



EASY BLUE

WATER SAVINGS PROGRAM



Water Audit and Water Savings Action Plan:
Wodonga Caravan and Cabin Park
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Document Control

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Wodonga Caravan and Cabin Park

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Wodonga Caravan and Cabin Park

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1 EXECUTIVE SUMMARY

Wodonga Caravan and Cabin was selected to participate in the Easy Blue program, an initiative run by the North East Greenhouse Alliance, on behalf of City of Wodonga, Rural City of Wangaratta, Alpine, Indigo and Towong Shires, in partnership with the North East Catchment Management Authority, North East Water and Goulburn Murray Water. The program is intended to help businesses in North East Victoria understand and reduce their water use, and through that adapt to a low water future.

Wodonga Caravan and Cabin Park is located on Melbourne Road, Wodonga. It is a caravan park with a total of 23 cabins and 16 powered sites for caravans. This report is a result of Park's participation in the Easy Blue program. It uses a methodology of estimating water use values for various areas of consumption around the site based on information gathered during the site visit and calibrating them against total water consumption as per site water bills. This allows the estimation of the effectiveness of water savings measures.

This process has led to the following conclusions:

- On average the facility uses 3,213kL/yr of water at a cost of approximately \$7,068/yr at current water rates
- 13% of the facility's total potable water usage could be saved by undertaking the simple steps of installing flow restrictors in all amenity and kitchenette taps, installing water conservation signage in the cabin showers, swapping the guest top loading washing machine for a front loader, and adjusting the urinal's flush volume
- This would lead to expected annual water savings of 392kL/year
- The estimated cost to implement the savings measures is \$4,765
- The payback period for these measures is 4.1 years, for ongoing annual savings of \$1,161/year

We strongly recommend that Wodonga Caravan and Cabin Park take up all of the recommendations made in this report, and in doing so save both water and money.

2 FACILITY WATER CONSUMPTION

2.1 Water Consumption Levels and Water Pricing

Wodonga Caravan and Cabin Park provided copies of their water bills for December 2010 to December 2011. This showed that annual water consumption is approximately 3,213kL/year, a figure which has been used as the baseline water consumption at the site for the purposes of this report.

Water is supplied to the site by North East Water. The current (2011-2012 financial year) cost of water for the site is \$2.20/kL, making for annual water consumption charges of \$7,068/year.

2.2 Specific Water Consumption (KPI)

Given that the site is a hotel, the most applicable business activity indicator is the number of guest nights per year. For this report, on the basis of discussions with Park staff, this has been estimated at 30,850 or 85 persons in the park for each night of the year. Thus the specific water consumption for the site is 105L/guest night.

2.3 Water Metering Information

The site is supplied by a water meter located near the front boundary of the site. The facility does not currently have a smart metering system in place.



Figure 1. The Main Water Meter at Wodonga Caravan and Cabin Park

3 WATER BALANCE

3.1 Site Visit

A site visit was carried out on December 15th, 2011. Data gathered during this visit included:

- Number of staff working at the site
- Number of guests staying at the site
- Location of site water meter(s)
- Number and flow rates of amenity taps and other hand basin taps
- Number, flush volumes and types of toilets and urinals (where applicable)
- General site water management practices and water conservation behaviour (or their lack thereof) observed

The site visit also demonstrated that many water savings measures have already been put in place, for example the installation of dual flush toilets and low flow showerheads. Wodonga Caravan and Cabin Park should be commended for having already taken these steps.

3.2 Water Balance

From the findings of the preliminary site visit and the supplied overall consumption information, a Water Balance has been prepared.

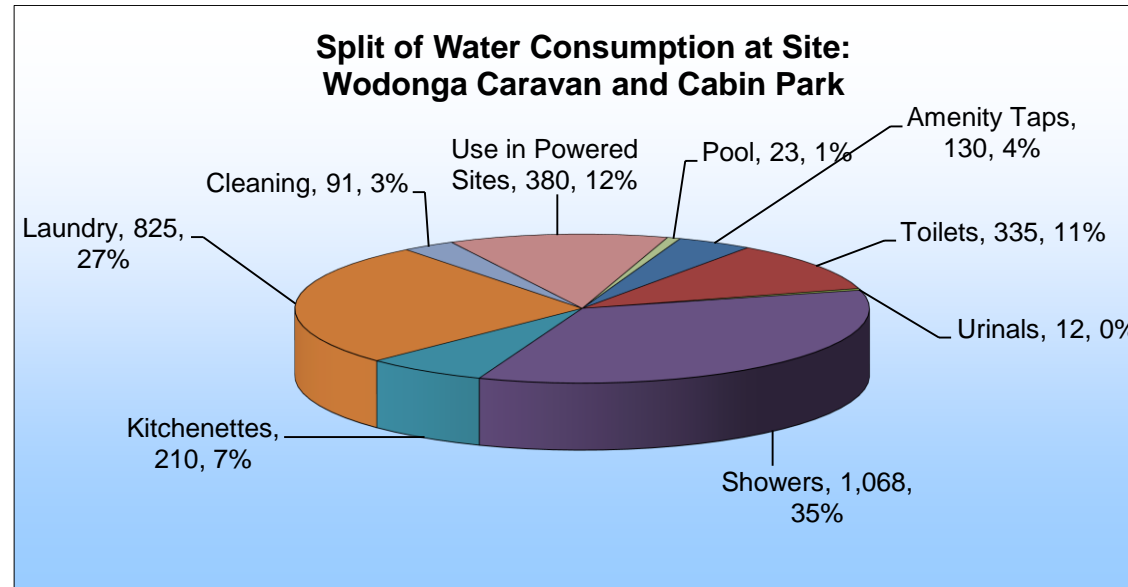


Figure 2. Water Use at Wodonga Caravan and Cabin Park (in kL and % of total)

As Figure 2 shows, the major water consumer at the site is guest showering, which consumes 35% of site water use. Other significant contributors are laundry use (27%) and toilet flushing (11%).

3.3 Water Use Single Line Diagram

The following single line diagram describes how water is supplied to, used within, and is disposed of from the site:

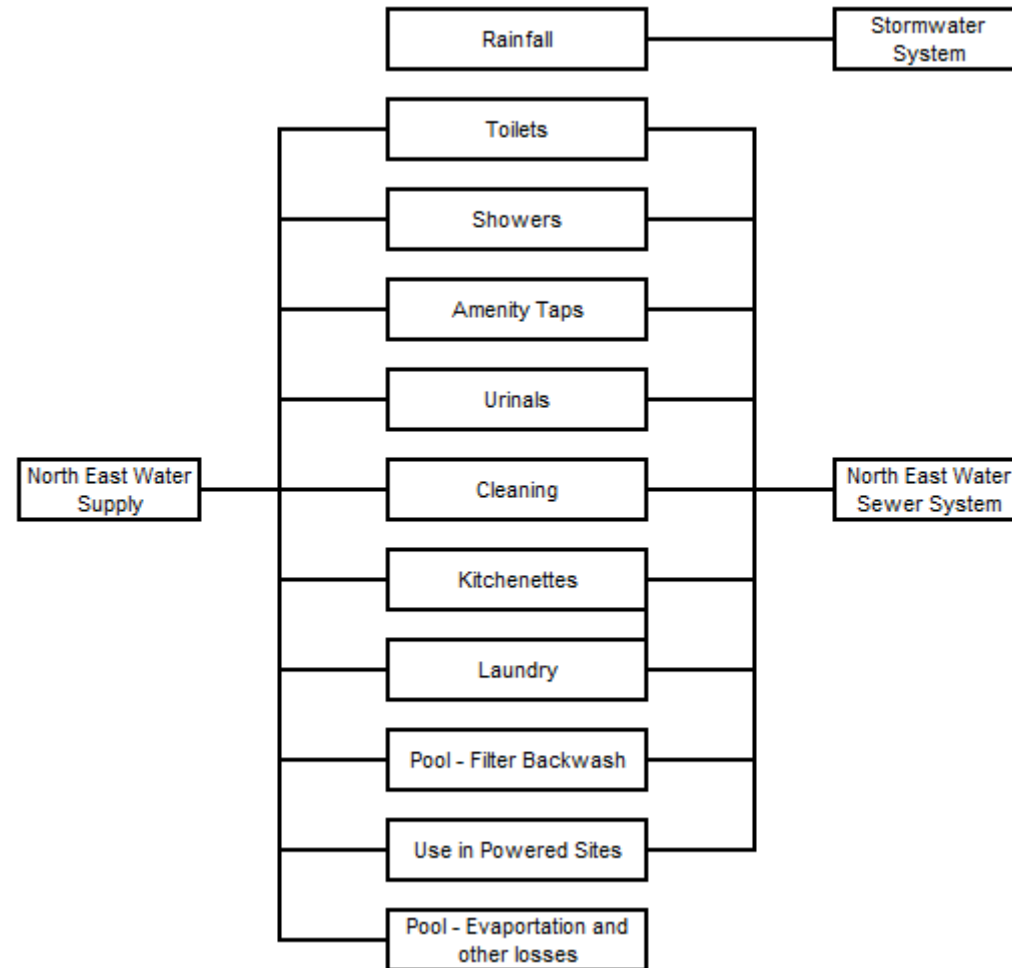


Figure 3. Single Line Diagram for Wodonga Caravan and Cabin Park

4 POSSIBLE WATER SAVINGS

During the site visit, flow rates & volumes of representative fittings were measured where possible. Other areas, such as the water used in the pool backwash and laundry were observed or estimated through discussions with staff. The discussion below is split up into two groups – Tier 1 measures, with reasonable payback periods meaning it makes business sense to implement straight away; and Tier 2 measures, which push the payback out to levels which should be considered in any expanded water conservation program.

4.1 Description of Possible Savings – Tier 1

4.1.1 Amenity Taps

The flow rates of the amenity (bathroom) taps in the cabins were measured to be approximately 8L/min. The Water Efficiency and Labelling Standards Scheme (WELS), operated by the Australian Government provides an independent source of information about the water efficiency of devices such as showerheads, toilets, urinals, taps and dishwashers. The WELS scheme states that a flow rate of 4L/min is sufficient for amenity use. The installation of flow restrictors could thus bring their flow rate down with no loss of effectiveness. A total of 21 flow restrictors would be needed (cabins 41 and 42 have slightly different tapware, which is already of a good standard of efficiency). The taps are such that end-of-tap aerator restrictors can be fitted to them.



Figure 4. Example of an Amenity Tap at Wodonga Caravan and Cabin Park

4.1.2 Kitchenette Taps

Each cabin is also equipped with a kitchenette, with a sink and taps included. The flow rates measured from these taps was around 10L/min. The WELS scheme recommends that such taps have a flow rate of 6L/min, representing a good balance between rinsing and filling purposes. Again, end-of-tap aerators should be fitted, and a total of 21 would be required (again, cabins 41 and 42 are already acceptable).



Figure 5. Example of a Kitchenette Tap at Wodonga Caravan and Cabin Park

4.1.3 Urinal

The urinal installed in the common amenity area (used by the people in caravans occupying the powered sites) has a very large cistern, and thus uses too much water per flush. This urinal's water usage can be improved simply by adjusting the ball float valve arm in the cistern so as it only fills up half way, or by introducing a mass (such as a few bricks or plastic bottles full of water) to displace a certain volume of water. The amount of flush reduction to be used can be investigated via trial and error to ensure that the trough of the urinal still clears after its flush volume has been reduced.

4.1.4 Showering

The showerheads at the site have already been swapped to low flow models. However, further water savings could be possible in the showers through the installation of some simple signage in the bathrooms, encouraging users to minimise

shower times. An example of such signage which is supplied by City West Water in Melbourne is shown in Figure 6. A similar message could be delivered in the hotel's signage, with its tone modified for use in a caravan park.

Note that water savings in showers are particularly cost effective, since they save water heating costs as well as reducing the site's water bill.



Figure 6. Example Water Conservation Signage for Showering

4.1.5 Laundry

A laundry with two coin operated washing machines is open to guests at the site. One is a front loader and the other a top loading machine. Front loading machines are much more water efficient than top loading machines (and again, since hot water is used for washing, the savings reduce the site's power bill as well as the water bill - so are particularly important).



Figure 7. Top Loading Washing Machine at Wodonga Caravan and Cabin Park

It is therefore recommend that the top loading washing machine be replaced with a front loading model.

4.2 Description of Possible Savings – Tier 2

4.2.1 Rainwater Harvesting

The site already has a small rainwater harvesting system, which is occasionally used to top up the pool. Rainwater harvesting was considered as a further option for each individual cabin for toilet flushing. However, each cabin uses about 15kL of water for flushing per year, at a cost of \$33/year. Given that installing rainwater tanks for each cabin would cost in the order of \$6,000, it is not seen as a viable option for the site.

Thus there are no recommended Tier 2 measures for the site – all the identified measures fall into the Tier 1 category.

4.3 Other Areas of Water Consumption

The following other areas of water consumption were noted during the site visit, but are not amenable to water savings measures:

- Toilets: The toilets at the site have water efficient dual flushing cisterns.
- Cleaning: On the basis of discussions with Park staff, current cleaning practices seem to be of acceptable water efficiency
- Pool: The pool is not heavily used, and some of its demand is supplied using rainwater. No action is needed here.
- Use in Powered Sites: Each caravan which occupies a powered site has access to a sewer point to dump its wastewater and a tap to fill its water tank. Given that use inside each caravan is beyond the control of the Park, it is difficult to achieve water savings for the powered sites.

5 WATER SAVINGS ACTION PLAN

The recommendations made in this report provide a clear action plan to achieve water savings at Wodonga Caravan and Cabin Park. All recommended actions are Tier 1 - there are no Tier 2 actions. We recommend that Tier 1 actions are undertaken as soon as possible.

Tier 1 Actions:

- Install flow restrictors in the amenity taps in the cabins
- Install flow restrictors in the kitchenette taps in the cabins
- Reduce the flush volume of the site's urinal
- Install water conservation related signage in the cabin showers
- Replace the top loading washing machine with a front loader in the guest laundry

To reiterate, there are no Tier 2 actions for this site. All identified water savings actions are financially attractive, make business sense and should be implemented as soon as possible.

The following table summarizes these water savings measures, and presents the total potential savings that could be realized at the site, the investment required to achieve them, and the resulting payback period. According to this information:

- By implementing Tier 1 measures, the facility can save 12% of its total water consumption or 392kL/year, for an outlay of \$4,765.

Table 1. Possible Water Savings at the Wodonga Caravan and Cabin Park

Possible Water Savings, Costings & Payback					
Project: Wodonga Caravan and Cabin Park					
Water Consumption kL/yr		3,213			
Cost of Water and Sewer \$/kL		\$2.20			
Cost of Warm Water \$/kL		\$2.50			
Item	Measure	Water Savings kL/yr	Total Savings \$/yr	Budget Cost	Payback yrs
Amenity Taps	Install flow restrictors on amenity hand basin taps in cabins	33	\$96	\$735	7.7
Urinals	Introduce a displacement volume into the site's urinal to reduce its flush volume	6	\$13	\$50	3.8
Showers	Install some water conservation related signage in cabins	27	\$119	\$250	2.1
Kitchenettes	Install flow restrictors on kitchenette taps in cabins	42	\$92	\$735	8.0
Laundry	Swap top loading guest washing machine for front loader	285	\$841	\$2,995	3.6
Total for Tier 1 Measures		392	\$1,161	\$4,765	4.1
Total for All Measures		392	\$1,161	\$4,765	4.1