1 New Initiatives/Policy Matters

Not Relevant

103 MEC0052/05CS Water Proofing Adelaide Final Strategy
APPROVED (MINISTER HILL TO CONSULT WITH PREMIER'S OFFICE IN PREPARING FOR RELEASE OF DOCUMENT. POINTS RAISED IN CABINET OFFICE ADVICE "RED" MUST BE DEALT WITH.)

Not Relevant
TO: THE PREMIER FOR CABINET

RE: WATER PROOFING ADELAIDE FINAL STRATEGY

1. PROPOSAL

That Cabinet:

1.1 Approve the release of the attached Water Proofing Adelaide final strategy entitled "Water Proofing Adelaide A thirst for change – 2005 - 2025" (Attachment 1).

1.2 Approve in-principle the implementation of the Water Proofing Adelaide final strategy with initiatives requiring additional funds being considered as part of the annual budget processes.

1.3 Note that the implementation of the strategy will be coordinated by the Water Policy Coordinating Group, reporting to the Minister for the Environment and Conservation.

2. BACKGROUND

2.1 The Water Proofing Adelaide project was approved by Cabinet in February 2003 and launched publicly in October 2003. It aims to set a blueprint for the management, conservation and development of Adelaide’s water resources to 2025.

2.2 The Water Proofing Adelaide project is overseen by a Heads of Agencies Steering Committee with representation from SA Water; Department of Water, Land and Biodiversity Conservation; Department for Environment and Heritage; Planning SA; Department of Treasury and Finance; and Office for Infrastructure Development. A community-based Strategy Advisory Committee has facilitated consultation on the strategy.

2.3 The Water Proofing Adelaide project supports the objectives of WaterCare and uses the WaterCare logo.

2.4 Cabinet approved the release for public comment of the Water Proofing Adelaide draft strategy “A thirst for change” in November 2004. The draft strategy was open for public comment between November 2004 and January 2005. During this time 390 stakeholders including 160 State and Australian Government agencies were invited to comment, along with 230 individuals and community organisations that had had previous contact with the project. The draft strategy received 96 comments from stakeholders and the community. In addition, a random survey (McGregor Tan Research) of 606 South Australians found strong support for the draft strategy's key recommendations. This feedback has been considered during the development of the final strategy entitled "Water Proofing Adelaide A thirst for change – 2005 – 2025".
3. DISCUSSION

3.1 The Water Proofing Adelaide final strategy has been developed taking into account the feedback received through the public consultation process and with reference to other key strategies and documents including:

- South Australia’s Strategic Plan;
- The State Water Plan; and
- The National Water Initiative.

In addition, the Water Proofing Adelaide final strategy recognises other current initiatives including the Planning Strategy for South Australia, the work of the Minister’s Local Government Forum, the Urban Stormwater Initiative and the report prepared by Thinker in Residence, Professor Peter Cullen. The Strategy has been built around three key issues:

Managing Our Existing Resources
This recognises the importance of our key existing water resources and the threats to the viability of those resources in the future. It looks at how we can best manage those resources, in light of the threats, to ensure that they remain healthy and sustainable.

Responsible Water Use
Recognising that as a community we have an obligation to use our finite water resources in an efficient manner, this section looks at opportunities for various sectors of the community to use water more efficiently and effectively. It also discusses further reduction of water losses from the mains water system, how pricing changes may be used to encourage water use efficiency, and issues around supply reliability.

Developing Additional Water Supplies and Fostering Innovation
The third section looks at opportunities to develop or access alternative water supplies, such as stormwater, recycled water and desalinated water. It also considers the possible benefits of future innovation and looks at mechanisms for supporting and fostering such innovation.

3.2 The strategy document recognises a number of initiatives taken by the Government since the approval of the Water Proofing Adelaide project. It builds on those initiatives and sets a series of goals aimed at managing the water resources of the Adelaide region to 2025 and beyond. When fully implemented, the strategy will provide sufficient water to meet the needs of the Adelaide region, even in most droughts, to well beyond 2025. In severe droughts it may still be necessary for the Government to impose temporary water use restrictions in addition to the existing 'low level' permanent conservation measures. However, except for in the most extreme circumstances, there will be no need to impose total bans on the use of water for gardening and other external purposes.
In addition to providing a reliable mains water supply, the strategy will:

- help to protect, restore and reduce our reliance on the River Murray;
- ensure that water resources in the Adelaide Hills will be equitably allocated between competing uses. It will also ensure that landowners are given more certainty and financial security through the allocation of tradable water licences;
- reduce pollution in Adelaide Hills waterways;
- return water to rivers downstream of the Adelaide Hills reservoirs for environmental purposes;
- ensure that groundwater is used within sustainable limits;
- increase the use of recycled water and stormwater, in turn reducing discharges of these resources to Gulf St Vincent; and
- support ongoing research and monitoring of technological innovation to ensure that Adelaide is well placed to meet the challenges associated with water supply and management well beyond 2025.

3.3 At present, total water use from all sources in the Adelaide region is about 300,000 ML per annum. The table below summarises potential benefits to water supplies in the Adelaide region through the implementation of the Water Proofing Adelaide strategy.

The impacts of the goals are very significant and will allow continued population and economic growth in line with South Australia’s Strategic Plan. They will also allow the provision of environmental flows to streams in the Adelaide region and the expansion of irrigation in some agricultural areas. In addition, the goals will help to mitigate the expected but, to an extent currently uncertain, impacts of climate change and other risks to Adelaide’s long term water supply security.

3.4 The final strategy has been developed following significant community and stakeholder consultation in the lead up to and following the release of the draft strategy in November 2004. Market research on the draft strategy indicates that its recommendations are generally very well supported by the community.

3.5 Economic, financial and budgetary implications

3.5.1 Required Resources

Some of the new initiatives identified in the strategy do have financial and budgetary implications. These initiatives are significant and as a result will be subject to separate Cabinet approvals through the annual budget processes.

It is difficult to estimate accurately the costs of all the goals since some will need to be implemented over time frames of up to 20 years and final costs will depend on the extent to which goals are implemented and the extent to which the Federal Government, private sector or other interests may contribute. In addition, some goals have already received Cabinet approval and funding but are
yet to be fully implemented. Examples include prescription of the Western Mount Lofty Ranges, rehabilitation of the Lower Murray swamps, and SA Water’s leakage reduction program.

Attachment 2 broadly summarises the anticipated costs to the State Government associated with key goals.

3.5.2 Staffing Implications

No additional human resources will be required for the strategy release.

3.6 Impact on the community and the environment

Release of the final strategy will have no direct community or environmental impacts, as the individual projects to implement the strategy will be subject to future Cabinet consideration and approval. The expected impacts of implementing the strategy are summarised below.

3.6.1 Regulatory impact

Some regulatory impacts are expected to result from implementing the strategy’s goals. For example, the Government has already announced that rainwater tanks will be required to be plumbed into new houses from July 2006. Regulatory impacts that arise from the implementation of the strategy’s goals will be included in relevant future Cabinet submissions. Some of these measures may need to be prescriptive in order for the objectives of the strategy to be achieved.

3.6.2 Small business impact

South Australia’s Strategic Plan identifies a close link between sustainability, prosperity and economic growth. The Water Proofing Adelaide Strategy will lead to more sustainable water resources management and consequential economic, social and environmental benefits. Positive outcomes may include new opportunities in the development (and related intellectual property rights), manufacture and supply of water efficient devices.

The proposal may impact on small to medium businesses but this is expected to be minimised as most of the goals affecting commercial and industrial water users are of a voluntary nature. They relate to water audits and environmental management systems that may require inefficient water appliances and practices to be replaced over-time.

Adelaide Hills businesses and landholders may be required to invest in improved septic tank management and fencing to reduce the pollution of waterways.
If the Government decides to proceed with the prescription of the Western Mount Lofty Ranges, there may be an impact on small to medium sized agricultural businesses. If prescribed, a Water Resource Allocation Plan will provide water users with security of supply and may provide opportunities for water trading. There may also be a need for a water levy and for users to purchase and install water meters. These issues will be considered in further consultation with the community as part of the prescription process.

3.6.3 Impact on the environment
Sustainable water resources management promotes positive environmental outcomes. The Water Proofing Adelaide strategy will improve the management of water resources and reduce pollution.

3.6.4 Impact on families and society
The proposal will benefit families and society from the better management of water resources. South Australia’s Strategic Plan closely links sustainability with prosperity, economic growth and community wellbeing. Improved availability of water of a suitable quality and improved environmental outcomes are critical factors for community wellbeing and the wellbeing of families.

3.6.5 Regional impact
The Water Proofing Adelaide project has been aimed at the Adelaide region including the semi-rural areas surrounding Adelaide. The water resources of the Mount Lofty Ranges have suffered from intense development pressure and the lack of measures to manage the taking and allocation of water. This situation is no longer tenable and the proposed prescription of the water resources of the Eastern and Western Mount Lofty Ranges, would enable the region to gain greater certainty in the allocation and sustainable management of scarce water resources.

In addition, the strategy recognises the dependence of both Adelaide and the State on the River Murray and the associated communities. The strategy, including the purchase of 25,000 ML from the lower Murray, is expected to result in benefits for Lower Murray communities and indirect benefits for other river communities through the more efficient and effective management of Adelaide’s water supply needs.

Should an individual initiative impact on Regional areas, assessment of that impact will be made before final Cabinet approval is sought for that initiative.
3.7 Relevant Government Policy and/or South Australia’s Strategic Plan Target

The Water Proofing Adelaide strategy is consistent with South Australia’s Strategic Plan targets relating to the River Murray and for population growth. The strategy will not hinder the achievement of other targets including investment, export growth and business confidence.

3.8 Risk Management Strategy

When implemented the Water Proofing Adelaide final strategy will have a significant positive impact on the future of water supplies for the Adelaide region. Not implementing the strategy will result in significant risk that the Adelaide region will not be able to meet its water supply needs during drought years.

Some of the goals, such as targeting the return of 1,500 gigalitres of water per annum to the River Murray by 2018, salinity strategies for the Murray, irrigation restructuring in the Lower Murray irrigation areas, and industrial water audits are either in train or in the development stages. Risks associated with these programs were addressed in their development and approval stages or are being addressed.

The State Government has committed to the National Water Initiative (NWI). The NWI should provide significant funding from the Commonwealth Government for initiatives such as those suggested in the strategy.

The Government’s intention to prescribe the water resources of the Western Mount Lofty Ranges was announced in October 2004. Prescribing the resources now will have a lower social, political and economic risk than in the future, when retrospective controls to reduce water use may need to be implemented where resources may have become over exploited. If the prescription process is not well managed there is a risk of delays and confusion among water users and the community.

Measures to redress the imbalance between allocation and sustainable yield of the groundwater resources of the Northern Adelaide Plains may evoke industry and community concern and may require some adjustment to allocations and/or licence conditions. The process will be mediated by statutory water allocation planning procedures, which facilitate a high level of community participation.

Several of the goals within the strategy will require active involvement from local government. This may impact on the economic and staff resources of local councils. The strategy identifies those initiatives requiring local government participation. Lead agencies for each initiative will ensure that local government is properly consulted and involved in the development and implementation of those initiatives and that any concerns are adequately addressed.
Some businesses may adopt water audit recommendations or may choose to implement environmental management systems etc. Such actions may lead to higher operating costs but decisions will be made by individual businesses on a commercial basis. There will be an opportunity to assess these and any other identified risks when the individual initiatives are considered by Cabinet.

Increased use of stormwater and recycled water will rely on the willingness of industry and both rural and urban irrigators to take up the resources. This willingness may be influenced by the cost of such schemes and the suitability of the water for particular purposes. Similarly, water use reduction targets will require the cooperation of all sectors of the community. All goals have been canvassed through the Water Proofing Adelaide community and stakeholder consultation process and have been broadly accepted as indicated by the results of market research and from comments received on the draft strategy.

The strategy has taken the best available advice on how climate change will affect the Murray-Darling Basin and the Adelaide Hills catchments that supply Adelaide with its water. However, further research is being undertaken in this area. The strategy recommends a review of its goals every five years. These reviews should consider the findings of the latest climate change research available and make appropriate changes to the management of water resources.

3.9 Consultation

The following agencies have been consulted:

3.9.1 Department of Treasury and Finance

Department of Treasury and Finance (DTF) is represented on the Heads of Agencies Steering Committee and has been generally supportive of the strategy.

DTF recognise that estimates in this proposal are submitted as information only and that formal financial approval will be sought for each project at a later date.

Water Proofing Adelaide project team has submitted to DTF the necessary financial information that supports the estimates in this Water Proofing Adelaide proposal. DTF have reviewed the documents and do not have any major objections in relation to the financial estimates, however, Treasury and Finance have advised that formal costing comments will be provided to Cabinet as each project is submitted for financial approval.

DTF also notes that a cost benefit analysis has not been presented to Cabinet, nor a Cabinet decision yet taken on the proposal to release 10,000 ML per annum from SA Water dams to improve downstream environmental flows, which is nevertheless assumed in this document and which may have a significant opportunity cost.
3.9.2 Department of the Premier and Cabinet
DPC requested additional information regarding the funding and timing of the initiatives outlined in the strategy. Funding estimates can be found in Attachment 2 to this submission and timing estimates are set out in the strategy document.

DPC is concerned that the strategy may require changes to legislation or regulations and that this may adversely impact on business. This concern is noted. Any such changes would be subject to further Cabinet deliberations.

3.9.3 Department of Trade and Economic Development, Office of Small Business
DTED is concerned that some measures within the strategy may impact on business competitiveness, export growth, and economic growth. It is also concerned about any possibility of a review of the pricing system that may affect the price of water. These concerns have been noted, however as indicated in 3.7 the strategy is unlikely to hinder State prosperity targets such as investment, export growth and business confidence. Although pricing is discussed in the strategy, it contains no formal proposal to review pricing.

3.9.4 Department of Trade and Economic Development, Office of Regional Affairs
Requested a statement under 3.6.5 to the effect that the impact of individual initiatives on regional areas be considered before they are adopted by Cabinet. Request accepted.

3.9.5 Department for Families and Communities
Commented that as there are no recommendations within the strategy relating to an increase in water prices the Department is unlikely to have any concerns.

3.9.6 Department for Environment and Heritage
DEH is represented on the Heads of Agencies Steering Committee and has shown general support for the strategy.

DEH did however request a number of changes to the strategy and Cabinet submission. Some of these were adopted and some were not for reasons outlined below:

• request for further references to climate change, natural resources management legislation, and a more positive statement about the impact on families in the Cabinet submission - accepted.

• request that recommendation 4.2 be deleted - declined, although it has been changed to recommend ‘in-principle’ approval for the implementation of the strategy.
- request for more information within the strategy on the triple-bottom line and multi-criteria analysis used - declined as this information can be found in other WPA publications and is not necessary for a final strategy.

- request that the strategy show better integration with other strategies such as Greenhouse, Natural Resource Management, the Urban Stormwater Initiative, WaterCare and local government. WPA has considered all relevant government strategies and made every effort to be consistent with them.

- request to include consultation with industry in goal 26 of the strategy - accepted.

3.9.7 SA Water

SA Water is represented on the Heads of Agencies Steering Committee and is supportive of the strategy and its release.

The Corporation notes that it has been nominated as lead agency for implementation of several initiatives. SA Water has reviewed those allocated to the Corporation. While a number of these are included in current SA Water budgets, the following initiatives are un-funded at this stage:

(i) Education programs form the basis of a number of the goals. The cost is estimated to be $0.7m per year on-going

(ii) Funds for re-use schemes are included in capital budgets assuming 50% subsidy will be available from the Commonwealth Government

(iii) Funds to support R&D for non-Government parties, estimated to be $0.5m per year, are not in current budgets

SA Water is also concerned about some potential impacts of the strategy on mains water system reliability viz:

(a) The supply/demand balance in the strategy assumes that River Murray water will always be available to the full extent of SA Water's licence holding. The last two years has shown this not to be the case. Also, the Murray-Darling Basin Commission's work on the six major risks to the water resources within the Murray-Darling basin indicates the possibility of a 10% reduction in water availability. Under the NWI this reduction would be borne by water users, that is, there is a possibility that current water licences could be reduced in the future.

(b) The diagrams of supply and demand presented in the strategy assume changes will occur uniformly over time. It is likely that SA Water will need to supply the full environmental flows ahead of works to mitigate demands or develop alternative sources of supply, leading to reduced reliability in the short term.
(c) The strategy assumes environmental flow releases will be 10GL per year, while the Onkaparinga Catchment Water Management Board is seeking 15GL/yr for the high priority releases in that catchment alone.

(d) The impact of environmental flows is at least a 5-10GL deficit in 2010, with this reducing slowly over time.

(e) A number of the initiatives in the final strategy tend to increase the risk of water restrictions. For example, stormwater systems are likely to be designed to maximise average use rather than provide a high degree of reliability and users will look to the public supply if the stormwater is not available. Also, a number of the demand management initiatives such as reduced water on gardens are the traditional response to drought conditions. In future, more severe restrictions on external water use will be required during drought conditions to achieve meaningful water savings.

SA Water points out that there are a number of ways of mitigating the above risks. For example, SA Water could purchase water on the temporary water market when it is needed. However, this may be politically difficult, given that irrigators will also be seeking to purchase water to save their plantings and the volumes of water required by SA Water may not be readily available. Alternatively, SA Water could purchase additional water licence to ensure it is able to manage the risks.

SA Water acknowledges that the issue about utilisation of the 25GL of water being purchased by SA Water is yet to be resolved and that it is not appropriate to canvass this within the Water Proofing Adelaide strategy document. However, the Corporation believes that the strategy presents an overly optimistic position that the initiatives in the strategy on their own are sufficient to provide the level of reliability expected of the public water supply.

Water Proofing Adelaide acknowledges these points and recognises that points (a) and (c) in particular represent a significant risk to the strategy. These risks would be exacerbated without the development and implementation of the strategy.

3.9.8 Department of Water, Land and Biodiversity Conservation

DWLBC is represented on the Heads of Agencies Steering Committee and is supportive of the strategy and its release.

DWLBC requested minor editorial changes to the Cabinet Submission and that the strategy be consistent with Professor Peter Cullen’s recommendations on desalination and water pricing. These suggestions were largely accepted; however a comment regarding water pricing was not accepted as Water Proofing Adelaide has been asked not to make recommendations in this area.
DWLBC commented on the potential difficulty of finding water to return to the River Murray. This has been noted.

3.9.9 The Department of Primary Industries & Resources – Office of Local Government and Planning SA

PIRSA believes that the strategy takes a softer approach to commercial, industrial and community purposes water users than it does to agricultural users. This concern relates to water restrictions for irrigators on the River Murray, which is not part of the Water Proofing Adelaide strategy.

PIRSA’s concerns about the impact of the prescription of the Western Mount Lofty Ranges and the viability of alternative water sources have been noted under sections 3.6.2.

The Office of Local Government supports the recommendations of the Water Proofing Adelaide Cabinet submission.

Planning SA is represented on the Heads of Agencies Steering Committee and is supportive.

3.9.10 The Department of Health

Supports the integrated approach of the strategy and its release.

3.10 Implementation Plan

An implementation program that assigns lead government agencies to each goal and sets timelines is included in the final strategy. The Department of Water, Land and Biodiversity Conservation and SA Water will be the main lead agencies.

The Department of Water, Land and Biodiversity Conservation will take the lead on goals relating to the management of our existing resources, including the protection of the Adelaide Hills catchments and the River Murray. They will also be responsible for goals to increase the use of rainwater and stormwater.

SA Water has been assigned responsibility for goals to implement proactive water conservation education programs for householders; commercial and industrial premises; and community purposes water users. They will also take the lead in implementing goals relating to: the Water Efficiency Labelling scheme and Smart Water Mark scheme; service provider use; drinking water infrastructure; and some water reuse schemes.

Other agencies that may take the lead on specific goals include: Planning SA; the Department of Health; the Department of Primary Industries and Resources SA; and the Environment Protection Authority. A number of partners have also been identified to help to achieve the goals including local government, relevant NRM boards, other government jurisdictions and industry and community groups.
3.11 Communication Strategy

The Water Proofing Adelaide strategy underwent two rounds of community consultation. Subject to Cabinet, approval the strategy will be publicly released. During the implementation phase some individual goals will require input from the community and stakeholders.

3.12 Executive Council

This proposal does not require the approval of Her Excellency the Governor in Executive Council.

4. RECOMMENDATIONS

It is recommended that Cabinet:

4.1 Approve the release of the attached Water Proofing Adelaide final strategy entitled ‘Water Proofing Adelaide A thirst for change – 2005 - 2025” (Attachment 1);

4.2 Approve in-principle the implementation of the strategy, with initiatives requiring extra funds being considered as part of the annual budget processes;

4.3 Note that the implementation of the strategy will be coordinated by the Water Policy Coordinating Group, reporting to the Minister for Environment and Conservation.

JOHN HILL
MINISTER FOR ENVIRONMENT AND CONSERVATION
Date: 20/6/05

MICHAEL WRIGHT
MINISTER FOR ADMINISTRATIVE SERVICES
Date: 30/6/05

Attachments:
Water Proofing Adelaide 'Water Proofing Adelaide A thirst for change – 2005 - 2025'
Water Proofing Adelaide final strategy – Costs to State Government

In Cabinet

11 JUL 2005
Water Proofing
Adelaide
A thirst for change
2005 – 2025
Hon John Hill
Minister for Environment and Conservation

Hon Michael Wright
Minister for Administrative Services

Rob Freeman
Chairman, Heads of Agencies Steering Committee

Dr Don Hopgood
Chairman of Water Proofing Adelaide Strategy Advisory Committee,
former state Deputy Premier,
Minister for Water Resources
and Minister for Environment and Planning

Heads of Agencies Steering Committee members:
    Anne Howe
    Christine Bierbaum
    Kathryn Bellette
    Paul Grimes
    Anne Harvey

Strategy Advisory Committee members:
    Peter Moser
    Colin Pitman
    Rochelle Woodley-Baker
    Sharon Starick
    Alan Ockenden
    Don Bursill
    Graham Dooley
    Peter Cooper
    George Ganf
    Keith Walker
Thank you to all the South Australians who have contributed to completing the first phase in the journey of Water Proofing Adelaide. Since this project was officially launched in October 2003 there has been an increasing awareness and level of concern for how we manage our water resources. This has been reflected in the debate within the media and in the interest shown in Water Proofing Adelaide.

The project team has consulted extensively with a broad cross section of the community including: water industry professionals, scientists, farmers, business people, students and parents, and councillors.

A significant amount of technical research and reviews have been conducted on issues including: future demand for water, alternative water sources, climate change, water saving devices, and the environmental impacts of water use.

The project has found that Adelaide has different issues from those facing other states. The Adelaide Hills catchment and the River Murray provide us with a highly reliable water supply which makes Adelaide attractive to industry. However, if we are to address the environmental risks facing our rivers and catchments, and Adelaide’s increasing need for water, then we must make some changes.

The Strategy A thirst for change identifies the changes which need to be made. It gives Adelaide the confidence to face the challenges ahead, to grow and prosper and for future generations to continue to enjoy our unique environment and lifestyle.

The second phase of Water Proofing Adelaide is to ensure the goals within this Strategy are achieved. This is a responsibility for everyone as we continue to work together towards a sustainable water future. I urge everyone to join the South Australian Government in making this commitment.

Premier Mike Rann
July 2005
Acknowledgements

Water Proofing Adelaide acknowledges the support received from Catchment Water Management Boards in the community consultation process, and those members of the public and organisations who have provided verbal or written submissions during public consultation. Water Proofing Adelaide also acknowledges the specific support provided by the Mount Lofty Ranges and Greater Adelaide Region Interim Integrated Natural Resources Management Group, the Department of Water, Land and Biodiversity Conservation and SA Water.

Water Volumes

Throughout this document it has been necessary to refer to water volumes using various units of measurement depending on the context. A summary of these is given below:

Kilolitre (kL) – One kilolitre is 1,000 litres. In volume it represents one cubic metre and one kilolitre of water weighs one tonne. Kilolitres are the units most commonly used in referring to household water consumption with the average Adelaide household using between 250 and 300 kL each year.

Megalitre (ML) – One megalitre is 1,000 kL or one million litres and is roughly the volume of most 50 metre public swimming pools. The Torrens Lake between Hackney Road and the Torrens Lake weir holds about 600 ML.

Gigalitre (GL) – One gigalitre is 1,000 ML or 1 billion litres and represents a volume of water one square kilometre by one metre deep. When full, the Hope Valley reservoir holds about 2.8 GL and the Happy Valley Reservoir holds 11 GL.

Please refer to the glossary for further explanations of different terms.

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Executive Summary

Adelaide faces significant challenges in relation to water supply and management. The stresses on the River Murray, a key water resource for Adelaide, have become increasingly evident in the new millennium with excessive extractions, rising water salinity, the dieback of dependent ecosystems and increasing pollution.

In the future, increasing farm dam development, reafforestation, and the impacts of climate change are expected to reduce runoff across the Murray-Darling Basin, further decreasing river flows.

In the Adelaide Hills increased competition for water from agricultural, domestic and industrial users has led to reduced flows in rivers and streams, both above and below our storage reservoirs. This has impacted on the health and wellbeing of local ecosystems and means less water is flowing into the reservoirs which supply Adelaide with its water needs. In addition, development within the Hills catchments has intensified the pollution of local waterways presenting some health risks and harming the biodiversity of the aquatic environments.

Similarly, most groundwater resources in the regions surrounding the urban areas of Adelaide are either approaching full allocation or in some cases are over-allocated. This is unsustainable in the long term and severely limits expansion of irrigated agriculture especially in the Northern Adelaide Plains and the Willunga Basin areas.

At the same time community expectations in relation to water are beginning to change. There is an increasing awareness of the value of water, particularly in such a dry continent as Australia. The community as a whole is beginning to embrace an obligation on all users to become efficient in their water use and to reduce wasteful practices. Communities are also recognising the value of alternative water resources such as stormwater and recycled water from wastewater treatment plants.

In 2003 residents faced the first water restrictions imposed since the construction of the Mannum to Adelaide pipeline in 1954. The reduction in rainfall across the Adelaide Hills in 2002 was not particularly significant against long-term averages but combined with several years of low rainfall across the Murray-Darling Basin it helped to cement the realisation that Adelaide needed to do more to manage its water supplies in a sustainable manner.

Since then the SA Government has implemented a series of initiatives to ensure that even in drought years, impacts on the broad community of Adelaide can be effectively managed.
The Water Proofing Adelaide Strategy

In developing its strategic plan for the future of South Australia in 2002, the SA Government recognised the need to address challenges to water supply and management and also the need to promote economic growth through increased growth in population and commercial and economic development. Clearly such growth would put further pressures on Adelaide’s water supplies. So, in the same year, the Government made a commitment to address these problems.

The Water Proofing Adelaide project was established to set a blueprint for the management, conservation and development of Adelaide’s water resources to 2025. In conjunction with this initiative, the Government has already announced a number of complementary measures to form the backbone of a 20-year strategy. When fully implemented this Strategy will allow us to grow and develop while at the same time providing us with a reliable water supply in drought years and as the impacts of climate change become more evident.

The work of Water Proofing Adelaide has made it clear that there is no single quick fix solution to Adelaide’s water challenges. Rather, the way forward lies in the implementation of a large number of smaller goals working together.

The Strategy is divided into three sections, each of which is supported by a series of goals which will achieve the aims stated above.

1. Management of our existing resources

To restore the health of the River Murray system, the Government will work with the other governments of the Murray-Darling Basin to achieve an additional environmental flow in the River Murray of at least 1,500,000 ML per annum by 2018, and to ensure that river salinity levels at Morgan in South Australia do not exceed 800 EC Units for 95% of the time.

The Government is providing assistance packages to dairy farmers on the lower Murray irrigation areas that enable rehabilitation of some properties and allow more marginal properties to be taken out of production, leading to improved water quality in the lower Murray.

The Adelaide Hills water resources will be better protected. The SA Government’s commitment to promoting responsible management of these resources was highlighted by issuing a notice of intent to prescribe the Western Mount Lofty Ranges during the development of the Water Proofing Adelaide Strategy. This provides a mechanism for public consultation for consideration of both whether prescription should occur and if so to what extent. Prescription provides a mechanism for sustainable water resources planning and management, including more equitable and secure allocation of water resources. In addition, tighter planning and environmental controls
will soon be implemented to reduce the runoff of pollutants into creeks, streams and water storages.

Implementation of a new groundwater management regime in the Northern Adelaide Plains prescribed wells area by 2007 will reduce extractions to sustainable levels.

2 Responsible water use

With the support of the community, local government, businesses and industry the SA Government will continue to implement programs aimed at reducing annual mains water demand so that by 2025 consumption will be lower than it would otherwise have been by about 35,000 ML. Households will contribute 30,000 ML towards these savings, commercial and industrial users 2,000 ML, and 3,000 ML will be saved by community purpose users.

To aid in meeting the target, the Government has implemented permanent conservation measures aimed at minimising water losses through poor water use practices.

The SA Government has committed to the National Water Initiative, which will introduce a national water efficiency labelling and standards scheme by the end of 2005 to inform consumers of the water efficiency of domestic appliances and some other products. In addition, ongoing education and conservation programs will be implemented.

A voluntary water audit scheme has been introduced for industrial and commercial water users and this will be expanded in the near future to provide audits of large irrigation systems used for public and recreational purposes as well as to households.

The SA Government will reduce its own water use through the 'Greening of Government' conservation initiative and through continuing a leakage reduction program adopted by SA Water to reduce leakage in the mains water system.

3 Additional water supplies

The SA Government in conjunction with homeowners, local government and community groups will aim to protect coastal waters and reduce demand on the mains water system by increasing the rainwater use, and use of stormwater for non-drinking purposes from an estimated 2,000 ML per annum in 2002 to 20,000 ML per annum by 2025.

Individual projects to help achieve this target will need to be considered on a case-by-case basis. Each project will need to demonstrate that the benefits it produces, including environmental and social benefits, exceed the costs.

Recycled water will be promoted particularly for agricultural and irrigation
purposes and as a complementary resource to stormwater. This will allow
growth in irrigated agriculture and will help to protect both groundwater
resources and the marine environment. It is estimated that the use of recycled
water can grow from about 14,000 ML in 2002 to in excess of 30,000 ML per
annum by 2025.

Water licences purchased from owners of land being retired from dairy
production on the lower Murray and other irrigation areas will be allocated
for social, economic or environmental purposes.

Adelaide's water supplies will be secured well beyond 2025 through research
and by monitoring technological change and innovation that will lead to
sustainable and cost-effective alternative water sources such as desalination
of seawater or brackish water.

The Government will support the continuing development of an innovative
water industry in South Australia through alliances between the public and
private sectors to pursue technological and policy solutions to further meet
the aims of this Strategy.

The benefits

With the support of the broad community the Strategy will provide sufficient
mains water to meet our needs to well beyond 2025. In some drought situations it
may be necessary for the Government to impose temporary water use restrictions
additional to the current conservation measures. However the Strategy should
allow us to face even major droughts without the need to impose total bans on
the use of water for gardening and other external purposes.

In addition to providing a reliable mains water supply, the Strategy will
also achieve many positive environmental and economic outcomes. It will
contribute to the protection and restoration of the River Murray and will
allow us to limit our demands on the river.

Pollution in the Hills waterways will be reduced and environmental flows
will be returned to rivers downstream of the Hills reservoirs. Groundwater
resources will also be protected for future generations while landowners in
the Adelaide Hills will be given more certainty and financial security through
the allocation of tradable water licences.

Increased use of recycled water and stormwater will provide economic
benefits and will benefit the marine environment through reduced
discharges. Complementary to this initiative the SA Government has, over the
past few years, undertaken major upgrade works on all of the metropolitan
wastewater treatment plants to significantly reduce the level of pollutants in
the discharge to Gulf St Vincent.

... the Strategy should allow us to face even major droughts without the need to impose total bans on the use of water for gardening and other external purposes."
Executive Summary

Finally, the Government's support for ongoing research and monitoring of technological innovation will ensure that Adelaide is well placed to meet the challenges associated with water supply and management well beyond 2025. This work will prepare the way for future generations to enjoy the same level of amenity as we now have and will ensure that Adelaide remains a great city with a bright future.

The table below sets out in summary form the gains to be made in water availability through implementation of the Strategy.

<table>
<thead>
<tr>
<th>Measures relating to:</th>
<th>Mains water</th>
<th>Ground- water</th>
<th>Unallocated water</th>
<th>Environment</th>
<th>Totals (ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible water use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Permanent water conservation measures</td>
<td>11,500</td>
<td>500</td>
<td></td>
<td></td>
<td>12,000</td>
</tr>
<tr>
<td>• Reduce indoor household water use</td>
<td>12,000</td>
<td></td>
<td></td>
<td></td>
<td>12,000</td>
</tr>
<tr>
<td>• Reduce outdoor household water use (additional to permanent water conservation measures)</td>
<td>6,500</td>
<td>500</td>
<td></td>
<td></td>
<td>7,000</td>
</tr>
<tr>
<td>• Reduce community purposes water use (additional to permanent water conservation measures)</td>
<td>2,000</td>
<td>1,000</td>
<td></td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>• Reduce commercial and industrial water use</td>
<td>1,500</td>
<td>500</td>
<td></td>
<td></td>
<td>2,000</td>
</tr>
<tr>
<td>• Reduce losses from mains water system</td>
<td>1,000</td>
<td></td>
<td></td>
<td></td>
<td>1,000</td>
</tr>
<tr>
<td>• Prescription of Western Mount Lofty Ranges – see Environmental flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-total: 37,000</td>
</tr>
<tr>
<td>Additional water supplies and fostering innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Large scale stormwater use projects</td>
<td>6,000</td>
<td>2,500</td>
<td>2,500</td>
<td></td>
<td>11,000</td>
</tr>
<tr>
<td>• Rainwater tanks in new homes</td>
<td>4,000</td>
<td></td>
<td></td>
<td></td>
<td>4,000</td>
</tr>
<tr>
<td>• Water sensitive urban development in new land divisions</td>
<td>2,000</td>
<td></td>
<td></td>
<td></td>
<td>2,000</td>
</tr>
<tr>
<td>• Recycled water</td>
<td>500</td>
<td>7,000</td>
<td>8,500</td>
<td></td>
<td>16,000</td>
</tr>
<tr>
<td>Sub total:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33,000</td>
</tr>
<tr>
<td>Totals:</td>
<td>47,000</td>
<td>12,000</td>
<td>11,000</td>
<td>70,000</td>
<td></td>
</tr>
</tbody>
</table>

Environmental flows

|                      |               |               |                  | See note 2   |             |
|----------------------|---------------|---------------|                  |              |             |
| • River Murray | See note 3 |               |                  |              | 10,000* |
| • Western Mount Lofty Ranges | See note 3 |               |                  |              | 10,000 |
| Totals: | | | | | 10,000 |

Notes

1. Additional water that may become available for as yet unallocated purposes such as additional irrigated agriculture.
2. Additional environmental flow increases for the River Murray, articulated in *South Australia’s Strategic Plan* and on page 21 of this Strategy, do not have a direct bearing on environmental flows within the Adelaide geographic area, and is therefore excluded from the table.

3. As of July 2005 the SA Government is yet to decide whether prescription of the Western Mount Lofty Ranges will proceed. Greater regulation of surface water capture by farm dams and groundwater use in the Adelaide Hills will maintain status quo, and is not additional water. Nevertheless, in the absence of greater regulation it is estimated that farm dam capture will reduce surface runoff by a further 7,000 ML per year by 2025.

4. Prescription (subject to above) of the Western Mount Lofty Ranges is expected to lead to a requirement for environmental flow releases to waterways downstream of reservoirs. An additional 10,000 ML in ‘average years’ is assumed. The amount ultimately allocated and the timing of releases would be established in a water allocation plan if prescription proceeds.

At present, total water use from all sources in the Adelaide region is about 300,000 ML per annum. Clearly the impacts of the Water Proofing Adelaide strategies are significant and will allow continued population and economic growth in line with *South Australia’s Strategic Plan*. 
Introduction

When Colonel William Light arrived in South Australia in 1836 with the task of designing a new city, his instructions from the colony’s commissioners pointed out the importance of making sure there was an abundant supply of fresh water. They understood very well it would be critical to building a viable community for future generations.

For many years, residents of Adelaide have generally enjoyed a comfortable lifestyle and have been able to take for granted the water that flows from their taps. We live in what is often referred to as the driest State in the driest inhabited continent in the world. Historically, however, Australians in general have tended to use water unsustainably.

Today we are more aware that our water resources are precious. South Australia is developing innovative ways to use its water more wisely.

In Adelaide’s north, stormwater passes through a large wetland and is stored underground and reused for industry. A significant amount of recycled water from the city’s wastewater treatment plants is being used to irrigate vegetable farms, orchards and vineyards. Individual households are also contributing to a turnaround in the judicious use of water.

Adelaide boasts the highest percentage of households with rainwater tanks in Australia, and South Australians have readily adapted to permanent water conservation measures introduced in October 2003. In fact, many people have become passionate about the issue and have made a strong personal commitment to reducing water use and wastage.

While we are proud of these achievements we are also mindful that the future brings more challenges. In recognition of these, the SA Government launched the Water Proofing Adelaide project in October 2003. The project set out to explore the water issues facing Adelaide and its nearby semi-rural areas with the aim of creating a strategy that was cost-effective, environmentally-sustainable and in line with community expectations.

The project has been jointly sponsored by the Minister for Environment and Conservation and the Minister for Administrative Services. It has been overseen by a steering committee made up of Heads of Agencies from across Government (HoASC) and a community-based strategy advisory committee (SAC). For a full list of those involved please see ‘Who is involved?’ on page 56.

The project set out to investigate issues and develop recommendations in three principal areas:
• better managing the water resources we have;
• increasing the efficiency of water use; and
• encouraging alternative water sources through fostering innovation.
The area covered by the project incorporates the Greater Adelaide region, extending from Myponga in the south to the Barossa Valley in the north and taking in the western Mount Lofty Ranges.

The initiative has also taken into account a number of areas which obtain water from within the catchments, or where they influence water supplies to these areas.

"... many people have become passionate about the issue and have made a strong personal commitment to reducing water use and wasteage."
Introduction

Community and stakeholder consultation

Water Proofing Adelaide has endeavoured to work with the community, local government, industry, business and environmental groups throughout this process. Consultation was carried out in two rounds.

Round One (December 2003 – March 2004)

- 120 representative stakeholders including local government, industry and research organisations were invited to participate. There were 45 stakeholder briefings held.
- 11 community forums attended by about 200 people
- 200 submissions received via phone, email, post and briefings

Round Two (November 2004 – January 2005)

- One stakeholder and one community information session
- An open invitation to the public and stakeholders to comment on the draft strategy
- Survey of 606 South Australians
- Almost 100 written comments received on the draft strategy

For more information on the consultation please read the Community and Stakeholder Consultation Report 2005 which is available on the website www.waterproofingadelaide.sa.gov.au

Implementation

The implementation of the Strategy will involve a number of government agencies, and the general community. For a broad outline of how this will happen please refer to page 51.

It is intended that the Strategy will be re-visited on a regular basis to ensure the SA Government takes advantage of any breakthroughs in knowledge and technology which can help in meeting the water challenges ahead.

This Strategy sets the path to ensure the greater Adelaide region has the water it needs to ensure a prosperous State and a healthier environment for future generations.

"This Strategy sets the path to ensure the greater Adelaide region has the water it needs to ensure a prosperous State ..."
Defining the challenges

Adelaide faces significant challenges in relation to water supply and management. Adelaide currently relies on water from the River Murray, catchments in the Adelaide Hills and groundwater. All of these resources are under pressure and the amount of water available from the Hills catchments varies significantly from year to year, with some resources particularly vulnerable to seasonal variations.

South Australians are aware of the precious nature of water. The community as a whole is beginning to accept that every water user has an obligation to become efficient in their water use and to reduce wasteful practices.

The above diagram gives you an understanding of where Adelaide's water comes from and where it goes, however actual water use volumes vary significantly year by year. In particular it should be noted that the figures...
Defining the challenges

for ‘Adelaide consumption’ include water from the mains system and groundwater as well as some recycled water and stormwater. The figures are therefore not directly comparable with the charts for ‘mains water use’ used elsewhere in the document which relate only to mains water use within the Water Proofing Adelaide boundary. The lack of variability between average and dry years is due to the fact that consumption in the metropolitan area tends to vary more with summer temperatures than with the dryness of the year.

South Australians have readily adapted to permanent water conservation measures introduced in October 2003, and formal research has since shown that the overwhelming majority of people is highly supportive of the measures. However, there is a growing expectation that governments should manage water resources better to provide and ensure reliable water supply in the face of drought.

Communities are recognising the potential value of alternative water resources such as stormwater and recycled water. Most of Adelaide’s stormwater and effluent, which carry high loads of nutrients and other pollutants, end up in Gulf St Vincent.

This is a factor in the dieback of seagrasses with consequences for fisheries and other marine environments, particularly in the areas surrounding the Barker Inlet. On occasions, pollution from stormwater discharges can lead to temporary closure of some metropolitan beaches. Significant work has been undertaken in the past few years to reduce the pollutant loads in both stormwater and effluent.

Where were we heading?

As at 2001-02, Adelaide’s demand for mains water could be met from existing resources even though demand had continued to increase due to population growth. However, that level of supply could not continue to be guaranteed in drought years.

In 2003 residents faced the first compulsory water restrictions imposed since the construction of the Mannum to Adelaide pipeline in 1955. This came about as a result of reduced rainfall across the Adelaide Hills in 2002, combined with several years of low rainfall across the Murray-Darting Basin, and showed that Adelaide needed to do more to manage its water supplies in a sustainable manner.

The chart on the next page shows that in 2002, mains water supply availability in a drought year was close to the expected level of demand. Over the next 20 years population growth in line with Bureau of Statistics predictions...
Mains water supply and demand

![Graph showing mains water supply and demand](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total use - Historic</th>
<th>'High demand' projection*</th>
<th>Projected availability - Normal years</th>
<th>Projected availability - Drought years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>1990</td>
<td>125</td>
<td>200</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>2000</td>
<td>200</td>
<td>37 GL</td>
<td>37 GL</td>
<td>37 GL</td>
</tr>
<tr>
<td>2025</td>
<td>350</td>
<td>37 GL</td>
<td>37 GL</td>
<td>37 GL</td>
</tr>
</tbody>
</table>

Projections based on the situation in 2002, showing the likely shortfall in mains water supplies in a drought year if demand levels continue on their current trend. *(Based on Australian Bureau of Statistics population growth estimates (2002-2011 Series B))*

is expected to increase demand (projected water use) while supplies are expected to decline by about 20,000 ML per annum as a result of climate change and development in the Adelaide Hills.

**Where are we heading now?**

In conjunction with Water Proofing Adelaide, the SA Government has already announced a number of measures to address the State's future water supply and management needs.

These initiatives include the introduction of permanent conservation measures and issuing a 'notice of intention' to prescribe the water resources of the Mount Lofty Ranges. In addition, the mandatory installation of plumbed rainwater tanks in new developments from 2006 will begin the process of utilising more of our stormwater.

The following chart (page 16) takes account of these initiatives and differs from the one above in several ways. The projected water use takes into account higher population growth (in line with South Australia's Strategic Plan) but also the impacts of the permanent water conservation measures. The projected water availability allows for sustainable management of the Hills resources and environmental flow releases from the Hills reservoirs as an outcome of the prescription process. It also takes account of increased

"... supplies are expected to decline by about 20,000 ML per annum ..."
Defining the challenges

stormwater use through rainwater tanks.

The chart shows that the initiatives taken to date will meet most of the additional demands placed on the Adelaide’s mains water supply through increased growth and will allow environmental flow releases but they are insufficient to meet the challenges discussed earlier.

Therefore, we need to build on the initiatives already in place. These measures along with those outlined in the following strategy are the foundation of a 20-year plan which, when fully implemented, will allow the State to prosper while at the same time provide a high level of reliability in drought years and as the forecast impacts of climate change become more evident.

It should be noted that in developing future supply predictions it has been assumed, based on the best information currently available, that intake into the Adelaide Hills reservoirs will reduce by 10% per annum by 2025 due to the impacts of climate change. Major studies to more accurately assess the likely impacts of climate change have begun. The South Australian Greenhouse Strategy is also expected to be completed by the end of 2005.
The Strategy

The Water Proofing Adelaide Strategy has been shaped by a number of other plans as well as its own terms of reference and guiding principles. South Australia’s Strategic Plan and a number of its objectives have been a key influence on the Strategy. These objectives are:

- Growing prosperity
- Improving wellbeing
- Attaining sustainability
- Fostering creativity
- Building communities
- Expanding opportunity.

As part of its growing prosperity objective the Government has set a target to increase the population of the State from 1.5 million to 2 million people by 2050.

The SA Government is committed to promoting the prosperity of the State through strategies to drive economic development and population growth.

In early 2004, it unveiled a strategic plan for the future of South Australia, with a goal of increasing the population by 500,000 people by 2050.

In developing this plan, the Government recognised the need to address issues relating to water and additional pressures the growing population would have on supplies, including in metropolitan Adelaide.

The SA Government has made a commitment to address these issues for the long-term good of the State and the city.

Water Proofing Adelaide also aims to complement and support other State Government strategies and initiatives including the State Water Plan, the Natural Resources Management Act 2004 and South Australia’s commitment to the National Water Initiative. It also recognises initiatives currently being developed as part of the South Australian Government’s Planning Strategy, Tackling Climate Change South Australia’s Greenhouse Strategy, the Urban Stormwater Initiative, and the Strategic Infrastructure Plan for South Australia.

The project also acknowledges the substantial work being carried out by local government, catchment water management boards, irrigation associations and other groups in water management and conservation.

Assessing the options

The Water Proofing Adelaide recommendations result from the distillation of many options through a thorough assessment process encompassing social, environmental and economic aspects; functionality; research;
stakeholder and community consultation; and consideration of the option's impact on the water balance. A multi-criteria analysis tool was developed to assist in this process. However, individual projects will require further assessment before being implemented. A list of the options assessed as part of the project is included as an Appendix.

The process has led to a series of strategies set out in the following pages under three key headings.

Managing our existing resources

This section recognises the importance of our key existing water resources and threats to the viability of those resources in the future. It looks at how we can best manage those resources in light of the threats to ensure they remain healthy and sustainable well into the future.

Responsible water use

This section looks at opportunities for various sectors of the community to use water more efficiently and effectively. It recognises that as a community we have an obligation to use our finite water resources in a wise and efficient manner.

Developing additional water supplies and fostering innovation

The third section looks at opportunities to develop or access additional water supplies in the future. The use of multiple supply sources improves our supply security and can have other significant beneficial impacts. For example the use of stormwater or recycled water for purposes where drinking quality water is not required will reduce discharges to Gulf St Vincent, reducing the degradation of the coastal marine environment.

The section also considers the possible benefits of future innovation and looks at mechanisms for supporting and fostering such innovation.
Managing our existing resources

Introduction

• Rainwater tanks 0.4%
• Farm dams 4%
• Wedand 1%
• Mains 68%
• Reclaimed wastewater 5%
• River water 2%
• Groundwater 20%
• Rainwater tanks 0.4%

Sources of water in Adelaide and surrounds.

More than 90% of the water currently used in and around Adelaide ultimately derives from three key sources: the River Murray, the Adelaide Hills catchments and various groundwater resources.

While there are opportunities to expand and diversify our water resources in the future, these three are expected to continue to form the primary water sources for Adelaide for many years to come. Each of these resources faces various pressures and risks, and it is essential we manage them well to ensure they remain available to future generations.

The River Murray

The challenge

On average the River Murray provides about 40% of Adelaide's mains water, however in a drought year this can be as high as 90%. It also supports a large number of country towns, rural communities and regional industries. The River Murray is essential to the social wellbeing and economic prosperity of the State.

The River also supports precious natural ecosystems and biodiversity in the river channel itself as well as in many lakes, lagoons, backwaters and associated systems such as the Coorong, which must be protected.

The stresses on the River Murray have become increasingly evident with rising water salinity, the dieback of dependent ecosystems and increasing pollution. In the future, increasing farm dam development, reafforestation, re-growth following bushfires, and the impacts of climate change are expected to reduce run-off across the Murray-Darling Basin, decreasing river flows. These environmental pressures could result in the socio-economic decline of those communities, along the river, which would inevitably have a flow-on effect on
the State's economy. Our challenge is to protect the River and to restore its health, both for our own benefit and that of future generations.

"Our challenge is to protect the River and to restore its health ..."

The above map highlights the health of the River Murray at selected sampling points. The points are based on the Australian River Assessment System (AUSRIVAS). AUSRIVAS compares the biological, physical and chemical characteristics of a site and compares that information to a similar site in an undisturbed or unimpacted condition (Reference Site). Reference Site, Reference Condition (A) and More biologically diverse than reference sites all indicate good ecological condition. Significantly impaired (B) and Severely impaired (C) both suggest poor river health or worse.

Meeting the challenge now

- The SA Government has committed to intergovernmental agreements and the Living Murray initiative that will secure 500,000 ML of water for environmental purposes to improve the health of the Murray-Darling Basin by 2009.

- In 2003 the SA Government introduced the Save the River Murray Levy which is payable by all SA Water customers. The funds can only
be used for programs to improve the health of the river, including for the permanent return of water to the river and for salt interception schemes.

- Significant work is being undertaken to combat salinity in the River Murray. Salt interception schemes are now preventing about 350 tonnes of salt a day from entering the river.

- SA Water is planning to purchase up to 25,000 ML of water licences and land, particularly from the Lower Murray Irrigation Areas, for social, environmental and economic purposes. The use of this water will be determined in the future and is yet to be included in the Strategy.

- The River Murray Act (2003) is providing protection for the River Murray and related areas and ecosystems.

- The Environment Protection Authority (EPA), SA Water and the River Murray Catchment Water Management Board are working together to undertake a River Murray Water Quality Risk Assessment to identify hazards that present potential risks to the water quality of the River Murray from the SA/Victorian border to the Lower Lakes.

- Through the Murray-Darling Basin Commission (MDBC), the SA Government has capped the amount of water that can be diverted from the river.

- The SA Government manages a dredging program funded by the Murray-Darling Basin Commission and the member States to keep the Murray mouth open. This program helps to ensure environmental sustainability of the Coorong.

- The River Murray Catchment Water Management Board and various other community groups are running programs to protect and enhance the river environment.

- Irrigators are committed to raising their efficiency of water use to 85% under the Water Allocation Plan and have made considerable investments in improved on-farm irrigation systems and management.

- The Murray-Darling Association is representative of 80 local government municipalities as well as community groups and businesses. It seeks to ensure the environmental integrity of the basin is preserved and protected through a number of initiatives and by encouraging responsible development.

- Retirement of carefully selected areas of land previously used for dairy farming is reducing the risk of pathogens, including Cryptosporidium.
Managing our existing resources and *Giardia*, entering the mains water supply pump stations at Mannum and Murray Bridge.

**Strategies for 2005 to 2025**

1. The SA Government will work with upstream States to boost the Intergovernmental Agreement and secure 1,500,000 ML for environmental purposes in the Murray-Darling Basin by 2018.

2. The number of salt interception schemes in South Australia will be increased from two to seven by 2010 in an effort to reduce salt inflow into the river.

3. The SA Government will work with the MDBC to ensure salinity levels in the River Murray at Morgan in South Australia remain below 800 EC units at least 95% of the time. This is equivalent to salt concentration of about 500mg/L – the limit recommended by the Australian Drinking Water Guidelines.

4. The SA Government will provide assistance packages to dairy farmers on the lower Murray swamps between Mannum and Wellington to enable rehabilitation of some properties and allow marginal properties to be taken out of production. This will enable regeneration of natural environments in some areas and will reduce the amount of pollutants entering the river.
The Adelaide Hills catchments

The challenge

The Adelaide Hills catchments provide, on average, about 60% of Adelaide’s mains water supplies. Water from the catchments is also used to support agriculture as well as some industry and residential development. In addition, the significant biodiversity of the Adelaide Hills relies on the creeks and streams for survival.

Resource allocation between these competing users presents a challenge for the State, with much of the resource already fully allocated. There is potential for climate change to reduce rainfall and runoff in the Adelaide Hills, further increasing competition. Various forms of development in the Adelaide Hills catchments have also led to increasing pollution of the waterways.

"... the significant biodiversity of the Adelaide Hills relies on the creeks and streams for survival."

Biological indicators of river health in Adelaide and surrounds (source: AUSRIVAS)
Managing our existing resources

The map on the previous page highlights the health of selected sampling points within the Water Proofing Adelaide boundary. The points are based on the Australian River Assessment System (AUSRIVAS) – see Page 20.

Meeting the challenge now

- The SA Government has taken the first step in prescribing the Western Mount Lofty Ranges by issuing a Notice of Prohibition on the use of water from wells, watercourses and surface water. This means that no further development of groundwater or surface resources in the region is allowed until water allocation plans have been established.

- The EPA’s Watershed Protection Office has made significant progress in protecting water quality since it was established in 2000.

- The Mount Lofty Ranges Catchment Program is providing on-ground support to landholders and communities with the aim of encouraging sustainable practices.

- The Environment Protection Authority, SA Water and the Department of Transport and Urban Planning are identifying areas and land uses in the watershed where there is a higher or lower risk of pollution impacting on water quality in the reservoirs.

- SA Water’s land management program aims to improve water quality and biodiversity conservation in and around its major reservoirs. The program includes plant and animal pest control, erosion control, and a partnership with Trees for Life.

"The EPA's Watershed Protection Office has made significant progress in protecting water quality since it was established in 2000."
- water to support and sustain dependent ecosystems; and
- environmental flows downstream of reservoirs to improve water quality in urban watercourses.

6 The Natural Resources Management Act 2004 will deliver an integrated and transparent natural resources management system which aims to ensure South Australia’s resources are used sustainably. This structure replaces the current system of more than 70 boards located around the State which separately manage issues relating to water, pest plants and animals and soil conservation.

7 Updated planning strategies for the Mount Lofty Ranges Watershed will protect the region from inappropriate development that may impact on water quality.

8 The Adelaide and Mount Lofty Ranges Natural Resources Management Board, has been established to deliver integrated and transparent management systems to the region.

9 Strategies will be evaluated and introduced to reduce pollution from existing developments in the Adelaide Hills, including improving septic tank management, and fencing off more rivers and creeks to prevent stock access.

10 Complex existing management arrangements for water resources in the Adelaide Hills will be reviewed and simplified to clarify overlapping responsibilities involving State and local government, semi-government and community organisations.
Managing our existing resources

Groundwater

The challenge

It is estimated that groundwater makes up about 20% of the water resource used in and around Adelaide. Most of these groundwater resources are either fully allocated or, in some cases, over-allocated.

In time, over-allocation leads to depletion of the resource and can sometimes lead to salt water intrusion, which can ultimately make the aquifer unusable and destroy the biodiversity within the aquifer itself. Our challenge is to ensure that groundwater extraction does not exceed sustainable limits in any of our aquifers.

Meeting the challenge now

Most groundwater resources have been prescribed to ensure water allocations are sustainable and equitable. The notice of restriction and issue of a notice of intent to prescribe the Western Mt Lofty Ranges, should this proceed, will apply to all groundwater resources in that region.

Strategies for 2005 to 2025

11 A new groundwater management regime in the Northern Adelaide Plains prescribed wells area will reduce extractions to sustainable levels, maintaining the resource for future generations.

12 Opportunities for further expansion of schemes which substitute recycled water for groundwater use in some parts of the Northern Adelaide Plains will be investigated.

13 The SA Government will explore ways of better managing groundwater resources in the Adelaide urban area to prevent them from being over exploited.

14 Current permanent water conservation measures, applicable to mains water users, may be extended to include groundwater and other water resources following a period of community consultation.
Responsible water use

Introduction

The chart below shows that most of our water is used by households and agriculture. These users along with community purposes and commercial and industrial users are beginning to become water efficient, however drought has made us more aware of the need to be even more careful.

Household water use

The challenge

Responsible household water use involves using water more efficiently while meeting domestic, individual, lifestyle and amenity needs. Over time it is possible to reduce per capita household water use by up to 22% without significant impacts on our lifestyles.

Achieving this target will mean that by 2025 we will be using about 30,000 ML less water each year than we would have been using if we took no action. If we fail to meet this challenge then we run the risk of facing more frequent and severe water restrictions. Alternatively, we may need to use more expensive water sources to meet demand.

A breakdown of how water is used in the home. Each home uses about 280 kL a year.
Responsible water use

Meeting the challenge now

- The SA Government has introduced permanent water conservation measures which mean householders, local government, business and industry now use water more effectively by watering at appropriate times during the day. The measures have already resulted in the increased use of water efficient devices and improved practices. South Australians have demonstrated widespread support for these measures. Total mains water use was 14% less during the 2003-04 financial year compared with 2002-03. It is anticipated that savings of 8% are achievable over a 10-year period.

- The whole-of-government initiative, WaterCare, is raising awareness about the precious nature of water and how we can protect it in South Australia.

- SA Water has introduced a range of ongoing community education initiatives to encourage the wise use of water and promote the permanent water conservation measures.

- Water conservation officers have been employed by SA Water as part of its responsibility to advise water users about the efficient and effective use of water and where necessary enforce the water conservation measures.

- Dual-flush toilets have been required in all new houses and for replacement toilets in South Australia since the early 1980s.

Strategies for 2005 to 2025

15 A nationally-recognised Water Efficiency Labelling Scheme (WELS) will be implemented. This will require the labelling of many domestic water-using appliances, fixtures and fittings to provide information about water efficiency. It is anticipated that savings of 8% are achievable over a 10 year period.

16 The SA Government will promote from 2007 a 'Smart Water Mark' scheme which seeks to accredit water-efficient garden products, water-efficient organisations, etc.

17 Education and conservation programs, including a targeted voluntary water audit program, will be implemented and supported by the SA Government.

18 From July 2006 regulations will require new house developments to have a rainwater tank plumbed in to the house for some household purposes (see Additional water supplies and fostering innovation - Stormwater).
Meeting the challenge now

• Trade waste charges are applied to industries that produce high volumes or high concentrations of waste. These charges are partially volume-based and act as an incentive for industries to reduce their 'waste' water discharge.

• SA Water has introduced a water audit service for commercial, industrial and some institutional water users. The program offers advice on water savings including promotion of the financial benefits for the user.

• The move from a property-based charging system to a 'charge by volume' system for commercial users will be completed by 2006 and will encourage further gains in water efficiency.

"The SA Government and industry will take the lead in encouraging the development of environmental management systems ...

Strategies for 2005 to 2025

21 Inefficiencies in some commercial and industrial settings, particularly in regard to inefficient water appliances and some older air conditioning systems, facilities and processes, will be identified through the SA Water audits program.

22 Large commercial and industrial water users will be encouraged to adopt environmental management systems to both minimise environmental impact and optimise water recycling and water use.

23 The SA Government and industry will take the lead in encouraging the development of environmental management systems for commercial and industrial premises.

Key outcome

Overall water use by industrial and commercial users will be reduced by 10% (about 2000 ML) per annum, if the strategies are implemented.

Agricultural water use

The challenge

Various forms of primary production, both agricultural and pastoral, occupy the majority of land area in the Adelaide region. Areas within 100 km of the Adelaide CBD comprise only 3% of the State's productive land base but are
estimated to yield about 20-25% of the State’s farmgate earnings. Significant industries in the region include wine grapes, orchards, vegetables and farm forestry, as well as dairying, livestock, poultry, commercial fisheries and freshwater aquaculture.

It is estimated that 94,000 ML of water is diverted each year for agricultural purposes. This has been increasing by about 2,000 ML a year for the past 10 years, driven in part by the significant expansion of wine grape production in the region. There are now limitations on the ability to extract more water in most agricultural areas, with most water resources being used at their sustainable limit. While irrigation efficiencies have improved, the proliferation of farm dams in the Mount Lofty Ranges over the last couple of decades presents major challenges for water use efficiency and ecological health.

There are opportunities to increase the use of alternative water sources such as recycled water, but the major challenge for the agricultural sector will be to continue to grow by employing best management practices and technology to improve water use efficiency to remain within the sustainable limits of the water available.

Meeting the challenge now

- The EPA, in cooperation with Natural Resources Management Boards, the Mount Lofty Ranges Catchment Program and Landcare, is offering on-ground support working with landholders to raise awareness and change behaviour in relation to land management and water quality.
- Primary Industries and Resources South Australia supports the implementation of simplified industry-specific, voluntary agricultural environmental management systems (EMS) programs.
- Several South Australian-based companies are developing and selling soil water monitoring technologies and scheduling and control systems nationally and in some cases internationally.
- A number of South Australian companies are offering best practice irrigation management services to primary producers.
- In partnership with apple, cherry and grape growers, Rural Solutions SA has recently completed a three-year study into irrigation practices in the Mount Lofty Ranges and Adelaide region. A similar study is now being conducted in partnership with pasture-based industries.
- In the Mt Lofty Ranges, a major pilot project is under way involving more than 30 orchardists and grape growers setting up property-based EMS.
"During 2003 community purposes water use represented approximately 13% (25,000 ML) of total mains water use."

**Strategies for 2005 to 2025**

24 Surface and groundwater supplies in the western Mount Lofty Ranges, including those used for agricultural production, will be brought under a more sustainable management regime.

25 Natural resources management legislation will deliver an integrated system to ensure South Australia's resources are used sustainably.

26 The SA Government, in consultation with the agricultural and horticultural industry, will provide ongoing education, training and extension programs to improve knowledge of best practice irrigation systems.

27 Opportunities to expand the use of stormwater and recycled water resources as alternatives to using rivers and groundwater will be explored for primary production.

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**Community purposes water use**

The challenge

Water for community purposes includes water used by government agencies, universities, schools, local government, public parks and gardens, sporting grounds, places of worship and hospitals. The majority of this water is used to maintain Adelaide's amenity, particularly parklands, open spaces and gardens.

During 2003 community purposes water use represented about 15% (25,000 ML) of total mains water use. Irrigating parks, gardens, ovals and sports fields uses approximately 15,000 ML per year.

A significant amount of water is also taken from groundwater or surface water resources. Through more efficient practices and the installation of water efficient appliances in public and community buildings, there is the opportunity to reduce mains water use for public purposes by at least 12% (about 3,000 ML per year).

Meeting the challenge now

- Many local councils and some sporting groups have been working with irrigation specialists to improve irrigation techniques for watering of parks, gardens and ovals etc, significantly reducing water use.
• Some community organisations have been reviewing water use within buildings and replacing old appliances with more water-efficient models.

• SA Water is working with city developers in the planning and design of new water-efficient buildings in the central business district.

Strategies for 2005 to 2025

28 A voluntary water audit scheme already in place for industrial and commercial water users will be expanded to provide audits of large irrigation systems used for public and recreational purposes.

29 The SA Government will proactively promote a 'Smart Water Mark' scheme due to be implemented by 2007 and which seeks to accredit water-efficient garden products, water-efficient organisations, etc.

30 The Water Efficiency Labelling and Standards Scheme (see Household water use, Page 27) will allow public and community groups to choose water-efficient appliances when installing or replacing systems within public buildings.


32 Organisations managing Adelaide's parks and gardens will be encouraged to look at replanting some areas with water-efficient vegetation.

33 A code of practice that encourages irrigation efficiency for public purposes water use will be developed by the SA Government in consultation with the Irrigation Association of Australia, Local Government Association of SA, Botanic Gardens and sporting associations.

34 High-volume community purpose water use organisations will be required to achieve 'Smart Water Mark' scheme accreditation.

35 Mains water used for community purposes may, in some situations, be substituted with lower quality water such as recycled water, rainwater and stormwater (see Additional Water Supplies and Fostering Innovation, Page 35).
Responsible water use

36 Legislation that provides the cities of Port Adelaide/Enfield and Adelaide with free water will be reviewed in consultation with the councils.

Key outcome

Overall water use by industrial and commercial users will be reduced by 10% (about 2,000 ML) per annum, if the strategies are implemented.

Service provider use

"In 2002-03 it is estimated that approximately 26,000 ML of water was ‘lost’, largely due to evaporation from reservoirs."

The challenge

Water for Adelaide’s mains water system is collected from the Adelaide Hills catchments by a series of 10 reservoirs that are supplemented by transfers from the River Murray via two major pipelines. Water is transmitted to eight water treatment plants. The treated water is then supplied to consumers via a distribution network.

It is estimated that in 2002-03 about 26,000 ML of water was ‘lost’, largely due to evaporation from reservoirs. The use of natural rivers as aqueducts to transfer water also results in some seepage losses. Other factors that have to be taken into account include leaking pipes in the mains system, old and inaccurate water meters, un-metered water use, and operational uses such as fire fighting and maintenance of the distribution system. Our challenge is to continue to reduce these losses and to ensure all water is properly accounted for.

Meeting the challenge now

- A leakage reduction program has been introduced by SA Water. The State’s leakage rate is now recognised as one of the lowest in the world.
- A meter replacement program is providing more accurate data for householders and SA Water.
Strategies for 2005 to 2025

37 The Hope Valley aqueduct is to be covered or replaced with a pipe, which will reduce losses.

38 Further opportunities to reduce leakage in the reticulation system will be assessed on a triple bottom line basis (social, economic and environmental) and will result in further water savings.

39 Emerging technologies will be monitored as they become available, including chemical films to reduce evaporation losses from reservoirs and new techniques to improve leakage detection.

Pricing for urban water conservation

The challenge

Pricing is often cited as a potential tool for reducing the demand for drinking water and making alternative sources of supply more cost competitive. However, some research indicates that pricing may have only a short term effect in achieving relatively small reductions in household use, but may have a greater impact in households which use relatively large volumes of water. On the other hand, water conservation measures introduced for SA Water customers in October 2003 assisted in achieving a 14% reduction in urban water use during the 2003-04 financial year compared with 2002-03. While some of this saving was due to climatic conditions it is anticipated that savings of 8% are achievable over a 10-year period.

In addition, pricing considerations must be balanced against other, sometimes competing, aims such as commercial viability, social equity, economic efficiency and business competitiveness.

In 2004, Adelaide Thinker in Residence, Professor Peter Cullen, released his report *Water Challenges for South Australia in the 21st Century*. The report makes recommendations regarding pricing which are being considered by the SA Government.

Currently South Australian households using mains water pay a quarterly access fee, plus a water usage charge of $0.44 per kL for the first 125 kL used in the year and $1.03 per kL for usage above 125 kL over the year. The charge for the first 125 kL in the year could instead be applied on a quarterly basis of, say, 30 kL. Combined with quarterly meter reading this could provide price signals to be received closer to the time of consumption, reinforcing the need
Responsible water use

for conservation and providing earlier identification of leakage and faulty meters.

A tiered pricing system is considered by some as a fair and effective way of reinforcing the need for water conservation in the home whilst also recognising the need for affordably-priced water for essential needs. It works by charging a higher price per kilolitre above a specified level of water use.

An Eco-water scheme could run along similar lines to some of the ‘green power’ schemes offered by different power companies. Eco-water would be funded by voluntary premiums being paid by: householders; industrial, agricultural and commercial users; and state and local government agencies. The premium could be paid via SA Water bills but placed in a special fund and managed by an independent body. The money raised would be used for reducing the draw of water on the River Murray and Adelaide Hills catchments. Potential projects could include using stormwater and recycled water for purposes other than drinking water.

Many non-mains water users face high up-front capital costs to access water, however, they pay little or nothing for the amount of water they extract from groundwater or surface water resources despite the fact that there is a significant cost to the community associated with managing those resources. Similarly, irrigators in the southern Murray-Darling Basin consume around 70 times the amount of water that is used by urban Adelaide users at prices significantly below urban water prices. The National Water Initiative requires States to develop consistent approaches to pricing and attributing the costs of water planning and management. As this issue will require further discussion and negotiation nationwide it is not dealt with in this Strategy.

The challenge is to establish pricing structures that equitably assign costs to users and encourage water use efficiency ...

Meeting the challenge now

A new National Water Initiative has been set up to build on earlier institutional and market reforms. It advances the need to balance ways that mutually enhance social, economic and environmental outcomes through reform of water markets, regulation, resource management, accounting and pricing.
Strategies for 2005 to 2025

40 The SA Government will encourage consumers to voluntarily contribute to a scheme that funds projects which reuse water for purposes other than drinking water (e.g. irrigation). 'Eco-Water' could be used to reduce Adelaide's draw on the River Murray and Adelaide Hills catchments.

Reliability of mains water supplies

'Reliability' refers to how sure we are that the community's particular water demand can be maintained regardless of the variation of inflow to reservoirs, from season to season, or from year to year.

Reliability of Adelaide's supply is influenced by rainfall variation in the Adelaide Hills, the adequacy of flows in the River Murray, and the sufficiency of SA Water's licence to take water from the River Murray. The capacity of the River Murray pipelines can also be a factor, but this is currently adequate.

Adelaide has enjoyed a highly reliable water supply for many years because it has two major water sources, the Adelaide Hills catchments and the River Murray. This is despite the storage capacity of the reservoirs in the Adelaide Hills being only equivalent to only one year's demand, compared with Melbourne and Sydney whose storages hold up to four years' demand. Having two sources means that, not only is there enough water available, but the likelihood of both being low at the same time is very small.

The Adelaide Hills catchments on their own would only be able to supply about 30% of Adelaide's current population, unless permanent severe water restrictions were imposed. Building additional reservoirs or dams in the Hills would not help, as there would not be enough water to put in them.

The challenge

Although adequate in the past, both major water resources are finite and the volume of water available from them has reduced over time.

Development in the Adelaide Hills has reduced the volume of water flowing into reservoirs which supply the mains water system. In the future, climate change is likely to lead to lower rainfall, further reducing the volume of water captured in our reservoirs.
Responsible water use

The extraction of water from the River Murray has been capped at 1993-94 levels of extraction. For Adelaide to obtain additional water from the River, water entitlements would have to be purchased and transferred from elsewhere; primarily from irrigation users. However, one of the aims of Water Proofing Adelaide is to reduce Adelaide’s reliance on the River Murray.

If no action is taken, as the Adelaide region grows and demand increases, the reliability of supply will reduce. This would lead to more frequent and severe water restrictions.

It is important that the severity of the impacts associated with extreme drought conditions remain manageable. While most people accept the need for water restrictions during drought, recent interstate experiences suggest that the community expects the Government to manage mains water systems so as to limit the duration and severity of water restrictions when they are imposed.

Demand management and stormwater will help reduce Adelaide’s overall draw on the Adelaide Hills and River Murray sources. In drought years however, the impact of these strategies is likely to be much lower due to higher demand, less room to move with restrictions, and limited storage for stormwater.

Alternative supplies such as stormwater can be developed to the same high level of reliability as existing drinking water systems provided yield is managed in line with available storage. On the other hand, total long term yield from alternative sources can be much higher if a lower level of reliability can be accepted. This would further reduce total and average use from traditional sources such as the River Murray. Traditional sources would still be required in very dry years, and consideration therefore needs to be given to retaining existing reliability levels from these sources.

Strategies for 2005 to 2025

41 The SA Government will manage the mains water resources to ensure that the mains water system provides supplies even in major droughts. Except for the most extreme circumstances there will be no need to impose total bans on the use of water for gardening and other external purposes.
Additional water supplies and fostering innovation

Introduction
In addition to the water supplies we already have, there are opportunities to utilise other, largely untapped resources. A large number of alternative water supply options have been investigated but have been eliminated on the grounds they are uneconomic and/or result in adverse environmental impacts. They include building new reservoirs, piped water schemes from other regions and various other options. A list of these options can be found in the Appendix. Alternatively, further information is available on the website: www.waterproofingadelaide.sa.gov.au/main/options.htm

However, there are potentially viable opportunities to provide additional water and benefit the environment. In particular stormwater and effluent discharges to Gulf St Vincent contain nutrients and other pollutants which are harmful to the marine environment, particularly in the sensitive but important areas around the Barker Inlet. It is possible to utilise some of these resources and at the same time reduce impacts on the environment. By 2025 discharges to Gulf St Vincent could be reduced from 2002 levels by as much as 34,000 ML each year. Schemes to substitute mains water use with alternative sources can contribute to this. If the costs were shared amongst all water users it is estimated to be equivalent to $0.05/kL.

Complementary to this initiative the SA Government has, over the past few years, undertaken major upgrade works on all of the metropolitan wastewater treatment plants to significantly reduce the level of pollutants in effluent that continues to be discharged to the gulf.

Stormwater
The challenge

On average about 160,000 ML of stormwater, combined with surface water from the Adelaide Hills, flows through watercourses into Gulf St Vincent. Actual annual stormwater runoff varies significantly depending on weather patterns and is much higher in a wet year, or as low as 50,000 ML in a drought year.

The biggest challenge in maximising the use of urban stormwater is the availability of space to capture, treat and store large volumes of water. Given
Additional water supplies and fostering innovation

Our challenge is to seek out viable opportunities to use stormwater both as a supplement to existing resources and to reduce environmental impacts on Gulf St Vincent.

Current technology and opportunities for use of stormwater, it is estimated that by 2025 we will be able to increase rainwater and stormwater use to about 20,000 ML per annum. In arriving at this figure several factors have been considered including:

- Potential uptake of rainwater tanks for domestic rainwater use.
- Land availability for capture and treatment of stormwater.
- The location of aquifers and the potential to store water in those aquifers.

Areas within the Water Proofing Adelaide boundary where there is greatest potential for water reuse.
• The locality of potential users and the volumes that could be used.
• The economic cost of stormwater use schemes, taking account of the environmental and social benefits.
• The economic cost of alternative options for water supply and the point at which these may become more cost effective for the community. Such alternatives may include using recycled water or seawater desalination.

As technology develops and our knowledge of our aquifer systems increases, it may be possible to increase the use of stormwater beyond 20,000 ML per year. However, in some instances it may be more cost effective or appropriate to use recycled water, since the two resources will compete for the same market.

Our challenge is to seek out viable opportunities to use stormwater, both as a supplement to existing resources and to reduce environmental impacts on Gulf St Vincent.

Meeting the challenge now
• The Adelaide region currently captures and uses between 3,000 and 5,000 ML each year, making SA a leader in stormwater reuse. For example, the Salisbury Council’s aquifer storage and recovery scheme treats and stores stormwater in an aquifer before it is used by industry. At Morphettville, the local racecourse captures stormwater and stores it for irrigation purposes.
• The use of rainwater tanks is much higher in Adelaide than in any other Australian capital city.
• Measures have been taken through the Environment Protection (Water Quality) Policy 2003 to protect stormwater quality.

Strategies for 2005 to 2025
42 Commencing in July 2006, most new houses in South Australia will be required to have a rainwater tank plumbed into the house for some domestic uses. This should provide an additional 4,000 ML of water per year by 2025 and is likely to encourage the further uptake of rainwater tanks in existing developments.

43 The SA Government will work with the Australian Government and other States and Territories to develop national guidelines for the use of stormwater.
Additional water supplies and fostering innovation

44 The Urban Stormwater Initiative will progress policy issues that incorporate multiple objectives of stormwater management into decision-making. These include key issues of flood management, reuse, water quality and amenity. The policies are expected to make recommendations that would lead to improved viability of stormwater as a resource.

45 Further research will be carried out by the SA Government together with regional Natural Resources Management Boards on the potential for Aquifer Storage and Recovery (ASR) to provide additional storage capability for stormwater and recycled water in the Adelaide region.

46 The SA Government will review environmental values under its water quality policy to enable ASR projects on the Adelaide Plains.

47 Water sensitive urban design principles will be incorporated into the Planning Strategy for South Australia and implemented by council development plans and other regulations with the aim of emphasising and integrating water quality, urban amenity and stormwater use with adequate flood mitigation.

48 Localised reuse of stormwater and/or recycled water, where practical and economic, will be considered in all new land divisions as part of water-sensitive urban development requirements.

49 The SA Government will work with local councils to develop whole-of-catchment stormwater management plans.

50 Legal issues surrounding ownership and access rights to surface and groundwater resources will be reviewed to provide an appropriate level of security/certainty for potential stormwater users.

51 Responsibilities will be reviewed and clarified for various functions associated with managing stormwater (especially arterial drains) including provision of works, planning, education and regulation of water quality.

52 Projects aimed at using stormwater will be considered on their merits to ensure that there is sufficient benefit to the community to warrant the cost. Evaluation will be made easier over time as more research is carried out and better information on environmental and social benefits becomes available.

Key outcome

By 2025, increase rainwater and stormwater use from 2000ML per annum
(2002) to about 20,000 ML per annum, if current technologies and the strategies are implemented.

Recycled water
The challenge
About 90,000 ML of effluent is generated in Adelaide each year, of which around 70,000 ML is discharged into Gulf St Vincent. Every day more than half the fresh water used in Adelaide homes is returned to sewers from household toilets, showers and washing machines. Added to this is 'waste' water from industrial, commercial and other sources.

In comparison with stormwater, recycled water is very consistent in quantity and quality but has higher salinity which can limit its use. The nutrients in recycled water can make it ideal for reuse for agricultural and other irrigation purposes as well as in some industrial applications.

There is potential to expand or develop further large-scale recycled water schemes as indicated in the map on page 40. Extraction from groundwater resources has reached or exceeded sustainable limits in both the Northern Adelaide Plains and the Willunga Basin, so using recycled water in these areas in particular provides the opportunity for continued expansion of irrigated agriculture while allowing for sustainable management of the existing resources. Opportunities also exist to encourage local reuse, particularly in new developments.

It is estimated that the use of recycled water can grow from 14,000 ML in 2002 to more than 30,000 ML per annum by 2025. Our challenge is to reduce effluent discharge to Gulf St Vincent by using recycled water wherever practically viable and economically effective.

Meeting the challenge now
- South Australia has the highest per capita level of recycled water use in Australia.
- A new dual-pipe system delivering a mixture of Class A recycled water from the Bolivar Wastewater Treatment Plant and reclaimed water from Salisbury wetlands to more than 1,000 homes at Mawson Lakes was commissioned early in 2005. Involving the SA Government, the City of Salisbury and Delfin, this project delivers recycled water for toilet flushing and watering of parks and gardens.
- SA Water has undertaken a $250 million Environment Improvement
Additional water supplies and fostering innovation

Program in the past few years to reduce the impact of effluent on the marine environment.

Strategies for 2005 to 2025

53 The Adelaide Coastal Waters Study will provide information on the extent to which the discharge from stormwater and from wastewater treatment plants is still affecting the marine environment in Gulf St Vincent. This may lead to additional interventions to reduce impacts.

54 National health guidelines for water reuse, including greywater, will be developed by the SA Government, in conjunction with the Australian Government and other States and Territories.

55 Further opportunities for large-scale recycled water projects including the expansion of existing schemes will be implemented where they are viable according to an economic, environmental and social impact assessment.

56 Localised reuse of recycled water and/or stormwater will be considered for new land divisions as part of water-sensitive urban development requirements.

57 Regulations relating to sewer mining and greywater reuse systems will be reviewed to ensure that restrictions on reuse are justified by the public health and urban amenity criteria.

Key outcome

By 2025, increase the use of recycled water from 14,000 ML per annum to more than 30,000 ML per annum, if the strategies are implemented.

Other opportunities for additional water supplies

The challenge

Subject to the full implementation of this Strategy, Adelaide should have safe and reliable water supplies to 2025 and beyond.

However the long term future is not without some unknowns, particularly in relation to the impacts of climate change. Prolonged drought in the Adelaide Hills could lead to a demand for water that exceeds the current licences. Similarly prolonged drought across the Murray-Darling Basin could potentially lead to reduced water allocations from the river and/or increases

" South Australia has the highest per capita level of wastewater reuse in Australia. "

44
in river salinity to unacceptable levels.

We therefore face the ongoing challenge of finding ways to supplement our water supplies, either temporarily or permanently, to secure our longer-term future.

Desalination technology is still developing and Adelaide is not yet in a position where it needs to move to large-scale desalination projects. Such projects are currently more expensive than our current supplies in terms of cost and the increase in greenhouse emissions.

We can, however, learn from Western Australia and overseas countries currently planning large-scale desalination plants and benefit from the innovations that will almost inevitably flow from their experiences. In the future, desalination of seawater or brackish water may prove to be a viable option for Adelaide.

Meeting the challenge now

Desalination is not currently used within the Water Proofing Adelaide area; however, the SA Government is learning from the experiences in other parts of the State. For example:

- A small-scale seawater desalination plant has been constructed at Penneshaw on Kangaroo Island to serve the domestic needs of that town.
- In the north of the State, Coober Pedy's water is provided from a plant that desalinates saline groundwater.

Strategies for 2005 to 2025

58 Water licences will be purchased in the lower Murray area as part of the strategy to protect the River Murray and the quality of our mains water supplies (see Managing Our Existing Resources, Page 16). This water will be used for social, environmental or economic purposes, particularly in regional South Australia.

59 The SA Government will develop a State policy towards desalination that addresses planning issues, access to saline water, disposal of brine and management of other environmental impacts.

60 The SA Government will ensure that its long-term water infrastructure plans remain flexible enough to enable the integration of desalination plants as and when they become viable in the future.
Fostering innovation

The challenge

South Australia is showing leadership in many water-related practices, including the storage of recycled water in aquifers for potential reuse, stormwater aquifer storage and recovery, some areas of water treatment, desalination, water-sensitive urban design, on-farm irrigation and pipe relining. Our challenge into the future is to remain innovative and to build on the expertise already developed in the water industry.

Meeting the challenge now

• The SA Government has links with a number of major water-focused research groups now based in South Australia including: the Cooperative Research Centre for Water Quality and Treatment; the CSIRO Water Reclamation Team, the Policy and Economic Research Group and the Centre for Groundwater Studies.

• The Australian Water Quality Centre (AWQC) provides a comprehensive and internationally recognised range of services including sampling, analysis, advice and research.

• The Adelaide-based Australian International Centre of Excellence in Water Resources Management provides a focus for the best expertise in water management throughout Australia and internationally, across academic and research institutions, public and private sector providers. The Centre is the Australian gateway for international access to education and training, including research and practical skills, in all aspects of water resources management.

• In 2004 SA Water and UniSA appointed the Chair of the new SA Water Centre for Water Science and Systems. This is a multi-million dollar project to support research into stormwater, effluent management and water recycling, purification and desalination.

• The Water Industry Alliance, which is supported by SA Water and its major contractors, brings together, in Adelaide, a range of private sector companies developing new technologies to better manage water.

• The SA Government's Thinkers in Residence program brings world-leading thinkers to live and work in Adelaide to assist in the strategic development and promotion of South Australia. In 2004 it included renowned water expert Professor Peter Cullen, whose expertise was made available to the Water Proofing Adelaide project team.
Strategies for 2005 to 2025

61 The SA Government, in accordance with the National Water Initiative, will place importance on the proper evaluation of 'icon' developments in order to learn from them and develop new skills and policies and capabilities for future projects.

62 The SA Government will continue to support research and innovation, and will establish clear eligibility guidelines for non-Government parties to access assistance in establishing the feasibility of water projects and for trialling innovative water schemes or products.

63 The SA Government will conduct a five year rolling review of the Water Proofing Adelaide Strategy with a focus on changes in the environment, technology, and knowledge that have occurred in the intervening period.
The benefits for Adelaide

With support from the entire community, implementation of the Water Proofing Adelaide Strategy will provide sufficient mains water to meet Adelaide's needs, even in a drought year, well beyond 2025.

In contrast to the chart on page 15, the chart below shows the impacts on the mains water system that can be achieved through the initiatives discussed within the Strategy. This projection allows for increased population growth, an allowance for the impacts of climate change on the Adelaide Hills catchments and the return of environmental flows to waterways downstream of the Adelaide Hills reservoirs.

The chart indicates that in drought situations it may still be necessary for the SA Government to impose temporary water use restrictions additional to the current permanent water conservation measures. Except for the most extreme circumstances, there will be no need to impose total bans on the use of water for gardening and other external purposes since the anticipated water shortfall is relatively small.

![Mains water supply and demand chart](chart.png)

Projected supply and demand scenarios for mains water following implementation of both the State Strategic Plan and the Water Proofing Adelaide Strategy

* Prosperity through people: A population policy for SA 2004
Specific key benefits

Once fully implemented in 2025 the Strategy will:

• Protect Adelaide’s domestic water supply sources and reduce our reliance on the River Murray in the longer term;

• Reduce or eliminate pollutants flowing into the River Murray from some river flats, and allow regeneration of natural environments by retiring less-productive river flats.

• Reduce the risk of pathogens, including Cryptosporidium and Giardia, entering the mains water supply pump stations at Mannum and Murray Bridge.

• Provide a high degree of reliability for Adelaide’s water supply.

• Give landowners in the Adelaide Hills more certainty and financial security by allocating tradable water licences which give guaranteed access to a share of the Adelaide Hills water resource.

• Reduce pollution in the Adelaide Hills waterways and provide for environmental flows to be returned to rivers downstream of the Adelaide Hills reservoirs.

• Protect groundwater resources for future generations.

• Manage the reduction in groundwater availability in the Northern Adelaide Plains (where resources have been over-allocated) through ongoing improvements in irrigation techniques and through the provision of recycled water piped to the region from the Bolivar Wastewater Treatment Plant.

• Encourage localised use of recycled water, including sewer mining and greywater recycling.

• Allow continued irrigation development in the Willunga Basin region despite the cap on groundwater resources, through the provision of additional recycled water from the Christies Beach and Aldinga wastewater treatment plants.

• Reduce discharges to Gulf St Vincent from 2002 levels by as much as 34,000 ML by 2025 with the attendant reduction in nutrients and other pollutants which impact on the marine environment.

• Significantly reduce the level of pollutants in stormwater and effluent ...
The benefits

• Increase the use of stormwater and rainwater.

The Water Proofing Adelaide Strategy will benefit from the ongoing support of all SA Government departments and agencies, local government, businesses, industry and the general community. By working to be more water efficient and taking better care of our water resources we can – together – make a difference and ensure Adelaide remains a great city with a bright future.

"By working to be more water efficient and taking better care of our water resources we can – together – make a difference and ensure Adelaide remains a great city with a bright future."
How will it be implemented?  

The implementation of the Water Proofing Adelaide Strategy will involve a number of government and non-government organisations, the community and industry. It is important that the SA Government work collaboratively with key stakeholders and the community to ensure that the Strategy is successful.

The table below sets target dates for the goals and assigns lead agency responsibility.

<table>
<thead>
<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
<th>Completion 2010-15</th>
<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
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<tbody>
<tr>
<td>1</td>
<td>The SA Government will work with upstream States to boost the Intergovernmental Agreement and secure 1,500,000 ML for environmental purposes in the Murray-Darling Basin by 2018.</td>
<td>2018</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>MDB Ministerial Council &amp; Partner Governments</td>
</tr>
<tr>
<td>2</td>
<td>The number of salt interception schemes in SA will be increased from two to seven by 2010 in an effort to reduce salt inflow into the river.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>MDBC &amp; SA Water</td>
</tr>
<tr>
<td>3</td>
<td>The SA Government will work with the MDBC to ensure salinity levels in the River Murray at Morgan in SA remain below 800 EC units at least 95% of the time. This is equivalent to salinity concentration of about 500 mg/L – the limit recommended by the Australian Drinking Water Guidelines.</td>
<td></td>
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<td></td>
<td></td>
<td>DWLBC</td>
<td>MDBC &amp; Partner Governments</td>
</tr>
<tr>
<td>4</td>
<td>The SA Government will provide assistance packages to dairy farmers on the lower Murray swamps between Mannum and Wellington to enable rehabilitation of some properties and allow marginal properties to be taken out of production. This will enable regeneration of natural environments in some areas and will reduce the amount of pollutants entering the river.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Commonwealth, Lower Murray Irrigators &amp; EPA</td>
</tr>
<tr>
<td>5</td>
<td>Surface and groundwater supplies in the western Mount Lofty Ranges (including the sections of the Gawler, Torrens and Onkaparinga rivers which cross the Adelaide Plains) have been placed under a Notice of Intent to Prescribe and a Notice of Prohibition. If prescription goes ahead they will be brought into a regime providing: - sustainable management and use of water; - a means to balance the needs of all users, including mains water users, primary production, stock and domestic supplies and water-dependent ecosystems; - protection of sources of Adelaide’s domestic water supply and reduction of our reliance on the River Murray in the longer term; - more secure access rights to water users; - potential for tradeable water licences; - water to support and sustain dependent ecosystems; and - environmental flows downstream of reservoirs to improve water in urban watercourses.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>SA Water, stakeholders, community</td>
</tr>
<tr>
<td>6</td>
<td>The Natural Resources Management Act 2004 will deliver an integrated and transparent natural resources management system which aims to ensure South Australia’s resources are used sustainably. This structure replaces the current system of more than 70 boards located around the State which separately manage issues relating to water, pest plants and animals and soil conservation.</td>
<td></td>
<td></td>
<td></td>
<td>2005.</td>
<td>DWLBC</td>
<td>INRM groups, PIRSA</td>
</tr>
<tr>
<td>7</td>
<td>Updated planning strategies for the Mount Lofty Ranges Watershed will protect the region from inappropriate development that may impact on water quality.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Planning SA</td>
<td>EPA, local government</td>
</tr>
<tr>
<td>8</td>
<td>The Adelaide and Mount Lofty Natural Resources Management Board, has been established to deliver integrated and transparent management systems to the region.</td>
<td></td>
<td></td>
<td></td>
<td>2005.</td>
<td>DWLBC</td>
<td>INRM groups</td>
</tr>
<tr>
<td>9</td>
<td>Strategies will be evaluated and introduced to reduce pollution from existing developments in the Adelaide Hills, including improving septic tank management, and fencing off more rivers and creeks to prevent stock access.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EPA</td>
<td>Local government, INRM groups, Planning SA</td>
</tr>
</tbody>
</table>
### Implementation

<table>
<thead>
<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
<th>Completion 2010-15</th>
<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Complex existing management arrangements for water resources in the Adelaide Hills will be reviewed and simplified to clarify overlapping responsibilities involving State and local government, semi-government and community organisations.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>INRM groups, Planning SA, EPA, PIRSA, local government</td>
</tr>
<tr>
<td>11</td>
<td>A new groundwater management regime in the Northern Adelaide Plains prescribed wells area will reduce extractions to sustainable levels, maintaining the resource for future generations.</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Northern Adelaide &amp; Barossa CWMB/Mt Lofty Ranges &amp; Greater Adelaide NRM Board, Virginia Horticulture Centre</td>
</tr>
<tr>
<td>12</td>
<td>Opportunities for further expansion of schemes which substitute recycled water for groundwater use in some parts of the Northern Adelaide Plains will be investigated.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Virginia Horticulture Centre, Northern Adelaide &amp; Barossa CWMB/Mt Lofty Ranges &amp; Greater Adelaide NRM Board, Planning SA, SA Water, Dept. of Health</td>
</tr>
<tr>
<td>13</td>
<td>The SA Government will explore ways of better managing groundwater resources in the Adelaide urban area to prevent them from being over exploited.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Mt Lofty Ranges &amp; Greater Adelaide NRM Board</td>
</tr>
<tr>
<td>14</td>
<td>Current permanent water conservation measures, applicable to mains water users, may be extended to include groundwater and other water resources following a period of community consultation.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>SA Water</td>
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</table>

### Responsible water use

#### Household water use

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<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
<th>Completion 2010-15</th>
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<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A nationally-recognised Water Efficiency Labelling Scheme (WELS) will be implemented, which will require the labelling of many common water-using appliances, fixtures and fittings to provide information about water efficiency.</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td>Comm. Govt.</td>
<td>DEH, SA Water, WaterCare</td>
</tr>
<tr>
<td>16</td>
<td>The SA Government will pro-actively promote from 2007 a 'Smart Water Mark' scheme which seeks to accredit water-efficient garden products, water-efficient organisations, etc.</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>WaterCare, Water Services Assoc.</td>
</tr>
<tr>
<td>17</td>
<td>Pro-active education and conservation programs, including a targeted voluntary water audit program, will be implemented and supported by the SA Government.</td>
<td>Commence 2007</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>WaterCare</td>
</tr>
<tr>
<td>18</td>
<td>From July 2008 regulations will require all new house developments to have a rainwater tank plumbed in to the house for some household purposes (see Additional water supplies and fostering innovation – Stormwater).</td>
<td>July '08</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Planning SA, SA Water, Dept. of Health</td>
</tr>
<tr>
<td>19</td>
<td>Water conservation programs will encourage the uptake of water efficient devices in household gardens. These programs along with the continuing trend towards smaller gardens will reduce domestic water use by 1,000 ML per year by 2025.</td>
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<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>WaterCare</td>
</tr>
<tr>
<td>20</td>
<td>The SA Government will investigate ways of making new homes more water efficient.</td>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td>DEH</td>
<td>Planning SA, local government</td>
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</tbody>
</table>

#### Commercial and industrial water use

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<th>Strategy</th>
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<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Inefficiencies in some commercial and industrial settings, particularly in regard to inefficient water appliances and some older air conditioning systems, facilities and processes, will be identified through an SA Water audits program.</td>
<td></td>
<td></td>
<td></td>
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<td>SA Water</td>
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</tr>
<tr>
<td>22</td>
<td>Large commercial and industrial water users will be encouraged to adopt environmental management systems to both minimise environmental impact and optimise water recycling and water use.</td>
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<td></td>
<td></td>
<td>SA Water</td>
<td>NRM Boards, Business SA</td>
</tr>
<tr>
<td>23</td>
<td>The SA Government and industry will take the lead in encouraging the development of environmental management systems for commercial and industrial premises.</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>NRM Boards, Business SA</td>
</tr>
<tr>
<td>Strategy number</td>
<td>Strategy</td>
<td>Completion 2005-10</td>
<td>Completion 2010-15</td>
<td>Completion 2015-20</td>
<td>Completion 2020-25</td>
<td>Lead Agency</td>
<td>Partners</td>
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<td><strong>Agricultural water use</strong></td>
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<tr>
<td>24</td>
<td>Surface and groundwater supplies in the western Mount Lofty Ranges, including those used for agricultural production, will be brought under a more sustainable management regime.</td>
<td></td>
<td>2015</td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>INRM groups, PIRSA, SA Water</td>
</tr>
<tr>
<td>25</td>
<td>Natural resources management legislation will deliver an integrated system to ensure South Australia’s resources are used sustainably.</td>
<td></td>
<td>2005</td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>INRM groups, PIRSA</td>
</tr>
<tr>
<td>26</td>
<td>The SA Government in consultation with the agricultural and horticultural industry will provide ongoing education, training and extension programs to improve knowledge of best practice irrigation systems.</td>
<td></td>
<td></td>
<td>Commence 2006</td>
<td></td>
<td>PIRSA</td>
<td>DWLBC, INRM groups</td>
</tr>
<tr>
<td>27</td>
<td>Opportunities to expand the use of stormwater and recycled water as alternatives to using rivers and groundwater will be explored for primary production.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Local government, Dept. Health, public/private partnerships</td>
</tr>
<tr>
<td><strong>Community purposes water use</strong></td>
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<tr>
<td>28</td>
<td>A voluntary water audit scheme already in place for industrial and commercial water users will be expanded to provide audits of large irrigation systems used for public and recreational purposes.</td>
<td>Commence 2007</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Local government</td>
</tr>
<tr>
<td>29</td>
<td>The SA Government will pro-actively promote the ‘Smart Water Mark’ scheme due to be implemented by 2007 and which seeks to accredit water-efficient garden products, water-efficient organisations, etc.</td>
<td>Commence 2007</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Watercare, Water Services Assoc.</td>
</tr>
<tr>
<td>30</td>
<td>The Water Efficiency Labelling Scheme (see Household water use, Page 27) will allow public and community groups to choose water-efficient appliances when installing or replacing systems within public buildings.</td>
<td></td>
<td>2007</td>
<td></td>
<td></td>
<td>Comm. Govt.</td>
<td>DEH, SA Water</td>
</tr>
<tr>
<td>32</td>
<td>Organisations managing Adelaide’s parks and gardens will be encouraged to look at replanting some areas with water-efficient vegetation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Local government, Nursery &amp; Garden Industry of SA</td>
</tr>
<tr>
<td>33</td>
<td>A code of practice that encourages irrigation efficiency for public purposes water will be developed by the SA Government in consultation with the Irrigation Association of Australia, Local Government Association of SA, Botanic Gardens and sporting associations</td>
<td></td>
<td>2007</td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Irrg. Assoc. of Aust., local government, Botanic Gardens, sporting assoc’s.</td>
</tr>
<tr>
<td>34</td>
<td>High-volume community purpose water use organisation will be required to achieve ‘Smart Water Mark’ scheme accreditation.</td>
<td></td>
<td>2012</td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Water Services Assoc., local government</td>
</tr>
<tr>
<td>35</td>
<td>Mains water used for community purposes may, in some situations, be substituted with lower quality water such as treated wastewater, rainwater and stormwater (see Additional Water Supplies and Foresting Innovation Page 35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>Local government, sporting assoc’s., schools, Dept. of Health</td>
</tr>
<tr>
<td>36</td>
<td>Legislation that provides the cities of Port Adelaide/Enfield and Adelaide with free water will be reviewed in consultation with the councils.</td>
<td></td>
<td>2006</td>
<td></td>
<td></td>
<td>SA Water</td>
<td>City of Pt Adelaide/ Enfield, Adelaide City Council</td>
</tr>
<tr>
<td><strong>Service provider use</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>37</td>
<td>The Hope Valley aqueduct is to be covered or replaced with a pipe, which will reduce losses.</td>
<td></td>
<td>2007</td>
<td></td>
<td></td>
<td>SA Water</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Further opportunities to reduce leakage in the reticulation system will be assessed on a triple bottom line basis (social, economic and environmental) and will result in further water savings</td>
<td></td>
<td>2008</td>
<td></td>
<td></td>
<td>SA Water</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Emerging technologies will be monitored, including chemical films to reduce evaporation losses from reservoirs and new techniques to improve leakage detection.</td>
<td></td>
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<td>SA Water</td>
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<tr>
<td>Strategy number</td>
<td>Strategy</td>
<td>Completion 2005-10</td>
<td>Completion 2010-15</td>
<td>Completion 2015-20</td>
<td>Completion 2020-25</td>
<td>Lead Agency</td>
<td>Partners</td>
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<tr>
<td>40</td>
<td>The SA Government will encourage consumers to voluntarily contribute to a scheme that funds projects which reuse water for purposes other than drinking water (e.g. irrigation). 'Eco-Water' could be used to reduce Adelaide's draw on the River Murray and Adelaide Hills catchments.</td>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>A yet-to-be-established independent body</td>
</tr>
<tr>
<td>41</td>
<td>The SA Government will manage the mains water resources to ensure that the mains water system provides supplies even in major droughts. Except for the most extreme circumstances there will be no need to impose total bans on the use of water for gardening and other external purposes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
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</tbody>
</table>

### Additional water supplies and fostering innovation

#### Stormwater

<table>
<thead>
<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
<th>Completion 2010-15</th>
<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Commencing in July 2006, new homes in South Australia will be required to have a rainwater tank plumbed into the house for some domestic use purposes. This should provide an additional 4,000 ML of water per year by 2025 and is likely to encourage the further uptake of rainwater tanks in existing developments.</td>
<td>Commence July 2006</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Planning SA, SA Water, Dept. Health</td>
</tr>
<tr>
<td>43</td>
<td>The SA Government will work with other States to develop public health guidelines for the monitoring and use of stormwater.</td>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td>Comm. Govt.</td>
<td>Dept. Health, CRC for Water Quality &amp; Treatment, EPA</td>
</tr>
<tr>
<td>44</td>
<td>The Urban Stormwater Initiative will progress policy issues that incorporate multiple objectives of stormwater management into decision-making. These include key issues of flood management, reuse, water quality and amenity. The policies are expected to make recommendations that would lead to improved viability of stormwater as a resource through: - Broadening the objectives for stormwater management to place more emphasis on water quality, urban amenity and use. - Clarifying responsibilities for various functions associated with managing stormwater, including provision of works, planning, education and regulation of water quality. - Establishing security/certainty for potential users by clarifying legal issues around ownership and access rights. - Requiring councils to develop stormwater management plans on a whole-of-catchment basis, which recognises and optimises the use of the resource across the entire catchment. - Ensuring that future development will recognise the value of stormwater through water-sensitive urban design. These strategies would be implemented through planning strategies and council development plans. - Building support functions associated with stormwater use such as through provision of information and education. - Ensuring that public health is protected.</td>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>Local government, Office of Local Gov., Planning SA, DTUP</td>
</tr>
<tr>
<td>45</td>
<td>Further research will be carried out by the SA Government together with regional Natural Resources Management Boards on the potential for Aquifer Storage and Recovery (ASR) to provide additional storage capability for stormwater and wastewater in the Adelaide region.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>SA Water, NRM Boards, EPA, Dept. Health, local government</td>
</tr>
<tr>
<td>46</td>
<td>The SA Government will review environmental values under its water quality policy to enable ASR projects on the Adelaide Plains.</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td>EPA</td>
<td>DWLBC</td>
</tr>
<tr>
<td>47</td>
<td>Water sensitive urban design principles will be incorporated into the Planning Strategy for South Australia and implemented by council development plans and other regulations with the aim of emphasising and integrating water quality, urban amenity and stormwater use with adequate flood mitigation.</td>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td>Planning SA</td>
<td>Local government</td>
</tr>
<tr>
<td>48</td>
<td>Localised reuse of stormwater and/or wastewater, where practical and economic, will be considered in all new land divisions as part of water-sensitive urban development requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Planning SA</td>
<td>DWLBC, local government, NRM Boards, DEH, SA Water</td>
</tr>
<tr>
<td>49</td>
<td>The SA Government will work with local councils to develop whole-of-catchment stormwater management plans.</td>
<td>Commence 2007</td>
<td></td>
<td></td>
<td></td>
<td>NRM Boards</td>
<td>Local government</td>
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<tr>
<td>Strategy number</td>
<td>Strategy</td>
<td>Completion 2005-10</td>
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<tr>
<td>50</td>
<td>Legal issues surrounding ownership and access rights to surface and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DWLBC</td>
<td>DWLBC, local government, Planning SA, DTUP</td>
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<tr>
<td></td>
<td>groundwater resources will be reviewed to provide an appropriate level</td>
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<td></td>
<td>of security/certainty for potential stormwater users.</td>
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<tr>
<td>51</td>
<td>Responsibilities will be reviewed and clarified for various functions</td>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td>USIEG &amp; DWLBC</td>
<td>DWLBC, local government, Planning SA, DTUP</td>
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<td></td>
<td>associated with managing stormwater (especially arterial drains)</td>
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<td>including provision of works, planning, education and regulation of</td>
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<td>water quality.</td>
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<tr>
<td>52</td>
<td>Projects aimed at using stormwater will be considered on their merits</td>
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<td></td>
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<td>New policy arrangement under USI</td>
<td>New policy arrangement under USI</td>
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<td>to ensure that there is sufficient benefit to the community to warrant</td>
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<td>the cost. Evaluation will be made easier over time as more research is</td>
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<td>carried out and better information on environmental and social benefits</td>
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<td>becomes available.</td>
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</tbody>
</table>

### Wastewater

<table>
<thead>
<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
<th>Completion 2010-15</th>
<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>The Adelaide Coastal Waters Study will provide information on the extent</td>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td>EPA</td>
<td>Metro Adelaide CWMBs/Mt Lofty Ranges &amp; Greater Adelaide NRM Board, SA Water, Transport SA, PIRSA, Mobil, TXU, Conservation Council, Local Gov't Assoc., SAIRC, Coast Protection Board, Planning SA, DWLBC</td>
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<td></td>
<td>to which the discharge from stormwater and from wastewater treatment</td>
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<td></td>
<td>plants is still affecting the marine environment in Gulf St Vincent.</td>
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<td></td>
<td>This may lead to additional interventions to reduce impacts.</td>
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<tr>
<td>54</td>
<td>National health guidelines for water reuse, including greywater, will</td>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td>Comm. Govt.</td>
<td>CRC for Water Quality &amp; Treatment, EPA</td>
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<td></td>
<td>be developed by the SA Government, in conjunction with the Australian</td>
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<td>Government and other states and territories.</td>
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<td>55</td>
<td>Further opportunities for large-scale wastewater reuse including the</td>
<td>From 2005-06</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>CWMBs, EPA, DWLBC</td>
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<td></td>
<td>expansion of existing schemes will be implemented where they are viable</td>
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<td>according to an economic, environmental and social impact assessment.</td>
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<tr>
<td>56</td>
<td>Localised reuse of wastewater and/or stormwater will be considered for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Planning SA</td>
<td>DWLBC, local government, NRM Boards, DEH, SA Water</td>
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<td></td>
<td>new land divisions as part of water-sensitive urban development</td>
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<td>requirements.</td>
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<td>57</td>
<td>Regulations relating to sewer mining and greywater reuse systems will</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td>Dept. Health</td>
<td>EPA, SA Water, local government</td>
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<td></td>
<td>be reviewed to ensure that restrictions on reuse are justified by the</td>
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<td>public health and urban amenity criteria.</td>
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</table>

### Other opportunities for additional water supplies

<table>
<thead>
<tr>
<th>Strategy number</th>
<th>Strategy</th>
<th>Completion 2005-10</th>
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<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
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</thead>
<tbody>
<tr>
<td>58</td>
<td>Water licences will be purchased in the lower Murray area as part of the</td>
<td>Commenced.</td>
<td></td>
<td></td>
<td></td>
<td>SA Water</td>
<td>DWLBC, PIRSA, CWMBs</td>
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<td></td>
<td>Strategy to protect the River Murray and the quality of our mains water</td>
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<td>supplies (see Managing our Existing Resources). This water could be used</td>
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<td>for social, environmental or economic purposes. However the precise use</td>
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<td>of this water is still to be determined by the Government.</td>
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<tr>
<td>59</td>
<td>The SA Government will develop a State policy towards desalination that</td>
<td>SA Water</td>
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<td></td>
<td></td>
<td>EPA, DEH</td>
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<td></td>
<td>addresses planning issues, access to saline water, disposal of brine and</td>
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<td>management of other environmental impacts.</td>
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<td>60</td>
<td>The SA Government will ensure that its long-term water infrastructure</td>
<td>SA Water</td>
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<td></td>
<td>plans remain flexible enough to enable the integration of desalination</td>
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<td>plants in the future.</td>
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### Fostering Innovation

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<tr>
<th>Strategy number</th>
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<th>Completion 2015-20</th>
<th>Completion 2020-25</th>
<th>Lead Agency</th>
<th>Partners</th>
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</thead>
<tbody>
<tr>
<td>61</td>
<td>The SA Government, in accordance with the National Water Initiative, will</td>
<td>2008</td>
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<td></td>
<td></td>
<td>DWLBC</td>
<td>SA Water, EPA, DEH</td>
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<td></td>
<td>place importance on the proper evaluation of 'loom' developments in</td>
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<td>order to learn from them and develop new policies and capabilities for</td>
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<td>future projects.</td>
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<td>62</td>
<td>The SA Government will continue to support research and innovation,</td>
<td>SA Water</td>
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<td></td>
<td>and will establish clear eligibility guidelines for non-Government</td>
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<td>parties to access assistance in establishing the feasibility of water</td>
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<td>projects and for trialing innovative water schemes or products.</td>
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<tr>
<td>63</td>
<td>The SA Government will conduct a five-year rolling review of the Water</td>
<td>SA Water</td>
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<td></td>
<td>Proofing Adelaide Strategy with a focus on changes in the environment,</td>
<td>DWLBC</td>
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<td></td>
<td>technology and knowledge that have occurred in the intervening period.</td>
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</tbody>
</table>
Contacts

For more information and copies of this Strategy visit:

www.waterproofingadelaide.sa.gov.au

or contact

Department of Water, Land and Biodiversity Conservation on 8463 6800

or

SA Water on 1300 650 950

Who is involved?

Sponsoring Ministers

Hon. John Hill
Minister for Environment and Conservation

Hon. Michael Wright
Minister for Administrative Services

Heads of Agencies Steering Committee (HoASC)

Chair – Rob Freeman, Chief Executive Department of Water, Land and Biodiversity Conservation

Anne Howe, Chief Executive SA Water
Christine Bierbaum, Executive Director, Policy and Planning, Office for Infrastructure Development
Kathryn Bellette, Director of Strategic Planning, Planning SA
Dr. Paul Grimes, Deputy Under Treasurer, Treasury and Finance
Anne Harvey, Director, Office of Sustainability, Department of Environment and Heritage

Strategy Advisory Committee (SAC)

Chair – Dr Don Hopgood, former State Deputy Premier, Minister for Water Resources and Minister for Environment and Planning

Peter Moser, Business SA
Colin Pitman, Local Government Association
Rochelle Woodley-Baker, SA Council of Social Services
Sharon Starick, SA Farmers Federation
Alan Ockenden, Catchment Water Management Boards
A/Professor George Ganf, CRC for Freshwater Ecology
Professor Don Bursill, CRC for Water Quality and Treatment
Dr Keith Walker, SA Conservation Council
Peter Cooper, Water Resources Council
Graham Dooley, Australian Water Association (SA)

Project Team
The team is made up of Department of Water, Land and Biodiversity Conservation, and SA Water representatives.

Project Team Leader – Steve Rose

Martin Allen
Rachel Bishop
Patricia Cannizzaro
Belinda Day
Paul Doherty
Trisha Drioli
Natasha Hall
Steven Kotz
Sam LeRay
Ed Pikusa
Natalie Stalenberg
## Glossary of terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Aquifers</td>
<td>Underground sediments or fractured rock that hold water and allow water to flow through them.</td>
</tr>
<tr>
<td>Basin</td>
<td>An area drained by a given stream and its tributaries.</td>
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<tr>
<td>Biodiversity</td>
<td>A shortening of the term biological diversity which means the variety of all life forms.</td>
</tr>
<tr>
<td>Catchment</td>
<td>An area of land draining rainfall into a river or reservoir.</td>
</tr>
<tr>
<td>Demand management</td>
<td>An approach that is used to reduce the consumption of water.</td>
</tr>
<tr>
<td>Desalination</td>
<td>The process of removing dissolved salts from seawater (or brackish water) so that it becomes suitable for drinking or other uses.</td>
</tr>
<tr>
<td>Drinking water (potable water)</td>
<td>Water that is fit for human consumption.</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>A community of plants, animals, and microorganisms that are linked by energy and nutrient flows and that interact with each other and with the physical environment.</td>
</tr>
<tr>
<td>Effluent</td>
<td>The treated water discharged from a wastewater treatment plant.</td>
</tr>
<tr>
<td>Environmental flow release</td>
<td>Release from a water storage intended to maintain appropriate environmental conditions in a waterway.</td>
</tr>
<tr>
<td>Greywater</td>
<td>Wastewater from the laundry, bathroom and kitchen.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Sub-surface water, particularly that which is in aquifers.</td>
</tr>
<tr>
<td>Irrigation</td>
<td>The application of water to cultivated land or open space to promote the growth of vegetation.</td>
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<tr>
<td>Prescription</td>
<td>Establishes a system for water resource planning and the sustainable allocation and management of water.</td>
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<tr>
<td>Recycled water</td>
<td>Water derived from sewerage systems, or industry processes, that is treated to a standard that is appropriate for its intended use.</td>
</tr>
<tr>
<td>Run-off</td>
<td>That part of precipitation which flows from a catchment area into streams, lakes, rivers or reservoirs.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Security of supply</td>
<td>Reliability or surety of meeting water supply demand. Storages provide the capability to ensure a certain level of supply is available despite seasonal variations in stream flow.</td>
</tr>
<tr>
<td>Sewerage</td>
<td>A physical arrangement of pipes and plant for the collection, removal, treatment and disposal of liquid waste.</td>
</tr>
<tr>
<td>Sewer mining</td>
<td>The localised harvesting of sewage that is treated to a safe level as required for a particular use.</td>
</tr>
<tr>
<td>Stream flow</td>
<td>The flow in a stream or river.</td>
</tr>
<tr>
<td>Transfer/distribution system</td>
<td>A system of conduits (e.g. pipes, channels and aqueducts) used to supply water to customers. A distribution system is typically made up of large supply ‘mains’, which convey the water from the major storage points – perhaps to smaller service reservoirs; these can then feed into smaller ‘service’ pipes which deliver the water to the customers.</td>
</tr>
<tr>
<td>Unfiltered water</td>
<td>Water harvested from uninhabited catchments and supplied without filtration but always disinfected.</td>
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<tr>
<td>Wastewater</td>
<td>Contaminated water before it undergoes any form of treatment. The water may be contaminated with solids, chemicals or changes in temperature.</td>
</tr>
</tbody>
</table>

**Abbreviations**

- CWMB: Catchment Water Management Board
- DEH: Department of Environment and Heritage
- DTUP: Department of Transport and Urban Planning
- DWLBC: Department of Water, Land and Biodiversity Conservation
- EPA: Environment Protection Authority
- MDB: Murray Darling Basin
- MDBC: Murray Darling Basin Commission
- NRM Board: Natural Resources Management Board
- PIRSA: Department of Primary Industries and Resources
- SAFIC: South Australian Fishing Industries Council
- WPCG: Water Policy Coordinating Group
Appendix

The following is a list of other options which have been considered by Water Proofing Adelaide using a multi-criteria analysis tool.

Buying water from the River Murray (to increase drinking water supplies)
Cloud seeding
Domestic aquifer storage and recovery
Evaporation management
Greywater recycling
Icebergs
Increasing storage in existing reservoirs
Industry demand management
Large scale water supply schemes (including the Bradfield, Clarence River, Ord River and Great Artesian Basin schemes)
Localised wastewater recycling
Management of the Adelaide Hills water resources
New reservoirs in the Adelaide Hills
On-site wastewater treatment/reuse
Reducing water losses in the bulk water system
Sealed catchments
Seawater desalination
Sewer mining
South east surface water or groundwater transfer
Sustainable water use for agricultural industries

These options were rejected by Water Proofing Adelaide for a variety of reasons. More information on these can be found in the earlier publication ‘Water Proofing Adelaide Exploring the Issues – a discussion paper’ and from a series of information sheets. All of these publications are available on the website www.waterproofingadelaide.sa.gov.au.