

Water Efficiency Management Plan

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1. List of WEMP documents

Doc Ref #	WEMP Document	To be read in conjunction with WEMP Document
WG-1	WEMP Guideline	The <i>Water Act 2000</i> and the Water Restriction in force (available from the QWC website or your local water service provider). Water Service Providers must also refer to the <i>Notice of Procedures - Non-Residential High Volume Water Users Compliance Program (NoP)</i> Guidelines listed below
WG-2	Cooling Tower Guideline	WG-1, WG-14
WG-3	WEMP Assessment & Certification Checklist	WG-1, WG-7
WG-5	Technical Compliance Checklist	WG-3
WG-6	Audit Guideline	WG-1
WG-9	WEMP Template	WG-1
WG-12	WSP Quarterly Report Template	WG-1, WG-3
WG-14	Cooling Tower Annual Report Template	WG-1, WG-2
WG-16	Customer Annual Report Template	WG-14,
WG-17	Meter Reading Log Sheet	WG-14, WG-6, WG-9
WG-18	WSP Audit and Inspection Checklist	WG-1
WG-19	WSP Annual Report Template	WG-1, WG-3
WG-20	WEMP for Public Pools Less than 10 ML/year	WG-1
WG-21	WEMP for Nurseries, Turf Farms and Market Gardens Less than 10 ML/year	WG-1
WG-22	Irrigation WEMP and Certification Template	WG-1, <i>Efficient Irrigation for Water Conservation Guideline</i> and the Water Restriction in force.
Note	WG-4,7,8,10,11,13 and 15 are no longer in use	

2. Glossary of terms

Term	Definition
Business	A person, partnership, or corporation engaged in commerce, manufacturing, or a service.
Other non-residential water user	An entity that is not defined as a business, but uses water for non-residential purposes. This can include (but is not limited to) schools, active playing fields, swimming pools, retirement villages and premises under the <i>Body Corporate and Community Management Act, 1997</i> or the <i>Building Units and Group Titles Act, 1980</i> .
CIP	Certified Irrigation Professional
Cooling tower	An open recirculating cooling water system used to extract heat from processes or equipment on premises, which includes air conditioning chillers and industrial processes.
Customer	Refer to the <i>Water Act 2000</i>
Evaluation Criteria	<p>In the context of setting an alternate submission date for a WEMP, or the review of an implementation date for a measure contained in a restriction set out in the QWC Water Restriction (where the service provider has the discretion to vary such a date), the following criteria being:</p> <ul style="list-style-type: none"> • The extent of the immediate financial impact of compliance with the QWC Water Restriction on the entity owning or operating a particular affected premises; • The ability of such an entity to access information about the external resources that are reasonable, necessary or required to undertake the action or measure; • The past actions of the entity in respect of the particular premises in achieving water efficiencies prior to the commencement of the QWC Water Restriction; • The actions that have been taken by the entity in respect of the particular premises to comply with the QWC Water Restriction; and • Whether the alternate dates proposed by the entity to undertake the action or measure are reasonable in all the circumstances.
KPI	An index that accurately reflects the efficiency in water use for the Commercial Activity conducted at the premises and permits benchmarking with other like businesses.
ML	<p>Megalitre - measure of water consumption.</p> <p>1ML = 1,000,000 litres = 1,000 kilolitres</p>
ML/year	Megalitres per year
Non-residential customer	A customer of a non-residential premise as defined in QWC Water Restrictions.
NoP	<i>Notice of Procedures - Non-Residential High Volume Water Users Compliance Program</i>
QWC	Queensland Water Commission
Restriction	QWC Water Restriction, including Permanent Water Conservation Measures, issued by the QWC, pursuant to Section 36oZE of the <i>Queensland Water Act, 2000</i> .
SEQ	South East Queensland
Significant Proportion	<p>A significant proportion of water is defined as:</p> <ul style="list-style-type: none"> • Greater than 15% and less than 85% of total water use for premises using 50 ML/year or greater • Greater than 30% and less than 85% of total water use for premises using less than 50ML/year
Water Restriction (s)	Notice of Water Restriction(s) or Permanent Water Conservation Measures - Residential and Non-residential as issued by the QWC

Term	Definition
WEA	A Water Efficiency Assessor is a competent person who is able to support businesses and non-residential water users in developing an appropriate WEMP for the premises and in achieving best practice water use efficiency.
WELS	Water Efficiency Labelling Scheme (as per AS/NZ 6400:2005). A 6-star rating system used to highlight the water use efficiency of appliances or devices.
Water Efficiency Management Plan (WEMP)	<p>A Plan that has been:</p> <ul style="list-style-type: none"> • Prepared in accordance with this Guideline; • Submitted to the relevant water service provider for approval in accordance with the <i>Water Act, 2000</i>; • Is capable of third party certification; • Contains details of how a water consumption reduction of 25% or best practice will be achieved by the applicable date; and • Contains an outline of quantity of water saving that will be achieved with associated timelines.
Water Efficiency Management Plan (Standard)	Refers to all non-residential customers (identified under Water Restrictions 7.1, 11.3, 13.3 and 15.2) using 10 ML/year or greater and who are required to prepare and submit a WEMP.
Water Efficiency Management Plan (Simplified)	Refers to all non-residential customers (identified under Water Restrictions 11.3, 13.3, 15.2) using less than 10 ML/year and who are required to prepare and submit a WEMP.
Irrigation WEMP (IWEMP)	Refers to non-residential premises (identified under Water Restriction 12.1) using town water to irrigate an area greater than 500 m ² who are required to prepare and submit an IWEMP.
WEMP Guideline	Guidelines issued by the QWC to assist in the preparation, authorisation and submission of a WEMP.
WEMP Part	A component of a submitted WEMP, in which specific performance requirements and outcomes must be met by the business or non-residential water user for a specific end use category.
WSP	Water Service Provider, such as a local water authority.

3. WEMP guideline introduction and overview

3.1 Introduction

The Water Efficiency Management Plan (WEMP) program is a key element of the QWC demand management strategy requiring businesses to achieve water savings of 25% initially and achieve best practice water use efficiency over the long-term. While the development and implementation of a WEMP enables businesses to assess their activities and identify and implement water savings, the overall outcome is about businesses making the efficient use of water a part of normal day to day business operations.

The WEMP program is a Permanent Water Conservation Measure which will be retained even as South East Queensland (SEQ) steps back in water restriction levels. While a WEMP is a business requirement under Water Restrictions, the Water Restrictions (including Permanent Water Conservation Measures) and the WEMP process are statutory requirements enforceable under the *Water Act, 2000*.

The WEMP Guideline is to be used by customers and/or Water Efficiency Assessors when developing WEMPs for:

- all non-residential customers using greater than 10 ML/year ;
- nurseries, turf farms, and market gardens using less than 10 ML/year ;
- public pools using less than 10 ML/year ;
- all cooling towers; and
- non-residential premises using town water to irrigate areas greater than 500 m².

The Guideline is supported by QWC Water Restrictions, including Permanent Water Conservation Measures and should be read in conjunction with the applicable Water Restriction in effect. The Water Restriction identifies key actions that must be implemented by customers to manage their water consumption and improve water efficiency.

The NoP is a directional notice which WSPs must follow to provide a consistent and transparent decision-making approach to customers who must lodge and operate in accordance with a WEMP. The NoP is the minimum standard a WSP must follow in order to comply with the WEMP notification, assessment and decision-making process and QWC monitoring and reporting requirements.

A WSP may require activities or actions that are in addition to those required in the NoP. However, such activities cannot be inconsistent with those identified in the NoP and the *Water Act 2000*.

Similarly, the WEMP Guideline also sets out the minimum process that must be followed to enable the development of an effective WEMP with identified water saving project(s) that are to be implemented and forecast water savings to be achieved. The WEMP Guideline also identifies recommended actions that may assist in identifying and achieving additional water savings.

This WG-1 WEMP Guideline replaces previous versions issued by the QWC from time to time.

4. General WEMP Information

4.1 What is a Water Efficiency Management Plan (WEMP)?

A WEMP assists a business to:

- account for water use in a business or other non-residential premises;
- identify water saving measures that can be readily applied to a business or other non-residential premises; and
- prepare a plan for implementing the identified measures, including the identified savings and program priority and implementation timelines.

A WEMP must:

- be prepared in accordance with the Guideline;
- be submitted for approval to the relevant water service provider;
- be capable of third party certification; and contain details (including dates) of how the business is achieving, or plans to achieve, a 25% reduction of water use or move towards best practice. Best practice can be demonstrated by documenting the types of measures the business has implemented to achieve best practice and verifying why such measures are considered to be best practice. One way to provide verification is to assess and benchmark business activities and processes against industry accepted key performance indicators or relevant business or industry standards.

4.2 Why prepare and submit a WEMP?

The preparation and implementation of a WEMP is an essential part of a long-term strategy for more sustainable water use. The Plan has several benefits including:

- identifying water as a business input that should be considered as part of business and budgetary planning;
- assisting customers to reduce demand and better manage water consumption;

- recognising the linkages between water, energy and waste and the broader impact and savings that can occur with reducing water usage;
- ensuring a greater level of accountability and transparency in water use; and
- providing a process for regular review and uptake of water efficiency opportunities.

A customer, who is required to submit a WEMP and has not done so, may be subject to on-the-spot fines or prosecution under the *Water Act 2000*.

4.3 What resources are available to help complete your WEMP?

The WEMP Guideline has been developed by the QWC in consultation with key stakeholders to assist customers, WEAs, CIPs and WSPs in completing, approving and actioning WEMPs. The Guideline is supported by a number of technical guides, templates, spreadsheets, and charts which will:

- assist customers to complete and submit a WEMP;
- provide information on the roles and responsibilities of all stakeholders;
- assist WEAs and CIPs to prepare a WEMP on behalf of a customer;
- explain the WSPs' role in approving a WEMP;
- provide details of the WEMP submission and approval processes for WSPs;
- explain the various reporting requirements; and
- provide clarity as to QWC requirements and consistency in decision making and outcomes.

4.4 Who is required to prepare a WEMP?

The WEMP Process can be organised into five key categories:

- all non-residential customers (including those categories listed below) using 10 ML/year or greater or, a customer with a new building under construction;
- nurseries, turf farms, and market gardens;
- public pools;
- non-residential premises where the area to be irrigated with town water is greater than 500m²; and
- all premises with cooling towers.

4.4.1 Non-residential customers using 10 ML/year or greater

All non-residential customers (identified under Water Restrictions 7.1, 11.3, 13.3 and 15.2) using 10 ML/year or greater are required to prepare and submit a Standard WEMP.

This category is identified by water use in the following areas:

- an actual annual metered water consumption of 10 ML/year or greater based on the most recent four quarterly rating periods or, the last 12 month rating period (as applicable);
- an estimated annual consumption for the premises based on an extrapolation of the water consumption as set out in the available quarterly rating periods that is 10 ML/year or greater; or
- where a new building is under construction and the customer has received written notice to prepare a Water Efficiency Management Plan for the premises.

4.4.2 Nurseries, Turf Farms, and Market Gardens using less than 10 ML/year

Nurseries, turf farms, and market gardens using less than 10 ML/year (Water Restriction 15.2) are required to prepare and submit a Simplified WEMP.

This category is identified by water use in the following areas:

- an actual annual metered water consumption of less than 10 ML/year based on the most recent four quarterly rating periods or, the last 12 month rating period (as applicable); or
- an estimated annual consumption for the premises based on an extrapolation of the water consumption as set out in the available quarterly rating periods that is less than 10 ML/year.

4.4.3 Public Pools using less than 10 ML/year

All public pools (Water Restriction 13.3) using less than 10 ML/year are required to prepare and submit a WEMP.

This category is identified by water use in the following areas:

- an actual annual metered water consumption of less than 10 ML/year based on the most recent four quarterly rating periods or, the last 12 month rating period (as applicable); or
- an estimated annual consumption for the premises based on an extrapolation of the water consumption as set out in the available quarterly rating periods that is less than 10 ML/year.

4.4.4 Cooling Towers (Customers using less than 10 ML/year)

All premises with cooling towers (Water Restriction 11.3) must submit a WEMP, regardless of size. However, customers are permitted to complete a simplified WEMP if the cooling tower is located on premises that meet the following conditions:

- an actual annual metered water consumption of less than 10 ML/year based on the most recent four quarterly

rating periods or, the last 12 month rating period (as applicable); or

- an estimated annual consumption for the premises based on an extrapolation of the water consumption as set out in the available quarterly rating periods that is less than 10 ML/year.

4.4.5 Non-residential Irrigation (with an area to be irrigated greater than 500m²)

Customers seeking to use town water for irrigating areas greater than 500m² must develop an Irrigation WEMP (IWEMP) in conjunction with the requirements set out in the *Efficient Irrigation for Water Conservation Guideline*.

4.5 What needs to be in a WEMP

For a WEMP to be approved by a WSP or certified by a Certified Irrigation Professional in the case of an IWEMP, the following parameters must be met:

- All the detailed information as specified in WG-3 WEMP Assessment and Certification Checklist are met;
- All reasonable water saving measures or actions must have been considered for implementation and specific deadlines must have been set by the customer for their implementation;
- A monitoring program to ensure water savings are achieved within the set timeframes must be implemented; and
- The relevant templates/forms must be completed and signed off by an accountable officer.

4.6 Who is required to sign off on a WEMP?

The WEMP must be signed by an accountable officer (i.e. a person with the appropriate authority to authorise such actions, (for example, a CEO, an operations manager or business manager). This will signify a binding agreement between the business and their local WSP for the customer to continue to use town water and to complete the actions specified in the WEMP.

5. Roles and responsibilities

5.1 The Role of a Non-residential Customer

- All non-residential customers and/or owners of premises using 10 ML/year or greater must:
- submit a WEMP to their WSP;
- report annually on water use and compliance with their WEMP;
- update their WSP of any changes in water use;
- ensure any document prepared on behalf of the premises meets the requirements of the WEMP Guideline and other relevant documents to comply with Water Restrictions, including Permanent Water Conservation Measures, and
- monitor and record quarterly consumption and production data in order to complete annual reporting requirements.

5.2 The Role of a Water Efficiency Assessor (WEA)

A Water Efficiency Assessor (WEA) or other competent person may be engaged by a non-residential customer to:

- prepare and/or certify the WEMP;
- undertake any review of your water-using activities;
- prepare any reports required in accordance with the WEMP Guideline; and
- provide practical and cost-effective, water-efficient solutions with a view to achieving best practice water use efficiency that can be implemented within a reasonable timeframe.

A WEA could be one or all of the following of the following:

1. a registered professional engineer who has relevant industry experience and is experienced in water efficient technologies and performance. (A registered professional engineer must be a registered professional engineer as defined by the *Professional Engineers Act, 1988* (QLD); or
2. a licensed plumber registered with the Plumbers and Drainers Board (to the extent that the actions or proposed actions will be carried out by a licensed plumber); or
3. a person who has relevant industry experience and is trained to undertake water audits and/or assess water efficient technologies and performance.

It is recommended that you check with the relevant WSP for confirmation on the acceptable level of competency required for a WEA by the WSP, prior to engaging a WEA.

5.3 Role of the Certified Irrigation Professional (CIP)

There are two possible roles for a CIP in completing an IWEMP:

I. Preparation and Certification of a IWEMP

If a CIP is not associated or affiliated in any way with the business or non-residential water user undertaking the IWEMP, the CIP can prepare an IWEMP for that entity and certify the IWEMP prior to submission of a copy to the WSP. The IWEMP is submitted once the business or non-residential water user has authorised the actions recommended in the WEMP;

OR

II. Review and Certification of a IWEMP

If a business or non-residential water user elects to use its own staff to prepare an IWEMP, a CIP must be engaged to certify that the IWEMP has been prepared in accordance with, and meets the requirements of, the QWC guidelines.

In addition to certifying your IWEMP a CIP will be able to provide advice on:

- suitable efficient irrigation system for your premises;
- suitable irrigation scheduling requirements;
- water saving techniques and practices; and
- water efficient products and systems.

A list of Certified Irrigation Professionals can be found through Irrigation Australia Ltd. at www.irrigation.org.au.

5.4 The Role of the Water Service Provider

WSPs are required to provide final approval of all WEMPs except the IWEMP (refer to Section 5.3).

The specific functions of the WSP in the WEMP process are to:

- notify a customer of WEMP requirements;
- ensure compliance with the required submission date;
- approve or refuse the WEMP;
- audit and inspect business compliance with their IWEMP and/or approved WEMP; and
- report to the QWC on WEMP implementation and cancellation, including monitoring and enforcement, water consumption and water savings.

The WSP must ensure that Customers are notified of their requirements in line with the NoP and establish appropriate processes and procedures to monitor the receipt and processing of WEMP submissions.

6. WEMP preparation

6.1 Who can complete a WEMP?

A WEMP can be prepared by any person competent to:

- undertake a review of the water-using activities of a customer;
- prepare a report in accordance with the WEMP Guidelines; and
- provide practical and cost-effective, water-efficient solutions with a view to achieving best practice water use efficiency, that can be implemented within a reasonable timeframe.

Non-residential customers can prepare their own WEMP. However, if a Customer conducts his/her own audit and assessment of the premises, it is recommended that a WEA or other competent person verify and certify the WEMP as being prepared in accordance with and meeting the requirements of QWC Guidelines. For an IWEMP, a CIP must be engaged to certify the WEMP as being prepared in accordance with and meeting the requirements of QWC Guidelines.

6.2 Which WEMP do you need to complete?

To help facilitate WEMP preparation, templates have been developed. The templates, which are available from the QWC website, comprise of a number of MS Excel spreadsheets for the direct entry of required information and data from the analyses of other relevant investigations.

The three main WEMP template categories are:

- Standard (for all non-residential premises, including those business categories listed below using 10 ML/year or greater); and
- Simplified (for all nurseries, turf farms, market gardens, public pools and premises with Cooling Towers using less than 10 ML/year).
- Simplified for irrigation (non-residential premises with an area to be irrigated greater than 500 m²)

In some cases, where prior approval from the relevant WSP has been granted, customers may submit a WEMP in their own format, provided the required elements can be readily identified and provide the same type of information to an equal level of detail.

6.3 What does a WEMP include?

The required elements of the WEMP categories are outlined below.

6.3.1 Standard WEMP (Customers using 10 ML/year or greater)

This category encompasses all non-residential customers using 10 ML/year or greater, including nurseries, turf farms, public pools, and premises with cooling towers.

Water Audit

The water audit is the first step in preparing a Standard WEMP. It is fundamental to determining where and how the site's water is used, if water is wasted, and where appropriate savings measures can be made for inclusion in the WEMP Action Plan.

To assist in the preparation of an acceptable audit and increase the likelihood of gaining WEMP approval, a WG-6 *Audit Guideline* has been prepared.

The Audit Guideline suggests appropriate levels of audits based on consumption levels and usage complexity. A Scope and Content Checklist is provided in the Audit Guideline to assist in identifying common activities that use water. A *Technical Compliance Checklist* (WG-5) is also provided to assist in identifying typical end uses and water savings measures. If water saving measures are not identified, the auditor needs to briefly explain why and include the completed Checklist with the WEMP submission.

A Standard WEMP must include the following parts of the WEMP Template (WG-9):

General Data (Modules G1-G4)

This includes customer and account details, site address, contacts, and administrative-type information.

Scope of the Plan (G5)

The scope is a description of what end use categories are included (e.g. 5-1A-Taps & Showers, 5-1B-Toilets & Urinals, 2-Cooling Towers). The scope should include information about activities on the premises product outputs, hours of operation, number of personnel, and any significant variations that may occur from time to time such as seasonal variations (holidays) where premises may be open for longer hours and businesses may employ additional staff.

The scope should also include details on any future plans the business may have that might impact on water consumption (e.g. business expansion).

Business and Site Data (Module G6)

This module includes key details about the site, including information on the town water reticulation system throughout the site, the meters in place and whether other water sources such as bore water or recycled water are used on site - a site plan is recommended. The Module also provides for specific information about the main business activities conducted on the premises (a process description and flow chart can be used.)

Water Management Review and Actions (Modules 2 and 3)

The Management Review is intended to be a review of the organisational structure, roles and responsibilities in relation to water management including an assessment of staff and management attitudes and behaviour towards water use. It should identify ways in which water efficiency can be integrated into business and budgetary planning.

A Management Review must be conducted with outcomes and actions arising included in the WEMP. The review should focus on at least the following five key management areas or elements:

- Accountability;
- Management Structure;
- Staff Awareness and Training;
- Reporting; and
- Budget.

The outcome of the review should be used to clearly define actions, assign responsibilities to specific individuals and to establish firm dates for completion in the WEMP. Actions should be included in the site's action plan with designated timeframes and responsible persons identified.

End Use Categories (Module 4)

The function of this module is to list all categories of water use on a site.

Taps and Showers (Module 5-1A)

Module 5-1A Taps and Showers is a water end use category specifically targeted under QWC demand management strategy.

Such fittings are typically found in bathrooms, but can also be found in workshops, kitchens and outdoor work areas. High density, high usage situations such as sports-related shower blocks and dormitories have the potential to provide significant water and related energy savings.

Certain applications of taps and showers should not be considered for water efficiency measures. These applications are where the water use is based on a volumetric use or have a specific design that cannot be altered.

Some examples of these may include, but are not limited to:

- laundry taps connected to washing machines;
- baths;
- taps controlling toilet cisterns; and
- safety equipment (eg deluge showers, eye baths).

Regulatory Requirements

All non-residential customers with water use greater than or equal to 1 ML per year must install water efficient taps and showers.

This requirement must be met unless written approval has been given by the WSP.

Module 5-1A is essentially an inventory of existing taps and showers, with appropriate actions and timelines outlined for completion of any required retro-fitting or replacement. The Customer and/or owner must separately show and specify actions to replace or improve the performance of existing taps or showers.

Performance Requirements

Taps and showers must meet a specific performance requirement, as specified in Table 1. These are minimum standards. It may be more cost-efficient if fixtures of higher water efficiency are implemented, particularly if greater hot water savings can be achieved.

Table 1: Taps and Showers Performance Requirements

Fixture	Description	Performance Requirement
		Minimum WELS Rating (★ ★ ★)
Tap	New/improved efficiency/replacement tap	Three (9L/min)
Shower	New/improved efficiency/replacement shower	
Commercial Kitchen environments		
Trigger sprays	Mounted, flexible hoses with automatic cut-off trigger	Three (9L/min)

Technical Guidelines

- AS/NZS 6400:2005 - Water efficient products — Rating and labelling standard
- Water Efficiency Labelling Standards (WELS). The WELS scheme came into effect in July 2006, providing a way for consumers to assess how much water an appliance or fixture uses. For more information on the WELS scheme's 6-star rating system, go to:

- *Water Efficiency Labelling Standards (WELS)*
<http://www.waterrating.gov.au>

Existing taps and showers may be fitted with a flow restriction device that can reduce the flow of water to give the equivalent of a WELS compliant fitting.

Toilets and Urinals (Module 5-1B)

This section addresses toilets and urinals and how they can be assessed and modified or replaced to save water. While urinal retrofits are a requirement under Water Restrictions, toilets are not, but are recommended to be retrofitted where possible.

Performance Requirements

Urinals must meet specific performance requirements, as specified in **Table 2**. These are considered to be minimum standards and it may be more cost-effective if fixtures of higher efficiency are installed. "Waterless" urinals should also be considered.

Technical Guidelines

- Establishing appropriate actions for urinals:
 - *Waterless*. Waterless technology should be implemented where possible.
 - *Water-efficient technology*. The use of urinals achieving WELS 4-star rating (or greater) should be implemented with great care taken in the positioning, orientation and programming of any sensor-based flush controls. Battery powered sensors should be avoided – power should be sourced from mains supply.
- WELS. The WELS scheme came into effect in July 2006, providing a way for consumers to assess how much water an appliance or fixture uses. For more information on the WELS Scheme's 6-star rating system, go to:

- Water Efficiency Labelling Standards (WELS)
<http://www.waterrating.gov.au>

Urinals

- When selecting new urinals, look for the WELS Rating sticker.
- All urinals should use waterless technology if possible.
- Where waterless technology is demonstrated to be impractical for a business to install, all urinals must demonstrate equivalent flow rating performance to at least 4-star urinals.

Volume Control Devices

It may be possible to install volume reduction devices (e.g. cistern 'dams') to reduce the amount of water used by a toilet or urinal. However you will need to check with the manufacturer's requirements.

Toilets

- When selecting a new toilet, look for the WELS Rating sticker.

Cooling Towers (where applicable) (Module 5-2)

Cooling tower systems used for air conditioning and industrial process cooling can consume large amounts of water in the non-residential sector. Under Water Restrictions, all cooling towers at premises using 10 ML/year or greater must be audited and identified operational efficiency measures must be implemented to reduce water use.

Performance Requirements

As a part of the requirements of a WEMP, best practice management of a cooling tower is required. This includes monitoring water use, minimising water wastage and overall operating the cooling tower in a manner that conserves water.

A cooling tower is considered "inefficient" if:

- more than 8% of the make-up water is lost to leakage; and/or
- the system is operating at less than 5 cycles of concentration.

Table 2: Toilets and Urinals Performance Requirements

Fixture	Description	Performance Requirement	
		Minimum WELS Rating (★ ★ ★)	Alternative to WELS
Toilet	Existing dual flush toilets	One (9/4.5 L)	
	New/replacement toilet	Three (6/3 L)	
Urinals	New/improved efficiency/ replacement urinal	Four (1.5L per flush)	Max daily use of 10L/stall or 600mm of continuous wall

Monitoring of the cooling tower is required to determine the level of leakage and cycles of concentration at which the system operates. Sub-meters are required to be installed when the cooling tower uses a '*significant proportion*' of the total water used on site. Significant proportion is defined as:

- 30-85% for cooling tower sites up to 50 ML/year, and
- 15-85% for cooling tower sites 50 ML/year or greater.

Sub-meters must be installed at:

- the inlet (make-up) line to the cooling tower; and
- the outlet (bleed) line from the cooling tower.

Customers are required to monitor sub-meters on weekly basis, as a minimum (Refer WG-2). Sub-meter readings are to be recorded (logged) and available on request for inspection by a representative of the WSP.

During the water audit in preparation of a WEMP, readings should be recorded as an hourly average using data loggers. This record forms part of the submission process for the WEMP and the data is used to complete Module 5-2 of the *WEMP Template* (WG-9).

In addition, the WEMP must include the following:

- specific actions improve the water efficiency performance of existing cooling towers which may included the replacement of highly inefficient cooling towers;
- the timeframe and priority for implementing water efficiency measures; and
- if sub-meters are installed on the make-up water lines and bleed lines of cooling tower(s), proof must be demonstrated by supplying a sub-metering plan (schematic or location map) showing meter serial numbers.

Further compliance reporting and technical guidance is provided in WG-2 *Cooling Tower Guideline*. This guideline includes detailed Checklists for use by auditors in quarterly and annual reporting. This Checklist is also suitable for the Performance Review by a WEA.

End Use Inventory (Module 6)

Module 6 is provided to capture water savings based on end use category. Please provide a summary beside each end use of how the figure was calculated (e.g. sub-metered, based on manufacturer specifications, etc).

End Use Totals (Module 7)

Module 7 requires no action from the Customer. Totals are automatically calculated.

End Use Consumption Breakdown Chart (Module 8)

Module 8 requires no action from the Customer. Totals are automatically calculated.

Water Saving Measures Action Plan (Module 9)

The Action Plan is a schedule of assigned actions and measures, with a commitment to implement all necessary measures to achieve a 25 per cent reduction or best practice by dates with a quantification of savings over time.

An action plan must include completion dates, associated savings, and responsible persons identified for completing an action. The water end use consumption breakdown chart should be used to identify where savings can be made. Literature relating to the water efficiency for particular uses should be used to compare to water usage. Equipment suppliers should be able to assist you with typical water use for a particular process or equipment need.

Best Practice

Where a customer states that best practice water consumption efficiency is being achieved it must be supported with evidence such as documenting the types of measures the business has implemented to achieve best practice and verifying why such measures are considered to be best practice.

Assessing and benchmarking business activities and processes against industry accepted key performance indicators or relevant business or industry standards would provide verification.

6.3.2 Simplified WEMP (Customers less than 10 ML/year)

Nurseries, turf farms, market gardens, and public pools using less than 10 ML/year should submit a simplified WEMP specific to the business type. Templates WG-20 and WG-21 are available for download from the QWC website for this purpose.

6.3.3 Simplified WEMP for Cooling Towers (Customers less than 10 ML/year)

For cooling towers using less than the 10 ML/year, the WEMP submission must include the following modules from the WG-9 *WEMP Template*:

General Data (Modules G1-G4)

This includes customer and account details, site address, contacts, and administrative-type information.

Scope of the Plan (G5)

The scope is a description of what end use categories are included (e.g. 5-1A-Taps & Showers, 5-1B-Toilets & Urinals, 2-Cooling Towers). The scope should also include information about activities on the premises, hours of operation, number of personnel, and any significant variations that may occur from time to time such as seasonal variations (holidays) where premises may be open for longer hours and businesses may employ additional staff.

Business and Site Data (Module G6)

This module includes key details about the site, including information about the town water reticulation system throughout the site, the meters in place and whether other water sources such as bore water or recycled water are used (a site plan is recommended). The Module also provides for specific information about the main business activities conducted on the premises (a process description and flow chart can be used).

Cooling Towers (Module 5-2)

Cooling tower systems used for air conditioning and industrial process cooling can consume large amounts of water. Under Water Restrictions, all cooling towers must be audited and identified operational efficiency measures must be implemented to reduce water use.

See Section 6.3.1 for a detailed description of this module.

6.3.4 Simplified WEMP for Irrigation (IWEMP) (area to be irrigated greater than 500m²)

Non-residential premises seeking to use town water for irrigation of a garden and/or lawn area greater than 500 m² must:

- prepare an IWEMP using Template WG-22 (available on the QWC website);
- install a sub-meter on the supply line of the system (refer also to Section 6.4);
- demonstrate how the water is to be efficiently used, managed and monitored in accordance with the *Efficient Irrigation for Water Conservation Guideline*;
- maintain a written record of water usage for each sub-meter;
- have the IWEMP certified by a Certified Irrigation Professional (CIP);
- submit a copy of the certified IWEMP to the relevant Water Service Provider; and
- Comply with the irrigation times set out in the QWC Water Restriction, (including Permanent Water Conservation Measures) – Category 12.1 and 12.2

Please note:

- Customers must check the applicable Water Restriction in force as the irrigation of gardens and lawns is not permitted under some levels of Restriction .
- Water from the reticulated (town) supply is not permitted for irrigation of Road reserves, Local, State and Commonwealth government reserves and Council parks (refer to Restriction 12.4).
- The use of reticulated (town) supply system for irrigation of Active Playing Surfaces must be in accordance with the Active Playing Surface Guidelines.

6.2 Sub-Metering

In addition to submitting a WEMP, high volume non-residential water users must install a sub-meter on the supply line of processes or equipment which uses a 'significant portion' of the site's water and on the supply line of an irrigation system.

One critical success factor for an effective water audit is access to sub-metering data for major water loads. Such data helps confirm estimated/calculated end use breakdowns from modelling and provides invaluable insight into after-hours flows (e.g. leaks) and abnormal flow patterns during operations (e.g. faulty solenoid valves, incorrect control settings).

For premises using 10 ML/year or greater, a Sub Metering Plan must be developed.

- For premises using more than 10ML/year but less than 50 ML/year, the Plan must show the location of the sub-meters for all facilities, processes and/or items of equipment accounting for 30-85% or more of the total site water end use.
- For premises using 50 ML/year or greater, sub meters must be fitted to all loads representing 15-85% or more of the total load and the location of each sub meter clearly identified on the Plan.

The sub-meters must be water mark approved and suitable for data logging. A licensed plumber must be employed to install or make any changes to sub-meter arrangements. As part of the WEMP Water Audit, for all such sub-meters and the WSP billing meter(s), a customer must record an hourly average continuously (24 hours a day) for a period of not less than 4 weeks over the audit period.

Post-audit, such data logging should ideally be permanent with users having on line access to data and automated reports. However, as a minimum, readings should be recorded weekly for each sub-meter using WG-17 *Meter Reading Log Sheet*. The Log Sheet can be expanded in scope as required to collect other useful data (e.g. cooling tower water conductivity, vehicles cleaned, pool backwash times, etc).

One reading should be taken at the end of operations or the last shift on the last working day of the week and a second reading taken at the start of the next day of operations or the start of the next shift. If this is not possible due to continuous plant operations, then time-of-use meter data logging will be needed for analysis.

This data should be used to assess total usage for the week and to check for leaks and unexplained usage during the non-operational periods. The weekly usage should be used to calculate an average kl/day figure to be compared with figures for the previous week and month and the same week and month last year.

This data log should be maintained and used in annual reporting to the WSP (see reporting requirements in Section 8). Any leakage or other unexplained base flows should be addressed promptly. Additional time of use data logging may be required as part of any detailed investigation of system problems.

7 WEMP Submission process

The WEMP submission and approval process is set out in detail in WG-3 WEMP Assessment Checklist and the NoP.

7.1 Approving or Refusing a WEMP (excluding IWEMP)

Following submission of a WEMP to the WSP for approval, the WEMP is considered operative in that the customer must operate in accordance with the submitted WEMP until the WSP approves or refuses the WEMP. The WSP and customer, as part of the WEMP approval process, may agree to changes to the WEMP, which must then be implemented in accordance with the WEMP Action Plan.

The customer and/or business owner and/or water user is responsible for carrying out all actions identified in the WEMP Action Plan and must adhere to the nominated time frames (unless advised otherwise by the WSP).

For an IWEMP, following submission of a copy of the certified IWEMP to the WSP, the IWEMP is considered operative in that the customer must operate in accordance with the certified IWEMP.

8. Performance review and reporting

8.1 Customer Reporting Requirements – All WEMPs

Under Section 360ZCF of the *Water Act 2000* and the NoP, an annual report must be submitted to the WSP.

8.1.1 Quarterly

Quarterly reporting was required for the March quarter 2008 and each quarter after until the March quarter 2009.

After the March quarter 2009, reporting is only required annually. However, customers are still required to monitor and record consumption and production data in order to complete the annual report.

8.1.2 Annual

Each customer is required to provide an annual report on the progress of WEMP implementation and water savings. The Annual Report must be submitted to the WSP within 10 business days from the last business day of October each year and must cover the twelve (12) months prior to that date.

This report shall be in the form of the template provided in WG-16 *Customer Annual Report Template*. Prior to drafting an Annual Report, customers should check the QWC website for the most recent version of the template.

8.2 Customer Reporting Requirements - Cooling Towers

Customers with cooling towers on the premises have additional reporting requirements.

8.2.1 Quarterly

Quarterly reporting was required for the March quarter 2008 and each quarter after until the March quarter 2009. After the March quarter 2009 reporting is only required annually. However, where applicable, customers are still required to monitor and record consumption and production data in order to complete the annual report.

8.2.2 Annual

Each Customer is required to submit an annual report in the form of WG-14 Cooling Tower Annual Report Template. Customers with Cooling Towers using 10 ML/year or greater will also need to submit the Customer Annual Report Template (WG-16) in addition to WG-14.

Prior to drafting an Annual Report, customers should check the QWC website for the most recent version of the template.

8.3 WSP Reporting to the QWC

In accordance with Section 360ZCF of the *Water Act, 2000* and the NoP, the WSP must report to the QWC as directed.

8.3.1 Quarterly

WSPs are required to provide the QWC with a status and consumption quarterly report in the form of WG-12 WSP Quarterly Report Template. This report summarises the water consumption for 10 ML/year or greater customers. The WG-12 WSP Quarterly Report Template also summarises the status of WEMPs, and if appropriate, progress towards approval. It also provides information on WSP audit and inspection activities as well as providing information on APS activities and registration.

8.3.2 Annual WEMP Report

WSPs are required to provide the QWC with an Annual WEMP Report in the form of the template WG-19 for all WEMP customers. The report will summarise the Annual WEMP Reports of WEMP customers, including status of the WEMP, annual water consumption and provide information on CAUs and ANZSIC codes.

8.3.3 WEMP Amendment and Review

The QWC may direct a WSP to give a notice to a customer to amend an approved WEMP or to prepare a new one. A WSP may also require a WEMP to be amended or a new WEMP to be submitted.

The WSP may give a customer notice to amend a plan or to prepare a new one if:

- production output or water consumption has increased significantly and this has not been addressed in a WEMP;
- the cost effectiveness of implementing an approved WEMP has changed significantly; or
- there is, or is likely to be, a severe water shortage.

A customer may request approval from the WSP to amend an approved WEMP or to prepare a new WEMP. The WSP has discretion to accept or refuse such a request.

A WSP must ensure a customer's approved WEMP is reviewed when appropriate (at a minimum of every 5 years).

8.3.4 WEMP Cancellation

A WEMP customer may apply for cancellation of an approved WEMP if the customer can show, to the reasonable satisfaction of the relevant Water Service Provider, that the quantity of water use at the relevant premises has been, for at least 1 year immediately before the application for cancellation is made, less than 10ML/year, and is not likely to exceed 10ML/year again.

Applications for WEMP cancellation are to be made direct to the relevant Water Service Provider.

9. Tools and checklists explanatory notes

A range of guides, checklists, and templates have been developed to reduce the workload for customers, WSPs and WEAs. These should also increase consistency of submissions and reduce the number of rejections and conditional approvals.

9.1 Cooling Tower Guideline (WG-2)

This Guideline provides an introduction to cooling towers, the terminology involved, and parameters of concern to the QWC. It explains the spreadsheet Module 5-2 in WG-9 WEMP Template.

9.2 WEMP Assessment and Certification Checklist (WG-3)

This checklist outlines the minimum requirements that must be met to satisfy the *Water Act, 2000*, Water Restrictions and the WEMP Guideline. It ensures that all WSPs adopt a uniform and consistent approach. It is also useful to the party preparing the WEMP.

9.3 WEMP Technical Compliance Checklist (WG-5)

This checklist shows the typical end use categories that one can expect to find in different business sectors. It then indicates a range of water saving measures one would expect to see in a WEMP to increase efficiency of each of these end use categories. It is meant as a memory jogger and guide for WEAs and WSPs to help ensure WEMPs cover all possibilities.

9.4 Audit Guideline (WG-6)

This guideline provides standard report outlines and scopes of work for different levels of audit to suit the complexity and usage level of the premises. Checklists help ensure that all major issues are addressed and elements included.

9.5 WEMP Template (WG-9)

This template can be downloaded from the QWC Website and may be completed and lodged electronically. Customers can amend the template to better suit individual business operations. The WEMP Template (WG-9) is an Excel spreadsheet with a number of worksheets or modules that act as electronic forms. Some basic calculations are automated but user flexibility has been optimised.

The main elements of the WG-9 WEMP Template are:

- General and Account Data (Modules G1-G4);
- Scope of the Plan (Module G5);
- Premises and Business Description (Module G6);
- Management Review and Actions (Modules 2 and 3);
- End Use Categories (Module 4);
- Taps and Showers (Module 5-1A);
- Toilets and Urinals (Module 5-1B);
- Cooling Towers (Module 5-2);
- End Use Inventory (Module 6);
- End Use Totals (Module 7)
- End Use Consumption Breakdown Chart (Module 8); and
- Water Saving Measures and Action Plan (Module 9).

9.6 Cooling Tower Annual Report Template (WG-14)

This document allows reporting in a standard form for electronic submission. The data captured satisfies the QWC requirements and the checklist ensures that best practice levels of performance are obtained.

9.7 Customer Annual Report Template (WG-16)

The Customer Annual Report is to be submitted to the relevant WSP at the end of each year.

Further Information Required?

If you require further information or assistance with the preparation of a WEMP, please contact your WSP. Further information can also be found at the QWC website, www.qwc.qld.gov.au

9.8 Meter Reading Log Sheet (WG-17)

This worksheet allows main supply and sub meter usage to be recorded. In addition, business activity data is recorded to allow benchmarking to be performed. The use of this worksheet is a mandatory requirement under the Water Restrictions.

9.9 WSP Audit and Inspection Checklist (WG-18)

This worksheet is designed to assist Water Service Providers in auditing customers and insuring compliance with the Water Restrictions.

9.10 Water Service Provider Quarterly Report Template (WG-12)

The WSP Customer Quarterly Report is to be submitted to QWC at the end of each three-month period.

9.11 Water Service Provider Annual Report Template (WG-19)

The WSP Customer Annual Report is to be submitted to QWC at the end of each year.

9.12 WEMP for Public Pools Less than 10 ML/year (WG-20)

This is a simplified WEMP template for a Customer to submit to their relevant Water Service Provider.

9.13 WEMP for Nurseries, Turf Farms, and Market Gardens Less than 10 ML/year (WG-21)

This is a simplified WEMP template for a Customer to submit to their relevant Water Service Provider.

9.14 Irrigation WEMP (irrigated areas greater than 500m²) (WG-22)

This is a simplified WEMP Template for a Customer to submit to their relevant Water Service Provider.