

# BUSSELTON WATER



BUSSELTON **WATER**

## **WATER EFFICIENCY MANAGEMENT PLAN (WEMP)**

### **Guidelines for Business**

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## Background

### *Overview*

In recent years, as community demand for water has increased, it is more important than ever to manage this valuable natural resource and employ water conservation measures.

In October 2007 the Board of Busselton Water formally adopted Stage 4 water restrictions in support of the State Government's "Water-Wise" initiatives. Stage 4 restrictions are the middle-of-the-road level of restrictions and are the stage recommended by the government for application in the south of the State (albeit these may change as determined necessary by the Minister for Water eg. October / November 2010 Stage 5 restrictions [one day watering] introduced).

The Water Agencies (Water Use) By-Laws 2010 include a Part dedicated to the implementation of Water Efficiency Management Plans (WEMP). Busselton Water is bound to enforce these laws.

Busselton Water's focus is scheme water, however to make the WEMP more meaningful to your business provision has been made for optional information to be included on all sources of water (eg. bore water, recycled, reclaimed water etc).

This document will provide information on how to comply with the requirements.

### ***Water Efficiency Business Program***

Participation in the Water Efficiency Program aims to improve the water management processes of Busselton Water's major commercial and industrial customers. In addition to business customers, all government agencies statewide must participate in the program.

Businesses and government agencies that use more than 20,000kl (per site) of scheme water per reading year will be required to participate in a water management assessment facilitated by Busselton Water.

The WEMP will include:

- A profile and description of the person submitting the plan and business operations
- Date and results of the water management assessment
- Water savings opportunities (including the estimate of the likely savings)
- Water savings action plan (including timeframes)

Once the WEMP is submitted, it will last 5 years. However, if the business changes ownership or the water use increases significantly, a revised WEMP will be required.



All businesses participating in the program will be required to:

- Submit an annual report detailing the progress against the water-savings action plan
- Undertake a Water Management Assessment on a yearly basis

### ***Penalties for non-compliance***

Under the Water Agencies (Water Use) By-Laws 2007 and Busselton Water Area By-Laws financial penalties apply to customers that do not meet the mandatory requirements.

### ***Benefits***

Participation in the program will result in business:

- Gaining a greater understanding of the water management processes on site
- Focusing management on the continuous improvement of water management processes
- Understanding water costs
- Understanding associated water heating costs
- Demonstrating and promoting commitment to improving environmental outcomes
- Establishing and achieving targets to reduce scheme water use

### ***Templates***

Busselton Water has prepared templates to help business comply with the mandatory requirements of the WEMP. If not attached to this document contact the Manager, Customer Services on 9781 0506.

These guidelines provide information on how to complete and produce a WEMP.

### ***Further Information***

Additional information can be found on Busselton Water's website [www.busseltonwater.wa.gov.au](http://www.busseltonwater.wa.gov.au) or you can contact the Manager, Customer Services on 9781 0506.

Busselton Water can also provide information on your site's historical water use.

### ***Confidentiality***

Busselton Water will ensure that all information provided by participants of the program remains confidential.



## ***Acknowledgements***

This guideline draws together the best available published water efficiency information relevant to commercial and institutional businesses. This guidelines and the WEMP template is based on material development by City West Water and Yarra Valley Water.

We wish to thank the following organisation for their assistance in preparing this material:

City West Water  
Sydney Water  
Yarra Valley Water  
Master Plumbers and Mechanical Services Association of Australia  
Australian Institute of Refrigeration Air Conditioning and Heating  
Plumbing Industry Commission of Victoria  
Water Corporation, Western Australia

# Completing your WEMP

## 1. Introduction

The introduction includes a brief description of the current water situation in Western Australia and reasons why a WEMP is beneficial to business.

WEMP objectives and methodology are outlined. Businesses have the opportunity to add any additional objectives.

## 2. Company Information

### 2.1 Company Details

Information is required to be provided in this section about the site, business activities and water. **Table I** (mandatory) in the WEMP template will assist you in providing the required information.

Business will be required to undertake an assessment of all water intensive equipment on site, and estimate the percentage of water used for each. There is also provision to include information on existing water conservation activities.

The table below has the Australian and New Zealand Standard Industrial Classification (ANZSIC) which is required in **Table I**.

<b>A</b>	<b>Agriculture, Forestry and Fishing</b> 1 Agriculture 2 Services to Agriculture; Hunting and Trapping 3 Forestry and Logging 4 Commercial Fishing
<b>B</b>	<b>Mining</b> 11 Coal Mining 12 Oil and Gas Extraction 13 Metal Ore Mining 14 Other Mining 15 Services to Mining
<b>C</b>	<b>Manufacturing</b> 21 Food, Beverage and Tobacco Manufacturing 22 Textile, Clothing, Footwear and Leather Manufacturing 23 Wood and Paper Product Manufacturing 24 Printing, Publishing and Recorded Media 25 Petroleum, Coal, Chemical and Associated Product Manufacturing  26 Non-Metallic Mineral Product Manufacturing 27 Metal Product Manufacturing 28 Machinery and Equipment Manufacturing 29 Other Manufacturing



<b>D</b>	<b>Electricity, Gas and Water Supply</b> 36 Electricity and Gas Supply 37 Water Supply, Sewerage and Drainage Services
<b>E</b>	<b>Construction</b> 41 General Construction 42 Construction Trade Services
<b>F</b>	<b>Wholesale Trade</b> 45 Basic Material Wholesaling 46 Machinery and Motor Vehicle Wholesaling 47 Personal and Household Goods Wholesaling
<b>G</b>	<b>Retail Trade</b> 51 Food Retailing 52 Personal and Household Goods Retailing 53 Motor Vehicle Retailing and Services
<b>H</b>	<b>Accommodation, Cafes and Restaurants</b> 57 Accommodation, Cafes and Restaurants
<b>I</b>	<b>Transport and Storage</b> 61 Road Transport 62 Rail Transport 63 Water Transport 64 Air and Space Transport 65 Other Transport 66 Services to Transport 67 Storage
<b>J</b>	<b>Communication Services</b> 71 Communication Services
<b>K</b>	<b>Finance and Insurance</b> 73 Finance 74 Insurance 75 Services to Finance and Insurance
<b>L</b>	<b>Property and Business Services</b> 77 Property Services 78 Business Services
<b>M</b>	<b>Government Administration and Defence</b> 81 Government Administration 82 Defence
<b>N</b>	<b>Education</b> 84 Education
<b>O</b>	<b>Health and Community Services</b> 86 Health Services 87 Community Services
<b>P</b>	<b>Cultural and Recreational Services</b> 91 Motion Picture, Radio and Television Services 92 Libraries, Museums and the Arts 93 Sport and Recreation
<b>Q</b>	<b>Personal and Other Services</b> 95 Personal Services 96 Other Services 97 Private Households Employing Staff



## 2.2 Water Management Team

To ensure your WEMP is successfully implemented it is a good idea to establish a Water Management Team. Decide who your appropriate management contact(s) are and involve key staff members who may influence or have an understanding of how water is used at your site. This will enable you to readily identify and implement water-saving measures. You may wish to involve staff from groups such as:

- Senior management
- Operations / Facilities managers
- On-site maintenance staff
- Finance/accounting, who can provide financial information to support initiatives
- General staff
- OH&S and environment staff.

Please list your Water Management Team members in **Table 2** (mandatory) of the WEMP template.

## 3. Water Use

To identify what savings can be achieved at your site, it is essential to understand where and how water is used and how much it costs. Busselton Water's primary focus is scheme water, but to make a WEMP more meaningful, a holistic view has been taken in developing the WEMP template. Businesses have the option to include all sources of water (eg. Bore water, recycled, reclaimed water etc) in the analysis.

### 3.1 Water Use on Site

Identify the major water using facilities on site. You may wish to represent this via a flow chart (refer to Figure 1 in the WEMP template). However, a list of water using equipment on site is sufficient.

To ascertain whether water use on site is understood, please list factors that influence your site's use. This could include:

- Days of operation and opening hours
- Number of staff/contractors on site
- Number of customers
- Production rates (number of units produced)
- Refurbishment / closure of areas
- Seasonal factors such as rainfall



## 3.2 Baseline Water Use

### Calculating Baseline Water Use

Your baseline water use is the amount of water you currently use on site. This information helps to determine what potential savings can be achieved in the timeframe identified. It also helps you to measure your performance. Savings can be easily identified by comparing your water use each year with your baseline water use.

To determine your baseline scheme water use, you will need your site's water bills for the previous 12 to 36 months. For assistance with this information, please contact the Manager, Customer Services on 9781 0506 or email [julie.rawlings@busseltonwater.wa.gov.au](mailto:julie.rawlings@busseltonwater.wa.gov.au)

When reviewing your site's water use history, ensure the data represents normal operating conditions, i.e. there were no shutdowns or refurbishments during the period. If there has been a variation from normal conditions during the period, please include a description or reason for this and the estimated impact on water use.

If you have undertaken water efficiency projects in the past 12 to 36 months that have significantly impacted your water use, please include a description of those projects. Businesses that are currently at best practice within their industry are encouraged to demonstrate this in their WEMP.

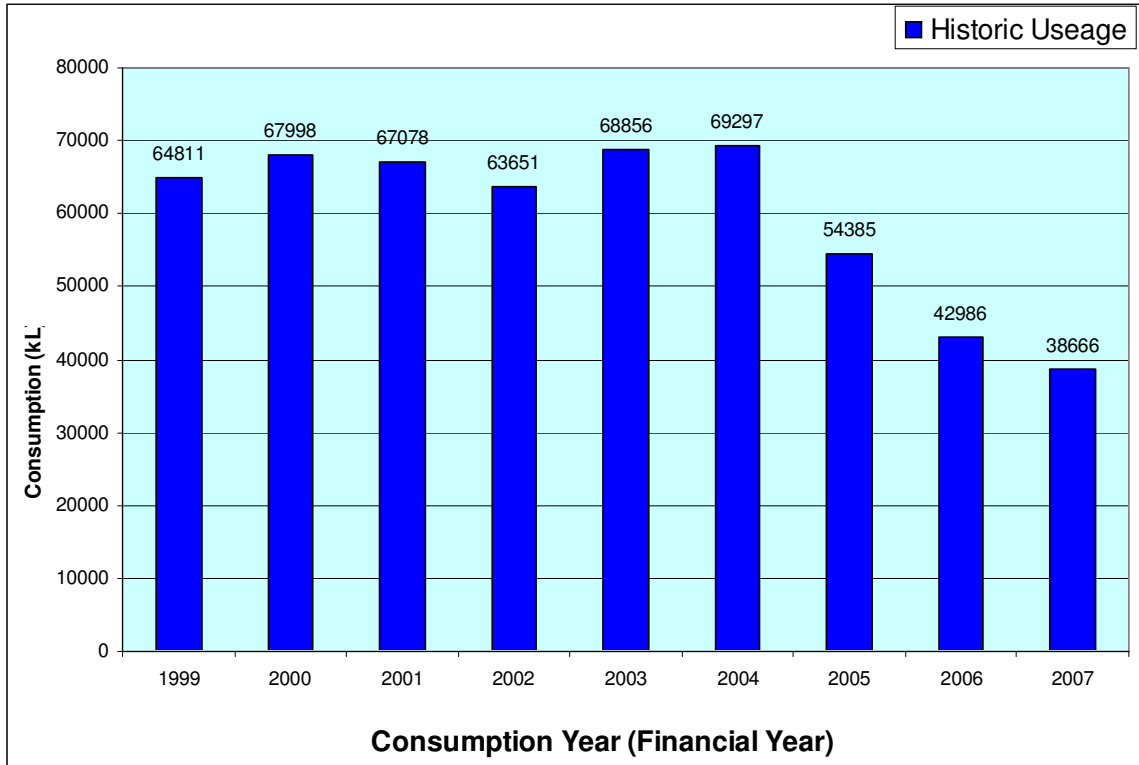
Complete Tables 4a (mandatory) and 4b (optional) using information on your water bills to calculate your baseline water use.

In addition to the data in Tables 4a and 4b, businesses may also wish to include their baseline data in visual forms. The following graphs are useful aids (examples only) for setting your water-saving targets.



**EXAMPLES ONLY**

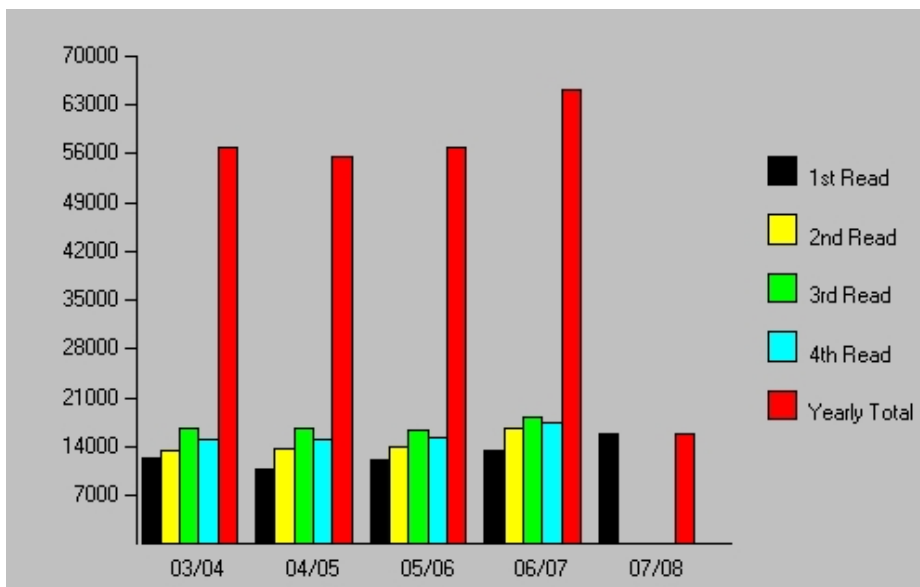
- Annual Scheme Water Use (financial year)



Business Comment: Water savings implemented in 2004 – water efficient showerheads, pool blankets and waterless urinals

**Figure 1 Annual Scheme Water Use (optional)**

- Quarterly Scheme Water Use



**Figure 2 Quarterly Scheme Water Use (optional)**



- Monthly Scheme Water Use – monthly (or daily) recording of meter readings is the best way to gain a full understanding of water-use trends

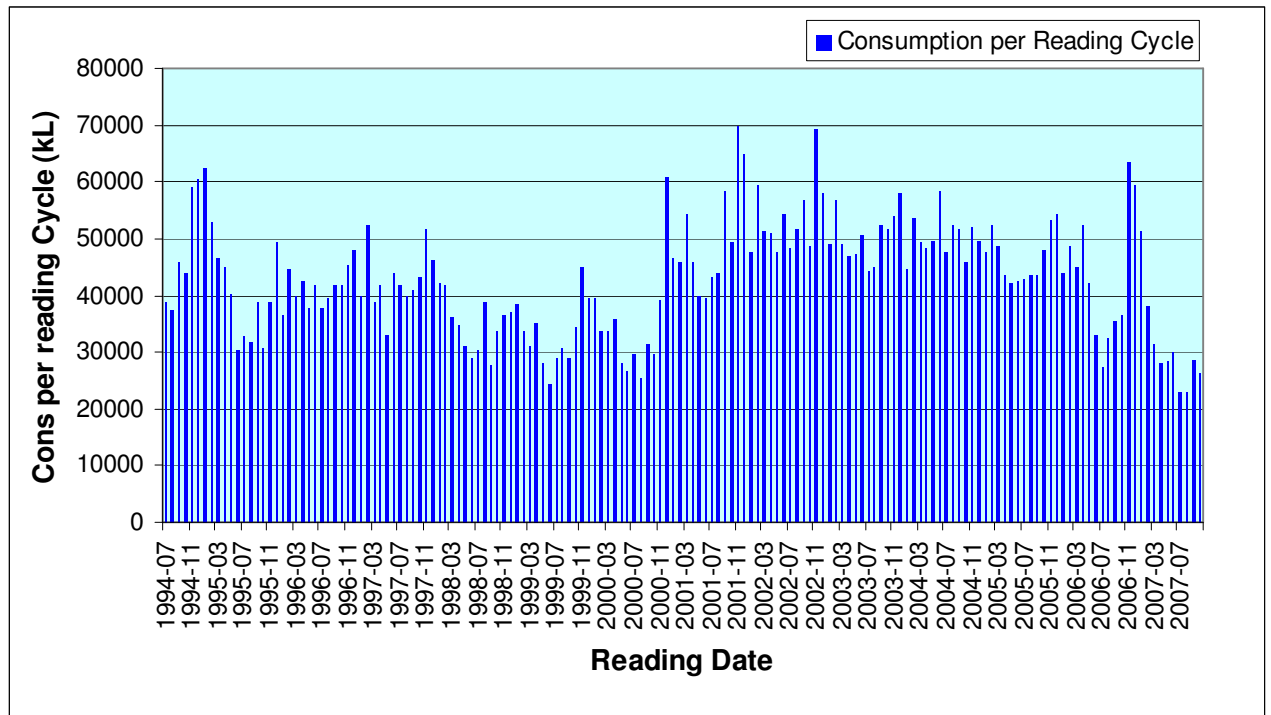


Figure 3 Monthly Scheme Water Use (optional)

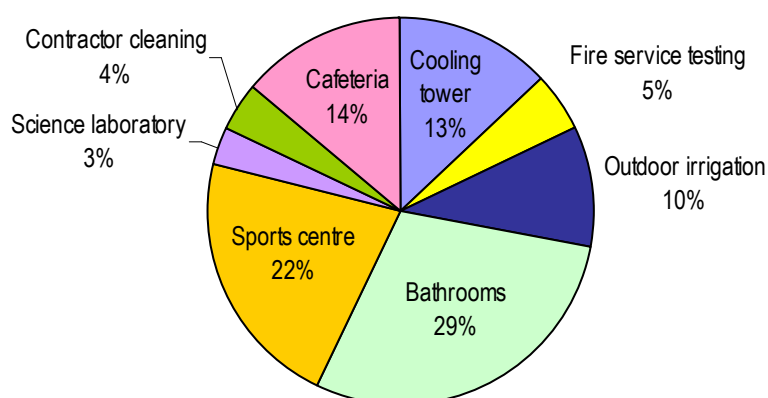
### 3.3 Water Balance

Sections 3.1 and 3.2 have determined how much water your business uses, from all sources. A site water balance is now necessary to determine how much water is actually used in each area of your business. A site water audit or sub-metering will be useful in accurately determining the water use in each area. **Table 5** (mandatory) has the required fields for completing this section.

## Monitoring of Actual Water Use

Once water using areas have been identified, the actual water used can be measured through sub-metering. Sub-metering high water demanding areas (such as cooling towers, production process, irrigation, showers etc) will help you gain a better understanding of each area and identify savings opportunities. This can be done manually (involve staff members to read the main meter at night and first thing in the morning, to check for leaks) or automatically via data loggers to record water use information in real time.

Once **Table 5** is completed, information can be graphed to provide a visual representation of major water using areas (optional).



**Figure Water Balance Chart (optional)**

### 3.4 Water Use Outlook

Once a WEMP has been submitted and approved, it is valid for 5 years. Hence, if there are plans for expansion, change in water use (new product line) or planned water conservation initiatives please provide a description of these in section 3.4.

This will assist you in explaining any increases in water use when submitting your annual review.



## 4. Indicators and Targets

### 4.1 Water Conservation Target

Setting water reduction targets will help drive the implementation of water conservation actions in your business. Targets need to include a realistic timeframe and the base year from which improvements will be measured.

It is possible that your site is already operating at best practice. If so, congratulations! You will still benefit from developing a WEMP to gain a full understanding of water use to maintain or improve current efficiencies.

Setting an overall target now provides good motivation for your team to begin the program, even though you may be optimising water use already. The WEMP allows for both short-term and long-term targets to be set.

#### 4.1.1 Short-Term Water Conservation Target

The short-term target should indicate what percentage reduction in water use can be achieved at your business site within the next year.

For example, “The site will reduce its water use per customer by 10% from 2005/06 levels to 2.86 kL/customer by 2006/07”.

#### 4.1.2 Long-Term Water Conservation Target

State your water conservation targets as a percentage reduction in terms of your core business indicator or in terms of a benchmark (best practice) if applicable.

For example. “The business aims to reduce water use per customer by 30% from 2006/07 levels to 2.0kL/customer by 2011/12” or “Our target is to operate at best practice of 2.0kL / customer within the next 12 months”.

The table below provides an example of calculations used to determined water conservation targets:

<b>2006/07 BASELINE DATA</b>	
Total Water Used (L)	100,000,000
Total number of litres produced (L)	20,000,000
Benchmark (L/Litre of drink)	5.0
<b>SHORT-TERM TARGET (2007/08)</b>	
10% reduction in benchmark from 2006 data (L/Litre of drink)	4.5
<b>LONG-TERM TARGET (2011/12)</b>	
Operate at best practice (L/Litre of drink)	4.2



## 5. Opportunities to Save Water

Now that you understand the site's water use and have set targets to reduce it, you need to identify improvements that can be made.

Date of walkthrough			
Area	Details of major water processes, equipment or appliances using	Observations	Recommendations or Action to be taken
Kitchen	Prepare food for meals	Thaw meat using water	Take out night before and place in fridge
Kitchen	Washing of dishes	Dishes washed under running water	Fill sink with water. Use flow restrictors.
Car wash	Car washing	No trigger nozzles on hoses	Fit trigger nozzles or purchase high pressure, low flow washing unit
Washdown	Equipment washing	Leaking taps	Replace tap washer
Washdown	Cleaning of floors	Hose	Use a squeegee mop

Consider opportunities in terms of efficiency and conservation, water re-use and wastewater management, culture and education and operational efficiency.

### 5.1 Efficiency and Conservation

Describe the efficiency measures that you will be undertaking at your site. A list of actions and description of how this will reduce your water use is required. For example, "Install flow control valves on all taps to reduce the flow rate to 4L/min".

The list below provides ideas and the associated potential savings. Actual water savings are site specific.



Opportunity to save water	Potential Savings/Outcome
Install flow control valves in taps / basins	12L/min to 4L/min 66% savings
Retrofit toilets to dual flush	9L to 6L/3L or 4.5L/3L 33 – 66% savings
Waterless urinals	Up to 97% reduction in water use
Water efficient showerheads	15L/min to 9L/min 40% savings
Upgrade appliances to 6 star (WELS rating system) water efficient appliances: dishwashers, washing machines, glass washers.	Up to 50% savings
Make sure combi ovens are on standby or off when not in use.	Reduce water wastage
Upgrade cooling towers – consider new technologies	Save up to 20L/min if a faulty ball valve is replaced
Install waterless wok stoves in restaurants	Up to 5000L/day
Hydrozone plants	Group plants with similar water requirements together to reduce water wastage
Plant drought-resistant species	Reduce water required for irrigation
Reduce irrigated area (prioritise outdoor areas)	Reduce water required for irrigation
Upgrade pre-rinse valves to water efficient versions	12L/min to 4L/min 66% savings
Backwash pools less frequently: investigate implications for water quality	Potential to save upwards of 10,000L per week
Install trigger nozzles on hoses	Reduce water wastage

## 5.2 Water Re-use and Wastewater Management (optional)

Water re-use opportunities relate to the capture and re-use of stormwater and wastewater. Please list any re-use opportunities relevant to your site. For example, “Redirect water in our final rinse process onto the garden”.

The list below provides ideas on water re-use opportunities.



Opportunity to save water	Potential Savings/Outcome
Re-use fire testing water	Savings will depend on where water is re-used and will be site specific
Capture and re-use dump water from evaporative coolers on gardens	Savings will depend on where water is re-used and will be site specific
Combine evaporative cooling water and rain water in tanks for reuse	Use for toilets or irrigation systems
* Sewer mining: tap into wastewater, treat and re-use	Use for flushing toilets
Capture and re-use stormwater: install a grease pollutant trap and re-use water on gardens	Reduce water required for irrigation
** Reuse backwash water from pools	Reduce water required for irrigation
* Use greywater from laundry on gardens (consider using liquid detergent that is low in phosphorus and salt)	Reduce water required for irrigation
Car wash water – use fire testing water / collect in tanks / put in a recycling system	Savings will depend on where water is re-used and will be site specific

\* Department of Health approval required

\*\* Local Authority Approvals required

### 5.3 Education and Awareness

Promoting water efficient behaviour helps raise awareness and can lead to a reduction in water use. List any cultural/ educational opportunities at your site. For example “Install signage at all water using fixtures to increase awareness”.

The list below provides ideas on awareness campaigns that can be run at your site.

Opportunity to save water	Potential Savings/Outcome
Install signage at all water using fixtures	Increase awareness Encourage water-conscious behaviour
Install shower timers to encourage shorter showers	Reducing shower time from 7min to 4min can save 30L/shower or 25,000L per year.
User education for dishwashers, washing machines and glass washers to ensure there is a full load	Reduce the number of loads per day
Include water conservation in future staff/tenant inductions	Raise awareness and promote water efficient behaviour
Use newsletters and communication tools to increase staff/customer awareness of water conservation and where water saving measures have been implemented	Raise awareness and promote water efficient behaviour
Run staff/student seminars or training programs	Raise awareness and promote water efficient behaviour
Develop an environment group within the business	Increase internal communications about water use
Promote your water-saving initiatives within the local community via media releases and the local newspaper	Enhance your company profile and raise awareness in the community
Include staff/contractors in identifying water-saving measures and developing projects	Increase likelihood of success through staff commitment to the program



Offer an incentive scheme to encourage a reduction in water use	Reduce water use on site
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### 5.4 Operational Efficiency

Improving the operational efficiency of machinery at your site is one of the easiest ways to reduce water wastage. List operational efficiency opportunities for your business. For example “read water meters on a daily basis to help detect leaks, and identify equipment that may be operating in error”.

Opportunity to save water	Potential Savings/Outcome
Install check meters / data loggers / smart metering to improve knowledge of where water is used	Identifies high water using areas to target for better management
Utility Management Systems	Identify leaks immediately
Routine maintenance or leak checking	Save up to 30% of water use
Consider including use of water efficient products in future lease agreements (businesses with tenants)	Save up to 50% of water use for a particular appliance
As water using appliances need upgrading consider water efficient replacements	Save up to 50% of water use for a particular appliance
Install check meters on cooling towers to identify leaks/faults	Faulty ball valves can waste 20L/min.

## 6. Action Plan

Once you have identified your list of improvement opportunities the next step of the WEMP process requires you to produce an action plan.

The following steps may assist you in further analysing water-saving opportunities, and in selecting options that are suitable for your action plan.

### **Step 1: Further investigate opportunities for improvement**

The actions required to improve water efficiency may not have been clear during your initial identification of opportunities and site walkthrough. You may need to carry out a technical water audit, perhaps using the assistance of a specialist. This will help quantify water savings specific to your site.

For example, you may have identified the cooling towers as an opportunity for improvement. You may require a technical review of their operation to determine exactly what improvements can be made. A cooling tower specialist could be engaged to review the water efficiency of cooling tower operation.

Low cost options with the potential to yield high water savings may not require further investigation.

### **Step 2: Feasibility Assessment**

Look at the technical viability of each opportunity (is it practical to implement?), as well as the financial viability or cost benefit analysis (is the payback period within the businesses normal payback period?).

**Table 7** (mandatory) documents the information you have collected during the feasibility assessment – the fields relating to cost and payback periods are optional.

Actions are prioritised in terms of the timeframe for implementation.



## 7. Annual Reporting

The progress of each WEMP will be monitored annually. Businesses will be required to report annually on the water savings actions, using **Tables 7, 8, 9a and 10** (mandatory). **Table 9b** relates to other sources of water, and is optional.

Water use information required in **Table 9a** (mandatory) can be provided by contacting the Manager, Customer Services on 9781 0506 or email [Julie.rawlings@busseltonwater.wa.gov.au](mailto:Julie.rawlings@busseltonwater.wa.gov.au)

**Table 9a** (mandatory) contains details of your baseline water use, as calculated previously in the WEMP. Use your usage for 2006/07 financial year as your baseline water use value. In the current information section, document your water usage for the current year.

The table below has been completed as an example of what you might submit. It has been filled out as if it were the year 2008/09.

### Example of Table 9a Water Savings Report for 2009/2010

<b>Baseline information:</b>	
1. Water use (kL/ yr)	71,000kL (2005/06 data)
2. Benchmark (s)	1.5kL of water used per customer
<b>Current information:</b>	
3. Annual water use (kL)	66,000kL (2008/09)
4. Benchmark (s)	1.3kL / customer
<b>Targets:</b>	
5. Water savings (kL/annum)	63,000kL (Target for 2008/09)
6. Benchmark (s)	1.1kL / customer (Target for 2008/09)
7. Target Saving(s) Identified in WEMP	
<b>Details (if targets were not met)</b>	
Increase in visitor numbers by 20% due to closure of a nearby shopping centre, resulting in an unexpected increase in water use in public amenities. Despite this increase in visitor numbers, a reduction in total water use was still achieved.	

**Table 10** (mandatory) confirms the information provided by the business as part of the annual reporting requirement is accurate. Once Section 7 has been reviewed and accepted by the Busselton Water, **Table 10** will be signed by Busselton Water. Busselton Water will notify the business that the WEMP has been accepted.



## 8. Management Commitment and Busselton Water Acceptance

**Table II** (mandatory) confirms commitment from the business to implement the water-saving actions identified in the WEMP. Once the WEMP has been reviewed and accepted by the Busselton Water, **Table II** will be signed by the Busselton Water. The Busselton Water will notify the business that the WEMP has been accepted.