water forever

DIRECTIONS FOR OUR WATER FUTURE SUMMARY

FEBRUARY 2009

ISBN 1 74043 497 8

This information is available in alternative formats on request.

WATER CORPORATION

DIRECTIONS FOR OUR WATER FUTURE

THINKING 50 YEARS AHEAD

Water is vital to life and our quality of life. It supports the natural environment, public health, the economy, community amenity, recreation and sporting activities.

Water Forever: Directions for Our Water Future is a draft plan that looks at the challenge of providing water:

- in an even drier climate;
- with twice as many people; while
- minimising environmental impact.

Based on work completed by the CSIRO and the Bureau of Meteorology, over the next 50 years, the south west of Western Australia is expected to experience further declines in rainfall due to climate change.

This will have a significant impact on water availability for households, business and industry, local government, mining and agriculture.

In this draft plan, the Water Corporation has adopted a climate scenario that projects:

- a 20% decline in rainfall by 2030; and
- a 40% decline in rainfall by 2060.

If rainfall reductions of this magnitude occur, the overall area of irrigated land in Perth and surrounding areas will need to reduce. Over time, it is expected that this will alter the way our gardens, public parks and ovals are landscaped to adapt to these changing conditions.

About Water Forever

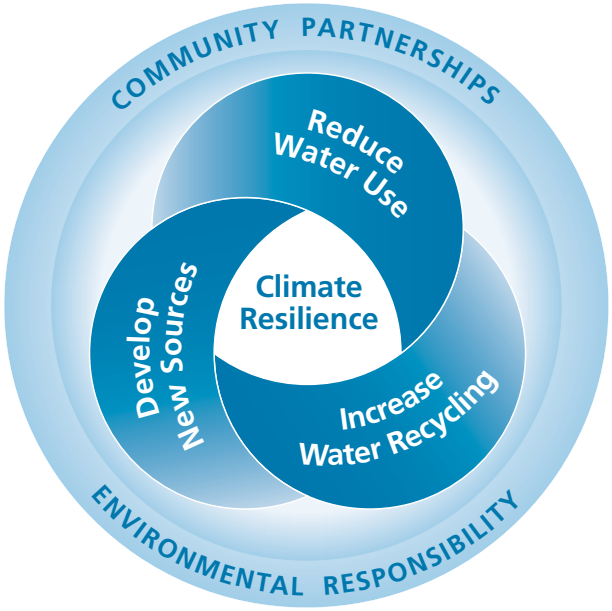
Water Forever is the Water Corporation's 50 year plan to deliver sustainable water and wastewater services to Perth and surrounding areas including the Goldfields and Agricultural water supply.

Water Forever: Directions for Our Water Future has been developed in close consultation with the community and industry to ensure it reflects your views and preferences for securing our water future. We will continue to work with the community, industry, State and local governments to finalise and implement the plan.

CLIMATE RESILIENT COMMUNITIES

Since 2001, average water use per person has decreased by 20%. This translates to a saving of approximately 61 gigalitres of water during that period. Even with these savings however, Perth remains one of the highest water using cities in Australia.

We need to do more to adapt to the drying climate. *Water Forever* is the Water Corporation's plan to make this happen - to help Perth and surrounding areas become more "climate resilient".



Water Forever has created a portfolio of water options to achieve this goal.

By 2060, working in partnership with the community, the Water Corporation will:

- help to reduce water use, so we all use a quarter less water than we do now;
- support the recycling of up to 60% of wastewater in the Perth-Mandurah area; and
- prepare a diverse array of potential water sources for future development.

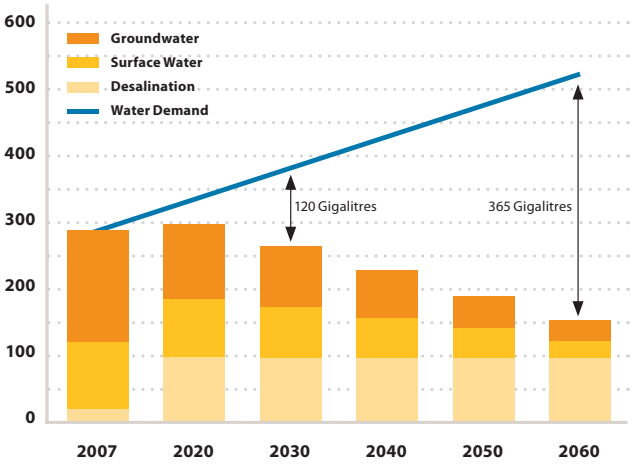
As a climate resilient community, we need to reduce water consumption where possible, match water quality to its use and develop new sources to supplement existing supplies.

This transition to climate resilience is a shared journey, working in partnership with households, business, industry, schools, State and local governments, academic and research institutions, mining and agriculture.

HOW MUCH WATER WILL WE NEED IN THE FUTURE?

Projected reductions in rainfall combined with a growing population means that an additional 120 gigalitres of water will be needed by 2030. This is more than 40% of current annual water use. We are confident that with the help of the community, we will be able to generate around 50 gigalitres of this through water efficiency initiatives. This means that the remaining 70 gigalitres will need to be met through the development of new sources.

Gap between water supply and demand to 2060 (Gigalitres per year)



By 2060, it is forecast that Perth and surrounding areas will need an additional 365 gigalitres– more than double current levels.

By creating a portfolio of water options, the Corporation will ensure that there is enough water to meet future needs, even in a drying climate.

Table 1 below outlines the portfolio of options that could be developed to meet water demand over the next 50 years.

The yields shown for new rainfall dependent water sources are based on current climatic conditions. It is important to note that under the climate change scenario adopted by *Water Forever*, the groundwater and source recovery water yields would be expected to be down-rated over time.

In a drying climate, there is a risk in developing rainfall dependent sources, even though they may be effective short to medium term options.

The future is inherently uncertain. Advancements in technology, the actual rate and impact of climate change, fluctuations in population and changes to the way water services are delivered will all impact how water is used over the next 50 years.

Water Forever: Directions for Our Water Future discusses how the Water Corporation proposes to respond to changes in supply and demand scenarios over time.

Portfolio of water options that could be implemented by 2030 and 2060 *(table 1)*
(Gigalitres per year)

Portfolio of new water source options (GL/year)	Rainfall independent	Yields 2010 - 2030	Yields 2030 - 2060	Portfolio total
Reducing water use				
• water efficiency programs	✔	50	80	130
Increasing water recycling				
• groundwater replenishment	✔	35	80	
• industry	✔	20	20	175
• parks and gardens	✔	3	2	
• horticulture	✔	5	10	
Developing new water sources				
• desalination	✔	100	218	435
• groundwater	✘	44	48	
• source recovery*	✘	25	0	
Total options to meet future supply – demand gap		282	458	740

**Source recovery options optimise the amount of water that can be obtained from existing sources and include catchment management and water trading.*

REDUCING WATER USE

2060 GOAL

25% reduction of all scheme water use, from 2008 levels of water use

2030 TARGET

15% reduction of all scheme water use, from 2008 levels of water use

Most people in the community believe that a long term, sustained focus on using less water is central to living with less rainfall. While people have already made a considerable effort to reduce water use in homes, business and industry, more can be done to adapt to the changing climate.

Using less water has many benefits. In the short term it will defer the immediate need for a new water source once the Southern Seawater Desalination Plant is commissioned (planned for 2011).

Reducing water use also has substantial environmental benefits including reduced energy use, greenhouse gas emissions, land clearing and an increase in water left in the environment.

It will also help to maintain the affordability of this essential service.

The Water Corporation aims to progress the goal of reducing water use in households and businesses by 25% through measures listed below.

ACTIONS TO 2015

Continue to →	Commit to →	Explore
• Work with the nursery and garden, turf and irrigation industries to reduce water use • Reduce water use in high water using businesses, industries and local government areas by identifying cost-savings and through education, Waterwise programs and Water Efficiency Management Plans • Promote water sensitive urban design at city, development, street and lot scales	• A 15% reduction in water use by 2030 • Implementation of a large-scale Waterwise Homes program to work one-on-one with households to reduce water use inside and outside the home • Education programs to increase the uptake of climate resilient gardens at city, development, street and lot scales • Completing a report on the yield and cost effectiveness of rainwater tanks • Working with the WA Planning Commission and the Department for Planning and Infrastructure to better integrate strategic land and water planning • Working with the Department of Sport and Recreation and sport/ leisure associations to reduce water use • Expanding the Waterwise Schools program to all metropolitan primary schools • Improving drainage water quality to facilitate recharge and reuse in local areas • Reviewing metering, pricing and billing practices to support reduced water use	• Liaising with the Department of Water to increase metering, monitoring and reporting of private water use, with a view to improving its productivity by 20% • Working with land planning agencies, to increase urban density (more multi-residential houses) • Working with building code regulators and the housing industry to mandate minimum water efficient approaches and appliances for new residential and commercial developments • Working with national bodies to regulate for minimum WELS ratings for water efficient products

INCREASING WATER RECYCLING

2060 GOAL

60% recycling of all metropolitan wastewater

2030 TARGET

30% recycling of all metropolitan wastewater

Currently, only 6% of treated wastewater is recycled in the metropolitan area.

In the longer term the Water Corporation believes that most of Perth's wastewater can be recycled. By 2030 it is estimated that water recycling in Perth will exceed 30%. This will require collaboration between the Water Corporation, State and local governments, business and industry.

The Water Corporation believes that major advances in water recycling can be made through large scale recycling schemes such as:

- groundwater replenishment, where high quality recycled water is stored in groundwater for use in drinking water supplies;
- recycling to industry; and
- providing recycled water to irrigate public parks, gardens and for horticulture.

Recycling water at a household level still has a role to play, although the water savings made through individual recycling systems are relatively small. The Water Corporation supports water recycling at household and community scales where risks to human or environmental health can be managed.

ACTIONS TO 2015

Continue to →	Commit to →	Explore
• Work with the private sector and industry to use biosolids for beneficial uses, including agriculture • Optimise operations of Kwinana Water Recycling Plant to supply recycled water to industry • Monitor ocean discharges to ensure appropriate water quality to protect the environment	• Expanding the existing Kwinana Water Recycling Plant output by a further 3.6 gigalitres a year • Working with land planning and development agencies to ensure that the Neerabup and East Rockingham Industrial Estates are reticulated to support the use of recycled water • Renaming wastewater treatment plants as "water recycling plants" where more than 20% of wastewater is recycled • Reducing the use of potable scheme water in wastewater treatment plants to less than 10% of all in-plant water use • Investing in co-generation to harvest more energy from wastewater treatment plant processes • Identifying existing or proposed Water Corporation land that could be irrigated with recycled water and used for community, sporting and recreational activities • Working with local government to irrigate more public parks and ovals with recycled water	• Water quality and quantity parameters for returning recycled water to the environment • Ensuring that future wastewater infrastructure, recycling plants and pipeline corridors are catered for in the land planning process

DEVELOPING NEW SOURCES

2060 GOAL

New source options are identified, investigated and secured to support development by the Water Corporation and the private sector.

2030 TARGET

Develop an estimated 70 to 100 gigalitres of new sources

While reducing water use and increasing water recycling will take us a long way to becoming climate resilient, they are not enough to overcome the significant reductions in rainfall that are projected.

New sources of water will eventually be required to supply a growing population in a drying climate. As a community, we cannot rely on a single source of water. As a result, the Water Corporation has considered a range of new water sources that could be developed.

These new sources of water include:

- groundwater replenishment where high quality recycled water stored in groundwater for use in drinking water supplies;
- accessing groundwater from the Collie Coal Basin;
- building new desalination plants north and south of Perth to serve these growth corridors;
- optimising the use of existing dams by completing the catchment management trial;
- investigating opportunities for trading groundwater on the Gnangara Mound;
- expanding the Southern Seawater Desalination Plant by a further 50 gigalitres; and
- developing new groundwater sources.

Further work needs to be undertaken to determine which sources will be developed and in what order. Investigative work has commenced on some sources but all require more detailed work to determine their viability.

Over the next 50 years, it is expected that existing surface water and groundwater sources will comprise an increasingly smaller portion of public water supply. As the climate dries, the focus of new source development will continue to favour rainfall independent sources, such as recycling and desalination.

ACTIONS TO 2015

Continue to →	Commit to →	Explore
• Complete the 50 gigalitre Southern Seawater Desalination Plant at Binningup • Complete the Groundwater Replenishment Trial • Complete the Wungong Catchment Management Trial to determine the viability of thinning catchments to increase run-off into dams • Mitigate the impacts of energy intensive sources such as desalination by contracting for energy from sources including biomass, wind, sun and waves or purchasing offsets	• Ensuring a range of water source options can be developed when required • Securing sites for possible desalination plants in the northern corridor • Developing a full scale groundwater replenishment scheme, if the trial is successful and supported by the community • Securing approvals for the next major water source, or partner with the private sector for delivery • Reducing the amount of water taken from the Gnangara Mound to an average 120 gigalitres per year (once the Southern Seawater Desalination Plant is operational) • Providing early input into structure plans and local planning strategies to ensure that future buffers and infrastructure corridors are secured • Working with the State and Federal Governments and the Water Services Association of Australia to monitor and plan for the introduction of the Carbon Pollution Reduction Scheme	• Research into the viability of new technologies to reduce evaporation from drinking water dams • Resource investigation on groundwater in the North West metropolitan coastal and Gingin-Jurien groundwater areas • Conducting a detailed economic, social and environmental impact assessment on the most prospective future water sources