



ENERGY AND WATER STRATEGY

2007 – 2010

This Energy and Water Strategy is Blue Mountains City Council's blueprint for improving the energy and water performance in its own operations, and for influencing energy and water performance in the community.

The Strategy is the central document that sets out the priority areas for energy and water performance improvement, and is a dynamic tool used by Council staff to guide them in developing specific energy and water related projects and actions.

The Strategy is a major component of Council's Energy and Water Management System, which is the overarching framework developed by Council to achieve the energy and water improvement targets of the City in an efficient and cost effective way.

TABLE OF CONTENTS

1. HOW TO USE THIS STRATEGY
2. BLUE MOUNTAINS CITY COUNCIL ENERGY AND WATER MANAGEMENT SYSTEM
3. PREVIOUS ENERGY AND WATER PROGRAMS AND INITIATIVES
 - Cities for Climate Protection Program
 - Energy Performance Contracts
 - Every Drop Counts Program
 - Energy and Water Savings Action Plans
4. STATEMENT OF COMMITMENT TO ENERGY AND WATER PERFORMANCE IMPROVEMENT
5. HISTORICAL ENERGY AND WATER PERFORMANCE
6. ENERGY AND WATER OBJECTIVES AND TARGETS
 - Energy
 - Water
7. CURRENT AREAS OF FOCUS: 2007-2010
 - Energy
 - Water
8. ENERGY AND WATER ISSUES AND ACTIONS REGISTER
9. APPENDIX 1 - The EWMS Model, Components and Documentation

HOW TO USE THIS STRATEGY

This Energy and Water Strategy is a ‘living’ document that will be continually updated and adjusted to ensure it remains a powerful tool for managers and staff of Council.

The Strategy comprises the following sections:

- a background to the Strategy, Council’s previous energy and water initiatives, and the Energy and Water Management System
- a Statement of Commitment
- details of the historical energy and water performance of the organisation
- current energy and water objectives and targets
- current areas of focus for the current Strategy
- an extract of the Energy and Water Issues and Actions Register.

Updating the Energy and Water Strategy

The Energy and Water Strategy is adjusted every year by updating the Energy and Water Issues and Actions Register, and the objectives and targets (if necessary). The Strategy is also ‘overhauled’ every three years to update the broad areas of focus and adjust any other parts of the Strategy that require updating. The broad areas of focus are generally those where the corresponding actions in the Issues and Actions Register are rated as ‘high priority’ for implementation.

Using the Energy and Water Strategy to develop annual project plans and budgets

Following the development of the energy and water targets for the year, the Sustainability Coordinator and Energy and Water Steering Team liaise with individual managers to identify the specific actions that will be implemented that year. These actions are drawn from the actions listed in the Energy and Water Issues and Actions Register, and are selected so they contribute towards achieving the energy and water objectives and targets.

Once actions are identified, the Energy and Water Steering Team, led by the Sustainability Coordinator, work with managers to ensure these actions are included in departmental submissions for annual budgeting and planning purposes. Managers are responsible for ensuring the projects and budget requests they submit to the Council every year will contribute to achieving the energy and water targets related to their area of responsibility.

Projects submitted to the Council by managers for inclusion in the budget allocation process are first subjected to a Capital Works triple bottom line assessment to reinforce the importance of projects and assist Councillors and Executive Managers to prioritise projects for funding according to energy and water outcomes.

The outcome of this process is a set of specific actions and projects to achieve the energy and water objectives and targets and improve energy and water performance within Blue Mountains City Council.

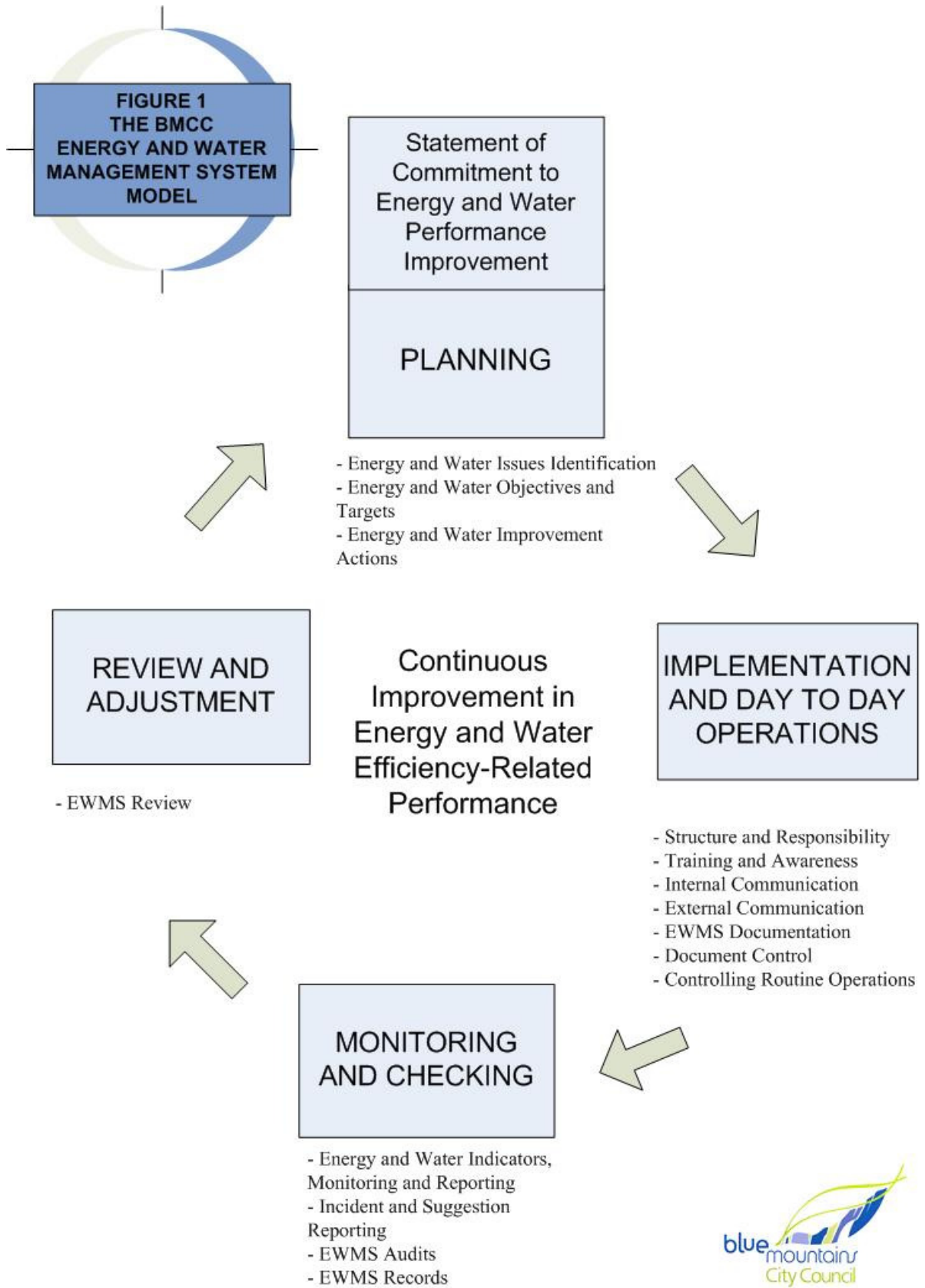
THE ENERGY AND WATER MANAGEMENT SYSTEM

This Strategy forms a key component of Council's Energy and Water Management System (EWMS), which has been developed to consolidate all current and future energy and water related plans, strategies and processes under a single strategic management framework. The aim of this framework is to provide the City with a simple and streamlined approach to improving its energy and water performance, in a way that integrates energy and water management into the core business of the organisation.

The EWMS is based on a continuous improvement model, comprising a 'Plan – Implement – Check – Adjust' framework. The model comprises documented processes for:

- identifying what needs to be done to improve the energy and water performance of the organisation, and listing the significant issues affecting Council's energy and water performance
- setting objectives and targets to address these energy and water performance issues
- developing plans to achieve the objectives and targets
- implementing these plans effectively
- ensuring routine, everyday operations are carried out with regard to energy and water efficiency
- monitoring the effectiveness of the EWMS and the outcomes it generates
- reviewing the system and adjusting it on a regular basis

The EWMS model and components are shown in Figure 1. Appendix 1 describes each EWMS component and EWMS documentation.



PREVIOUS ENERGY AND WATER PROGRAMS AND INITIATIVES

Council has been involved in a number of initiatives over recent years to accelerate its energy and water performance improvement. These include:

- the Cities for Climate Protection Program
- Energy Performance Contracts
- Energy and Water Savings Action Plans
- Every Drop Counts Program

The processes for implementing the requirements of each of these initiatives have been integrated into the EWMS, ensuring a streamlined approach to energy and water performance improvement overall.

Cities for Climate Protection Program

Blue Mountains City Council is a member of the Cities for Climate Protection (CCP) Program. CCP is an international initiative of ICLEI ANZ – Local Governments for Sustainability, and is delivered in collaboration with the Australian Greenhouse Office, an agency of the Australian Government. The aim of the CCP Program is to build capacity in local government to help them reduce their own energy consumption and greenhouse gas emissions, and to influence the reduction of emissions in the community.

Blue Mountains City Council resolved to participate in the CCP Program in April 2005. The Program is based on a five Milestone framework:

Milestone 1:	Prepare an inventory of greenhouse gas emissions for both Council (Corporate) and LGA (Community) activities and a forecast of emissions growth for the future.
Milestone 2:	Set reduction goals for corporate and community emissions.
Milestone 3:	Prepare and adopt a Local Greenhouse Action Plan documenting measures to be undertaken to achieve the reduction goal.
Milestone 4:	Commence implementation of the Local Greenhouse Action Plan.
Milestone 5:	Monitor and report on the implementation, and review the Local Greenhouse Action Plan.

The City successfully completed Milestone 1 of the CCP program in May 2006 by developing an inventory of energy use for Council operations using a base year of 2004-2005, and the Community using a base year of 2001.

The inventory showed that Council emissions generated **18,367 tonnes of CO₂^e**, and the Community Sector generated **1,115,180 tonnes of CO₂^e** in the respective base years. Buildings and streetlighting produced the highest emissions for Council operations, while in the Community Sector the majority of emissions were produced by the residential sector followed by City transport. Emissions forecasts to the year 2011/12 were also carried out, predicting an increase in emissions in all areas.

In June 2006 Blue Mountains City Council achieved Milestone Two of the CCP Program by endorsing the following greenhouse gas reduction goals:

- (1) **Reduce Council greenhouse gas emissions from 2004 levels by 10% by 2012**

- (2) **Reduce community greenhouse gas emissions from 2001 levels by 10% by 2012.**

This Energy and Water Strategy will meet the requirements for awarding of Milestone 3 of the CCP program, while implementation of the EWMS will help Council to achieve Milestones 4 and 5 of the Program during 2007-2008.

Energy Performance Contracts

Council has been involved in two Energy Performance Contracts (EPCs) with the aim of reducing energy consumption from its major sites.

The first contract was completed in 2004, and focused on upgrading the efficiency of lighting in Council's Administration Building. The cost of works carried out under the contract was \$96,408, which resulted in Council reducing its annual energy consumption by 130,000 kWh, achieving a greenhouse gas abatement of 132 tonnes of CO₂ equivalent, and saving \$17,500 per year in energy costs.

The second EPC started in 2005 and involved the upgrading of air conditioning and heating systems, lighting efficiency projects and hot water system upgrades at the depots, sports centres and pools, libraries and Administration buildings. The cost of works carried out under the contract was \$548,585, which resulted in Council achieving a greenhouse gas abatement of 617 tonnes of CO₂ equivalent, and saving \$101,500 per year in energy costs.

Every Drop Counts Program

Blue Mountains City Council is participating in two Sydney Water “Every Drop Counts” pilot projects.

The first is an assessment and audit of water use in aquatic centres, with Springwood Aquatic and Fitness Centre being targeted in the Blue Mountains. It will also look at energy use on the site.

The second is an assessment of water use at irrigated sporting facilities. Summerhayes Park will be the focus of this assessment.

Each of these will see Blue Mountains City Council receive a findings report with recommendations for water savings while maintaining quality conditions for users.

Energy and Water Savings Action Plans

The New South Wales State Government realised that high energy users, including some local Councils, can play a large and important role in reducing greenhouse gas emissions as part of an overall attempt to cease global warming and climate change. As a result, the New South Wales Minister for Utilities gazetted an *Energy Savings Order* on 28 October 2005 requiring Councils with high energy and water use to prepare Energy and Water Savings Action Plans. These Plans were to be developed in accordance with section 34R of the *Energy and Utilities Administration Act 1987*, and submitted to the Minister for approval. Schedule 2 designates Blue Mountains City Council as an energy and water user and requires the Council to prepare Energy and Water Savings Plans.

Council prepared a draft Energy Savings Plan and submitted it to the Minister for review in December 2006. Soon after, Council commenced development of its EWMS and Energy and Water Strategy, and subsequently informed the

Department of Energy, Utilities and Sustainability that it would be re-submitting the Energy Savings Plan in the form of an overall Energy and Water Strategy (i.e. this document) in August 2007.

A Water Savings Action Plan was also submitted by the Council to the Minister for review, in May 2006. This document was subsequently accepted by the Minister. The majority of the actions designated for implementation in the Water Savings Plans have since been implemented, with the remainder transferred to the Energy and Water Issues and Actions Register, to ensure integration of the Water Savings Action Plan into the Energy and Water Strategy and broader EWMS.

STATEMENT OF COMMITMENT TO ENERGY AND WATER PERFORMANCE IMPROVEMENT

Blue Mountains City Council is pursuing a sustainable future. We will improve energy and water efficiency.

Blue Mountains City Council will endeavour to:

- *Proactively identify aspects of Council's operations that may be energy or water inefficient, set targets, implement programs and continually monitor performance*
- *Train, involve and communicate openly with all Council employees*
- *Liaise with, educate and encourage the community and lead by example*
- *Comply with all regulatory requirements*
- *Implement and maintain an energy and water management system to serve as the primary tool for delivering these outcomes*

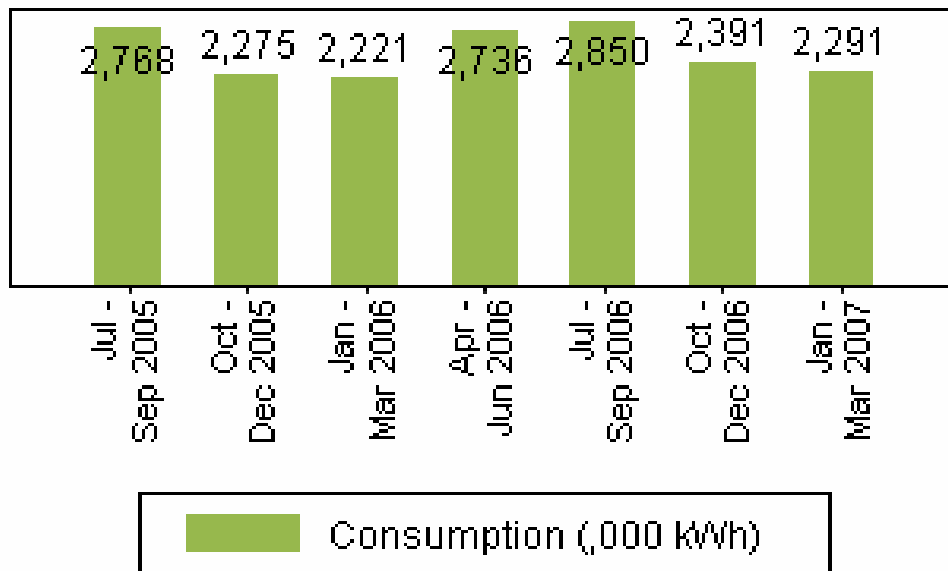
Blue Mountains City Council recognises that an energy and water efficient organisation and community is an integral part of its successful operation, and crucial to its ability to deliver quality services to the community now and in the future.

HISTORICAL ENERGY AND WATER PERFORMANCE

Energy

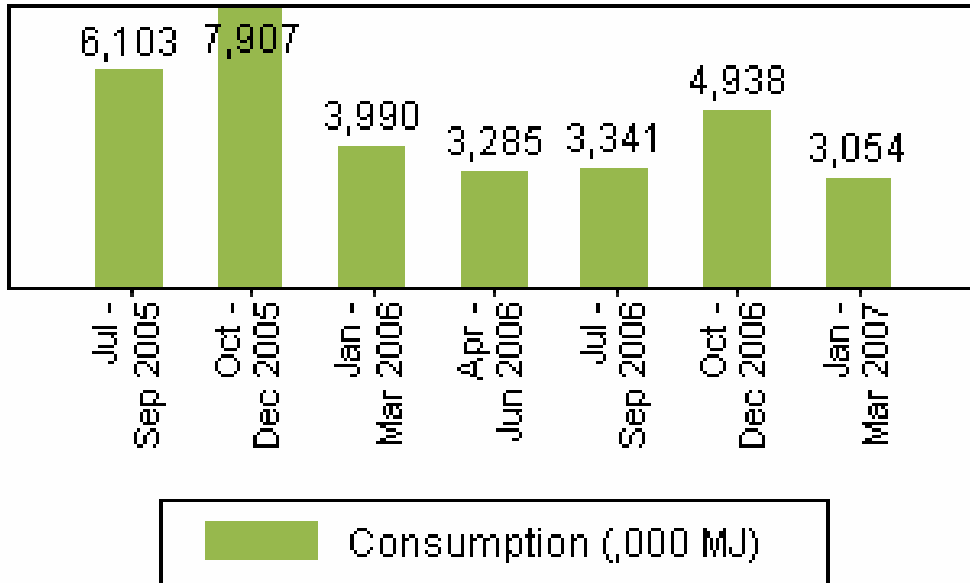
Electricity Performance

Quarterly Consumption - All Properties



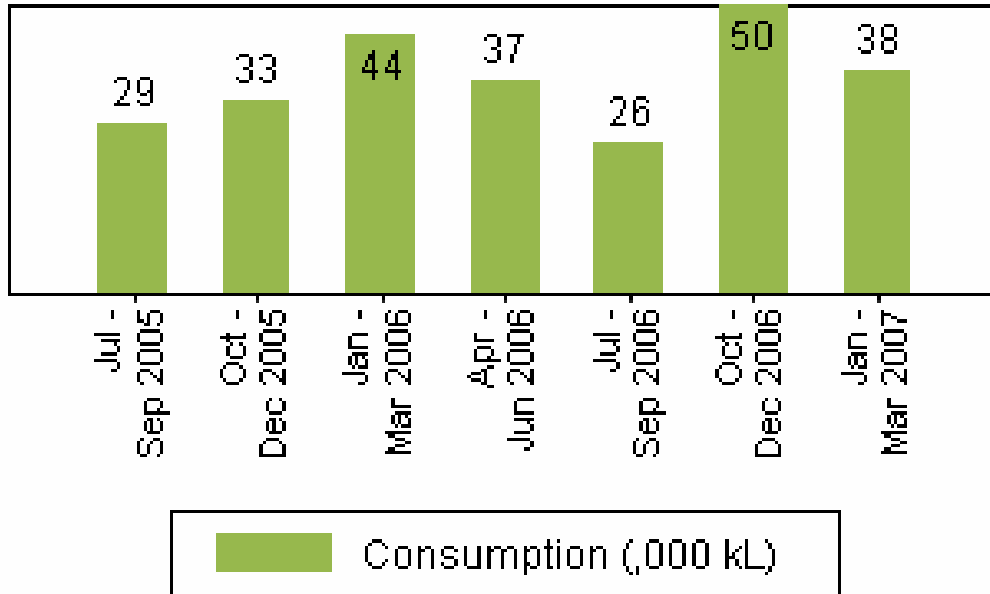
Gas Performance

Quarterly Consumption - All Properties



Water

Quarterly Consumption - All Properties



ENERGY AND WATER

OBJECTIVES AND TARGETS

Energy

Council will be working to establish specific energy targets for key parts of its operations during 2007-2008. This will involve assessment of historical performance and liaison with staff as to the most appropriate targets that should be established for each section.

In the meantime, Council will continue to work towards achieving its overall energy-related objectives set as part of Milestone 2 of the Cities for Climate Protection Program.

The current energy/greenhouse related objectives are:

- (1) Reduce Council greenhouse gas emissions from 2004 levels by 10% by 2012**
- (2) Reduce community greenhouse gas emissions from 2001 levels by 10% by 2012.**

Water

Council will be working to establish specific water targets for key parts of its operations during 2007-2008. This will involve assessment of historical performance and liaison with staff as to the most appropriate targets that should be established for each section.

In the meantime, Council will continue to work towards achieving its overall water-related objectives set as a legislated requirement of the New South Wales government.

The current water related objectives are:

Reduce water use from 2001/02-2002/03 levels by 20% by 2010.

CURRENT AREAS OF FOCUS 2007-2010

Energy

1. Staff awareness and behavioural actions.
2. Completion of EPC related projects.
3. Improvement to the efficiency of heating and cooling in Council buildings.
4. Commencement of community greenhouse capacity building projects.

Water

1. Staff awareness and behavioural actions.
2. Upgrade inefficient water 'equipment' and improve water flow controls in all assets.

ENERGY AND WATER ISSUES AND ACTIONS REGISTER

The following table is an extract from the Energy and Water Issues and Actions Register. Please refer to the full Register (located on the BMCC Intranet as an Excel Spreadsheet) which includes:

- Asset
- Issue
- Reference (source)
- Water
- Energy
- Category
- Potential Action/Project to address the issue
- Estimated cost
- Estimated annual financial saving
- Estimated annual environmental saving
- Responsible Manager
- Operational controls
- Priority
- Funding source
- Addressed/Implemented?

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
All EPC buildings	Staff don't understand the EPC measures		Yes	Behaviour and Awareness	Conduct brief practical information sessions at all sites where EPC measures have been implemented.	High
All occupied buildings	Low levels of energy and water awareness	Yes	Yes	Behaviour and Awareness	Implement an ongoing energy and water awareness campaign for staff	High
All occupied buildings	The level of energy saving features and behavioural issues relating to computer workstations is unknown		Yes	Computers	Survey the current status of behaviour and energy savings implemented on computer workstations at all sites.	High
All occupied buildings	A plan is needed to roll-out potential computer energy savings		Yes	Computers	Develop an energy saving plan in consultation with the IT department	High
All occupied buildings	Hot water boilers are not needed in some areas and oversized in others		Yes	Hot water boilers	Assess the need for water boilers at all sites, remove where appropriate or downsize if a spare is available.	High
All occupied buildings	Some areas are over-lit		Yes	Lighting	Conduct a simple assessment of lighting and remove excess lighting where appropriate.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
All occupied buildings	Other areas only need to have lights on for a limited amount of time each day		Yes	Lighting	Opportunities for simple retrofits such as motion sensors and light-level sensors should also be investigated and acted on.	High
All occupied buildings	Energy star features may not be implemented on all appliances		Yes	Office equipment	Implement Energy Star features on all appliances with this as an option.	High
All occupied buildings	Office equipment has high standby power consumption		Yes	Office equipment	For other large appliances, or where standby load remains significant, install programmable timers to switch them off after-hours.	High
All occupied buildings	Status of refrigerator and freezer use is unknown		Yes	Refrigeration	Conduct a refrigeration audit, particularly in council's administration buildings and public pool kiosks.	High
All occupied buildings	Refrigerators and freezers appear to be overused in some areas		Yes	Refrigeration	Consolidate and re-organise units after staff at each site have been consulted about any proposed changes.	High
All occupied buildings	The thermal performance of most buildings can be easily improved		Yes		Create a master list of opportunities to improve building thermal performance in the key areas of air leakage, insulation and shading.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
All occupied buildings and public toilets	Urinals presently use either manual or automatic flush systems which waste water	Yes		Water use	Waterless urinal systems could potentially be rolled out to all these sites.	High
All pool sites	Pool heating is by far council's single biggest energy consuming activity	Yes	Yes	Pool heating	Staff education programs and other initiatives should reflect this with a focus on raising awareness at the pool centres and making energy saving investments where necessary.	High
All pool sites	The use of pool covers may not be as diligent as possible	Yes	Yes	Pool heating	Develop a clear pool cover usage schedule for all sites.	High
All public toilets and sports facilities	Inefficient taps	Yes		Water flow controls	Install timer taps in all public toilets and sports facilities	High
Blackheath Caravan Park	Vandalised showerheads	Yes	Yes	Water flow controls	Install 10 water efficient anti-vandal showerheads in amenities block	High
Blackheath Caravan Park	Inefficient bathroom taps	Yes	Yes	Water flow controls	Install inline flow control devices in bathroom tap ware	High
Blaxland Complex	Inefficient water use in all buildings	Yes	Yes	Water flow controls	Install flow control devices and float adjustment in toilet cisterns.	High
Blaxland Library and Community Centre	The artificial lighting does not complement the available daylighting		Yes	Lighting	Install light sensors on the two strips of lights closest to the high windows in each roof section.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Community (CCP)	Excess energy use in the home		Yes		Provide and install energy efficient light globes to all homes in Blackheath	High
Community (CCP)	Excess water use in the home	Yes			Provide and install low flow shower heads and flow control devices on taps and toilets	High
Glenbrook Swimming Pool	Cleaning hose nozzle inefficient	Yes		Appropriate water equipment	Upgrade cleaning hose nozzle.	High
Glenbrook Swimming Pool	There is a significant build up of waste heat (from refrigeration) in the store room		Yes	HVAC	Provide an air path (with ventilation grills and so on) for waste heat to escape from the storage room without the use of extractor fans.	High
Glenbrook Swimming Pool	Excessive off season water use	Yes		Monitoring and checking	Investigate water use during off season.	High
Glenbrook Swimming Pool	A tree is shading the solar collectors in winter		Yes	Pool heating	Remove the tree presently shading the solar hot water system	High
Glenbrook Swimming Pool	Excessive water flow to urinals, basins, showers and toilet systems; Excess water use in toilets; Vandalised showerheads	Yes		Water flow controls	Install flow control valves to all taps under EPC; Adjust floats in toilet systems; Install vandal proof showerheads.	High
Glenbrook Swimming Pool	Lost opportunity for water reuse	Yes		Water retention infrastructure	Install backwash holding tank	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Civic Centre and Library	Constant flush urinal in community centre	Yes		Water flow controls	Upgrade of large urinal in community centre to sensor flush from constant flush.	High
Katoomba Civic Centre and Library	Excessive water flow to urinals, basins and toilet systems; Leaking urinal; Excess water use in toilets	Yes	Yes	Water flow controls	Install flow control valves to all taps under EPC; Fix leaking urinal; Adjust floats in toilet systems	High
Katoomba Falls Caravan Park	Excessive taps around camping ground, with increased potential for leaks and unnecessary maintenance	Yes		Appropriate water equipment	Reduce number of external taps where possible	High
Katoomba Falls Caravan Park	Vandalised showerheads	Yes	Yes	Water flow controls	Install 10 water efficient anti-vandal showerheads in amenities block	High
Katoomba Falls Caravan Park	Inefficient shower heads in park cabins	Yes	Yes	Water flow controls	Install water efficient showerheads for park cabins	High
Katoomba Falls Caravan Park	Inefficient bathroom taps	Yes	Yes	Water flow controls	Install inline flow control devices in bathroom tap ware	High
Katoomba Falls Caravan Park	Inefficient urinal	Yes	Yes	Water flow controls	Convert urinal to waterless operation	High
Katoomba Headquarters	Overheating in summer causing unnecessary air conditioning usage		Yes	HVAC	Incorporate 'night purge' ventilation into the ventilation control system during summer months to minimise daytime air conditioning usage.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Headquarters	Installation of new air conditioning units without consideration of building thermal performance		Yes	HVAC	Investigate all opportunities to minimise heat gain before permitting the installation of anymore air conditioning units.	High
Katoomba Headquarters	Air conditioning in the UPS room is highly wasteful and may not be necessary		Yes	HVAC	Re-asses the need for air conditioning in the UPS room and rather install a larger ventilation unit.	High
Katoomba Headquarters	The heat load in both the UPS and computer rooms can be significantly reduced		Yes	HVAC	Increase the target temperature of the AC a few degrees and install motion sensors for the lights.	High
Katoomba Headquarters	Leaks going unreported	Yes		Monitoring and checking	Installation of signage for reporting of leaks	High
Katoomba Headquarters	Excessive water flow to urinals, basins and toilet systems.	Yes	Yes	Water flow controls	Install flow control valves to all internal basins, taps, urinals and toilet systems under EPC.	High
Katoomba Showground	Poor leak management	Yes		Monitoring and checking	Further investigate and repair potential leakages. Use sub meters to aid in determining leakage location.	High
Katoomba Showground	Inefficient water use in amenities building	Yes	Yes	Water flow controls	Install water efficient showerheads and flow restrictors in amenities building.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Sports and Aquatic Centre	Lack of awareness of water issues by staff and patrons	Yes		Behaviour and Awareness	Install water awareness signage	High
Katoomba Sports and Aquatic Centre	Uplighting for the indoor pool is sometimes accidentally left on during the day		Yes	Lighting	Install light-level sensors on the up-lights so they are not inadvertently left on when not needed.	High
Katoomba Sports and Aquatic Centre	Excessive water flow to urinals, basins, showers and toilet systems; Excess water use in toilets; Vandalised showerheads	Yes	Yes	Water flow controls	Install flow control valves to all taps under EPC; Adjust floats in toilet systems; Install vandal proof showerheads.	High
Katoomba Sports and Aquatic Centre	Poor water savings practices re backwashing and water retention	Yes		Water retention infrastructure	Investigation into potential use of water collected from rooftop and options for recycling of backwashed waste water.	High
Katoomba Waste Management Facility	Lost opportunity for renewable energy use		Yes	Renewable energy infrastructure	Investigate the potential to use solar power at the proposed Katoomba Waste Transfer Station	High
Katoomba Waste Management Facility	Lost opportunity for water re-use	Yes		Water retention infrastructure	Install water tanks on proposed new infrastructure for the Katoomba Waste Transfer Station	High
Katoomba Works Depot	The lights in the garage are left on even when there is sufficient daylighting		Yes	Lighting	Install combined occupancy/daylight sensors for the main lighting in the garages.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Works Depot	Inefficient water use in all buildings	Yes	Yes	Water flow controls	Install water savings measure including flow control devices and upgrading showerheads.	High
Knapsack Park	Vandalised showerheads	Yes	Yes	Water flow controls	Install water efficient anti-vandal showerheads in amenities block	High
Lawson Aquatic Centre	Inefficient water use in all buildings	Yes	Yes	Water flow controls	Install flow control devices and upgrade showerheads	High
N/A	Lost opportunity for renewable energy use	Yes	Yes	Green Power	Investigate the potential for utilising 'Green Power' sources at Council properties	High
N/A	Lost opportunity for funding further initiatives	Yes	Yes		Investigate the merit of implementing a revolving fund to finance energy and water savings initiatives, as opposed to the merit of implementing further Energy Performance Contracts to fund these initiatives.	High
Springwood Fitness and Aquatic Centre	Fire hoses used to clean	Yes		Appropriate water equipment	Cease use of fire hoses in cleaning processes and provide appropriate hoses and fixtures	High
Springwood Fitness and Aquatic Centre	Need detailed audit of facility to understand issue	Yes		Monitoring and checking	Conduct detailed audit of aquatic centre as part of EDC program.	High

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Springwood Fitness and Aquatic Centre	Recommendations from EDC audit to be reviewed and actioned as appropriate	Yes		n/a	Review and action recommendations from EDC audit	High
Springwood Fitness and Aquatic Centre	Evaporation and heat loss from 25 metre and learners pool	Yes	Yes	Water and energy retention infrastructure	Install pool blankets for the 25 metre and learners pools	High
Springwood Fitness and Aquatic Centre	Poor water savings practices re backwashing and water retention	Yes		Water retention infrastructure	Investigation into potential use of water collected from rooftop and options for recycling of backwashed waste water.	High
Springwood Library and Offices	Braemer House and gallery has relative poor thermal performance		Yes	HVAC	Reduce air conditioning load by installing additional insulation and draught proofing.	High
Springwood Library and Offices	Inefficient water use in all buildings	Yes	Yes	Water flow controls	Install flow control devices and float adjustment in toilet cisterns.	High
Summerhayes Park	Vandalised showerheads	Yes	Yes	Water flow controls	Install water efficient anti-vandal showerheads in amenities block	High
All occupied buildings	Hot water boilers have a high standby power consumption		Yes	Hot water boilers	Install timer switches on all remaining units.	Medium

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
All occupied buildings and public toilets	Sites tend to have vastly different levels of water saving technology implemented (flow restrictors, aerators, efficient fittings etc)	Yes	Yes	Water use	Implement water saving measures at all sites, to bring them all to the same level in terms of water-saving technology.	Medium
All pool sites	Rainwater tanks are not used at the pool sites	Yes		Pool water	Investigate the feasibility (practical and economic) of installing water tanks at several sites.	Medium
Blackheath Caravan Park	Inefficient washing machines in caravan park communal laundry	Yes	Yes	Appropriate water equipment	Install 3 x front loading Maytag industrial washing machines	Medium
Blackheath Caravan Park	Inefficient single flush toilets	Yes		Water flow controls	Upgrade toilets cisterns to dual flush 6L/3L models	Medium
Blackheath Caravan Park	Inefficient capture of water runoff from amenities block	Yes		Water retention infrastructure	Install rain harvesting in amenities block for use in toilet flushing	Medium
Community (CCP)	Methane gas production from landfilled commercial waste		Yes	Waste	Carry out commercial recycling services to divert materials from landfill	Medium
Glenbrook Swimming Pool	Inefficient pool filtration plant	Yes		Water maintenance infrastructure	Upgrade pool filtration plant.	Medium
Katoomba Falls Caravan Park	Inefficient washing machines in caravan park communal laundry	Yes	Yes	Appropriate water equipment	Install 3 x front loading Maytag industrial washing machines	Medium
Katoomba Falls Caravan Park	Inefficient single flush toilets	Yes		Water flow controls	Upgrade toilets cisterns to dual flush 6L/3L models	Medium

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Falls Caravan Park	Inefficient capture of water runoff from amenities block	Yes		Water retention infrastructure	Install rain harvesting in amenities block for use in toilet flushing	Medium
Katoomba Headquarters	Multiple HVAC systems are potentially working against each other		Yes	HVAC	After the above measures have been implemented, price the overhauling of the multiple existing HVAC systems into a more appropriate system.	Medium
Katoomba Headquarters	An opportunity to use photovoltaics (solar panels) in a highly visible and effective fashion		Yes	Photovoltaics	Install solar panels on the north facing wall of the building (for shading and electricity generation).	Medium
Katoomba Sports and Aquatic Centre	The cooling system in the gym does not make use of outside conditions		Yes	HVAC	Install ventilation and improved insulation to reduce air conditioning load	Medium
Katoomba Sports and Aquatic Centre	Water wastage through inefficient backwashing practices	Yes		Water retention infrastructure	Recycle backwashed wastewater	Medium
Katoomba Works Depot	Overheating is a problem in the office building in summer		Yes	HVAC	Install external shading devices for the lower floor of the office building.	Medium
Springwood Fitness and Aquatic Centre	Water wastage through poor retention	Yes		Water retention infrastructure	Utilise water collected from rainwater harvesting	Medium
Springwood Fitness and Aquatic Centre	Water wastage through inefficient backwashing practices	Yes		Water retention infrastructure	Recycle backwashed wastewater	Medium

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Springwood Library and Offices	The PABX room is air conditioned, but proper ventilation should be sufficient		Yes	HVAC	Install a ventilation system to replace the air conditioning unit.	Medium
Summerhayes Park	Lost opportunity for water reuse	Yes		Water retention infrastructure	Install water tanks on the soccer club house	Medium
Summerhayes Park	Lost opportunity for water reuse	Yes		Water retention infrastructure and recycling/treatment	Investigate water reuse from Winmalee Sewerage Treatment Plant as an option for Summerhayes Park and other water users in the Winmalee area including Springwood Golf Course. If feasible, implement water reuse from Winmalee SPT project.	Medium (investigation) Dependent on funding (implementation)
All EPC buildings	EPC measures are not being effectively monitored		Yes	Monitoring and checking	Appoint a member of staff to thoroughly manage the ECS relationship and fully understand the EPC.	Ongoing
All occupied buildings	Opportunities are being missed to educate staff about saving water and energy	Yes	Yes	Behaviour and Awareness	Use every energy reduction action as an opportunity for staff education and/or awareness raising.	Ongoing

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
All occupied buildings	Councils needs a single contact for staff suggestions	Yes	Yes	Behaviour and Awareness	Create a single 'energy use' point of contact within the council, through which any suggestions and queries about new equipment can be channelled.	Ongoing
All occupied buildings	Improving building thermal performance is an ongoing issue		Yes		Establish an energy efficiency work crew to look for further opportunities and carry out upgrades.	Ongoing
Blackheath Caravan Park	Leaks and poor water performance going unreported	Yes		Monitoring and checking	Develop and implement a program for regular inspection and maintenance of water using fixtures	Ongoing
Community (CCP)	Methane gas production from landfilled domestic waste		Yes	Waste	Carry out domestic recycling services to divert materials from landfill	Ongoing
Community (CCP)	Methane gas production from landfilled organic materials		Yes	Waste	Carry out mulching services at Waste Management Facilities to re-use tree wastes to divert this organic material from landfill	Ongoing
Community (CCP)	Methane gas production from landfilled organic garden materials		Yes	Waste	Carry out kerbside chipping services to re-use and divert domestic garden waste from landfill	Ongoing

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Community (CCP)	Methane gas production from landfilled organic kitchen scraps		Yes	Waste	Provide educational opportunities for learning about home composting and worm farming to divert home kitchen scraps from landfill	Ongoing
Glenbrook Swimming Pool	Filter sand not being replaced regularly	Yes		Water maintenance infrastructure	Develop and implement program for replacing filter sand every three years	Ongoing
Katoomba Civic Centre and Library	Insufficient water performance monitoring (meter and/or bill monitoring)	Yes	Yes	Monitoring and checking	Implement effective process for tracking water and energy usage, trends and comparisons with other Councils	Ongoing
Katoomba Falls Caravan Park	Leaks and poor water performance going unreported	Yes		Monitoring and checking	Develop and implement a program for regular inspection and maintenance of water using fixtures	Ongoing
Katoomba Headquarters	Some issues going undetected.	Yes	Yes	Monitoring and checking	Implement regular and effective inspection and maintenance programs for all infrastructure.	Ongoing
Katoomba Headquarters	Insufficient water performance monitoring (meter and/or bill monitoring)	Yes	Yes	Monitoring and checking	Implement effective process for tracking water and energy usage, trends and comparisons with other Councils	Ongoing

COUNCIL ASSET	ISSUE	WATER	ENERGY	CATEGORY	POSSIBLE ACTIONS/PROJECTS TO ADDRESS ISSUES FOR USE IN ANNUAL BUSINESS PLANNING PROCESS	PRIORITY High = 1-2 years Medium = 2-4 years Low = 4+ years Ongoing
Katoomba Showground	Irrigation system leakage	Yes		Behaviour and Awareness	Turn off irrigation system at the main when not in use, to prevent leakage occurring.	Ongoing
New energy investments	Measures such as EPC's often result in unnecessarily complex systems		Yes		Consult an independent third party when making large scale energy investments	Ongoing
New energy investments	New energy investments will almost always have an impact on existing systems		Yes		Review all future energy investments (large or small) with the aim to consolidate rather than add-on solutions to existing systems	Ongoing
New energy investments	Poor purchasing policies will hinder energy saving measures		Yes		Incorporate efficiency considerations into the purchasing policies for key energy consuming goods.	Ongoing
Springwood Fitness and Aquatic Centre	Detailed (at least daily) meter monitoring needed to better understand site issues	Yes		Monitoring and checking	Implement a process that extends core monitoring to include more frequent collection of results (e.g. daily)	Ongoing
Springwood Fitness and Aquatic Centre	Lost opportunity for renewable energy use		Yes	Renewable energy infrastructure	Install solar panels on Springwood Fitness and Aquatic Centre	
Various town centres	Lost opportunity for water re-use on street side garden beds, particularly in high tourist areas	Yes		Water retention infrastructure	Install water tanks on commercial/village buildings nearby to garden beds	

Appendix 1 – Energy & Water Management System

Specifically, Blue Mountains City Council Energy and Water Management System model is made up of five primary components, supported by 16 sub-components:

COMMITMENT COMPONENT

Statement of Energy and Water Efficiency

The overall document that sets out the organisation's commitment to energy and water performance improvement.

PLANNING COMPONENT

Energy and Water Issues Identification

The process for identifying the key energy and water issues facing the organisation and the community.

Energy and Water Performance Objectives and Targets

The process for setting of strategic objectives and quantifiable targets to address the significant issues and bring about energy and water performance improvement.

Energy and Water Improvement Actions

The process for developing the actual actions and strategies to be implemented to improve performance.

IMPLEMENTATION AND OPERATION COMPONENT

Structure and Responsibility

The process for allocating responsibility for energy and water efficiency within the organisation, and making staff accountable for energy and water performance improvement.

Training and Awareness

The process for ensuring staff are appropriately trained to act with regard to energy and water efficiency in their day-to-day roles, and raising awareness among staff of the importance of energy and water efficiency and their role in the EWMS.

Internal Communication

The process for ensuring there is effective communication on energy and water efficiency issues between staff, and from management down to staff and visa versa.

External Communication

The process for communicating and interacting with external stakeholders and the community on energy and water efficiency issues.

EWMS Documentation

The process for ensuring all relevant EWMS processes, practices and components are documented simply and effectively.

Document Control

The process for implementing tools to control the distribution of EWMS-related documentation, to ensure relevant copies are maintained and obsolete versions of documents are removed from use in a timely fashion.

Controlling Routine Operations

The process for adjusting existing procedures and work instructions, and implementing new procedures that provide for energy and water efficiency in all routine operations.

MONITORING AND CHECKING COMPONENT

Energy and Water Performance Indicators, Monitoring and Reporting

The process for identifying the indicators that need to be monitored to assess the effectiveness of the EWMS and measure the organisation's and community energy and water performance, and the process for reporting of performance both internally and to the public.

Incident and Suggestion Reporting

The process for identifying non conformances in the EWMS as well as opportunities for improvement, and for addressing these in a timely and effective manner.

EWMS Audits

The process for auditing the EWMS to assess its effectiveness in delivering energy and water performance improvement.

EWMS Records

The process for identifying what records need to be maintained to demonstrate that outcomes are being achieved through the EWMS.

REVIEW AND ADJUSTMENT COMPONENT

EWMS Review

The process for reviewing the overall EWMS on a regular basis and making fundamental changes to the system as required ensuring it remains valid and effective.

EWMS Documentation

The various processes that make up the EWMS are documented in a strategic set of standards, notes, tools and templates. These are shown in Figure 2.

EWMS STANDARDS

The approach Blue Mountains City Council has taken to implement the various EWMS components and sub components is detailed in a series of Standards. The Standards are upper level documents that set out in specific detail how each of the EWMS components has been implemented within the organisation. The Standards serve as the primary reference point for the EWMS Coordinator and Managers on EWMS issues.

A Standard has been developed for all EWMS sub components.

EWMS SUPPORT SHEETS

Key elements of each Standard will be summarised in EWMS Support Sheets. These Support Sheets set out the important EWMS components in a simplified way, and support the EWMS Standards. They are designed as a quick source of EWMS information for Managers.

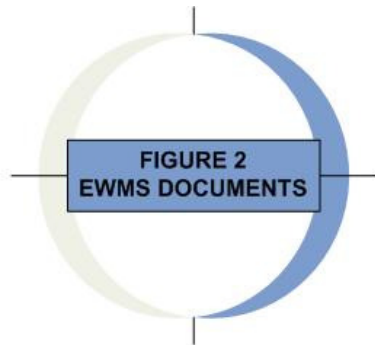
EWMS Support sheets have been developed for the more complicated EWMS components.

EWMS TOOLS AND TEMPLATES

A variety of tools and templates will be developed to aid in the implementation of the processes described in the Standards. These include Issues Identification Sheets, and an Incident and Suggestion Form.

EWMS MANUALS AND GUIDES

EWMS Manuals and Guides will be developed for the EWMS Coordinator, Managers and Staff. Each document is tailored to that specific audience, and comprises a mix of Standards, Support sheets, tools and other information to support staff in discharging their responsibilities under the EWMS.



THE VARIOUS COMPONENTS OF THE EWMS ARE DESCRIBED IN A SERIES OF STANDARDS, SUPPORT SHEETS, TOOLS AND TEMPLATES. ALL OF THESE ARE COLLATED TOGETHER IN SEVERAL GUIDES AND MANUALS FOR STAFF AND MANAGERS.....

THESE FORM THE FIRST TIER OF EWMS DOCUMENTATION

