


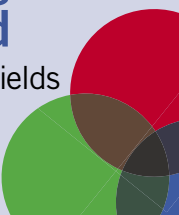
Securing Water for the Goldfields

Building on
CY O'Connor's vision

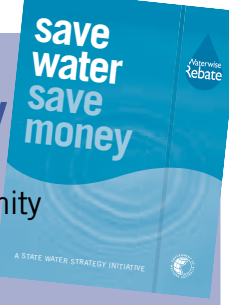


On the inside:

Meeting water demand
in the Goldfields



Save water, save money
Water Rebates help the community save money



Achieving water security through diversity

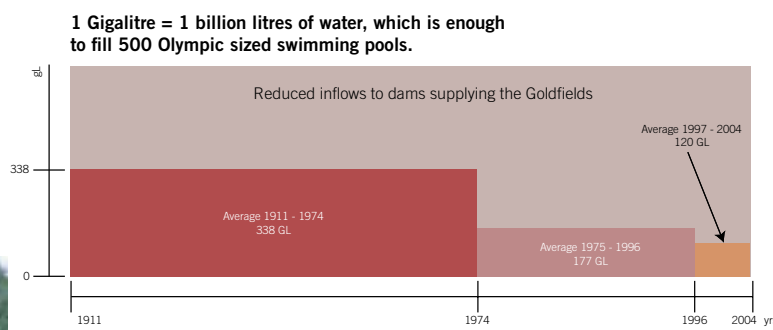
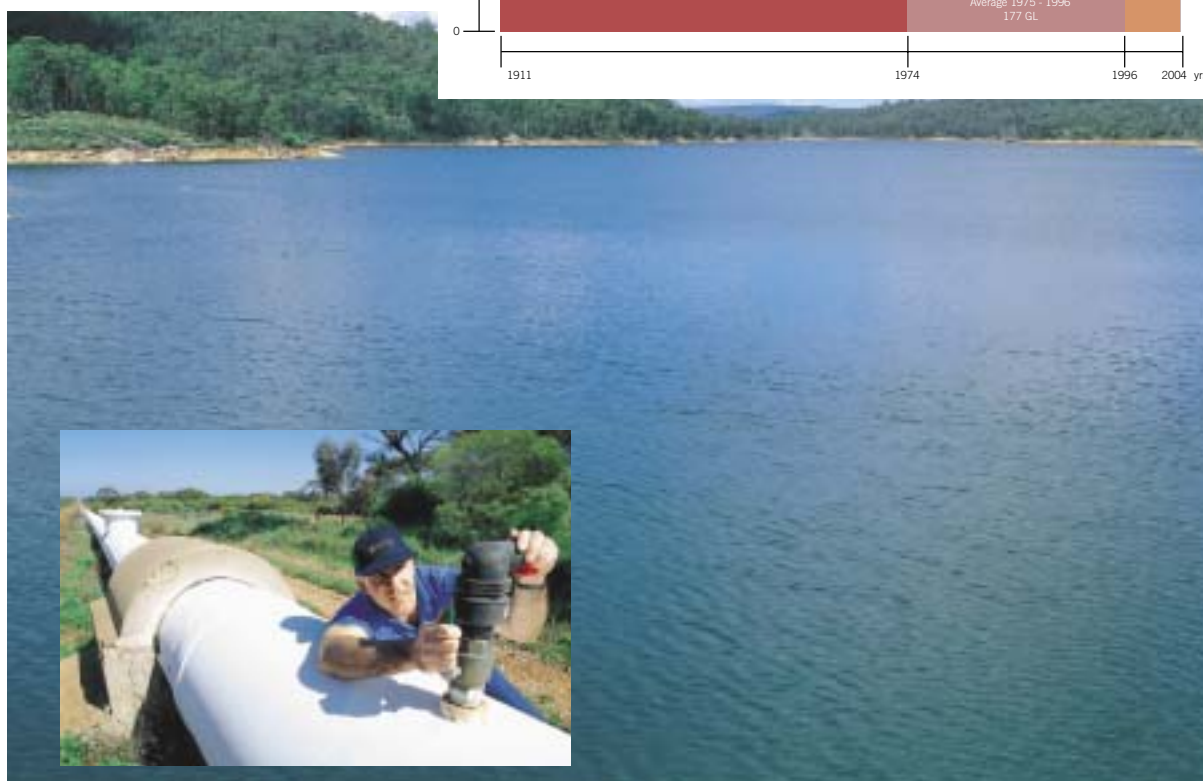
There are no simple solutions for the future needs of Perth and its Integrated Water Supply Scheme (IWSS), which supplies water to the metropolitan area, some towns in the South West and, through the Goldfields Pipeline from Mundaring Weir, towns and farmlands in the Central Wheatbelt out to Kalgoorlie-Boulder.

The Water Corporation is therefore tackling the issue on a number of fronts through a diverse and practical 'Security through Diversity' approach.

"The continuing run of dry winters means that a range of water supply initiatives must be pursued to secure our water future," said Water Corporation Chief Executive Officer Dr Jim Gill.

"Those initiatives are desalination; water trading with irrigators; water recycling; catchment management; demand management and new surface water and groundwater developments."

Groundwater already plays a big part in servicing the needs of the IWSS, with about 60 per cent of groundwater supplied from existing metropolitan sources.



Groundwater boost - With declining run-off into dams, groundwater is now transferred to Mundaring Weir and services farms and towns in the Goldfields and Wheatbelt.

Dr Gill said the Water Corporation considered that there is no one 'silver bullet' solution for our future water needs - unlike the Goldfields a century ago, which had its water supply needs solved with one master stroke of CY O'Connor's engineering.

"Consequently, in planning for our water future, the Water Corporation has adopted a Security through Diversity approach that will secure our water supplies even in times of drought.

"New technologies and approaches are evolving all the time to use water in smarter ways.

"Just like CY O'Connor, the Corporation will be looking for answers, not problems, as we attempt to deal with one of the most critical issues facing Western Australia's future development - the drying climate."



Our drying climate

The drying climate is a critical issue - The 2001 winter saw the worst inflow to the metropolitan dams servicing the IWSS since 1914. (Photo by courtesy: The West Australian)

Like other parts of the world, Western Australia is experiencing significant and serious changes in climate.

Climate change has contributed to a 10-20 per cent reduction in rainfall in the south-west of the State over the past 30 years. This has led to a massive two-thirds reduction in run-off into the dams supplying the Integrated Water Supply Scheme, which also services the Kalgoorlie-Boulder area.

In fact, the past four years have been the driest on record in the south west. And the most recent climate change predictions indicate that the current dry conditions are likely to continue.

Water Corporation Chief Executive Officer Dr Jim Gill said that the drying climate was one of the most critical issues ever to face Western Australia.

"We do not know when the dramatic decline in our stream flows will end - if it ends at all," Dr Gill said.

"However, as critical as our water supply situation is, it is important to emphasise that our expanded water supply systems have provided an adequate amount of water to meet our needs."

For more information on the new Security through Diversity projects under investigation to boost our water supplies, visit watercorporation.com.au



Securing Water for the Goldfields



World-class water supply scheme - Since 1903, the historic Goldfields pipeline has been continuously upgraded to meet demand.

Building on CY O'Connor's vision

Responding to the alarming reduction in inflow to dams supplying the Integrated Water Supply Scheme; between 1996 and 2004 the Water Corporation invested \$582 million in an accelerated source development program to increase our water supply capacity.

In the Goldfields and Central Wheatbelt, since 1996, over \$90 million was spent upgrading the Goldfields pipeline. Works included building new pump stations; upgrading other pump stations; refurbishing the pipe; and installing a remote, computerised monitoring and control system.

In addition to this, many millions of dollars were spent in previous decades on upgrading the pipeline to provide a reliable water supply for Kalgoorlie-Boulder, and communities along the way.

Water Corporation Goldfields Regional Business Manager, David Hughes-Owen said that since the historic pipeline opened in 1903 this lifeline to the Goldfields had been continuously upgraded to maintain its status as a world-class water supply scheme.

"Now, about 320 kilometres of CY O'Connor's original 552 kilometre pipeline remains," Mr Hughes-Owen said.

"The rest has been replaced and the pipe is no longer buried in a trench, but runs above the ground.

"The pipe is also now cement-lined internally to prevent corrosion."

Through the years, the number of pumping stations has increased from 8 to 19 and the number of storage locations from 9 to 13.

Steam-powered pump stations have been replaced with modern electric pump stations and supplemented with booster stations.

Mr Hughes-Owen said to minimise electrical and operation costs, a sophisticated telemetry system had been installed at Cunderdin, enabling pumps, valves and storage systems for the scheme to be remotely controlled.

"World-first equipment, using remotely controlled video cameras, is now used to inspect the inside of pipes for corrosion while they are still in use. Similar equipment is also being used in the refurbishment of pipes," he said.

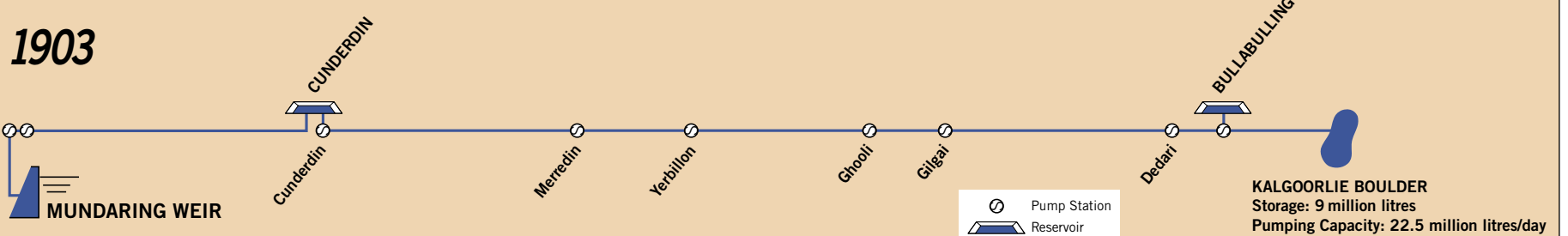
"The capacity to supply water to the Eastern Goldfields has increased by about 8,000 million litres per year in the 102 years since the pipeline first delivered its precious contents to Coolgardie and Kalgoorlie-Boulder."



TOP - Innovative equipment is used to inspect and refurbish the inside of pipes; CENTRE - Three generations of pump stations at Merredin - the original steam-powered plant built in 1902 was replaced with second and third generation electrical pump stations in the 1950's and in 2001; BOTTOM - Water Corporation Goldfields Regional Business Manager, David Hughes-Owen tracks system performance on-line. Telemetry equipment at Cunderdin now remotely controls the Goldfields and Agricultural Water Supply system.

Diagram of CY O'Connor's original pipeline.

1903



For a copy of the Water Corporation's Source Development Plan 2005-2050 for the Integrated Water Supply Scheme, visit

watercorporation.com.au

Securing Water for the Goldfields



Golden Pipeline - Millions of dollars are being spent to further upgrade the Goldfields pipeline and also preserve the heritage aspects of CY O'Connor's original scheme.

Meeting future demand in the Goldfields

In the next five years the Water Corporation will add at least 107 billion litres of water - or an additional 45% to our water supply scheme - through the Corporation's Security through Diversity approach.

About \$80 million will be spent further upgrading the Goldfields pipeline, which today remains the longest freshwater pipeline in the world.

Water Corporation Regional Business Manager David Hughes-Owen said works would include upgrading or replacing eight pump stations along the Goldfields pipeline, increasing pumping capacity to the Eastern Goldfields towns of Kalgoorlie-Boulder, Kambalda, Coolgardie and Norseman from 44 to 56 million litres a day.

"A new \$50-million project to design and build two 200,000 kilolitre reservoirs and new water treatment facilities at Binduli, just west of Kalgoorlie-Boulder, is scheduled to begin at the end of the year." Mr Hughes-Owen said.

"The reservoir complex will be built by 2009 and become the biggest in regional Western Australia, almost doubling Kalgoorlie-Boulder's water storage capacity to 880 million litres, as well as improving the water quality."

Works planned over the next five years to meet the projected demand on the Goldfields pipeline will focus on:

- Increasing the water storage capacity at Binduli, West Northam and Sawyers Valley.
- Upgrading or replacing pump stations and equipment at Boondi, Chidlow, Coolgardie, Grass Valley, Koorarawaylee, Meckering, Southern Cross, and Wundowie.
- Refurbishing sections of CY O'Connor's original pipe.

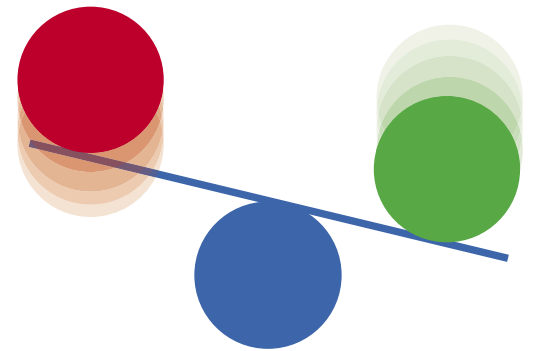
Mr Hughes-Owen said the pipeline works involved refurbishing the cement lining of 7 to 10 kilometres of pipeline annually.

Golden Pipeline Project

In January 1998 the National Trust of Australia (WA) launched the Golden Pipeline Project to celebrate the 100-year anniversary of the historic Goldfields pipeline in 2003.

The Water Corporation has contributed \$1.3 million to this project, which will preserve the heritage aspects of the original Goldfields Water Supply Scheme, between Mundaring and Kalgoorlie. It will ensure the outstanding engineering feat designed and overseen by CY O'Connor is recognised for its impact on the community of Western Australia.

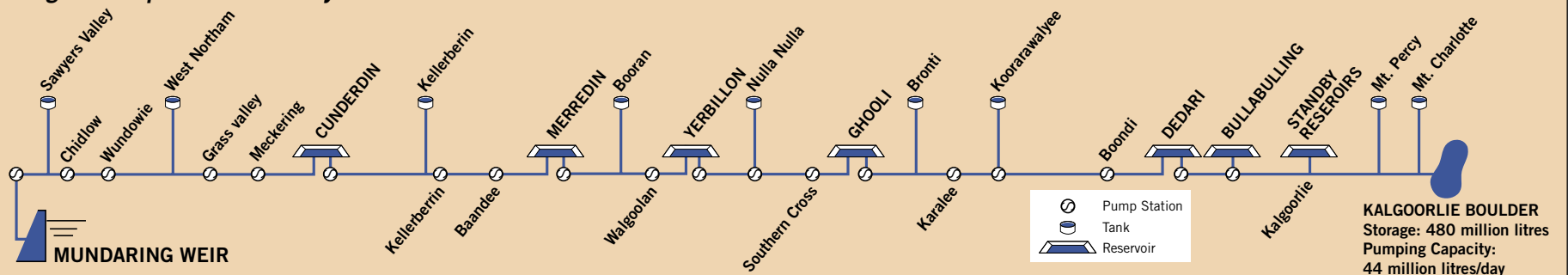
We're continually balancing the environmental, social and economic needs of our State's water future.



With a changing climate comes the need to look for sources of water other than those that rely on rainfall. We have responded to this change by investigating, developing and delivering a diverse range of solutions such as the Seawater Desalination Plant in Kwinana, water trading opportunities with the agricultural industry and groundwater from our deep aquifers in our South West. We've also looked at ways we can use the water we have more efficiently. Recycling water, for use by industry in Kwinana and for irrigation on over 60 parks and sporting grounds around the State. One thing that hasn't changed though is the Water Corporation's commitment, just like CY O'Connor, to provide a secure water future for us all. To find out more about our new Security through Diversity projects visit www.watercorporation.com.au



Diagram of Pipeline as it is today.



Securing Water for the Goldfields

Water use efficiency

In 2001 the two days a week sprinkler roster was introduced in the metropolitan area and towns and properties along the Goldfields pipeline. This has saved an average of 45 billion litres of water every year since it was introduced.

As part of the Water Corporation's commitment to the State Water Strategy, it has set a target of reducing water use from 180,000 litres per person per year to less than 155,000 litres by 2012.

To help the community move towards this goal, the Corporation has established a number of new water efficiency programs across the State - including the Waterwise Plumbers, Waterwise Garden Centres, Waterwise Garden Irrigators and Waterwise Business Programs - which are being progressively introduced in country areas.

The Waterwise family of programs will boost water conservation efforts in Kalgoorlie-Boulder, which is already recognised as one of the State's most Waterwise regions.

The programs complement water efficiency measures introduced in Kalgoorlie-Boulder several years ago, including the WaterLink strategy developed with industry, Local and State Government agencies, to secure the long-term water needs of the Goldfields Region.

• Waterwise Plumbers Program

The Waterwise Plumbers Program, a joint initiative with



the Master Plumbers Association, is being established in the Goldfields. Under this program householders can get a plumber to tell you how water efficient your home is for just \$33.

The comprehensive, obligation free water efficiency appraisal is carried out by a specially-trained licensed plumber and would normally cost \$66 but half of the fee is being subsidised by the Water Corporation.

• Waterwise Business Program

Businesses across the State are now being offered the tools they need to save water and reduce their water bills.

The Water Corporation's innovative new Waterwise Business Program helps large organisations to evaluate their water management practices and provides a clear pathway to improving water efficiency.

Water Corporation Goldfields Regional Business Manager David Hughes-Owen said the mining industry was the lifeblood of Kalgoorlie-Boulder and the Eastern Goldfields.

"The Corporation meets regularly with mining customers and industry groups to discuss their water management practices and offer advice on demand management," Mr Hughes-Owen said.

"We deliver more than five million kilolitres of potable water each year to mines east of Coolgardie and south to Norseman for gold and nickel processing.

"Although the mining industry uses mostly hypersaline groundwater, it is still by far the biggest user of potable water, using around half the total water supplied to the Eastern Goldfields."

Through the Waterwise Business Program, Waterwise business conservation checklists are now available for a variety of specific business types, including office buildings, shopping centres, caravan parks and hospitals.

FREE copies are available from the Water Corporation's website at www.watercorporation.com.au/savingwater

• Waterwise Schools Program

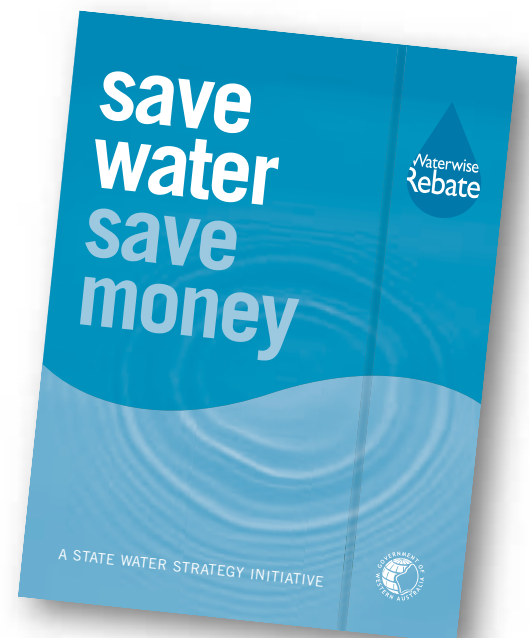
More than 80,000 school children throughout the State are being taught how to value, protect and conserve water through the Corporation's Waterwise Schools Program. This means our adults of the future will understand the importance of looking after our most precious resource and pass on their Waterwise knowledge for generations to come.

In the Goldfields Region, there are now six accredited Waterwise Schools:

- North Kalgoorlie Primary School (1995)
- Kambalda Primary School (1998)
- Hannans Primary School (2001)
- O'Connor Primary School (2002)
- Kalgoorlie Central Primary School (2003)
- Goldfields Baptist College Primary School (2003)

WATER CORPORATION IN THE COMMUNITY - TOP TO BOTTOM:

Customer service officer Katherine Koushappis serves a customer at the Water Corporation's Goldfields office in Hannan Street, Kalgoorlie; Goldfields Regional Business Manager David Hughes-Owen (right) and major customer Lloyd Buckingham from Kalgoorlie Consolidated Gold Mines at the company's mine site; Customer Services Manager Rod Botica (right) with North Kalgoorlie Primary School Principal Scott Harris and students Connor Wicksteed and Emma Dowson in the school's Waterwise garden; and Water Industry Worker Noel Schaars connecting new water meters in Kalgoorlie.



Rebates boost savings

The Waterwise Rebate Program has again been extended due to its success, boosting permanent water savings by almost 7 billion litres a year since it was introduced in February 2003.

Almost \$24 million has been granted to customers to date through the State Government's scheme, which is expected to return a further \$5 million to the community in rebates in its third year.

The program is also popular in the Goldfields with around \$400,000 granted to Kalgoorlie-Boulder residents. Water-efficient washing machines are by far the most popular product, ahead of soil wetting agents and shower-heads.

The Waterwise Rebate Program now also includes:

- Swimming pool covers
- Rain sensors
- Subsurface irrigation systems
- Waterwise garden assessments
- Tap timers
- Grey water re-use systems and aerobic treatment units.

The Water Corporation is responsible for promoting and operating the program on behalf of the State Government.

For information about water-efficient products and how it pays to be Waterwise, visit www.ourwaterfuture.com.au, or call the Water Corporation on **1300 133 646** for a copy of the Save Water Save Money.

For information about the Waterwise Programs and participants in your area, call Rod Botica at the Water Corporation's Kalgoorlie office on 9080 1017.

watercorporation.com.au

