

# PROTECTING OUR NATURAL ENVIRONMENT

## STRATEGIC GOALS

- > Improve environmental outcomes from all aspects of our business
- > Respond to climate change through mitigation and adaptation measures
- > Improve the health and amenity of waterways and marine environments
- > Conserve and improve biodiversity and ecosystems
- > Minimise waste disposal and maximise resource efficiency
- > Invest prudently and efficiently, taking account of environmental, social and financial considerations, whole-of-life costs, risks and service needs
- > Operate and maintain our assets efficiently, in accordance with sustainability principles

## KEY ACHIEVEMENTS

- > Increased electricity generation at the Western Treatment Plant to a 100% self sufficiency level in the last quarter of the year
- > Developed a standard operating procedure for estimating our greenhouse gas emissions in accordance with the National Greenhouse and Energy Reporting System (NGERS)
- > Began investigating opportunities for algae grown in wastewater to generate energy and recover nutrients
- > Won a clean technology award at the 2010 Banksia Environmental Awards for mini hydro-electricity plants constructed at Melbourne Water reservoirs
- > Ranked top of a global sustainability benchmarking study
- > Developed a strategy outlining plans to reduce our reliance on disposing waste to landfill
- > Integrated all climate change risks and adaptation actions into our Risk Management Framework

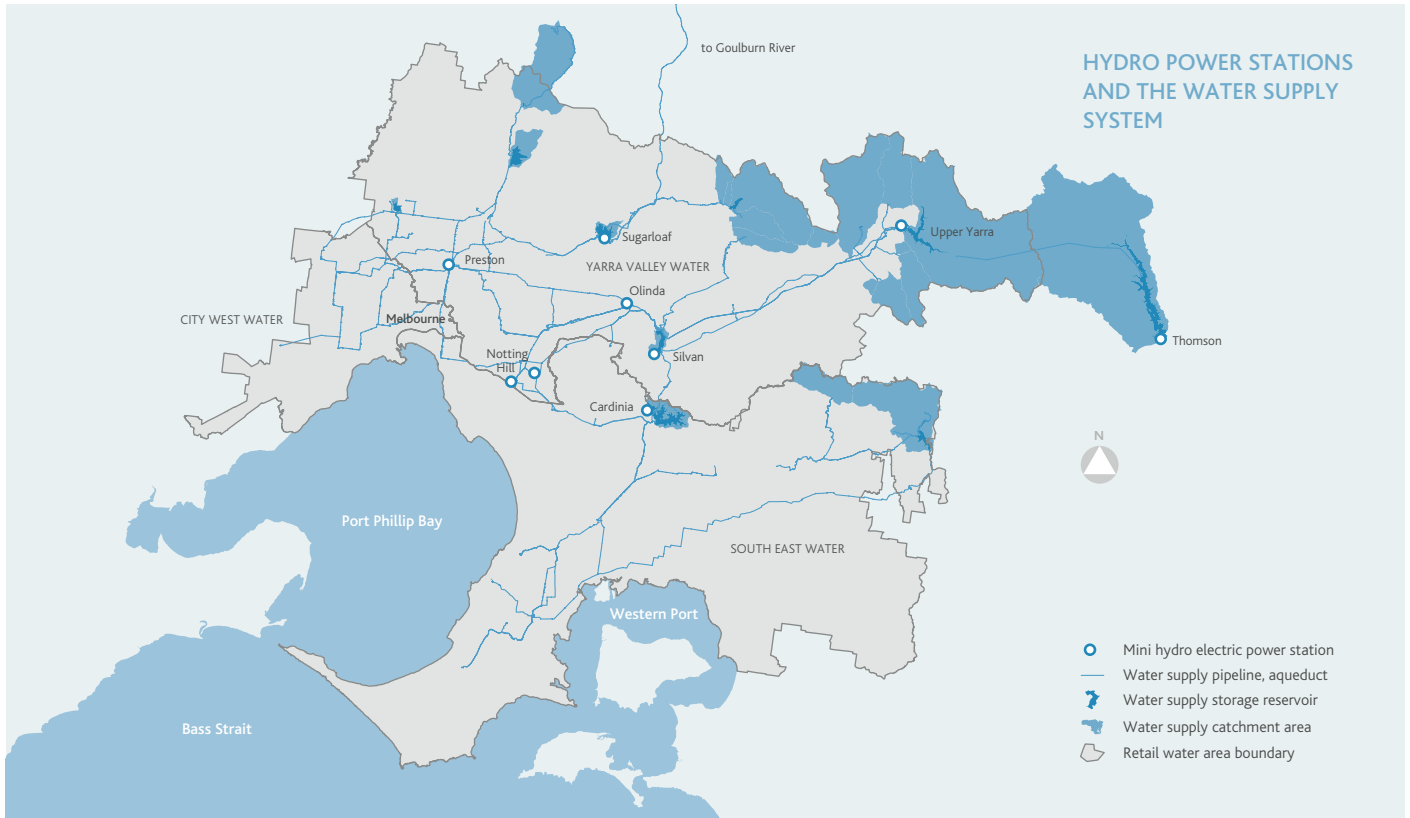
## DISAPPOINTMENTS

- > Did not progress investigations into greenhouse gas emissions at our sewage treatment plants as rapidly as anticipated
- > Did not progress investigations into a replacement Greenhouse and Energy Data Management System as quickly as anticipated

## CHALLENGES

- > Incorporating our 2018 renewable energy and greenhouse emission targets into the next Water Plan
- > Continuing to improve system methodologies to more accurately measure emissions from our sewage treatment plants
- > Minimising waste volumes and converting waste to valuable resources
- > Improving biodiversity and ensuring it continues to be protected and conserved on land and waterways managed by Melbourne Water

# PROTECTING OUR NATURAL ENVIRONMENT



## OUR COMMITMENT

Melbourne Water is committed to protecting, conserving and improving natural assets and using natural resources sustainably. *Our Environment Policy* specifies actions and outcomes to achieve maximum net environmental benefits to society and to promote sustainable resource management and use.

We have an Environmental Management System certified to the International Standard ISO 14001, which establishes management requirements to protect the environment, prevent pollution and improve environmental performance.

We also use our Stakeholder, Environment and Public Health Assessment process and triple bottom line guidelines to help assess and plan for potential impacts on the environment from

our activities, while balancing benefits to the community and meeting efficiency requirements for public spending.

## MANAGING CLIMATE CHANGE AND VARIABILITY CHALLENGES

Climate change is a significant challenge for Melbourne Water, influencing our efforts to protect the natural environment and posing a critical impact on our water supply, sewerage, waterways and drainage assets, operation and strategic planning.

Climate change projections for south-east Australia indicate increased temperature and evaporation, reduced annual rainfall, increased rainfall intensity during storms, increased risk of bushfires in Melbourne's water supply catchments and a rise in sea levels.

## Adaptation measures

In the past year, Melbourne Water has focused on three key areas in climate change adaptation: risk management, research and stakeholder engagement.

All climate change risks and adaptation actions have been integrated into Melbourne Water's Risk Management Framework. Key climate change risks have been identified and adaptation actions have been initiated or planned across the business.

We are continuing to engage in and support collaborative research initiatives in partnership with institutions including the CSIRO, the Bureau of Meteorology, universities and major government and industry partners. The aim of this research is to:

- Improve our understanding of past, current and future hydro-climate conditions

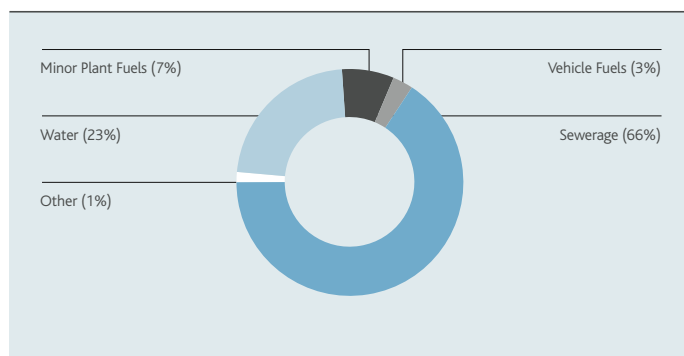
- Establish regionally relevant scientific information for use in conducting modelling, analysis, impact assessments and in developing adaptation actions.

Melbourne Water worked with the Water Services Association of Australia in planning and carrying out a national climate change adaptation workshop. We are engaging with stakeholders including the Department of Sustainability and Environment in developing the climate change scenarios for the *Water Supply Demand Strategy*.

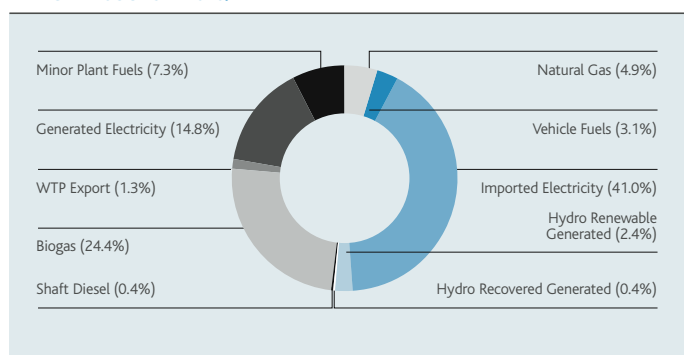
We also instigated the Melbourne Water Industry Climate Change Committee which consists of key employees from our business and the retail water businesses. We have and will continue to meet to discuss key adaptation and mitigation challenges facing our industry.

# In the past year, Melbourne Water has focused on three key areas in climate change adaptation: risk management, research and stakeholder engagement

ENERGY BY USE - 2010/11



ENERGY BY SOURCE - 2010/11



## ENERGY AND GREENHOUSE GAS MANAGEMENT

Melbourne Water's management of climate change includes a mitigation strategy. As a business, we have committed to actively managing our own contribution to greenhouse gas emissions by establishing a target to reduce net greenhouse gas emissions to zero and increase the use or export of renewable energy to 100% of total energy used by 2018.

We completed a comprehensive *Greenhouse and Renewable Energy Strategy* in 2008/09 to identify how these targets could be met most efficiently.

### Our performance

Melbourne Water uses significant amounts of energy to deliver water and sewerage services to its customers and the community. We are among the top 15 electricity users in Victoria and the top 150 in Australia.

In 2010/11, we used 1.602 million gigajoules of energy, 1.638 million gigajoules in 2009/10, (reduction due to changed biogas measurement methodologies at ETP), and emitted total net greenhouse gas emissions including:

Water treatment and pumping	123,750 tCO <sub>2</sub> e
Wastewater treatment	307,726 tCO <sub>2</sub> e
Transport	4,138 tCO <sub>2</sub> e
Other Energy use (Inc. Offices)	15,421 tCO <sub>2</sub> e
Offsets purchased	79,275 tCO <sub>2</sub> e

Melbourne Water spent \$23.1 million this year on energy compared with \$20.2 million in 2009/10.

## Greenhouse gas emissions

Melbourne Water achieved a 48.7% reduction in greenhouse gas emissions this year compared with 2000/01 emissions, exceeding the 42% target.

Emissions during the year totaled 371,760 tonnes of carbon dioxide equivalent. This included the purchased renewable energy certificates used to achieve the renewable energy target, using our own renewable energy and offsetting emissions from office energy use (4,296 tCO<sub>2</sub>e), vehicle fuels (3,767 tCO<sub>2</sub>e) and air travel (280 tCO<sub>2</sub>e) by employees.

## National Greenhouse and Energy Reporting System

We report to the Federal Department of Climate Change and Energy Efficiency under the National Greenhouse and Energy Reporting System (NGERS). Under NGERS methodologies, Melbourne Water emitted 390,000 tonnes of carbon dioxide equivalent in 2008/09 and 420,000 tonnes last year. Our preliminary estimation of 2010/11 emissions is 451,035 tonnes of carbon dioxide equivalent.

Discussions with the Department of Climate Change, through the Water Services Association of Australia, continued this year to support development of system methodologies that more accurately represent emissions from our sewage treatment plants.

## Securing renewable sources

Power company AGL is supplying Melbourne Water with renewable electricity under a 20 year contract which began in July 2010. This will help to achieve our goal of zero net greenhouse emissions by 2018 through the use of 100% renewable energy.

AGL is also Melbourne Water's power provider at the Western Treatment Plant and operates a biogas-fuelled generation facility there. The 10-megawatt facility supplied 86% of the plant's annual electricity needs over the past year, including net electricity export in April, May and June 2011.

Our use and generation of renewable energy was 763,454 gigajoules in 2010/11 (846,000 gigajoules in 2009/10). The amount of renewable energy we used and generated as a proportion of total energy used decreased from 51.6% to 47.7%. The reduction was due to changed biogas measurement methodologies at ETP.

However, we had to surrender 50,497 renewable energy certificates to achieve our target of 59% of renewable energy used or exported as a percentage of total energy used.

Since commissioning six mini-hydro electricity plants at our reservoirs, Melbourne Water has investigated sites for additional mini-hydros and has identified five suitable sites. These projects are in their early design phase.

## Prestigious clean energy award

The hydro-electricity plants are helping to reduce our greenhouse gas emissions and our work in this area was recognised when the mini-hydro project was successful in winning the 'Clean Technology – Harnessing Opportunities' category award in the prestigious 2010 Banksia Environmental Awards.

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## Energy efficiency studies

Melbourne Water submitted its third public report under the Federal Government's Energy Efficiency Opportunities Program, which requires large energy-using businesses to conduct energy efficiency studies at key sites.

This year's report examined opportunities at the Eastern Treatment Plant. The report, completed in December, identified opportunities likely to yield a 7% improvement in energy use at the plant. The opportunities included an upgrade of the existing aeration blowers and optimisation of blower operation, speed control of the outfall pumping station pumps, fixing air header leaks in the low pressure air system, and moving to open valve control on the aeration tanks to operate at minimum header pressure.

## Environmental Resource Efficiency Plans

Melbourne Water has three sites required to participate in EPA Victoria's Environmental Resource Efficiency Plans program – Winneke water treatment plant and the Eastern and Western sewage treatment plants.

Work on the plans submitted to the EPA continued. Approval for the plan for WTP was achieved and plans for Winneke and ETP were further developed according to EPA requirements. Plan actions are being implemented to reduce energy and water use and waste, with most actions exceeding the better than three-year payback period requirement.

Hoppers Crossing Pumping Station was granted an exemption from the program because recycled water has largely replaced the use of drinking water for pump cooling.



## MEETING ENVIRONMENTAL SUSTAINABILITY OBLIGATIONS

### REGIONAL CATCHMENT MANAGEMENT STRATEGY

Management and protection of Melbourne Water's forested water supply catchments are governed by the following principles:

- Protect water quality, including regulating human activities for this purpose
- Protect water production capacity, including regulating human activities
- Maintain and conserve biodiversity
- Provide fire protection

- Maintain and conserve features of natural scenic significance and cultural heritage.

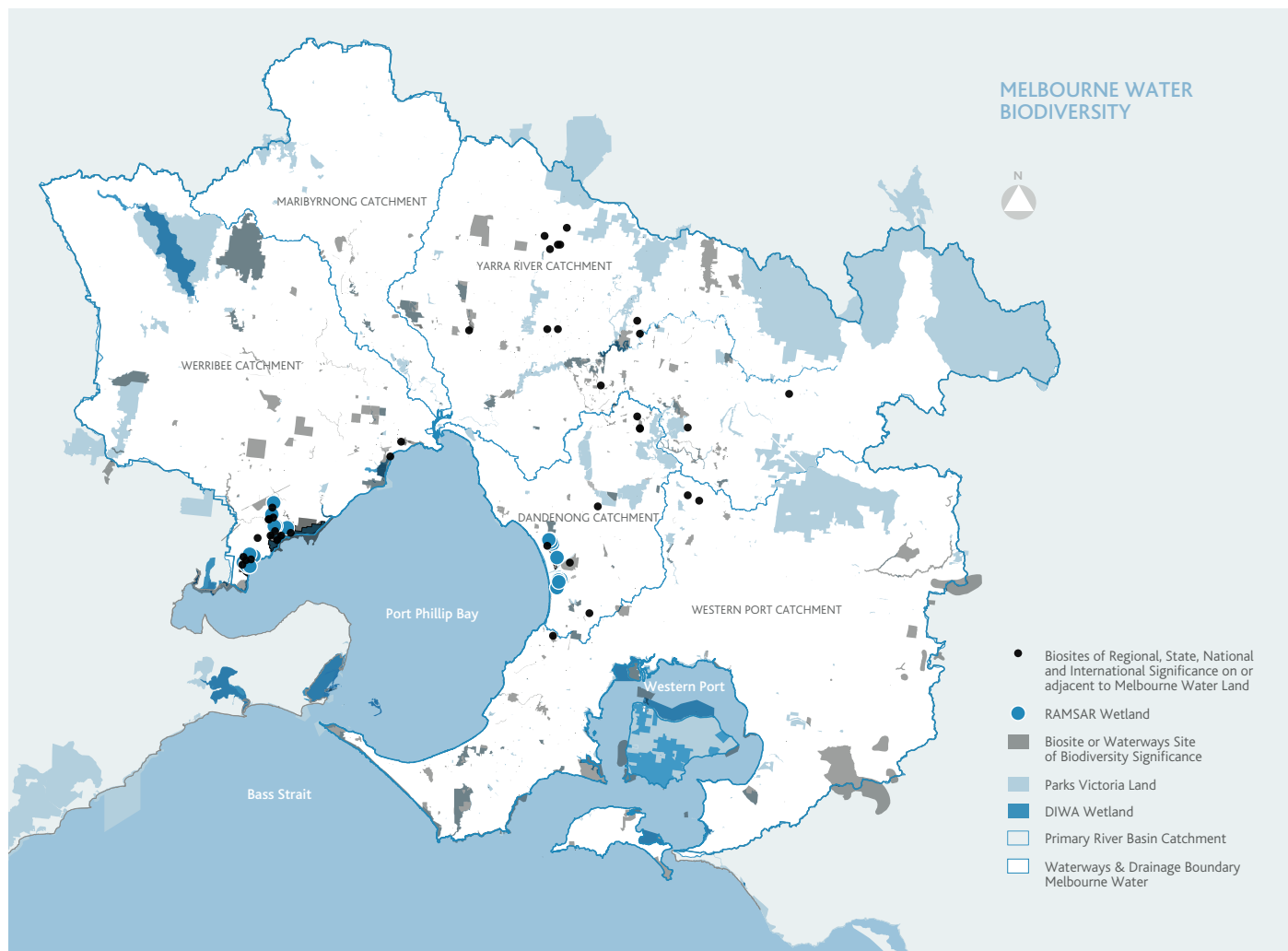
If a conflict arises in carrying out any duties, greater weight must be given to principles (a) and (b).

To achieve its objectives and meet the above principles, Melbourne Water runs programs including:

- Maintaining a fire detection and suppression capacity including staffing four fire towers; providing 110 fire-fighters consisting of permanent employees and 50 summer casuals supported by fire tankers and bulldozers; and has a water bombing helicopter on standby to protect the catchments

- Maintaining a road network to allow quick access to the catchments for bushfire response. Considerable planning goes into ensuring roads and bridges are constructed and maintained to best practice to manage sediment runoff into the catchment
- Undertaking targeted pest animal and plant control with Parks Victoria and Department of Sustainability and Environment to protect water quality and conserve biodiversity
- Maintaining security fencing and security patrols to regulate human activities to protect water quality.

# Our mini hydro project was successful in winning the 'Clean Technology – Harnessing Opportunities' category award in the prestigious 2010 Banksia Environmental Awards



## PROTECTING BIODIVERSITY

Melbourne Water is a significant landholder and waterways manager within the Port Phillip and Westernport region. We actively develop and implement strategies and projects that support biodiversity, in compliance with the *Victorian Biodiversity Strategy*.

### Biodiversity Strategy

Melbourne Water's *Biodiversity Strategy* establishes a consistent approach to biodiversity management across the organisation. The strategy sets priority actions over the next five years for biodiversity improvement.

Some of these actions completed in 2010/11 included:

- Developing flora and fauna survey assessment documents to determine the level of ecological assessment required for a project that may have an impact on a site's biodiversity
- Implementing our pest animal documents - *Pest Animal Strategy* (provides a strategic framework and priority sites for pest animal management), pest animal guidelines (provides a technical reference for pest animal management), and the local pest animal action plan (provides a template to guide planning pest animal programs)
- Development of an organisation-wide pest plant guideline, to provide a technical reference for managing pest plants.

## Biodiversity conservation management

Melbourne Water owns and manages 56 sites of biodiversity significance. These sites contain important biological communities of rare or threatened species of plants or animals.

Ten sites lie within the Ramsar-listed Western Treatment Plant, which is one of the most important waterbird refuges in Victoria. It also possesses significant native grassland remnants and a large population of the nationally endangered Growling Grass Frog.

Several research projects were commissioned in 2010/11 to improve our knowledge and understanding of ecosystem functioning at this site.

Nine nationally significant faunal populations were monitored against defined benchmarks and during 2010, three management 'trigger points' were reached. Further investigation and management actions will be implemented. Results were reported to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

The Ramsar-listed Edithvale-Seaford Wetlands are included within the larger Carrum Wetlands Important Bird Area. It includes the Eastern Treatment Plant and several adjacent wetland areas, both constructed and natural. This wetland complex is most important for its waterbird and wetland vegetation values.

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At Edithvale-Seaford Wetlands, monitoring of waterbirds continued, fox and cat control was trialled, and a water level study was undertaken to determine the most useful flows for enhancing biodiversity at the site. Weed mapping was also undertaken to track trends and inform controls.

Other biodiversity research undertaken this year included:

- A management plan was prepared for the Tarnuk Retarding Basin
- Fox and cat control was trialled at The Inlets on Westernport, a site that supports southern brown bandicoots
- Sites in Melbourne's west with grassland remnants were surveyed for threatened species of grassland fauna including four sites for the fat-tailed dunnart and three sites for the striped legless lizard
- A water level study was undertaken at Tirhatuan Wetlands to provide recommendations to improve habitat for the threatened species of small fish, Dwarf Galaxias.

Melbourne Water continues to prepare and update management plans for each of our sites of biodiversity significance. Management effectiveness is assessed through monitoring of key fauna or flora at least every five years.

## Leader in sustainability

Melbourne Water participated in our fourth Sustainable Asset Management (SAM) benchmarking study for sustainability, benchmarking against worldwide publicly listed water utility companies on the Dow Jones Sustainability World Indexes (DJSI).

The study results confirmed Melbourne Water's leadership status in this survey. We outranked the best company score, and achieved an overall result of 81% (the comparable best company score was 77%).

## River health strategies

River health strategies are covered in Waterways (see pages 16-17).

For compliance with environmental obligations in bulk entitlements (Please refer to bulk entitlements compliance data in Statutory Information, (pages 114-118).

## Streamflow Management Plans

Streamflow Management Plans are developed with the aim of sharing the available water within a catchment sustainably between all users. This ensures that the licensed diverters and the environment receive the water they need.

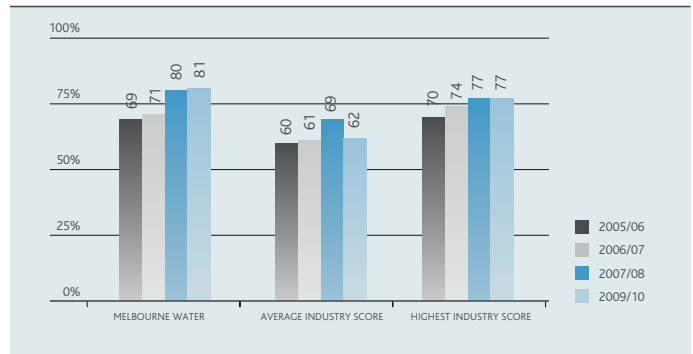
Each plan is developed by a ministerially appointed committee, which is made up of local licensed diverters, representatives from local and state government, Environment Victoria and Melbourne Water. Melbourne Water also provides executive and technical support to these committees.

Streamflow Management Plans include management arrangements that:

- Recognise historical rights to water in the catchment
- Establish environmental flows, including minimum flows and other aspects of the flow regime
- Outline conditions that are placed on licences to protect the environment or to protect other water users
- Define the total volume of water that can be taken under licence in any year (a cap on diversions)
- Establish trading rules that will apply to transfers of water entitlements into, and within, the catchment.

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DJSI - GLOBAL WATER UTILITY INDEX COMPARISON



Melbourne Water has prepared plans for Diamond Creek, Hoddles Creek, Plenty River, Olinda Creek, Stringybark Creek and Steels, Pauls and Dixons Creeks. The Little Yarra and Don and Woori Yallock Streamflow Management Plans are the last two plans being prepared in the Yarra catchment. These two plans were released for consultation in May and June 2011.

## Waste to Landfill Strategy

Melbourne Water generates a wide range of waste streams in delivering its services. It disposes water treatment solids, wastewater grit and screenings, bio-filter media, office waste,

roots and rag mass, contaminated sediments, litter, debris and some construction and demolition wastes to landfill each year.

In 2010/11, Melbourne Water developed a *Waste to Landfill Strategy* which outlines the approach the business plans to take to reduce its reliance on disposing waste to landfill to 2020. Implementation of the strategy will enable the business to gain a better understanding of the characteristics of its waste streams and identify potential end uses and market opportunities for recycling.