



**CAMPBELLTOWN
CITY COUNCIL**

**INTEGRATED URBAN WATER CYCLE
MANAGEMENT PLAN
2005 - 2008**



Adopted by Campbelltown City Council
on 4 April 2006

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1. Introduction

The purpose of this Integrated Urban Water Cycle Management Plan is to provide Council with a strategic direction and an implementation plan for integrated water management over the next 3 years.

The plan addresses the four key resources that comprise integrated water management:

1. water consumption;
2. surface water / stormwater;
3. wastewater; and
4. groundwater

The plan is intended to provide Council management, staff, and Elected Members guidance for investing in water management actions that 1) conserve water and 2) protect water quality and ecosystem health.

It will also serve to inform the community, other Councils and State Government about the water management programs and goals for the Campbelltown City Council.

In it's approach to managing water resources the Plan will:

- look at the way water resources are used and identify opportunities to conserve water
- protect waterways and biodiversity by monitoring activities with the potential to impact water quality
- set goals for water conservation and water quality for Council and it's community
- commit to actions for integrated water management based on managing short and long term risks to water resources
- allocate responsibilities for integrated water management
- provide a context for involving the community, governments and other agencies to partner in education and action across the catchment
- establish an adaptive management cycle that includes processes for monitoring, review and reporting

2. What is Urban Water Cycle Management?

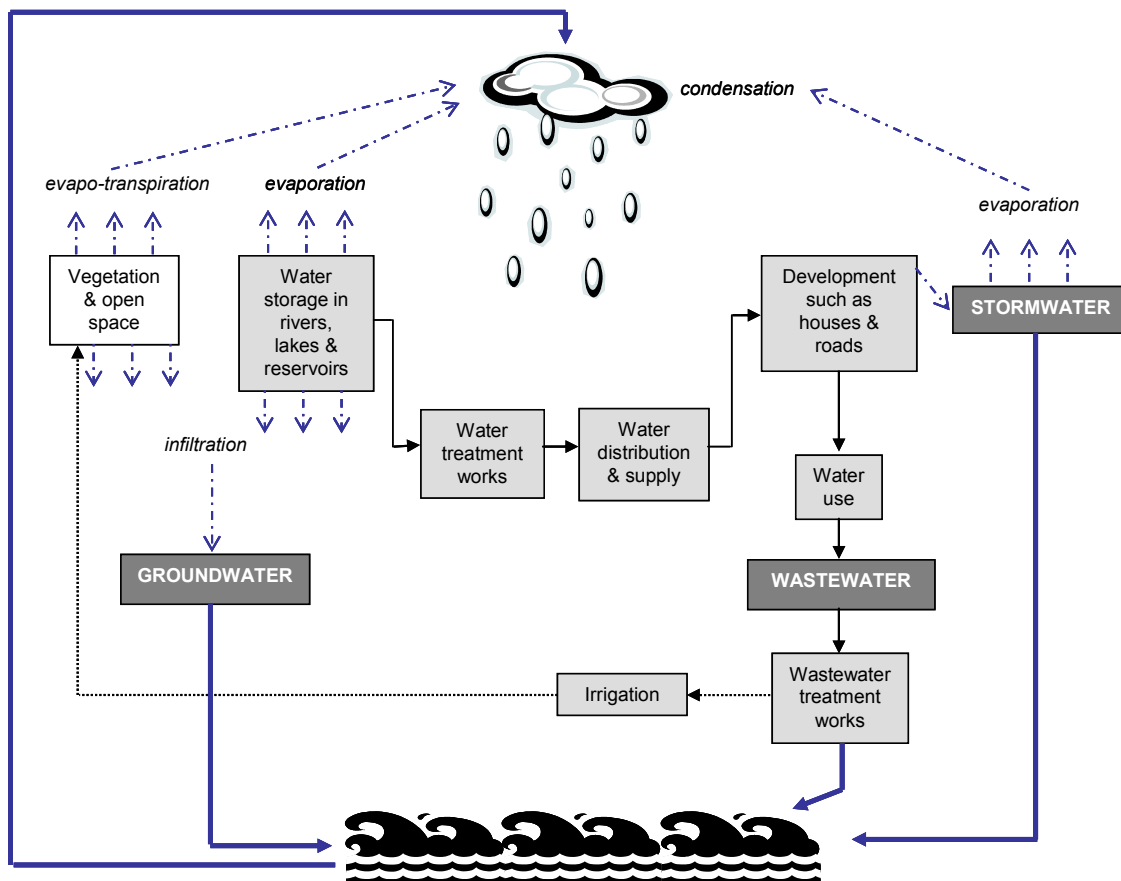
Urban water cycle management is about planning for the integrated management of water consumption, groundwater, stormwater and wastewater to support the environment, economy and community of the broader catchment.

Traditionally, mains water supply, groundwater, wastewater and stormwater have been managed as separate systems. Integrated urban water cycle management looks at the way we use key water resources and the effects this has on the quality of natural resources and waterways. It seeks to close the 'water loop' by preventing wastage and pollution of water resources and re-using water wherever possible.

Urban water users have relied heavily on surface water supplies distributed through the mains water system and to a lesser extent on water extracted from aquifers (Figure 1). There are only limited opportunities to further exploit these resources. Continuing to extract large volumes of water from surface and groundwater systems will place significant stress on ecosystem health. Arguably the decline in the health of the River Murray is evidence that resources are already over-exploited.

Existing water supply, wastewater and stormwater infrastructure is ageing and the replacement costs to the community are considerable. The Adelaide urban growth boundary will reduce the need to extend infrastructure on the city's fringe. This is countered by the pressure population growth and urban infill will have on the existing network.

Figure 1 Schematic of the Urban Water Cycle



Today's water resource managers need to find solutions to water management challenges that protect the existing network system, benefit the environment and are socially acceptable. Frameworks for achieving integrated urban water cycle management are discussed below and include: the water management hierarchy, source control and water sensitive urban design. Source control and water sensitive urban design provide opportunities to manage water using decentralised infrastructure and techniques.

2.1. Water Management Hierarchy

The water management hierarchy mirrors that developed for the management of waste. Avoid or minimise the production of waste or pollution (water efficiency, stormwater and wastewater). Where this is not possible or reasonably achievable, the reuse of waste (wastewater and stormwater) should, as far as practicable, be maximised, and so on.

1. avoiding the production of waste (water efficiency, wastewater and stormwater)
2. minimising, as far as reasonably practicable, the production of waste (wastewater and stormwater)
3. reusing waste (wastewater and stormwater)
4. recycling waste (wastewater and stormwater)
5. recovering part of waste (wastewater and stormwater) for re-use
6. treating waste (wastewater and stormwater) to reduce potentially degrading impacts
7. disposing of waste (wastewater and stormwater) in an environmentally sound manner

2.2. Source Control

Source control refers to management techniques that address the issue in question at the point at which it is generated and or supplied. It attempts to harness the potential of rain and stormwater water as supply and reduce the discharge of wastewaters. In an urban landscape source control is applied at the individual allotment scale.

When applied to water resources the aim of source control is to minimise the use of mains water and the generation of stormwater and wastewater.

Source control can be implemented in the following ways¹:

- retention of rainwater
- stormwater detention
- greywater (laundry, bathroom and kitchen) re-use
- on-site treatment of blackwater (toilet)
- use of energy efficient appliances and practices
- on-site infiltration and
- aquifer storage and recovery

Techniques such as the use of energy efficient appliances and stormwater detention for new developments have achieved greater uptake than other methods that may require greater investment, research or acceptance amongst the community.

¹ Coombes, P.J. & Kuczera, G. '*Integrated Urban Water Cycle Management: moving towards systems understanding*,' Civil, Surveying and Environmental Engineering, School of Engineering, University of Newcastle.

2.3. Water Sensitive Urban Design

The aim of water sensitive urban design is to integrate land use planning with urban water cycle management. Water sensitive urban design involves providing services for water supply, stormwater and wastewater at a range of geographical scales ranging from the allotment scale (incorporating source control) to regional services (i.e. wetlands).

3. Development of the Plan

The Integrated Urban Water Cycle Management Plan has been prepared using the International Council for Local Environmental Initiatives (ICLEI) Water Campaign™ framework.

The Water Campaign™ is based upon a framework of five performance-based milestones:

1. Inventory of water consumption and water quality management data
2. Setting goals for water conservation and water quality
3. Development of a Water Management Plan including local actions
4. Implementation and measurement of actions arising from the Water Management Plan
5. Monitor, review and report on actions implemented

The Water Campaign™ is a national program with 75 participants across Australia. The program is available to Council's in metropolitan Adelaide through the Mount Lofty and Greater Adelaide Region Integrated Natural Resources Management Board. Campbelltown City Council is the host of the State Water Campaign Coordinator.

The development of the Plan is the outcome of milestones one and two of the Water Campaign™, research activities and internal Council workshops, combined with consultation with the community and member Council's of the Office of the East. The intention of consultation was to gain input from the key players involved in service development, delivery and reporting across the catchment.

Council has a partnership arrangement with five other metropolitan Local Governments to improve service delivery and natural resource management across the eastern region of Adelaide. The regional grouping, Office of the East, comprises the Cities of Campbelltown, Norwood, Payneham & St Peters, Walkerville, Prospect, Burnside and Tea Tree Gully. As part of this arrangement, the Council's have agreed to work collaboratively towards shared goals and targets for water resource management.

In preparing the Plan the following opportunities to input into the plan were provided to people living and working within the Campbelltown Council area:

- review of water actions in Council's existing Environmental Management Plan by Council staff
- workshops for Council staff including office and field operators
- workshops with local government officers charged with water management responsibilities for member Councils of the Office of the East
- consultation with Council's environmental reference group, the Friends of the Environment
- broad community consultation in accordance with Council's Consultation Policy

4. Our Water

The Water Campaign™ comprises a Corporate (Council) module and a Community module. A third module is in development and will focus on catchment issues. Milestone one of the Water Campaign™ involved completing a corporate water consumption inventory and water quality management analysis for both the Corporate and Community module. The findings for Council and the community are presented in the following sections.

4.1. Council's Water Consumption

Council completed a water consumption inventory for the Water Campaign™ detailing how much water Council and the community use. The inventory was completed for two financial years of data, these being 1997-1998 and 1999-2000. Water consumed in the 1999-2000 financial year will be used as the base year to measure improvements in water conservation. Data has been recorded for the period 2001/2002 to assist in future decision making, but will not be used in the formal evaluation of the Water Campaign™.

Council's corporate water conservation inventory identified that there was a 36% decrease in water use between 1997/1998 (391,294 kilolitres) and 2001/2002 (251,453 kilolitres). High water use in 1997/1998 coincides with an extended dry period in South Australia that began late in 1996. South Australian water restrictions (stage 2) began in July 2003 and their impact is not reflected in the data.

Council's water use patterns are characteristic of its assets. Council's main water usage in 2001-2002 was for open space (64%), playing fields (32%) and administration buildings and community centres (3% combined).

Playing fields are irrigated more intensively than other assets to maintain a suitable playing surface for active recreational purposes, such as soccer, football and cricket. Open space and playing fields are treated as priority areas for action in this plan.

Just over half of all water used in 2001-2 was on the assets listed in Table 1. Thorndon Park is Council's premier recreational facility and has recently undergone reconstruction. Of note, is that high water consumers in the open space sector tend to relate to reserves along the River Torrens Linear Park.

Table 1 Top ten high water using sites, Campbelltown City Council

Council Asset	Sector	2001/2002	
		Consumption (kl)	% Total Consumption
Thorndon Park	Open Space	23,130	9.2
Newton Sports Ground	Playing Fields	23,055	9.2
Torrens Valley Sports Field (pitch and oval)	Playing Fields	17,574	7.0
Daly Oval	Playing Fields	14,832	6.0
River Drive Developed Reserve (River Torrens Linear Park)	Open Space	14,005	5.6
Gorge Road Developed Reserve (River Torrens Linear Park)	Open Space	10,975	4.4
Foxfield Oval and Hall	Playing Fields	9,850	3.9
The Dress Circle (River Torrens Linear Park)	Open Space	9,196	3.7
Athelstone Recreation Reserve	Playing Fields	7,077	2.8
Antares Way Reserve	Open Space	6,473	2.6
TOTAL		136,167	54.2

4.2. Community's Water Consumption

Campbelltown City Council is pre-dominantly residential land use with some retail, commercial and light industrial users. Water consumed by these sectors in 2001-2 was 5,373,794 kilolitres.

Households account for the majority of water consumed followed by the non-residential and commercial sectors (Table 2 and Figure 2). On average, non-residential users consume more water per property than other land uses.

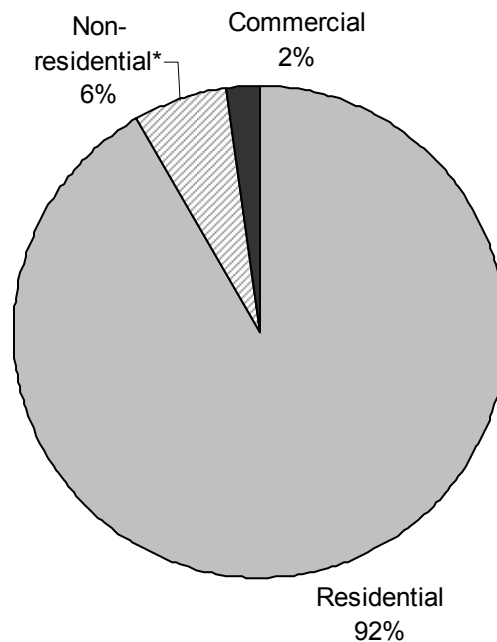
Land use composition has remained reasonably constant between 1998 and 2002, particularly for non-residential and commercial land use sectors. A minimal increase of approximately 500 water meters has occurred across the residential land use sector during the period. The impact of water restrictions and the State Government's Water Proofing Adelaide Strategy are not reflected in the data.

Table 2 Community Mains Water Consumption

Land Use Sector	Consumption (kl)			
	1998/1999	1999/2000	2000/2001	2001/2002
Residential	4,932,334	4,876,118	5,151,564	4,928,656
Non-residential*	306,414	294,996	307,297	328,282
Commercial	111,327	122,603	114,890	116,856
TOTAL	5,350,075	5,293,717	5,573,751	5,373,794

Source: SA Water Rating Analysis Data

*includes hotel/motels, industrial, public institutions, public utilities, recreation and primary production.

Figure 2 Community Water Consumption 2001-2002

4.3. Water Conservation

In measuring improvements in water conservation, Council has developed two goals, one for the Corporate module and one for the Community module of the Water Campaign™. These goals are to:

- improve corporate water conservation by 25% based upon 1999-2000 levels by 2015
- improve community water conservation by 25% based upon 1999-2000 levels by 2015

4.4. Water Quality

Milestone one of the Water Campaign™ involved completing a corporate water consumption inventory and water quality management analysis for Council and its community.

A water quality management analysis has been completed for the Water Campaign™. The analysis involved surveying staff and assessing the various Council activities that may affect water quality, and Council initiatives for influencing water quality within its community.

Three priority areas for attention have been identified for water quality as follows:

1. erosion and sediment management
2. gross litter and pollution management
3. herbicide, pesticide and fertiliser use

In addition, Council participated in an independent audit organised by the Torrens Catchment Water Management Board that focussed on compliance with the Environment Protection Authority Stormwater Code of Practice for Local Government. The audit identified a number of areas for improvement.

As a result of these assessments, priority is given to the following actions in the Water Implementation Plan:

Council Actions

Prepare an Urban Stormwater Master Plan in accordance with Planning SA Guidelines, in order to develop more detailed flood control, stormwater detention and treatment standards for incorporation into Council's Development Plan;

Ensure appropriate environmental management information is available for Council staff:

- relevant Council staff and contractors are trained in fertiliser and pesticide application and support non-chemical pest eradication methods where appropriate; and

Review Councils policies and procedures for environmental sustainability to ensure:

- procedures and reporting processes for emergency response, spill contingency, non-conformance, incidents and complaints are in accordance with State Government guidelines
- all Council work sites have effective erosion, sediment and wastewater controls installed and maintained;

Community Actions

Actively work with developers to achieve best environmental practice and design principles for urban regeneration, infill and major development projects:

- developers and local businesses are encouraged to comply with the Environment Protection Authority's Environment Protection Policy on Water Quality and principles of water sensitive urban design

Prevent pollution by maintaining and where necessary improving the level of service and information regarding waste management:

- all households are informed regarding waste avoidance, recycling and litter prevention

Utilise a range of communication methods including Council's website, publications and assets to promote environmental sustainability:

- Complete a comprehensive review of environmental information on Council's website to ensure households are informed regarding responsible herbicide, pesticide and fertiliser use, and alternate non-chemical pest eradication strategies.

The Water Campaign™ records Council's achievement in the area of water quality according to a points system that relates to Corporate and Community Water Quality Action Cards. Milestone five of the Water Campaign™ will involve Council undertaking a review of all work completed from the year of joining the Campaign in 2003, to identify progress towards the following goals:

- to implement 50 points of actions from the Water Campaign™ Corporate Water Quality Action Cards by 2015
- to implement 50 points of actions from the Water Campaign™ Community Water Quality Action Cards by 2015

5. Water Management Principles

Council will apply the following principles in its approach to water resource management to ensure the best possible environmental, social and economic outcomes. These are:

Manage based on ecosystems

- manage water resources on an integrated basis and at a catchment scale to achieve multiple outcomes
- recognise the cumulative effect of threatening processes and complex interactions and relationships between water, land, biodiversity, economy and society

Take action

- apply the 'precautionary principle' whereby managing threats to the environment are not postponed because of lack of scientific certainty
- support different strategies to protect the environment including education, incentives and enforcement
- support innovation in water resource management
- commit to actions for short-term and long-term total water management

Prevention before rehabilitation

- examine risks and opportunities arising from management options and seek to optimise environmental outcomes
- prioritise actions to address water resource issues according to the level of threat and the potential benefits to the environment

6. State Legislative and Strategic Framework

6.1. Legislative Requirements for Water Management

South Australia's legislative framework provides a number of tools to address water management ranging from state-wide legislation to regional and local policy. The following are key pieces of environmental legislation for water management across the State.

6.1.1. Environment Protection Act 1993

The main piece of pollution prevention legislation in South Australia is the *Environment Protection Act 1993* (EP Act). The EP Act sets out a general environmental duty that:

a person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm

The EP Act is administered primarily by the Environment Protection Authority (EPA). Local Government can voluntarily administer some activities under the Act, and by 2007, may be required to do so.

Authorised Officers at the Campbelltown Council are not presently resourced for this function.

6.1.2. Environment Protection (Water Quality) Policy 2003

The Environment Protection (Water Quality) Policy 2003 is the main mechanism for protecting water quality in South Australia. The policy sets environmental values, water quality objectives and specific water quality criteria for all inland surface water, groundwater and marine waters.

The EPP includes the following general obligations relevant to the protection of water resources:

- to avoid the discharge or deposit of waste into any waters, including a public stormwater disposal system; or onto land from which it is reasonably likely to enter any waters; and
- requires Council to apply the waste management hierarchy (avoiding waste and pollution in the first instance), when managing water quality.

6.1.3. Natural Resources Management Act 2004

The *Natural Resources Management Act 2004* (NRM Act) promotes sustainable and integrated management of the natural resources of the State, and the protection of those natural resources. The Act amends a number of pieces of legislation and repeals three other Acts, including the *Water Resources Act 1997*.

Chapter seven of the NRM Act refers specifically to management and protection of water resources. This section deals with:

2. general rights in relation to water;
3. control of activities affecting water;
4. licensing and allocation of water;
5. reservation of excess water by Minister;
6. water conservation measures; and
7. other related matters.

The Act also establishes the framework for Natural Resource Management Boards.

6.2. State Policy for Water Management

6.2.1. South Australian Strategic Plan 2005

During March 2004, the State Government released the South Australian Strategic Plan: Creating Opportunity. The Plan is based upon six interrelated objectives including 'Attaining sustainability,' which contains targets to a secure sustainable energy and water supplies.

The priority for water management across South Australia is to return environmental flows to the Murray-Darling Basin. The vehicle to achieve this target is through the Water Proofing Adelaide Strategy which investigates ways to ensure quality and quantity of water supply for a twenty year period from 2005-2025.

6.2.2. Water Proofing Adelaide: A thirst for change 2005-2025

Water Proofing Adelaide addresses issues associated with water supply for South Australia. There are three main aspects to the Water Proofing Adelaide Strategy: managing existing resources, responsible water use and additional water supplies, which together aim to reduce Adelaide's water use by around 20% by 2025.

Strategies within each of the three main areas of the Strategy will affect the operations of Local Government and have been considered in the development of this plan.

6.2.3. Torrens Catchment Water Management Plan 2003-2007

The Torrens Catchment Water Management Plan 2003-2007 sets out a five year works program to improve water quality in the Torrens Catchment. Projects include the construction of wetlands, aquifer storage and recovery schemes, installation of gross pollution traps, and stormwater compliance projects.

The Torrens Catchment Board was superseded by the Natural Resources Management Board in December 2005. However, the five year works program will continue as scheduled until 2007.

6.2.4. Integrated Natural Resource Management Plan for Mount Lofty Ranges and Greater Adelaide Region

In 2003, the State Government approved the Integrated Natural Resource Management (INRM) Plan for the Mount Lofty Ranges and Greater Adelaide Region, developed by the interim INRM Board.

The plan deals specifically with managing water for improved quality and sustainability:

...water quality and quantity managed to sustain natural ecosystems, drinking water supplies, industry, and other urban and domestic uses...

The Investment Strategy which outlines how the plan will be funded and implemented is currently being developed and will be released during the implementation of this Integrated Urban Water Cycle Management Plan.

6.2.5. Intent to Prescribe the Wells in the Central Adelaide Area

Minister for Environment and Conservation, John Hill, issued a Notice of Intent to Prescribe the Wells in the Central Adelaide Area, pursuant to Section 125 of the *Natural Resources Management Act 2004* on 1 December 2005.

The Notice applies to all existing and future groundwater bores within the Campbelltown Council area excluding groundwater used for stock and domestic purposes.

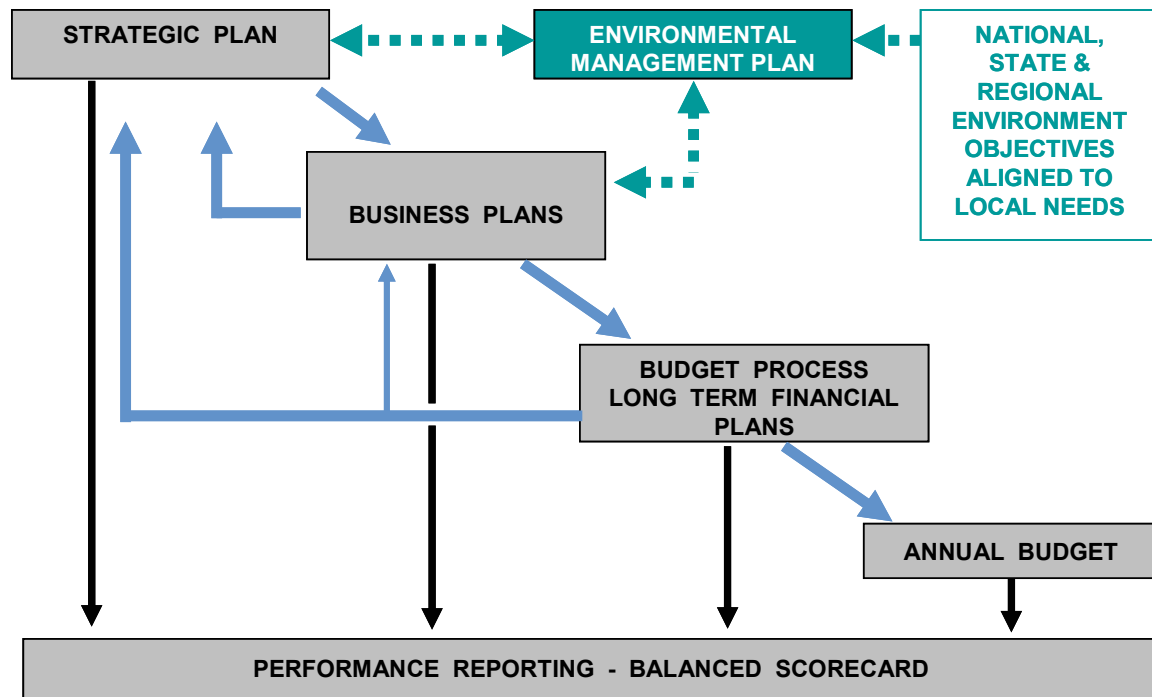
If groundwater resources for the Central Adelaide Area are prescribed, Council will need to apply to the Minister for a license to use groundwater. Licensing will define how much groundwater is allocated for use by Council. In order that Council's use of groundwater is within the defined allocation, metering of bores across the City will be mandatory. A decision about prescription will be made by the Minister around August 2006.

During this time, the Minister has placed temporary restrictions on increasing the use of groundwater through a Notice of Prohibition on Taking Water from Wells in the Central Adelaide Area. The Notice of Prohibition is effective immediately.

Under the Notice of Prohibition, written authorisation to use groundwater is required from the Department of Water, Land and Biodiversity Conservation (DWLBC). As part of the authorisation process, Officers of the DWLBC will progressively conduct land and water use surveys to collect information about current groundwater use. Council will need to install flow recording meters to monitor groundwater use as a condition of authorisation.

7. Council's Strategic Framework

Figure 3 Council's Strategic Management Framework



7.1. Campbelltown City Council's Strategic Plan 2005-2010

The Strategic Plan 2005-2010 provides the overarching planning framework, vision, goals and future directions to guide Council's priorities, projects and investment over the next five years. The plan encompasses five strategic themes: Community life, Economic development, Natural environment, Urban design and built environment, and Governance and organisation.

The overarching goal for the Natural Environment is:

An environment providing the community with high quality open spaces and biodiversity which is supported by responsible management of natural resources

In achieving this Goal, the plan seeks to achieve a number of environmental outcomes. Most relevant to water management is the 'Efficient use and conservation of natural resources.'

7.2. Environmental Management Plan

The Environmental Management Plan 2004-2005 seeks to further the environmental objectives identified in Council's Strategic Plan, and guides Council's activities in relation to the environment.

The key principles that Council has adopted to protect our environment in relation to Water Management are:

W1 - Reduce corporate water consumption

W2 - Support water conservation by local residents

W3 - Protect waterways and improve water quality through effective stormwater management

7.3. Stormwater Management Audit Report

The Torrens Catchment Water Management Board conducted an independent stormwater management audit of Council during 2003, to assess compliance with the Environment Protection Authority Stormwater Pollution Prevention Code of Practice for Local, State and Federal Government 1997.

The audit covered the following corporate activities:

- building and construction works;
- stormwater infrastructure and maintenance;
- general Council maintenance activities;
- Council depot operations; and
- stormwater management programs and policies.

Audit recommendations for water quality were considered in the development of this plan.

8. Council Actions Implemented 2000 - 2005

Council has been actively involved in water resource management for several years. Actions to improve water conservation and water quality implemented since 2000 are outlined below.

8.1. Water Conservation Actions Implemented

Action	Description	Further information
River Torrens Linear Park	<ul style="list-style-type: none"> Hydro-mulching was investigated along the River Torrens Linear Park to reduce the irrigated lawned area. The use of mulch along the River Torrens Linear Park has enabled water regimes to be modified to reduce watering frequency. Revegetation along the River Torrens Linear Park is with local indigenous plant species. A comprehensive weed management program is being conducted to remove woody weeds and competition between plants for limited resources including water. <p>Partners - Torrens Catchment Water Management Board; City of Tea Tree Gully; and Urban Forest Biodiversity Program</p>	Council's Tree Management Officer
Council buildings	<ul style="list-style-type: none"> Council has installed a waterless urinal and has replaced single flush toilets with dual flush toilets in it's administration office. 	City Services Department
Council parks and reserves	<ul style="list-style-type: none"> The majority of irrigation systems in Council parks and reserves have been upgraded from manual to automatic timers to increase the level and control of water application. This included a review of nozzle sizing and spacing to ensure even coverage. There are about four of the new irrigation systems yet to be brought on-line, and the preliminary work for these systems is complete. A system is in place to review the performance of the new irrigation system. A rain gauge has been installed at Councils Depot to inform irrigation regimes and prevent over-irrigation during periods of rainfall. Council has increased the level of soil conditioning and mulching occurring in parks and reserves to help reduce water consumption. More indigenous plant species are being used in parks and reserves and other plants are being selected and planted according to their water requirements, and to include drought tolerant species. 	City Services Department
Rainwater Tank Rebate Project	<ul style="list-style-type: none"> During 2001-2002, Council received a State Government grant to implement a rainwater tank rebate scheme. In total, the incentive scheme resulted in the installation of 85 tanks within the community. Council will consider a program of interest free loans for rainwater tank installation for existing development in the 2006-2007 budget. <p>Partners - Department for the Environment and Heritage - Water Conservation Partnership Project</p>	Council's Environmental Policy Officer
Water efficient devices	<ul style="list-style-type: none"> During 2001-2002, Council participated in an incentive based project to offer a range of rebates to residents for water conservation, including: tap timers; AAA-rated showerheads; dual flush toilets; flow restrictors; and front load washing machines. <p>Partners - Department for the Environment and Heritage - Water Conservation Partnership Project</p>	Council's Environmental Policy Officer
Promotion of indigenous and drought tolerant plant species	<ul style="list-style-type: none"> Council is attempting to raise community awareness of indigenous and drought tolerant plant species that can be used by residents in their gardens. This has included the development of a Backyard Biodiversity booklet which contains a local indigenous planting guide. <p>Partners - Urban Forest and Biodiversity Program; and Campbelltown Landcare</p>	Council's Environmental Policy Officer

Action	Description	Further information
Corporate water inventory	<ul style="list-style-type: none"> As part of milestone one of the ICLEI Water Campaign™, Council has developed a corporate water inventory to assess its water usage. Council will continue to monitor water consumption as part of this Integrated Water Cycle Management Plan. <p>Partners - International Council for Local Environmental Initiatives</p>	Council's Environmental Policy Officer
Street trees and verge development	<ul style="list-style-type: none"> Council has policies for both Street Trees and Verge Development that encourage the use of drought tolerant plant species in the streetscape environment. 	Council's Tree Management Officer

8.2. Stormwater and Wastewater Management Actions Implemented

Action	Description	Council Contact
Enforcement of Water Quality Policy	<ul style="list-style-type: none"> Some of Council's General Inspectors are authorised by the Environment Protection Authority to enforce the Environment Protection (Water Quality) Policy. Council is not required to administer this policy which is currently a responsibility of the Environment Protection Authority. <p>Partners - Environment Protection Authority</p>	City Services Department
Planning controls	<ul style="list-style-type: none"> Council's Development Plan includes provisions for effective stormwater management and a policy for the mandatory installation of a stormwater detention tank for new development. This policy is currently being independently reviewed to assess its effectiveness and for consistency with the State Government's policy that all new developments will have a rainwater tank plumbed for household uses from July 2006. <p>Partners - Torrens Catchment Water Management Board; and Urban Water Resource Centre - University of SA</p>	Council's Senior Planner
Gross pollutant traps	<ul style="list-style-type: none"> Gross pollutant traps have been installed at Dennis Morrissey Park and twelve locations along the River Torrens Linear Park. <p>Partners - Torrens Catchment Water Management Board</p>	City Services Department
Watercourse restoration	<ul style="list-style-type: none"> Council has prioritised its creeks and waterways for rehabilitation using indigenous plant species to increase biodiversity and protect water quality. Campbelltown Landcare Group have been actively rehabilitating areas of indigenous vegetation contained within Wadmore Park, including a comprehensive effort along Fifth Creek. Council will continue to support the work of the group. Stradbroke Primary School has adopted a section of Fifth Creek as an outdoor classroom and is actively rehabilitating the riparian zone with indigenous plant species. The group has done extensive weed control reducing the need for chemical control methods. <p>Partners - Campbelltown Landcare Group; and Stradbroke Primary School</p>	Council's Environmental Policy Officer
Litter management	<ul style="list-style-type: none"> Council has regularly participated in Clean Up Australia day, to encourage businesses, residents and schools to collect rubbish. Council provides and regularly maintains waste bins at parks, reserves and areas of public open space to prevent littering. Council has a program for street sweeping that removes pollutants on roads and carparks from being washed into the stormwater system. <p>Partners - Clean Up Australia</p>	City Services Department
Corporate stormwater audit	<ul style="list-style-type: none"> During 2003, the Council Depot and corporate activities were externally audited for compliance with the Stormwater Pollution Prevention Code of Practice for Government Agencies produced by the Environment Protection Authority. 	Council's Environmental Policy Officer

Action	Description	Council Contact
Household hazardous waste collection	<ul style="list-style-type: none"> During 2004, Council hosted a hazardous household waste collection at it's Depot and invited residents and ratepayers of the Cities of Campbelltown, Burnside and Norwood, Payneham & St Peters to drop-off household wastes. During 2005, Campbelltown Council arranged for it's residents to attend the collection hosted by Norwood, Payneham & St Peters. In 2006, Campbelltown Council residents will have access to the collection at Burnside Council. <p>Partners - Torrens Catchment Water Management Board; Zero Waste SA; and Cities of Burnside, and Norwood, Payneham & St Peters</p>	Council's Environmental Policy Officer
Community & school based projects	<ul style="list-style-type: none"> Council supports community based projects for water quality improvement such as KESAB Waterwatch, for monitoring water quality in creeks and waterways, and Gutter Guardians, a program designed to remove litter and pollution from stormwater drains. Council actively participates in the KESAB Waterwatch program by monitoring one site along Fifth Creek and one site along Fourth Creek. Council has approximately six Our Patch sites where community and school students adopt a piece of land to plant with indigenous plant species. Council has encouraged these sites to be established along riparian zones for water quality and biodiversity benefits. Council annually participates in community events to promote the use of indigenous plant species including National Tree Day and Schools Tree Day. <p>Partners - KESAB; Torrens Catchment Water Management Board - Our Patch; Planet Ark; Northpoint Toyota; Kiwanis of Athelstone; local schools</p>	Council's Environmental Policy Officer
Councils sports fields	<ul style="list-style-type: none"> Council investigated the potential to capture and re-use irrigation water at the Newton Sports Ground. Irrigation water re-use at this site proved cost prohibitive. Instead, a new surface and drainage system has been laid to improve the efficiency of irrigation. Further improvements in water efficiency at the Newton Sports Ground will be investigated. 	City Services Department

8.3. Groundwater Actions Implemented

Action	Description	Further information
Aquifer Storage and Recovery scheme	<ul style="list-style-type: none"> An Aquifer Storage and Recovery scheme was installed along Fifth Creek during 2003. The scheme collects water to store temporarily in an underground aquifer and is used to use irrigate the Torrens Valley Sports Oval during summer months. Council has been able to inject approximately 70 megalitres of stormwater into the aquifer for storage and has so far recovered about 13 megalitres to irrigate the sports oval. Further water savings are expected in future years. <p>Partners - Torrens Catchment Water Management Board</p>	Manager Strategic Development

9. Water Resource Goals, Performance Targets & Measures

In developing the goals, performance targets and measures for water resource management, Council has taken into account the specific water conservation and water quality priorities for the Campbelltown Council area as identified through Milestones one and two of the Water Campaign™. In addition, Council has consulted extensively with member Council's of the Office of the East, comprising the Cities of Norwood, Payneham and St Peters, Walkerville, Prospect, Burnside and Tea Tree Gully regarding regional priorities. The resulting table is the combined water management goal set.

GOALS	TARGETS	MEASURES
Sustainable total water cycle management	1a. integrate the management of stormwater, wastewater, groundwater and water consumption 1b. integrate land, biodiversity and water management 1c. promote the principles of water sensitive urban design through land use planning and building design	A community satisfied with the quality of parks, reserves and open spaces
Protect ecosystems, water quality and public health	2a. monitor and improve the ecological quality and health of aquatic invertebrate fauna and biodiversity in creeks and waterways 2b. protect the environmental values of our waterways to enhance environmental and urban amenity and biodiversity 2c. prevention pollution of the stormwater system and our waterways	Improve the ecological quality and health of aquatic invertebrate fauna in creeks and waterways
Conserve more water	3a. residents, business, industry and Council to conserve 25% more drinking quality water in 2015 than was used in 1997-1998 3b. sustainable water management through more efficient use of water 3c. sustainable groundwater resources	Conserve 25% more drinking quality water in 2015 than was used in 1999-2000
Promote fit for purpose water supplies	4a. provide the best opportunities for rainwater, stormwater and recycled water to be re-used through better methods of managing water 4b. seek opportunities to increase the uptake of alternate water supplies by 15% based on 2005 levels by 2015	Increase the uptake of alternate water supplies by 15% based on 2005 levels by 2015
Provide protection from flooding	5a. reduce the incidence of local flooding 5b. retain 5% of urban runoff in 2005 by 2015	Retain 5% of urban runoff in 2005 by 2015
Continual improvement	6a. capture baseline information for water consumption, stormwater, wastewater and groundwater 6b. establish a monitoring and review process to keep the water management program relevant, consultative and effective	Data capture and monitoring processes established
Form partnerships	7a. establish a framework for local government to work collaboratively on priority water resource management actions to benefit the region 7b. work with business, community and government agencies for effective water management	Regional local government environmental management framework in place
Educate to encourage participation	8a. provide a context for involving and educating residents, businesses and staff in integrated water management	A community aware of Council's environmental initiatives

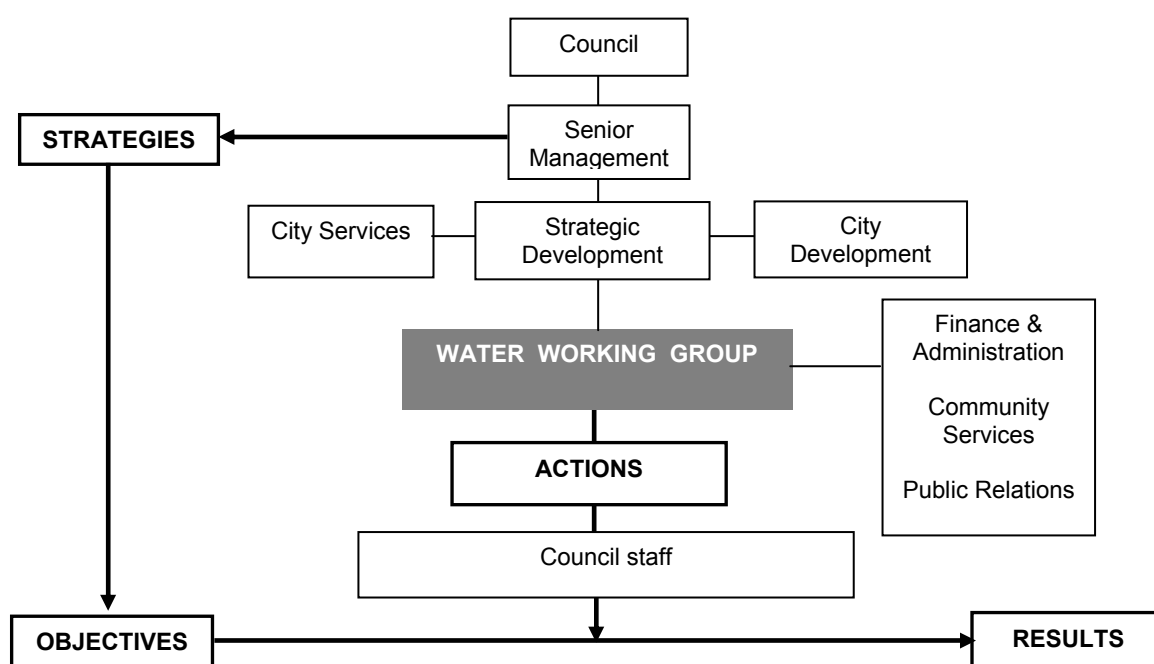
10. Integrated Decision-making Philosophy

Managing the urban water cycle is a complex process compounded by what can be conflicting social, cultural, economic and environmental needs.

To be effective a multi-disciplinary management approach is required to ensure cross-organisation decision making.

The integrated water management approach is shown diagrammatically in Figure 4.

Figure 4 Organisational arrangements for the Water Implementation Plan



11. Water Implementation Plan

The Implementation Plan clearly sets out the activities that the Council will undertake to achieve the goals and targets of the Integrated Urban Water Cycle Management Plan.

The Plan requires Council to commit resources to improving it's own organisational environmental performance, as well as implementing projects in the community sector. Actions have been included for both the Council sector (Council operations and the operations of Council contractors) and the community sector (residential, industrial and commercial activities).

Implementation is based upon a priority system where the ranking is defined as follows:

Priority	Ranking	Explanation
H	High	To be undertaken as soon as practicable. Actions: <ul style="list-style-type: none"> are funded or require funding as a matter of urgency (year 1 or 2) will result in multiple objectives being achieved (social, environmental and economic)
M	Medium	To be undertaken once the high priority actions are completed or if external funds or resources are available. Actions: <ul style="list-style-type: none"> should be funded during the implementation of the plan (year 2 or 3) will result in positive environmental outcomes and may have other benefits
BP	Business process	To be undertaken as part of normal business processes or through a minor change to process. Actions: <ul style="list-style-type: none"> can be carried out as part of existing budgets and workload will result in a change to existing services, processes or activities and will have no or marginal impact on workload

The implementation plan provides detail on each of the actions including direct links to strategies and outcomes contained in Council's Strategic Plan. Responsibility has been assigned to each action along with a suggested timeframe and where appropriate, an estimated budget allocation for implementation.

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
1a 1b 2c 3a 3b 4a 4b	Implement best environmental practice in the development and management of open space and other public land	3.1.3	Review Council's management proposals and maintenance procedures for open space and community land for environmental sustainability.	Internal	BP	Manager City Services	\$0	<p>2006-7</p> <p>Review existing maintenance programs to improve water and biodiversity conservation in parks and reserves, including identifying priority areas to:</p> <ul style="list-style-type: none"> rationalise the extent of irrigated and mown grassed areas review the standard of irrigation and the level of watering install water efficient measures use alternative water sources maximise the use of indigenous and drought tolerant plant species conserve remnant vegetation
1b 5a	Implement best environmental practice in the development and management of open space and other public land	3.1.3	Implement the Wadmore Park Management Plan and Vegetation Action Plan	Natural Resource Management Board, and Campbelltown Landcare	BP H	Manager City Services	\$0 \$200,000	<p>annual review</p> <p>Re-establish native grasses and indigenous plant species to prevent erosion where vegetation has been degraded</p> <p>Rationalise the number of walking tracks and prevent erosion of fire access tracks</p> <p>2005-7</p> <p>Prevent erosion from water run-off to preserve the natural form of the land and native vegetation at Wadmore Park by:</p> <ul style="list-style-type: none"> investigating options to control stormwater generated upstream of the park to reduce erosion implementing suitable erosion controls
1b 2b	Develop management systems, policies	3.1.4	Develop a strategic land acquisition plan for internal planning purposes	Internal	H	Manager Strategic Development	\$0	<p>2005-6</p> <p>Prioritise opportunities to acquire land adjoining watercourses for the purposes of:</p>

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	and protocols that assist the purchase, development and maintenance of open spaces							<ul style="list-style-type: none"> improving linkages between open spaces protecting watercourses and water quality providing habitat and maximising biodiversity
7b	Develop and maintain productive partnerships for environmental management	3.2.1	Involve State, Federal and Local Government, business, community and non-government organisations in environmental management to benefit the City	State Government International Council for Local Environmental Initiatives (ICLEI), Zero Waste SA, Plumbing Industry Association, Local Government	BP	Environmental Policy Officer Manager City Services Environmental Policy Officer	\$0	<p>annual review</p> <p>Continue existing partnerships with ICLEI for the delivery of the Water Campaign</p> <p>Support local hazardous waste collection days within the eastern region</p> <p>2005-6</p> <p>Support and promote the development of a training package and accreditation system for Eco-smart plumbers</p>
4a 6a 7a	Incorporate principles of total catchment management into the planning, design and maintenance of open spaces including the potential for wetlands	3.2.3	Prepare an Urban Stormwater Master Plan in accordance with Planning SA Guidelines, in order to develop more detailed flood control, stormwater detention and treatment standards for incorporation into Council's Development Plan *	Natural Resource Management Board, Cities of Burnside, Adelaide, and Norwood, Payneham & St Peters	H	Manager City Services	\$300,000	<p>2005-6</p> <p>Complete Stage 1 of the plan including data collation, modelling and setting strategic objectives</p> <p>2006-7</p> <p>Complete Stage 2 of the plan to investigate detailed projects and make recommendations for the Development Plan</p> <p>2007-8</p> <p>Review watercourses for flooding, water quality and biodiversity priorities following the development of the Urban Stormwater Master Plan</p>
7b	Liaise with the Natural Resource	3.2.4	Establish partnerships with regional bodies to facilitate	Natural Resource	BP	Environmental Policy Officer	\$0	<p>annual review</p> <p>Maintain relationships with the Natural Resource</p>

Tar get	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	Management Board in relation to water resource management issues		the setting of shared priorities, targets and objectives	Management Board				Management Board
1b 2b	Protect waterways and improve water quality through effective stormwater management	3.2.6	Retain and rehabilitate watercourses and riparian areas through revegetation activities including planting only indigenous plant species	Our Patch & Urban Forest Biodiversity Program	BP	Manager City Services	\$0	annual review Implement Council's indigenous planting and weed control program in identified biodiversity priority areas (beginning 2007)
4a 4b	Investigate alternative water and energy technologies	3.3.1	Investigate the benefits of harvesting stormwater and rainwater during Council's infrastructure planning	Natural Resource Management Board	BP	Manager City Services	\$0	annual review
4b	Investigate alternative water and energy technologies	3.3.1	Identify sources and uses of alternate supplies including Aquifer Storage and Recovery within the eastern region	Office of the East	M	Environmental Policy Officer	\$0	2007-8 Review opportunities for alternative supplies following the development of the Urban Stormwater Master Plan
3a 7b	Support conservation of natural resources by local residents	3.3.2	Seek opportunities for external funding for incentive programs	Local and State Government	M BP	Environmental Policy Officer	\$0	annual review Investigate the costs and benefits of providing environmental incentives for the community, such as: <ul style="list-style-type: none"> rainwater tanks indigenous plant species efficient garden and household equipment 2006-8 Support and promote State Government initiatives including 'Smart Water Mark' scheme and Water Efficiency Labelling Scheme once they come into effect
2c	Review Council activities to minimise	3.3.4	Use Council's risk assessment procedures to	Internal	H	Manager City Services	\$0	annual review Continue to implement recommendations arising

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	environmental impact	3.2.6	identify, analyse, evaluate, treat, monitor and communicate environmental risks arising from Council's activities, services and products			All staff Environmental Policy Officer Managers		from Council's stormwater management audit report On-going environmental risk assessment (beginning 2007) 2005-6 Develop guidelines to assist staff to identify environmental risks and impacts: <ul style="list-style-type: none"> include assessment of stormwater pollution prevention 2006-7 Conduct comprehensive risk assessments for all business units
2c 3a	Review Council activities to minimise environmental impact	3.3.4	Review Councils policies and procedures for environmental sustainability *	Internal	H	Environmental Policy Officer Environmental Policy Officer	\$0	2005-6 Review Council's purchasing / contracting / tendering policies and procedures for environmental sustainability 2006-7 Develop environmental purchasing guidelines and criteria to assist staff with: <ul style="list-style-type: none"> water efficient contracts and purchases Ensure procedures and reporting processes for: <ul style="list-style-type: none"> emergency response, spill contingency, non-conformance, incidents and complaints are in accordance with State Government stormwater guidelines * all work sites to have effective erosion, sediment and wastewater controls installed and maintained *
3a 3b 4b	Review Council activities to minimise environmental	3.3.4	Invest in water efficiency and alternate water supply projects for Council facilities,	Office of the East, external service	H	Manager Strategic Development	\$100,000 recurrent	annual review Project identification (audit) and investment based upon guaranteed savings and costed

Tar get	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	impact		toilets, buildings and infrastructure	provider		Manager City Services Manager Strategic Development Manager City Services		<p>payback periods (beginning 2006-7)</p> <p>All new equipment and infrastructure upgrades to use water and energy efficient products or best available technologies (alternate supplies)</p> <p>2005-6 Establish a budget allocation and revolving fund for investment in corporate water efficiency projects</p> <p>2005-7 Upgrade public toilets for improved water efficiency</p>
7b 8a	Support relevant environmental groups	3.4.1	Support and encourage community based groups regarding environment protection, conservation and land remediation programs	KESAB, Campbelltown Landcare, Schools, Trees for Life, and Our Patch	BP	Manager City Services		<p>annual review</p> <p>Work with Campbelltown Landcare to implement the Wadmore Park Vegetation Action Plan</p> <p>Support school and community groups to participate in National Tree Day, Clean Up Australia Day, KESAB Waterwatch, and Gutter Guardian programs</p> <p>Continue partnerships with Landcare, Trees for Life, One Million Trees, Our Patch, local schools and other community groups to maintain and improve biodiversity</p> <p>2005-6 Prioritise areas of open space for community "Our Patch" sites and revegetation, focussing along watercourses</p>
8a	Provide environmental awareness education to all staff, Elected Members	3.4.2	Utilise a range of communication methods including Council's website, publications and assets to promote environmental	Office of the East	BP	Environmental Policy Officer		<p>annual review</p> <p>Promote Council's water environments including the River Torrens Linear Park, walking trails along Third, Fourth and Fifth Creeks, and Thorndon Park Reservoir</p>

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	and the community		sustainability					<p>2005-6 Develop information brochures for sustainable water and energy use.</p> <p>2006-7 Complete a comprehensive review of environmental information on Council's website for information on:</p> <ul style="list-style-type: none"> • water sensitive urban design principles including: water saving at home, site planning, rainwater tanks, paving options, landscaping ideas, groundwater and wastewater reuse • drought tolerant and indigenous vegetation • responsible herbicide, pesticide and fertiliser use, and alternate non-chemical pest plant eradication strategies • invertebrate / creek health • materials recovery and stormwater pollution prevention by industry and builders • waste avoidance, recycling and litter prevention <p>2007-8 Investigate the feasibility of implementing a 'water challenge' competition for households to track and reduce their water usage.</p>
7a 8a	Provide environmental awareness education to all staff, Elected Members and the community	3.4.2	Offer a regional environmental education seminar series with quarterly seminars / workshops	external service providers, State and Local Government	M	Environmental Policy Officer	\$1,000 recurrent (from 2006-7)	<p>2006-7 Negotiate seminar series with the Office of the East including an annual community workshop on water management</p>

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
2c 8a	Provide environmental awareness education to all staff, Elected Members and the community	3.4.2	Ensure appropriate environmental management information is available for Council staff *	Natural Resource Management Board, Environment Protection Authority, Local Government Association	H	Environmental Policy Officer	\$0	<p>2005-6</p> <p>Participate in the development of a Local Government stormwater pollution prevention training package</p> <p>2006-7</p> <p>Ensure relevant staff and contractors are trained in fertiliser and pesticide application and support non-chemical pest eradication methods where appropriate *</p>
7b 8a	Provide environmental awareness education to all staff, Elected Members and the community	3.4.2	Facilitate school education programs in conjunction with external providers	State Government, KESAB; Office of the East	M	Environmental Policy Officer	\$20,000 recurrent	<p>annual review</p> <p>Investigate opportunities to provide and support State Government schools education programs across the region, including partnerships with:</p> <ul style="list-style-type: none"> Rostrevor College Environmental Centre Morialta Collaborative Landcare Project (Young Friends of Black Hill)
8a	Provide environmental awareness education to all staff, Elected Members and the community	3.4.2	Develop appropriate locations across the eastern region as environmental demonstration sites	Office of the East	M	Environmental Policy Officer		<p>annual review</p> <p>Provide signage to showcase environmental initiatives and assets at key locations for example at:</p> <ul style="list-style-type: none"> locations of aquifer storage and recovery or where alternate water supply is used watercourse rehabilitation sites sites of water efficiency <p>2006-7</p> <p>Negotiate with the Office of the East for a water demonstration site for the region</p> <p>Investigate the potential to hold a regional 'open house' demonstration day to showcase environmental initiatives including:</p> <ul style="list-style-type: none"> biodiversity

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
								<ul style="list-style-type: none"> solar & energy efficiency water conservation
6b 8a	Seek feedback from the community in relation to environmental issues	3.4.3	Ensure an environmental reference group for interested community members	Campbelltown Council Friends of the Environment	H	Environmental Policy Officer	\$2,000 recurrent	<p>annual review</p> <p>Council to provide meeting and administration costs</p> <p>2005-6</p> <p>Establish a reference group including developing terms of reference and a meeting schedule for members</p>
6b 8a	Seek feedback from the community in relation to environmental issues	3.4.3	Survey the community's awareness of environmental initiatives and satisfaction with the quality of the environment including parks, reserves and open spaces	Community	M	Manager Strategic Development		<p>annual review</p> <p>Determine the need to survey using one or more of the following methods:</p> <ul style="list-style-type: none"> including questions in the Local Government comparative survey conducting biennial Council survey via focus groups
2c	Develop and implement innovative waste management and recycling programs in Council, businesses and the community	3.5.1	Provide a free used oil recycling service at the Campbelltown Transfer Station	Zero Waste SA	H	Manager City Services	\$14,000	<p>2005-6</p> <p>Establish a used oil collection facility at the Newton Refuse Transfer Station for residents</p> <p>2006-7</p> <p>Investigate recycling opportunities for local business.</p>
2c	Provide efficient waste collection services including hard rubbish	3.5.2	Prevent pollution by maintaining and where necessary improving the level of service and information regarding waste management	KESAB, Zero Waste SA	BP	Manager City Services		<p>annual review</p> <p>Ensure efficient waste collection services for:</p> <ul style="list-style-type: none"> street and reserve bins dog faecal bins cigarette butt bins illegal dumping <p>Ensure all households are informed regarding waste avoidance, recycling and litter prevention *</p>

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
						Environmental Policy Officer		<p>Provide a programmed litter bin collection service to public places in the City</p> <p>2006-7</p> <p>Investigate the potential to provide public place recycling in Council reserves</p>
2c 6a	Provide an effective street sweeping program	3.5.3	Provide a monthly street sweeping cycle of all roads in the City (incorporating the autumn and summer leaf programs)	Internal	BP	Manager City Services		<p>annual review</p> <p>Monitor and report on the volume of street-sweeping and modify services frequency as required to prevent pollution</p>
1a 1b 1c 3a 4a 4b 5a 5b	Investigate opportunities to incorporate enhanced environmental design criteria into Council's Development Plan	4.2.6 3.3.2	Regularly review development principles for environmental sustainability and to provide clear information for developers on environmental design criteria	Office of the East, Planning SA	M	Manager City Development		<p>2005-6</p> <p>Ensure adequate water management policies are included in the Development Plan as part of the Better Development Plan conversion</p> <p>Respond to the new SA Planning Strategy and meet statutory requirements under the Sustainable Development Bill when both are adopted</p> <p>Respond to Ministerial Plan Amendment Report for Stormwater</p> <p>2006-7</p> <p>Include a requirement for the preparation of erosion and sediment control plans with all subdivisions involving earthworks and/or public roads</p> <p>Review planning requirements for stormwater detention tanks and investigate opportunities for use of rainwater as supply</p> <p>Ensure all new homes built from July 2006 have a rainwater tank plumbed for household uses</p>

Tar get	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
								<p>2007-8</p> <p>Review and strengthen water sensitive urban design policies in Council's Development Plan via the section 30 review process and in response to recommendations arising from the Urban Stormwater Master Plan</p>
1c 2c 7b	Provide suitable information to developers on best environmental practice and design principles	4.2.7 3.3.2	Actively work with developers to achieve best environmental practice and design principles for urban regeneration, infill and major development projects	Office of the East; Construction Industry Training Board	M	Manager City Development		<p>annual review</p> <p>Provide information to developers on environmental sustainability and Clean Site principles at least once per annum through one or more of the following:</p> <ul style="list-style-type: none"> • information evening • direct correspondence • displaying public information <p>Encourage developers and local businesses to comply with the Environment Protection Authority's Environment Protection Policy on Water Quality and principles of water sensitive urban design *</p> <p>2006-7</p> <p>Investigate the potential to engage a regional independent advisory service for residents, business and developers looking to improve the energy and water efficiency of their homes</p>
2c 5a	Manage stormwater systems	4.5.1	Continue to remediate erosion on minor watercourses as required		BP	Manager City Services		annual review
5a 6a	Identify and develop corrective programs to minimise risks of flooding	4.5.2 3.3.4 5.7.1	Record and monitor the number of incidences of local flooding	Natural Resource Management Board, State Government	H	Manager City Services		<p>annual review</p> <p>Report the number of incidences of local flooding</p> <p>2005-6</p> <p>Identify and map areas of localised flooding through stage 1 of the Urban Stormwater Master Plan</p>

Tar get	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
								<p>Undertake comprehensive Floodplain mapping analysis on a catchment basis</p> <p>Support the State Government to install a flood warning station along Third Creek to contribute to the broader network of flooding gauges in the catchment</p>
5a	Identify and develop corrective programs to minimise risks of flooding	4.5.2	Maintaining creeks to minimise obstructions and erosion to ensure design flows are achieved	Natural Resource Management Board	BP	Manager City Services		annual review
2c 6a	Review and maintain Council's trash racks and gross pollutant traps	4.5.3	Record and monitor the level of gross pollutants collected in Council's trash racks and modify service frequency as required to prevent pollution	Internal	BP	Manager City Services		<p>annual review</p> <p>Monitor and report on the level of gross pollutants collected in trash racks</p> <p>Undertake regular inspection, maintenance and cleaning of Denis Morrissey Park trash rack</p> <p>Undertake the inspection and cleaning of all trash racks and gross pollutant traps</p>
7a	Maintain and grow partnerships with other Local Government entities	5.2.1	Ensure the exchange of environmental ideas and information across local government	Environment Sustainability Network, Alliance of Waste and Recycling Educators, Local Government, and Local Government Association	BP	Environmental Policy Officer		<p>annual review</p> <p>Actively participate in local government forums for the exchange of environmental information and ideas</p> <p>Ensure environmental policy responses advocate for:</p> <ul style="list-style-type: none"> • effective State Government policy and programs, including guidelines for grey water reuse • appropriate arrangements to resource environmental initiatives based upon inter-governmental roles and responsibilities
7a	Investigate benefits	5.2.2	Seek opportunities to	Office of the	M	Environmental		annual review

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
	of regionalisation of services and resource sharing with other Councils		integrate environmental service delivery across local governments	East		Policy Officer		Investigate funding opportunities for regional application Develop and document the number, type and value of activities delivered via regional subsidiaries or partnerships 2005-6 Establish a monthly meeting for regional environmental officers to: <ul style="list-style-type: none"> develop regional environmental indicators, goals and priorities for local government negotiate regional actions and projects 2006-8 Investigate the sharing of a half-time project officer with a suitable Council to assist in environmental project implementation
6a 6b	Undertake regular review and evaluation of Council services to increase value to customers	5.7.1	Prepare a state of the environment report to establish an environmental baseline through a series of key indicators, for the ongoing assessment and reporting of environmental trends and pressures	external provider	H	Environmental Policy Officer	2005-6 \$12,500 2006-7 \$12,500	annual review Report Council's progress against environmental indicators (beginning 2006-7) 2005-6 Develop environmental indicators for water 2006-7 Complete State of the Environment Report subject to funding
2a 6a 6b	Undertake regular review and evaluation of Council services to increase value to customers	5.7.1 3.2.6 3.2.7 3.2.4	Ensure efficient data monitoring and information management systems are available to support management of the environment	KESAB, Department for Water, Land and Biodiversity Conservation, Natural Resource Management Board, and	H	Manager City Services Manager Finance and Administration		annual review Participate in KESAB Waterwatch program to monitor the health of waterways by continuing to monitor sites along Fifth Creek 2005-6 Establish a system to record and report on corporate water consumption, including use on reserves and open space, through Finance One

Target	Strategic Plan Reference		Actions	Partnerships	Priority	Business Unit	Budget	Timeframe & process
				Office of the East		Manager City Services	\$20,000 (for bore metering)	and Geographic Information Systems 2005-7 Identify corporate consumption of bore water via metering of groundwater bores
						Manager City Services	\$5,000	2006-7 Map the location of all water meters and bores on Geographic Information Systems
						Environmental Policy Officer		Clarify the location of water monitoring sites across the eastern region and advocate for additional sites/ data if required
						Environmental Policy Officer		2007-8 Conduct a re-inventory of Council and community water consumption

12. Monitoring and Review

This plan adopts the adaptive management cycle of Plan - Do - Monitor - Evaluate, promoted by the *Natural Resources Management Act 2005*, and shown in Figure 5.

Figure 5 Adaptive management cycle



All actions contained in the Implementation Plan contribute to strategies and outcomes in Council's Strategic Plan. Council will report against these strategies quarterly through its reporting on the Strategic Plan.

In addition, Council will quantify water conservation actions and record water quality initiatives in order to measure performance in the Water Campaign™.

Actions contained in the Water Implementation Plan cover a three year financial period. A comprehensive review of this Plan will be undertaken in 2009.

12.1. Further Information

To find out more about Council's Integrated Water Management Plan please contact Council's Environmental Policy Officer on 8366 9222.