



## Discussion Paper

### Establishing a water substitution target

A new approach to securing Melbourne's water needs

**December 2007**

**OVERVIEW**

To address Melbourne's future water needs the Victorian Government is proposing to take 75 billion litres of water from the Goulburn Valley – a region already desperately short of water - and build a seawater desalination plant at Wonthaggi. The Government's plans are expensive leading to a doubling of the price of water for consumers, they will have a negative impact on the environment and are socially divisive.

The Nationals believe a better way forward is to provide effective incentives for industry and households in Melbourne to substitute recycled water and storm water for potable water used for non potable purposes such as flushing toilets, watering lawns and gardens and by industry. There are huge untapped opportunities to do this given that each year Melbourne Water pumps 300 billion litres of treated sewage into the sea and 500 billions litres of rain water falls in the metropolitan area with most of that entering Port Phillip Bay and Westernport as stormwater runoff.

Our solution involves establishing a mandated water substitution target with the aim of replacing 30 percent or 130 billion litres of the city's current potable water use with recycled water, treated storm water or rain water by 2020.

The proposal is modelled on comparable Victorian and Commonwealth schemes to promote renewable energy and more efficient use of electricity.

**What is a mandated water substitution target?**

The key elements of how the scheme could work are as follows:

- Specific targets would be set for substitution of potable water with recycled water, treated storm water or rain water. (30% by 2020 with interim targets of 10% by 2010 and 15% by 2015)
- Activities which result in substitution of potable water would generate water substitution certificates. One water substitution certificate would be issued for each kilolitre of potable water replaced.
- Households would be offered incentives to substitute potable water use and in the process generate water substitution certificates(eg installing rainwater tanks connected to toilets and/or laundry)
- Smaller non domestic water consumers would similarly be able to generate water substitution certificates.
- At each of the target dates, 2010, 2015, and 2020, water retailers would be required to surrender water substitution certificates equal to their share of the overall water substitution target.
- Large water consumers using more than 10 million litres of water per year would also be required to directly participate in the scheme and surrender water substitution certificates equal to their share of the target on a similar basis to water retailers.
- A market for water substitution certificates would be established. The market would be overseen by the Essential Services Commission. Melbourne water retailers and large water users unable to generate sufficient water substitution certificates on their own account to meet their obligations under the scheme would be able to purchase them from the market. Companies or individuals substituting potable water with other supplies and generating water substitution certificates would be able to sell water substitution certificates through the market.

- Melbourne water retailers and large water consumers unable to meet their water substitution targets, either through projects they initiate or by purchasing water substitution certificates through the market would effectively incur a financial penalty with the proceeds being used by the Government to augment Melbourne water supply by other means (but not involving transferring more water from country Victoria).

### **Advantages of The Nationals' scheme**

Major advantages of the scheme include:

- It is likely to provide a cheaper option for Melbourne Water consumers than building an expensive north-south pipeline or a desalination plant
- It avoids the necessity for Melbourne to take water from other communities which are themselves desperately short.
- The market mechanism proposed will identify least cost opportunities to substitute potable water with recycled water, treated stormwater or rain water. This is in marked contrast with the Government's approach involving ad hoc grants which favours large projects over small scale projects, largely ignores the private sector, is subject to political influence and has resulted in government subsidies for high profile but often inefficient water substitution projects.
- The Nationals' proposal provides an equitable way of sharing the burden of reducing Melbourne's water consumption.
- Our proposal is far more environmentally sustainable avoiding the need to take water from northern Victoria that could otherwise be used to enhance river health. Nor does it require an expensive water desalination project which will have a very high demand for electricity and create environmental problems with the disposal of highly saline water and sludge.

## INTRODUCTION

Prior to the November 2006 State election the ALP assured Victorians the Government would not meet Melbourne future water needs by taking water from irrigators in northern Victoria. Suggestions of a desalination plant were dismissed as too expensive and not environmentally sustainable.

Subsequent to the election a complete policy reversal has occurred. The Government appears to have been panicked by the current drought and has backed down on its pre-election positions by proposing a very large desalination plant at Wonthaggi and a north-south pipeline to transfer 75 billion litres a year from the Goulburn Valley to Melbourne. Both of these projects are expensive. It is conceded they will lead to a doubling of the real price of water by 2012. They will also have a negative impact on the environment and they are socially divisive. If they proceed they will be viewed by future generations of Victorians as very poor public policy decisions.

The Nationals believe there is a better way forward. The focus of government policy and investment should be on promoting water recycling, encouraging more water use efficiency and utilising storm water. There is enormous potential to substitute recycled water and treated storm water for potable water. Examples include water used by industry for cooling and cleaning, for watering public and private parks and gardens and for flushing toilets.

## WATER RECYCLING IN MELBOURNE

The State Government has previously set a water recycling target for Melbourne of 20% by 2010. On paper at least this target was met in 2006/07 but achieving it was more due to dubious accounting methodology than to a real focus on water recycling.

64% of the water claimed to be recycled by Melbourne Water is water used on site at the sewage treatment works. 35% is sold to commercial farmers. The volume of recycled water used to replace potable water in non potable uses is insignificant – less than 1% of total water consumption.

## OPPORTUNITIES TO SUBSTITUTE POTABLE WATER WITH RECYCLED WATER

Recycled water is barely on the Government's radar as a solution to the water shortage the city faces. Opportunities for using recycled water to replace potable water in non potable uses have largely been ignored.

Melbourne currently discharges approximately 300 billion litres of waste water into the sea each year. On top of this an average of 500 billions litres of rain water falls in the metropolitan area with most of that entering Port Phillip Bay and Westernport as stormwater runoff. In aggregate the waste water pumped into the sea and storm water runoff is approximately one and a half times Melbourne's current consumption of potable water. Clearly we need to be thinking creatively about how we can substitute precious supplies of potable water with recycled water or treated storm water runoff.

**THE NATIONAL'S APPROACH - A MANDATED WATER SUBSTITUTION TARGET.**

Before investing billions of dollars in grandiose, expensive and socially disruptive desalination plants and pipelines we need to become more serious about maximising opportunities to substitute potable water with recycled water and storm water.

The Nationals propose establishing a mandated water substitution target. The suggested target would be to replace 30 percent or 130 billion litres of the city's current water use by 2020. Interim targets of 10% by 2010 and 20% by 2015 should also be established. A market based mechanism would be used to achieve these targets and encourage water users wherever possible to substitute potable water with other water sources such as recycled water and storm water.

**HOW WOULD THIS OBJECTIVE BE ACHIEVED?**

The water substitution target scheme would be similar in concept and design to Victorian and Commonwealth Governments' renewable energy target schemes and the Victorian Government's recently announced Victorian Energy Efficiency Target Scheme. Projects that result in the substitution of potable water with other sources of water would be eligible for water substitution certificates (WSC). One WSC would be issued for each kilolitre (or 1000 litres) of potable water saved.

For example a company replacing a megalitre (or a million litres) of potable water per year with recycled water or rain water would be eligible for 1000 WSCs. A family installing a rainwater tank in their home connected to the toilet would be eligible for 34 WSCs<sup>1</sup>.

By the nominated target dates of 2010, 2015 and 2020 Melbourne water retailers would be required to surrender sufficient WSCs to meet their share of the established water substitution targets. Large water users using more than 10 megalitres of water per year<sup>2</sup> would also be required to surrender WSCs equivalent to their share of the overall water substitution target.

Water retailers would offer incentives to retail consumers, property developers and business to encourage them to take action or participate in projects which result in substitution of potable water with other supplies. These actions would enable the water retailer to earn WSCs.

Similarly large water users could earn WSCs for action they take to replace potable water with other sources of water. They could even offer incentives to others to substitute potable water and in the process earn WSCs. A market for WSCs would be established. This would enable water retailers and large water users to trade WSCs.

The Nationals anticipate that in response to a market for WSCs new opportunities for potable water substitution will emerge. Private investment in projects aimed at substituting potable water for recycled water or storm water harvesting would be encouraged based on the value

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<sup>1</sup> Based on The Victorian Government's estimate of the water savings resulting from the installation of rain water tank connected to toilets.

<sup>2</sup> There are approximately 1500 water customers in Melbourne using more than 10 megalitres of water per year. They include manufacturing businesses, hospitals, parks and golf courses, universities and hotels.

of WSCs generated. Examples may include new office buildings using recycled water for flushing toilets; recycled water replacing potable water in industrial processes and sewer mines producing recycled water for watering public and private parks and gardens.

The market would be regulated by the Essential Services Commission.

### HOW MUCH WOULD WATER SUBSTITUTION CERTIFICATES BE WORTH?

The value of WSCs would be determined by the market. It is not possible to accurately predict the market price. However it would be prudent for the Government to set maximum and minimum limits on the market value of WSCs. The capital cost of the proposed Wonthaggi desalination plant is \$3 billion. It will produce 150 gigalitres of water per year. The up front capital cost is equivalent to \$20 per kilolitre and on top of this the direct operating costs will be about 70 cents per kilolitre. On this basis reasonable upper and lower limits on the price of WSCs could be \$25 and \$10 per kilolitre. With these limits in place the value of the 34 WSCs generated by a household rainwater tank would be between \$340 and \$850.

### WHAT IF MELBOURNE WATER RETAILERS OR LARGE WATER CONSUMERS DON'T MEET THEIR WATER SUBSTITUTION TARGETS?

If water retailers or large consumers do not achieve sufficient substitution of potable water with recycled water to meet their share of the target they will need to purchase WSCs through the market. If WSCs cannot be secured through the market at less than the maximum set by the Government (say \$25 per kilolitre) the Government would waive the requirement and in effect “fine” retailers \$25 for each kilolitre they fall short. The Government would be required to spend the revenue so generated on alternative water augmentation for Melbourne (but not transferring more water from country Victoria.)

### ADVANTAGES

The major advantages in the scheme are as follows:

- **Proposal will identify least cost solutions to Melbourne’s water shortage.** Markets are very good at identifying new least cost solutions to otherwise seemingly intractable problems and this is the philosophy that underpins our approach. Within the upper and lower limits set by the Government the market would also establish the incentive required to achieve the mandated water substitution target.

Companies and individuals will have a direct financial incentive to think creatively about how they can substitute potable water with recycled water, storm water or rainwater tanks.

The Government’s current approach to encouraging recycled water use is to provide one off grants to companies and local government authorities who have proposed recycling projects. The approach is ad hoc and subject to political influence. The size of the grant does not necessarily correspond with the amount of potable water saved. No doubt some worthy water savings projects have been supported but

others seem to have been selected more on the basis of political considerations rather than their merit as a cost effective water savings project.

The problem with the current approach is clearly illustrated by the Government's decision to retrofit a storm water recycling system at Southern Cross Station. This decision was primarily taken in response to public criticism of the fact that the station was designed without any provision for collecting and using rainwater. According to the Government's media release the estimated cost of the project is \$1.2 million and it will save 20,000 kilolitres of water per year<sup>3</sup>. This is equivalent to \$60 per kilolitre of water saved.

On the face of it this seems a very expensive water saving project. In part this is because the system was retrofitted to the existing building. If a water recycling system had been built into the original building design, the cost would have been much less. Under The Nationals' proposal designers of every public and commercial building will have an incentive to consider the issue of water recycling. A decision whether or not to incorporate water recycling or a storm water system into a new building will be based on economic and technical considerations not on whether the Government can be persuaded to offer a grant.

- **The Nationals' approach encourages the private sector to take responsibility for reducing potable water use and it promotes local solutions.**

The Government's current approach tends to favour large projects over small local scale initiatives. It also largely ignores the private sector and individual households. On the other hand The Nationals believe a large part of the solution to the city's water problems can come from small scale local solutions involving innovative individuals and companies.

By creating a financial environment which provides the private sector with an incentive to invest in potable water substitution new technology will be encouraged. We are confident there are numerous small scale opportunities for companies and individuals to cost efficiently substitute potable water with other more appropriate sources of water. We must save our potable water resources for uses which require highest quality water.

- **Environmental advantages.**

The Government's proposal to take water from the Goulburn River via the north south pipeline will come, in part at the expense of increased environmental flows for the Goulburn and Murray Rivers.

The Government claims the water taken for Melbourne will come from water saved by improving the efficiency of the irrigation system in northern Victoria. However, The Nationals believe water savings as a result of upgrading irrigation infrastructure should be shared between the environment and northern Victorian communities.

The inescapable fact is that if the Government takes 75Gl of water per year from the Goulburn River for Melbourne there will be less water available for environmental flows.

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<sup>3</sup>Media release from the Office of Victorian Premier Thursday February 1, 2007

The proposed desalination plant also represents a number of environmental risks. The plant will be a huge consumer of electricity and the additional electricity demand will add to the State's greenhouse gas emissions.

While it is claimed the electricity used by the plant will come from renewable sources this is largely government political spin. Even if the plant is run entirely on renewable energy it will simply divert this from other users.

There are also real concerns about the environmental impact of disposing of the highly saline water and sludge produced by the plant.

#### OTHER ISSUES TO BE ADDRESSED.

**Auditing:** The success of the scheme will largely depend upon its integrity and accordingly provision will need to be made for auditing RWCs. For households this would require simple confirmation that water savings devices have been installed. For large water users installing more sophisticated water recycling technologies a system of auditing will be required to ensure the water savings claimed are indeed delivered.

**Rights to Storm Water and Sewage:** The Nationals expect water retailers to play a major part in initiating water substitution projects. It is important to also ensure there are opportunities for private sector involvement in this area. Research undertaken for the Federal Government<sup>4</sup> highlights the need for companies to have secure access to sewage and stormwater prior to committing to invest in water recycling or stormwater capture. As part of the process of developing legislation to underpin the mandated recycled water target consideration will need to be given to resource security. We must ensure Melbourne Water or local government does not stymie private investment in recycling or storm water capture by imposing unreasonable restrictions on access to these resources by the private sector.

#### THE NEXT STEPS

The Nationals have foreshadowed in the Victorian Parliament that they intend to introduce a Private Members Bill to establish targets for promoting the use of alternative water sources including recycled water, storm water runoff and rainwater to replace potable water used for non potable purposes. The Bill will also provide for the creation, acquisition and surrender of Water Substitution Certificates as outlined in this paper.

The legislation will be broadly modelled on the Victorian Energy Efficiency Target Bill 2007 which was introduced into the Parliament in October and November 2007

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<sup>4</sup> ACIL Tasman. *Research into access to recycled water and impediments to recycled water investment*. Report prepared for the Australian Government Department of Agriculture, Fisheries and Forestry, June 2005

The Nationals would welcome feedback on the concepts raised in this discussion Paper. Comments should be forwarded to:

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#### FURTHER INFORMATION

- A comprehensive review of water recycling in Australia and overseas has been published by the Australian Academy of Technological Sciences and Engineering. *Water Recycling in Australia* May. 2004.  
<http://www.atse.org.au/index.php?sectionid=597>
- The Victorian Energy Efficiency Target Bill 2007 is available on the Victorian Parliament's web site. <http://www.legislation.vic.gov.au/>
- The Victorian Department of Primary Industries has published fact sheets on the VEET scheme. They are available at the following web site.  
<http://www.dpi.vic.gov.au/dpi/dpinenergy.nsf/linkview/25f3a72717ed1f21ca2572b2001bf39d866b51f390263ba1ca2572b2001634f9>