GUIDELINES FOR

WATER SAVINGS ACTION PLANS

DEPARTMENT OF ENERGY, UTILITIES AND SUSTAINABILITY
NEW SOUTH WALES GOVERNMENT

Water for Life Plan
NSW GOVERNMENT

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// INTRODUCTION

Why Water Savings Action Plans?

As detailed in the NSW Government's 2004 Metropolitan Water Plan for Sydney, "Sydney is using more water than is sustainable". Over the next 25 years, the existing shortfall between the amount of water used and the amount provided by catchments will increase.

The Metropolitan Water Plan includes a range of initiatives to respond to the current drought and increase the certainty of future water supplies. The Plan – and the *Energy Administration Amendment (Water and Energy Savings) Act 2005* – gives the NSW Department of Energy, Utilities and Sustainability (DEUS) the responsibility to promote improvements in the water efficiency of key businesses, local government and NSW government agencies.

Experience in NSW and elsewhere has demonstrated that even the largest and most sophisticated water users – nevermind the users for whom water is a relatively small part of their operations – can find additional opportunities for cost-effective water savings. There are various techniques available for identifying and assessing those potential savings, and the purpose of Water Savings Action Plans is to identify and help deliver those savings in a practical, effective and flexible way.

Specifically, DEUS will promote improvements in water efficiency by:

- providing the guidelines for Water Savings Action Plans for use by business, Local Government and NSW Government agencies
- ensuring good quality Water Savings Action Plans are in place for designated high water users and
- ensuring program participants report on their progress towards implementing cost-effective water efficiency improvements on an annual basis, and revise their Water Savings Action Plan every four years.

DEUS recognises that many businesses have already taken the initiative to identify where they can save water. Any work completed by an organisation for internal purposes or under another government or utility-sponsored program, can be used to partially or wholly fulfil their requirements but an acceptable Savings Action Plan must still be submitted. Appendix A outlines how other programs relate to Water Savings Action Plans.

Who is Required to Develop Water Savings Action Plans?

These Guidelines are designed to assist any organisation in developing a Water Savings Action Plan as a first step to identifying and implementing substantial water savings. The following organisations within Sydney Water's area of operations (Sydney, Blue Mountains and Illawarra) are legally required to develop Water Savings Action Plans after being designated by the Minister for Utilities in a gazetted Savings Order:

- business and government agencies with high water use at a site
- local councils.

Skills Needed to Prepare a Water Savings Action Plan

Water Savings Action Plans need to be prepared by an experienced person with:

- relevant water management experience
- understanding of the designated user's industry sector
- understanding of business management systems
- skills in communicating and negotiating with management teams
- ability to identify water efficiency measures.

DEUS is developing training support to assist internal and external assessors and managers in preparing Water Savings Action Plans.

What is in these Guidelines?

These Guidelines are provided for all designated users developing and implementing Water Savings Action Plans under the Metropolitan Water Plan. The overarching aim of these Guidelines is to make sure that actual water savings are made.

The *Energy Administration Amendment (Water and Energy Savings) Act 2005* provides that a Water Savings Action Plan **must** be prepared in accordance with these Guidelines.

In this document we lay out a process in steps that will ensure your organisation will be able to:

- use accurate data
- identify and promote improved management practices related to water
- identify measures that will result in actual savings
- implement measures that are highly cost-effective for you and
- confidently report your achievements to stakeholders and shareholders.

The approach outlined in these Guidelines is based on similar approaches used elsewhere in Australia and overseas for identifying energy and water savings measures.

There are a number of tasks identified in these Guidelines – some can be done in parallel, but others need to be done in sequence. This section provides an overview of the tasks required and the rationale for each one. The next section titled, "Making a Water Savings Action Plan", provides more detail on tasks, and provides templates for data collection. Templates have been designed as a guide, organisations may choose to modify the templates to suit their needs.

Appendix A outlines how work undertaken through another program relates to the tasks involved in preparing a Savings Action Plan.

Task 1. Determining How Much Water is Used

The first step is to use 12 months of water usage data to identify the existing **baseline water use**. This baseline water use needs to accurately reflect regular operating conditions. For this reason you should record any anomalies in the baseline, which takes into account any unusual operating circumstances in the baseline year, and makes sure your actual future savings are recognised against the correct starting point.

Task 2. Planning at Management Level

It is invaluable to involve the right level of management at the right time in your water planning and identify the appropriate level of accountability. The term used for this step is a **Water Management Review**.

Task 3. Determining How Water is Used and Efficiency Opportunities

A **technical review** is used to break down water usage at a site. This breakdown will help assess what appliances and processes are consuming water, and will facilitate the assessment of water utilisation and opportunities for investment. Technical reviews should be conducted to a level that enables investment decisions to be made based on whether an opportunity meets or exceeds an organisation's hurdle rate of return and other applicable business investment criteria.

With regard to local councils, it is recommended as a guide that the top 10 sites be included in the Water Savings Action Plan to capture the bulk of the water use. However, the measures in the Plan may relate to more or fewer sites.

Task 4. Putting the Plan Together

The Plan itself is a compilation of all the tasks undertaken in identifying water use and a priority list for implementation of savings measures. The plan will be assessed by DEUS (see guide on page 20) in making recommendations to the Minister for Utilities as to the approval of the Plan.

Task 5. Implementing and Reviewing Plans

Plans will include a list of actions that will be implemented over the next 4 years. Annual progress reports on outcomes are to be prepared, and Plans reviewed every 4 years.

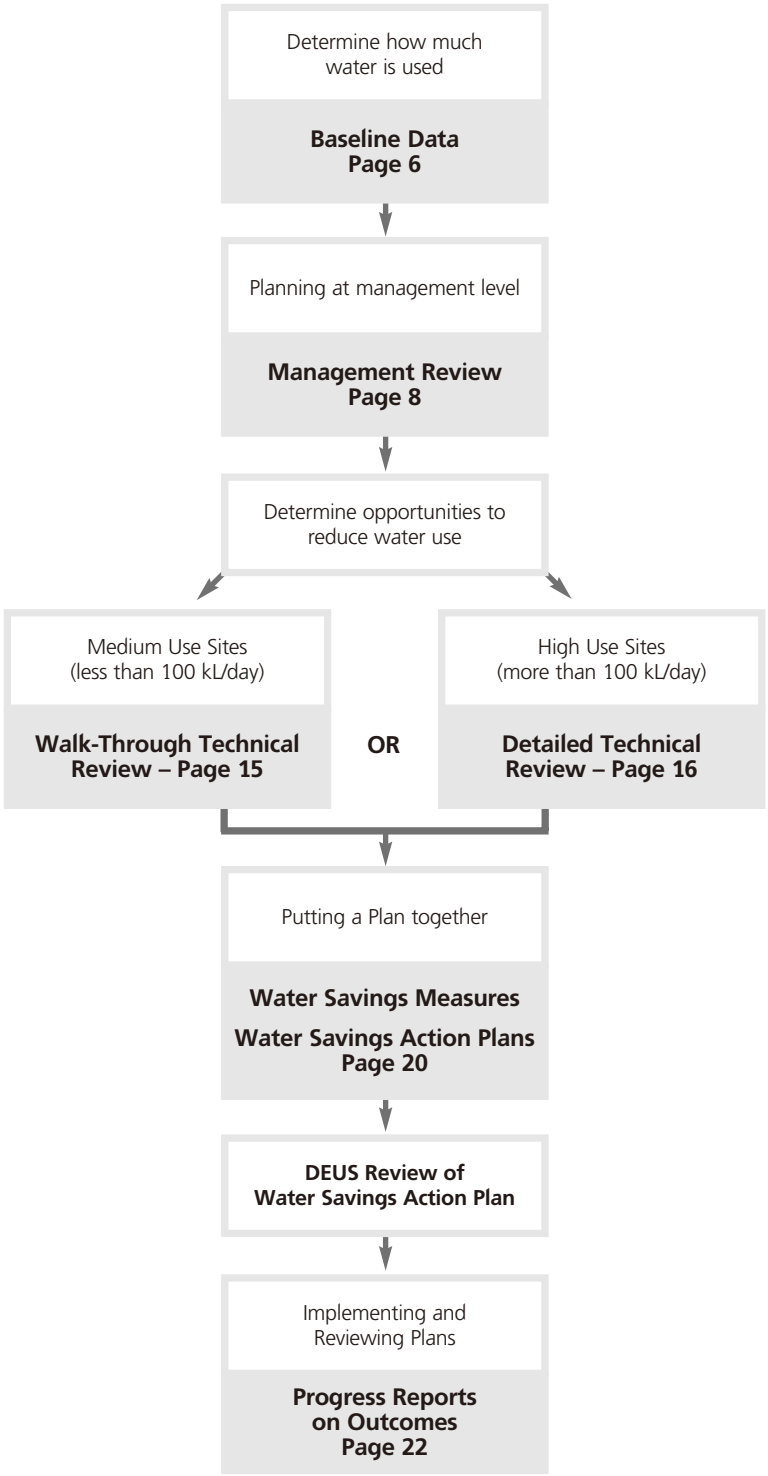
Relationship to Energy Savings Action Plans

For sites that are required to prepare and implement an Energy Savings Action Plan and a Water Savings Action Plan the two Plans may be combined within a single 'Energy and Water Savings Action Plan', making sure to fully meet the requirements set out in both Guidelines.

Confidentiality

Information provided to DEUS by a designated user through the Plan process will be treated confidentially when it is commercially confidential in its nature and nominated as such by the user.

Steps in Preparing a Water Savings Action Plan



Determining How Much Water is Used

Monthly water use data will determine what detail is required for the rest of the process in developing Water Savings Action Plans. This section describes how to collect this information.

All designated users must determine their **baseline water use**.

What is Baseline Water Use?

Your organisation's baseline water use is simply what water you would expect to use on a regular and repeatable basis. It is an important measure as it will determine what water savings are achievable in any given year.

How to Determine Baseline Water Use

Step One: Collate **monthly historical water use data** for all sites that are included in the organisation's Water Savings Action Plan. While collating this data you need to consider:

- that data needs to be obtained for a representative 12 month period prior to commencing the investigation
- **if this water use data is not available from within your organisation**, it should be obtained from Sydney Water by providing your account details.

Step Two: Confirm that the data used to determine baseline water use is **based on normal operations** and is corrected for any variation from normal operations:

- variation from normal operations includes water restrictions, refurbishments or shutdowns
- where variations in water use have occurred, the organisation should either use data from an alternative normal period or quantify the impact on the expected water consumption and adjust the baseline water use accordingly.

Step Three: Provide baseline water use to DEUS as part of Water Savings Action Plan using Template 1 (see page 7).

Where the baseline is not representative of normal operations, include a description of the reasons for your varied water use (e.g. restrictions, shutdown, refurbishment), the impact of those factors on your normal water use (i.e. variation from normal) and make an allowance in the baseline water use for that variation.

The template includes:

- a calculation for variation from normal operations and
- the **Business Activity Indicator** for your site's business sector (see box).

Business Activity Indicator

The business activity indicator is a unit of measurement that represents the business operation. Preferably it is the same indicator that your organisation uses to assess business efficiency. The indicators will assist your organisation manage water and will not be used as a performance monitoring tool across organisations. Examples are:

- for commercial buildings and shopping centres "leasable area" in m^2
- for hotels and hospitals "number of bed nights or meals"
- for manufacturing and laundries "quantity of production" in tonnes or other units
- for education "number of full time student equivalents"
- for irrigators "area"(e.g. golf courses, show grounds reserves) in m^2
- for swimming pools, clubs and pubs "number of patrons"

For other sectors, as nominated and agreed with DEUS

Template 1 – Baseline Water Use

Organisation Name

To be completed for all sites that are included in the organisation's Water Savings Action Plan.

Site Description	Normal operation	With variation from Normal operation
Address	123 Smith St	321 Jones St
Sydney Water Account Number/s	23 333 555	23 333 601
Baseline Start Date	1-Jan-03	1-Jan-03
Baseline End Date	1-Jan-04	1-Jan-04
A = baseline water use per annum (kL)	50,000	50,000
Business Activity Indicator	tonnes	tonnes
B = Quantity of Site Business Activity Indicator per annum (corrected for variations)	1,800	2,000
Is baseline representative of normal water use YES/NO	YES	NO
If NO, description of variation (e.g. restrictions, shutdown, refurbishment etc)		Plant shutdown for (July + August 03)
C = Impact of variation on water use (i.e. variation from normal) kL per annum	0	-8,000
D = A – C baseline water use corrected for variation (kL)	50,000	58,000
E = D / B baseline water use key performance indicator (KPI)	27.8	29.0
Baseline KPI units	kL/tonne	kL/tonne

Planning at Management Level

A **Water Management Review** seeks to ensure that water efficiency is incorporated into existing management practices of an organisation and accountabilities are identified for priority actions.

What is a Water Management Review?

The review is a structured assessment of the systems the organisation has in place for managing water. This means that all levels of business management – financial, production, maintenance, OHS&E and operation – will need to be included in the review. The ISO 1400 type management system audit is an example of this approach.

All designated users must undertake a Water Management Review for sites which require a Water Savings Action Plan.

Where a recent Water Management Review has been conducted and meets the requirements of this section, this review can be used to fulfil part, or all, of the requirements of this section.

Management Review Measures

The steps outlined below provide a guide to the type of approach that should be undertaken to assess current performance of management systems for water and set priorities and accountabilities for improvement.

Step One: Determine what level of review the organisation needs to do and who is involved.

- as a minimum, the management review should be conducted with representatives from senior management, and the finance and the engineering/facility management divisions of the site in question
- where an organisation must prepare a Water Savings Action Plan for more than one site, the Management Review should include representatives from a corporate level.

Step Two: Identify the key areas in which you will review your organisation's performance in sustainable water management. These may include, for example:

- **senior management commitment** to, and involvement in water management
- **understanding of water savings potential** at operations and maintenance levels, and within new capital works
- management of **water targets and key performance indicators**
- **water metering and monitoring**
- **water management reporting**
- **water supply management** and alternative water supply options such as recycling
- incorporation of water management into **operating and maintenance procedures**
- **accountabilities for water management**
- **training and awareness procedures**
- **compliance with legal or other requirements**.

Step Three: As a team, assess current performance, strengths and weaknesses in each area using a matrix, such as that in Template 2.

Template 2 – Management Review (sample assessment)

Area	Review Area	Rating				
		Low	Moderate	Minimum Sustainable	Industry Leader	Best Practice
A	Senior management commitment					
B	Understanding of water savings potential					
C	Water targets and key performance indicators					
D	Water metering and monitoring					
E	Water management reporting					
F	Water supply management					
G	Operating and maintenance procedures					
H	Accountabilities for water management					
I	Training and awareness procedures					
J	Compliance with legal and/ or regulatory requirements					

Table 1 – Ranking Management Systems

As a guide, the table below provides an indicative ranking system for how your organisation meets each of the Management Review Areas.

	Management Review Area	Ranking	Descriptor
A	Senior management commitment	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Executive-level management policy for improving water efficiency or reducing water costs that includes targets. This policy is reported on the organisation's website and in Annual Reports and communicated to all employees. Sub-targets are established for major facilities, and regularly updated.
		Industry Leader	In addition to minimum sustainable, business practices are routinely audited, and publicly reported.
		Best Practice	In addition to industry leader, organisations can demonstrate that water management is ingrained into corporate culture.
B	Understanding of water savings potential	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Water efficiency opportunities are based on a comprehensive review of water use by major users, and of savings opportunities in each major operation covering operating procedures, maintenance procedures, and capital works.
		Industry Leader	Cost-effective measures are routinely implemented, water operating and maintenance procedures for water intensive plant, and documented internal communications strategy implemented.
		Best Practice	In addition to industry leader, all innovation measures implemented.
C	Water targets and key performance indicators	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	KPIs established and tracked monthly for large sites, and grouped to allow for internal benchmarking of similar facilities where applicable. Sites have routine visibility of this data, and review in operations meetings where they show large variance from target.
		Industry Leader	In addition to minimum sustainable, KPIs are included in job descriptions.
		Best Practice	In addition to industry leader, KPIs are benchmarked against world best practice performance and facilities in top quartile.
D	Water metering and monitoring	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Organisations maintain a baseline database for all sites, and basic plant monitoring enables access to metering data for major water streams.

	Management Review Area	Ranking	Descriptor
		Industry Leader	In addition to minimum sustainable, sub-metering installed throughout plant and results reported and tracked at regular management meetings.
		Best Practice	Water consumption metered as per industry leader, regular reporting of consumption at board level.
E	Water management reporting	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Organisations report savings opportunities with extended payback periods (>5 years) and whether they plan to implement these measures and over what time-frame.
		Industry Leader	In addition to minimum sustainable, business practices are routinely audited, and publicly reported.
		Best Practice	In addition to industry leader, organisations can demonstrate that water management is ingrained into corporate culture.
F	Water supply management	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Organisations have formal processes for water procurement, and assess opportunities for alternative water supply options (such as water recycling and reuse) based on capital and operating costs.
		Industry Leader	In addition to minimum sustainable, product life cycles studies are carried out.
		Best Practice	In addition to industry leader, organisation acts on product life cycle measures to reduce cradle to grave impacts.
G	Operating and maintenance procedures	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Opportunities assessment includes potential improvements to operating and maintenance procedures, and planned projects to improve water efficiency incorporate formal operating procedures and training to ensure sustainability.
		Industry Leader	In addition to minimum sustainable, product life cycles studies are carried out.
		Best Practice	In addition to industry leader, organisation acts on product life cycle measures to reduce cradle to grave impacts.
H	Accountabilities for water management	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Organisations have an executive-level manager who is accountable for water management, together with at least one person at each site and a water management group that coordinates water management activities at major sites.

	Management Review Area	Ranking	Descriptor
		Industry Leader	In addition to minimum sustainable, KPIs are included in job description.
		Best Practice	In addition to industry leader, KPIs are benchmarked against world best practice performance and in top quartile.
I	Training and procedures awareness	Low	No activity/absent.
		Moderate	Informal management practices.
		Minimum Sustainable	Basic water-awareness activities are in place at each major facility, and water management training is provided to operations and maintenance teams in water intensive areas.
		Industry Leader	In addition to minimum sustainable, business practices are routinely audited, and publicly reported.
		Best Practice	In addition to industry leader, organisations can demonstrate that water management is ingrained into corporate culture.
J	Compliance with legal and other regulatory requirements	Low	Regularly fails compliance requirements.
		Moderate	Occasionally fails compliance requirements.
		Minimum Sustainable	Limited compliance failures.
		Industry Leader	Compliance within allowable limits.
		Best Practice	Consistently above compliance requirements.

Step Four: Determine the actions needed to improve the management systems that the organisation currently has in place for managing water. With the management representatives, gain agreement on management actions to address all sustainability measures defined in this section. Use Template 3 (see page 13) for each of the agreed water management actions to detail:

- the specific water management action
- timeframe for implementation of the action and
- person/s responsible for implementing the action.

Template 3 – Water Management Actions (sample assessment)

Proj No	Water Management Action	Planned Responsibility	Planned Completion Date	Actual Completion Date
1	Incorporate water efficiency into the existing corporate and site environmental policies **Step 1**. Review existing policy and prepare updated draft **Step 2**. Gain approval and sign off by CEO **Step 3**. Communicate changes to all staff	Name of Senior Manager	Jan 06	
2	Implement a water savings awareness program **Step 1**. **Step 2**…etc	Name of Senior Manager	March 06	
3	Assign specific responsibility for water efficiency to operation managers, including targets. **Step 1**. **Step 2**…etc	Name of Senior Manager	March 06	
4				
5				

Technical Review

The depth and detail of a **technical review** will vary for each site, and is determined by the level of water use at that site.

What is a Technical Review?

A **technical review** is a review of water use and an investigation of water saving measures within an organisation. It includes but is not limited to the identification of water usage trends, water using devices and equipment, operating and maintenance procedures, and opportunities to utilise stormwater, water re-use or recycled water.

Recently Conducted Technical Reviews

Where a recent technical review has been conducted **and** where the level of detail provided for the site is equivalent to that outlined in this section, then the existing technical review may be used to fulfil some or all of the requirements of this section. For example, savings may have been achieved through a voluntary program such as Sydney Water Every Drop Counts business program, the International Council for Local Environmental Initiatives (ICLEI) Water Campaign or an Energy Performance Contract (EPC) which includes water efficiency measures.

What Level of Technical Review?

The two levels of technical review are:

Walk-Through Technical Review	For sites consuming less than 100 kL/day **and** where water efficiency benchmarks are available from DEUS for the organisation's industry sector.
Detailed Technical Review	For sites consuming greater than 100kL/day or for sites consuming less than 100 kL/day where **no** water efficiency benchmarks are available.

The work for this section can be conducted as a combination of both on-site and desk-top work.

Table 2 – Levels of Technical Review

Baseline water use for the site	Undertake **Walk-Through Review**	Undertake **Detailed Review**
MEDIUM < 100 kL/day With water efficiency benchmarks available	3	
MEDIUM < 100 kL/day Without water efficiency benchmarks available		3
HIGH >100 kL/day		3

Before commencing an on-site technical review

Before commencing a technical review the water use assessor (internal or external) should meet with the organisation's management team to:

- confirm the objectives of the technical review
- arrange meetings with key representatives and
- agree on how outcomes from the technical review will be distributed and actions decided.

Possible exemptions from a technical review

Some sites may be exempt from the detailed technical review if they can demonstrate:

- a representative site has the same water consuming devices, processes, and operating and maintenance practices as other nominated sites for review **and**
- a representative site has a similar water consumption to the other nominated sites for review **and**
- the opportunities identified by a detailed technical review at the representative site are equally applicable to the other nominated sites.

Special conditions at a site such as recent change in ownership or proposed redevelopments should be discussed with DEUS.

Walk-Through Technical Review

A complete walk-through review should include:

- preparation of a water balance for the site. This should include the development of a model or "flow chart" of water consumption on the site utilising the equipment/device inventory and known flows for the equipment (e.g. from suppliers, equipment manuals) and reconciling this with total water use
- a breakdown of water usage across the site and site activities
- inspection of water using equipment, devices and processes across the site as part of preparing a water use inventory
- investigation of water consumption within water using equipment, devices and processes
- investigation of usage trends and patterns using monitoring as detailed below in this section
- preparation of Key Performance Indicators (KPIs) of water consumption (using baseline data) in relation to an appropriate business activity indicator
- comparison of monthly KPIs with industry benchmarks (where available) for baseline water consumption, with consideration of site specific factors (e.g. climate) where appropriate.

Information Collected

For sites requiring walk-through technical reviews, provide or record the following:

- name of the assessor and any other personnel involved in the review
- brief description of the site and the technical review undertaken
- overview of existing water using equipment, water reticulation system, devices and processes across the site (the water use inventory)
- graphical historical site water use profiles and KPIs
- either tabular or graphical representation of major water use/process/equipment across the site
- details of **all** identified measures. For each measure specify:
  - brief description of the measure
  - estimated water saving (kL/annum)
  - estimate of energy and other savings (e.g. chemical treatment costs) resulting from the measure
  - the measured costs and savings, supported with appropriate calculation and/or quotation
  - Internal Rate of Return (IRR) calculated over 10 years
  - estimated time taken to implement the measure.

Monitoring

Regular water meter readings should be taken over a four week period to determine water usage.

If required, install sub-meters to large water using appliances where flow patterns cannot be determined from the main meter.

Analysis of Water Use

The monitoring data should be reviewed to identify usage trends and leakage, and presented in graphical format. Any changes in water use patterns identified during the technical review should be analysed and explained.

Ideally any obvious water wastage for which immediate corrective action is possible (e.g. leaks, malfunctioning float valves etc), should be addressed during the monitoring period. When action is taken and savings achieved, this should be highlighted on graphical outputs.

Detailed Technical Review

For sites requiring detailed technical reviews, the review should include **all** activities required for the walk-through technical review as detailed in a walk-through **Technical Review** as well as:

- a detailed investigation of each water-using device, equipment item and process across the site and preparation of an inventory, including as appropriate:
  - current water consumption
  - description of water use, operating, maintenance and cleaning procedures
  - control systems, normal working hours, start up and shutdown procedures
- in addition, for major water uses/processes/equipment items:
  - usage trends and patterns utilising the monitoring required in this section
  - water consumption indicators (KPIs) including a comparison of current consumption against predicted water use
  - identification of appropriate water use targets
- in production and manufacturing organisations, a consideration of scheduling and lengths of production runs
- quantification of out-of-hours flow and identification of measures to reduce out-of-hours flow
- investigation of opportunities to reduce water pressure.

Use the information captured to identify measures to improve water efficiency and reduce cost.
In identifying measures, consider:

- opportunities to improve operating and maintenance procedures
- opportunities to utilise alternative water sources, such as stormwater, water re-use within the site, and use of recycled effluent where practical.

Information Collected

For sites requiring detailed technical reviews, provide or record the following:

- conduct a water balance for the site with breakdown of consumption based on monitoring conducted
- the executive summary of major findings of the review, measures, costs, and savings for each major water use/process/equipment
- the name of the assessor and any other personnel involved in the review
- a description of the site and an outline of the methodology used in the technical review undertaken
- a description of existing water reticulation system, water using equipment, devices and processes across the site. For major items include:
  - the current water consumption
  - the description of water use, operating, maintenance and cleaning procedures as well as any leakage
  - the control systems, normal working hours, start up and shutdown procedures and
  - the re-use opportunities
- a table identifying the meters monitored during the review, dates logged and data
- benchmarking of current water use for major water uses (KPIs) against best practice (where available)
- graphs of historical and current site water use profiles and KPIs
- graphical summary of the monitoring from all meters and sub-meters conducted during the technical review including:
  - commentary on usage and interpretation of monitoring graphs and
  - identification of the opportunities to reduce out-of-hours-flow where appropriate
- suggestion and commentary of an appropriate water savings target and
- details of all identified measures including cost-effective measures. For each measure specify:
  - description of the measure
  - summary of where the measure is to be applied and a photograph of the existing equipment, as appropriate
  - estimated water saving (kL/annum)
  - estimate of energy and other savings (e.g. chemical treatment costs) resulting from the measure
  - expected costs and savings from the implementation of the measure, supported with appropriate calculations and/or quotations
  - IRR of the measure
  - estimated time required to implement the measure.

Monitoring

All meters should be continuously monitored (e.g. consumption for each 15 minute period) for a minimum of 4 to 6 weeks.

For sites requiring detailed technical review, sub-metering should be installed, if not already, for all major water uses. That is:

- any individual piece of equipment, process or facility consuming about 15% or more of the total site water consumption and where the flow to the equipment, process or facility is more than 10kL/day.

Analysis of Water Use

The monitoring data should be reviewed to identify usage trends and leakage, and presented where possible in graphical format. Any changes in water use patterns during the technical review should be analysed and explained.

Ideally any obvious water wastage for which immediate corrective action is possible (e.g. leaks, malfunctioning float valves etc), should be addressed during the monitoring period. Where action is taken and savings achieved, this should be highlighted on graphical outputs.

Assessing Your Opportunities

A complete **Water Savings Action Plan** details water savings measures and assesses their costs and benefits. Template 4 on the following page provides guidance on how to present information on savings measures.

Organisations should include water savings measures which have been completed and implemented in the last five years. This allows organisations to demonstrate the actions they have already undertaken to save water.

Assess Cost Effectiveness of Each Savings Measure

The water savings measures identified in the technical review should be presented in order of their **cost effectiveness**. All assumptions made in the financial assessment should be made explicit.

Internal Rate of Return (IRR) can be used to rank measures. For the purposes of this exercise, IRR should be calculated using a 10-year project life. Shorter project lives may be accepted after consultation with DEUS where specific information about the project's life can be demonstrated.

Net Present Value (NPV) can also be calculated to assess the viability of an individual measure.

Grouping Savings Measures

It is suggested that measures are grouped into the following categories, using the results of the financial assessment:

- **Cost-Effective Opportunities**: water savings measures that exceed the organisation's hurdle rate of return (cost of capital). This includes measures which can be implemented with little or no capital cost or which are highly cost-effective
- **Potential Cost-Effective Opportunities**: water savings measures that are below an organisation's hurdle rate of return (cost of capital) but which may become cost-effective if circumstances change, for example financial assistance is accessed. Measures may be eligible for funding from the NSW Government's Water Savings Fund on a competitive basis.

Template 4 – Water Savings Measures

Project Number	Measure Description	Responsibility	Cost to Implement	Savings: Water (ML or kL) p.a. Energy (kW or MJ) p.a.	Total Cost Savings (Water + Energy + Chemical + other) ($ p.a.)	Internal Rate of Return	Time Required to Implement	Planned Completion Date
Previous Actions Over Last Five Years								
1								
Cost-Effective Opportunities								
2								
Potential Cost-Effective Opportunities								
3								
4								
5								
Total Water Savings for Site 1					**Total Savings as a Percentage of Total Site Use (%)**			

// THE WATER SAVINGS ACTION PLAN

The Water Savings Action Plan for your organisation must be submitted to DEUS by the date specified by DEUS for your organisation.The Plan should utilise the outcomes of the assessment of the **baseline water use, management review** and **technical review** and be based on the templates provided in those sections. A guide to compiling your Plan is as follows.

The Savings Action Plan must be signed by a person authorised to sign for and on behalf of the designated user.

Plan Section	Includes	Template/ Section	Page # in these Guidelines
Overview and introduction to the business	Introduction to Plan	Template 5	21
Baseline water use	Identification of **baseline water use** Any ongoing work – e.g. where sites have not had technical reviews completed and the timing of any proposed reviews.	Template 1 n/a	7
Water Management Actions	**Water management review** – identification of the strengths, weaknesses and improvements to systems for managing water. **Water management actions** – listed with timeframes and responsibilities.	Template 2 Template 3	9 13
Water Savings Measures	Attach a copy of the **technical review** for each site where appropriate All water savings measures. For each measure, list: – description of the measure – person responsible for implementing the measure – measure costs – estimate of water saving – estimate of net energy and other savings – Internal Rate of Return – time required to implement – consideration of training needs.	Technical Review Template 4	13-18 19

Template 5 – Introduction to Plan (sample assessment)

Organisation Name:

Brief introduction to the business:
(description, how many sites etc)

Background/History of water savings within the organisation:
(e.g. involvement in an existing voluntary program)

Introduction to water savings within the organisation:
(how has this Plan been developed, objectives)

How plan integrates with existing business operations:

Signoff of the Plan:
Short signed statement 'I certify that this Savings Action Plan has been prepared in accordance with the Guidelines issued by the Minister for Utilities. I am authorised to submit this Plan, on behalf of the designated user, to DEUS'.

Site Number	Sydney Water Account Number(s)	Level of review conducted and why	Site Location and Description
1	011632	Level 2 review using industry benchmarks	Corner of Smith Street and Henry Lane. Five-storey apartment block.
2			
3			

Implementing and Reviewing Plans

Implementing Water Savings Action Plans

As part of the Water Savings Action Plans, designated users must state what actions will be implemented over the next 4 years. Information needs to include initial set-up costs and annual costs for each measure and timeframes for implementation.

Measures may be eligible for funding from the NSW Government's Water Savings Fund on a competitive basis.

Progress Reports of Outcomes

Designated users must prepare an annual progress report of outcomes (Template 6) and submit this to DEUS.

Review of Water Savings Action Plans

Water Savings Action Plans must be reviewed every 4 years.

Template 6 – Annual Progress Report of Outcomes (sample assessment)

Organisation Name		
To be completed for all sites that are included in the organisation's Water Savings Action Plan.		
Site Description	Normal operations	With variations from normal operations
Address	123 Smith St	321 Jones St
Sydney Water Account Number/s	23 333 555	23 333 601
All Project (s) implemented at site	Project 1,3,4,6,14	Project 1,3,4,6,14
F = Estimated water savings kL/annum	4,000	4,000
G = Baseline water use KPI (from baseline report)	29.0	29.0
Baseline KPI units	kL/tonne	kL/tonne
Current report start date	1-Apr-06	1-Apr-06
Current report end date	31-Mar-07	31-Mar-07
Site water use for report period (kL)	26,500	26,500
A = Current annual water use (kL)	53,000	53,000
Site Business Activity Indicator	tonnes	tonnes
Quantity of Site Business Activity Indicator for report period	1,150	1,150
B = Annualised Site Business Activity Indicator	2,300	2,300
Is current water use representative of normal use YES/NO	YES	NO
If NO, description of abnormality (e.g. restrictions, shutdown, refurbishment etc)		Water restrictions
C = Water use impact of abnormality (i.e. variation from normal) kL/annum	0	-3,000
D = A – C Current annual water use corrected for abnormality (kL)	53,000	56,000
Water use KPI units	tonnes/annum	tonnes/annum
E = D / B Current annual water use KPI	23.04	24.35
H = G – F / B Forecast water use KPI including implemented projects	27.26	27.26
I = E – H Variation of current use KPI from forecast water use	-4.22	-2.91
Explanation of variation	Better than expected savings	Better than expected savings

// GLOSSARY OF TERMS

Baseline Water Use means historical water use for all sites included in the organisation's Water Savings Action Plan over a 12 month period, adjusted for variations.

Business Activity Indicator means a representative indicator of the site's business operation, preferably the indicator that the business uses to assess their own efficiency.

Designated user means an entity required to prepare a Water Savings Action Plan under the Energy Administration Amendment (Water and Energy Savings) Act 2005.

Detailed Level Technical Review means a comprehensive investigation of water efficiency measures.

Internal Rate of Return (IRR) means the savings (expressed as an interest rate) received for a Water Saving Measure based on the Measure Cost and Measure Savings, yearly over a defined timeframe. It can be compared with the interest rate from investing the capital in an alternative investment (e.g. bank or shares).

The Internal Rate of Return should be calculated using a 10-year project life. Shorter project lives may be accepted after consultation with DEUS where specific information about the project's life can be demonstrated.

Major Water Use means any individual piece of equipment, process or facility consuming about 15% or more of the total site water consumption and where the flow to the equipment, process or facility is more than 10kL/day.

Management Review means a review of the organisation's management practices and systems for managing water such as targets, operating and maintenance practices, accountabilities, monitoring and reporting systems, as detailed in these Guidelines.

Measure Cost includes costs directly associated with the purchase and installation of devices or equipment within a Water Saving Measure. It does not include training costs, project management costs or other staff costs.

Measure Saving includes savings in direct water costs (such as Sydney Water Charges for water supply, wastewater and trade waste), and indirect costs such as chemical costs, heat / energy costs, labour and maintenance costs and operating costs associated with a Water Savings Measure.

Out-of-hours flow means water use when normal business processes are not operating (for example when a production facility is shutdown or when a commercial building has no occupants).

Recent refers to a reasonable amount of time elapsed, since which no material changes have occurred at a site that would render previous actions to improve water efficiency unsuitable for use in meeting the requirements of the Guidelines (e.g. a technical review was conducted 12 months previously and the business processes and practices have not significantly changed since the review).

Sites means all sites for which a Water Savings Action Plan is required for which the organisation is responsible for water use or has an account with Sydney Water.

Technical Review means a review of water use and investigation of Water Saving Measures as detailed in these Guidelines within an organisation, including but not limited to, water usage and trends, water using devices and equipment, operating and maintenance procedures, opportunities to utilise stormwater, water re-use and recycled water.

Variation from normal operation means any variations to water use within the organisation as impacted by changes such as water restrictions, redevelopments, refurbishments, upgrades, shutdowns, purchase or sale of sites, new or stopped leases and greenfield sites.

Walk-Through Technical Review means a general investigation of Water Efficiency Measures.

Water Efficiency Benchmark means a benchmark indicator of water use for an industry sector, approved for use by DEUS.

Water Savings Measure means a measure that will reduce water consumption from the Sydney Water supply including:

- water conservation measures that will reduce water used in equipment, devices and/or processes, reduce leaks, improve operating and/or maintenance practices
- measures that capture/utilise storm water, re-use water within the site or use recycled water.

Water Management Actions means actions identified in the Management Review to improve the organisation's management practices and systems for managing water, such as targets, operating and maintenance practices, accountabilities, monitoring and reporting systems.

Water Savings Action Plan means an organisation's plan to reduce water consumption from Sydney Water's supply and improve an organisation's water management practices by implementing Water Savings Measures and Water Management Actions.

Appendix A Links to Existing Water Programs

Links to Existing Water Savings Programs

Some organisations will be members of the existing local and national voluntary water savings programs. The following is a brief description of two current programs. Commentary on links between these programs and the Guidelines is included within the Guidelines and shown in the diagram on page 27.

Sydney Water's current Every Drop Counts Business Program

The current Sydney Water Every Drop Counts (EDC) Business program addresses both technical improvements (with technical reviews) and non-technical factors (with management reviews). The program is available to commercial and industrial organisations, local government and State Agencies.

Non-technical factors include staff awareness and training, incorporating water in operating and maintenance procedures, monitoring and reporting of water use. The approach is similar to the management approach to environmental management taken by ISO14001, the International Standard for environmental management systems. The non-technical (management) elements of the EDC business program support businesses by integrating water management into their existing business management systems and day-to-day business activities.

ICLEI Water Campaign™ for Local Government

ICLEI-Local Governments for Sustainability was founded in 1990 by local governments at the United Nations Headquarters in New York as the International Council for Local Environmental Initiatives (ICLEI). ICLEI is a democratically governed membership association of cities, towns, counties, metropolitan governments, and local government associations.

For local government, ICLEI provides the Water Campaign™ program that aims to improve water quality and promote water conservation. The program provides a performance based framework for local government to address water management activities, through identifying opportunities to implement cost saving water efficient measures. The program is designed to build the capacity of local government by taking a holistic approach to water resource management. It covers water use within Council's own properties (as addressed by these Guidelines) and also community water use and catchment areas.

ICLEI's Water Campaign commenced in Australia in 2002 and is a voluntary program for local government to participate in.

The program is based around a structured program with 5 milestones:

- Milestone 1 Inventory of water consumption and water quality issues
- Milestone 2 Establish goals for water conservation and improvement in water quality
- Milestone 3 Develop a local action plan
- Milestone 4 Implement water conservation and water quality actions
- Milestone 5 Monitor and report progress.

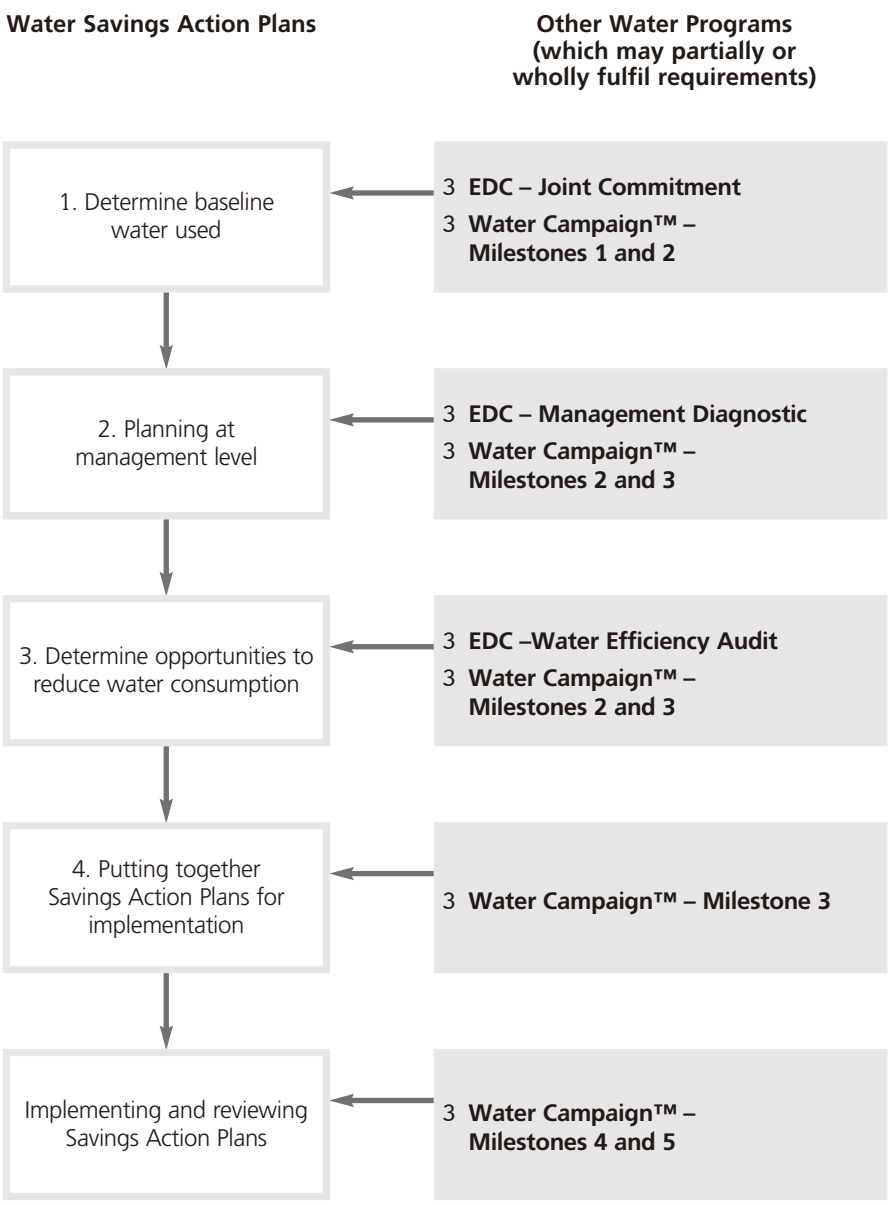
The scope of the Water Campaign™ is therefore broader than these Guidelines, which are focused on water savings within the Council's own properties.

Activities conducted under these Guidelines can contribute towards the achievement of milestones within the Water Campaign™ program in relation to the Council's own properties by:

- identifying water use baselines (Milestone 1)
- understanding current water management practices (Milestone 3)
- understanding current water usage (Milestone 3)
- identifying opportunities to save water (including reuse/recycling) (Milestone 3)
- developing a water savings action plan (Milestone 3)
- implementing water savings opportunities (Milestone 4)
- monitoring water usage and reporting progress (Milestone 5).

Since these Guidelines also target State Agencies and large business, it is likely that a proportion of community water usage will also be captured by the Guidelines within many local government areas, though given the broader scope of the Water Campaign™, additional work will be required by local government to fulfil the requirements of the Water Campaign™ milestones.

Indicative Links to Other Water Programs



Note: EDC – Sydney Water's Every Drop Counts Program Water Campaign™ – ICLEI – A/NZ – Local Governments for Sustainability Campaigns (International Council for Local Environmental Initiatives)

Appendix B Principles Used in Preparing These Guidelines

The following principles were used in preparing these plans:

- Water Savings Action Plans are to be primarily targeted at water efficiency measures that are highly cost-effective
- consideration should also be given to water efficiency measures that are not cost-effective over a longer timeframe and to opportunities for funding such measures (e.g. performance contracts, external funding and grant sources)
- overall Water Savings Action Plans should achieve an average of 20% water savings across all organisations
- management within organisations need to be involved in preparing Water Savings Action Plans
- councils or businesses that have taken action to improve water efficiency (e.g. through programs such as Every Drop Counts or self-initiated action) should be given credit for those actions to date, where they meet the requirements of the Guidelines
- where organisations have taken voluntary action to date, this may be used in the preparation of a Water Savings Action Plan. Where the voluntary action does not fully meet the Guideline requirements, additional activities may be required. For example a detailed technical review may have been conducted that meets the requirements of the Guidelines but may need to be augmented with an evaluation of cost-effective water saving opportunities and the preparation of a Water Savings Action Plan.