

New Water

RE-USING WASTEWATER IN THE MURRAY-DARLING BASIN, SA

• A business case for future investment •



The District Council of Mount Barker New Water scheme is supported by a \$150,000 grant from the Board and the Australian Government.
Photo: District Council of Mount Barker

Ecologically sustainable development relies on innovative uses of existing resources. Recent drought conditions have increased the need to invest in the re-use of wastewater.

The South Australian Murray-Darling Basin Natural Resources Management Board¹ ('the Board') recognises that in moving towards more sustainable water use within the region, alternative water sources must be considered. Wastewater from both domestic and industrial sources represents a guaranteed—and presently under-utilised—water supply.

An investigation of opportunities for wastewater re-use in the SA Murray-Darling Basin commenced in 2005 to help shape and accelerate investment in wastewater re-use programs.

This 'New Water' project supports three major objectives:

- match wastewater supply, from both domestic and industrial sources, with beneficial uses
- maximise beneficial re-use of wastewater
- reduce the demand for raw or mains water.

The Board is seeking investment partners to further these objectives.



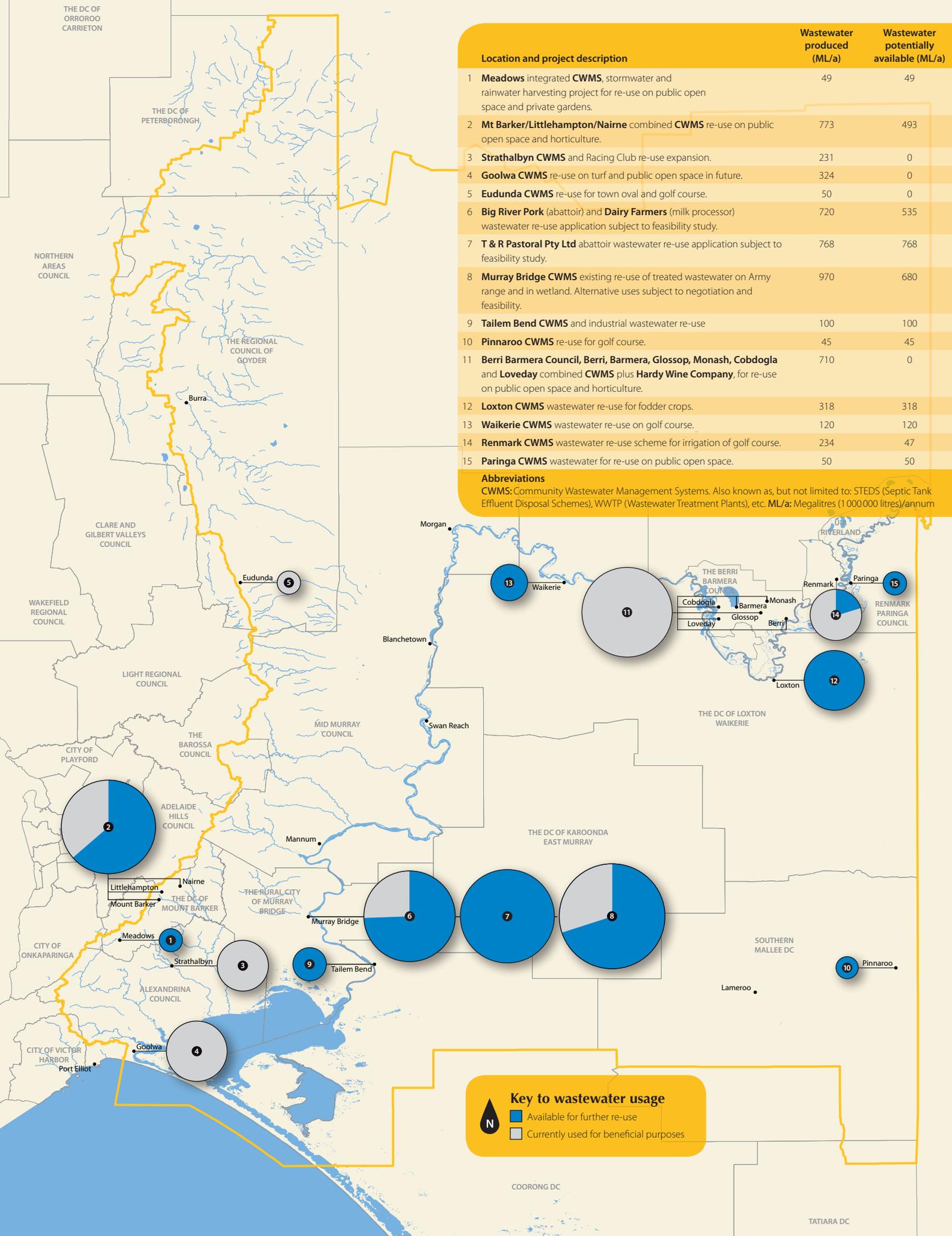
Government
of South Australia

South Australian
Murray-Darling Basin
Natural Resources
Management Board



Australian Government

Priority wastewater re-use (New Water) projects identified for the SA Murray-Darling Basin



The New Water project has identified that up to 4000 megalitres (ML) of wastewater per year is available from centralised domestic and industrial wastewater schemes.

A large proportion (3370 ML) of this available 'new water' is planned for beneficial re-use schemes that can potentially be implemented within 12–36 months.

The Alexandrina Council wastewater re-use project at Goolwa. This project is supported by a \$200,000 grant from the Board and the Australian Government



Implications of the drought

At the time the project was initiated in February 2005, the pricing and availability of raw water supplies from the River Murray meant some businesses struggled to identify the potential financial gains to be realised by either treating wastewater to a higher quality for re-use within their own business, or accessing recycled water from another party to supplement or replace untreated water supplies.

Given the current severe drought conditions and an increasing awareness of over-allocation of water resources within the Murray-Darling Basin, the potential uses of recycled wastewater now appear even more attractive to businesses as an alternative to untreated water from the River Murray.

South Australian irrigators and industrial water users face a severe cut in allocations for the 2007–08 summer if significant rainfall is not experienced within the Basin over coming months. Due to the uncertainty over the duration of the current drought, it is important that irrigators and industrial users establish contingency plans for several consecutive years when they may receive less than their licensed water allocation.

The New Water project has identified a number of sources of significant volumes of water that may have the potential to offer relief to some irrigators in the short term as an alternative water source and/or provide a sustainable guaranteed water resource for businesses with the vision to permanently switch to recycled wastewater.

Project framework and method

The New Water project has been broken into three distinct parts:

- **Stage One:** research and investigation
- **Stage Two:** analysis and feasibility, including a triple-bottom-line assessment framework to prioritise projects considering economic, social and environmental criteria (15 priority projects have been identified)
- **Stage Three:** engagement for implementation.

A project Steering Committee comprised of representatives from Regional Development Boards, industry (winery and dairy processing), local government, the Environment Protection Authority and Primary Industry and Resources South Australia was established to oversee the entire project from inception.



Photo: District Council of Mount Barker

All the water in the world is not the same. Photo: District Council of Mount Barker

Photo: Alexandrina Council

Status of wastewater re-use within the region

Stage One of the project revealed excellent wastewater re-use rates for businesses and local government in the Board's region. Currently 50.9% of domestic wastewater is recycled and re-used and approximately 47% of industrial wastewater is re-used² (see pie charts).

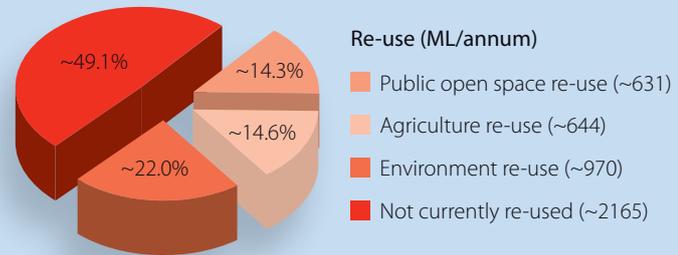
New Water challenges

Challenges facing wastewater managers in local government and industry include:

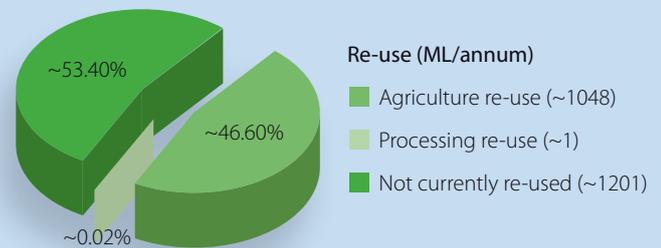
- the quality of the wastewater, including high salinity levels
- the availability of low-cost alternative water supplies
- increased costs of water supply (e.g. cost of treatment)
- ensuring water quality meets Department of Health and EPA standards for end use and is subject to a Land Management Agreement
- perception of safety and/or public risk
- priorities of elected members in local government and industrial board members
- some standard NRM Investment Strategies do not provide sufficient funding for infrastructure projects
- the magnitude of costs often means large investment from a range of partners is required from the public and private sectors
- low margins or rates of return on investment
- lack of understanding of true cost of existing wastewater disposal practices
- too little information or lack of local knowledge of sophisticated, cost-effective treatment and recycling technologies
- inflexible legislative controls limiting re-use opportunities.

Regional wastewater generation and re-use (ML/annum)²

Domestic wastewater generation (4410 ML/annum)



Industrial wastewater generation (2250 ML/annum)



New Water's links with key strategies

Investment in the implementation of the New Water project will deliver upon the objectives of a range of state and regional strategies and plans of management.

State Strategic Plan 2007

Objective 3—Attaining Sustainability: promoting sustainable water use and fostering innovative options for supplies of water, including stormwater re-use, recycled water and desalination.

Beneficial re-use

For the purposes of this project, 'beneficial re-use' of recycled wastewater includes:

- irrigation of horticultural land
- irrigation of commercial crops (e.g. biofuels, lucerne etc.)
- irrigation of recreational land or public open space
- in-house (e.g. toilet flushing) or garden use in new developments (residential, commercial and industrial)

- environmental flows
- commercial or farm forestry
- aquifer storage and recovery.

The use of recycled wastewater for disposal onto woodlots or other crops that are not effectively managed as a valued resource for commercial purposes, (e.g. carbon credits) is discouraged and is not included in the definition of 'beneficial re-use'.





Photo: Alexandra Council

Part of Strathalbyn's wastewater re-use involves storage of treated wastewater in a 40 ML dam inside the race track for re-use onsite. Expansion of this scheme is planned for 2008.

Tackling Climate Change: SA's Greenhouse Strategy 2007–2020⁴.

Objective 8.2—To incorporate climate change in the sustainable management of water resources and water supply.

Following national guidelines

Wastewater re-use is linked with various legislation and guidelines. The *National Guidelines for Water Re-cycling, Managing Health and Environmental Risks⁵* is now the over-arching reference document for the planning and implementation of wastewater re-use projects in Australia. The Guidelines provide a framework to manage health risks and environmental risks, details of monitoring requirements and a guide for consultation and communication.

The *SA Reclaimed Water Guidelines: treated effluent* (1999) provides a guide for general requirements for re-use applications and will soon be re-issued to fully complement the National Guidelines.

The Board's Interim NRM Plan 2006–07

Goals:

- Water Quality Program—to maintain or improve water quality so that it is suitable for economic, social and environmental purposes. To adopt environmentally responsible recreation and tourism practices and make productive use of alternative water resources whenever possible.
- Water Use Program—urban and industrial users must reduce their dependency on the River Murray through the use of alternative water supplies, more efficient use of water and adoption of best practice water conservation principles.

State of the Environment Report for South Australia 2003³

Give priority to the development of policy that encourages water conservation and efficiency by all users, and fosters water recycling and re-use schemes throughout urban areas.

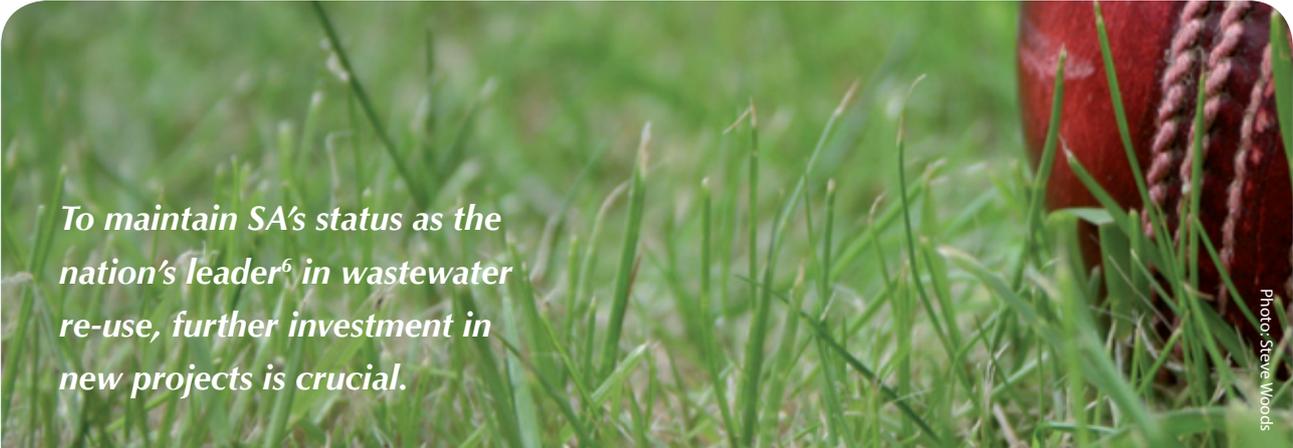


Irrigation of public open space such as ovals and parks is already a major use of wastewater for local government

Photo: Steve Woods

'Fit-for-purpose' water use

The Board encourages water use that is 'fit-for-purpose', meaning that the water source (and the level of treatment) being used to supply water should be of a quality that is safe for the proposed end use. In practical terms, this means that high quality mains water should not be used for lower grade uses such as irrigation of public open space or toilet flushing. Wastewater treated to the required standard is a more appropriate source of water for these applications.



To maintain SA's status as the nation's leader⁶ in wastewater re-use, further investment in new projects is crucial.

Photo: Steve Woods

How do we make it happen?

The Board is seeking to establish partnerships with industry, local, State and Australian governments to accelerate investment in innovative wastewater re-use projects that provide for water quality protection, economic development and reduce demand for raw or mains water supplies.

The Board invests in wastewater re-use infrastructure projects as part of its annual community grants program. This program is supported by Australian Government funding under the National Action Plan for Salinity and Water Quality. Collectively, approximately \$300,000 is available annually for New Water projects within the SA Murray-Darling Basin.

While these funds provide seed funding for project initiation, greater investment is required to progress large infrastructure projects within the region.

Businesses or government organisations interested in exploring opportunities to expand wastewater re-use initiatives within the SA Murray-Darling Basin are invited to contact the Board for further information.

Emerging New Water projects

The identified priority projects reflect industry production and township population levels in 2005–06. Future business growth and urban expansion in some sectors may provide for further New Water opportunities at these locations, with growth in processing industries anticipated in the Murray Bridge area. Significant township growth in and around Mount Barker, Goolwa, Murray Bridge and Strathalbyn, for example, is expected to offer further wastewater re-use opportunities. The Board is therefore seeking to work with the emerging users of wastewater as more businesses and Councils across the region recognise the benefits of the application of New Water. 💧

Contact us

For more information on this project, contact the South Australian Murray-Darling Basin Natural Resources Management Board.

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Footnotes: 1. The project was initiated by the River Murray Catchment Water Management Board prior to the creation of the South Australian Murray-Darling Basin Natural Resources Management Board in 2006. 2. Findings and estimates based on 2005–06 data gathered from 12 local councils and 67 businesses (48% able to provide accurate data, remainder estimates). 3. Government of South Australia, p 3. 4. Government of South Australia, p 48. 5. Environment Protection and Heritage Council and Natural Resources Management Ministerial Council. 6. Department of Water, Land & Biodiversity Conservation. Fact Sheet 02 Water Reuse. | **Acknowledgements:** Graphic design, map illustration and editing by Matthew Wright-Simon and Clare Oakes (original maps from SAMRIC). This publication is printed on recycled paper with 100% post-consumer waste content. Inks are vegetable-based. Print production was carbon-neutral. The paper mill and printer operate with environmental management systems certified under ISO 14001. | **Copyright:** © South Australian Murray-Darling Basin Natural Resources Management Board 2007. | **Disclaimer:** Although reasonable care has been taken in preparing the information contained in this publication, neither the South Australian Murray-Darling Basin Natural Resources Management Board nor the other contributing authors accept any responsibility or liability for any losses of whatever kind arising from the interpretation or use of the information set out in this publication. Where products and/or their trade names are mentioned, no endorsement of these products is intended, nor is any criticism implied of similar products not mentioned.