

Greens WA Policy Initiative



Being Smart With Water Action Plan

February 8, 2013

No one disputes it. With business as usual, Western Australia, including Perth, faces a bleak outlook for water supply over coming decades, with or without population growth.

More than half of Perth's drinking water comes from the Gnangara and Jandakot mounds, but these underground aquifers are being depleted at a faster rate than they can recharge through rainfall and water levels have reached an historic low. Our other main water source, seawater desalination, is highly expensive and energy-intensive – ultimately contributing, even with renewable energy offsets, to a key driver of our water crisis, climate change.

Perth's dams, built last century to capture rainfall and thus supply the city's water, are no longer reliable. By 2029, they will be as good as useless. By then, south-western Australia will be up to 14% drier than now – on top of the 15% decline in rainfall we have already experienced since 1975. The water flow in our rivers and streams, already 30% lower than in the 70s, will fall another 20–30% due to the drying climate, higher temperatures and hence increased evaporation.

To meet the looming water crisis, improvements have been made in water efficiency, conservation, re-use and recycling, but much more can and must be done. This includes practical and regulatory measures to increase water efficiency, on an individual, community and industrial scale.

Equally necessary is a major overhaul of how we manage and monitor our water resources, especially our groundwater, with which Western Australia is uniquely blessed. The Greens have exposed how the Government's lead agency, the Department of Water, is mismanaging the State's water resources, at times failing to comply with its own policies as well as missing national targets for water management. We need better management, greater compliance and more transparency. It's time our most important public resource was treated as such.

This Action Plan, *Being Smart With Water*, outlines how we can meet our water needs to 2029 and beyond without building more expensive, energy-guzzling desalination plants.

However, equally important is fixing how we manage our State's state and groundwater resources for all water users, not just the water utilities. Those issues are addressed in a separate Action Plan, the *Groundwater Management Plan*. Both documents draw on four years of research, collaboration with stakeholders and awareness-raising by my office. I welcome your comments and feedback.



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Avoiding the need for more desalination plants

As Perth grows, and rainfall continues to decline, the Water Corporation has allowed in its future planning scenarios for building more desalination plants, either north or south Perth, to meet future water demand. This plan proposes a different approach in the first instance.

WA already has two industrial-scale seawater desalination plants at Kwinana and Binningup. By late 2013 these will together produce 145 billion litres-a-year of scheme water – nearly half of the Water Corporation’s total water supply for Perth and the South-West. But this so-called ‘climate-independent’ water source comes at a high price. The Kwinana and the expanded Binningup desalination plants will together consume a massive 765,000 megawatt-hours of electricity per year, equivalent to the average annual electricity needs of 127,000 Perth households.⁽¹⁾ While this has been offset through the purchase of an equivalent amount of renewable electricity it is still a huge energy requirement – and as electricity costs go up, so will the plants’ operating costs. Desalination is, in other words, not only extremely expensive at the construction stage (the two-stage Binningup plant cost \$955 million) but it is also significantly expensive to run one and will become more so.

The Greens do not propose to shut down Perth’s existing desalination plants but we do say that many other actions must be taken before any more are built. Reducing the need for new water supplies through water conservation is the most economically efficient solution to averting a future water crisis.

By taking the steps listed below, the need for more expensive new desalination plants can be avoided without harsh water restrictions or a loss of amenity. In many cases, data on costing is limited (due either to much-needed research not being done or because the Government has not released it) yet even a preliminary assessment has shown that several key water-saving measures could be introduced at a cheaper capital cost per litre than desalination, and are certainly cheaper when operational costs are also factored in.

Despite a lack of available data, the total water savings from taking these steps can be conservatively estimated to be between 190 to 260 billion litres a year by the year 2029 (if not sooner).

⁽¹⁾ Average Perth household annual electricity needs are calculated as 6000 Kilowatt-hours a year.



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Nine-Point Action Plan

1. Mandate long-term, binding water conservation targets as a condition to operate for all WA water utilities.⁽²⁾

The Water Corporation is currently working to a water conservation of average annual per capita residential water consumption in Perth at 85Kl/year by 2030 and 75Kl/year by 2060. The Greens applaud the Water Corporation for voluntarily setting these targets. However, the same targets can and must be achieved faster – that is, 85Kl/year by 2020 and 75Kl/year by 2029.

2. Mandate leak reduction targets as a condition to operate for all water utilities.

Amongst similar-sized water utilities nationally, the Water Corporation has the fourth highest rate of water losses from mains infrastructure, as measured by litres lost through leaks per number of service connections. The Greens would set leak reduction targets in a similar manner to Sydney Water, with annual water losses steadily reduced through a program of increased investment in mains repairs and improvements, as well as pressure management.

3. Roll-out tailored water-saving advice and assistance to all households State-wide.

To date, the Water Corporation's H2ome Smart has only been offered in limited areas around the State, totalling 20,000 households. By offering staged roll-out of H2ome Smart to all of Western Australia's current 900,000 households, even if only 30% take it up in addition to the 20,000 who have already used it, the annual water saving is likely to be in the region of 6 billion litres.

4. Roll out tailored water-saving advice and assistance to all businesses State-wide.

The Greens would expand the Water Corporation's H2O Smart program, currently only available in limited areas, as an option for all businesses.

5. Conduct a cost-benefit analysis of a staged roll-out of smart water meters State-wide.

With co-funding from the Federal Government, the WA Government has rolled out smart water meter trials in Kalgoorlie and the Pilbara. Based on the Kalgoorlie trial and Pilbara projections, a roll-out of smart water meters to all WA households could provide annual water savings in the region of 70 billion litres a year – equivalent to one and a half times the annual capacity of the Kwinana desalination plant – at a much lower cost per litre than desalination.

(2) Including Water Corporation, Aqwest and Busselton Water Board. Discussion in this document is largely about the Water Corporation because it is WA's largest water utility.



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Nine-Point Action Plan

6. Investigate expansion of managed aquifer recharge projects in new areas of Perth.

To date the Water Corporation's trial injection of purified, recycled water from its Beenyup Wastewater Treatment Plant into the Leederville Aquifer in the northern Perth suburb of Craigie appears to have been a success. The Water Corporation proposes to scale-up operations at the plant to 35 billion litres a year, meaning that an equivalent amount of groundwater drawn from a site elsewhere could be 'freed up' for scheme water supply, and it also states that groundwater replenishment may be possible at its Subiaco, Alkimos and Woodman Point wastewater plants, potentially enabling 100–105 billion litres to be replenished across the Perth metropolitan area. The Greens support this expansion program, on the condition it can be done without harm to groundwater resources, is powered via renewable energy and is supported by a cost benefit analysis.

7. Increase investment in re-use of treated waste water for open space and industry.

Each year the Water Corporation discharges more than 100 billion litres of treated wastewater from its treatment plants in the Perth-Peel area into the ocean. Overall, only 7.9% of treated waste water in the Perth-Peel region is re-used, compared to much higher rates of waste water recycling in country areas of WA, which average more than 50% of waste water recycled. The Greens propose to raise the water recycling target for the Perth-Peel region to 30% by 2030.

8. Research into water sensitive urban design principles for all new buildings.

In some cities, stormwater (rainfall run-off from buildings, roads and paved along with any solids mobilised in this process) is captured and stored for re-use at drier times, or used to replenish depleted aquifers. Water Corporation-owned Main Drains in the Perth-Peel region discharge more than 100 billion litres of water into the Swan-Canning system and ocean annually. The other key reason to take this action being to reduce pollution in the Swan-Canning river system. The Greens are calling for a study on this with a view to mandating these principles.

9. Incentivise dual plumbing systems supplying grey water in all new homes as well as retrofitting approved greywater re-use systems.

Greywater is waste water from all indoor household uses apart from toilets. Research by Murdoch University, ENV Australia and Josh Byrne & Associates indicates that in many typical homes with a moderate sized garden, greywater reuse systems can enable 10-40% of the home's scheme water to be re-used, thus reducing the need for new scheme water to be supplied to the home. The Greens would provide incentives for installing dual plumbing systems supplying grey water in new homes and for retrofitting approved greywater re-use systems in existing homes.



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Action Plan – a summary

| | Action | Target date | Potential annual water saving (billions of litres) |
|---|--|--------------------|--|
| 1 | Mandate long-term, binding water conservation targets as a condition to operate for all WA water utilities | 2029 | 26 (Below current Water Corporation targets for the same year.) |
| 2 | Mandate leak reduction targets as a condition to operate for all water utilities | 2020 | 5 |
| 3 | Tailored water-saving advice and assistance to all households | 2020 | 6 |
| 4 | Tailored water-saving advice and assistance to all businesses | 2020 | 5 |
| 5 | Analysis of smart water meter roll-out to all households | 2029 | 70 |
| 6 | Expansion of managed aquifer recharge | 2029 | 35–105 |
| 7 | Increase investment in re-use of treated waste water for open space and industry | 2020 | 20 |
| 8 | Review water sensitive urban design principles for all new buildings | 2020 | Unknown |
| 9 | Incentivise dual plumbing systems in all new homes and retrofitted greywater re-use | 2020 | 23 |
| | TOTAL | 2029 | 190–260 |



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