Water Campaign™
Milestone 5 Template Report

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Statement from the Mayor

It gives me great pleasure to present Hornsby Shire Council's application to ICLEI's Water Campaign™ Milestone 5. Through its proud association with ICLEI, Hornsby Council has enthusiastically progressed through the Water Campaign™ Milestone framework and has continued to achieve its water savings and water quality improvement initiatives. These achievements are crucial at a time when our country is experiencing unprecedented drought conditions and climate change, resulting in the need for government to enforce water restrictions.

Hornsby Shire Council has already demonstrated its commitment to water consumption reduction and water quality improvement by successfully completing Milestones 1 to 4 of the Water Campaign™. Since joining the Water Campaign in June 2002, Council has subsequently implemented a Water Conservation Policy and a Water Management Action Plan in 2004, as well as a Total Water Cycle Management Strategy in 2005. Council's existing Catchment Remediation Program and associated environmental projects have largely contributed to its success in being the first Council to achieve Milestone 4 for Corporate and Community.

Council is pleased to be working in partnership with ICLEI on sustainability issues through the Cities for Climate Protection (CCP) Program, the Water Campaign™ and the Green Purchasing Pilot program. Council has benefited through ICLEI's experience and international publications in the field of sustainability and has enjoyed a mutually beneficial working relationship.

Nick Berman
Mayor

Executive Summary

This ICLEI Milestone 5 Report involves collecting information which will allow Hornsby Council to track, re-assess and report on our progress towards water conservation and water quality goals. Milestone 5 is to demonstrate that Council has been successful and progressive in effectively implementing all the actions previously nominated in the Milestone 4 Action Cards.

Council has re-examined and updated all the actions contained in our Action Cards, based on works implemented on existing and/or new projects associated with the three priority areas listed in Milestone 1 as follows:

1) Stormwater recycling (ICLEI Category – Gross litter and pollution management);
2) Leachate treatment (ICLEI Category – Wastewater treatment); and
3) Nursery operations (ICLEI Category – Herbicide and Pesticide Management).

All the updated Action Cards have been endorsed by the Executive Manager, Environment and the General Manager.

During the past two years, Hornsby Council had commenced various projects that enhanced our water saving and water quality improvement initiatives, funded either through our own capital works program or from successful grant applications from state and federal government organisations. Some projects that are directly related to ICLEI's Water Campaign™ principles include the following:

- Production of a commemorative booklet titled: "Your Catchments Remediation Rate – 10 years of Improving our Waterways" circulated to all stakeholders in the Shire.

- Development of a Stormwater Catchment Management Strategy, and continue to construct stormwater quality improvement devices (now over 300) in the Shire. These have prevented 900 tonnes of sediment, litter and organic matter from entering our waterways annually.

- Development of a Total Water Cycle Management Strategy stipulating action items, responsibilities and timelines.

- Water saving and reuse projects with three local bowling clubs.

- Environmental education programs for schools, and Council's involvement with the Tankscape project for the installation of rainwater tanks in 10 local schools.

These achievements, as well as many others, show that Council is working towards enhancing the natural and built environment of the Shire and aligns with its objective of 'creating a living environment'.

Council's record indicates that in 2005, Council had already achieved its water conservation goal of 20% set at Milestone 2 (using 1999 to 2002 as a baseline), thus saving 7,800 kls of water. Similarly, the community water conservation goal of 18% had also been achieved, saving 900,000 kls of water.

In summary, water consumption for the past 2 years has continued to decrease in terms of our 1999-2002 base year figure (i.e. 213,739 kls). During 2004-05, the corporate water consumption figure was 177,878 kls. During 2005-06, water consumption has increased to **179,612 kls**. However this increase is still below the set base year water reduction target of **213,739 kls.** Council has therefore **saved 34,127 kls**. The increase for 2005-06 was due to continuing drought conditions and a major leak in the Administration Building. This leak has been identified by the Water Catchments Team during their water meter audit and has subsequently been rectified.

At the time of the audit, the site used an average of 55 kLs/d which was substantially higher than the normal usage. A major leak was suspected. However, it took some time to identify the source as it was from a broken pipe under the ground between the Council Chambers and the Administration building; this led to a dramatic increase in water consumption in May 2006.

The average daily use after the leak was fixed was **5.6 kls/day**. This figure is actually much lower than the baseline for 1999-2002 of **10.25 kls/day**.

Introduction

As a member of the International Council for Local Environmental Initiatives (ICLEI), Hornsby Council was invited in 2002 to join its Water Campaign™. The Water Campaign in Australia is based on a similar framework as ICLEI's two other international sustainable development campaigns, i.e. Cities for Climate Protection (CCP) and Local Agenda 21. As Council has already been actively involved in CCP projects, Council resolved at its Ordinary Meeting on 12 June 2002 to join the ICLEI Water Campaign™ and adopted a recommendation to progress through the 5 performance-based milestone framework:

1. Undertake a water consumption inventory and water quality checklist
2. Establish a water consumption reduction goal and water quality improvement goal
3. Develop and adopt a local action plan
4. Implement policies and measures to work towards integrated freshwater resource management
5. Monitor and report on water consumption reductions and water quality improvements.

Milestone 1 – Achieved 24th November 2003

Hornsby Council achieved Milestone 1 of the Water Campaign™ on 24th November 2003 at ICLEI's recognition breakfast at the National General Assembly in Canberra. Council completed the water consumption inventory for the Corporate and Community modules and selected the years 1999 to 2002 as its baseline for the establishment of the water consumption reduction goals.

As the compilation of a water consumption inventory was not a normal practice within Council's core business prior to joining ICLEI's Water Campaign™, a number of difficulties were encountered when trying to access water consumption data from Sydney Water. We commenced this task by collecting information from our Accounts Section on all Sydney Water Account invoices for the years 1999 to 2002, then compared these with the data received from Sydney Water (which were incomplete), with the aim of compiling the best available data. These difficulties were conveyed to ICLEI.

Milestone 2 and Milestone 3 – Achieved 23rd May 2005

Milestone 2 requires Council to establish water consumption reduction and water quality improvement goals for the Corporate and Community modules. Milestone 3 requires Council to complete a strategic local action plan (Water Management Plan). As the work involved in progressing Milestone 2 and Milestone 3 was intrinsically linked, Council felt it would be most appropriate to proceed with these two Milestones together.

Through the establishment of a Council-wide Water Conservation Policy in December 2004 and a Hornsby Shire Water Management Local Action Plan, Council demonstrated its commitment to water conservation and water quality improvement. The Water Conservation Policy sets out the water consumption reduction goals and water quality improvement goals for both corporate and community which also align with the goals set by Sydney Water to the general community. These are:

- Corporate water consumption reduction of 20% by 2011 in the use of reticulated water.
- Community water consumption reduction of 18% by 2011 in the use of reticulated water.
- Corporate water quality improvement of 20% of a total of 105 points of the ICLEI actions, by the year 2006.
- Community water quality improvement of 20% of a total of 115 points of the ICLEI actions, by the year 2006.

The Water Conservation Policy is deliberately non-prescriptive so as not to stifle any future innovative technologies which are constantly evolving in the field of water conservation and reuse.

The Hornsby Shire Local Water Management Plan is a strategic document which outlines the approach that Council will take to reduce water consumption and improve water quality with its current and projected programs. Actions have been assigned to each strategy and corresponding stakeholders are nominated to undertake each of these actions. There is also a mechanism for monitoring the progress of these actions. An economic analysis was commissioned to assess the theoretical application of the Policy to a retrofit of water conservation measures to Council's Administration Building and a new childcare centre, as well as stormwater reuse in Council parks.

The Water Conservation Policy and the Hornsby Shire Water Management Plan were endorsed at Council's Ordinary Meeting on 8 December 2004.

Council was officially awarded the achievement of Milestones 2 and 3 on 23rd May 2005 at the National General Assembly in Canberra.

Milestone 4 – Achieved 9 November 2005
Hornsby Council is the first Council to achieve Milestone 4 corporate and community, and was awarded on 9 November 2005 at the National Assembly in Canberra.

Council's Milestone 4 achievement demonstrated that Council had successfully attained its Corporate and Community water conservation and water quality improvement targets.

Community
Hornsby Council's application of its Sustainable Water DCP (Water Sensitive Urban Design) and Best Practices Manual to all new development applications has achieved a saving of **1,518,875 kLs** per year for the community module. This saving exceeds the target reduction of 900,000 kL.

Corporate
The water conservation works contained in Council's Energy Performance Contract, June 2004, have successfully addressed water saving initiatives as stipulated in the **Corporate Water Conservation Action Cards**. These initiatives included the installation of water efficient bathroom appliances, rainwater tanks, waste water reuse and irrigation practices.

Milestone 5
Milestone 5 involves collecting information which will enable Council to track and report on progress towards water quality and conservation goals.

Council's Milestone 5 report includes information on both corporate and community water conservation and quality data. To proceed with re-inventory, we entered up-to-date water consumption data for 2004-2005, and 2005-2006, as well as modifying the Milestone 1 figures for the baseline data with Sydney Water's more detailed information received. Simultaneously we obtained community water consumption data from Sydney Water. The Milestone 5 report also highlights actions Council has implemented since the base year (1999-2002).

Key actions implemented <u>since the base year</u>

Updated Action cards for Corporate and Community on water quality and water conservation have been forwarded to ICLEI separately on 13 December 2006. In summary, key actions implemented since the base year included:

Corporate Water Quality

Sediment and erosion control

- Develop and implement erosion and sediment control guidelines based on best management practices for Council staff and contractors on all Council's construction sites.
- Contract managers/supervisors to undertake training in the interpretation of the erosion and sediment guidelines.
- Include clauses to all Council tenders for construction activities which incorporates erosion and sediment control guidelines or management plans.
- Contract Managers/Supervisors to ensure that Council tenders are strictly adhered to with respect to erosion and sediment control.
- Restore 500 lineal metres of degraded riparian environments per annum. This can involve the removal of exotics, bank stabilisation and revegetation with indigenous plants.

Gross litter trapping

- Undertake a litter hot spot audit which identifies locations of high gross litter generation.
- Collect and collate data on the quantity and type of litter trapped for use in education and awareness raising.
- Respond to litter audit results by the appropriate selection and placement of litter traps.

Herbicide, pesticide and fertiliser use

- Identify and implement alternatives to spraying herbicides along concrete kerb and channel and plantation areas.

Nutrients

- Remove all organic matter generated during all Council operations.
- Contain mulch and soil stockpiles within bunded areas.

Wastewater treatment

- Fulfil the requirements of our trade waste or licence agreement for wastewater discharge.
- Install sewage pumpout facilities for boats at all marinas within the Hornsby LGA.
- Implement a program that will see all Council properties connected to sewer or the effective containment of specific septic system by target year.
- Develop a Council guideline that supports the use of residential and commercial generated grey water on site that meets health regulations for our state.

- Develop a guideline that supports the treatment and use of sewage from residential and commercial developments that meets health regulations for our state.

Groundwater management

- Develop a planning policy to protect groundwater quality from the impact of de-watering of areas and exposure of acid sulphate soils.
- Development of a 'de-watering' fact sheet for building and construction sites.

Community Water Quality

Sediment and erosion control

- Develop and implement erosion and sediment control guidelines based on best management practices for developers / contractors working on construction sites.
- Develop and circulate a series of educational brochures for erosion and sediment control in the building and construction sectors working in our Council area for site management.
- Develop and conduct an induction training session on erosion and sediment control for the building and construction businesses working in our Council area.
- Develop and circulate a series of educational brochures for erosion and sediment control and containment of landscape materials for the nursery and landscape industry working in our Council area.

Corporate water conservation

Water efficient bathroom appliances

- Install waterless urinals in Council buildings
- Install dual flush toilets in public toilets
- Install waterless urinals in all new and renovated public toilets.
- Install water efficient shower roses in Council buildings.
- Install flow control valves in all taps or spring located taps.

Rainwater tanks

- Install rainwater tanks to supplement mains water use for toilet flushing in Council buildings.
- Install rainwater tanks to supplement water consumption in Council nurseries and depots.

Wastewater Re-use

- Install wastewater systems to capture, treat and reuse swimming pool backwash in Council swimming pools for toilet flushing or irrigation.

- Install wastewater systems to capture, treat and reuse swimming pool backwash to refill Council swimming pools
- Use treated wastewater for wetting down of roads during road works to prevent dust clouds.
- Use wastewater (sewer, stormwater, grey water, etc.) for irrigation in Council parks and gardens.

Irrigation practices

- Construct stormwater detention systems and/or aquifer storage recovery schemes in new or upgraded parks for use in irrigation practices.
- Introduce moisture sensitive or similar water efficient practices for irrigation of open space areas.
- Reduce irrigation in turf median strips by using alternative paving design median strips.
- Locate plants together that have a similar water requirement.
- Select and plant xerophytic plants in new and upgraded plantations.
- Select and plant indigenous plants in new and upgraded plantations.
- Use wetting agents in soil media plant stock to control the released moisture.
- Use mulch in planting beds and street trees to maintain moisture.
- Select drought tolerant turf species for turf upgrade and new site establishment.

Education

- In-house education and promotion of water smart practices through placement of effective signage.
- Contract management to reflect water conservation and stormwater management.

Community Water Conservation

Hornsby Council has assisted the community in achieving water reduction since 1999 (our baseline for the ICLEI Water Campaign™) primarily by the implementation of the Water Sensitive Urban Design Development Control Plan (WSUD DCP) and Best Practices Manual. This Manual includes a range of elements aimed at guiding new development in the implementation of water saving measures in dwellings.

From 2004/05 (i.e. post Milestone 4), **2,344 development applications** for dwellings were received by Hornsby Council. Of these, **2,180** were for single houses on individual blocks.

The community water conservation target was achieved by the application of the WSUD DCP to the 2344 DAs based on the following 6 elements:

Sustainable Water DCP (Water Sensitive Urban Design)

Element Number	Description	Projected Savings per dwelling per year - kL
1	**Dual flush toilets** (2 per dwelling) – saving 35 kL per year per toilet (Source: Sydney Water and Water Association of Australia)	70 kL
2	**Low flow shower heads** (2 per dwelling) – saving 25 kL per year per shower (Source: Sydney Water and Water Association of Australia)	50 kL
3	**Tap flow restrictors** (24 min. each day), tap flows at 17L per minute, restrictors save 8 L/min.	70 kL
4	**Water efficient dish washers** (5 washes per week), save 25L per wash (Source: Sydney Water and Water Services Association of Australia)	6.5 kL
5	**Water efficient clothes washing machines** (5 washes per week), save 50L per wash (Source: Sydney Water and Water Services Association of Australia)	13 kL
6	**Water efficient gardens and irrigation systems** Garden hose runs at 30L per minute. Non water efficient garden requires 1 hr per week watering. Application of mulch, water tolerant plants and drip irrigation systems results in a 75% reduction in water use in the garden.	70.2 kL

Elements 1 to 5 are relevant to all **2,344 development applications** as these included multi-unit dwellings and new houses. This combination therefore results in a saving of **491,068 kLs** per year (Total of Elements 1 to 5 = 209.5 kLs x 2,344).

The Water Sensitive Urban Design DCP also promotes water efficient gardens and irrigation systems. It is estimated that these water efficient gardens will result in a saving of 70.2 kLs per year per dwelling. Given that 2,180 single dwellings, i.e. on a single block of land had the DCP applied to them over this period, it is estimated that these resulted in water saving of **153,036 kLs** per year. (2,180 x 70.2 kL)

In addition, Hornsby Council has had a Rainwater Tank Policy since 2000. Data supplied by Sydney Water indicates that **667 rainwater tanks** (rebate program) have been installed in the Hornsby Local Government Area since our Milestone 4 application. The average tank size is 5,000 L (DA is required for rain water tanks >10,000L, and 667 rainwater tanks are <10,000L. Council estimates 20,000 Ls (20kL) of water savings can be predicted per year per tank**.** This resulted in total water savings of **13,340 kL** per year (667 x 20,000L).

Total kLs water saved per year as per the community water conservation = **657,444 kLs** (sum of 491,068 + 153,036 + 13,340)

Corporate Water Conservation

Hornsby Shire Council completed an inventory for the years 1999-2006 of water used in the following facility types:

- Administration Buildings
- Childcare Centres
- Cultural Buildings
- Depots
- Facilities and toilets
- Function and Community Centres
- Gardens-Planter Boxes
- Miscellaneous
- Nurseries
- Open Space
- Playing Fields
- Recreation Centres
- Residences
- Shops and Shopping Centres
- Standpipes/Metered Hydrants
- Swimming Pools

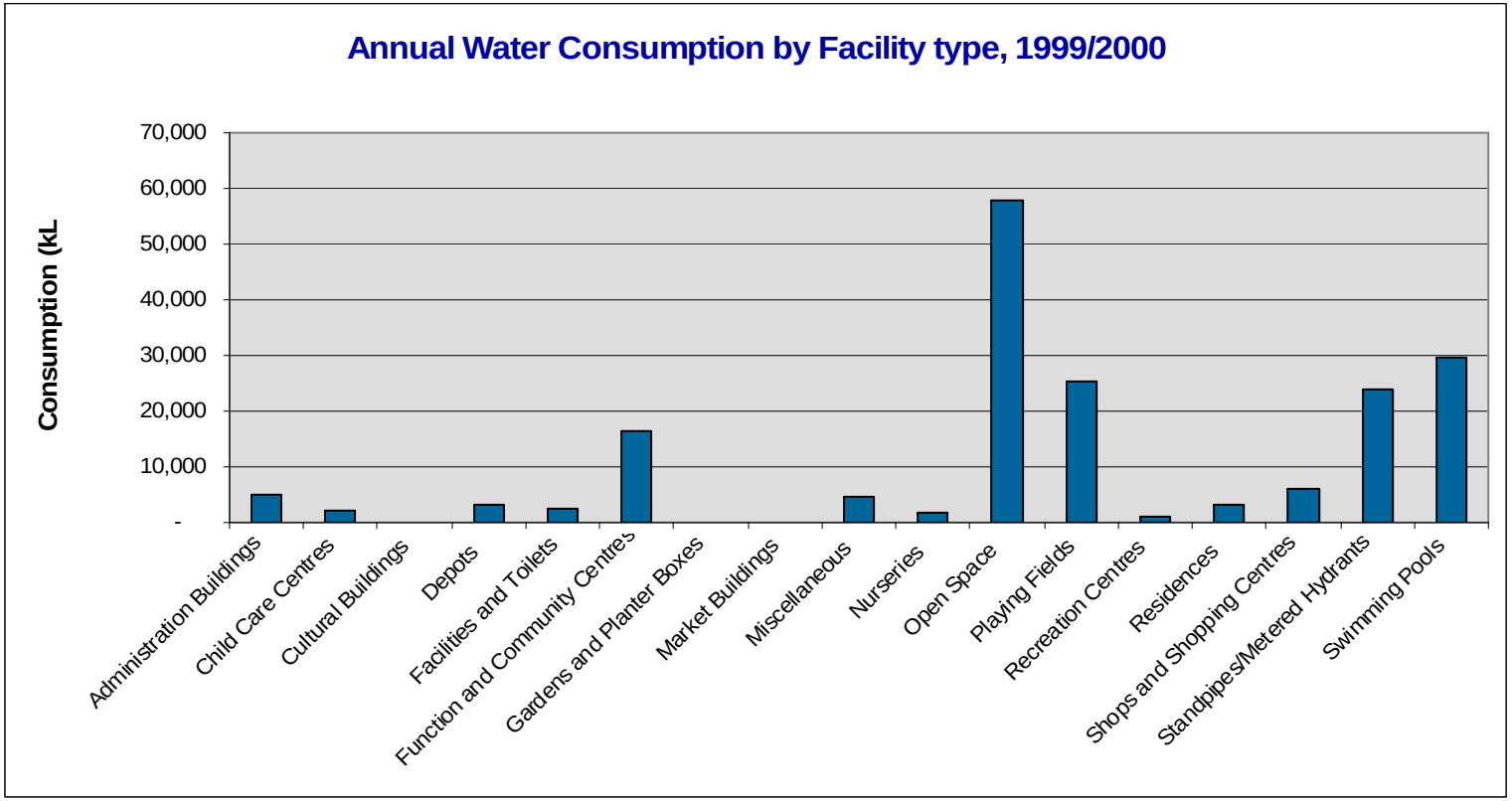
Please refer to the table on the following page which shows a comparison of the Milestone 1 inventory, and the re-inventory conducted for Milestone 5.

Facility type	1999/2000 Consumption (kL)	Percentage of Total	Cost ($)	2000/2001 Consumption (kL)	Percentage of Total	Cost ($)
Administration Buildings	4,828	3%	4,249	3,542	2%	3,294
Child Care Centres	2,100	1%	1,848	2,156	1%	2,005
Cultural Buildings	71	0%	62	121	0%	113
Depots	3,328	2%	2,929	3,384	2%	3,147
Facilities and Toilets	2,642	1%	2,325	1,813	1%	1,686
Function and Community Centre	16,606	9%	14,613	10,990	5%	10,221
Gardens and Planter Boxes	55	0%	2,248	4,593	2%	4,271
Market Buildings	-	0%	-	-	0%	-
Miscellaneous	4,541	2%	3,996	5,610	3%	5,217
Nurseries	1,745	1%	1,536	2,668	1%	2,481
Open Space	57,948	32%	51,089	58,190	28%	54,117
Playing Fields	25,369	14%	22,325	34,845	17%	32,406
Recreation Centres	1,204	1%	1,060	935	0%	870
Residences	3,053	2%	2,687	3,048	1%	2,835
Shops and Shopping Centres	6,004	3%	5,284	12,374	6%	11,508
Standpipes/Metered Hydrants	24,055	13%	21,168	33,073	16%	30,758
Swimming Pools	29,497	16%	25,957	28,339	14%	26,355
TOTAL	**183,046**	**100%**	**163,376**	**205,681**	**100%**	**191,283**

2001/2002 Consumption (kL)	Percentage of Total	Cost ($)	2005/2006 Consumption (kL)	Percentage of Total	Cost ($)
3,646	1%	3,391	9,486	5%	11,383
2,276	1%	2,117	3,175	2%	3,810
79	0%	73	78	0%	94
1,795	1%	1,669	1,249	1%	1,499
1,945	1%	1,809	679	0%	815
10,299	4%	9,578	15,614	9%	18,737
3,735	1%	3,474	2,669	1%	3,203
-	0%	-	-	0%	-
11,677	5%	10,860	18,350	10%	22,282
3,824	2%	3,556	2,226	1%	2,671
69,333	28%	64,480	45,701	25%	54,841
30,555	12%	28,416	19,743	11%	23,693
1,094	0%	1,017	1,392	1%	1,670
3,048	1%	2,835	2,898	2%	3,478
34,275	14%	31,876	6,213	3%	7,456
36,746	15%	34,174	30,885	17%	38,674
35,555	14%	33,066	19,254	11%	23,105
249,882	**100%**	**232,390**	**179,612**	**100%**	**217,409**

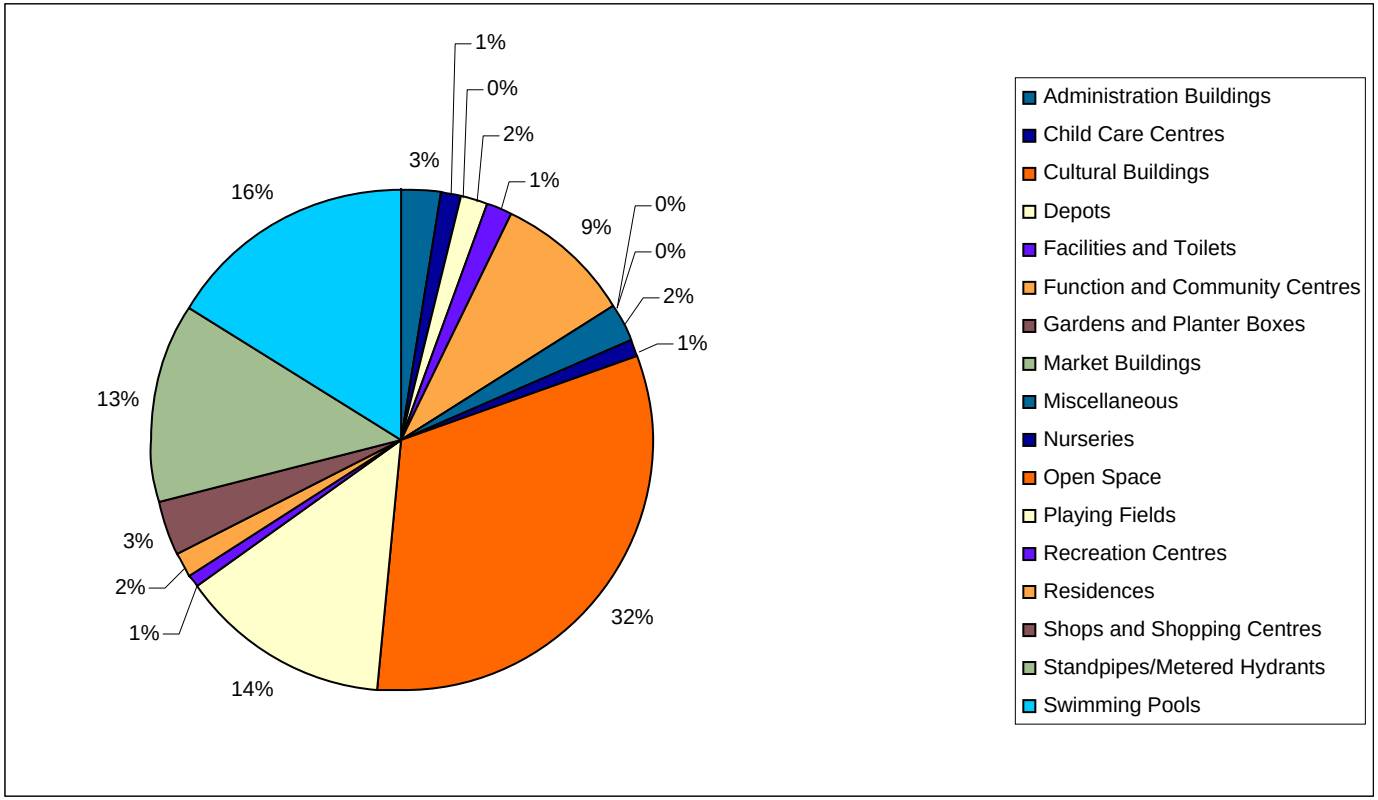
ICLEI–A/NZ Facility Type	Base years 1999-2002 Average	Most Recent Reinventory Year 2005-2006	Percentage change (from base year to most recent re-inventory year)	Comments
Administration Buildings	4,005 kL	9,486 kL	137% increase	Due to major leak at Council's Admin. Building. Leak has now been fixed, and consumption has resumed to normal, approx. 1,100 kL per quarter.
Child Care Centres	2,178 kL	3,175 kL	45% increase	Increased places at childcare centres due to the increased population in the Shire.
Cultural Buildings	90 kL	78 kL	13% decrease	less activities conducted at Council's cultural buildings
Community Centres	12,632 kL	15,614 kL	23% increase	More activities conducted at community centres.
Depots	2,836 kL	1,249 kL	55% decrease	Water tanks installed and other water saving devices
Facilities Toilets	2,134 kL	679 kL	68% decrease	Water saving devices installed
Gardens-Planter Boxes	2,794 kL	2,669 kL	4% decrease	One of the garden and planter boxes accounts has been closed.
Miscellaneous	21,828 kL	18,350 kL	15% decrease	Not known
Nurseries	2,746 kL	2,226 kL	18% decrease	Water saving devices installed.
Open Space	61,824 kL	45,701 kL	26% decrease	Water savings measures introduced and water restrictions
Playing Fields	30,256 kL	19,743 kL	34% decrease	Water saving measures introduced and water restrictions
Recreation Centres	1,078 kL	1,392 kL	29% increase	Increased usage of recreational centres
Residences	3,050 kL	2,898 kL	4% decrease	Not known
Shopping Centres	17,551 kL	6,213 kL	64% decrease	Not known but one account was closed
Swimming Pools	31,131 kL	19,254 kL	38% decrease	Reverse Osmosis
Standpipes/metered hydrants	31,291 kL	30,885	1% decrease	Some standpipe accounts have been closed
TOTAL	**227,424 kL**	**179,612 kL**	**21% decrease**	**21% decrease in water consumption from base year**

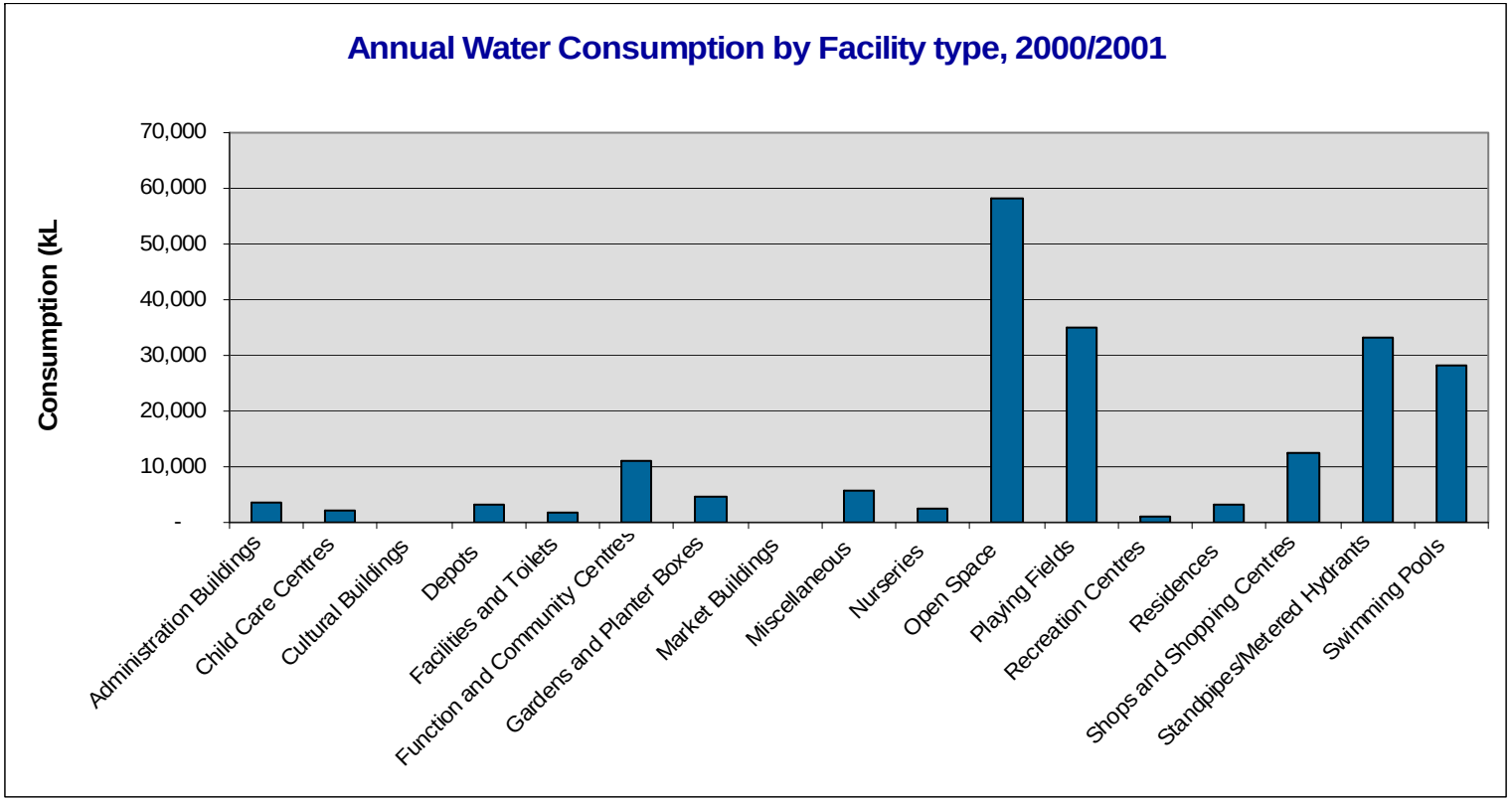
Graph of Water Consumption by facility type for 1999/2000. Open Space represents parks and reserves, and Ovals represent playing fields.



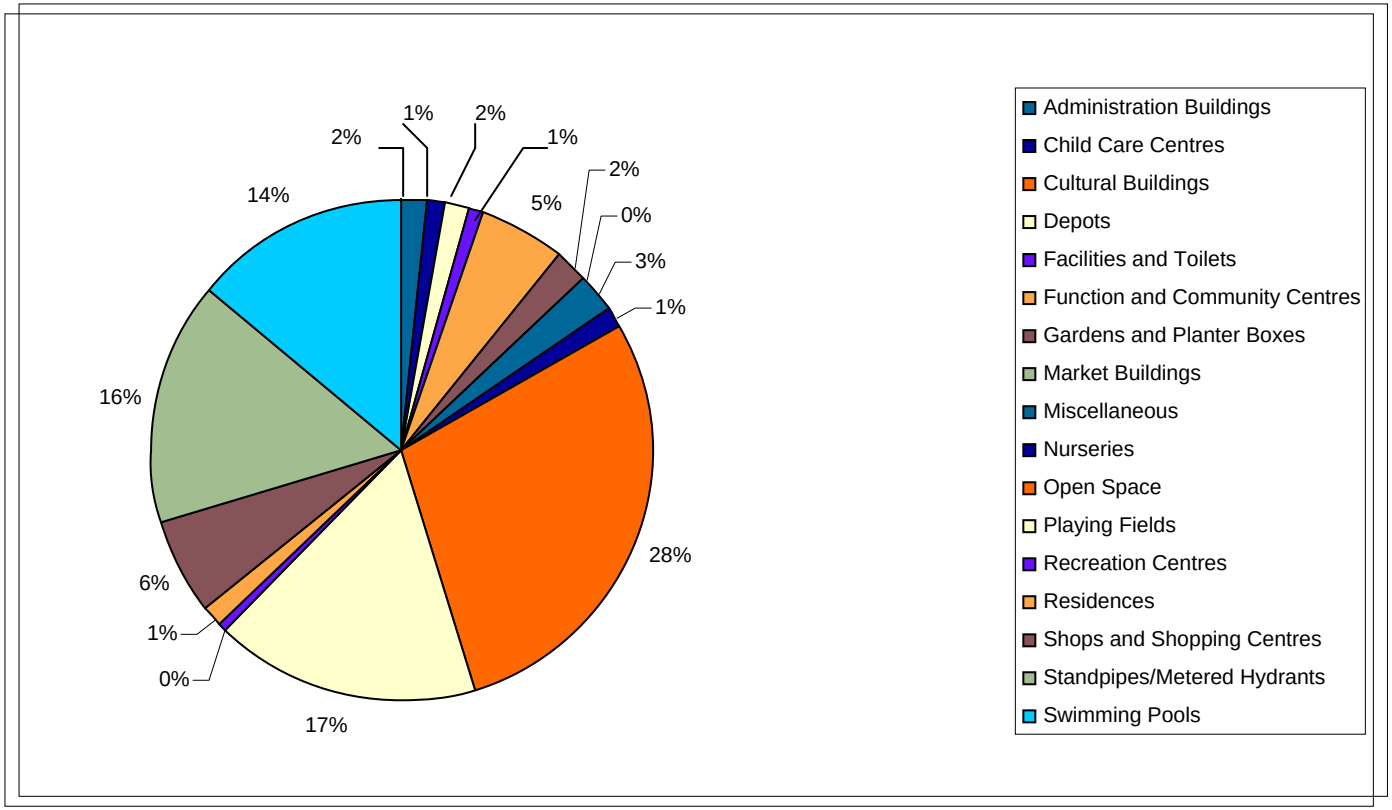
The following pie chart shows the percentage of water consumption for the different categories:

Annual Water Consumption Pie Graph, 1999/2000

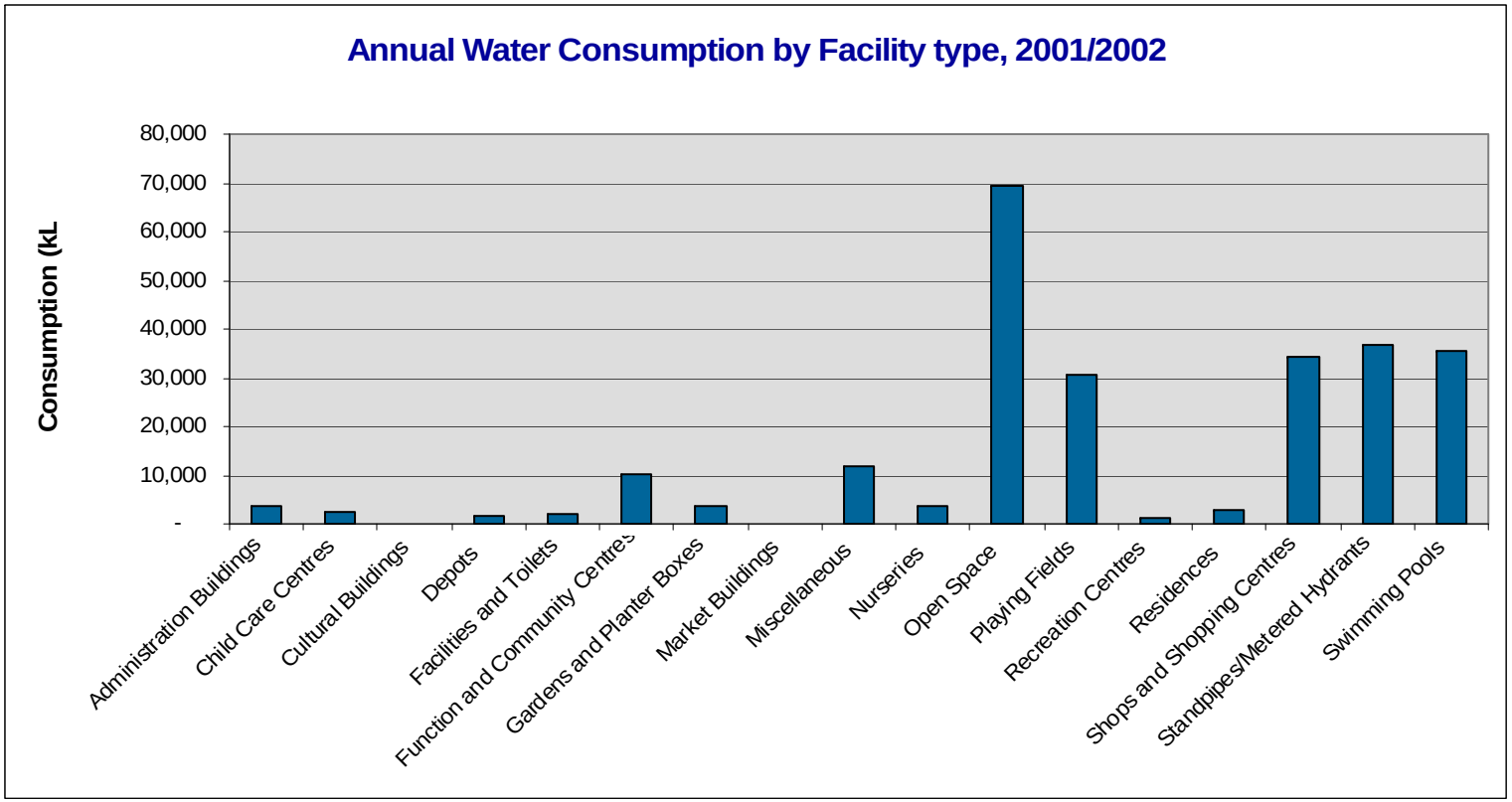




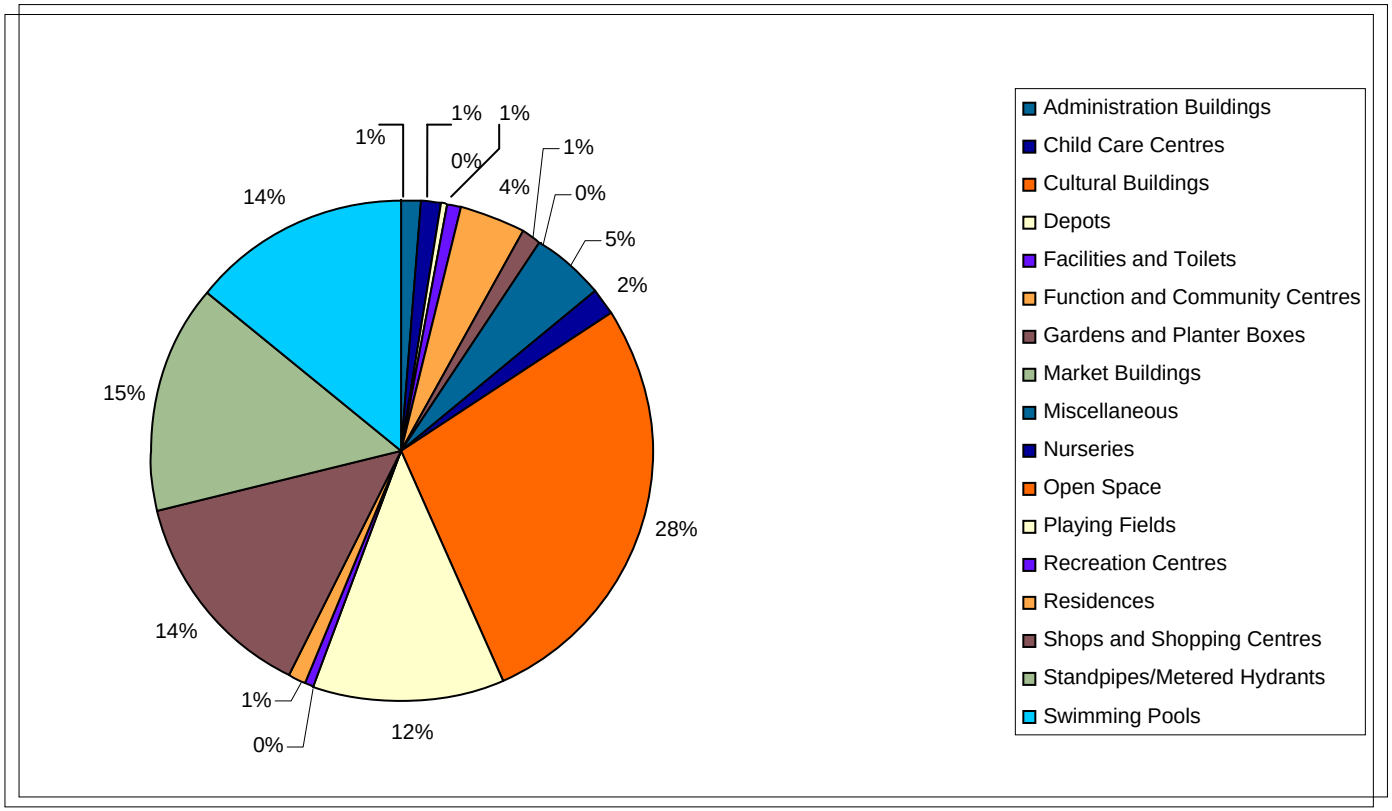
Annual Water Consumption Pie Graph, 2000/2001



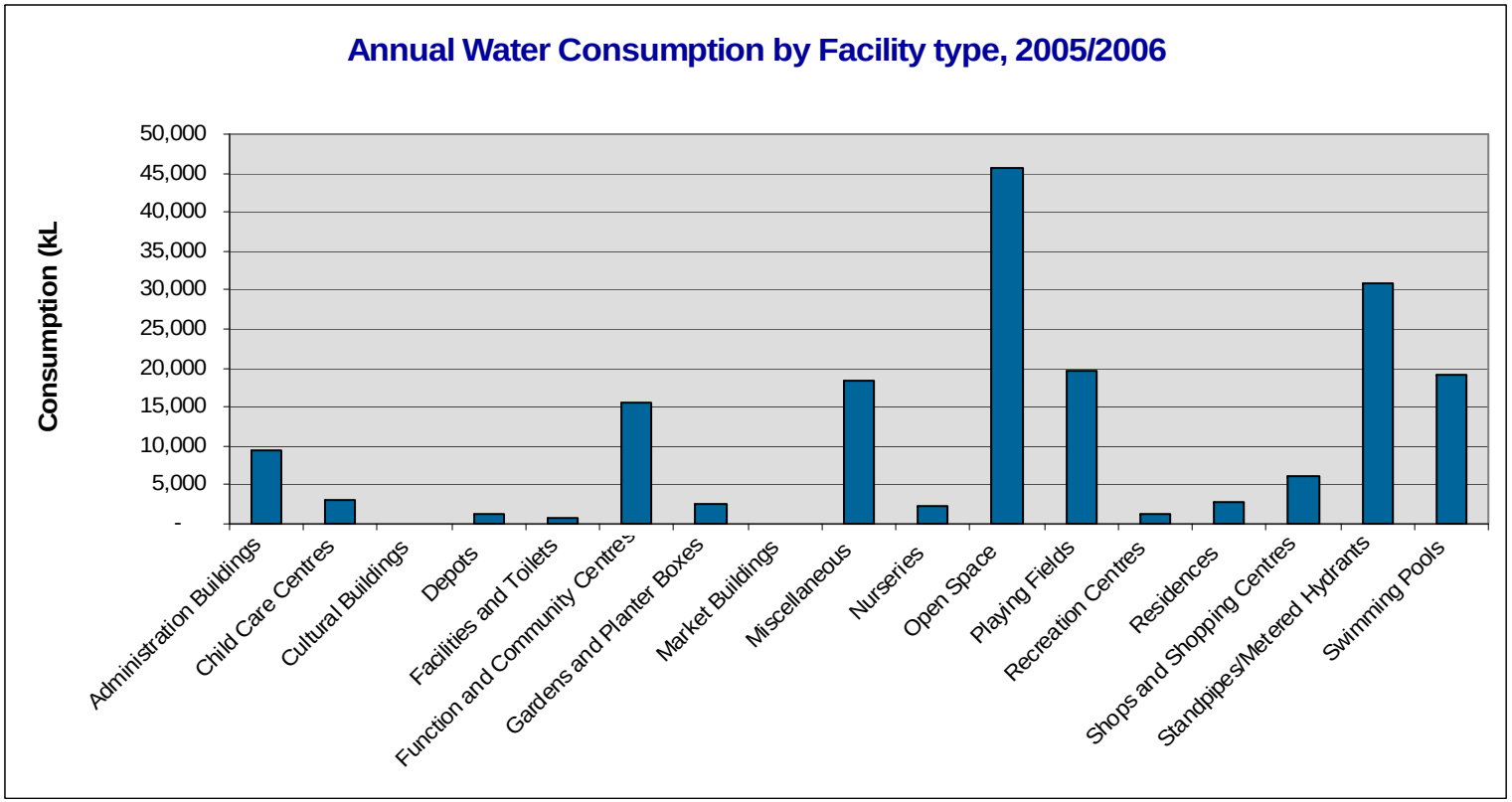
Graph of Water Consumption by facility type for 2001/2002



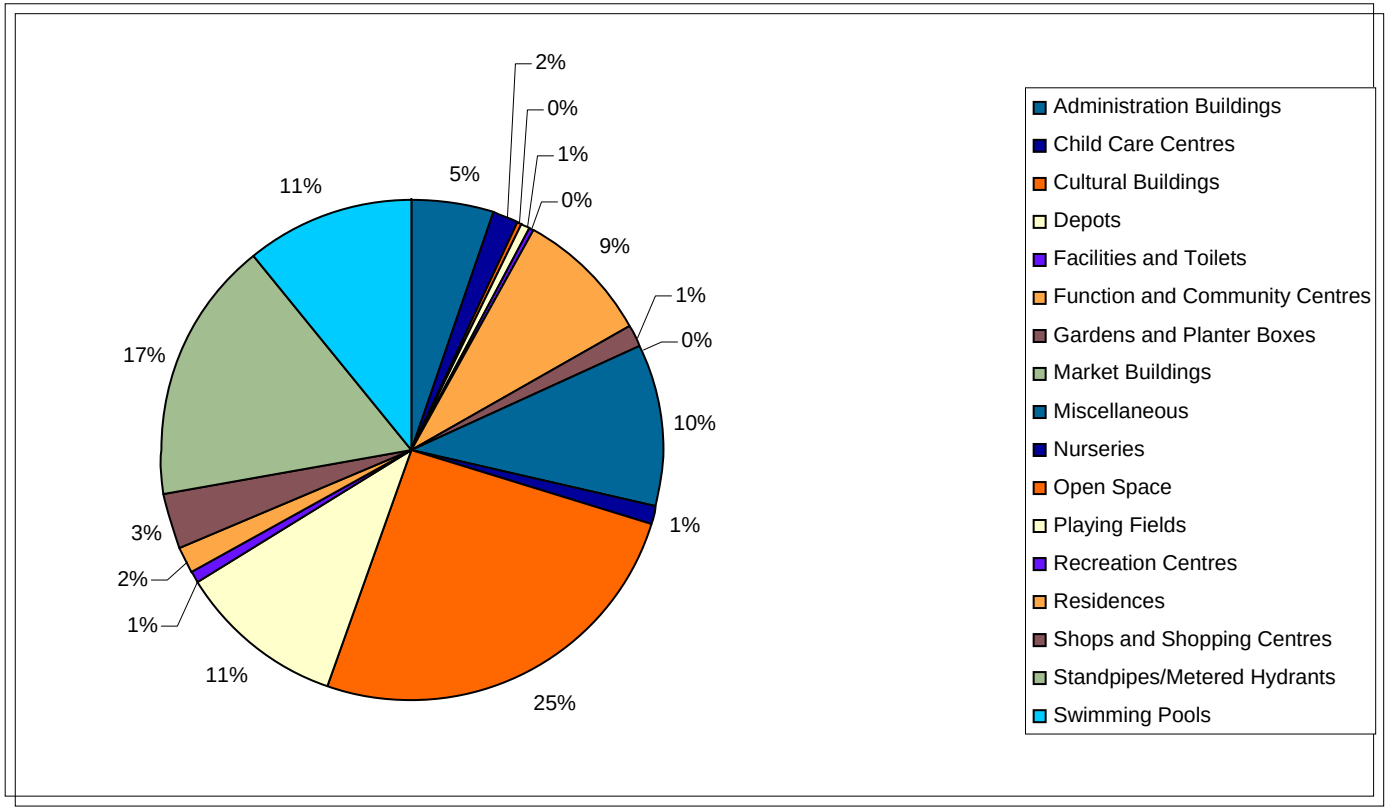
Annual Water Consumption Pie Graph, 2001/2002



Graph of Water Consumption by facility type for 2005/2006

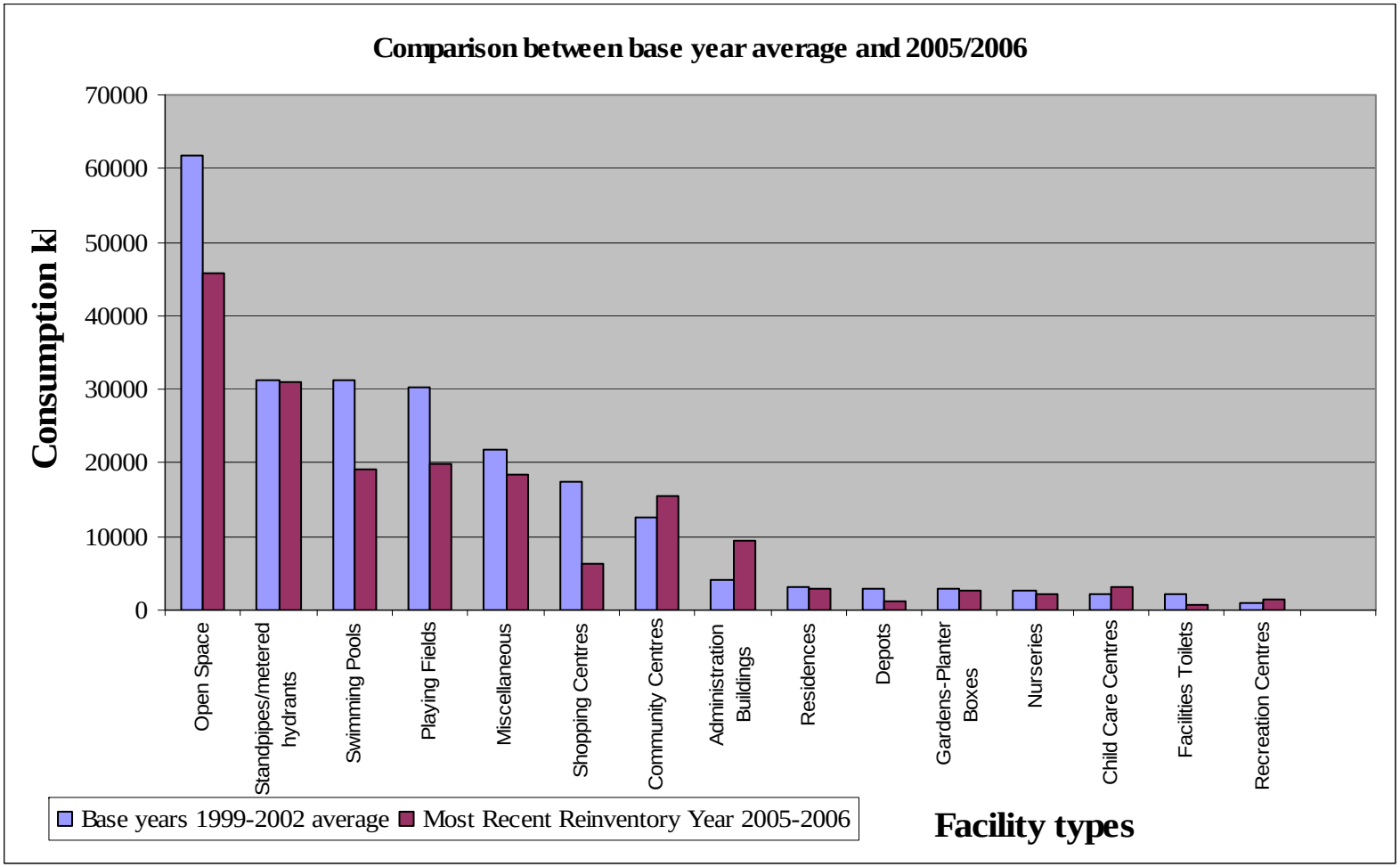


Annual Water Consumption Pie Graph, 2005/2006



Water consumption Comparison Graph between base year and current year

(Please note that the consumption had dramatically increased for the Admin Building due to the major leak discussed above)

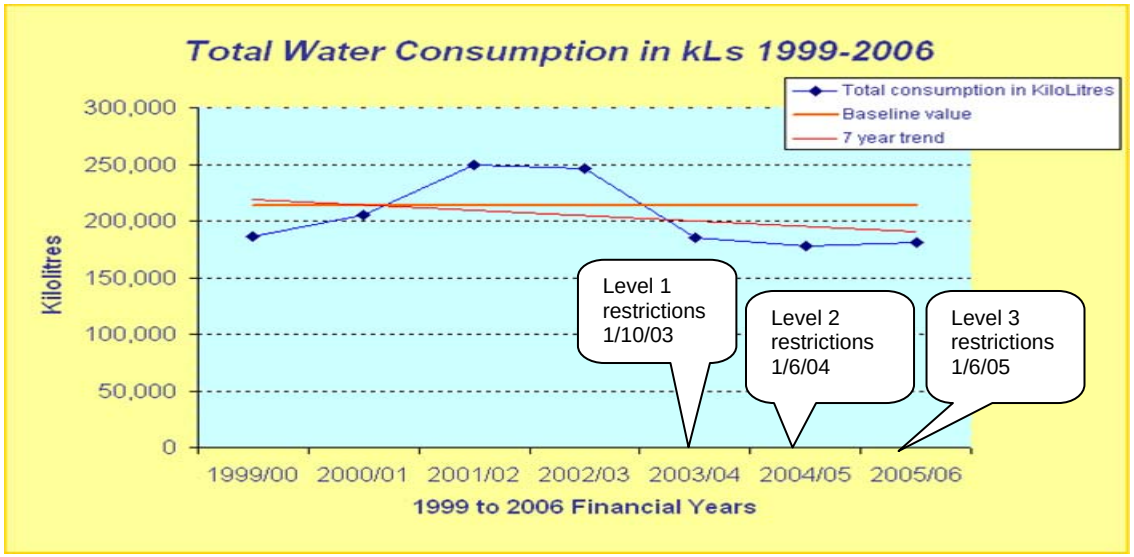


- Reconciliation of base year & re-inventory year consumption with water savings having effect in re-inventory year:

	KL	**KL**
<1999-2002> Average Inventory		227,424
<2005-2006> Reinventory		179,612
Change		**47,812**
<2003-2006> Water Conservation Actions		
Water appliances retrofit	Refer to attached pages extracted from the Energy Performance Contract	`
Rainwater tanks	- ditto -	
Pool Cover	- ditto -	
Wastewater substitution	- ditto -	
Total savings	**62,886**	
Summary		
Total savings		62,886
Increase without savings (Business as Usual*) inventory year – [re-inventory year + total savings] =*		15,074
Change in consumption		47,812

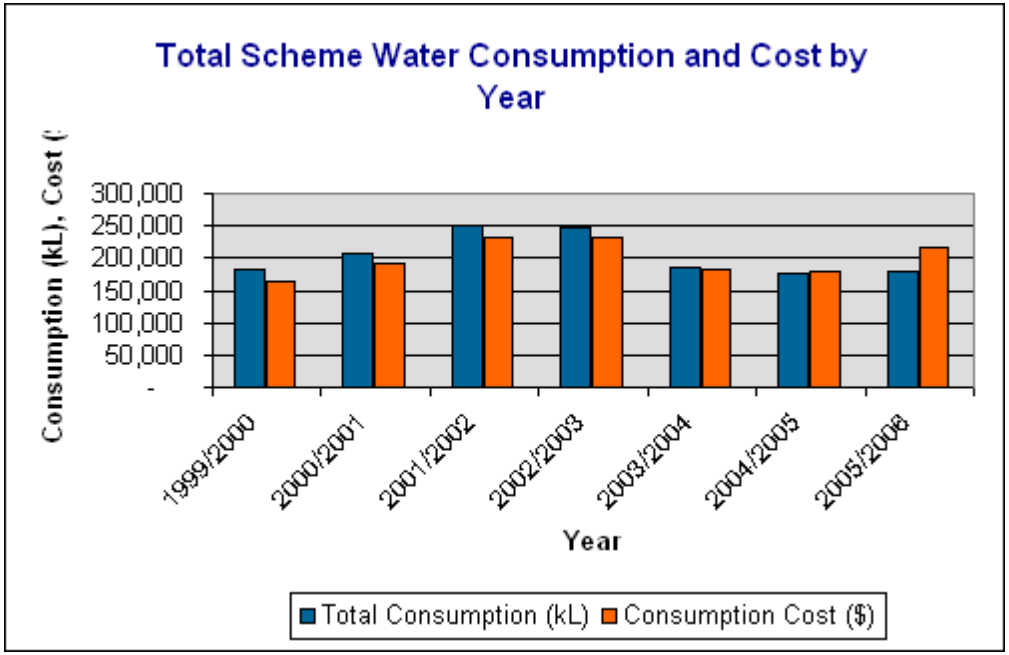
Additional <2004-2006> Actions (non-quantifiable) – Qualitative Assessment	Detail results/key performance indicators
Staff Water Conservation Education program	Through the application of Council-wide Water Conservation Policy, Water Savings Action Plan, Total Water Cycle Management Strategy, all staff members (over 500) are aware of the need to conserve water.

- The report indicates that Council's **consumption trend** during 2005-2006 is **21% lower**, as compared to the base year. Council's consumption savings in the reinventory year was **47,812 KL**. The following table highlights the water consumption trend from 1999 to 2005/2006.



- During the re-inventory years (2004-2006), the price of water per kL has increased from $0.88 per kL in 1999/2000 to $1.20 kL in 2004/2005. Please refer to the table below for the total water consumption trend and cost from the base year to 2005/2006.

Year	Total Consumption (kL)	Consumption Cost ($)
1999/2000	183,046	$ 163,376
2000/2001	205,681	$ 191,283
2001/2002	249,882	$ 232,390
2002/2003	246,078	$ 231,313
2003/2004	185,173	$ 181,470
2004/2005	177,878	$ 179,421
2005/2006	181,453	$ 217,409



- **Sewage Disposal Charges** – Council has made no savings on the sewer disposal charges.

As Council has already achieved its water conservation target of 20% by 2011, we have revised this to now be a target of **25% by 2011**. For a summary of planned actions for the next 2 to 3 years, please see Council's attached ICLEI Local Water Action Plan, the Total Water Cycle Management Strategy and the DEUS Water Savings Action Plan.

Community Water Conservation

Introduction

Please note that it would be difficult to accurately compare the Community water conservation between the base year data (1999 to 2002) and the re-inventory years 2004-2006 as no data on the property/unit counts of flats and houses for the years 1999/2000 and 2000/2001 had been provided by Sydney Water. The only **complete** data from Sydney Water were those of **2001 and 2002.** It would therefore be appropriate for Council to use the complete data of 2001/2002 as its base year for the community consumption inventory comparison. As for the re-inventory years (2004 to 2006), Sydney Water has provided Council with complete statistics for these years. In order to provide a 'near-accurate' figure for the table below, we have chosen to use the total water consumption and the total property and unit counts for the re-inventory year of 2005/2006 alone.

	2001/2002
Flats	10,988
Consumption for flats (kls)	1,943,775
Houses	38,859
Consumption for houses (kls)	11,909,341

	2005/2006
Flats	14,380
Consumption for flats (kls)	2,120,463
Houses	40,205
Consumption for houses (kls)	9,442,503

The water consumption statistics between the base year and the re-inventory years indicated that the community is using less water generally despite the fact that the Hornsby LGA has experienced a significant increase in population due to the construction of many new units.

1. COMMUNITY CONSUMPTION INVENTORY COMPARISON

RESIDENTIAL				RESIDENTIAL			
Base Year:	2001/2002			RE-INVENTORY Year:	2005/2006		
	Flats	Houses	Total		Flats	Houses	Total
Consumption (kL)	1,943,775	11,909,341	13,853,116	Consumption (kL)	2,120,463	9,442,503	11,562,966
Number of properties in LGA	10,988	38,859	49,847	Number of properties in LGA	14,380	40,205	54,585
Consumption per property type (kL)	177	306	483	Consumption per property type (kL)	147	235	382

Note:

The above table clearly demonstrates that water consumption reduction has happened between the base year and the most recent re-inventory year (2005 to 2006) for both houses and flats despite the fact that both property types have increased in numbers in the Hornsby LGA (**20% decrease)**.

2. RESULTS OF COMPARISON BETWEEN RESIDENTIAL INVENTORY AND RE-INVENTORY

RESIDENTIAL			
	Flats	**Houses**	**Total**
Change in Consumption (kL)	+176,688	-2,466,838	2,643,526
Change in Number of properties in LGA	+3,392	+1,346	4,738
Change in Consumption per property type (kL)	52	1,833	1,885

3. NON-RESIDENTIAL CONSUMPTION INVENTORIES COMPARISON

NON-RESIDENTIAL		NON-RESIDENTIAL	
Base Year	**2001/2002**	**re-inventory year**	**2005/2006**
Total Consumption	3,077,198	**Total Consumption**	1,776,589
Total number of Properties	1,947	**Total number of Properties**	1,207
Average Consumption per property	1,581	**Average Consumption per property**	1,472

Non-Residential includes Commercial and Industrial

4. RESULTS OF COMPARISON BETWEEN NON-RES INVENTORY AND RE-INVENTORY

NON-RESIDENTIAL	
Total Consumption (change)	-1,399,609
Total number of Properties (change)	-740
Average Consumption per property (change in kL)	-109

Community Water Conservation Actions

- Please refer to the Community Water Conservation Action Cards.

Corporate Water Quality

- Please refer to the updated Corporate Water Quality Action Cards.

Water Quality Priorities - Corporate

Three priorities chosen in **<1999 to 2002>** for water quality improvement action.	Three priorities chosen in **2005 to 2006>** for water quality improvement action.
1. ICLEI Category: Gross litter and pollution management. (Stormwater recycling)	1. Gross litter and pollution management
2. ICLEI Category: Wastewater treatment (Leachate treatment)	2. Wastewater treatment
3. ICLEI Category: Herbicide and Pesticide Management (Nursery operations)	3. Nutrient management

- Council has further progressed on the number of actions for the originally chosen three priorities during our re-inventory years.

Corporate Water Quality actions

- As Council has implemented several actions for Corporate Water Quality, please refer to the detailed updated water quality action cards and corresponding points assigned. The following points have now been verified by ICLEI after review.

Table 1: Points assigned for Corporate water quality actions

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned
Employment of an officer to implement and enforce council's sediment and erosion control policies	♦ Improvement to aquatic ecosystem health – ongoing water quality monitoring program. ♦ Increased builder knowledge.	10

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned – continued.
Gross litter traps (300 across the Shire) Litter hotspot audit, data collection, review pollutant capture efficiency.	• Data assists with community education programs. • Improvement of design process for GPTs • Enhance site specific design modifications.	5
Random audit of creek lines and GPTs and response to audits	• Identification of land use types that are sources of gross pollution. • Helped prioritisation of water quality remediation capital works and plan. • Appropriate maintenance ensures efficiency of GPTs	5
Evaluation and removal of unnecessary rubbish bins and community education. Staff training for the improvement of issuing notices and fines. Review of street sweeping programs and implementation of best management practices.	• Promotion of recycling to the community. • Litter education and compliance. • Logical treatment train developed for high impact catchments.	5
Treatment (RO) and reuse of backwash water at council pools.	• Protection of natural creeklines, water saving and public education.	5
WSUD DCP and Best practice manual.	• Reduction in the impacts of developments on water quality and increase in council awareness if development pressures from Planning Division.	10
Identification of and remediation of old tip sites to prevent contamination of surrounding soil and water bodies	• Improvement to downstream aquatic ecosystem habitat. • Reduction in the use of reticulated water for irrigation.	5

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned – continued.
Sediment and erosion control plans requested with all construction tenders. Contract managers/supervisors ensure sediment and erosion control plans adhered to.	• Increased awareness of both private contractors and council.	10
Restoration or degraded riparian environments. Council restored 1,070 metres 2004/05.	• Addressing sediment and erosion control problems. • Increased benefits to biodiversity. • Other knock-on effects to the water cycle.	5
Identification and implementation of alternatives to herbicide spraying.	• Avoidance of herbicide impacts to biodiversity and natural creek systems. • Volume of round-up used recorded by council.	5
Fulfilment and improvement of trade waste agreement for wastewater discharge.	• Increase water conservation and water reuse	5
Installation of sewage pumpout facilities for boats at 7 marinas.	• Cleaner waterways.	5
Development of an education program relating to the reuse of greywater.	• Community understanding of water conservation and reuse in general.	5

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned – continued.
Adoption of Acid Sulphate Soil Manual. Preparation and adoption of draft LEP and DCP for Acid Sulphate Soils.	♦ Mitigation of environmental effects of acid leachate generation on biodiversity.	5
Total		**95**
Goal set for 2011		**105**
Points remaining to achieve goal		**10**

Of the 37 Corporate Water Quality key initiatives covering the areas of sediment and erosion control, gross litter trapping, herbicide, pesticide and fertiliser use, nutrients, council swimming pools, wastewater treatments, groundwater treatment and water sensitive urban design, there are only **7** items remaining to be finalised. These are as follows:

Sediment and Erosion Control:
3b. Undertake footpath maintenance works which prevent the creation of concrete slurry.

Gross litter trapping:
3a. Provide a level of maintenance to street litter bins that prevents overflow into nearby drains.

Herbicide, pesticide and fertiliser use:
1a. Undertake a review of herbicide, pesticide and fertiliser use and demonstrate any reduction in applied chemical use.
1b. Educate staff on the impacts of fertiliser and pesticide use through induction and EMS training.

Wastewater treatments:
1b. Review existing practices of wastewater management and rectify environmental concerns that may arise from wastewater exfiltration.

Groundwater management:
2a. Develop a planning policy, which protects remaining indigenous vegetation to protect water quality of groundwater resources.
2b. Develop a policy that promotes the establishment of plant species that reduces saline discharge areas.

Community Water Quality

Please refer to updated Community Water Quality action cards.

Water Quality Priorities – Community

Three priorities chosen in **<1999-2002>** for water quality improvement action.	Three priorities chosen in **<2005-2006>** for water quality improvement action.
1. ICLEI Category: Gross litter pollution management (Community access to water quality data).	1. Gross litter pollution management (Community access to water quality data).
2. ICLEI Category: Development of stormwater treatment systems (Wastewater treatment)	2. Development of waste water treatment systems
3. ICLEI Category: Expansion of bushcare education (Herbicide and pesticide management).	3. Erosion and sediment control.

- As Council has implemented several actions for Community Water Quality, please refer to the detailed updated water quality action cards and corresponding points assigned. These points have now been verified by ICLEI after review.

Community Water Quality actions

Table 2: Points assigned for Community water quality actions

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned
Education program for developers for the implementation of sediment and erosion controls. Development and implementation of a planning control to promote a vegetated buffer strip along drainage lines during construction.	♦ Internal education of council staff and a better understanding by the community of the need to control sediments entering waterways.	5
Periodic review of recycling services provided to ratepayers. Periodic review of the effectiveness of recycling method and	♦ General environmental education of the community ♦ Increase in recycling rates ♦ Increase in the sustainable management of waste in general.	5

respond to improvements as necessary. Educational material to ensure appropriate recycling methods are used in the community	• Financial incentive – recycling is cheaper than disposal to landfill. • Links with green procurement program.	
Cigarette butt education program Incentive and enforcement cigarette butt program.	• Increase in water quality due to the reduction of gross pollutants. • Increased community understanding.	5
Workshop program to minimise herbicide, pesticide and fertiliser use in private gardens, paddocks and industry. Educational materials to improve environmental benefits of gardening practices. Development of rooftop garden and leadership projects.	• Bushcare residents engagement with the wider community. • Community understanding of the need and importance for open space.	5
Provision of free mulch to ratepayers. Quarterly free indigenous plant give-away.	• Water conservation and native garden establishment. • Links to community education about other environmental issues such as composting, biodiversity and water quality.	5
Educational materials that promote the collection of organic litter for composting or recycling. Development of a local law preventing a dog owner leaving dog faeces in public spaces. Handing out of dog faeces collection bags and issuing of warnings. Signs at public open space areas.	• Reduction of waste to landfill. • Encouragement of ecologically sustainable gardening practices. • Cleaner open space areas. • Visual pollution and water quality improvements.	5

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned cont'd
Sediment and erosion control – audits of all nurseries in LGA and distribution of educational materials. Induction and training session for nursery and landscape industries.	• Education of the nursery and landscaping industries has significant community education benefits.	5
Utilisation of powers under the NSW Local Government Act to impose fines for illegal dumping on public land. Removal of dumped rubbish immediately and attempt to identify persons involved (dedicated illegal dumping officer) Installation of signage and surveillance.	• Reduction of visual pollution and increased biodiversity. • Reduction in leachate emanating from dumped material. • Reduction in the number of dumping incidents.	5
Rural lands incentive – use of best management practices for native vegetation on private lands.	• Addressing the impacts of herbicide, pesticide and fertiliser use. • Encouragement of best management practices for terrestrial ecosystems.	5
Wastewater treatment, greywater and reuse policy (supporting brochures and documentation) Rainwater tank policy (supporting documentation and brochures)	• Public health, water conservation and water reuse.	5

Action Implemented since the Base Year	Benefits (qualitative description and any quantified benefits)	Points assigned – cont'd
Development of priority sewage treatment scheme with Sydney Water for unsewered areas. Council employment of 3 officers who work full time on the on-site sewage management program.	• Detailed identification of environmental impacts and improve the knowledge of conservation and reuse issues within council.	5
Integrated education program that targets water quality and water conservation	• The integrated environment education program covers water, energy and biodiversity. • Significant schools component in the program	10
Total		**65**
Goal set for 2011		**115**
Points remaining to achieve Goal		**50**

Of the 46 Community Water Quality key initiatives covering the areas of sediment and erosion control, gross litter trapping, herbicide, pesticide and fertiliser use, nutrients, private swimming pools, wastewater treatments and groundwater treatments, there are **9** items remaining to be finalised. These are as follows:

Herbicide, pesticide and fertiliser use:

3a. Engage with the local permaculture and organic gardening groups to run sessions for the community on ways to minimise herbicide, pesticide and fertiliser use in private gardens.
3b. Engage with local landcare groups to run sessions for farmers on ways to minimise herbicide, pesticide and fertiliser use in paddocks.
3c. Engage with organic nursery producers to run session for mainstream nurseries on ways to minimise herbicide, pesticide and fertiliser use in nurseries.

Private Swimming Pools:

1a. Develop a building control that requires the connection of pool backwash to sewer.
1b. Inspect that the pool backwash is connected to sewer.

Groundwater management:

1. Enforce the planning control that protects the retention of native vegetation in designated areas.
2. Support the activities of local landholder groups engaged in the restoration of saline discharge areas through, e.g. advice, materials, and officer supervision.
3a. In conjunction with the water authority promote the installation of bore check meters.
3b. In conjunction with the water authority, develop and circulate educational material to owners of bores for effective management and recording.

Analysis

For its integrated water resource management, Hornsby Council's Water Conservation Policy formulated for Milestone 2 committed Council to achieve a corporate water consumption reduction of 20% in the use of reticulated water, and community water consumption reduction of 18% by 2011. A 20% progress towards attainment of a corporate water quality improvement of 50 points out of a total of 115 points, and a community water quality improvement of 50 points out of a total of 105 points of the ICLEI actions, by the year 2006.

In 2005, Council had already achieved its water conservation goal of 20% set at Milestone 2 (using 1999 to 2002 as a baseline), thus saving 7,800 kls of water. Similarly, the community water conservation goal of 18% had also been achieved, saving 900,000 kls of water.

Progress related to goals set as part of the Water Campaign™

Module	Goals established		Progress achieved since 2002
Corporate water conservation goal	Goal established in 2004 for 20% consumption reduction	**Corporate water conservation achievement**	**21% reduction achieved in 2006**
Community water conservation goal	Goal established in 2004 for 18% consumption reduction	**Community water conservation achievement**	**20% reduction achieved in 2006**
Corporate water quality goal	Goal of 50 points by 2006.	**Corporate water quality points achieved**	**Total 95 points now achieved (90%) of a total 105 points.**
Community water quality goal	Goal of 50 points by 2006.	**Community water quality points achieved**	**Total 65 points now achieved (56%) of a total 115 points**

Corporate

- Our corporate water conservation has evolved around the installation of water conservation devices in all Council buildings and the application of stormwater reuse at various Council parks, backwash treatment and reuse at Council swimming pools, and stormwater harvesting at the Council nursery.

- Corporate water quality has improved as a result of our sediment and erosion control procedures, our Catchment Remediation program and our Waste Management program.

Community

- Our Community water conservation program has benefited primarily from the implementation of our Water Sensitive Urban Design Development Control Plan and Best Practices Manual on all new developments within the Shire.

- Our Community water quality has improved primarily through the application of Council's environmental levy to the remediation of water quality through the Catchment Remediation Rates (CRR) capital works program. Council maintains in excess of 300 new devices which are currently improving water quality through time.

Future Water Conservation and Water Quality Improvement Actions

In the next 2 to 3 years Council will continue to implement its range of aquatic resource management strategies. These include:

- Sustainable Total Water Cycle Management Strategy;
- ICLEI Hornsby Council Water Management Plan;
- DEUS Water Savings Action Plan;
- Sydney Water Every Drop Counts Program;
- CRR Capital Works Improvement Program;
- The Brooklyn and Berowra Estuary Management Plans; and
- Water Conservation Policy

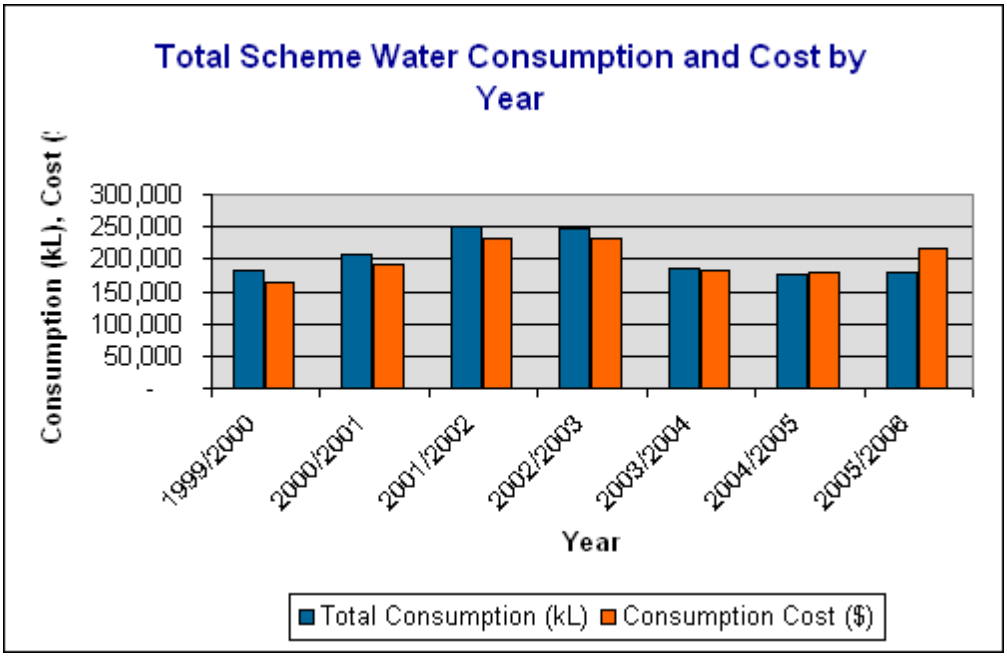
A new estuary management plan is currently being formulated for the entire Lower Hawkesbury estuary.

A concept design strategic management plan for water conservation and reuse is currently being developed for all Council's irrigated parks and ovals.

In line with Council's current philosophy, a suite of local/regional wastewater treatment and reuse projects are also currently being developed. Council will continue to expand its education programs for the community on water conservation and reuse.

Council will continue to pursue achievement of the remaining initiatives as outlined above for both corporate and the community modules, especially in the education area.

The following table indicates the trend of Council's total water consumption and costs from the base-years (1999 to 2002) to the two re-inventory years.



Based on Council's progress in the ICLEI Water Campaign™ and its water consumption reduction trend, Council would like to set a **25% reduction** goal for both **corporate** and **community** water consumption by 2011.

Corporate Water Conservation Action Cards

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Water Efficient Bathroom Appliances			
	1	Install dual flush toilets Council buildings	**M4 Action**
	2	Install waterless urinals in Council buildings	
	3	Install dual flush toilets in public toilets	
	4	Install waterless urinals in all new and renovated public toilet	
	5	Install water efficient showers roses in Council buildings	
	6	Install flow control valves in all taps or spring loaded taps	
		62,866 kLs savings were reported on and have been accounted for in the Milestone 4 application. No further actions since this time.	
CATEGORIES			
Type of device installed:		Various, see attached Energy Performance Contract (EPC), Measurement and Verification Report, June, 2004	
Justification of selection:		It was logical to include water savings with our Energy Performance Contract as the two issues are closely linked.	

Date implemented:		June 2004.	
Where action was implemented:		Council's Administration Building, Council Chambers and the three Council swimming pools, i.e. Hornsby, Epping and Galston.	
Cost of implementation:		See Energy Performance Contract (EPC) attached	
Capital outlay:		See EPC contract	
Water costs saved:		See Section 5, EPC contract: 2003: Total savings per annum: 62,866 kLs, Costs saved: $97,027.	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Rainwater tanks	**7**	Install rainwater tanks to supplement mains water use for toilet flushing in Council buildings Implemented in 2005. We calculated the water savings using ICLEI's rainwater tank calculator. 132 kLs /year were saved. Please see attached rainwater tank savings calculations.	Ref. Table 1
Type of device installed:		Rainwater tanks	
Justification of selection:		Utilisation of stormwater asset.	
Date implemented:		2005	
Where located:		Council's Community Nursery and the Bushland Cottage at 28 Britannia Street, Pennant Hills, NSW 2120	
Cost of implementation:		$10,000	
Capital outlay:		$10,000	
Water costs saved:		132 kLs at $1.20 kL = $158.40	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Rainwater tanks	**8**	Install rainwater tanks to supplement water consumption in Council nurseries and depots Please refer to the attached rainwater tank calculation for Council nurseries and depots. This action is different to No. 7. The water savings from the rainwater tanks were 8,800 kLs using ICLEI's rainwater tank calculator.	Ref. Table 1
Type of device installed:		2 x 100,000 litre aboveground concrete tanks and 1 x 30,000 litres above ground concrete tank.	
Justification of selection:		Utilisation of rainwater and irrigated water for the community nursery.	
Date implemented:		2002	
Where located:		Community nursery	
Cost of implementation:		$325,000	
Capital outlay:		$325,000	
Water costs saved:		8,800 kLs at $1.20/kL = $10,560	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Wastewater Re-use	**10**	Install wastewater systems to capture, treat and reuse swimming pool backwash in Council swimming pools for toilet flushing or irrigation. Reverse Osmosis is installed at two of Council's aquatic centres, i.e. Hornsby and Epping. Currently, approximately **40 kLs** at each site per week are reclaimed from the backwash water and used to irrigate the surrounding parklands at Hornsby park and as top-up water in the swimming pool at Epping. Please see calculations below: 90,000 L per week from backwash 60,000 L per week treated by Reverse Osmosis, 30,000 L per week to sewer 40,000 L per week reclaimed by Reverse Osmosis, 20,000 L per week (brine to sewer) 40,000 L (i.e. **40kL**) per week at $1.20 per kL= $48.00 per week 52 wks/year = approx. $2,500 per annum water savings	Ref. Table 1
Type of device installed:		Reverse Osmosis (RO) treatment of backwash water at Hornsby and Epping swimming pools for reuse back into the pool and to irrigate surrounding parklands.	
Justification of selection:		Reuse of degraded backwash water.	
Date implemented:		2002	
Where located:		Hornsby Aquatic Centre: Hornsby Park, 203 Pacific Highway, Hornsby NSW 2077. Epping Aquatic Centre: Dence Park, 26 Stanley Road, Epping NSW 2121.	

Cost of implementation: **Capital outlay:** **Water costs saved:**		Approximately $200,000 Approximately $200,000 40 kL per week at $1.20 kL = $48:00 per week. $48 x 52 wks= $2,496, round if off to $2,500 per year.	

Wastewater Re-use **Type of device installed:**	**11**	Install wastewater systems to capture, treat and reuse swimming pool backwash to refill Council swimming pools. Please see **10** above for all entries.	Ref. Table 1
Wastewater Re-use **Type of device installed:** **Justification of selection:** **Date implemented:** **Where located:**	**12**	Use treated wastewater for wetting down of roads during road works to prevent dust clouds. Estimate: Less than 50 kL per year. Council tankers used to collect treated effluent from West Hornsby and Hornsby Heights Sewage Treatment Plants for wetting down roads. The need to not use potable water for this function. Various Various roads across the Shire, all water sourced from West Hornsby and Hornsby Heights Sewage Treatment Plants.	

Cost of implementation: **Capital outlay:** **Water costs saved:**		\$60 per hour for the internal hiring of tanker and tanker driver. N/A N/A	

Wastewater Re-use **Type of device installed:** **Justification of selection:** **Date implemented:** **Where located:** **Cost of implementation:** **Capital outlay:**	**15**	Use wastewater (sewer, stormwater, grey water, etc) for irrigation in Council parks and gardens. 2 x 200,000 litres above ground rainwater tanks installed at Pennant Hills, Greenway Park and Somerville Parks. Greenway Park (45,000 sq.m); Somerville Park (40,000 sq.m); and Pennant Hills Park (3,000 sq.m) Please refer to the rainwater tank calculator for water savings attached. Total water savings calculated: 77,440 kLs per year. Utilisation of stormwater resource June, 2004 Pennant Hills Park and Greenway Park. Approximately \$100,000 each Approximately \$100,000 each	Ref. Table 1

Water costs saved:		77,440 kLs at $1.20 per kL = $92,928 per year.	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Irrigation practices	**20**	Construct stormwater detention systems and/or aquifer storage recovery schemes in new or upgraded parks for use in irrigation practices.	Ref. Table 1
	21	Introduce moisture sensitive or similar water efficient practices for irrigation of open space areas	
	22	Reduce irrigation in turf median strips by using alternative paving design median strips	
	23	Locate plants together that have a similar water requirement	
	24	Select and plant xerophytic plants in new and upgraded plantations	
	25	Select and plant indigenous plants in new and upgraded plantations	
	26	Use wetting agents in soil media plant stock to control the released moisture	
	27	Use mulch in planting beds and street trees to maintain moisture	
	28	Select drought tolerant turf species for turf upgrade and new site establishment	
		The above items consisted of various small jobs across the Shire which is very difficult to quantify.	

Irrigation practices	**20-28 continued**		
Type of device installed:		The Water Sensitive Urban Design Development Control Plan (DCP) is used to assess both external development applications and internal works programs. These result in the techniques promoted by the Water Sensitive Urban Design DCP being applied to all major Council internal works operations.	
Justification of selection:		It would be hypocritical of Council not to apply the same Water Sensitive Urban Design principles to its internal works as it does to external Development Applications.	
Date implemented:		The Water Sensitive Urban Design DCP was implemented in April 1998.	
Where located:		Various	
Cost of implementation:		Various	
Capital outlay:		Various, staff time and printing and reprinting of the Water Sensitive Urban Design booklet	
Water costs saved:		Difficult to quantify.	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Education	**29**	In-house education and promotion of water smart practices through placement of effective signage. Implemented in 2004, action reporting complete.	Ref Table 1
Type of device installed:		Installation of signage across all Council buildings in bathrooms, toilets and kitchens.	
Justification of selection:		Educational signage is a component of the Environment Division Education Strategy attached.	
Date implemented:		2004	
Where located:		Council buildings	
Cost of implementation:		Negligible	
Capital outlay:		Negligible	
Water costs saved:		N/A	

Corporate Water Saving Areas - Action Card (Milestone 5)	No.	Key Initiatives	Points
Education **Type of device installed:** **Justification of selection:** **Date implemented:** **Where located:** **Cost of implementation:** **Capital outlay:** **Water costs saved:**	**32**	Contract management to reflect water conservation and stormwater management A generic Review of Environmental Factors (REF) template has been produced and applied to all Council internal works program. There is a section on water conservation and a section on water quality amongst other environmental sections. Please see attached REF template for info. Implemented in 1998. Action reporting complete. A formal internal process which captures potential environmental impacts which would otherwise fall through the net if the project does not require a development application. 1998 Across all Council works. Various Negligible N/A	Ref. Table 1

Corporate Water Quality Action Cards

Water Quality areas - Corporate Action Card (Milestone 5) ***Sediment and Erosion Control*** **CATEGORIES**	**No.** **1a**	**Key Initiatives** Develop and implement erosion and sediment control guidelines based on best management practices for Council staff and contractors on all Council's construction sites. Action implemented since 1994. It is now business as usual. Hornsby Council used to have a sediment and erosion control policy prior to the introduction of the Water Sensitive Urban Design Development Control Plan and Best Practices Manual. The sediment and erosion control policy had been incorporated in the WSUD DCP as one of the elements. Please find attached a copy of the WSUD DCP and Best Management Practice for your information. There is no mechanism to check the numbers of Review of Environmental Factors (REF) that have been submitted as the REF is a template that can be accessed by all the different Divisions and Teams within Hornsby Council, if and when this is required.	**Points** Ref. Table 1

Description of action:		Generic soil and water management plans were developed in 1994, and training was rolled out across Council (mainly the Works Division staff) with regard to sediment and erosion control on Council' sites. Ongoing and one-on-one training was provided to the Works Division gangs by officers of the Water Catchments Team.	
Justification of selection:		Breaches of appropriate legislation by Council employees prompted this action.	
Date Implemented		1994	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		Increased understanding of the importance of sediment and erosion control across the entire range of Council operations, i.e. where soil is disturbed.	
What was measured:		The number of REFs (Review of Environmental Factors) submitted for approval for internal Council jobs addressing sediment and erosion control.	
Cost of implementation		$40,000 consultancy to develop the generic soil and management plans.	
Lifespan of product:		Ongoing program with periodic review as technology improves.	
Capital Outlay p.a.		Not applicable	

Sediment and Erosion Control	**1b**	Contract managers/supervisors to undertake training in the interpretation of the erosion and sediment guidelines. Action started in 1995. This is now business as usual.	Ref. Table 1
CATEGORIES **Description of action:**		All staff including Managers, Supervisors and Team Leaders, gangers and field staff are educated in the development of sediment and erosion control plans whenever soil is disturbed.	
Justification of selection:		The need for ongoing training due to staff turnover and the need for management to understand the importance of this work.	
Date Implemented **Where located:**		1995 Across the entire Hornsby LGA.	
Related benefits of action:		See above.	
What was measured:		The roll-out of internal training is measured on Council's Oracle training system.	
Cost of implementation		$50,000 plus small ongoing cost for ongoing training.	
Lifespan of product:		Not applicable	
Capital Outlay p.a.		Not applicable.	

Water Quality areas - Corporate Action Card ***Sediment and Erosion Control***	**No.** **3a**	**Key Initiatives** Include clause to all Council tenders for construction activities which incorporates erosion and sediment control guidelines or management plans	**Points** Ref. Table 1
CATEGORIES			
Description of action:		Sediment and erosion control plans are requested with all construction tenders.	
Justification of selection:		We need to better manage sediment and erosion from construction sites.	
Date Implemented:		2000	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		This action increases the awareness of both private contractors and Council	
What was measured:		All gangs are registered and assessed under the purchasing and procurement policies and legislation.	
Cost of implementation:		Not applicable.	
Lifespan of product:		Not applicable	
Capital outlay p.a.		Not applicable	

Water Quality areas - Corporate Action Card ***Sediment and Erosion Control*** **CATEGORIES** **Description of action, etc:**	**No.** **3c**	**Key Initiatives** Contract Managers/Supervisors to ensure that Council tenders are strictly adhered to with respect to erosion and sediment control (See 3 a above) Please see (1b) and (3a) above.	**Points** Ref. Table 1
Water Quality areas - Corporate Action Card (Milestone 5) ***Sediment and Erosion Control*** **CATEGORIES**	**No.** **4**	**Key Initiatives** Restore 500 lineal metres of degraded riparian environments per annum. This can involve the removal of exotics, bank stabilisation and revegetation with indigenous plants. Please refer to attached REFs for creek stabilisation projects (Fearnley Park-190 metres, Pembroke Street-80 metres, Ridge Street-200 metres, Lamorna Avenue(Park)-500 metres, and Kent Street(Park) 100 metres. Council has restored 1,070 lineal metres of degraded riparian environments between 2004 and 2005.	**Points** Ref. Table 1

Description of action:		Catchment remediation capital works program includes the restoration of riparian lands in its 5 year capital works program. These works come under the category of stream remediation projects. Total lineal metres restored per annum ranges from 50 metres to 1000 metres.	
Justification of selection:		Increased stream water flows in urban area due to impervious surface results in increased stream bank erosion. This program is specifically designed to restore and remediate streams and to also conduct works to reduce the velocity of stream water due to large storm events.	
Date Implemented:		1994	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		While addressing the sediment and erosion control problems, biodiversity issues are also addressed, and knock-on effects to other parts of the water cycle are also improved.	
What was measured:		Lineal metres of riparian works completed.	
Cost of implementation:		$100,000 to $250,000 per annum.	
Lifespan of product:		Not applicable	
Capital Outlay p.a.		$100,000 to $250,000 per annum.	

Water Quality areas - Corporate Action Card - Milestone 5	No.	Key Initiatives	Points
Gross litter trapping	**1a**	Undertake a litter hot spot audit which identifies locations of high gross litter generation. Milestone 4 action and points were awarded.	**M 4 Action**
CATEGORIES			
Description of action:		Litter audit conducted to assist in the development of the Catchment Remediation Rates 5 year capital works program. The audit determined that sites such as shopping centres, car parks, schools and ovals are primary source of gross pollution. Two audits were undertaken, one in 1998 and one in 2001.	
Justification of selection:		The need to place catchment remediation works such as gross pollutant traps.	
Date Implemented:		Ongoing since 1994.	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		Trapping the gross pollutants results in improved visual amenity and an improvement in biodiversity.	

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital Outlay p.a.**		Number of devices constructed and pollutants captured volume. Approximately $400,000 per annum. Various Various	
Gross litter trapping **CATEGORIES** **Description of action:** **Justification of selection:**	**1b**	Collect and collate data on the quantity and type of litter trapped for use in education and awareness raising. Action ongoing since 1994. Points were awarded at Milestone 4. Additional devices have since been commissioned, and more screening and sorting of materials from GPTs has been undertaken. Sub-contracts for the cleaning of gross pollutant traps are let on the basis that gross litter, sediment and organic materials are all individually measured. Materials are screened and sorted for recycling and data collected for reporting to Council and for use in educational programs. The need to recycle material from gross pollutant traps (GPTs) and the need to promote/educate residents' on the success or otherwise of the Catchment Remediation Rate program	**M 4 Action**

Date Implemented:		Ongoing since 1994.	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		Knock-on' effects to the community regarding environmental awareness for gross pollutants.	
What was measured:		Cubic metres of sediment, organic materials and gross litter captured by the gross pollution devices. Hornsby Council's Community Report for 2004-2005 indicated that the existing stormwater pollutant traps prevented 900 tonne (or 90 truck loads) of sediment, litter and leaf matter from entering the shire's waterways in the past 12 months.	
Cost of implementation:		Various GPT cleaning contracts, value in the order of $100,000 per annum.	
Lifespan of product:		Not applicable	
Capital Outlay:		Not applicable	

Gross litter trapping	**2a**	Respond to litter audit results by the appropriate selection and placement of litter traps.	**M 4 Action**
CATEGORIES		See (1a) above.	

Water Quality areas - Corporate Action Card - Milestone 5	No.	Key Initiatives	Points
Herbicide, pesticide and fertiliser use	**2**	Identify and implement alternatives to spraying herbicides along concrete kerb and channel and plantation areas.	Ref. Table 1
CATEGORIES			
Description of action:		The flame weeder is used to do primary control of herbaceous and succulent weed species. The flame weeder can be used in areas unsuitable for herbicide such as creeks and close to public playgrounds. Follow-up hand weeding is often required after flame weeding.	
Justification of selection:		To minimise the level of herbicides from entering into natural streams and waterways.	
Date Implemented:		2004	
Where located:		Across the entire Hornsby LGA	
Related benefits of action:		The avoidance of 'knock-on' effects to biodiversity and natural creek systems.	
What was measured:		Volume of roundup as used by Council is recorded.	
Cost of implementation:		Not applicable	

Lifespan of product: **Capital Outlay:**		Not applicable $10,000	

Water Quality areas - Corporate Action Card - Milestone 5	No.	Key Initiatives	Points
Nutrients	**1a**	Remove all organic matter generated during all Council operations.	Ref. Table 1
		Action implemented since 1998. This is now business as usual. All organic matter (e.g. tree clippings), go to Council's nursery for mulch distribution on designated free mulch days for shire residents.	
CATEGORIES			
Description of action:		All organic material such as tree lopping is removed from sites and taken to the Britannia Street Community Nursery where it is either mulched, re-used across the shire or milled into usable timber.	
Justification of selection:		The recycling of products which would otherwise go to landfill. This also results in the reduction of nutrients entering into local streams but this is considered minimal.	
Date Implemented:		Since 1998.	
Where located:		Council's community nursery, 28 Britannia Street, Pennant Hills, NSW 2120.	
Related benefits of action:		Community education at the Community Nursery related to the recycling of organic material	

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital Outlay:**		Nil Various Not applicable Tub grinders contracted periodically, costs - various.	

Nutrients **CATEGORIES** **Description of action:**	**1b**	Contain mulch and soil stockpiles within bunded areas The sediment and erosion control policy requires all soil stockpiles to be suitably contained. See Category "Sediment and Erosion Control". The containment of leachate from mulched piles is not considered a 'significant source' of nutrients and no policy exists requiring leachate to be contained in the short term. (Please refer to Water Sensitive Urban Design DCP and Best Practices Manual)	***Points*** Ref. Table 1

Water Quality areas - Corporate Action Card - Milestone 5	No.	Key Initiatives	Points
Wastewater treatments **CATEGORIES** **Description of action:**	**1a**	Fulfil the requirements of your trade waste or licence agreement for wastewater discharge. Implemented since 2004 Hornsby Council has trade waste agreements in two major areas: (1) with Sydney Water related to the discharge of pumpout effluent from unsewered areas of the Shire, and (2) trade waste agreement with Sydney Water regarding the discharge of pool backwash from pool maintenance operations. Council has recently improved backwash water treatment and recycling and we have now modified our Sydney Water trade waste agreement regarding the pool backwash water to be a minimum waste disposal after treatment. The management of the disposal of pumpout wastewater into Sydney Water's reticulated system is ongoing with current Council policy looking into removing Council from ongoing involvement under new State Government legislation.	Ref. Table 1

Justification of selection:		An improvement and simplification of Council handling all trade waste and licensing issues.	
Date Implemented:		The trade waste agreement for the Pumpout is current; the agreement for the Pools is ongoing as of 2004.	
Where located:		The 3 swimming pools are located at Hornsby, Epping and Galston, and the effluent pumpout station is at Leighton Place, Hornsby.	
Related benefits of action:		Increase water conservation and water reuse.	
What was measured:		The volumes as per the Sydney Water Trade Waste Agreement.	
Cost of implementation:		Various - ongoing	
Lifespan of product:		Not applicable	
Capital Outlay:		Not applicable	

Water Quality areas - Corporate Action Card - Milestone 5	No.	Key Initiatives	Points
Wastewater treatments	**1a**	Install sewage pumpout facilities for boats at all Marinas within our LGA.	Ref. Table 1
CATEGORIES		Implemented since 2002	
Description of action:		Of the 14 Marinas operating within the Hornsby LGA, 7 had installed pumpout facilities for boats, the other 7 utilised Council's purpose-built pumpout facility at Kangaroo Point on the Hawkesbury estuary. Please refer to the attached information pamphlet on the Kangaroo Point Pumpout User Guide.	
Justification of selection:		Public health issues related to the direct disposal of untreated effluent from vessels on the estuary.	
Date Implemented:		2002	
Where located:		Kangaroo Point Pumpout facility and the 14 Marinas.	
Related benefits of action:		Cleaner waterways	
What was measured:		The volume of effluent collected from boats.	

Cost of implementation: **Lifespan of product:** **Capital Outlay:**		$500,000 for the Kangaroo Point Pumpout Facility 50 years $500,000; annual maintenance $60,000	

Wastewater treatments	**1b**	Implement a program that will see all Council properties connected to sewer or the effective containment of septic system by target year. Water quality will improve if properties are properly connected to sewer. There are two programs operating in the Shire that relate to this action. The first one is the Priority Sewerage Treatment program operated by Sydney Water to examine the 52 unsewered areas across Greater Metropolitan Sydney for the development of the priority sewerage program for these areas. Three such areas had been approved recently in the Hornsby Shire. These are: Brooklyn, Dangar Island and the Mt Kuring-Gai industrial area. The second program related to this action is Council's internal program of licensing and inspecting of on-site sewage treatment and management across the Shire under NSW government state legislation. Council employs three environmental protection officers who work full time on the on-site sewage management program and classify all the on-site systems across the Shire in terms of their risk and inspect these on this basis.	Ref. Table 1

CATEGORIES			
Description of action:		As a result of the state government requirement to produce a Water Savings Action Plan, Council has audited all its present premises with a view to improving water conservation and water reuse.	
Justification of selection:		Improved environmental outcomes and the need to produce a state government Water Action Plan under government legislation.	
Date Implemented:		2005 - 2006	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		Detailed identification of environmental impacts and improve the knowledge of conservation and reuse issues within Council's own infrastructure. Under the ICLEI's Milestone 5 requirements, Council has to audit all its premises for water consumption.	
What was measured:		Water consumption of all Sydney Water accounts in the Shire.	
Cost of implementation:		Immediately.	
Lifespan of product:		Not applicable.	
Capital Outlay:		Not applicable.	

Wastewater treatments	**1a**	Develop a Council guideline that supports the use of residential and commercial generated grey water on site that meets health regulations for our state. Implemented since 2002. Please refer to the attached Powerpoint presentation for educational purposes through Council's Earthwise at home workshop. Two sessions for residents on Greywater use were held during 2005-2006, as well as one dedicated workshop conducted by Council officers and a plumber on March 13 2006. One overview session as part of a water and energy use in the home workshop was also conducted on 8 October 2006.	Ref. Table 1
CATEGORIES			
Description of action:		Education programs launched informing residents of the requirements relating to the reuse of grey water. This program was rolled out by the Environmental Health and Protection Team.	
Justification of selection:		The need for a comprehensive educational program relating to water conservation and grey water reuse.	
Date Implemented:		2002	
Where located:		Across the entire Hornsby LGA	
Related benefits of action:		Community understanding of water conservation and reuse in general	
What was measured:		Nil	

Cost of implementation: **Lifespan of product:** **Capital Outlay:**		Nil Not applicable Not applicable	

Wastewater treatments **CATEGORIES** **Description of action:** **Justification of selection:**	**1b**	Develop a guideline that supports the treatment and use of sewage from residential and commercial developments that meet health regulations for our state. This project is in planning/design stages. Such a guideline has not been developed as Council only supports the development of regional sewage treatment and reuse schemes rather than individual projects. Individual projects are not considered feasible in the Hornsby Local Government Area. Council is developing various sewer mining water conservation and reuse projects in conjunction with Sydney Water mainly related to the irrigation of open space. The need for improving water conservation and water reuse.	**N/A Design Phase**

Date Implemented:		Ongoing since 2005.	
Where located:		Across the entire Hornsby LGA	
Related benefits of action:		Reduction in treated effluent entering the Shire's waterways.	
What was measured:		Volume of water treated.	
Cost of implementation:		Various	
Lifespan of product:		Not applicable	
Capital Outlay:		Not applicable.	

Water Quality areas - Corporate Action Card - Milestone 5 ***Groundwater management***	**No. 1a**	**Key Initiatives**	**Points** Ref. Table 1
		Develop a planning policy to protect groundwater quality from the impact of de-watering of areas and exposure of acid sulphate soils. Council has adopted the Acid Sulphate Soil Manual developed by the EPA. Council has also prepared a draft local environmental plan and draft development control plan for Acid Sulphate Soils. These documents were submitted at Council's Planning meeting on 18 October 2006 and have been adopted, subject to any minor amendments as required by the Department of Natural Resources. The draft Local Environmental Plan (LEP) has now been referred to the Department of Natural Resources for review. Please see attached Council Report PLN303/06 and copy of the draft LEP.	
CATEGORIES			
Description of action:		Please see above.	
Justification of selection:		Protection of infrastructure and the protection of mangroves and saltmarsh habitat.	
Date Implemented:		2000. Please see current status as listed above.	
Where located:		Not applicable	

Related benefits of action:		Environmental effects of acid leachate generation on biodiversity.	
What was measured:		GIS maps adopted regarding the probability of acid sulphate soil developed by the state government.	
Cost of implementation:		Not applicable	
Lifespan of product:		Not applicable	
Capital Outlay:		Not applicable	

Groundwater management	**1b**	Undertake a review that assesses the environmental cost of de-watering of sites and establishment of canals for urban development on groundwater quality.	**Points** N/A
CATEGORIES			
Description of action:		This is not applicable to the Hornsby topography.	
Groundwater management	**1c**	Development of a 'de-watering' fact sheet for building and construction sites.	Ref. Table 1
CATEGORIES			
Description of action:		(Please see category of Sediment and Erosion Control)	

Community Water Conservation Action Cards

Hornsby Council has assisted the community in achieving water reduction since 1999 (our baseline for the ICLEI Water Campaign^{TM}) primarily by the implementation of the Water Sensitive Urban Design Development Control Plan (WSUD DCP) and Best Practices Manual. This Manual includes a range of elements aimed at guiding new development in the implementation of water saving measures in dwellings.

From 2004/2005 to 2005/2006 (ie post Milestone 4), **2,344** development applications for dwellings were received by Hornsby Council. Of these, 2,180 were for single houses on individual blocks.

A summary of the projected savings is displayed in Table below.
Sustainable Water DCP (Water Sensitive Urban Design)

Element Number	**Description**	**Projected Savings per dwelling per year - kL**
1	Dual flush toilets	70 kL
2	Low flow shower heads	50 kL
3	Tap flow restrictors	70 kL
4	Water efficient dish washers	6.5 kL
5	Water efficient clothes washing machines	13 kL
6	Water efficient gardens and irrigation systems	70.2 kL

Elements 1 to 5 are relevant to all **2,344 development applications** as these included multi-unit dwellings and new houses. This combination therefore results in a saving of **491,068 kLs** per year (Total of Elements 1 to 5 = 209.5 kLs x 2,344).

The Water Sensitive Urban Design DCP also promotes water efficient gardens and irrigation systems. It is estimated that these water efficient gardens will result in a saving of 70.2 kLs per year per dwelling. Given that 2,180 single dwellings, i.e. on a single block of land had the DCP applied to them over this period, it is estimated that these resulted in water saving of **153,036 kLs** per year.

In addition, Hornsby Council has had a Rainwater Tank Policy since 2000. Data supplied by Sydney Water indicates that **667 rainwater tanks** (rebate program) have been installed in the Hornsby Local Government Area since our Milestone 4 application. The average tank size is 5,000 L (DA is required for rain water tanks >10,000L, and 667 rainwater tanks are <10,000L. Council estimates 20,000 Ls (20kL) of water savings can be predicted per year per tank**.** This resulted in total water savings of **13,340 kL** per year from 667 rainwater tanks.

Community Water Conservation Action Cards

The Hornsby Council Sustainable Water DCP (Water Sensitive Urban Design) and Best Practices Manual have addressed the following Key Initiatives as outlined in the Water Campaign Community Water Conservation Action Cards:

Residential	
Influence	In conjunction with water retailers seek to achieve and record installation of dual flush toilets in the Hornsby LGA. In conjunction with water retailers seek to achieve and record installation of AAA shower roses in residential properties in the Hornsby LGA. Develop and implement planning controls that promote the principles of water sensitive urban design for residential developments. Develop and implement planning and building controls that support the installation of rainwater tanks to supplement mains water. Develop and implement water efficient garden design guidelines for use in planning applications. Develop and implement planning controls that achieve a water efficiency rating for new or renovated residential properties.
Education	In conjunction with water retailer, promote water efficient practices in and around the home for a general residential audience.
Non-residential sector	**Commercial and Industrial**
Influence	In conjunction with retailers seek to achieve and record installation of AAA shower roses in recreational properties in the Hornsby LGA.. Develop and implement planning and building controls that support the installation of rainwater tanks to supplement mains water in new and renovated non residential buildings.

CATEGORIES addressed as per the Community Water Conservation Action Cards include:

Type of device installed	Dual flush toilets Water efficient shower heads Water Sensitive Urban Design DCP Rainwater tanks Policy Water efficient garden design guidelines Water efficient dish washer Water efficient washing machine Tap flow restrictors
Justification of selection	Justification of selection of these conservation measures revolves wholly within Council's legislative ability to influence these choices in new development applications through the DA process.
Date implemented:	The Sustainable Water DCP (Water Sensitive Urban Design) and Best Practices Manual were initiated and applied in late 1998.
Number installed:	2,344 Development Applications have the Sustainable Water DCP (Water Sensitive Urban Design) applied to them. Of these, 2,180 were single dwelling houses.
Estimated number of uses / year	Many and various
Estimated litres saved by unit / year	Dual flush toilets, 70 kLs per year per dwelling Low flow shower heads, 50 kLs per year per dwelling Tap flow restrictors, 70 kLs per year per dwelling Water efficient dish washer, 6.5 kLs per year per dwelling. Water efficient clothes washing machine, 13 kLs per year per dwelling. Water efficient garden and irrigation systems, 70.2 kLs per year per dwelling. Rainwater tanks, 20,000L (20kL) x 667 = 13,340 kL.
Total kLs water saved / year	**491,068 kLs + 153,036 kLs** + **13,340 kLs** = **657,444** kLs per annum Note: When combined with savings from 1999 to 2004 (Milestone 4 – 1,606,636 kLs) this gives a total of 2,264 mLs per annum.
Projected cost to Council per annum	Employment of two Council staff (one in Planning Division and one Environmental Scientist)

The above calculation methodology has been approved by ICLEI.

In summary: Milestone 5 Community Water Conservation Actions are tabulated as follows:

Title of actions in Action Cards	Comments	Water saved (in kLs)
WSUD DCP 1. Dual Flush toilets 2. Low flow shower heads 3. Tap flow restrictors 4. Water efficient washing machines 5. Water efficient clothes washer	Water savings applied to 2,344 development applications since Milestone 4.	491,068 kLs
Water efficient gardens and irrigation systems	Water savings applied to 2,180 applications since Milestone 4.	153,036 kLs
Rainwater tank policy (since 2000)	667 rainwater tanks supplied since Milestone 4 application. These 667 rainwater tanks were in addition to those supplied for Milestone 4. Please refer to the attached email from Sydney Water. Using ICLEI's rainwater tank calculator, water savings achieved were 150,000 kLs	150,000 kLs
Rainwater tanks for 10 schools in the Hornsby Shire.	Council has successfully assisted 10 local schools in the Tankscape project. Ten rainwater tanks have been installed in these schools. Please refer to information attached on total water savings.	2,200 kLs

Rainwater tanks for 3 bowling clubs in the Hornsby Shire.	Council has successfully assisted three local bowling clubs for funding under the Community Water Grants for the installation of water savings infrastructure. Please see attached calculations of water savings using ICLEI's Rainwater Tank calculator .	792 kLs
	TOTAL kLs	**797,096 kLs**

Community Water Quality Action Cards

Community Water Quality Areas - Milestone 5		Key Initiatives	Points
Sediment and Erosion Control	**1a**	Develop and implement erosion and sediment control guidelines based on best management practices for developers/contractors working on construction sites. This action was implemented in 1998, action was reported on at M4, and relevant points have been awarded. It is now business as usual.	**M4 Actions**
CATEGORIES			
Description of Action:		In 1998, Hornsby Council developed the first Sustainable Water Development Control Plan and Sustainable Water Best Practices Manual (incorporating the Water Sensitive Urban Design concept) of any local government in New South Wales. This DCP is the primary document informing and educating contractors and developers as to best management practices for sediment and erosion control at building sites in the Hornsby Shire.	
Justification of selection:		The utilisation of a mandatory planning instrument to roll out sediment and erosion control to the building industry has been a logical and successful methodology.	
Date Implemented:		1998, continuously since that time.	
Where located:		Across the whole of the Hornsby LGA.	
Related benefits of action:		Knock-on' effects of the education of contractors and developers to areas outside Hornsby Shire LGA.	

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital outlay:**		The number of DAs assessed. The cost of the DCP development was absorbed by internal production. Ongoing with periodic review. Development Assessment Officers' time in implementing and rolling out this DCP through time.	

Sediment and Erosion Control - Continued. **CATEGORIES** **Description of Action:** **Justification of selection:** **Date Implemented:** **Where located:** **Related benefits of action:** **What was measured:** **Cost of implementation:** **Lifespan of product:** **Capital outlay:**	**3a**	Develop and circulate a series of educational brochures for erosion and sediment control in the building and construction sectors working in our Council area for site management. Implemented in 1998. This is now business as usual. Council periodically runs Sediment and Erosion Control workshops for contractors, builders and developers within the Shire at Hornsby RSL. Educational materials are distributed at these workshops. While the Water Sensitive Urban Design DCP is an excellent document, contractors need to have an understanding of the intricacies of the implementation of these suggested technologies. These educational programs ensure that this is the case for contractors operating within the Shire. 1998, continuously since that time. Training occurs at the Hornsby RSL. During these workshops, other issues such as water conservation and water reuse can be addressed with the participants. Attendance at workshops is measured. All internal training. Internal staff utilised to conduct training sessions. Not applicable Not applicable	**M4 Action**

Sediment and Erosion Control **Description of Action:**	**3b**	Develop and conduct an induction training session on erosion and sediment control for the building and construction businesses working in our Council area Please see (3a)	**M4 Action**
Sediment and Erosion Control **Description of Action:** **Justification of selection:**	**4a**	Develop and circulate a series of educational brochures for erosion and sediment control and containment of landscape materials for the nursery and landscape industry working in our Council area. Implemented 2001. Deals with sediment and erosion control, landscape material, herbicide and pesticide use. Please see attached pamphlets distributed at workshops and other venues when such information is necessary. In 2001 Hornsby Council conducted an audit of all nurseries within the Hornsby LGA. This audit formed the basis of an education pack which was developed and circulated to all nurseries to encourage better environmental practices within the nursery sector. This is a grant funded project under the NSW EPA. Sediment and erosion control, landscape material, herbicide and pesticide are all dealt with within this educational program. The nursery industry is a significant user of water and landscaping materials and can have a potential impact on resident practices within the Shire, so the logic of educating this industry sector can result in many positive outcomes.	Ref Table 2

Date Implemented:		2001	
Where located:		Nurseries across the Shire.	
Related benefits of action:		Knock-on' benefits to residents of the Shire.	
What was measured:		Production of educational packs for nurseries.	
Cost of implementation:		$70,000 external funding.	
Lifespan of product:		Ongoing with review	
Capital outlay:		Not applicable.	

Sediment and Erosion Control **Description of Action:**	**4b**	Develop and conduct induction training session for nursery and landscape industries in our Council area to adhere to best management practice. Implemented 2001. Deals with sediment and erosion control, landscape material, herbicide and pesticide use. Please see attached pamphlets distributed at workshops and other venues when such information is necessary. Please see 4a.	Ref Table 2
Sediment and Erosion Control **Description of Action:**	**5a**	Develop and implement an education campaign focused on sediment and erosion control. Please see 1a and 4b above.	Ref Table 2

Community Water Quality Area Milestone 5		Key Initiatives	Points
Gross litter trapping **CATEGORIES**	**1a**	Undertake a periodic review of recycling services provided to ratepayers to promote appropriate separation of materials. Milestone 4 action and relevant points have been awarded.	**M4 Action**
Description of Action:		The Waste Management Team within the Environment Division in Hornsby Council conducts periodic reviews of recycling services through the assessment of statistical data on recycling rates and through the distribution of surveys to residents.	
Justification of selection:		The recycling industry is evolving constantly and needs to be periodically reviewed to ensure that best practice is adhered to in the Hornsby local government area.	
Date Implemented:		Continuously.	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		To improve Council's waste reduction targets to landfill.	
What was measured:		Volume of recyclables.	

Cost of implementation: **Lifespan of product:** **Capital outlay:**		Internal, via the Waste Management Team Not applicable Not applicable	

Gross litter trapping **Description of Action:**	**1b**	Undertake a periodic review of the effectiveness of the recycling method undertaken in the Council area and respond to improvements necessary to prevent litter generation. Milestone 4 action and relevant points have been awarded. Please see 1a above.	**M4 Action**
Gross litter trapping **CATEGORIES** **Description of Action:**	**2a**	Develop a bylaw that prevents the dumping of rubbish on public land. Implemented since 2001. Action reporting complete for 2a, 2b and 2c. Hornsby Council has appropriate powers under the NSW Local Government Act to impose fines and penalties for the dumping of rubbish on public land.	Ref Table 2

Justification of selection:		Dumping in remote areas of the Shire is an ongoing problem and requires constant surveillance. To this end, Council has employed a permanent full time illegal dumping officer who operates in the Waste Management Team in the Environment Division.	
Date Implemented:		2001	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		Reduction in visual pollution and increased biodiversity.	
What was measured:		Number of dumping incidents	
Cost of implementation:		One full time staff member and car	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Gross litter trapping **CATEGORIES**	**2b**	Remove dumped rubbish immediately from public land and attempt to identify persons involved.	Ref Table 2
Description of Action:		This is the job description of the dedicated illegal dumping officer within Council who has both a compliance and educational role.	
Justification of selection:		As in 2a	
Date Implemented:		2001	
Where located:		Across the entire Hornsby LGA	
Related benefits of action:		Reduction in leachate emanating from dumped material.	
What was measured:		Number of dumping incidents	
Cost of implementation:		One full time staff and car	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Gross litter trapping **CATEGORIES**	**2c**	Install local laws signage on public land to deter the dumping of rubbish	Ref Table 2
Description of Action:		Signage has been erected at high incident dumping spots and closed circuit TV surveillance has been installed in an effort to apprehend repeat offenders.	
Justification of selection:		As the NSW EPA increases the cost for taking waste materials to landfill, incidents of illegal dumping has increased, as such, there is a need for Council to resource this area.	
Date Implemented:		2001	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		As above	
What was measured:		Number of dumping incidents	
Cost of implementation:		One full time staff and car, and legal cost.	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Gross litter trapping **CATEGORIES**	**3a**	Develop a cigarette butt education program to educate the community about the problems associated with polluting waterways with cigarette butts. Implemented in 2003. This action was reported on and included in the points attained at Milestone 4.	**M4 Action**
Description of Action:		In conjunction with the Sydney Coastal Councils Group (SCCG), Hornsby Council has developed a "cigarette butts' program which consisted of written and visual material addressing the impact of cigarette butts on waterways within the areas of the Sydney Coastal Councils. SCCG was established in 1999 under the NSW government to promote co-ordination between member councils on environmental and natural resource management issues relating to the sustainable management of the urban coastal environment.	
Justification of selection:		Cigarette butts are difficult to remove from waterways due to their size, and in some areas, these can be of a quantity to cause problems from both ecological and visual perspectives.	
Date Implemented:		2003	
Where located:		Across the entire Hornsby LGA.	
Related benefits of action:		As an added benefit to the life education program related to public health and smoking.	

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital outlay:**		Nil Nil Not applicable Not applicable	

Community Water Quality Area Milestone 5		Key Initiatives	Points
Nutrients **CATEGORIES**	**1a**	Develop and circulate educational material that promotes the collection of organic litter for composting or recycling This action was reported on at Milestone 4, and relevant points have been awarded.	**M4 Action**
Description of Action:		The Waste Management Team in the Environment Division in Hornsby Council provides educational material on all levels of recycling and composting inserted in Rates notices and via educational programs to schools.	
Justification of selection:		This helps with Hornsby Council's target of 66% reduction of waste to landfill by 2020.	
Date Implemented:		Continuously since 2002.	
Where located:		Across the entire Hornsby LGA.	
Related Benefits:		Encouragement of recycling within the home.	
What was measured:		Volume of recycled material and volume to landfill.	
Cost of implementation:		Staff time and recycled collection contracts.	
Lifespan of product:		Not applicable	

Capital outlay:		Various	

Community Water Quality Area Milestone 5		**Key Initiatives**	**Points**
Nutrients	**1b**	Develop a local law that prevents an owner leaving dog faeces in public spaces This action was reported on at Milestone 4, and relevant points have been awarded.	**M4 Action**
CATEGORIES			
Description of Action:		Under the NSW Local Government Act and under the Companion Animals Act, Hornsby Council has the power to impose fines on dog owners leaving faeces in public spaces. Hornsby Council has developed a number of leash free dog runs across the Shire with facilities to encourage dog owners to collect their dog faeces and put in plastic bags and dispose these in the storage bins provided	
Justification of selection:		This action is deemed appropriate from the point of view of visual amenity, nutrient impact on waterways and the spread of disease.	
Date Implemented:		Continuously since 1998.	
Where located:		Leash free runs across the Shire.	
Related Benefits:		Education of the community on general environmental awareness.	
What was measured:		Leash free runs production.	

Cost of implementation: **Lifespan of product:** **Capital outlay:**		Various, up to $50,000 per leash free run. Not applicable Up to $50,000 per leash free run.	

Community Water Quality Area Milestone 5		**Key Initiatives**	**Points**
Nutrients **CATEGORIES** **Description of Action:** **Justification of selection:** **Date Implemented:** **Where located:** **Related Benefits:**	**1c**	Install local laws signs at public open space on the collection and appropriate disposal of dog faeces. This action was reported on at Milestone 4, and relevant points have been awarded. Suitable signage has been installed at high use dog exercise parks across the Shire. As above. Continuously since 1998. All local dog exercise areas across the Shire. Public health issues in dog exercise areas, and public enjoyment at public open space.	**M4 Action**

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital outlay:**		Number of signs erected. Minimal Not applicable Not applicable.	

Community Water Quality Areas - Milestone 5		Key Initiatives	Points
Wastewater treatment	**1a**	Promote Council guidelines that support the use of residential and commercial generated grey water and rainwater on site that meet health regulations for our State in residential and commercial developments. Hornsby Council adopts the approach taken by NSW Health in terms of grey water treatment systems with regard to public health. Council has issued a fact sheet on Use of Greywater (attached) for distribution as and when required.	Ref Table 2
CATEGORIES			
Description of Action:		Council has rolled out a Grey water and Reuse Policy and supporting brochures and documentation and has also rolled out a Rainwater Tank Policy and supporting brochures and documentation.	
Justification of selection:		This program is based on the recommendations of the NSW Health Department and the NSW Environment Protection Authority.	
Date Implemented:		2004, and ongoing.	
Where located:		Across the Shire.	
Related Benefits:		Public health, water conservation and water reuse.	

What was measured:		Number of applications to install grey water systems and number of applications to install rainwater tanks although this is only for rainwater tanks above 10,000 litres when residents need to undertake a development application.	
Cost of implementation:		Nil cost to Council, residents installing rainwater tanks receive rebates from Sydney Water.	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Community Water Quality Areas - Milestone 5		**Key Initiatives**	**Points**
Wastewater treatment	**1b**	Promote Council guidelines that support the treatment and use of sewage from residential and commercial developments that meet health regulations. This project at design phase.	Ref Table 2
CATEGORIES			
Description of Action:		Council does not support individual projects relating to sewage treatment and reuse unless it is of an appropriate scale.	

		Council is currently working with Sydney Water on a raft of sewage treatment and reuse (sewer mining) projects which will have both local and regional benefits.	
Justification of selection:		Sewage treatment and reuse on a small scale is not economical and regional reticulation systems need to be developed.	
Date Implemented:		Various projects currently at design stage.	
Where located:		Across the entire Hornsby shire.	
Related Benefits:		Reduce flows from Sewage Treatment Plants (STP) into local waterways.	
What was measured:		Litres of effluent treated and reused.	
Cost of implementation:		Various, millions.	
Lifespan of product:		Various	
Capital outlay:		Various	

Community Water Quality Areas - Milestone 5		Key Initiatives	Points
Wastewater treatment	**2a**	Monitor the effectiveness of sewage pump out facilities for boats at all marinas within our LGA through periodic user surveys.	Ref Table 2
		Implemented since 2002. Program ongoing	
CATEGORIES			
Description of Action:		Hornsby Council conducted marina surveys in 1998 to establish what marinas are doing in regard to both sewage management and stormwater management. An education pack was developed under a NSW EPA government grant and follow-up audits conducted. These audits / educational programs are periodically undertaken to assess the success of the program. The Kangaroo Point Pumpout Facility is continuously monitored and measures the volumes of pumpout from vessels other than those discharged at the marinas.	
Justification of selection:		The impacts of raw sewage effluent from vessels into the Hawkesbury estuary can be significant from both a public health and environmental perspective.	
Date Implemented:		Continuously since 2002.	
Where located:		At the Kangaroo Point Pumpout Facility and the 14 marinas across the shire.	
Related Benefits:		Boat owners have a better understanding of the impacts of their activities at home if educated about the impact of their activities on the water.	
What was measured:		Volume of effluent pumpout	

Cost of implementation:		$60,000 per annum for the operation of the Kangaroo Point Pumpout Facility	
Lifespan of product:		50 years	
Capital outlay:		$500,000	

Community Water Quality Areas - Milestone 5		**Key Initiatives**	**Points**
Wastewater treatment	**2c**	Implement a program that will see all private properties connected to sewer or the effective containment of septic systems by target year.	Ref Table 2
CATEGORIES		Implemented since 1998. Ongoing commitment of 4 staff members and associated costs.	
Description of Action:		The NSW government established the Priority Sewage Treatment Scheme in 1998 which is to address some 52 unsewered areas across the Greater Sydney Metropolitan Area. Hornsby Council has been working with Sydney Water on addressing this issue and has developed a Priority Sewage Treatment Scheme with these unsewered areas. Currently, the areas of Brooklyn, Dangar Island and Mount Ku-ring-gai Industrial area have completed design works and construction has commenced.	

		In addition to this, under the NSW government legislation Council has primary responsibility for the ongoing audit assessment and licensing of onsite sewage treatment disposal systems. To this end, Council has employed 4 full time permanent officers to manage onsite sewage treatment, audit and licensing programs within the Shire.	
Justification of selection:		Water quality monitoring across the Shire has identified that unsewered areas are contributing a significant amount of faecal coliforms and nutrients to the surrounding environment.	
Date Implemented:		Continuously since 1998.	
Where located:		Across the entire Hornsby LGA.	
Related Benefits:		Improved public health in rural sectors and improved biodiversity in rural sectors.	
What was measured:		Establishment of a database on onsite disposal systems which integrates all systems of high, medium or low risks and assigns periodic reviews on this basis.	
Cost of implementation:		4 full time staff members and 4 motor vehicles and associated administrative costs.	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Community Water Quality Areas - Milestone 5		Key Initiatives	Points
Wastewater treatment	**3**	Promote WSUD leadership projects in infill and green field sites. Ongoing since 1998. This is now business as usual.	Ref Table 2
CATEGORIES			
Description of Action:		Hornsby Council's Water Sensitive Urban Design Development Control Plan (DCP) promotes innovative best practices in water management on all infill and green field sites.	
Justification of selection:		While Council has limited green field areas, infill development is happening to a significant extent and the Water Sensitive Urban Design DCP is the primary instrument by which Council is promoting best practices in water management.	
Date Implemented:		Continuously since 1998	
Where located:		Across the Hornsby LGA.	
Related Benefits:		Knock-on effects of better water management in new developments related to other environmental issues such as energy consumption.	
What was measured:		The number of Development Applications assessed against this development control plan.	

Cost of implementation: **Lifespan of product:** **Capital outlay:**		Nil, apart from DA assessment and staff time. Not applicable Not applicable	

Community Water Quality Areas - Milestone 5	No.	Key Initiatives	Points
Herbicide, pesticide and fertiliser use	**1a**	Develop and circulate educational brochures on ways to minimise herbicide, pesticide and fertiliser use in private gardens. Implemented since 1994, this is now business as usual. Council distributes copies of the list of Noxious Weeds for the Hornsby LGA, including Weed Control Techniques, at workshops and other venues, when required. A copy of the list of Noxious Weeds is enclosed.	Ref Table 2
CATEGORIES			
Description of Action:		Hornsby Council operates an extensive bushcare program utilising 900 volunteers across the Shire. This group is used as a 'seed' group for the circulation of educational material to the general public relating to vegetation management. Each member of the group has to register with Council's Bushland and Biodiversity Team. After registration, they undertake a 1/2 day workshop. Members need to renew their registration every 3 years by doing a refresher course. These workshops are on the technical aspects of bush regeneration, garden care, how to use herbicide, pesticide and fertiliser and OH&S.	
Justification of selection:		The use of the bushcare volunteers network to deliver this education to the community has been extremely successful due to the commitment of the volunteers.	
Date Implemented:		Continuously since 1994.	

Where located:		Across the entire Hornsby LGA	
Related benefit:		Increased health of waterways	
What was measured:		Number of workshops delivered to bushcare volunteers.	
Cost of implementation:		Inhouse training	
Lifespan of product:		Not applicable	
Capital outlay p.a.		Not applicable	

Herbicide, pesticide and fertiliser use **Description of Action:**	**1b**	Develop and circulate educational materials to farmers on ways to minimise herbicide, pesticide and fertiliser user in paddocks. The Rural Lands Incentive Scheme as developed by the Bushland and Biodiversity Team of Hornsby Council addresses the use of best management practices for native vegetation on private lands. This program is currently being rolled out to rural residents in the Shire. Please see attached Rural Land Incentive Program brochure and summer workshop details for rural residents. Some of the workshops are provided by Council free of charge, others attract a nominal fee. Workshops cover the topics of Bushland Birds, Finding Fauna walk, Property Planning Workshop, Growing Native Plants, and What Grass is that.	Ref Table 2

Justification of selection: **Date Implemented:** **Where located:** **Related benefit:**		The Rural Lands Incentive Scheme covers terrestrial ecosystem management issues relating to private land holdings. 2005 Rural areas of the Shire Not only the impacts of herbicide, pesticide and fertiliser use are addressed in this program, best management practices for terrestrial ecosystems are encouraged from rural landholders.	

What was measured: **Cost of implementation:** **Lifespan of product:** **Capital outlay p.a.**		Uptake of the Rural Lands Incentive Program. Of the 2000 rural properties that are eligible in the Rural Lands Incentives Program, Council's Weeds Officer has visited 80 properties in the Hornsby Shire and 40 of these properties visited are involved in this program. Staff time and material. Not applicable Not applicable	

Herbicide, pesticide and fertiliser use **CATEGORIES** **Description of Action:**	**1c**	Develop and circulate educational brochures on ways to minimise herbicide, pesticide and fertiliser use in nursery industries. (Please see Sediment and erosion control 4a and 4b)	Ref Table 2

Herbicide, pesticide and fertiliser use **CATEGORIES** **Description of Action:**	**2a**	Develop and implement workshop program to minimise herbicide, pesticide and fertiliser use in private gardens, paddocks and industry. Please see 1a to 1c.	Ref Table 2

Herbicide, pesticide and fertiliser use **CATEGORIES** **Description of Action:**	**2b**	Develop educational material to reflect environmental benefits through gardening practices. (Please see 1a above)	

Herbicide, pesticide and fertiliser use **CATEGORIES** **Description of Action:** **Justification of selection:** **Date Implemented:** **Where located:**	**4a**	Council to supply free or subsidised mulch to their ratepayers for private garden use Milestone 4 action reported and points have been awarded. All green waste generated by Council is transported to the Community Nursery at Pennant Hills where it is mulched, and made available to ratepayers across the Shire. These recyclables are otherwise wasted resources. Continuously since 1995. Community nursery at Pennant Hills.	**M4 Action**

Related benefit:		The use of mulch in private gardens helps reduced water loss and encourages water conservation and reuse practices for the garden.	
What was measured:		Nil	
Cost of implementation:		staff time, various	
Lifespan of product:		Not applicable	
Capital outlay p.a.		The periodic hiring of a tub grinder to produce mulch.	

Community Water Quality Areas - Milestone 5		Key Initiatives	Point
Other	**1a**	Identify an integrated education program targeting water quality and water consumption Implemented 2005. Ongoing commitment. Please find enclosed the Environment Division Education Strategy produced by Council's Environment Educators. Also, the Water Catchments Team Education Officer has conducted visits to schools in the Hornsby LGA to provide environmental education. (Please refer to attached info re engagement with schools in environmental education since 2004).	Ref Table 2
CATEGORIES			
Description of Action:		The Environment Division at Hornsby Council has developed an integrated environment education program which includes actions relating to water quality, water conservation and water reuse. This program is rolled out by 4 education officers distributed within the Environment Division Teams.	
Justification of selection:		The need to educate people on water conservation and reuse, especially in view of the current climate change debate.	
Date Implemented:		2005	
Where located:		Across the entire Hornsby LGA.	

Related benefits of action:		The integrated environment education program covers education programs relating to water, energy and biodiversity.	
What was measured:		Work plans have been developed for individual streams with specified timeframes for the roll-out of actions within the integrated education management strategy.	
Cost of implementation:		Nil, internally developed by staff.	
Lifespan of product:		Not applicable	
Capital outlay:		Not applicable	

Community Water Quality Areas - Milestone 5		**Key Initiatives**	**Point**
Other	**1b**	Develop and implement an integrated education program targeting water quality and water consumption for an identified community sector.	Ref Table 2
CATEGORIES			
Description of Action:		There is a significant schools component of the Environment Division's Integrated Education Management Plan. (Please see 1a)	

Appendices

Appendix A	Water Conservation Policy
Appendix B	Corporate and Community Checklists for Water Quality and Water improvement.
Appendix C	Catchment Remediation Rate (CRR): • Your Catchment Remediation Rate at work pamphlet • Catchment Remediation Program Five-Year Plan Capital Investment 2002-2007 • Catchment Remediation Program Five-Year Plan Capital Investment 1997-2002 • CRR Council Assets 2004-2006 • Your Catchment Remediation Rate 12 Years of improving our waterways 1994-2006 brochure • Catchment Remediation Rate Fact Sheet
Appendix D	DEUS Hornsby Water Savings Action Plan (approved by DEUS)
Appendix E	Sydney Water information: • Water consumption Hornsby LGA 1999-2006 financial year summary • Sydney Water Supply Area Use by Use Type 2001-2002 • Email from Mylissa Killan Re Rainwater tank installation during 2005/2006 at Hornsby LGA
Appendix F	Hornsby Shire Information pamphlet: Water Efficiency – Rainwater Tanks
Appendix G	Hornsby Shire Information pamphlet: Sewage management – Use of greywater Hornsby Shire Greywater Reuse in Your Home PowerPoint – Earthwise at home presentation by Environmental Health and Protection Team. Information on the Earthwise workshop program
Appendix H	Bushland related pamphlets: • Listed Noxious Weeds for Hornsby Shire Council • Rural Land Incentives program • Gardens for Wildlife in Hornsby Shire • Guided Bushwalks program • Native Plants recommended for growing near a water course

Appendix I	Water Quality Fact Sheet
Appendix J	Kangaroo Point Vessel Pumpout Facility – Users Guide
Appendix K	Hornsby Shire Map of Catchments
Appendix L	Population Projections January 2004 to June 2010 – extracted from the Australian Bureau of Statistics 14 May 2003
Appendix M	Sustainable Water Development Control Plan and Sustainable Water Best Practice
Appendix N	Total Water Cycle Management Strategy in pdf on CD.
Appendix O	Department of Commerce Water Audit 4 top sites Hornsby Council Chambers and three Aquatic Centres for DEUS Report in pdf. (on CD)
Appendix P	Additional supporting information: Rainwater Tank Calculations for Council buildings, bowling clubs, 10 local schools, community nursery and 3 Council parks. Environment Division Education Strategy Water Catchments Environmental Education Action Plan Review of Environmental Factors (REFs) template REFs for creek remediation

To access information on the above, please email Katie Clarke, Special Projects and Administration Officer, Water Catchments Team on kclarke@hornsby.nsw.gov.au