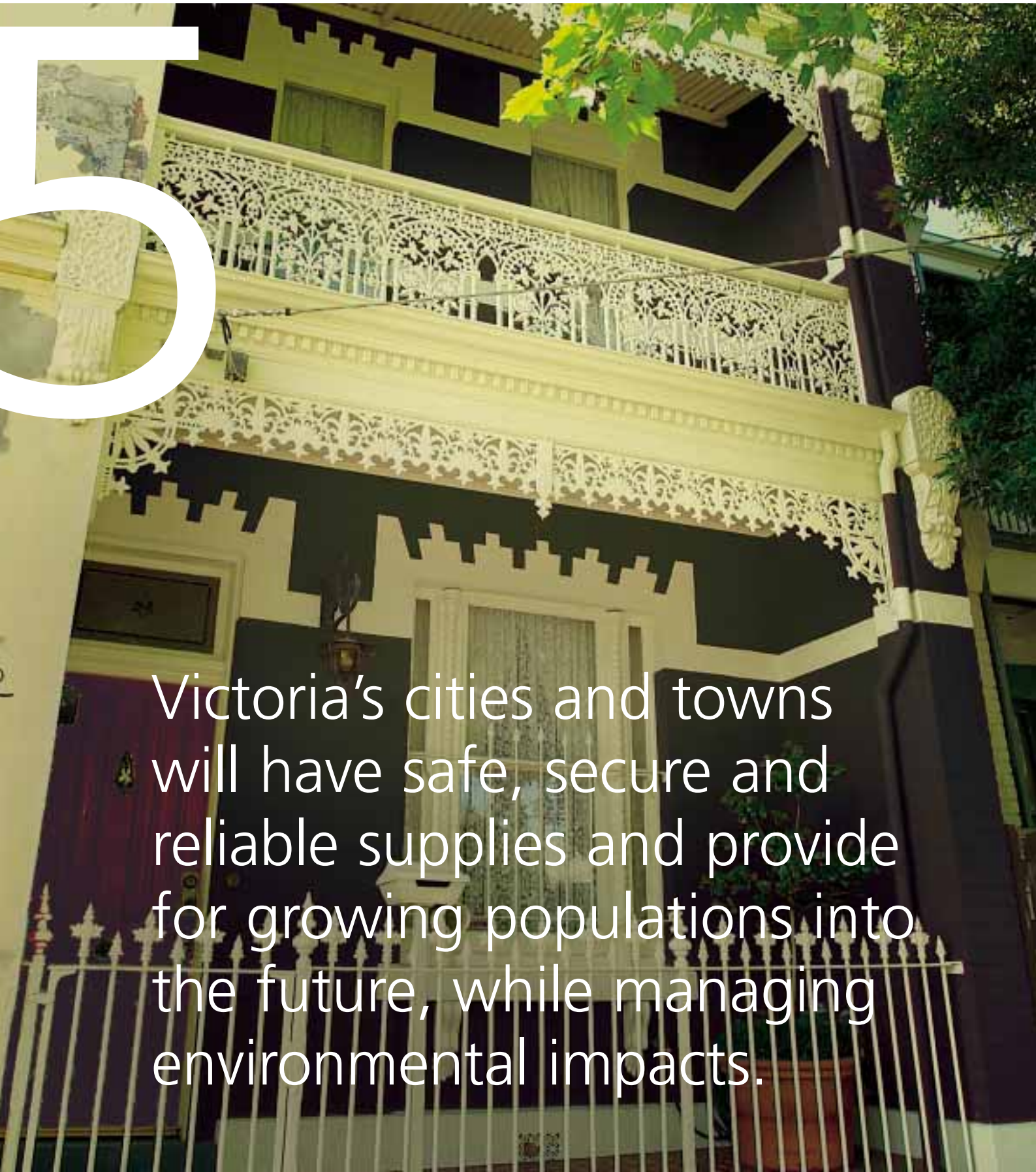


Chapter Five:



Victoria's cities and towns will have safe, secure and reliable supplies and provide for growing populations into the future, while managing environmental impacts.

Smarter Water Use in Our Cities and Towns

1

Key Challenges

- >> Safe, secure and reliable urban water supplies.
- >> Reliable sewerage services.
- >> To balance our demand for water with the available supplies.
- >> To reduce our demand for drinking water (for uses other than drinking).
- >> To be water smart at home, play and work.
- >> To use water that is fit-for-purpose while protecting public health and the environment.
- >> To secure our water supplies by using our existing infrastructure more effectively.

2

Government Initiatives

- >> Water Supply-Demand Strategies – balancing demand with supply.
- >> Pricing for water conservation.
- >> Permanent water savings measures.
- >> Water smart bills and labelling.
- >> An aspirational 25 per cent water savings target for new subdivisions.
- >> Industry and local government water conservation plans.
- >> Urban recycled water projects.
- >> Investigation of proposal to pump recycled water from Melbourne to Gippsland.
- >> Country Towns Water Supply and Sewerage Program.

3

Sustainable Outcomes

- >> Safe, secure and reliable urban water supplies.
- >> No new dam for Melbourne in the next 50 years.
- >> Water sensitive urban development.
- >> Reduced demand for drinking water (for uses other than drinking).
- >> Fit-for-purpose supplies.
- >> Strategic investment in water recovery and recycling projects.
- >> Reduced effluent disposal via ocean outfalls.
- >> The right planning framework and regulation.

Introduction

5

Seventeen per cent of Victoria’s water is used in urban areas. Almost half of this is used by households and industry in Melbourne, with the rest used in regional cities and towns.

Many of our urban populations are increasing, stretching our water resources. By 2030, Melbourne alone will accommodate more than one million additional people and regional Victoria another 350,000.

The demand for urban water will grow over time, yet our ability to divert more water from our rivers and aquifers is extremely limited.

Many rivers have reached and others have exceeded the sustainable limits of diversion. Climate change is likely to further reduce our available water.

Yet there is still much that we can do to reduce our demand for water through avoiding unnecessary use and using it more efficiently.

An average Melbourne household continues to pour 30 per cent of its drinking water onto the garden and flush 20 per cent down the toilet. Alternative supplies, such as recycled water, rainwater and stormwater would be fit for these purposes.

Victorians need to be smarter about how we use water in our cities and towns.

Policy

Victoria’s cities and towns will have safe, secure and reliable supplies and provide for growing populations into the future, while managing environmental impacts. This will be achieved through sustainable urban water management.

The reforms set out in this chapter will enable us to have enough water for our future and manage our urban water sustainably by:

- balancing water supply and demand;
- reducing water consumption;
- recycling and using alternative water supplies;
- securing our drinking water supplies;
- providing safe and reliable drinking water and sewerage services; and
- getting the right planning framework and regulation.

The reforms are consistent with and will drive the development of the National Water Initiative’s outcomes in relation to sustainable urban water management.

Policy Framework for Sustainable Urban Water Management

Everyone has a role to play in improving urban water management – individuals, households, community groups, industry (from plumbers to manufacturers), developers, local councils and the Government. Therefore, it is important that everyone works to a common purpose and objective.

To create this common direction, a policy framework for sustainable urban water management has been created.

A range of tools will be used to achieve sustainable urban water management – public education, incentives, regulation, planning provisions, technical change, pricing and investments.

The Government will adopt the following policy framework (Figure 5.1) for sustainable urban water management and encourage the ‘water decisions’ of stakeholders to be guided by it.

Figure 5.1 Policy framework for sustainable urban water management

1 BALANCING WATER SUPPLY AND DEMAND	2 REDUCING WATER CONSUMPTION
<p>To achieve sustainable urban water management, our demand for water in our cities and towns will be balanced with the available supply. The balance between water supply and demand will be achieved taking into consideration:</p> <ul style="list-style-type: none"> - a long-term outlook; - the total water cycle; - social, environmental and economic; costs and benefits; and - risks, such as climate change. 	<p>The priority action for sustainable urban water management is to use our traditional water supplies more wisely, reducing demand for drinking water (for uses other than drinking). This will be achieved by a range of measures, including education and awareness, pricing, regulation, rebates and water sensitive urban development.</p>
SUSTAINABLE URBAN WATER MANAGEMENT	
3 RECYCLING AND USING ALTERNATIVE SUPPLIES	4 SECURING OUR URBAN WATER SUPPLIES
<p>Urban water supplies can be drawn from all available water resources including recycled water, rainwater and stormwater. We will use water that is <i>fit-for-purpose</i> – many uses of water do not require treatment to drinking water standard. We will use recycled water and alternative water supplies for non-drinking uses where there is a net benefit to the urban community and to minimise detrimental discharges to the environment.</p>	<p>Our urban supplies will be secured by using our existing water supply infrastructure more effectively and by developing new innovative approaches.</p>

5

Balancing Water Supply and Demand

Our cities and towns need to ensure our demand for water does not exceed the available supply. Towns in many parts of the State are facing water shortages that are highlighted during the current drought. Stage 2 or higher restrictions are currently in place in many towns across Victoria.

Climate change is predicted to further reduce water supplies as a result of higher temperatures and lower rainfalls. The Murray-Darling Basin Commission has estimated that by 2023 there will be five per cent, or 1,100,000 megalitres, less water flowing into the Murray-Darling system.

The CSIRO is carrying out work for Melbourne Water on the effect of climate change on Melbourne’s water supply. This work is not yet complete, but the preliminary findings indicate that there will be less water available for Melbourne within the next 30 years.

Melbourne’s population is projected to increase by up to one million by 2030. If per capita demand for water stayed at the average for the 1990s, the demand for water would increase from 480,000 megalitres per year to about 659,000 megalitres per year. However under our current system, reliable water yield is estimated at only 566,000 megalitres per year.

In other words we will run out of water in the future unless we use water more efficiently. If Melburnians continue to use water in the future at the same rate and in the same way as they did in the 1990s, the city may be approaching its supply limits within 15 years.

It is possible to increase Melbourne’s water supply by reconnecting the Tarago Reservoir. However even with this upgrade we will need to reduce our demand for drinking water if we are to have enough water for the future.

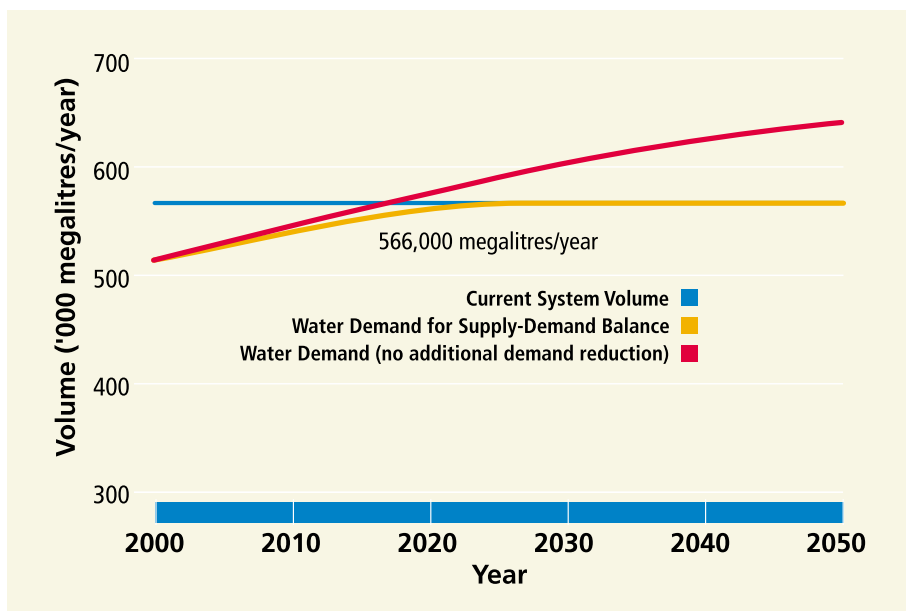
In any event, it makes sense to be more efficient with water which will defer the need for expensive engineering works.

The urban water authorities will play a key role in ensuring that our urban water demand is balanced with the available supplies.

Action

5.1 The Government will require all urban water authorities to prepare Water Supply-Demand Strategies that identify the best mix of demand measures and supply options.

Figure 5.2 Demand-supply balance for Melbourne’s drinking water supplies



Water Supply-Demand Strategies will be a critical input to the Government's new Sustainable Water Strategy process (detailed in Chapter 2). The Water Supply-Demand Strategies will be prepared every five years with a fifty-year outlook to identify measures to maintain a balance between demand for water and available supply over the medium and longer term.

In preparing the Strategies, urban water authorities will take into consideration:

- the total water cycle;
- the social, environmental and economic costs and benefits of options;
- the financial impacts of options; and
- risk management, including climate change, deviations from predicted population growth, environmental impacts and public health requirements.

The Water Supply-Demand Strategies will form part of the urban water authorities' normal business approvals processes, such as Water Plans and/or annual Corporate Plans.

The urban water authorities will be required to report on progress against their Water Supply-Demand Strategies on an annual basis.

New dams are not the solution

Upgrading dam and pipeline infrastructure is appropriate in some locations. However, new dams are not the solution. New dams do not create any new water. They simply take it from somewhere else – either from farmers who currently rely on it or from the environment.

North of the Divide, there is a cap on further allocations from the Murray-Darling river system. As a result, if new dams are built or existing dams expanded for towns, water would have to be purchased from somewhere else, most probably from farmers.

If a new dam were built for Melbourne, it would need to be filled with water that is currently used by rural and regional communities and the environment:

- a new dam for Melbourne would take water from Gippsland or Goulburn Valley farmers who depend upon irrigation for their livelihoods;
- it would also take water from our rivers that are already stressed. This would not only harm the habitat of our native plants, fish and animals, but also threaten our waterways tourism and recreation industry. Taking more water for Melbourne from Gippsland is also likely to harm the Gippsland Lakes, which are vital for Gippsland's economy;
- a new dam for Melbourne would be expensive, costing Victorians up to one billion dollars. These costs are not justified when there are great opportunities to use the water already available to Melbourne more wisely. The cost of saving water through sensible water conservation is far less than the cost of building a new dam; and
- there is existing water supply infrastructure that can be used to harness increased supplies for Melbourne (refer *Securing Our Drinking Water Supplies*).

Reducing Water Consumption



Reducing our demand for water is the priority action because:

- all Victorians can conserve water – simply turning the tap off while brushing your teeth can save up to nine litres of water for every minute of brushing;
- measures to reduce our water use are generally less costly than substituting our drinking water with alternative supplies;
- it reduces discharge of effluent into the environment;
- it reduces energy used for treatment and pumping and hence greenhouse gas emission; and
- it reduces extraction of water from the environment.

The Victorian public has demonstrated widespread support for water conservation measures in the past two years.

Water consumption targets

The Government has set a target to reduce per capita drinking water consumption in Melbourne by 15 per cent by 2010 compared to the 1990s average. This requires a permanent reduction from 423 to 360 litres per person per day.

In the past two years, Stage 1 and Stage 2 restrictions have been in place in Melbourne leading to significant water savings. Over and above this, the Government has supported a behavioural change campaign *Our Water Our Future* and provided rebates for water saving devices. Melburnians have demonstrated an enthusiasm to reduce water consumption. It is forecast that for 2003-04, Melburnians will have reduced their annual water consumption by 22 per cent in comparison with the 1990s average (refer Figure 5.3). Twelve per cent has been achieved through water restrictions and the remaining ten per cent has been achieved through the water savings efforts of Melburnians over and above the restrictions.

The real challenge will be to maintain reduced levels of water consumption after the drought ends. Melbourne’s water authorities have prepared a water conservation strategy to achieve the 15 per cent reduction in consumption by 2010. The strategy contains a number of initiatives designed to reduce water consumption by customers and distribution losses. The expected water savings as a result of these initiatives are summarised in Figure 5.4. Additional water conservation will be achieved through the initiatives contained in the water authorities’ water recycling plan.

Figure 5.3 Melbourne’s average water use per capita per day

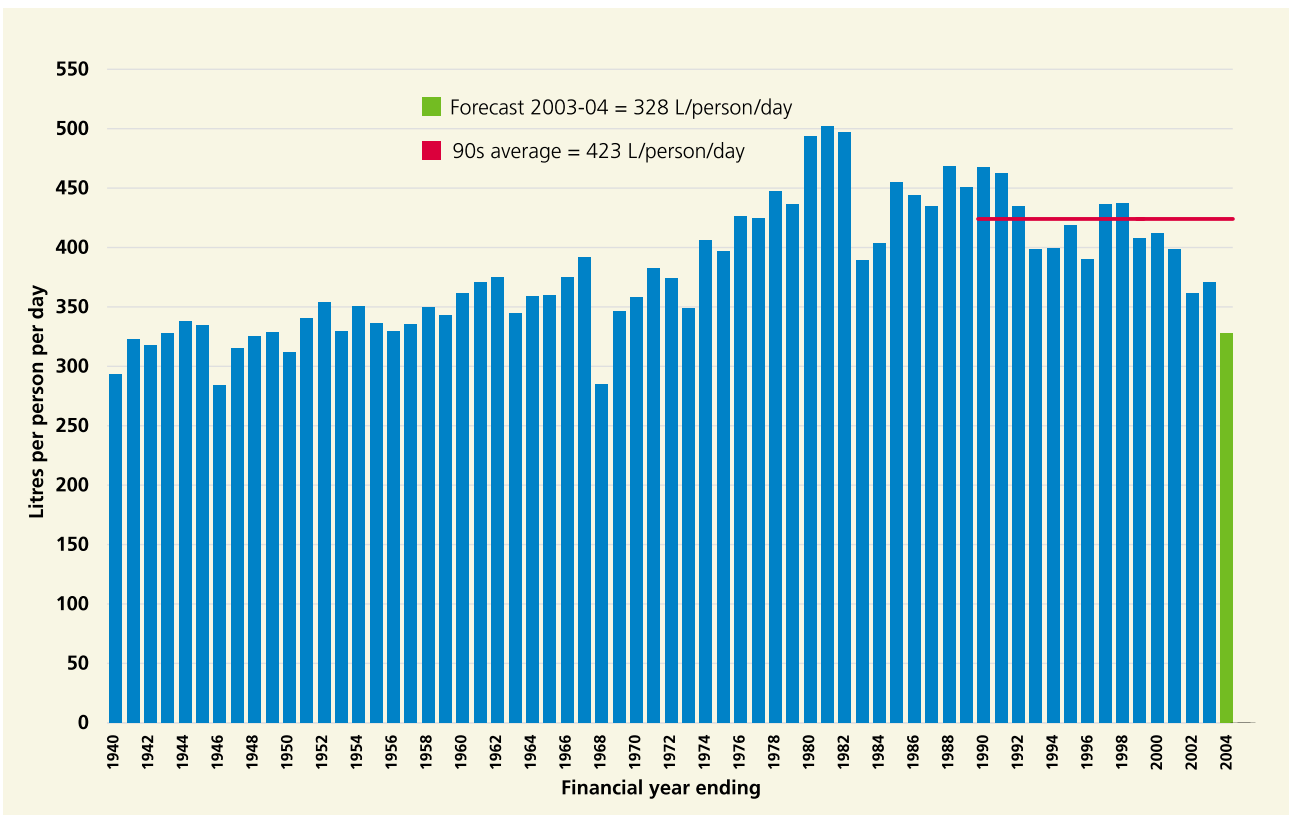
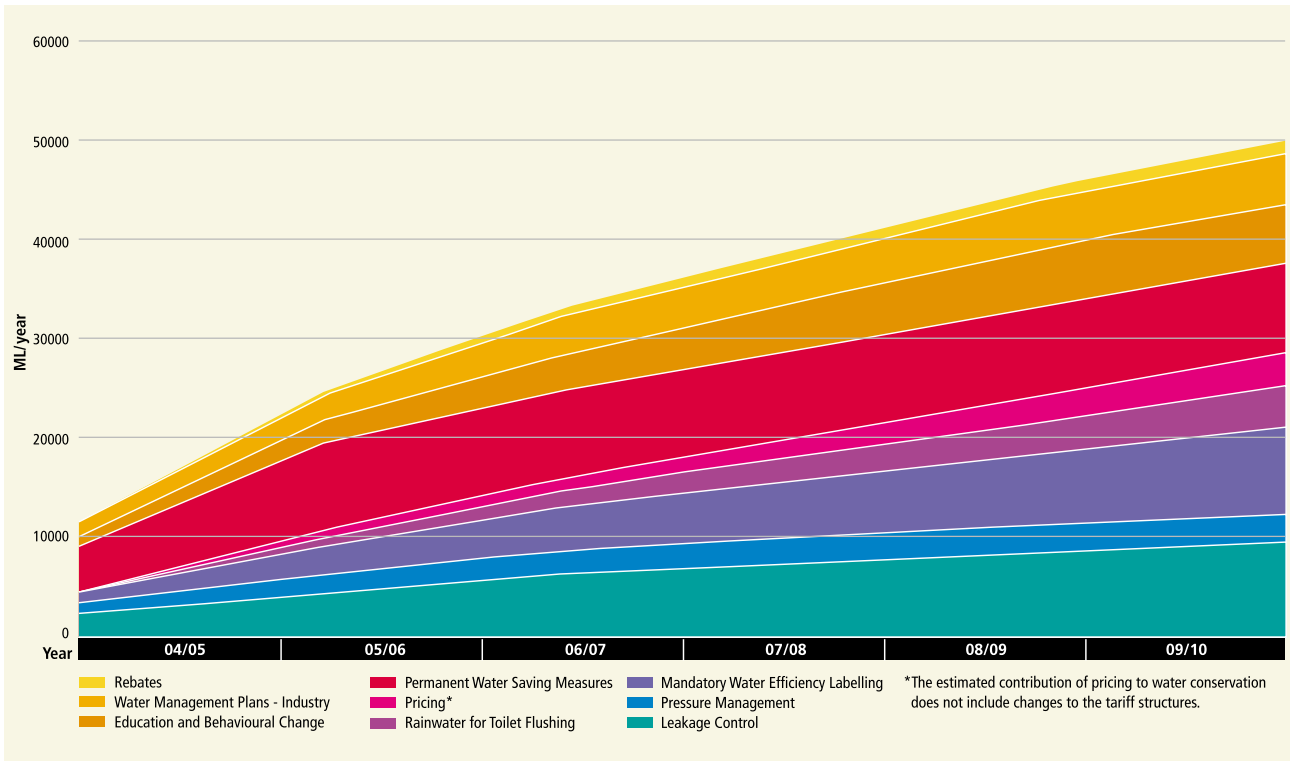


Figure 5.4 Projected water savings for Melbourne



With the introduction of permanent water saving measures for Melbourne, it is possible to achieve more than 15 per cent reduction in consumption in the years following 2010.

Given the risk of climate change, and the need to provide additional environmental flows into the Thomson River which are currently taken by Melbourne, it is proposed to set up an expert committee to examine whether Melbourne can achieve greater than 15 per cent reduction in water consumption beyond 2010.

It is important that this expert committee integrates its work with the work of the metropolitan water authorities in developing their Water Supply-Demand Strategy.

The Government will also require all regional urban water authorities to develop water conservation targets. The targets will be developed at the local level and will be suitable for local conditions. They will be implemented through specific water conservation programs and be incorporated into the urban water authority Water Supply-Demand Strategies.

Action

5.2 The Government will establish an expert committee to advise on an appropriate target for reduction in per capita drinking water consumption for Melbourne beyond 2010.

5.3 The Government will require all regional urban water authorities to develop water conservation targets within 12 months. These targets will be incorporated into the water authorities' Water Supply-Demand Strategies.

5 Actions to Deliver Water Savings

The Government in partnership with water authorities will support actions to deliver water savings through:

- pricing to encourage water conservation;
- introducing permanent water saving measures;
- education and water awareness campaigns;
- regulatory support for water efficient appliances;
- a rebate scheme to encourage water smart gardens and homes;
- water sensitive urban development;
- encouraging and supporting industry to reduce water consumption; and
- working with and supporting local government to promote water conservation.

Pricing to encourage water conservation

One key factor in conserving water is how it is priced. Currently, water is not priced to reflect its true cost, in particular the environmental cost associated with water use. There is scope to structure prices to further encourage the smarter use of water.

The Government proposes that the structure of prices should encourage water conservation by charging more as water use increases.

The Government will introduce rising block tariff pricing for domestic customers in Melbourne from 1 October 2004. The rising block tariffs will reward water conservation and discourage excessive use.

The Government will require regional urban water authorities to introduce pricing structures that provide incentives for water conservation by 1 July 2005.

The details of the pricing proposals are set out in Chapter 6.

Permanent water saving measures

The introduction of permanent water savings measures recognises that there are currently unacceptable uses of our precious water resources.

A number of regional urban water authorities have already introduced permanent water saving measures. In 2003, Barwon Water was the first authority to introduce such measures to limit the use of sprinklers and prohibit the hosing down of paved areas.

Other regional water authorities including Goulburn Valley Water and Lower Murray Water have already introduced permanent water saving measures, and North East Water will soon follow suit.

Action

5.4

The Government will require all urban water authorities to introduce permanent water savings measures. These measures will be developed at the local level and will be suitable for local conditions.

Proposed permanent water saving measures for Melbourne to apply all year round are presented in Table 5.1. The permanent water saving measures will apply once water restrictions are lifted.

These draft measures will be formally advertised for a period of public comment until 15 August 2004. Public comment will be considered prior to finalisation of the measures. (For further information, contact the Department of Sustainability and Environment's Customer Service Centre on 136 186).

Table 5.1 Draft permanent water savings measures for Melbourne

Purpose	Measure
Private Gardens (including lawns)	<ul style="list-style-type: none"> • A sprinkler, microspray or drip system or any other watering system must not be used to water a garden or lawn except between the hours of 8.00 pm and 8.00 am. • A hand-held hose fitted with a trigger nozzle, a watering-can or a bucket can be used at any time. • All automatic watering systems installed from 1 December 2004 must be fitted with either a rain sensor or soil moisture sensor as part of the control system. • All existing automatic watering systems must be fitted with either a rain sensor or soil moisture sensor as part of the control system by 1 December 2005.
Public Gardens and Sports Grounds/ Recreational Areas	<ul style="list-style-type: none"> • A sprinkler, microspray or drip system or any other watering system must not be used to water a garden or lawn except between the hours of 8.00 pm and 8.00 am. • A hand-held hose fitted with a trigger nozzle, can be used at any time. • All automatic watering systems installed from 1 December 2004 must be fitted with either a rain sensor or soil moisture sensor as part of the control system. • All existing automatic watering systems must be fitted with either a rain sensor or soil moisture sensor as part of the control system by 1 December 2005.
Fountains	<ul style="list-style-type: none"> • A fountain, which does not recycle water, must not be operated.
Motor Vehicle Cleaning (all vehicles)	<ul style="list-style-type: none"> • A hose used to clean a vehicle by hand must be fitted with a trigger nozzle.
Paved Areas – Cleaning	<ul style="list-style-type: none"> • A paved area must not be cleaned with water from a hose unless cleaning is required as a result of: <ul style="list-style-type: none"> - an accident, fire, health hazard or other emergency; - an identified safety hazard has developed over time and a high pressure water cleaning device is used; and - construction or renovation work to the surface.
Construction Industry	<ul style="list-style-type: none"> • Any hose used must be fitted with a trigger nozzle.
Swimming Pools	<ul style="list-style-type: none"> • Before a pool or spa with a capacity of 2,000 litres or greater is filled for the first time, an application which includes details of measures that will be undertaken to provide water savings to offset the volumes used in filling, must be lodged with and approved by the water authority.

The draft permanent water savings measures for Melbourne are based on the Barwon Water measures, but are seeking to provide some additional savings, in particular by further limiting the hours of operation for watering systems and by requiring automatic watering systems to be fitted with a rain sensor or soil moisture sensor.

The proposed requirement for a sensor is to ensure that automatic sprinkler systems do not operate while it is raining or when the soil is very wet. The cost of a rain sensor is around \$60.

With the introduction of daytime garden watering restrictions, some householders will purchase automatic irrigation systems for night watering. However, the use of these systems can lead to water wastage if they continue to operate as programmed during wet weather. This has been experienced in Perth. The recommendation to require rain or soil moisture sensors for automatic watering systems has been proposed to ensure that this does not occur.

5

Education and water awareness

Opportunities exist for the whole community at home, work and play to contribute towards sustainable urban water management by conserving water. To do this, communities need to be well informed on key water issues, and individuals must have the ability to recognise the value of their own individual contribution.

In recent years, both metropolitan and regional water authorities have actively engaged with their communities regarding water conservation. During the drought there has been a particular focus on community education and awareness about water restrictions.

There is a need to move public awareness beyond saving water during droughts, towards saving water all the time.

The Government has already recognised the need for informed communities through the implementation of the *Our Water Our Future* behavioural change campaign in metropolitan Melbourne.

The campaign has increased the awareness of the need to save water. The program will continue and similar community education programs will be undertaken in regional and rural Victoria. These campaigns will help make Victorians better water savers and inform them about the total water cycle.

Victorians are not very aware of how much water they use, or even how much they pay for it. Water bills can provide more information to help Victorians save water.

Water authorities also have a responsibility to keep the community informed about how the community is progressing on meeting its water conservation targets.

Action

5.5 The Government and water authorities will undertake community education and information programs to encourage water saving.

5.6 The Government will require water authorities to make water bills more informative. This will enable households to better monitor their water use over time, and compare their consumption with households in their local area.

5.7 The Government will require the urban water authorities to report to the community on a regular basis regarding their progress towards meeting water targets.

During 2003, most Victorians experienced water restrictions. Through their Drought Response Plans, the water authorities have managed the introduction of restrictions effectively with a high level of community acceptance and cooperation.

Historically, water restrictions across the State have differed. In some areas there are ten-step restrictions, in others there are four. This has led to some community confusion regarding varying levels and types of water restrictions across the State. A consistent system of drought restrictions is required, one that allows for local variation to ensure that restrictions are suitable for local conditions.

Action**5.8**

The Government and water authorities will develop, prior to 1 December 2004, uniform water restriction guidelines for drought response which will set out a recommended four-stage restriction policy for the whole of Victoria.

Regulatory support for water efficient appliances

To change water consumption behaviour it is important that water users are aware of how much water their household appliances use. Victoria is participating in a national approach to compulsory water efficiency labelling for household appliances including washing machines and dishwashers.

Action**5.9**

The Government, in partnership with the Commonwealth and other State and Territory Governments, is developing national mandatory water efficiency labelling for appliances, fixtures and fittings. Victoria proposes to introduce legislation to implement the national scheme by Autumn 2005.

Water efficient plumbing measures such as efficient shower roses and toilets are cost-effective ways to reduce water use. Efficient shower roses are relatively cheap and can save around 13 kilolitres per household per year.

Washing machines and dishwashers that are ranked highest for Australian water efficiency standards allow consumers to make substantial savings in water use, water heating and detergent use.

The Government will encourage their use by requiring suppliers to label their products with information about water efficiency.

5

Action

5.10 The Government will introduce mandatory water efficient plumbing measures such as water conserving shower roses and taps (AAA equivalent) for all new houses and other buildings and for new fittings within existing buildings from 1 July 2004.

5.11 The Government will encourage use of water efficient washing machines and dishwashers through the water efficiency labelling scheme but does not propose to make them mandatory at this stage.

Water Smart Gardens and Homes Rebate Scheme

The Government has committed \$10 million over four years to provide rebates to households that are 'water smart' in their gardens and homes.

There has been an overwhelming response to the rebate scheme since it commenced in January 2003. In that time, over 63,000 rebates have been approved. During October and November 2003, over 13,600 rebates were provided to customers for the purchase of AAAA washing machines.

The results of the rebate scheme are shown in Table 5.2.

The rebate scheme also distributed 50,000 flow control valves to Victorians requesting the *Our Water Our Future* water saving kits.

Estimated water savings from the uptake of water saving products through the rebates program is in the order of 680 megalitres per year.

Complementing these actions, Central Highlands Water is working with the University of Ballarat to understand the current level of adoption of water efficient appliances within the community, what barriers exist to uptake and how the level of uptake can be increased.

Table 5.2 Rebate uptake – 1 January 2003 to 13 May 2004 (Phases 1 and 2)

Products	Rebate Amount (\$)	Rebates Approved	Total Water Savings (ML)
AAA Dishwashers	100	5,744	17.2
AAAA Washing Machines	150	13,666	218.7
AAA Shower Rose	10	1,932	25.1
Dual-flush Toilet	50	1,803	23.4
Greywater Permanent Tank System	500	115	2.9
High Pressure Cleaning Device	30	19,064	24.8
Rainwater Tank to Toilet System	150	117	4.0
Rainwater Tank	150	6,034	99.8
Water Conservation Audit	30	45	0.5
Rebate when Purchasing \$100 worth of goods (\$20 for Phase 1)	30	15,141	75.7
Flow Control Valves (Water Saver Kits)	–	50,000	195 ^A
Overall Total		63,331 ^B	687.1

A – Assuming 30 per cent installation rate of flow control valves. B – Excluding flow control valves.

Action

5.12

The Water Smart Gardens and Homes Rebates Scheme will continue to support households to use water more wisely, over the next two years until 30 June 2006.

Rebates will also be made available to the following not-for-profit organisations that are eligible for the Water and Sewerage Rebate on service charges: sporting clubs, housing and accommodation, preschools and kindergartens and churches.

This not-for-profit component of the Water Smart Gardens and Homes Rebate Scheme will commence 1 October 2004. It will provide funding to these not-for-profit organisations on a dollar-for-dollar basis up

to a maximum of \$250 per eligible assessment for water efficiency improvements (the maximum rebate of \$250 is available when \$500 or more is spent by the organisation). The rebate will be provided back to the organisation on its water bill, as with the domestic rebates.

Rebates for these groups will be provided for:

- water audits and retrofitting;
- water efficient shower roses, flow regulators or flow control valves and dual flush toilets;
- maintenance work on leaking taps, toilets and showers; and
- maintenance on irrigation and watering systems to improve water efficiency.

(Note: The Water and Sewerage Rebate on service charges is administered by the water authorities and provides a rebate of up to \$260 per year to eligible community organisations on the fixed service charge component of their water bill issued by their water authority. For metropolitan water and sewerage rebates, the scheme is administered under the 'Metropolitan Rebates for Eligible Organisations Order 1998' made under section 26 of the *Water Industry Act 1994*. For non-metropolitan rebates, the scheme is administered under the 'Non-Metropolitan Water and Sewerage Rebates for Eligible Organisations Orders 1998' made under section 283 of the *Water Act 1989*.)

The Government is also investigating opportunities for schools to participate in a water audit and retrofitting program aimed at improving the water efficiency of the schools. Work conducted by Yarra Valley Water has demonstrated that there are substantial water savings that can be made in schools.

A similar water audit and retrofitting program will also be investigated for hospitals.

Water sensitive urban development

New developments provide opportunities for smarter water management.

Adoption of a total water cycle approach and water sensitive urban design can reduce demand for water and use alternative supplies in new residential, commercial and industrial developments and redevelopments.

The Green Paper proposed a target of 25 per cent water savings in all new developments. However, further work is required to determine how the 25 per cent target should be measured and achieved.

There are good examples of water sensitive urban design. For example, VicUrban's Aurora residential development at Epping North has developed a system that will provide water savings of over 60 per cent. This will be achieved through the use of a third pipe system for recycled water for toilet flushing, and watering gardens and open spaces. The use of rainwater for hot water purposes is also being considered.

There are a number of ways in which developers can reduce water demand including:

- water efficient plumbing and appliances within new homes;
- water efficient gardens and landscaping, including the use of drought resistant plants and water efficient irrigation systems;
- water sensitive urban drainage across subdivisions;
- rainwater tanks connected to sanitary (toilet) systems; and
- use of stormwater as a resource within new residential developments.

5

Action

5.13 The Government will set an aspirational target for new development to achieve at least 25 per cent savings in water use.

5.14 The Government will prepare Water Sensitive Urban Development guidelines to assist developers, industry and local government in achieving the target, further developing existing work by Councils, water authorities, developers and others.

5.15 The Government will provide funding to support smart urban water use initiatives which encourage innovative approaches to demand management, recycling and stormwater management.

5.16 The Government will require the urban water authorities to plan for new growth areas in the development of their Water Supply-Demand Strategies.

State Government buildings

The Government is leading by example in improving water efficiencies in its building and operations.

All Government departments are required to develop environment management systems aimed at improving environment performances, including reduced water consumption. Each department is required to report annually on progress.

The Department of Sustainability and Environment has developed *Environmentally Sustainable Design and Construction Principles and Guidelines*. These guidelines include measures for increased water efficiencies.

The Government is demanding high office standards. New Government accommodation in the following locations have been designed for water and energy efficiency:

- the Southern Cross Building, Melbourne;
- the Department of Treasury and Finance's offices at 50 Lonsdale Street, Melbourne;
- the new Department of Human Services Building, Bendigo;
- the new EPA Victoria building in Dandenong;
- the Department of Sustainability and Environment consolidation project at 8 Nicholson Street, Melbourne;
- the Department of Primary Industries fit-out of 1 Spring Street, Melbourne;
- the new Department of Sustainability and Environment office building at Bairnsdale; and
- water recycling and efficiency initiatives are being implemented in Ministry of Housing accommodation.

Action

5.17 The Government will require improved water efficiency in new Government buildings.

Encouraging industry to reduce water use

Industry and commerce accounts for almost one third of Melbourne's use of drinking water supplies. This can be much higher in regional towns.

In Melbourne, the top 200 water users alone account for the use of 10 per cent of the city's drinking water supply. The retail water authorities have launched *Pathways to Sustainability*, a voluntary program that encourages Melbourne's top 200 water users to prepare a water management plan. These plans will provide a complete analysis of a business' total water cycle, and provide the framework for improvements in water conservation.

Some plans have already been completed. As an example of the program, Yarra Valley Water has worked with the Chadstone Shopping Centre to achieve water saving of 30 megalitres per year through increased washroom efficiencies.

Many regional urban water authorities also have a history of working with local industry to achieve improved water management. For example, Goulburn Valley Water has been working with local industry to upgrade water supply and wastewater management facilities. Campbell's Soups, working with Goulburn Valley Water, has achieved water savings of 18 per cent per year (or 163 megalitres per year) and a reduction in effluent discharge of 27 per cent.

Melbourne's retail water authorities estimate that the top 200 industrial water users will have completed water management plans within three years. As the water authorities progress work

with these high water users, they will expand the *Pathways to Sustainability* program to other significant water users across metropolitan Melbourne.

Action

5.18 The Government will require all urban water authorities to work with industry towards improved water management outcomes, including opportunities for water conservation, recycling and waste minimisation.

5.19 The Government will require all urban water authorities to report annually on their water conservation programs with industry and details of water saved.

5.20 The *Pathways to Sustainability* program within metropolitan Melbourne will be extended by the water authorities to other industrial water users within the metropolitan area as soon as the initial program has been completed for the top 200 industrial water users.

Working with local government to reduce water use

Local government plays an important role in water management and many councils are leading the drive towards more sustainable water practices. Councils are not only role models and community educators, they also manage drainage and stormwater, regulate planning and building policies and are themselves significant water users.

Our public parks and gardens, sporting fields and other open spaces form a vital part of our social fabric. The Government and water authorities will work with local government to achieve more efficient water use for parks, gardens and sporting fields.

Local councils in Melbourne are working with the metropolitan water authorities to develop water conservation plans. The Government proposes to extend this initiative to regional Victoria in partnership with regional urban water authorities.

The Government and water authorities will work with local government to achieve more efficient water use for parks, gardens and sporting fields.

Action

5.21 Funding will be provided to support the extension of local government water conservation plans across regional Victoria.

5.22 The urban water authorities will be required to work with local government in the preparation of these plans.

5.23 Local government will be eligible for funding support for water conservation and recycling demonstration projects including use of recycled water on sporting grounds and in parks.

5.24 The Government has committed to supporting improved water management of country football grounds with \$1 million over the next two years.

5 Recycling and Alternative Water Supplies

Increasing the use of alternative water supplies, such as recycled water, stormwater, rainwater and greywater, can have numerous benefits – improving the reliability of our water supplies, freeing up water for the environment or growth and reducing the amount of treated effluent discharged into our rivers, bays and oceans.

We use drinking water for a number of purposes that do not require drinking water quality. This includes agricultural/horticultural irrigation, watering parks and recreational areas, some industrial processes, toilet flushing and garden watering.

Policy

Urban water supplies comprise all available water resources including recycled water, stormwater, rainwater and greywater.

In our urban communities, we will use water that is fit-for-purpose – many uses of water do not require drinking water standards.

We will use alternative water supplies for non-drinking uses where there is a net benefit to the urban community and to minimise detrimental discharges to the environment.

Regional urban areas are moving forward with recycling projects. In Geelong, Barwon Water has adopted a strategy to recycle 25 per cent of all treated effluent by 2015. Coliban Water supplies recycled water to irrigate crops and pastures and a local golf course. Glenelg Water is planning a high quality recycled water plant in Hamilton to provide a secure water supply of 350 megalitres per year for industry. Central Highlands Water's *SmartCycle* program sets a vision for managing water resources in the Ballarat region, including a major works program by 2005 which will enable 2,000 megalitres of recycled water per year to be used for a range of purposes.

In Melbourne, two very large sewage treatment plants at Werribee and Carrum treat about 96 per cent of Melbourne's sewage, with the remainder treated in smaller local plants. This makes it more difficult and expensive to recycle water that has to be transferred relatively long distances from the two major treatment plants.

Treated water from the Western Treatment Plant has relatively high salt levels, with almost half the salt produced by industry and commerce. This makes it more difficult and costly to recycle the treated water and a mix of measures will be required to reduce salt in the treated water over time.

Reducing ocean outfalls

All effluent discharges from Victoria's ocean outfalls are treated to secondary standard to meet EPA Victoria's licence requirements and to ensure that environmental impacts are reduced. Victoria leads Australia in this achievement. Under the *State Environment Protection Policy (Waters of Victoria)* all water authorities must have programs to assess the impact of discharges on the environment and manage environmental impacts.

Some small coastal treatment plants (Aireys Inlet, Lakes Entrance and Mallacoota) have ceased discharge to the ocean by recycling the treated effluent generated. This process will continue where recycling of all the treated effluent is practicable.

Further, the Government and water authorities are working to reduce discharges from other ocean outfalls through water conservation and recycling initiatives.

Policy

To protect the amenity and health of the marine environment, water authorities will continue to improve the quality and reduce the quantity of effluent discharged from ocean outfalls.

The Government and water authorities will vigorously pursue opportunities for water conservation and recycling to reduce discharges from ocean outfalls and to increase the feasibility of ceasing discharge.

EPA Victoria will continue to work with industry and coastal water authorities to reduce pollutant loads and concentrations and will review existing discharge licences on a case by case basis to progressively reduce discharge impacts.

At present, ocean outfalls are necessary to manage the treated effluent generated from our larger coastal urban centres, including Melbourne. The only current alternative for Melbourne would be to place treated water in our drinking water supply system. This is not acceptable.

It will take major water recycling projects to reduce ocean outfall discharges sufficiently to have measurable environmental benefits for larger urban centres like Melbourne and Geelong. Major water recycling projects present many challenges including:

- securing markets for large volumes of recycled water;
- establishing infrastructure for recycled water;
- managing environmental (including energy use) and social impacts of construction and operational activities; and
- high capital and operating costs, and hence the issue of financing of such projects. Such large-scale projects would present the opportunity for private sector participation in infrastructure provision in line with the Government's Partnership Victoria principles.

Examples of major recycling projects that would result in reductions in discharges to the marine environment include the Major Recycling Scenarios for Gippsland and West of Melbourne (refer: *Strategic investment in recycling and alternative supplies*). The Gippsland scenario would reduce the discharge from Eastern Treatment Plant's ocean outfall to Bass Strait by 80 per cent.

Regardless of the potential for major water recycling projects, currently ocean outfalls remain necessary for managing treated effluent generated from our larger coastal urban centres. At a minimum, ocean outfall capacity will need to be retained to manage wet weather flows. Over time the Government and the water authorities will work progressively to reduce the volume of treated effluent discharged to the ocean.

Targets for recycling

The Government has previously announced a water recycling target of 20 per cent by 2010. The metropolitan water authorities are making progress towards this target. In 2002-03 they achieved 11 per cent water recycling (36,000 megalitres) mainly for irrigation purposes and on-site process recycling.

Since then, two significant water recycling projects have been announced by the Government. These are the Werribee Irrigation District Recycled Water Scheme and the Eastern Irrigation Scheme in the Cranbourne/Five Ways area. Together, these two projects will supply up to 13,000 megalitres of recycled water per year to agricultural and horticultural customers, and to the Sandhurst residential development in the Carrum area.

Individual developers are also introducing recycling. For example, VicUrban at its Aurora development at Epping North is implementing a local treatment plant to produce recycled water for toilet flushing and garden watering. This substantial development will eventually house 25,000 people in up to 8,500 homes and will be a model for water recycling and environmentally sustainable designs.

There are eight existing committed projects that will count towards achieving the target. These projects are summarised in Table 5.3. Together with the 11 per cent recycling already achieved, these projects will achieve a recycling rate of 20 per cent. These projects will be funded through the normal water authority planning process. Chapter 6 outlines the Government's principles for water authority investment in recycled water and alternative supply projects.

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Table 5.3 Committed recycling projects

Projects	Use	Benefits	Estimate Volume (ML/yr) by 2010	Estimate Volume (ML/yr) by 2030
Werribee South (Southern Rural Water and Melbourne Water)	Recycled water for horticulture.	<ul style="list-style-type: none"> Reduced use of surface water and groundwater, freeing up water for the environment Allows for growth. Security of supply. Reduced discharge to Port Phillip Bay. 	8,500	10,600
Eastern Irrigation Scheme (Melbourne Water)	Recycled water for horticulture.	<ul style="list-style-type: none"> Reduced use of surface water and groundwater. Security of supply. Water for growth. Reduced discharge to Bass Strait. 	4,400	4,400
Western Treatment Plant On-Site Recycling (Melbourne Water)	Recycled water used on-site on 11,000 hectares of land for pasture production.	<ul style="list-style-type: none"> More sustainable on-site farming and land management practices. Reduction in nitrogen loads to Port Phillip Bay. 	19,615	19,615
Whittlesea Scheme (Yarra Valley Water)	Recycled water from Whittlesea Treatment Plant for irrigation of a new Council golf course and potentially TAFE horticulture program.	<ul style="list-style-type: none"> Removal of treated waste discharge to waterway. Security of supply. 	285	365
Koorringal Golf Club (City West Water)	Recycled water from Altona Sewage Treatment Plant for irrigation of Koorringal and Sanctuary Lakes golf courses.	<ul style="list-style-type: none"> Drinking water substitution. Security of supply. Reduced discharge to Port Phillip Bay. 	500	500
Aurora Development (Yarra Valley Water)	Recycled water from local treatment plant for toilet flushing, garden watering and open space irrigation in new development.	<ul style="list-style-type: none"> Demonstrate use in urban development in the north of Melbourne. Reduction in rate of growth in drinking water consumption due to urban growth. Security of supply. 	335	1,070
Sandhurst Club (South East Water and Melbourne Water)	Recycled water for irrigation of golf course and residential use.	<ul style="list-style-type: none"> Reduction in rate of growth in drinking water consumption due to urban growth. Security of supply. 	380	380
Inkerman Delux Development (South East Water)	Apartment development in St Kilda incorporating on-site recycling of stormwater and greywater for toilet flushing and irrigation.	<ul style="list-style-type: none"> Demonstrate use in a multi-unit development in Melbourne. Reduction in rate of growth in drinking water consumption due to urban growth. 	6	6

Examples of additional projects that are currently being investigated and that would contribute to the recycling target are summarised in the Table below. Implementation of these projects would take the level of recycling in Melbourne beyond the

Government's 20 per cent target and provide significant drinking water substitution. These projects will be fully assessed through the water authority planning process.

Table 5.4 Recycling projects currently under investigation

Projects	Use	Benefits	Estimate Volume (ML/yr) by 2010	Estimate Volume (ML/yr) by 2030
Sand Belt Scheme in south-east Melbourne (South East Water and Melbourne Water)	Recycled water for golf courses and council reserves. Potential to supply market gardens and industry.	<ul style="list-style-type: none"> • Drinking water and groundwater substitution. • Security of supply/drought proofing. • Reduced discharge to Bass Strait. 	1,000	2,000
Wyndham Residential Development at Werribee (City West Water and Melbourne Water)	Recycled water from Western Treatment Plant for toilet flushing, garden watering and open space irrigation in new development.	<ul style="list-style-type: none"> • Demonstrate use in urban development in the west of Melbourne. • Reduction in rate of growth in drinking water consumption due to urban growth. • Reduced discharge to Port Phillip Bay. 	655	1,560
Princes Park Water Recycling Project (City West Water)	Local treatment and recycled water for open space and landscape watering.	<ul style="list-style-type: none"> • Demonstrate local water mining and use of recycled water treated <i>fit-for-purpose</i>. • Drinking water substitution. • Security of supply. 	1,000	1,100
Cranbourne East Residential Development in south-east Melbourne (South East Water and Melbourne Water)	Recycled water from Eastern Treatment Plant for toilet flushing, garden watering and open space irrigation in new development.	<ul style="list-style-type: none"> • Demonstrate use in urban development in the east of Melbourne. • Reduction in rate of growth in drinking water consumption due to urban growth. • Security of supply. 	315	1,365
Cranbourne West Residential Development in south-east Melbourne (South East Water and Melbourne Water)	Recycled water from Eastern Treatment Plant for toilet flushing, garden watering and open space irrigation in new development.	<ul style="list-style-type: none"> • Demonstrate use in urban development in the east of Melbourne. • Reduction in rate of growth in drinking water consumption due to urban growth. • Security of supply. 	105	1,050

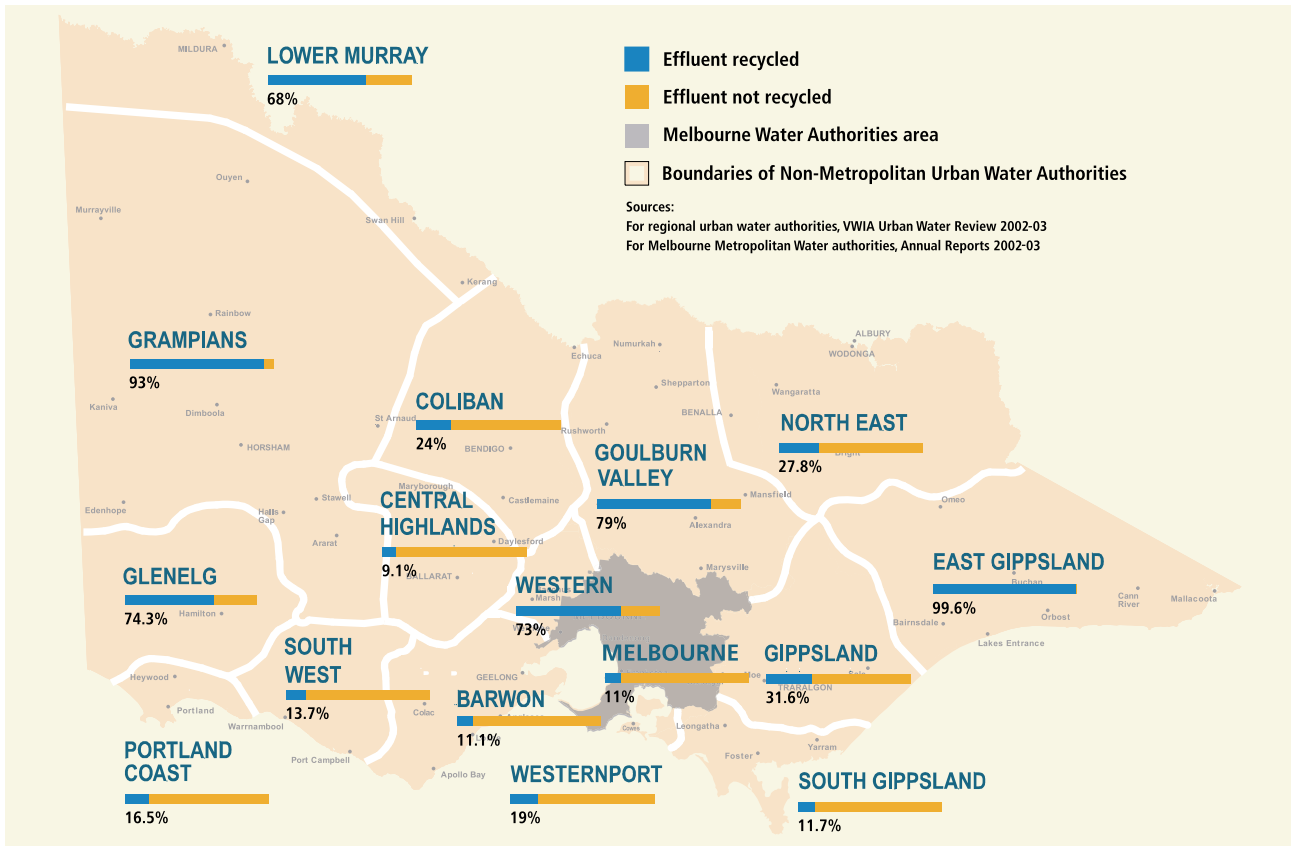
Regional urban water authorities are also investigating recycling opportunities which will be fully assessed through the water authority planning process. For example, Barwon Water is examining a range of options for achieving their 25 per cent target by 2015. Possible projects include an industrial project in northern Geelong which would provide recycled water from a water reclamation plant for industrial use and a potential third

pipe scheme using recycled water from Black Rock Water Reclamation Plant for toilet flushing, garden watering and open space irrigation in new development at Torquay. Coliban Water is investigating a major recycling project with Bendigo Mining that could boost Bendigo's water supply by 20 per cent.

A summary of recycling across Victoria for 2002-03 is provided in Figure 5.5 overleaf.

5

Figure 5.5 Percentage of treated effluent recycled across Victoria



Planning for recycling and alternative supplies

Action 5.25

The Government will require all urban water authorities to assess opportunities for the use of recycled water and other alternative supplies in the development of Water Supply-Demand Strategies.

In developing Water Supply-Demand Strategies, urban water authorities will be required to consider opportunities for:

- high technology local treatment plants that enable local recycling;
- the use of recycled water near recycled water sources;

- the use of third pipe systems;
- environmental uses of recycled water, for example, environmental flows;
- rainwater and stormwater use and greywater reuse; and
- the use of alternative water supplies accessed via water mining and aquifer storage and recovery.

The Water Supply-Demand Strategies will establish water recycling targets.

The Government will seek to maximise the use of recycled water and alternative supplies where they are fit-for-purpose and their use is justified on economic, environmental and social grounds. As part of this process, the Government and water authorities will continue to evaluate a range of water recycling projects for introduction around the State.

The Government and metropolitan water authorities are investigating a range of opportunities for recycling including larger-scale projects that, if implemented, would significantly increase recycling of Melbourne's wastewater. The Green Paper *Technical Report No.1 – Water Recycling Scenarios for Melbourne* (September 2003) provides 19 alternative supply scenarios. The Government's response to each of these scenarios is provided in Appendix E.

One of the scenarios was to use recycled water as a source of drinking water. In some parts of the world recycled water is used as a source for drinking water supplies.

It is possible to augment treatment at Melbourne's Western and Eastern Treatment Plants and then pump high quality recycled water into reservoirs such as Cardinia Reservoir. However, such measures are unnecessary. By reducing our water consumption and using supplies that are fit-for-purpose, we have sufficient water supplies for drinking purposes for the foreseeable future.

Action

5.26

The Government will not place recycled water directly into the drinking water supply system. However, technical development and implementation elsewhere will be monitored.

Urban third pipe systems

A third pipe system is generally used to deliver recycled water to urban areas. New residential, commercial and industrial developments provide the greatest opportunities for the distribution of recycled water via third pipe systems. However the cost of a third pipe system may be significant, particularly where a new development is a long distance from treatment plants.

Policy

The Government will not mandate third pipe systems in all new greenfield residential developments.

In new housing and industrial developments near existing treatment plants, third pipe systems are more likely to be economic. The Government will work with local government, water authorities and developers in these areas to support the introduction of third pipe systems for recycling. This may include mandating third pipe systems in a particular development through a planning scheme amendment or other mechanism.

Planning by urban water authorities, in particular through the development of Water Supply-Demand Strategies, may identify recycled water distributed by third pipe systems as the best solution for balancing overall supply and demand.

Regulation would then mandate developers to adopt these measures, enabling retailers to offer consumers an integrated water supply package (drinking water plus alternative supply in dual supply systems).

This will allow developers to offer 'drought proof' gardens, parklands and recreational areas. The Government does not support the compulsory retrofitting of third pipe systems to distribute recycled water in the existing suburbs of Melbourne due to the prohibitive costs and disruption involved.

5

Strategic investment in recycling and alternative supplies

Water recycling projects are core business for the water authorities. However, Government support may be required to deliver strategic recycling and water recovery projects that provide significant community benefits at a State or regional scale.

Policy

The Government will support strategic recycling and water recovery projects that provide significant community benefits at a State or regional scale.

Action

5.27 Over the next four years, the Government will consider investment in strategic water recovery and recycling programs that:

- are of State or regional significance;
- deliver multiple benefits – social, economic and environmental;
- involve a cooperative approach; and
- are larger scale projects or initiatives.

Examples of strategic investment opportunities are outlined below.

Major Recycling Scenario – Gippsland

Recycled water could provide for a major shift in the way we manage urban water resources south of the Divide. Availability of alternative water supplies in the Melbourne and Gippsland regions provides an opportunity to reconsider management of drinking water resources. It could provide greater security of supply, extra water resources for Gippsland and increase environmental flows to stressed rivers.

A proposed scenario for water management across this area is illustrated in Figure 5.6.

The key elements of this ‘big picture’ scenario include:

- recycled water transferred from Melbourne’s Eastern Treatment Plant via a 135 kilometre pipeline to the Latrobe Valley;

- a new water reclamation plant to treat water sourced from the Latrobe Valley sewerage system. The treated water would be mixed with recycled water from Eastern Treatment Plant and supplied to the Latrobe Valley’s power stations, paper industry and new industries in the region, substituting the use of surface water from the catchment. Return flows from power stations would be retreated in the reclamation plant;
- freshwater currently taken from Gippsland’s rivers for use in industry will be ‘freed up’ for environmental flows and extra drinking water; and
- use of appropriately treated recycled water in the Macalister Irrigation District for agricultural expansion and substitution.

Potential long-term benefits include:

- closure of Gippsland’s Regional Outfall Sewer for transfer of sewage;
- extra water available for agriculture or industrial expansion in Gippsland;
- additional environmental flows of freshwater in the Latrobe, Thomson and Macalister Rivers, and assisting with the revitalisation of the Gippsland Lakes;
- potentially providing extra drinking water throughout the region; and
- significantly reducing treated wastewater discharges (80 per cent reduction) to the marine environment at Gunnamatta on the Mornington Peninsula.

Melbourne Water and Gippsland Water are currently progressing a pre-feasibility study of the economic, social and environmental costs and benefits of the scenario.

Action

5.28 The Government will further investigate the Major Recycling Scenario – Gippsland.

Figure 5.6 Major Recycling Scenario – Gippsland



5

Major Recycling Scenario – West of Melbourne

The lack of water in the west is a constraint on growth in the major urban centres of Geelong and Ballarat. The rivers to the west of Melbourne – the Werribee, Moorabool and Barwon Rivers - are stressed due to extractions. High value agricultural production and industry development in the area is limited as a result of lack of water.

The Western Treatment Plant in Werribee has the potential to generate large volumes of high quality, recycled water. This water could be used for irrigation in the Moorabool and Bacchus Marsh areas, freeing up water for Geelong and Ballarat and for environmental flows. Recycled water from other treatment plants in the west is small in comparison, but could also offer a range of existing and potential recycling opportunities.

The proposed scenario for water management west of Melbourne will take a 'big picture' approach.

The key elements of the scenario will include:

- a strategic water resources plan for the west encompassing Ballarat, Bacchus Marsh, Greater Geelong, Surf Coast and the west of metropolitan Melbourne;
- an expanded Balliang business case, to include Bacchus Marsh and Moorabool Valley as priorities, investigating the beneficial use of up to 35,000 megalitres of recycled water;
- a commitment to reduce salt loads in recycled water at the Western Treatment Plant through desalination technology, innovation and cleaner production; and
- release of an action plan for the Werribee Plains Vision which details initiatives and projects using recycled water to create a major green region west of Melbourne.

The scenario is shown in Figure 5.7.

Action

5.29 Building on the significant work already undertaken, the Government will:

- as part of the Sustainable Water Strategy for the Central region, assess the Major Recycling Scenario – West of Melbourne to secure water supplies for Ballarat, Geelong and agriculture, and to improve environmental flow; and
- further to the implementation of the Werribee District Recycled Water Scheme, examine recycled water opportunities in Moorabool Valley, Bacchus Marsh and the Wyndham growth area through third pipe development.

In assessing the Major Recycling Scenarios, the Government will adopt a triple-bottom-line approach. While recycling offers significant water saving opportunities, the significant economic and environmental costs associated with piping and providing energy to pump water need to be considered.

Figure 5.7 Major Recycling Scenario – West of Melbourne



5

Sustainable management of biosolids

In the past, urban water authorities focussed on the treatment and disposal of waste products (domestic, commercial and trade) which were released into their sewerage networks. However, sustainable water management means new and innovative ways of managing the residuals from the treatment process. These residuals include treated water suitable for recycling, plus a by-product called 'biosolids'.

Policy

The Government supports sustainable beneficial uses for biosolids.

Biosolids are a valuable resource, containing essential plant nutrients and organic matter. They can be used as a natural fertiliser to improve agricultural soils and stimulate plant growth. Alternatively, the organic matter in biosolids may be used as a substitute for fossil fuels.

Victoria currently produces 67,000 dry tonnes of biosolids every year. Another 2,000,000 tonnes is currently stored at sewage treatment plants pending identification of suitable recycling or beneficial use opportunities. Melbourne's two major treatment plants have around 95 per cent of the State's biosolids and account for 60 per cent of the on-going production.

To progress towards sustainable management and reuse of biosolids, EPA Victoria requires all holders of sewage treatment licences to prepare biosolids management plans.

Managing trade waste to sewer

The waste that we discharge to sewer, at home and work, can impact upon our ability to use recycled water as an alternative water supply.

Industry and commerce contribute significantly to levels of salt and other pollutants, such as heavy metals, to treated effluent and biosolids respectively. For example, at Melbourne's Western Treatment Plant, industry and commerce contribute 40-50 per cent of the salt load and limit the use of recycled water from the treatment plant.

Policy

Trade waste management will be consistent with an ethic of water conservation, and facilitate water and biosolids recycling.

Trade wastes will be managed to reduce the impacts of discharges from wastewater treatment plants on the environment.

Historically, trade waste has been managed to protect public and worker health, sewerage systems and the environment. Today, management of trade waste also must consider objectives of waste minimisation and resource efficiency, including use of recycled water and biosolids.

Issues in trade waste management include:

- inconsistencies between water authorities leading to a non-level playing field for industry;
- poor linkages between trade waste management and use of recycled water and biosolids; and
- lack of a whole of system approach to waste management.

Action

5.30 The Government will require urban water authorities to work with industrial and commercial clients and EPA Victoria to develop cleaner production programs and reduce salt discharge.

5.31 The Government will review the State's trade waste management framework to reduce environmental impacts, facilitate water and biosolids recycling and support water conservation.

Salt Reduction at the Western Treatment Plant

A key constraint on recycling in the western metropolitan region is the salt levels of recycled water from the Western Treatment Plant. Melbourne Water and City West Water have assessed a range of options to reduce the salt levels from source to 'end of pipe'. Melbourne Water and City West Water are jointly developing a salinity reduction strategy which will recommend a detailed program to reduce the salt content of recycled water by 40 per cent by 2009 at the latest.

Options currently under consideration include:

- on-site treatment at the Western Treatment Plant;
- separate treatment of highly saline streams at the Western Treatment Plant;
- separate treatment of highly saline streams at the Altona Treatment Plant;
- treatment of highly saline streams at, or close to, the source; and
- trade waste cleaner production strategies.

Action

5.32 Melbourne Water and City West Water will develop a salinity reduction strategy for the Western Treatment Plant this year. A key outcome of the strategy's implementation will be fit-for-purpose water for the Werribee Irrigation District Recycled Water Scheme.

Urban stormwater

Urbanisation has led to increased volumes of stormwater being discharged into the environment. Stormwater is currently managed from a drainage perspective rather than as an alternative water supply. However progress has been made in the development and implementation of water sensitive approaches to stormwater management.

Potential uses of stormwater include water substitution for golf courses, racecourses, sporting grounds and public open space, watering gardens and toilet flushing.

Action

5.33 As part of the Government's support for smart urban water initiatives it will provide specific funding for projects to manage and harvest urban stormwater as a resource.

5

Aquifer storage and recovery

Storage is a key issue to enable local use of alternative water supplies such as stormwater runoff, river diversions and/or recycled water. Aquifer storage and recovery provides a temporary storage option for later recovery and reuse.

Given the limited knowledge about, and interest in, aquifer storage and recovery, its potential within the Melbourne region will be assessed and mapped in consultation with the waterway manager. Any feasible sites for pilot projects will be identified. The feasibility of extending mapping to regional centres will also be evaluated. If preliminary investigations are positive, a pilot project for aquifer storage and recovery will be established.

Action

5.34 The Government, water authorities and local government will investigate the potential for aquifer storage and recovery for Melbourne.

Action

5.35 The metropolitan water authorities will continue to support the Smart Water Fund. The metropolitan water authorities will provide up to \$4 million each year for the next four years for investment in projects across metropolitan Melbourne and the Government will provide \$1 million each year for investment across regional Victoria.

Smart Water Fund

The Smart Water Fund was established in 2002 by the four metropolitan water authorities and Government. The Fund has provided \$4 million per year to support innovative water conservation, water recycling and biosolids management projects in the metropolitan area.

The Smart Water Fund provides a vehicle for:

- research and development entities or joint venturers to pursue innovative projects that support the Fund objectives;
- community-based entrepreneurs and good environmental citizens to respond to the water industry and Government's call to change behaviour in relation to water usage through innovative initiatives in line with the Fund's objectives; and
- adding research and development value to the water industry that otherwise may not have occurred.

The Smart Water Fund has supported a number of innovative water initiatives in Melbourne and the Government will extend its benefits to regional Victoria.

Securing Our Drinking Water Supplies

As well as demand reduction and recycling measures, the Government and water authorities will implement measures to secure our urban water supplies.

Interconnected systems

There are opportunities to use existing water supply infrastructure more effectively to secure our urban water supplies.

In particular, interconnection can increase flexibility in balancing water supply and demand and use of available capacity within the existing water supply system. An example of improved system performance through interconnection is Western Water's pipeline connecting Sunbury-Melton to Melbourne's water supply.

Interconnection can be a cost-effective way of supplementing existing supplies in certain areas and generally leads to greater equity in security of supply between interconnected water authorities. Interconnection does not, however, take away from the fact that our water supplies are limited, nor does it not relieve us of the need to conserve our drinking water supplies.

Policy

Interconnected systems between rural, regional and metropolitan water authorities are an option to provide for greater security of supply for Victoria.

Securing supply in regional urban areas

The regional urban water authorities are using innovative approaches to meet short-and long-term drinking water security challenges.

The water pressures in the Central region are reflected in the establishment of the Macedon Ranges Water Resource Review – Community Reference Group. The Group has been established to advise Western Water on the community's views concerning the options for water supply security in the event of the continuation of the current drought.

The communities affected by the review include the area supplied by Rosslynne (Gisborne, Macedon), Mt Macedon and Riddells Creek) and the towns of Romsey, Lancefield, Woodend which all have their own sources of water supply. These communities are suffering the impact of drought with the towns serviced by Rosslynne Reservoir having been on modified stage 4 restrictions since December 2003.

For the Geelong area, Barwon Water has set challenging targets to meet future water supply and demand requirements. It has set a 15 per cent water conservation target for 2023 and a 25 per cent water recycling target by 2015. Key initiatives to meet these targets include the proposed Northern Water Reclamation Plant, which will have the potential to convert sewage and wastewater from industry into high quality recycled water. This project has the potential to achieve drinking water substitution of 5,500 megalitres per year.

For Ballarat, Central Highlands Water is currently reviewing long term resources management to manage drought and provide for future urban growth. This review will focus upon the Upper

Moorabool catchment, interactions with the major recycling opportunities for increased use of recycled water in the Werribee, Bacchus Marsh and Moorabool areas and opportunities for use of groundwater. Central Highlands Water will consult with its local community and other relevant water authorities in the development of the plan.

In northern Victoria, 2004 has had the driest start on record, with Bendigo receiving just over one quarter of its normal rainfall. Stage 4 water restrictions were introduced on 1 June 2004 for towns in the Bendigo, Castlemaine and Kyneton areas. These are the most severe restrictions applied in these towns for the last 20 years. Additionally, water supplied to rural areas in the Bendigo region have been restricted to less than 70 per cent of licence volume for the last three years.

A 50 per cent increase in population over the next 30 years is predicted for Bendigo. This is an added challenge for water resource management in the region.

To meet these challenges, Coliban Water has plans in place to safeguard future water supply by reducing water use by 15 per cent over the next ten years and substituting alternative water supplies and recycled water for five per cent of total water used by 2010. Proposed measures to achieve these targets include the introduction of permanent water savings measures and community education and assistance programs. Additionally, Coliban Water is investigating use of Bendigo Mine water as an additional water source and the use of recycled water from the Bendigo Water Reclamation Plant to free up water for agricultural use.

These innovative approaches will be incorporated into the regional Sustainable Water Strategies (refer Chapter 2).

Harnessing supplies for Melbourne

The Melbourne Water Resources Strategy (2002) recommended investigation into the following opportunities to harness increased water supplies for Melbourne:

- **Reconnecting Tarago Reservoir.** This reservoir, which does not have a closed catchment, was taken offline because of poor water quality. It can be reintroduced and contribute significantly to meeting projected demands (21,000 megalitres per year) by incorporating a new treatment plant. The costs of this are approximately \$50 million.
- **Duplicating O'Shannassy Reservoir pipeline.** This involves duplication of the pipeline from the reservoir to increase water transfer capability so that an extra 22,000 megalitres per year can be harvested from the O'Shannassy River. The costs of this are approximately \$11 million.
- **Increased use of Sugarloaf Reservoir.** This involves increased pumping of water from the Yarra River at Yering Gorge (downstream of Yarra Glen) into Sugarloaf Reservoir, and increasing the capacity of Winneke treatment plant by 72,000 megalitres per year.

The Melbourne Water Resources Strategy recommended that a small increase in supply would be required to provide for Melbourne's annual water use by 2050. This could be achieved by reconnecting the Tarago Reservoir.

However through water conservation measures, Victoria can defer or avoid the need for such augmentation works.

5

The O'Shannassy Reservoir pipeline duplication and the increased use of Sugarloaf Reservoir would involve increased extraction from the Yarra River. The environmental costs of this would need to be fully investigated, prior to consideration of any augmentation.

Action

5.36 Tarago Reservoir will be reconnected to provide water for growth in Melbourne. The timing, costs and environmental impacts of reconnection will be investigated.

Distribution losses including leakage

While it is low by international standards, about ten per cent of Victoria's urban water is lost through leakage from water authority pipes and client pipes.

The level of distribution losses has been reduced in Victoria over recent years. Water authorities have undertaken a number of initiatives including sophisticated leak detection programs to reduce distribution losses. The water authorities will continue to use acoustic equipment to determine leak location. They forecast savings of 7,000 megalitres a year by 2010.

Action

5.37 Water authorities will implement leakage reduction programs and use cost-effective technology such as water pressure reduction to reduce distribution losses.

Water authorities have undertaken a number of initiatives including sophisticated leak detection programs to reduce distribution losses.

Desalination

Desalination also offers the potential to develop large-scale alternative and renewable water supplies, which could lead to a reduction in water sourced from rivers and aquifers. It also offers further potential to reduce salinity within salt affected rivers and streams in northern Victoria.

At this stage, smaller-scale application of desalination is core business for water authorities. For example, Grampians Water has been using small-scale desalination plants to improve the quality of local water supplies.

However, the Government has committed to investigating large-scale applications, for the supply of bulk water. This analysis will determine whether Victoria should pursue initiatives to tap into this alternative water source.

Action

5.38 The Government will investigate the environmental, social and economic costs and benefits of large-scale application of desalination. The investigation is expected to be completed by 2006.

Providing Safe and Reliable Drinking Water and Sewerage Services

Victoria's urban water authorities provide safe and reliable drinking water and sewerage services to their customers. Recent or current projects that have been undertaken to improve water and sewerage services include:

- North East Water's innovative non-chemical water treatment processes at Myrtleford and Mt Beauty;
- the Melbourne to Wallan pipeline to improve the security of supply around Wallan; and
- South Gippsland Water's regional wastewater treatment plant to improve the performance of dairy wastewater treatment at Korumburra and Leongatha.

The discussion outlined above has focussed on the provision of reticulated water services in cities and towns by urban water authorities. However, there are many areas that are not served by reticulated water and sewerage but utilise rainwater tanks and septic systems instead.

Policy

All Victorians will be provided with safe and reliable drinking water and sewerage services that protect public health and the environment.

In the southeastern and eastern suburbs of Melbourne, over 42,000 property sites are of insufficient size to adequately treat domestic wastewater on-site via septic systems. These properties will require sewerage infrastructure.

In country Victoria, there are approximately 22,000 properties in towns of greater than 100 properties that do not have access to reticulated sewerage services. A lesser number do not have access to reticulated water supply. Unlike urban areas, these smaller towns have the opportunity to use innovative, smaller-scale water supply and sewerage service approaches. Indeed, for some of these towns, the best water supply will be via rainwater tanks and the best sewage treatment will be via on-site treatment including septic tanks. For other communities however, the best water supply and sewerage services will be via reticulated systems.

The Government has recently completed funding of the New Town Sewerage initiative. This \$22.5 million initiative involved the sewerage of over 50 towns across rural and regional Victoria.

The Government will build upon this process with the Country Towns Water Supply and Sewerage Program.

Action

5.39 The Government will continue to work with the metropolitan water authorities to implement the Metropolitan Backlog Sewerage Program.

5.40 In country Victoria, the Government will contribute \$42 million over the next eight years in the new Country Towns Water Supply and Sewerage Program to assist in providing sewerage and water supply solutions to small country towns.

The Program will include:

- priority investment in those towns with critical public health and environmental needs;
- a range of projects that will allow the water authorities, local government and the community to explore alternative approaches to meet water supply and sewerage needs; and
- \$2.3 million in funding to local government to assist in the development of municipal wastewater management plans.

Water authorities will continue to work with local councils to identify areas where the provision of infrastructure is necessary to ensure that further development does not result in a health or environmental impact. These water supply and sewerage schemes will be implemented by the water authority largely on a cost recovery basis to minimise the impact of any price rises on their broader customer base.

5 Getting the Right Planning Framework and Regulation

The planning and regulatory framework will be aligned to support water conservation and to ensure that the use of recycled water and alternative supplies is consistent with environmental and public health protection requirements.

Statutory planning and building approvals

In our cities and towns, the statutory planning and building approvals systems are important tools that will be used to help us move towards sustainable urban water management.

Action

5.41

The statutory planning and building approvals systems will be aligned to support water conservation and enable the use of recycled water and alternative supplies. This will be done through existing Government initiatives in the first instance by:

- reviewing the Victorian Planning Provisions to ensure consistency with the Government's policy for sustainable urban water management;
- reviewing the building approvals framework to provide for a consistent, performance-based approach to sustainable urban water management; and
- requiring water authorities, drainage authorities and catchment management authorities to work with local government in the development of local planning policies that are consistent with sustainable urban water management.

User-friendly tools, training and education, including Water Sensitive Urban Development Guidelines, will be developed to support the implementation of these changes.

Guidelines for the use of recycled water and alternative water supplies

As recycled water and alternative water supplies become more widely used throughout the community, there is a need to update the regulatory framework and associated guidance to ensure protection of public health and the environment.

Action

5.42

EPA Victoria, in partnership with the Department of Human Services, will review the public health and environmental framework supporting alternative urban water supplies, including recycled water, greywater, stormwater and rainwater. For each alternative water source, the review will consider:

- the level of regulatory oversight that is needed;
- the most efficient approaches for assessing and approving the use of individual alternative water supplies; and
- the necessary reporting and auditing requirements so that the community retains confidence in the safety of alternative water supplies.

The review will be completed by mid 2005.

Action

5.43

EPA Victoria will work in partnership with the Department of Human Services to build from the existing *Guideline for Environmental Management: Use of Reclaimed Water* (EPA, 2003) and establish a broad suite of guidance for alternative water supplies. The guidelines will establish water quality standards and appropriate management controls to expand the use of alternative supplies, including:

- the use of recycled water in urban third pipe networks;
- the use of recycled water to provide environmental flows for waterways;
- the use of greywater in individual households;
- the use of stormwater for urban recycling;
- the use of aquifer storage and recovery in water recycling; and
- the use of industrial process water for industrial and urban recycling.