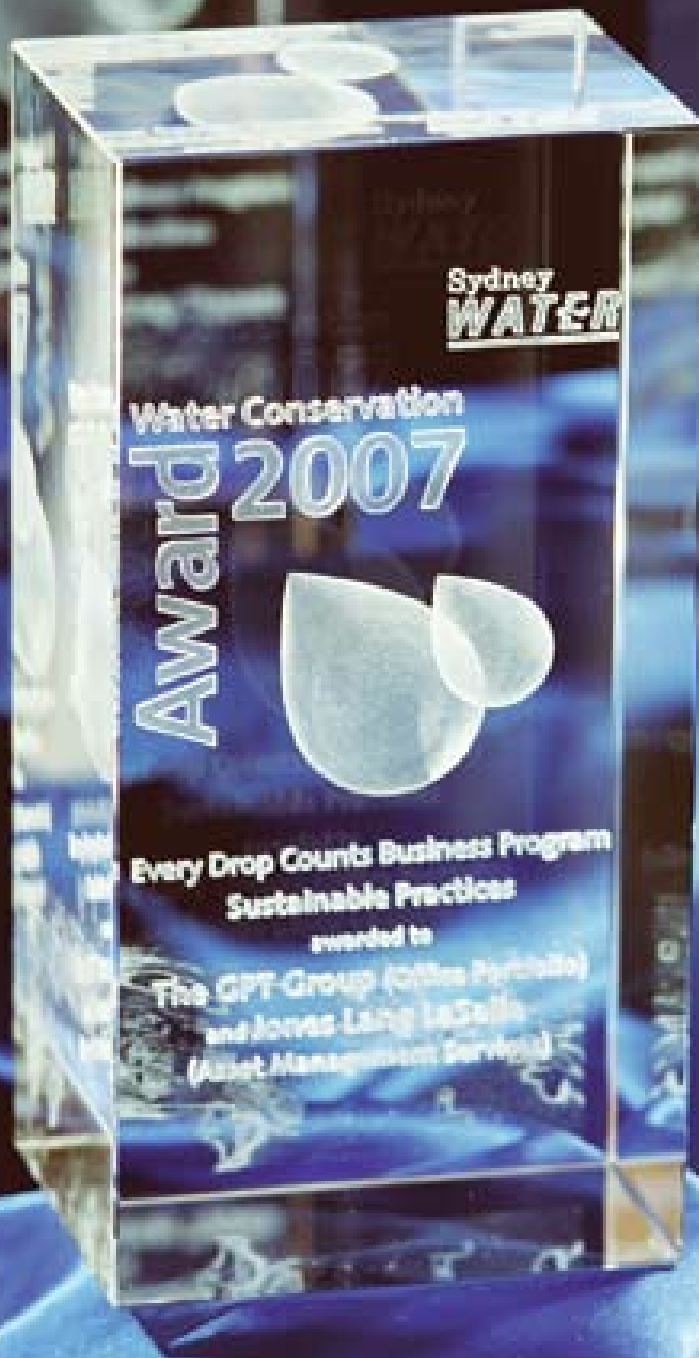


# The Conserver

JANUARY 2008 BUSINESS BULLETIN • ISSUE 14





On our cover...

The EDC Water Conservation Awards recognised key achievements in water conservation during the past year. See the full story on page 7.

## Contents

From the Managing Director	1
Diageo's water watchers	2
70 billion litres of wastewater recycled by 2015	4
Toyota's drive to save water	6
2007 Water Conservation Awards	7
Our fields need more water – or do they?	10
New benchmarks	12
Water efficiency in a capsule	13
Juicy savings at P&N	14
Solutions: Rinse it smart	16
Why monitoring matters	17
This quarter's new business partners	19

## For your next eco-friendly action....

Email your staff and encourage them to install a free DIY Water Saving Kit in their home. Each kit contains shower flow aerators and basin tap flow regulators. Once installed, they can save households about 16,000 litres of water a year (\$50 a year on water and energy bills). Staff can register by simply completing the online registration details. Sydney Water will then send out a free kit.

### Please direct your staff to:

[www.sydneywater.com.au/SavingWater/InYourHome/DIYWaterSavingKit/DoItYourselfKit.cfm](http://www.sydneywater.com.au/SavingWater/InYourHome/DIYWaterSavingKit/DoItYourselfKit.cfm)  
or contact your EDC Project Officer for a sample email template.

Sydney Water apologises for any confusion arising from the following omission in Issue 13 of *The Conserver*: In the article "Amenities go retro", the third last paragraph on page 7 should have read "Hornsby Tafe has cut its water use by about 30 per cent."

# From the Managing Director



This is the final edition of *Conserver* for 2007. Thank you to all Every Drop Counts business partners for your continued support over the past year.

It is often assumed that business and industry use the greatest share of water in Sydney, and that they do less than households to conserve Sydney's water supply.

The reality is different. Non-residential users – including all businesses, industry, government bodies and irrigators – account for only 30 per cent of the water used in Sydney, the Illawarra and the Blue Mountains. On top of this we can point to 379 of Sydney Water's largest customers that have enthusiastically embraced the EDC approach in managing their water resources. The relatively simple and cost effective changes they have adopted are saving the community significant amounts of water and reducing the organisation's overheads.

The statistics speak for themselves.

The 379 EDC Business partner organisations have achieved sustainable water savings of more than 12 billion litres a year – enough to supply more than 50,000 households. These organisations are sharing annual operational cost savings of more than \$3 million (based on water use and discharge costs alone). The investment required to achieve these savings varies from company to company, but are typically paid for by costs savings in at most a few years.

Participating in the EDC Program offers far more than just cost savings. It demonstrates a commitment to marrying business efficiency with environmental awareness. And in turn this encourages staff and customers to do their bit to conserve water.

In several cases, the improvements adopted by EDC Business Program participants in Sydney have proved so successful that they have been applied across other parts of the company, both in Australia and abroad.

The EDC Program has developed as a practical response to the challenge of reducing water consumption in businesses. It has been a catalyst for change, and has enabled businesses to reduce their environmental impact in a cost effective and sustainable way.

Managing water resources in a time of climate uncertainty will be an ongoing challenge for us all. In this environment, companies demonstrating a commitment to water conservation today will increasingly be hailed for their far-sighted leadership.

On behalf of the EDC Business Program team, we wish you all a happy and safe Christmas period. Sydney Water looks forward to a successful and rewarding 2008 in partnership with you.

Kerry Schott  
MANAGING DIRECTOR

Water conservation is not just about the statistics and graphs. As Diageo shows, it's the people that really drive the water savings.



Diageo's "Waterwatch" team in action.

### The strong water saving team culture at Diageo's Huntingwood plant means the drinks maker is saving water locally and leading the way globally.

Diageo Huntingwood established a WaterWatch team in 2003. The team is made up of about 16 staff volunteers who are so passionate about water conservation that they find valuable time, in spite of their already hectic work schedule, to spread the word about saving water in the workplace.

The team is led by Edwin Manlangit, Bulk Store Operator at Huntingwood, and has representatives from all parts of the business. Everyone is encouraged to share ideas and communicate.

The team produces a WaterWatch team newsletter and Edwin has organised and run staff water awareness presentations. Edwin is also taking the water conservation message into the home, by helping to organise the distribution of Sydney Water household DIY water savings kits to staff.

The WaterWatch team has helped to create something invaluable to any business that no amount of money can secure – culture.

"I think the most satisfying achievement of the group is to see what we have been creating: positive attitudes and sustainable working practices around water conservation". Edwin explains, "this is being recognised and accepted by the people of Diageo Australia as part of our day-to-day way of working".

As the culture created by the WaterWatch team flourishes, so too have the water saving projects. Since the beginning of 2007, Diageo Huntingwood has saved over 24ML of water – a reduction of more than 15 per cent.

Right: Diageo's WaterWatch Project Leader Edwin Manlangit with the new cleaning nozzles which are saving the company water and money.

# Diageo's



# water watchers



Diageo's Huntingwood Facilities Manager Mr. Bob Cable with Sydney Water's Project Officer Paul Kelly. Bob monitors water use at numerous points in the plant.

**“I think the most satisfying achievement of the group is to see what we have been creating: positive attitudes and sustainable working practices around water conservation”**

In December last year, Diageo Huntingwood achieved an astonishing target of just 1.1 litres of water used for every litre of product produced. This is almost half the amount used in 2001 and a further reduction from the 1.4 litres achieved in 2004.

Chris Stevens, Sustainability Manager of Diageo Australia, attributes Diageo's amazing water efficiencies to the three pillars of:

- continuous improvement
- capital investment in water saving projects and technology
- constant maintenance through detailed daily monitoring.

Diageo has invested in the latest technology monitoring system. This is helping the site make further strides in water conservation.

The monitoring technology was originally designed for building management but has been adapted and expanded for Diageo's manufacturing requirements.

The technology instantly monitors water use across the entire Huntingwood site. It enables the team to look at real time water usage trends in equipment such as conveyor lines, bottle warmers and clean in place processes.

The Huntingwood site has a reverse osmosis (RO) system that produces very high quality water for drinks manufacture. The monitoring system has enabled the team to monitor the performance of the RO system and see exactly what happens to resource use during shift changeovers and after hours activity.

To get the most from the monitoring system, Diageo has expanded its office based computing system to include two dedicated laptops that enable the user to log in to the system remotely through a wireless internet connection. This means the team isn't restricted to the office, and can check live production parameters from anywhere in the plant or off-site.

Since installing the system, the team has already identified significant opportunities to save water and energy across the site.

In line with the active conservation culture that exists throughout the Huntingwood site, wastewater, electricity, gas and even compressed air levels can be observed with the monitoring system. This means that even more resource conservation projects can be identified.

The hard work of the WaterWatch team and their colleagues at Huntingwood has not gone unnoticed.

At the Diageo Global Conference in Amsterdam this year, Diageo Australia's Sustainability Manager, Chris Stevens was asked to present on Huntingwood's WaterWatch model. This is now going to be used as part of the template for the rest of Diageo's worldwide operations.

Diageo is the largest maker of alcoholic beverages in the world. The Huntingwood site is one of two in Australia. Diageo also has operations in the UK and Europe, North America, Africa, Latin America, Asia and the Caribbean.

The outstanding achievements of the WaterWatch team were also recognised at Sydney Water's Water Conservation Awards for the last two years running.

The success of Huntingwood's monitoring system is also being observed by Diageo Global. And with the culture continually growing around the WaterWatch team, it seems the only way is up.

## Diageo Huntingwood has saved over 24ML in eight months

Conditioning Smirnoff charcoal	0.7ML
Changes to cleaning procedures	1.2ML
Line lube variations	2.0ML
Vacuum cooler pumps	3.5ML
Spray nozzles for bottle washing	4.5ML
Optimising RO system/water recovery	12.2ML
<b>Total savings from January to August 2007 (82kL/day)</b>	<b>24.1ML</b>



In 2006-07, Sydney Water increased the amount of wastewater recycled from 15 to over 22 billion litres a year.



**70 billion litres  
of wastewater**

**This was due to:**

- the commissioning of the Wollongong Recycling Plant in September 2006 to supply BlueScope Steel with recycled water. This is Australia's largest industrial water recycling project
- the expansion of recycling in Rouse Hill, Australia's largest residential recycling scheme
- many smaller local projects to irrigate farms, golf courses, sports grounds, parks and racecourses.

A reverse osmosis unit. Reverse osmosis is a key process technology producing recycled water for BlueScope Steel.

**recycled**  
by **2015**



# case study

## Liverpool to Ashfield pipeline

In July 2006, Sydney Water awarded the contract to Leighton Contractors for a 24 km pipeline between Liverpool and Ashfield.

The project is part of the \$180 million South Western Sydney Sewerage Scheme to provide additional wastewater services for a growing population.

The Liverpool to Ashfield pipeline is the backbone of a developing recycled water grid. At just over a metre in diameter and 24 km long, it will cross eight local government areas, nine watercourses, nine major roads and eight sets of railway tracks. Work began in November 2006.

Sydney Water will eventually provide recycled water to homes, businesses and industry from the Liverpool-Glenfield area in the south-west, along the Parramatta Road corridor and potentially into the Botany area.

In June 2007, the project passed the halfway stage. It is expected to be completed by mid 2008.



**By 2015, Sydney, the Illawarra and the Blue Mountains will be recycling at least 70 billion litres of wastewater a year – about 12 per cent of the water supply. This includes recycling for homes, industry, irrigation and to replace environmental flow releases from Warragamba Dam to the Hawkesbury-Nepean River.**

## Recycling for industry

Recycled water will be provided to industry in the Camellia and Smithfield areas. The new plant, at Fairfield Sewage Treatment Plant, is expected to be operational in early 2011. It will be delivered and operated by the private sector.

The Wollongong Recycled Water Plant will be expanded to provide recycled water to the Port Kembla Coal Terminal and irrigation customers from mid 2008.

Work on a new recycled water project at West Camden Sewage Treatment Plant is near completion. This will irrigate turf, lucerne crops and dairy farm pastures at the Elizabeth Macarthur Agricultural Institute.

## Recycled water to replace some environmental flows

In June, the contract was approved for the advanced wastewater recycling plant at St Marys. The plant will provide recycled water to replace drinking water currently released from Warragamba Dam for river health. The preferred tenderer was Deerubbin WaterFutures Consortium consisting of United Group Infrastructure, McConnell Dowell Constructors (Aust) and General Electric Betz.

Wastewater from St Marys, Penrith and Quakers Hill sewage treatment plants will be treated at this new recycling plant.

For Toyota Australia, water efficiency is an all important target, ably demonstrated at its Caringbah site.

# Toyota's drive to save water

**Car maker Toyota Australia has slashed water use by nearly half at its Sydney warehouse and administration centre in Caringbah.**

Toyota joined the EDC Business Program in 2006. Since then, water use at the southern Sydney site has dropped by 45 per cent to 49 kilolitres a day, cutting water costs dramatically.

The car maker attributes its rapid savings to a transformation in its culture of water management, prompted by membership of the EDC Business Program.

Toyota's Caringbah site has two major storage warehouses, commercial buildings with two commercial kitchens, training centres, a three hole golf course and a landscaped area with water features.

Within nine months of joining EDC, Toyota progressed from a 1-star to a 3-star rating in the One-2-Five Water management diagnostic.

Toyota management set clear objectives to reduce water use, participate in the program and implement critical actions from the One-2-Five sessions.

Making Toyota's Caringbah site more water efficient is an important part of Toyota Australia's Environment Plan. The plan sets targets for water, energy, waste, paper and carbon dioxide emissions across all its sites.

"Sydney Water's EDC Business Program has worked well with Toyota Australia at Caringbah. We have achieved realistic savings and these initiatives are now being expanded to Toyota operations in other states," Rob Gooch, Toyota Australia's Divisional Manager in charge of facilities management said.

The lessons from Caringbah have been applied at the company's headquarters in Melbourne. With the help of a 330,000 litre rainwater tank, water use there has been reduced by 54 per cent.

Toyota's continuous improvement programs have also been applied to the Victorian production facility. Water use in the manufacture of Camry and Aurion cars has been reduced by 30 per cent per vehicle over the past two years.



## What Toyota Australia did to save water

Under the leadership of Toyota's senior management the car maker has:

- identified clear objectives for water conservation with roles and responsibilities
- carried out an efficiency review of the irrigation system
- identified improvements in urinal water use
- installed rainwater tanks
- explored alternative water supplies including recycled water from Cronulla Sewage Treatment Plant and stormwater harvesting in conjunction with Sutherland Shire Council.

After a water efficiency audit, Toyota:

- installed sub-meters
- began a monitoring program
- engaged Aqualoc to retrofit most water fixtures
- trialled waterless urinals
- made improvements to irrigation practices and scheduling.

Top: Toyota's Brad Taylor regularly takes manual checks of the sub meters as part of a site wide monitoring program.  
Above: (L-R) Toyota's Brad Taylor, Sydney Water's Project Officer Fernando Ortega, and Toyota's Tony Walsh by the rainwater tanks which were recently installed for irrigation and car washing.  
Centre left: Toyota has actually reduced its use of drinking water outdoors while maintaining a lush green environment for staff to enjoy.



# 2007 Water Conservation Awards

Every Drop Counts Business Program

Sydney Water recognised companies and individuals that have demonstrated outstanding progress and leadership in water efficiency at the 2007 Every Drop Counts Water Conservation Awards. Five companies and 15 individuals received awards on the night. The awards ceremony was attended by the Minister for Water Utilities, Nathan Rees.



The Awards ceremony held at Customs House was hosted by the Every Drop Counts Team.

# Category Awards

Every Drop Counts Business Program



## Innovation

The purpose of this award is to recognise companies that have implemented innovative technologies, or operational practices and processes. Companies nominated for this award demonstrate a high degree of management commitment to water conservation, and a willingness to bear business and financial risk to achieve reductions in water use.

### Winner:

#### **Amcor Fibre Packaging – Botany**

Amcor's Botany mill received \$1.66 million from the NSW Government's Water Savings Fund to support its innovative use of reverse osmosis technology to treat bore water. The new \$13.5 million steam raising plant commissioned in late 2006 reduced the mill's drinking water use by 200 million litres a year.

#### **Finalist: BHP Billiton – Illawarra Coal (Appin Mine)**

Appin Mine has cut water use by 660 kL/d by using recycled water from an on-site filtration plant set up in 2006-07. The plant is the first of its kind to be used in greater Sydney.

#### **Finalist: DPK Australia**

A textile manufacturer, DPK commissioned a water recycling plant in 2006-07 to treat and reuse water from the dye treatment process and heat from waste streams. This is considered innovative as this posed financial and technical risk. It had not been done before by a textile manufacturer due to the difficulty in removing dyes from wastewater. The plant saves DPK 100 kL of water a day. This will be stepped up to the design capacity of 250 kL/d.

## Largest Percentage Reduction

This award recognises the customer that has made the largest percentage reduction in water consumption in 2006-07. As the award is based on percentage reductions, it can recognise smaller organisations that don't have sufficient volume to be considered for the largest volume reduction award.

### Winner:

#### **Stockland • 333 Kent St, Sydney • 601 Pacific Hwy, St Leonards**

The buildings have cut their water use by 56 and 51 per cent respectively. This was achieved by installing waterless urinals, improving management practices and implementing continuous monitoring and reporting.

#### **Finalist: Boral Masonry – Prospect**

Boral Masonry makes and distributes masonry blocks and pavers, including a sustainable range of products. The Prospect site uses recycled stormwater and reuses water from the production process (70 per cent). Site water management comprises an on-site wetlands area. Clean filtered water is also directed from the wetlands to Prospect Creek. This helps to irrigate downstream farms.

#### **Finalist: Helensburgh Coal (Metropolitan Colliery)**

The Helensburgh mine site increased the volume of treated wastewater used for mining operations. Treated wastewater is now used underground for dust suppression, machinery cooling and in hydraulic systems.





## Highest % KPI Reduction

The purpose of this award is to illustrate how a focus on industry specific water efficiency KPIs can drive water conservation efforts.

**Winner:**

### Boral Transport Sydney Tippers

This site is used to wash trucks. Using recycled water instead of drinking water has resulted in a 66 per cent KPI reduction in litres per truck.

**Finalist: AstraZeneca – North Ryde**

AstraZeneca is one of the world's largest pharmaceutical companies. At its North Ryde facility AstraZeneca has continued to reduce water use over the past three years through its water saving projects. (See story on Page 10)

**Finalist: Jones Lang LaSalle Sicard**

Jones Lang LaSalle Sicard has made great strides in water conservation at its 175 Liverpool Street site. A comprehensive amenities retrofit program included replacing taps, toilets and showers. Combined with a carefully researched urinal sensor replacement program, the program has achieved water savings of up to 50 per cent compared to the same period in previous years. The site has now achieved a 38 per cent KPI reduction.



## Largest Volume Reduction

This award recognises large water users that have made significant reductions in their water consumption.

**Winner:**

### BHP Billiton – Illawarra Coal (Appin Mine)

The Appin Mine has reduced its water use by 660 kilolitres of water a day (kL/d). This was achieved by using recycled water from an on-site filtration plant setup in 2006-07.

**Finalist: Amcor Fibre Packaging – Botany**

One of Australia's largest producers of 100 per cent recycled cardboard packaging, Amcor now uses treated bore water at its Botany Paper Mill. This makes up for the steam lost in the water intensive paper making process and has reduced the mill's drinking water use by 550 kL/d.

**Finalist: Helensburgh Coal (Metropolitan Colliery)**

A water audit of the Helensburgh mine site identified an opportunity to increase the volume of treated wastewater used in mining operations, reducing the amount of drinking water needed. Treated wastewater is now used underground for dust suppression, machinery cooling and in hydraulic systems.



## Sustainable Processes and Practices

This award recognises organisations that have embedded best-practice water conservation into their corporate management systems, ensuring water savings.

**Winner:**

### The GPT Group (Office Portfolio) and Jones Lang LaSalle (Asset Management Services)

The GPT Group is one of Australia's largest diversified listed property groups. They have achieved a 5-Star rating under the One-2-Five Water Management Diagnostic process and 13 per cent water saving across properties nationally.

**Finalist: Diageo Australia**

Diageo Australia is the largest manufacturer of alcoholic beverages in the world. Driven by its ground breaking WaterWatch team, Diageo continues to make huge improvements in water conservation every year. (See story on Page 2)

**Finalist: Macquarie Asset Services Limited**

Since joining the EDC Business Program in 2003, MASL has reduced water use across its Sydney-based properties by over 20 per cent. This has been achieved by focusing on building management and maintenance processes, continuous monitoring and clear accountabilities.

# Recognition Awards

The purpose of these awards is to recognise and reward individuals for their significant achievements in water conservation.

Ian Bentley	Jones Lang LaSalle • Sicard
David Pryor	P&N Beverages
Craig Scott	BlueScope Steel
Michael Johnson	BlueScope Steel
Neil Boles	BlueScope Steel
Raelene Oliver	Amcor Fibre Packaging • Botany
Bruce Lilly	DPK Australia
Larry Melnick	Railcorp

Malcolm Boyles	TAFE NSW • Northern Sydney Institute
Ian McIntosh	Jen Retail Properties • Market City
Don Quirt	Mandarin Shopping Centre
Jane Peacock	City of Ryde
Brad Taylor	Toyota Motor Corporation Australia
Ross McPherson	Hornsby Shire Council
Janine Cannell	Coca-Cola Amatil

If you want to improve the condition of your sports ovals and reserves, improving soil quality – rather than using more water – can be the key.

# Our fields need more water...

# or do they?

## The EDC Business team assessed irrigation at 22 council parks and ovals across greater Sydney.

The assessment identified that many ovals were in poor condition because they had inappropriate soils, rather than insufficient water.

This is vital information for open space managers, especially as current water restrictions continue and demand for playing time on good quality active sports fields increases.

“Many people blame the drought or restrictions for a bare or brown oval. But there are many fields that received no water during restrictions and yet still remained green and well covered,” Dr Mick Battam of URS, who conducted the assessment for Sydney Water said.

“For too long irrigation water has been used as a substitute for topsoil on sporting ovals. The problem is that the soil beneath most sports fields is so poor that it captures hardly any rain, hence lots of irrigation is needed if the turf is to survive.”



This oval has a good depth of sandy loam soil. While the soil is an excellent growing media it is prone to compaction around goal mouths where periodic decompaction is required. Limited areas of the site had inadequate soil depth, such as at the bowler's run up.



## To improve the condition of your oval you need to:

- understand the needs of the site (how often it's used for sports, what kind of sports, and how this will affect foot traffic on the oval)
- ensure the oval has adequate soil. Concentrate on the texture and quality of top soil. Good soils can capture rain better, reducing the amount you need to irrigate
- supply sufficient water with an effective irrigation schedule
- make sure you monitor oval condition and reassess management practices if conditions decline or needs change.

Open space managers should assess soil type and quality before installing expensive irrigation or using alternative water supply systems. If you don't think about your soil first, projects to expand irrigation may lead to little or no improvement in the condition of your ovals.

Sydney Water will publish best practice guidelines based on research carried out by URS to help oval managers understand the relationship between turf, topsoil and irrigation.

# A tale of two ovals... and one city park

Two ovals in southern Sydney were investigated during the irrigation assessment. The fields were only five kilometres apart, and in the same climate zone – but had dramatically different soil, management and turf condition.

## One oval had topsoil that was sand...

It was watered moderately during restrictions – 0.2kL/m<sup>2</sup>/year was applied. Despite this, the oval's condition was very poor, and the turf completely worn away in some places. Sections of the field frequently required returfing.

## The other oval had a deep sandy loam topsoil...

It was watered infrequently – 0.1 kL/m<sup>2</sup>/year, with the soil able to capture much rainfall for the turf. This oval was also used for active sport, but because it had the right soil, the oval condition was good, and turf cover was excellent.

A large park in the Sydney CBD was also assessed. The assessment revealed that the amount of water needed to irrigate the park could be cut by two thirds – saving over 15ML a year.

**"The problem is that the soil beneath most sports fields is so poor that it captures hardly any rain, hence lots of irrigation is needed if the turf is to survive."**

## Tips for better soil

Topsoil should be a minimum of 170 mm deep on sporting fields. If it is any shallower, the turf may not drain properly after rain and will be unable to draw on deeper water reserves in the soil during hot, dry weather.

Soil that is too sandy will hold little water and be unable to sustain turf cover during hot periods. Organic matter such as composted cow manure can be used to improve sandy soil and should be incorporated to a depth of at least 100 mm.

Gardens will thrive from greater amounts of organic matter, but areas with frequent

foot traffic may become compacted if too much organic matter is applied.

Soil with higher levels of clay, such as clay loams, can be used successfully on sports fields. Clay loam soil typically requires more frequent aeration than sandier soils to avoid compaction.

Even very sandy soil can become compacted over time, particularly those with high amounts of organic matter.

Compacted soil absorbs water poorly. To reduce compaction, and improve water infiltration and turf condition, soil should be aerated.



There is a considerable soil depth at this reserve, but the soil is sand that has a low water holding capacity, resulting in very poor turf performance.

To be effective, an aeration technique should penetrate to or beyond the depth of compaction.

Irrigation frequency should change with the seasons. More frequent watering (irrigation or rainfall) is needed in summer. The amount of irrigation doesn't need to change automatically with each season, because you should only be irrigating when the moisture held by the soil is depleted.

Other things that might affect water demand at your oval include the amount of shade and wind exposure and the amount of foot traffic your site receives.

## Benchmark water consumption – how do you compare?

Sydney Water has developed best practice benchmarks for water consumption at a range of outdoor sporting facilities. If you manage your soil well, you should be able to meet these best practice benchmarks and still maintain good quality sporting ovals.

Sporting facility	kL/m <sup>2</sup> /year
Golf green	0.60
Bowling green	0.22
Sporting field, eastern-central Sydney	0.22
Sporting field, western Sydney	0.13
Golf course – greens and trees combined	0.5
Golf course fairways, western Sydney	0.12

# New benchmarks...

## Commercial office buildings

A new study by Sydney Water has made it easier for commercial property owners to tell if their building is water efficient or not.



**Sydney Water has developed water consumption benchmarks for office buildings and shopping centres after analysing the results from 12 shopping centres and 31 office building audits.**

The benchmarks can tell you at a glance if your building is likely to operate at peak efficiency, if it is likely to have leaks, or if you have opportunities for cost effective water efficiency measures.

### Benchmarks for commercial office buildings

Benchmark	Offices with cooling towers	Offices without cooling towers
Average practice and no leaks	1.01 kL/m <sup>2</sup> /year	0.64 kL/m <sup>2</sup> /year
Economic best practice (median of implementing water saving projects with 2 year paybacks)	0.844 kL/m <sup>2</sup> /year	0.47 kL/m <sup>2</sup> /year
Very well managed building	0.77 kL/m <sup>2</sup> /year	0.4 kL/m <sup>2</sup> /year

The table indicates that if you are using more than one kilolitre of water per square metre in your building every year, you probably have leaks and should immediately investigate and fix them.

### Benchmarks for shopping centres

Benchmark	Value
Median market practice	1.7 kL/m <sup>2</sup> /year
Economic best practice (median of implementing water saving projects with 2 year paybacks)	1.68 kL/m <sup>2</sup> /year
Very well managed shopping centre	1.35 kL/m <sup>2</sup> /year

### How do the benchmarks compare with other rating systems?

The benchmarks for commercial office buildings can be used in conjunction with NABERS, the National Australian Built Environment Rating System. Your NABERS Water rating comes as an easy to understand star rating. The Sydney Water ratings let you know if you have cost effective opportunities to improve your NABERS star rating.

Water consumption (kL/m <sup>2</sup> /year)	Sydney Water performance benchmarks	NABERS water star rating	
1.80			Leak Zone
1.75		1 star (1.73)	
1.70			
1.65			
1.60			
1.55			
1.50			
1.45			
1.40		2 star (1.39)	
1.35			
1.30			
1.25			
1.20		2.5 star (1.21)	
1.15			
1.10			
1.05		3 star (1.04)	
1.00	Average practice for buildings with cooling towers and no leaks (1.01)		Cost effective improvement zone for water cooled buildings
0.95	Economic best practice for buildings with cooling towers (0.84)	3.5 star (0.87)	
0.90			
0.85			
0.80	Well managed building with cooling towers (0.77)		Target zone for water cooled buildings
0.75		4 star (0.70)	
0.70			
0.65	Average practice for buildings without cooling towers and no leaks (0.64)		Cost effective improvement zone for buildings without cooling towers
0.60	Economic best practice for buildings without cooling towers (0.47)	4.5 star (0.52)	
0.55			
0.50			
0.45			
0.40	Best practice for buildings without cooling towers (0.40)	5 star (0.35)	Target zone for buildings without cooling towers
0.35			

Using this table, you can see how your water consumption relates to the Sydney Water benchmarks and NABERS star ratings. You can also tell if you are within the target water consumption zone for a building of your type, or if you have opportunities to reduce water use.

To calculate your benchmarks accurately, you must use the Net Lettable Area of your building, calculated according to the Property Council of Australia (1997 Method of Measurement.)

The benchmarks and guidance on how to calculate them are contained in Sydney Water's new water conservation *Best practice guidelines for commercial buildings and shopping centres*.

AstraZeneca's Sydney plant has set a benchmark for water efficiency across the global company, cutting water use by 232 kilolitres a day.

# Water efficiency in a capsule

One of the world's largest pharmaceutical companies, AstraZeneca has 27 manufacturing sites in 19 countries. AstraZeneca exports pharmaceutical products from its Sydney plant to more than 37 countries. At its North Ryde facility, AstraZeneca has reduced the amount of water used to produce each 1,000 units by 40 per cent.

This has been achieved by involving staff at the site to improve the efficiency of amenities, and to implement major water recycling and reuse projects.

The three main areas of water use in the company's Nova manufacturing facility are:

- the water purification plant
- non potable process water
- cooling towers.



Water use at AstraZeneca's North Ryde facility has fallen by an amazing 232 kilolitres a day since it joined the EDC Business Program in 2003.

AstraZeneca produces highly purified distilled water to dissolve very pure pharmaceutical products for patient use in ampoules, IV bags and respules for injection or inhalation.

The purification plant produces wastewater of a very high quality. This has spurred the company on to complete two projects even as it commissions a third system for harvest and reuse. This system will serve cooling towers and liquid ring vacuum pumps that operate its one-step packaging processes.

In late June 2007, AstraZeneca closed an older facility on the site, where the use of cooling water was causing significant base flows.

AstraZeneca recently achieved a 4-star rating in the One-2-Five Water management diagnostic. Also, its North Ryde operation has been recognised through its success in AstraZeneca's global CEOs Safety Health & Environmental award.

Water use at AstraZeneca's North Ryde facility has fallen by an amazing 232 kilolitres a day since it joined the EDC Business Program in 2003.

The Sydney experience has shown how the EDC process can deliver sustainable water and cost savings. These initiatives are also being introduced to AstraZeneca's UK plants.



Top: AstraZeneca's Engineering Manager – Facility Services, Mike Crompton and Sydney Water's Project Officer, Carl Binns inspect the Nova facility's non-potable process water tank.

Above: Potable and non-potable water use is monitored throughout the facility so staff can track efficiency improvements.



# Juicy savings

P&N produces a variety of popular soft drinks.

**P&N Beverages is well known for popular drink brands Brekky Juice, Frantelle spring water, Pop Tops and Pub Squash among others.**

**Now, they are also becoming recognised for water – and how much of it they are saving.**

Having a system in place to monitor water use is a key element of good water management in any business.

With the assistance of the Every Drop Counts Business Program, P&N has installed over 20 sub meters at its Condell Park site, and a monitoring system that is hooked up to a live on-line computer link.

With a click of a button, National Engineering Manager David Pryor and his team can see exactly what's happening to water use across the whole site.

By using the monitoring system to identify opportunities to cut water use, David and his team have saved a staggering 150 kilolitres a day (55 megalitres a year) at Condell Park. This represents over 20 per cent of the site's total use.

Monitoring has helped P&N detect and repair leaks on the production line. Leaks fixed in the syrup area alone represent savings of 20kL/day or over \$12,000 a year.

Modifying the water sprays and nozzles on the can and bottle washer resulted in further significant savings. P&N also improved the efficiency of clean-in-place processes in the production area. Add to this completed projects to make amenities more water efficient, to reuse condensate water and switch sections of the conveyor lines from water based to dry lubricants and you can really see the savings add up.





The twenty sub meters installed throughout the site are connected to a live on-line computer link, and are also regularly inspected.



Drinks manufacturer P&N knows that monitoring water use is a key element of good water management in any business.

# at P&N



Above: P&N's National Engineering Manager David Pryor and Sydney Water Project Officer Paul Kelly.

Centre and right: The amount of water used to spray cans and bottles has dropped significantly with the introduction of new methods and modifications on some spray lines.



Everyone knows that saving water is smart. To make water savings without burning a hole in the company budget is even smarter.

"Many of these solutions were low or zero cost installs", David said.

"Including the expense of the water meter installation and the data logging we have spent approximately \$30,000. This was all paid back in a short time and we are now banking our savings."

P&N's experience shows that drinking water charges are just the tip of the iceberg of a company's total water costs.

The savings made in drinking water at P&N have translated to additional savings in other areas. "Based on water, wastewater and energy charges, this amounts to over \$200,000 saved each year," David explains.

You would think that the team might be looking for a break, but this is definitely not the case. The next challenge is to turn the spotlight on their Moorebank site, home of their popular juice brands. This will expand even further on the water savings they have already made.

# Solutions

Your questions answered...

Efficient pre-rinse spray valves can save the food industry water and money.

## Rinse it smart

**Pre-rinse spray valves are simple devices used to remove food scraps and grease from dishes before they go into the dishwasher. This improves the cleanliness of dishes and reduces water and chemical consumption by enabling heated and treated water to be used for more cycles.**

Traditional pre-rinse spray valves are surprisingly water intensive. A Sydney Water study indicated that more than 5.9 billion litres of water is used in pre-rinse spray valves in restaurants and takeaway food shops every year.

Flow rates in traditional pre-rinse spray valves are typically between 10 – 15 litres a minute. They are usually fitted with a shower-type spray nozzle that relies on water volume for its cleaning action.

New 6-star rated pre-rinse spray valves use about half the water of old models and have better cleaning efficiency.

They have a single orifice nozzle that produces a powerful fan-pattern jet that uses water velocity, rather than volume, to increase cleaning efficiency.

But can a simple device really make a big difference?

Aparosa LuLu Tawake, a steward at the Citigate Central Hotel witnessed the difference in performance between the hotel kitchen's old valve and the new low flow pre-rinse spray valve.

"The new valve is faster to use and cleans off the food quicker," Aparosa said.

To encourage customers to install the new low flow pre-rinse spray valves, Sydney Water will supply and install a 6 litre a minute low-flow pre-rinse spray valve free for eligible customers. The valve is WELS 6-star rated, and can't be locked on to automatically run at full pressure.

Small and medium sized hospitality businesses can make significant savings by changing spray valves.

**To encourage businesses to replace old pre-rinse spray valves with more efficient models, Sydney Water is offering Smart Rinse valves free to eligible customers for the next three years.**

Pre-rinse spray valves generally deliver water at between 40-60°C, meaning that reducing water use can also cut energy costs.

Table 1 shows how much water and money was saved by installing just one pre-rinse spray valve at four different sites.

Overall, Sydney Water's study showed that water use in pre-rinse spray valves can be cut by an average of 42 per cent. Each low flow pre-rinse spray valve can save businesses an average of \$456 in water and energy cost savings every year.



Citigate Central Hotel – achieving water savings with low flow pre-rinse spray valves.

The more often your business uses a pre-rinse spray valve, the greater the energy and cost savings.

To help keep water and energy costs low, maintenance is vital. All pre-rinse spray valves need to be inspected monthly, cleaned at least once a year, and replaced if the fittings are worn.

If the nozzles are worn, water pressure will fall and the spray angle will change, leading to slower cleaning times, a less efficient spray valve and higher energy and water costs.

Site	% Daily water savings (for one pre-rinse spray valve)	\$ Yearly water and energy cost savings
Café	47%	\$453.00
Restaurant	42%	\$304.00
Club	29%	\$142.00
Hotel	50%	\$925.00
Average	42%	\$456.00

TABLE 1: Water and cost savings achieved by each site using low flow pre-rinse spray valves costs.

For more information about Smart Rinse, contact Sherryn Cabardo from the Every Drop Counts Business team on 9350 6130.



Left: Aparosa LuLu Tawake.

Electronic water monitoring systems are becoming more popular, especially with large water users.

# Why monitoring matters



Left: Data loggers are straightforward to fit to pulse emitting meters. For basic data loggers a laptop is used to set up the logger and download the information. Others use wireless telemetry to provide information in real time to managers.

Below: Data loggers store flow data at pre-set time intervals e.g. 5 minutes. This level of detail enables leaks and other malfunctions to be detected, which is not possible through daily meter readings alone.



Above: Wollongong City Council's Sachiko Shepherd inspects a water meter and its data logger.

Monitoring systems can help building managers control water consumption. They also help control leaks.

Water efficiency audits conducted as part of the Every Drop Business Program have highlighted that leaks typically account for 10 to 20 per cent of total water use in all types of facilities.

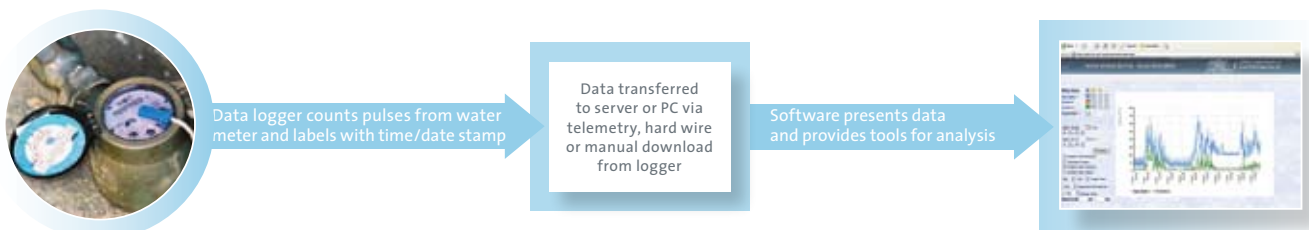
Hydraulic systems are vulnerable to leaks. Operating them well will mean ongoing leak management. Monitoring enables building managers to minimise baseflows and actively deal with leaks by:

1. reducing response times
2. allocating maintenance resources where they are needed most.

There is a range of monitoring systems available on the market today. Some of these are hard-wired into building management systems, while others rely on wireless technologies and telemetry using mobile phone networks.

At a very basic level, all monitoring systems will provide the same information – a volume of water that has passed through a water meter over a nominated period (eg every five minutes).

This information is then converted to a flow rate by averaging the volume measured by the elapsed period.



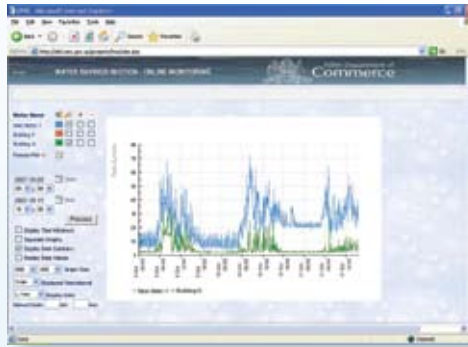
\*Pulse emitting meters send an electronic pulse every time the meter records a set level of usage. On some meters there are multiple outputs that produce a pulse at different increments (eg 10 litres, 100 litres or 1000 litres). It is best to use the smallest pulse output available.

# Why does monitoring matter?

Experiences at a large educational facility located in Western Sydney provide a strong example of the difficulties in managing leaks in a large hydraulic system. Over the last seven years, the site's average water use has been 120 kilolitres a day.

In 2002 a severe, hidden leak appeared in the reticulation network. Water use jumped to 450 kilolitres a day. Due to the complex nature of the site and the fact that the leak could not be seen at the surface, the leak continued for 12 months. The exact location of the leak was only identified when additional sub-meters and temporary monitoring was installed. Over time, sub-meters were no longer read.

In 2007, water use at the site again skyrocketed when a pool make-up system malfunctioned. This leak caused consumption to increase to over 500 kilolitres a day. Although management observed an increase in the site's water use after a few weeks, the source of the leak took three months to identify. During this time \$90,000 worth of water (including wastewater charges) had gone down the drain.



Monitoring software enables early detection of leaks and system malfunctions, which saves money.

## Saving water at Warringah Mall

Warringah Mall is located on Sydney's northern beaches. Managed by AMP Capital Shopping Centres, it is NSW's largest open-air shopping centre with 125,000 square metres of shopping space.

As part of its commitment to water efficiency, AMP installed a comprehensive monitoring system at the mall in May 2007. Regular checking of the system now forms part of the operations staff's daily regime. Within two weeks of the system being installed, the mall's management identified a leak of 70 kilolitres a day and promptly repaired it.

This has saved Warringah Mall \$57,400 a year – enough to operate the monitoring system for several years.

## Water efficiency audits conducted as part of the Every Drop Business Program have highlighted that leaks typically account for 10 to 20 per cent of total water use in all types of facilities.

Arguably the critical aspect of any monitoring system, and one that is often overlooked, is how data is accessed and presented to the user. This is generally done with custom designed software. Access to an electronic monitoring system should be fast, visual, reliable and accurate.

### Monitoring hardware should have:

- enough sub meters installed to give a useful breakdown of water uses on the site
- meters that are mechanically reliable, pulse emitting meters
- the pulse unit is as small as possible to give you the required detail without overwhelming you with excessive data (a pulse every 5 litres is generally preferable to a pulse every 1000 litres). As a rule of thumb, aim for no greater than 10 litres per pulse.

### Key characteristics of monitoring software:






- Clear labelling of all axes and data series.
- Flow data graphically presented as flow rate vs time.
- Ability to convert flow measurements to total daily use figures.
- Ability to display multiple flow profiles on a single graph.
- Ability to add or subtract flow rate from different metres.
- Summary tables highlighting daily minimum, maximum and average flows.
- Ability to nominate start and end period of data to be viewed.
- Ability to program alarms to notify user of excessive flow rates.

### To maximise the benefits of monitoring systems you might consider:

- giving site-based staff (who are the experts on the water using equipment and know how it's used) easy access to the system
- making one staff member responsible for checking the system daily
- a regular meeting or reporting mechanism to ensure that summary data is analysed.

# The Conserver fax back

9350 5942

Subscription and address details			
Delivery address <input type="checkbox"/> Please change my address details			
Name:			
Company:		Phone:	
New postal address:			
Suburb:		Postcode:	
<input type="checkbox"/> I would like to get an electronic version of <i>The Conserver</i>			
You will get an email as soon as an electronic version of <i>The Conserver</i> is published on the Sydney Water website. EDC Business Program members will continue to receive printed copies of <i>The Conserver</i> .			
Name:			
Company:			
Email address:			
<input type="checkbox"/> I would like to nominate an associate to receive a copy of <i>The Conserver</i>			
<input type="checkbox"/> Print subscription <input type="checkbox"/> Electronic subscription			
Your associate's name:			
Company:			
Address:			
Suburb:		Postcode:	
Phone:		Email:	
Order form for EDC information and marketing materials			
I would like the following EDC Business Program materials (please include quantities with your selections)			
<input type="checkbox"/> Sewer mining brochure		<input type="checkbox"/> Leak Cost Calculator Slide Rule	
<input type="checkbox"/> Shower hangers		<input type="checkbox"/> Waterless Wok fact sheet	
<input type="checkbox"/> 'Save it' sticker <input type="checkbox"/> Chinese language		<input type="checkbox"/> Waterless Urinals fact sheet	
<input type="checkbox"/> I would like a co-branded poster developed for my company (please tick the design that you prefer)			
			
<input type="checkbox"/> "Cool it"	<input type="checkbox"/> "Plug it"	<input type="checkbox"/> "Turn it off"	<input type="checkbox"/> "Half flush it"
			
<input type="checkbox"/> "Report it"			
Please provide the name and contact number of the person you would like listed on your co-branded poster(s). Also, please provide a version of the company logo you would like on the co-branded poster(s) as either a vector eps file or high resolution jpg.			

## Like to get the latest information?

Sydney Water has launched a new electronic newsletter – [Sydney Water Online](#).

If you'd like to get the latest news from Sydney Water sign up at [www.sydneywater.com.au](http://www.sydneywater.com.au)

## This quarter's new business partners

Sydney Water welcomes the following organisations to the Every Drop Counts Business Program:

51 Druit St

Youth Hostel Association

Woolworths

Parramatta Park Trust

General Mills

Fitness First

Sydney Ports Corporation

### Contact us

For more information visit our website at [www.sydneywater.com.au](http://www.sydneywater.com.au) or contact Sydney Water on:

Phone: 1800 661 161

Fax: 9350 5942

Email: [EDCBusiness@sydneywater.com.au](mailto:EDCBusiness@sydneywater.com.au)

Mail: EDC Business Team, Water Conservation & Recycling  
Sydney Water PO Box 53 Sydney South NSW 1235

Sydney Water Corporation ("Sydney Water") has voluntarily committed to comply with the NSW Privacy and Personal Information Protection Act 1998 (the Act). This commitment ensures that personal information gathered, held and used by Sydney Water will be managed in accordance with the requirements of the Act.

