawns, most of which are planted with a Greenlees Park couch. They don't take a lot of water but we do have to water. This type of lawn is fantastic for traffic and with 600 students walking over it five or six times a day, it stands up to it. You can use different types of lawn for high traffic areas, which will stay green with minimal water.

When we mow our lawns we retain the clippings and put them in our mulch heap with everything else.

Two other types of mulch are used at the school: one is sugarcane mulch and my favourite is tea tree mulch. It smells great and looks good, but after every six months we need to top it up. It is more expensive than a lot of other mulches but gives a particularly good appearance at the front of the school which most visitors see.

One of our nicest gardens is the bush tucker garden. We have put in plants here which don't require much water. We have a fish pond with lilies to give ourselves some greenery and flowers as well. This garden is very thickly mulched and even has old carpet underneath it.

There are pros and cons about using carpet. My personal dislike about it is that it doesn't break down quickly enough. It does stop weeds and holds moisture in the soil though. It is your choice as to what you do

in your gardens and certainly the carpet hasn't done any harm in this garden.

For shale and poor soil areas, I find the lemon-scented tea tree fantastic. I have acreage property myself and am on tank water. I do not have the luxury to do a lot of watering except for an integrated sewerage/ irrigation system which treats all my wastewater and pumps it out for irrigation. For about $4000 for the system and maintenance, I water all my gardens with wastewater. I find everything is thicker, greener and grows faster through this irrigation – I am amazed.

I actually haven't watered my lemon-scented tea tree at all and it is now two years old and about 12 foot high. It doesn't need any additional watering whatsoever. We have made our mounds of tea tree mulch and newspaper around it. The more good soil and paper you have there, the more water retention you will have.

The school also uses a drip feed watering system. You can buy all the parts from good hardware and gardening shops. You run poly pipe which is about 10 - 20mm through the garden beds with lines coming off it with little drippers attached. All it does is drip, drip, drip. Set it on a time - start with 10 - 20 minutes on a drip feed and monitor your soil conditions to check moisture.

For your industry, I recommend using timers to prevent over-watering. One warning – you can put in drip or micro-irrigation systems and think you are going to save money but if you turn them on and go away for hours you are not going to save any money. The bottom line is monitoring it and the soil, getting to know your garden and what is in it, then setting the optimum water time frame. Then you will save money and water.

If you do have immaculate lawns and gardens you will attract people to your caravan park and this will give you a competitive edge. It is pretty simple, but it does take some time and advice from people in the industry. You will find with the right plants plus good mulch and newspaper that you will save water and labour. If you correctly monitor your garden, you will definitely see results.

Bob Cray can be contacted at :

Trinity Lutheran College, 641 Ashmore Road, Ashmore, Q, 4215. Phone: (07) 55 393 8331.

Useful tips from Greening Australia

Greening Australia is a not-for-profit, non-government revegetation and education organisation. Their aim is to educate, enthuse and empower people to be involved in, use and protect native vegetation wherever they may be.

Their information about native plants is linked closely to WaterWise landscaping and may be very useful to your park.

Here are some ideas from the Gold Coast City Council Greening Australia extension officer Phil Watts.

Figure 31.1 New landscaping at Trinity Lutheran College

'You can use different types of lawn for high traffic areas, which will stay green with minimal water.'

Plant selection

The key to plant selection is having a clear aim. What do you want to achieve from your planting situation?

If your aim is environmental values, fauna habitat, landscape and ecological stability, reduction of water consumption or even aesthetics, then native plants may be the answer for you.

When selecting plant species for your planting project, the right plant should be:

- well-adapted to the soil and climatic conditions of the area;
- achieve the desired result;
- able to tolerate local climatic extremes like frost, wind or periodic drought;
- not develop into an ongoing weed problem (for example, camphor laurel or umbrella trees); and
- be relatively easy to establish and maintain

Why native plants?

In many situations, species which grow naturally in your area will best meet the criteria listed above. Local native species generally:

- need little or no fertiliser or water once established (saving time and money);
- attract wildlife to gardens and provide habitat;
- help move pollinators between bush remnants;
- help conserve Queensland's plants and animals;
- support the preservation of our natural heritage; and
- incorporate local natural surroundings into gardens.

Mulching

Mulching is the practice of putting a layer of material over the soil surrounding trees and plants.

The mulch can insulate the soil from temperature extremes, help the soil retain moisture and suppress the growth of weeds. If organic material is used, the mulch will break down and contribute organic matter to the soil.

Effective material for mulch is sometimes available from by-products of other farming activities, for example woodchips, sugarcane, compost, straw and hay.

Figure 32.1 Trinity College bush tucker garden

Landscaping tip - Treasure Island Holiday Village

Treasure Island Holiday Village on the Gold Coast recently designed and installed a clever watering system for some of its gardens surrounding the Village's cabins.

Rainwater collected from each cabin's roof area runs down the down pipe into a tee-piece which has a 100 mm flexible agricultural drain

pipe connected to it. The pipe, which loops around each cabin, runs through the garden distributing water into the garden.

At a certain point in each garden, there is a tee-piece standing up in the line with a short piece of drain pipe turned over to act as an overflow.

The system provides additional watering to sections of the grounds by distributing available rainwater. It is a simple, inexpensive irrigation idea.

For further information contact:

Ray Bristow, Treasure Island Holiday Village, 117 Brisbane Road, Biggera Waters, Q 4215. Phone: (07) 55 371 649.

Water pricing

Across Australia, the way water is charged and paid for is changing.

All levels of government – federal, state and local are working together under the National Competition Policy and the Council of Australian Governments (COAG) Water Resource Policy to reduce this country's water consumption.

'The aim is to place the responsibility on water users to conserve water – by using less and paying less.'

In the near future, most Australians will pay for water under a consumption-based water pricing system.

This means that we will pay for every drop of water we use.

The system is very similar to the way telephone and electricity charges are already made.

There will be an access charge based on the size of a property's water meter.

Domestic sizes are usually 20 mm (the 20 mm refers to the size of the service pipe). Business, commercial, schools and industrial meters varying in size as shown in Figure 34.1.

Then, every drop of water used will be metered and charged for, right from the very first drop.

The aim is to place the responsibility on water users to conserve water by using less and paying less.

Under this system, it will be possible to significantly reduce water consumption and pay less for your water supply than in the past.

The Gold Coast City Council has been developing an equitable and efficient water pricing strategy for Gold Coast City since 1996 and this will be implemented during 1997–98.

The following information details the strategy for Gold Coast City residents.

Specific information about other local governments' water pricing strategies can be obtained by contacting the relevant council directly.

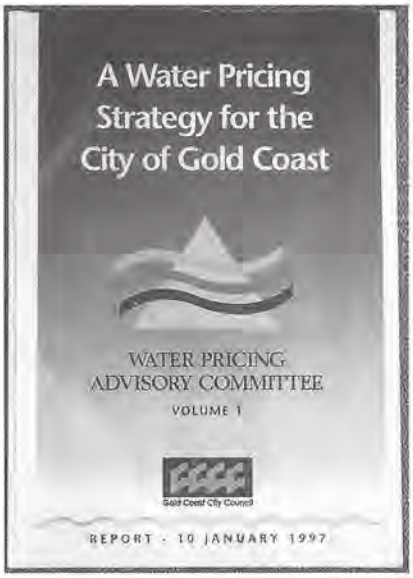

Figure 34.1 Gold Coast Water Pricing Strategy report

Gold Coast City Council Water Pricing Strategy

The following information is from A Water Pricing Strategy for the City of Gold Coast Volume 1 by the Water Pricing Advisory Committee (10 January 1997).

In August 1996, an advisory committee was established by the Gold Coast City Council, under the provisions of the Queensland Local Government Act 1993, to develop and recommend a new Water Pricing Strategy and supporting policies for the provision of reticulated water services throughout the Gold Coast City region.

This proposed strategy was considered by Council as part of its 1997–98 budget deliberations and Council resolved to commit the appropriate resources to ensure full implementation for the 1998–99 financial year.

The strategy adopted by the committee is consistent with the requirements of the National Competition Policy and the Council Of Australian Governments (COAG) Water Resource Policy, and complies with the important objectives of Council's corporate plan, namely equity and ecological and environmental sustainability.

Provided below is, in part, the recommended approach for the Water Pricing Strategy.

Objectives of the water pricing strategy

a. Adopt the following Water Pricing Strategy for the provision of reticulated water services, for those properties within the 'Water Area' as defined by the Gold Coast City Council's Local Laws;

b. Adopt a Water Pricing Strategy that is consistent with the principles of the National Competition Policy, the COAG Water Resource Policy and Council's Corporate Plan which enshrines the principles of economic and ecological sustainability and equity.

The water pricing structure

a. Adopt a consumption-based pricing structure and the pricing structure will be made up of a service charge and a single-tier consumption charge.

b. Adopt a service charge that reflects the ability of the customer to access Council's water supply infrastructure.

c. Adopt a standard consumption charge that reflects the volume of water used by the customer.

Determination of the service and consumption charge

a. Adopt for all properties and services, a service charge which is directly proportional to the cross-sectional area of the water service(s), using the 20 mm residential water service as the base case (see Figure 34.1).

b. Adopt a consumption charge based on every kilolitre of water consumed by each property, regardless of the purpose.

Water service size	Increase in cross-sectional area (as compared with the 20mm service)
20 mm	1.00
25 mm	1.5625
32 mm	2.56
40 mm	4.00
50 mm	6.25
80 mm	16.00
100 mm	25.00
150 mm	56.25
200 mm	100.00
250 mm	156.25
300 mm	225.00

Figure 34.1 Increase in cross-sectional area for water services

Billing and meter reading

a. Adopt a quarterly frequency for the reading of meters and issuing of bills.

b. Undertake such meter reading and billing on a 'rolling' basis, whereby these tasks are carried out continually throughout the year.

c. Adopt a format for its water accounts which is simple for the consumer to understand, and provides a graphical history of the consumer's water consumption.

d. Continue granting a discount for early payment of water charges and applying interest for charges in arrears in accordance with its current policy.

Promoting water conservation

a. Note the Committee's endorsement of its WaterWise demand management program.

b. Further promote the use of water saving devices as part of the WaterWise demand management program.

c. Continue with its WaterWise demand management program, with greater emphasis being placed on encouraging the efficient use of water outdoors.

d. Undertake research and development in alliance with the nursery and landscaping industries to investigate suitable local (provenance) plant species that are not currently readily available in mainstream horticulture, with the objective of implementing an ecologically sustainable landscaping policy within Council and on Council projects.

e. Implement a WaterWise and sustainable policy of utilising predominantly endemic species on all new and rehabilitative work within Council landscaping.

f. Actively promote the use of treated effluent as an alternative source of water for uses such as irrigation, where this is considered appropriate.

Implementation

a. Commence implementation of the proposed pricing strategy in the 1997/98 financial year, with full implementation being completed by the beginning of the 1998/99 financial year.

   However, for the 1997/98 financial year, the water rates are to be based on the current system of water allowance for a set base charge.

b. Undertake an extensive campaign raising the awareness of the City's ratepayers, in regard to the introduction of the new Water Pricing Strategy.

If you would like to know more about Gold Coast City Council's water pricing strategy contact:

Darren Hayman, WaterWise Co-ordinator, Gold Coast City Council, PO Box 5042, Gold Coast Mail Centre, Q 9729.
Phone: (07) 55 816 000.

Figure 35.1 Gold Coast City Council's WaterWise Co-ordinator, Darren Hayman

Figure 36.1 Bryan Nothling

Quality products

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by Bryan Nothling from Con-Serv Corporation.

The water conservation industry has existed for many years now and over that time has worked with all levels of government and private enterprise to learn about what works and what doesn't regarding water-saving products.

The manufacturers of water-saving products are open to hearing about consumers' experiences and, where necessary, will alter technology to ensure it is user-friendly and efficient.

A prime example of this is the water-saving shower rose.

Gone now are the days of the misty miser – the shower rose which emitted such a fine spray of water it was often incapable of doing the job of providing an enjoyable and efficient shower.

The technology now is so vastly improved that we even see water-conserving shower roses in some five star hotels and resorts.

An example of this is the Hyatt Regency Sanctuary Cove which has 9 litre per minute shower roses throughout its 247 guest rooms.

Not only does it save water and power for that establishment, it also solved an ongoing problem the hotel had with drainage in the showers.

Recent feedback from the Hyatt's hotel engineer is that guests have no idea they are showering under water-saving showers, because the look and quality of the roses is so high.

'Do your research, testing and networking and you will find the right product for your situation...'

Don't believe anything we say in the water saving industry...test our claims yourself. All you need is a hose and connection and a bucket marked in litres. Hook the products up, squirt the water into the bucket, time it and check for yourself.

Test products like shower roses personally by actually taking a shower. If it doesn't do the job you are after with the water savings it claims, don't get that product.

Talk to others who are using a particular technology or product and find out how it is working in other establishments.

There are many manufacturers and retailers of water-saving products in our business. It is a competitive industry and for most, our aim is to ensure quality and satisfaction.

Do your research, testing and networking and you will find the right product for your situation. It can take a little time and effort but for the sake of your business it is crucial to get it right.

Bryan Nothling can be contacted at:

Con-Serv Corporation, 5 Noble Street, Wilston, Q 4051. Phone: (07) 3856 4411.

WaterWise Plumbers and Master Plumbers Association

This section is adapted from a presentation made at the 1997 WaterWise Caravan Park Expo by Bill Watson of the Master Plumbers Association.

The Master Plumbers Association is involved with WaterWise Queensland in a joint venture to promote WaterWise throughout Queensland.

Australia is the driest continent in the world and for too long, we have allowed people to waste water. Times are changing and soon everyone will pay for their water supply. The amount of water they then use will be critical.

The caravan park industry, in particular, can save a great deal of water with minimal changes to the systems currently in place.

Prime areas of water use in caravan parks which can be easily addressed include showers, toilets and urinals.

Although in the past, some types of technology like water-saving shower roses were not appropriate for the standards of service required in the accommodation industry, we now have devices and systems which meet comfort and quality needs.

Do be aware, though, that these things must be installed correctly and that your WaterWise master plumber is trained and licensed to do this.

Master plumbers can also undertake a water audit for your park. The Association, in conjunction with WaterWise Queensland, has developed a training package to teach master plumbers how to do such audits.

A water audit involves a master plumber visiting your park and identifying where water is used. They will then give a comparison on what can be saved by switching to water saving devices.

During the audit, the master plumber will ask a series of questions about your park's occupancy rates, projected usage rates and so on, and then calculate water use rates based on your specific experience, rather than something generic.

If one home for example, converted completely to WaterWise appliances, the saving would be approximately 29 000 litres (29 kL) of water over 12 months. That represents significant dollar savings under consumption-based pricing where every litre used must be paid for.

If you compare that saving to the number of tenants in your park, you can see that thousands of kilolitres and dollars can be saved each year.

The other big saving, as well as water, is energy. When parks install water-saving shower roses or flow control systems in bathrooms, for example, the amount of energy saved in electricity (or gas) to heat your hot water is dramatic. It is a win/win situation at all levels.

The initial cost of installing water saving technology may frighten people, but analysed over the longer term, products more than pay for themselves (For example, Figure 9.1 on page 9 of this booklet

Figure 37.1 Gold Coast WaterWise master plumber

'If you use the same plumber for all your plumbing jobs, they are likely to understand your system and work effectively with it when installing water-saving technology.'

calculates the payback period on the installation of shower roses at the Hyatt Regency Hotel at Sanctuary Cove. It is less than one year).

Ask your WaterWise master plumber to give you a quote for converting your park and they will calculate a reasonable price wherever possible.

There are approximately 350 WaterWise master plumbers throughout Queensland. If you would like to know the master plumbers in your area, contact the Master Plumbers Association in Brisbane which will direct you to a local master plumber who has completed the WaterWise course.

At the same time, if you have a regular plumber for your park, encourage them to attend the WaterWise Master Plumbers training program if they haven't already.

Bill Watson can be contacted at:

The Master Plumbers Association, PO Box 408, Fortitude Valley, Q 4008. Phone: (07) 3252 1266.

Troubleshooting tips

If your caravan park needs any work done which involves your water supply, by law you must use a licensed plumber. This includes the installation of water-saving shower roses, flow control devices and most, if not all, water conservation measures.

Many caravan parks have complex and ageing water systems. If you use the same plumber for all your plumbing jobs, they are likely to understand your system and work effectively with it when installing water saving technology.

One of the main problems with the installation of water-saving shower roses, for example, can be a change in temperature balancing in shower blocks. If not installed and balanced correctly, visitors may be scalded by the water in the shower. In this sort of situation, if a licensed plumber has not done the work according to legal requirements, you may not be covered by insurance. The moment a caravan park owner or unlicensed person touches water supply equipment, your insurance may become void.

There are licenses and laws like the Workplace Health and Safety Act for good reason to protect your guests, your staff and yourself. Don't put any of these people in situations where damage or injury could occur.

Play it safe with your water supply and use a licensed plumber for all your caravan park work.

How to water audit your caravan park – a simple guide

The following information has come from WaterWise Queensland. It is designed to serve as a simple guide for you to learn more about the amounts of water used in different areas of your caravan park. You may want to photocopy these pages and take the copies with you (instead of the whole of this booklet) as you audit your park.

The bucket test

How to test how much water your shower is using.

What you will need

- A graduated 9 litre bucket (bucket with level indicators); and
- A watch with a sweep hand or stop watch facility.

Step 1

Turn on your shower to a comfortable level and begin capturing the water with your bucket.

Step 2

Hold the bucket under the shower for exactly 15 seconds, measuring the time with your watch.

Step 3

By looking at the graduated scale on the side of your bucket, measure how much water you have collected in 15 seconds.

Step 4

Multiply the amount x 4 to get your flow rate per minute.

Step 5

Repeat steps 1 to 4 using a water-efficient shower rose and learn how much water you could be saving each time the shower is used.

How to calculate how much money a water-efficient shower rose will save you – a worked example

(Figures are based on the Gold Coast City Council's Broadwater Tourist Park)

How much water does your existing shower rose use in a year?

- Flow rate of current shower rose as per the bucket test = 16 L/min (A)
- Research indicates that the average shower takes 4 minutes
- Total annual shower use calculation:

= (A)	x (min. per shower)	x (no. of showers per day)	x 365 = ____ litres
= (16)	x (4 min. per shower)	x (383 showers per day)	x 365 = **8 946 880 L (1)**

How much does a water-efficient shower rose use in a year?

- Flow rate of water-efficient shower rose as per bucket test = 9 L/min (B)
- Research indicates that the average shower takes 4 minutes
- Total annual shower use (with efficient shower rose) calculation:

= (B)	x (min. per shower)	x (no. of showers per day)	x 365 = ____ litres
= (9)	x (4 min. per shower)	x (383 showers per day)	x 365 = **5 032 620 L (2)**

Litres saved per year by changing from existing to water-saving shower roses

(1) 8 946 880 - (2) 5 032 620 = **3 914 260 L(3)**

Energy savings

Approx 50 per cent of water saved in the shower is hot water therefore:

(3) 3 914 260 ÷ 2 = **1 957 130 L(4)**

Kilowatt hours saved

= total hot water saving (4) 1,957,130 ÷ 15 = **130 475 kWh (5)**

Dollar savings

Water saved per year:	(3) 3 14 260 L	÷1000	x cost of water@ $0.78/kL	= $3,053.12
Energy saved per year:	(5) 130 475 kWh		x cost of energy@ $0.062/kWh	= $8,089.45

Note: (Cost of water will differ between local governments)

Total dollar savings = $11,142.57 per year

How to calculate how much money a water-efficient shower rose will save you

A water-efficient shower rose saves you money on your water and power bills. In Australian conditions, AAA water-efficient showers will pay for themselves in less than twelve months on water and energy cost savings. To calculate the money you can save use the form below.

How much water does your existing shower rose use in a year?

- Flow rate of current shower rose as per the bucket test = 16 L/min (A)
- Research indicates that the average shower takes 4 minutes
- Total annual shower use calculation:

= (A) x (min. per shower) x (no. of showers per day) x 365 = ____ L

= ( ) x (4) x ( ) x 365 = _____ **L(1)**

How much does a water-efficient shower rose use in a year?

- Flow rate of water-efficient shower rose as per bucket test = 9 L/min (B)
- Research indicates that the average shower takes 4 minutes
- Total annual shower use (with efficient shower rose) calculation:

= (B) x (min. per shower) x (no. of showers per day) x 365 = ____ L

= ( ) x (4) x ( ) x 365 = _____ **L (2)**

Litres saved per year by changing from existing to water-saving shower roses

(1) _____ - (2) _____ = _____ **L (3)**

Energy savings

Approx 50 per cent of water saved in the shower is hot water therefore:

(3) _____ ÷ 2 = _____ L (4)

Kilowatt hours saved

= total hot water saving (4) _____ ÷ 15 = _____ kWh (5)

Dollar savings

Water saved per year: (3) _____ ÷1000 x cost of water @ $0.78/kL = $_____

Energy saved per year: (5) _____kWh x cost of energy @ $0.062/kWh = $_____

Note: (Cost of water will differ between local governments)

Total dollar savings = $_____ per year

Calculating water savings for toilets and urinals

It is very difficult to model the impact of different water use technology (like dual flush toilets and infra-red urinals) on commercial water use because of the large number of end users.

Should you require more information about auditing these systems, please contact WaterWise Queensland (see contact list on page 46).

Beyond water conservation

Water conservation is a crucial part of ensuring our current water supplies and water quality are available to future generations.

There are many other water issues which must be addressed too. While it is not the purpose of this WaterWise booklet to detail these, it is important to briefly review some. Many of these issues are already important to the caravan park industry and others will be in the near future.

Most of the information in this section is from Wet Paper Publishers and WaterWise Queensland. The author thanks these organisations for their assistance.

Catchment management

Catchment is a term which describes the area of land which contributes runoff to a particular creek, river, lake or the ocean. Catchments can be very large, crossing municipal or state borders. Catchment boundaries may not be readily distinguishable in a settled urban area and changes that may occur to a habitat upstream of a waterway/creek may have an adverse effect on the lower reaches (downstream) of a catchment.

Integrated catchment management (ICM) recognises the interconnected impacts of activities within a catchment and the effects these have on watercourses and associated marine environments. It seeks to raise awareness within the community and encourage good land use planning, development and conservation practices.

ICM recognises that land and water management are interconnected. ICM helps local governments to identify activities which adversely affect watercourses and to prioritise mitigation options.

In conjunction with the community, local governments can develop an action plan to address adverse activities. ICM's main objectives are listed below.

- Improve the environment within the catchment.
- Recommend ways to rehabilitate and restore the catchment and waterways.
- Coordinate communication between the local council and the community with an interest in the protection of waterways.
- Educate the community.

Effective catchment management requires an informed community capable of developing and maintaining a long-term vision to improve the catchment. This approach involves individuals, groups and agencies all working together to achieve a shared set of goals.

Stormwater

All stormwater which washes off the catchment runs into the sea. Stormwater gutters collect dust from the air which accumulates heavy metals such as zinc from car brakes, rubbish from the footpath and fertilisers from the lawn.

The impacts of polluted stormwater can be as varied as the contaminants themselves but can include such things as poor water quality resulting in loss of aquatic life.

Significant weed problems are caused by people dumping garden rubbish (garden clippings and branches) along creeks because the plants in the garden refuse propagate and spread to cause massive weed infestations. Other impacts include the silting of waterways, loss of scenic amenity and compromised property values, increased maintenance of waterways and public parks resulting in increased costs to rate payers.

Reclaimed water

Reclaimed water is water from the sewerage treatment plant which has been cleaned and disinfected. Because of this process, reclaimed water can be used to irrigate parks, gardens, sporting fields and even some farms.

The Gold Coast City Council has used reclaimed water for many years to irrigate local parks, gardens and golf courses, and now even schools are applying to use it on their ovals and other areas. The Department of Education, Queensland has approved the use of reclaimed water in schools provided all government guidelines are fully adhered to.

Gold Coast organisations currently using reclaimed water for irrigation include: Royal Pines Resort, Currumbin Sanctuary and Palm Beach Currumbin High School.

They have all experienced significant water rate reductions and have quickly recovered works costs for installation of pumping and irrigation systems for the reclaimed water.

If you are interested in using reclaimed water in your caravan park, you must discuss the matter with your local council early on in your planning because each council will have specific by-laws relating to its use.

Grey water

Grey water is the water from areas including showers and washing machines which goes into the sewerage system. It can, in certain circumstances, be used to irrigate garden areas.

Controls on the use of grey water are understandably strict, but current technology is increasing to overcome some of the grey water safety problems such as bacteria accumulation, excess nutrients entering water ways and odours.

Rainwater tanks

Rainwater tanks have long been a source of domestic water in Australia. In the past, they were a standard feature of suburban backyards. They gradually disappeared as town and city water supply services expanded.

Today, rainwater and rainwater tanks are necessary for many rural and outback homeowners. Tanks are also being rediscovered by people in urban areas searching for ways to reduce water bills and play a part in protecting the environment.

If you think rainwater tanks could assist your caravan park, consider these issues:

- local council regulations and restrictions
- State regulations related to mosquito control and eradication
- reasons for wanting a rainwater tank
- the type and size of the system you need
- water quality
- the cost of buying and installing a tank
- the financial benefits

Composting toilets

Not all toilets need to be of the flushing variety. Operations like Jemby Rinja Lodge, an ecotourism lodge in the Blue Mountains, have installed composting or waterless toilets throughout its cabins and conference centre. According to Harris and Leiper (1995), Jemby Rinja Lodge currently has the largest single installation of these toilets in Australia – nine in all.

Like the use of reclaimed and grey water, composting toilets are subject to strict local government controls. Contact your council if you are interested in installing composting toilets at your park and talk to them about the steps you need to take and the issues you will need to address.

There are many other fascinating and challenging water issues arising every day. If water conservation and management is of particular interest to you, contact WaterWise Queensland for more information. Their telephone number is in the contact list at the rear of this booklet.

'Waste from toilets is commonly removed every six months and placed in a rotating compost tumbler. Here it is mixed with other natural products such as kitchen scraps and vegetable peelings. The resulting mixture, once composted, is then dispersed around the property including the lodge's herb garden' (Harris and Leiper, 1995, p 112).

WaterWise Queensland promotional products for your caravan park

WaterWise Queensland has produced many information and promotional products, from stickers, key rings and pens to information brochures and garden kits. Some of these items may be very useful to your park and an added service for your guests and residents.

To obtain a free catalogue of WaterWise products, contact your local Caravan Industry Australia (CIA) delegate or the CIA Queensland office direct on (07) 3357 4399.

Contact list

Gold Coast City Council

Councillor Daphne McDonald Chairman, Water, Wastewater, Beaches and Foreshores Committee

Shaun Cox Director, Gold Coast Water

Darren Hayman Co-ordinator, Water Revenue

Graham Walker Co-ordinator, Asset Performance

John Bowden Senior Microbiologist

John Tilton Tourist Park Controller

PO Box 5042

Gold Coast Mail Centre

Q 9729

Phone: (07) 55 816 000

WaterWise Gold Coast

Wet Paper Publishers and Consultants

Bob Moffatt Manager

14 Milbong Terrace

Ashmore Q 4214

Phone: (07) 55 972 806

Sally MacKinnon

39 Doomben Court

Beechmont Q 4211

Phone: (07) 55 333 646

WaterWise Queensland

John Clowes Manager

David Wiskar Consultant

Department of Natural Resources

GPO Box 2454

Brisbane Q 4001

Phone: (07) 3224 2716

Caravan Industry Australia (Queensland)

Ron Chapman Executive Director

PO Box 5542

Stafford Heights Q 4053

Phone: (07) 3357 4399

Information booklet contributors

Con-Serv Corporation

Bryan Nothling

5 Noble Street

Wilston Q 4051

Phone: (07) 3856 4411

Master Plumbers Association

Bill Watson

PO Box 408

Fortitude Valley Q 4006

Phone: (07) 3252 1266

Expert Plumbers Advice

Allan Archie

21 Russell Street

South Brisbane Q 4101

Phone: (07) 3846 1811

Water and Energy Saving Systems

Don Arms

PO Box 2084

Logan City DC Q 4114

Phone: (07) 3290 3171

Why Wait Plumbing

Gary Mays

55 Lake Shore Drive

Monterey Keys Q 4210

Phone: 0411 222 497

Rental Management Services

Simon Lee

Casino Village Caravan Park

PO Box 6595

Gold Coast Mail Centre Q 4217

Phone: (07) 55 944 188

Stradbroke Island North Tourist Park

Brian Mitchell

Dickson Way

Point Lookout Q 4183

Phone: (07) 3409 9151

Mt Warning Caravan Park

Bob Preen Jnr and Snr

Mt Warning Road via Murwillumbah NSW 2484

Phone: (066) 795 120

Blue Lagoon Enterprises

Ken Peuker

25 Jaguar Drive

Evandale Waters Q 4217

Phone: (07) 55 39 2828

Currumbin Sanctuary

Shane Holborn

28 Tomewin Street

Currumbin Q 4223

Phone: (07) 55 34 1266

Trinity Lutheran College

Bob Cray

641 Ashmore Road

Ashmore Q 4214

Phone: (07) 55 39 3833

Front Load Washers Association

Ken Evans

Major Electrical Appliances (MEA)

Showroom 5, 107 Ferry Road

The Brickworks Shopping Plaza

Southport Q 4215

Phone: (07) 55 91 3379

Industry representatives

This list was compiled from water saving trade organisations which were involved in the 1997 WaterWise in the Caravan Industry Expo by displaying their products to delegates.

CF & T Washroom Products

Pat Macky

PO Box 581

Mermaid Beach Q 4218

Phone: (07) 55 78 5199

Con-Serv Corporation

Bryan Nothling

5 Noble Street

Wilston Q 4051

Phone: (07) 3856 4411

Delrana Enterprises

Phil West

2 Ryecroft Street

Carrara Q 4211

Phone: (07) 55 30 3000

Enviroflow

Dal Goodman

PO Box 127

Archerfield Q 4108

Phone: (07) 3274 3466

Reliance Manufacturing Company

Paul Watkins

4042 Ross Street

Newstead Q 4006

Phone: (07) 3252 1396

Rye Australia

Michael Davidson

Unit 3, 1820 Overford Place

Acacia Ridge Q 4110

Phone: (07) 3272 1344

Saxon

David O'Gorman

212 Zillmere Road

Zillmere Q 4034

Phone: (07) 3265 5133

Tradelink Plumbing Supplies

Richard Gard

190 Kelvin Grove Road

Kelvin Grove Q 4059

Phone: (07) 3352 6622

Water and Energy Saving Systems

Don Arms

PO Box 2084

Logan City Q 4114

Phone: (07) 3290 3122

Zip Heaters

Ken Peuker

3/43 Links Avenue

North Eagle Farm Q 4009

Phone: (07) 3268 3301

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