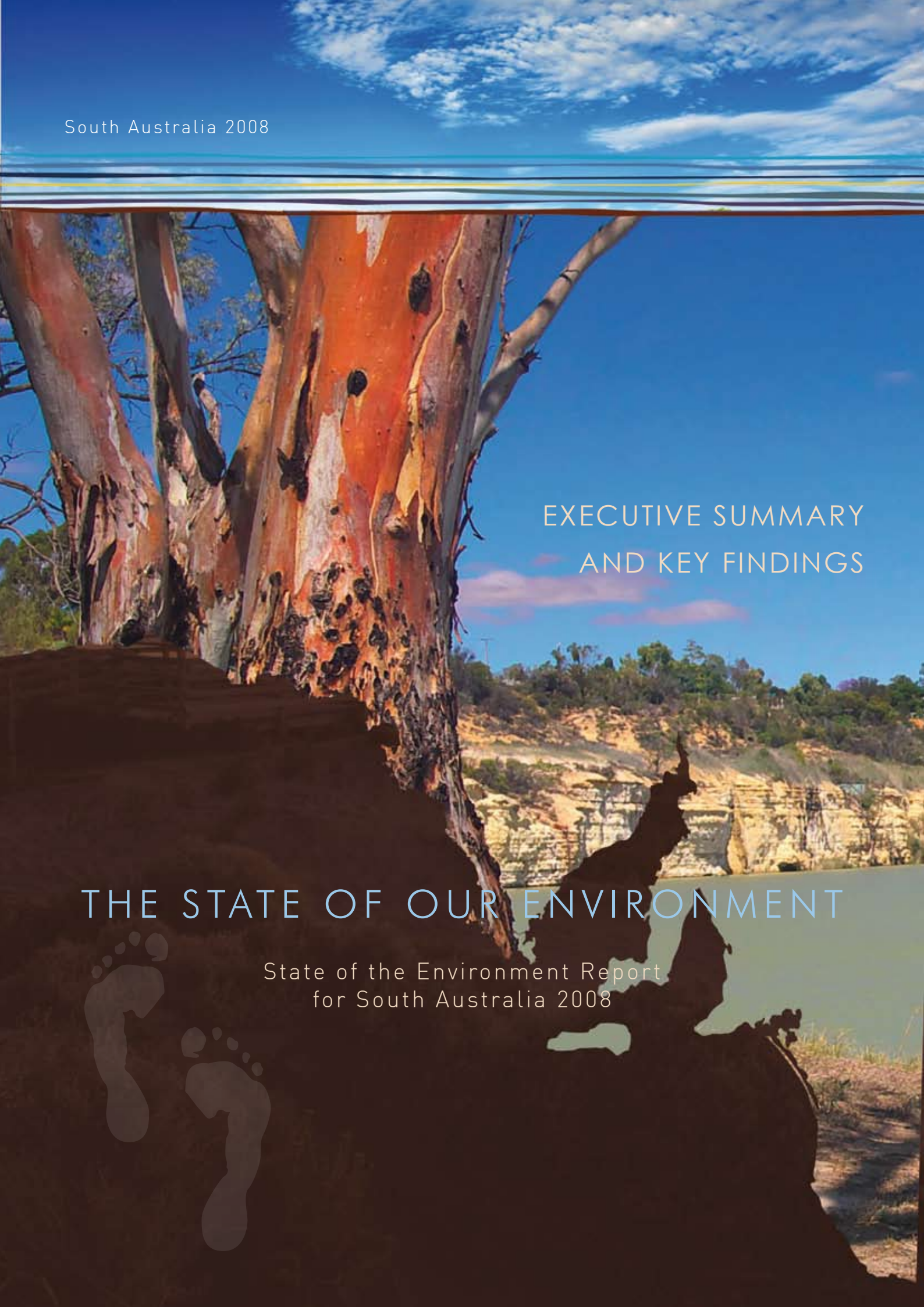
South Australia 2008



EXECUTIVE SUMMARY AND KEY FINDINGS

THE STATE OF OUR ENVIRONMENT

State of the Environment Report
for South Australia 2008

The State of Our Environment, South Australia, 2008

Project Team

Steven Mudge
Monica Moss

Environment Protection Authority

For further information please contact:

Environment Protection Authority

GPO Box 2607

Adelaide SA 5001

Telephone (08) 8204 2000

Facsimile (08) 8124 4670

Free call 1800 623 445 (country)

Email: epainfo@epa.sa.gov.au

Web site: www.epa.sa.gov.au/soe

ISBN: 978-1-921125-80-5

November 2008

This report is printed on 100% Australian-made recycled paper with vegetable-based inks using carbon neutral printing.

FOREWORD

South Australians are immensely privileged people, who live in a beautiful, dramatic, delicate natural environment and one that is rich in biodiversity.

However, there are significant threats to this natural heritage as best illustrated by the critical condition of the internationally important Coorong and Lower Lakes.

This, the fifth State of Environment Report for South Australia, shows that while improvements have occurred in some areas, our environment is under significant stress and requires urgent attention from government, business and the community.

The report is based on scientific data and assesses the condition of the environment, ascertains trends over time, quantifies pressures influencing these trends, and identifies emerging environmental issues. It also evaluates the effectiveness of government policy interventions and programs to protect, enhance and conserve the environment, and makes recommendations for action.

As a community we are developing a better understanding of the challenges of a changing climate and how we can collectively work towards ensuring a sustainable society that can be enjoyed by our children and future generations.

The release of the report coincides with a world financial crisis, which may divert attention from the urgent need for action on the environment front. The report is thus timely in its contribution to provide credible information and assessments to inform government and business decisions, and to engage the community in pursuing economic, social and environmental sustainability.

There is a CD-ROM enclosed containing the report as well as an excellent education resource package for children, teachers and the community.

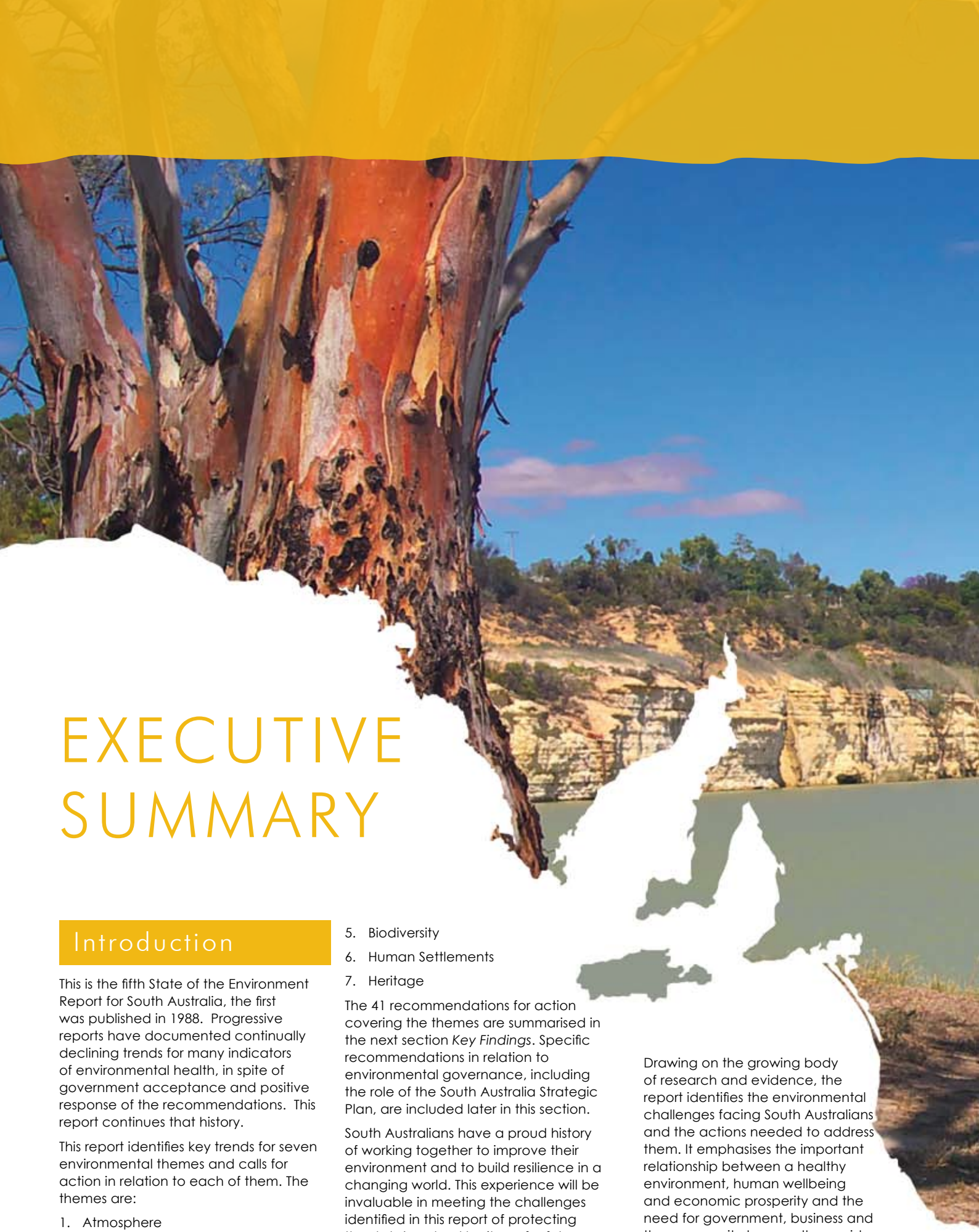
The realisation of this report has been a collaborative effort between the project team, the State of the Environment Report Steering Committee and the many people who contributed to, and peer reviewed, the various chapters of the report. Their efforts are very much appreciated.

I commend this report to you and strongly encourage all South Australians to get involved and contribute in whatever way you can to improving the state of our environment so that future generations can enjoy the quality of life that we often take for granted.

I call on government, business, industry, community groups, and each and every South Australian to act today to contribute to a better environment tomorrow.

Cheryl Bart
Presiding Member
Environment Protection Authority

CONTENTS



EXECUTIVE SUMMARY

Introduction

This is the fifth State of the Environment Report for South Australia, the first was published in 1988. Progressive reports have documented continually declining trends for many indicators of environmental health, in spite of government acceptance and positive response of the recommendations. This report continues that history.

This report identifies key trends for seven environmental themes and calls for action in relation to each of them. The themes are:

1. Atmosphere
2. Inland Waters
3. Coasts and the Seas
4. Land
5. Biodiversity
6. Human Settlements
7. Heritage

The 41 recommendations for action covering the themes are summarised in the next section *Key Findings*. Specific recommendations in relation to environmental governance, including the role of the South Australia Strategic Plan, are included later in this section.

South Australians have a proud history of working together to improve their environment and to build resilience in a changing world. This experience will be invaluable in meeting the challenges identified in this report of protecting the state's natural heritage for future generations in the face of climate change, natural resource depletion and pollution.

Drawing on the growing body of research and evidence, the report identifies the environmental challenges facing South Australians and the actions needed to address them. It emphasises the important relationship between a healthy environment, human wellbeing and economic prosperity and the need for government, business and the community to urgently consider the impacts of their decisions and actions on each of these pillars of a sustainable society.

As a Priority it is Recommended that Government:

- Improve incentives and support for environmental stewardship on private land, including for the control of invasive plants and feral animals by 2012. (Recommendation 5.5).

South Australia continues to have a strong reliance on the River Murray, which supplies almost half of the total water used in the state. In recent years the Murray-Darling Basin has been subject to the impacts of a combination of an extended drought and increased demand to supplement irrigation. This has resulted in declining health of the rivers, streams, lakes and wetlands in the River Murray floodplain. A significant shift in the management of available water resources is needed to set South Australia's water future on a more secure and sustainable path. While there has also been a marked increase in re-use of stormwater and wastewater over the reporting period, there remains a significant opportunity for a more systematic approach to the efficient use of available water resources.

As a Priority it is Recommended that Government:

- Double the capture and re-use of stormwater and wastewater by 2012 (Recommendation 2.3).
- Use a combination of water allocation planning, pricing, incentives and water rights to ensure sustainable water use by 2012 (Recommendation 2.4).

Since publication of the 2003 report, climate change has become a major focus in public discourse and policy development. Scientific research has provided increased certainty about the likely impacts of climate change, resulting in significant actions to reduce greenhouse gas emissions to mitigate impacts and to adapt to the unavoidable predicted impacts. It is important that South Australia remains at the forefront by increasing renewable energy sources and efficient energy use, and to build upon the resilience of communities to adapt to the impacts of climate change.

As a Priority it is Recommended that Government:

- Develop adaptation strategies based on assessed vulnerability and opportunities under different climate change and population scenarios for:
  - human health
  - water security
  - biodiversity and natural resources
  - asset protection, infrastructure and emergency services, especially in relation to fire and sea level rise (Recommendation 1.2).
- Promote public discussion and understanding of the possible consequences of climate change, with an emphasis on what South Australians can do to reduce their emissions and adapt to climate change (Recommendation 1.3).

A significant development since the 2003 report has been the introduction of the *South Australia Strategic Plan (SASP) in 2004* (revised 2007), which sets a number of environmental targets under the objective of 'Attaining Sustainability', including to reduce the state's ecological footprint. It also has targets to reduce waste, manage water resources within sustainable limits, increase environmental flows in the River Murray, lose no species, and become more energy efficient.

The 2007 update of SASP acknowledges the need to consider the interactions between targets and provides examples of key interactions, including:

1. Economic growth (T1.1) and greenhouse gas emissions (T3.5)
2. Economic growth (T1.1) and ecological footprint (T3.7)
3. Exports (T1.14) and sustainable water supply (T3.9)
4. Population (T1.22) and greenhouse gas emissions (T3.5)
5. Investment in science, research and innovation (T4.9, T4.10, T4.11) and greenhouse gas emissions (T3.5)

While some measures have been undertaken to draw out those interactions and develop more holistic policy responses, more can still be done.

A recurring theme in the report is the need for greater coordination and integration of environmental

As a Priority it is Recommended that Government:

- Include environmental representation in strategic planning and decision making within government to ensure explicit consideration of interactions between economic, social, and environmental objectives within policies and plans. (Recommendation Exec 1)
- Develop and use measures of greenhouse gas intensity as a means to evaluate the sustainability of government policies by 2012 (Recommendation 1.5).
- Include complementary indicators to those already in the SASP to assess the interactions between targets and progress across economic, social and environmental targets, for example environmental impacts in measuring growth, by 2012 (Recommendation 6.1).

management. Good progress has been made through regionalising the SASP, establishing common regional boundaries for all government agencies, increasing integration of land use planning (Planning Strategy), implementing more coordinated natural resources management (state and regional NRM Plans) and introducing marine planning (Marine Planning Framework).

There are remaining opportunities for greater efficiency through improved coordination of environmental monitoring, research, and reporting. There is also an urgent need for information management that would deliver better data for future environmental reporting requirements.

As a Priority it is Recommended that Government:

- Introduces an annual reporting requirement to monitor progress against the recommendations made in this report by 2010. This could be integrated with reporting under the SASP (Recommendation Exec 2).

'State of the Environment (SoE) reporting began in the United Nations Environment Programme (UNEP) in the 1980s and is now an internationally accepted approach to assessing environmental performance and the condition and trend of natural capital.'

State of the Environment Reporting

Background

State of the Environment (SoE) reporting began in the United Nations Environment Programme (UNEP) in the 1980s and is now an internationally accepted approach to assessing environmental performance and the condition and trend of natural capital. SoE reporting is conducted by all Australian States and Territories, with the exception of the Northern Territory, and is also undertaken at the national level by the Australian Government. Local governments also participate in SoE reporting; in New South Wales annual SoE reporting is a legislative requirement. Although there is no formal requirement in South Australia for local government *SoE* reporting, a number of councils produce reports.

SoE reports are based on scientific data and provide a key diagnostic tool to assess the condition of the environment, identify trends over time, quantify pressures influencing these trends, and identify emerging environmental issues. These reports also assess the effectiveness of government policy interventions and programs to protect, enhance and conserve the environment, and make recommendations for action.

The first comprehensive South Australian *SoE* report was published in 1988 – the first in Australia. Since that time, reports have been produced for South Australia on a five-yearly basis.

During the preparation of the 1993 South Australian SoE report, the state's *Environment Protection Act 1993* was amended to incorporate more comprehensive reporting requirements. Section 112 of the Act very broadly defines the core requirements of the report as follows:

- include an assessment of the condition of the major environmental resources of South Australia;
- include a specific assessment of the state of the River Murray, especially taking into account the 'Objectives for a Healthy River Murray' under the *River Murray Act 2003;*
- identify significant trends in environmental quality based on an analysis of indicators of environmental quality;
- review significant programmes, activities and achievements of public authorities relating to the protection, restoration or enhancement of the environment;
- review the progress made towards achieving the objects of the Act; and
- identify any significant issues and make any recommendations that, in the opinion of the Authority, should be drawn to the attention of the Minister

South Australian *SoE* reports are delivered by the Environment Protection Authority (EPA), an independent statutory body. The report provides independent recommendations for action to government.

The requirement to provide a specific assessment of the River Murray has been introduced since the 2003 report. Accordingly this report provides the second assessment of the health of the River Murray.

Reporting Framework

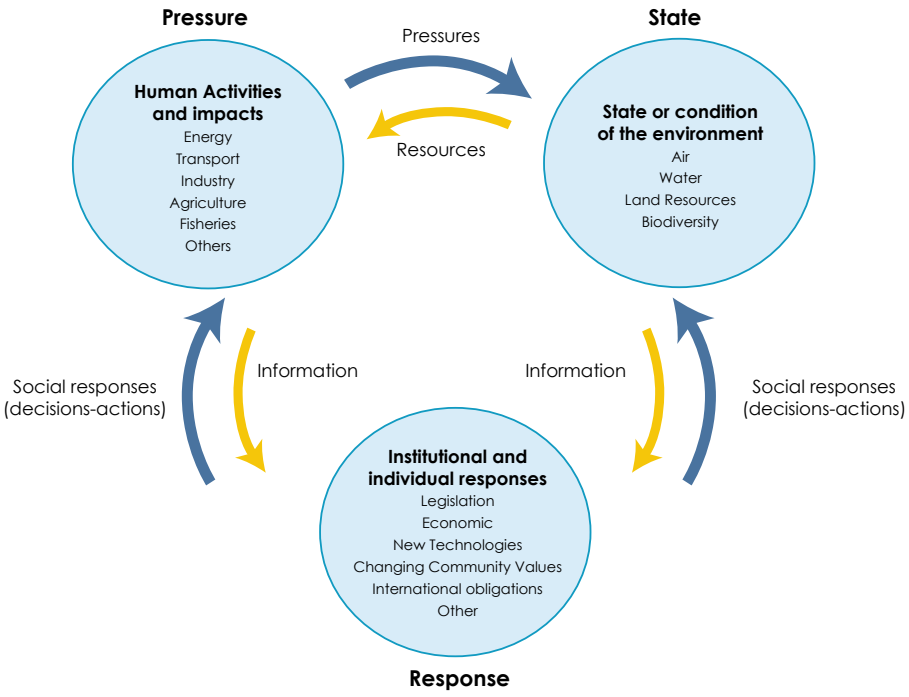
This report maintains the structure set by previous South Australian SoE reports in that it is centred on seven major environmental themes: Atmosphere, Inland Waters, Coasts and the Sea, Land, Biodiversity, Human Settlements and Heritage. While this thematic classification provides a convenient basis for reporting, environmental themes are often interconnected and there is a degree of cross referencing between chapters.

As in the 2003 South Australian *SoE* report, the pressure-state-response model developed by the Organisation for Economic Development (OECD) forms the basis for reporting (Figure 1). The model is also used in other jurisdictional SoE reports.

Environmental Indicators

Since the 1993 South Australian SoE report, environmental indicators that support quantitative reporting,

Figure 1 The OECD model reflects the causal relationship between human activity, the pressures it places on the environment, and the actions that are taken in response to these pressures.



Student taking part in National Tree Day event, 2007

Source: Adelaide City Council

as opposed to qualitative, have been developed. This reduces the subjectiveness of reports, enabling more informed and accurate decision making and policy development. The majority of indicators were used for the first time in the *1998 SoE Report,* and again in the *2003 SoE Report*, and have been carried forward in this report to enable consistent monitoring of progress over time.

The availability of consistent and complete data is essential to effectively report against these indicators. Coordination and standardisation of data collection and management is essential for long-term accurate reporting. This is currently not the case at either state or national level.

A Collaborative Effort

This report is the result of a whole-of-government process overseen by the SoE Executive Steering Committee, whose members represent different levels of government, academia and the private sector, and whose experience reflects a wide range of knowledge across SoE topics. The Steering Committee is a committee of the EPA Board, which is ultimately responsible for delivery of the report and whose members have actively participated in the development of the report.

To ensure the integrity of the information presented, the report has been subjected to a rigorous independent review process. Its contents have been scrutinised by experts across the various disciplines covered in the report, and also reviewed by the Steering Committee and the EPA Board.

Where to from Here?

One of the key elements of *SoE* reporting is the provision of independent recommendations to government on priorities for future action. This year's report provides more than 30 recommendations calling for action. Under section 112 of the *Environment Protection Act 1993,* the Government is required to provide a formal response to the recommendations within a reasonable time of receiving the report. It also provides an opportunity for government to provide information on how it intends to deal with the identified issues.

ATMOSPHERE

Achievements/commitments

Past responses to sources of air pollution such as banning of leaded fuels have led to noticeable differences in the ambient air quality. Because of its comparatively lower population and levels of industrial activity, Adelaide enjoys better average air quality than other Australian cities.

Several major corporations are playing an active role in helping to improve air quality. For example, a major upgrade to the OneSteel steelworks, known as Project Magnet, is reducing particulate emissions in Whyalla. In addition, 'tenby10', a program aiming to reduce blood lead levels in children in Port Pirie is being implemented by Nyrstar, Port Pirie Regional Council, the Department of Health, and the Environment Protection Authority (EPA).

In 2007, the state government passed Australia's first climate change legislation, The Climate Change and Greenhouse Emissions Reduction Act 2007. This contains a commitment to a target to reduce emissions to 60% below 1990 levels by 2050, and to increase the use of renewable energy by 2014.

Trends

- Residential sector energy & transport emissions have INCREASED 28% since 1990.

Moving forward

High priority should be afforded to planning for adaptation to climate change, considering potential implications of this for the state's biodiversity, regional communities, and

Torrens Island Power Station. Photo: Tim Lubcke

Recommendations for Action

R1.1 Implement an Air Quality Strategy for South Australia that identifies current and future risks, priorities and management objectives.

R1.2 Develop adaptation strategies based on assessed vulnerability and opportunities under different climate change and population scenarios for:

- Human health
- Water security
- Biodiversity and natural resources
- Asset protection, infrastructure and emergency services, especially in relation to fire and sea level rise.

R1.3 Promote public discussion and understanding of the possible consequences of climate change, with an emphasis on what South Australians can do to reduce their emissions and adapt to climate change.

R1.4 Fast-track procurement of low emission vehicles for the government fleet (including smaller vehicles where appropriate).

R1.5 Develop and use measures of greenhouse gas intensity as a means to evaluate the sustainability of government policies by 2012.

R1.6 Progress work on the 'developmental' South Australia's Strategic Plan target for adaptation to climate change with a view to incorporating it into the 2010 update of the Plan.

Smoke clouds from 2007 bushfires on Kangaroo Island. Photo: DEH

industries, pa rticularly those that rely heavily on existing natural resources. Further monitoring and research, and better coordination and integration of available data will be needed to inform this planning.

While air pollution levels are below the national average, monitoring has shown non-compliant levels of particulates occurring within most airsheds in South Australia. If South Australia's population target of two million results in a corresponding growth in motor vehicles travelling on roadways, there is likely to be a significant impact on ambient air quality. The volume of these added emissions are expected to offset gains made through fuel quality and engine improvements. Likewise, increased mining activity is expected to increase freight transport within the state and elevate greenhouse gas emissions.

The government needs to take the lead by investing in improvements to public transport infrastructure (encouraging reduction in private motor vehicle usage), improving regulation of wood heaters, and supporting industries that demonstrate best practice emission management.

Further Information

Australian Government Department of Climate Change
www.climatechange.gov.au

Climate Change in Australia (CSIRO and the Bureau of Meteorology)
www.climatechangeinaustralia.gov.au

National Pollutant Inventory
www.npi.gov.au

South Australian Government
www.climatechange.sa.gov.au
www.sustainableliving.sa.gov.au

INLAND WATERS

Achievements/commitments

Since 2003, information on the extent and distribution of wetlands in South Australia has improved through detailed inventories, remote sensing projects, regional wetland prioritisation activities and collation of topographic data.

Reporting of water quality for general information has improved, including a set of webpages for communicating up-to-date water quality data and information, which covers classifications based on water quality indicators and macroinvertebrates. Guidelines have also been released recently including a set for pesticide use.

SA Water is continuing to implement Environment Improvement Programs at its country based wastewater treatment plants to reduce the level of nutrients being discharged into rivers and creeks. All of the treated wastewater produced from the Gumeracha, Mannum, Murray Bridge and Myponga wastewater treatment works is now re-used.

Water resources have been prescribed in a number of areas of South Australia under the Natural Resources Management Act 2004. This means that where water resources have been identified as under stress, or where there is a risk that water resources will not meet future demand if uncontrolled development continues, a higher level of management will occur than in other areas.

South Australia's Strategic Plan (SASP) has set targets for achieving sustainable water supplies for the state and for managing South Australia's water resources within sustainable limits by 2018. Similarly, the State Natural Resources Management Plan 2006 has set State-wide policy directions and guidelines to ensure a greater focus on the integrated management of water resources.

Trends

- The condition of rivers and creeks remained STABLE at generally moderate to poor condition with respect to nutrient and turbidity levels.
- Water use in areas of South Australia where water use is licensed remained STABLE in most areas. The use of groundwater is currently above estimated sustainable limits in the

Northern Adelaide Plains and parts of the South East, and use of surface water is currently above indicative sustainable limits in some areas of the Mount Lofty Ranges.

- The health of rivers, streams and wetlands of the River Murray floodplain is DECLINING due to over-extraction of water from the river system, increasing salt levels, drought and non-delivery of environmental flows.
- The use of water from the River Murray is INCREASING due to entitlement flows being diverted for irrigation.

Moving forward

South Australia continues to have a strong reliance on the River Murray, with almost half of the total water used in South Australia being taken from the River Murray. In recent years, the Murray-Darling Basin has been subject to the full impact of an extended 10-year period of low rainfall, while at the same time being under pressure from considerable over-use of the resource (arguably from over-allocation).

Priority, in the short term, needs to be given to allocating sufficient River Murray flow to flush poor quality water from the system as soon as water becomes available. In the longer term, changes in environmental water sharing provisions in the Murray-Darling Basin Plan under the Commonwealth Water Act 2007 should include allocation of flood flows to South Australia sufficient to generate appropriate watering regimes for key wetlands on the floodplain. Of particular concern is that the Coorong and Lower Lakes are in the poorest condition that has ever been recorded. Without large amounts of freshwater inflow, the water quality and ecological condition of these sites will get worse and much of the damage may be irreversible.

While water resources in general are under pressure in many parts of South Australia, with demands increasing from large industries including agriculture, to date only a very small percentage of the total stormwater runoff from metropolitan Adelaide is re-used. Accelerating increases in temperature and changes in rainfall patterns associated with climate change may limit future availability of surface water and groundwater resources across all regions of South Australia.

As may be expected as a result of the drought, inland freshwater riverine ecosystem health has generally declined throughout South Australia. Among the regularly monitored sites, 58% have shown a decline in river health assessments during 2005–06 compared with earlier results. If rainfall patterns return to past average levels in the near future, aquatic ecosystems are likely to recover. If however the current drought continues and rainfall remains below average for much longer, then long-term changes to the structure and functioning of these ecosystems are likely.

To continue to improve future environmental management, further research will be crucial on the extent and environmental needs of water resources in South Australia, including the evaluation of the implications of changes in human land use, water demand and supply availability, water storage needs, flooding and evaporation losses.

Further information

AusRivas Assessment website
www.ausrivas.canberra.edu.au

EPA Water Quality information
www.epa.sa.gov.au/water_quality.html

Murray-Darling Basin Commission
www.mdbc.gov.au

National Water Commission
www.water.gov.au

National Water Quality Management Strategy **www.environment.gov.au/water/quality/nwqms**

SA Drought Link
www.service.sa.gov.au/ContentPages/sagovt/Drought.aspx

Recommendations for Action

R2.1 Streamline government management of water by rationalising overlapping responsibilities and improving coordination, in particular for water quality monitoring.

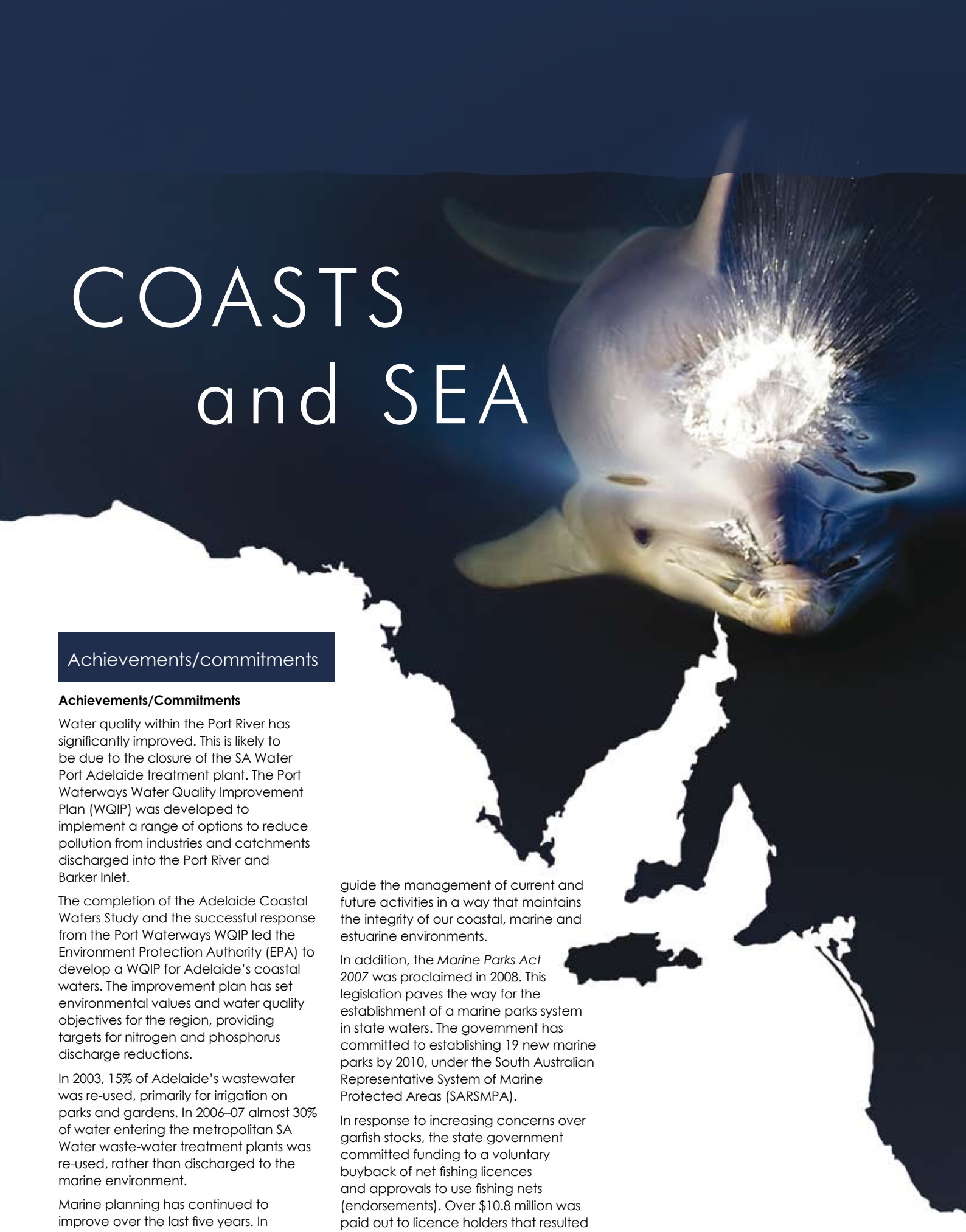
R2.2 Identify key freshwater assets and set maximum targets for sediment, nutrient and water discharges.

R2.3 Double the capture and re-use of stormwater and waste water by 2012.

R2.4 Use a combination of water allocation planning, pricing, incentives and water rights to ensure sustainable water use by 2012.

R2.5 Pursue environmental water sharing provisions in the Murray-Darling Basin Plan that include allocation of flood flows to South Australia sufficient to generate appropriate watering regimes for key wetlands.

COASTS and SEA



Achievements/commitments

Achievements/Commitments

Water quality within the Port River has significantly improved. This is likely to be due to the closure of the SA Water Port Adelaide treatment plant. The Port Waterways Water Quality Improvement Plan (WQIP) was developed to implement a range of options to reduce pollution from industries and catchments discharged into the Port River and Barker Inlet.

The completion of the Adelaide Coastal Waters Study and the successful response from the Port Waterways WQIP led the Environment Protection Authority (EPA) to develop a WQIP for Adelaide's coastal waters. The improvement plan has set environmental values and water quality objectives for the region, providing targets for nitrogen and phosphorus discharge reductions.

In 2003, 15% of Adelaide's wastewater was re-used, primarily for irrigation on parks and gardens. In 2006–07 almost 30% of water entering the metropolitan SA Water waste-water treatment plants was re-used, rather than discharged to the marine environment.

Marine planning has continued to improve over the last five years. In 2006, the Marine Planning Framework for South Australia was adopted as a whole-of-government approach to guide the management of current and future activities in a way that maintains the integrity of our coastal, marine and estuarine environments.

In addition, the *Marine Parks Act 2007* was proclaimed in 2008. This legislation paves the way for the establishment of a marine parks system in state waters. The government has committed to establishing 19 new marine parks by 2010, under the South Australian Representative System of Marine Protected Areas (SARSMPA).

In response to increasing concerns over garfish stocks, the state government committed funding to a voluntary buyback of net fishing licences and approvals to use fishing nets (endorsements). Over $10.8 million was paid out to licence holders that resulted in the permanent removal of over 50% of the total net endorsements in the garfish fishery.

Recommendations for Action

R3.1 Provide adequate buffer zones to facilitate the retreat of coastal ecosystems (e.g. mudflats, mangroves and samphire) in response to sea level rise induced by climate change.

R3.2 Move towards managing commercial and recreational fisheries on a full cost-recovery basis.

R3.3 Incorporate mutually supportive sustainable management principles for the coastal zone into Natural Resource Management Plans, Council Development Plans, and Marine Park Plans.

Trends

- Seagrass extent along the metropolitan coast is still DECLINING.
- Nitrogen concentration along the metropolitan coastal waters is INCREASING.
- The area subject to coastal sprawl is INCREASING.
- Development of marinas with associated residential developments are INCREASING.

Moving forward

The entire coastal zone should be assessed to identify sensitive coastal environments and landscapes of special heritage and amenity value. The government needs to ensure that fisheries currently designated fully fished or overfished are brought back within a sustainable level of take.

Further measures are needed to improve water quality and its impact on the marine environment along the coast. This includes reduction in nitrogen discharge from industry and wastewater treatment plants, and reduced stormwater discharge.

Further information

Adelaide's Living Beaches: A Strategy for 2005–2025 **www.environment.sa.gov.au/coasts/adelaides_living_beaches.html**

Australian Fisheries Management Authority **www.afma.gov.au**

Estuaries Regional Information Packages **www.environment.sa.gov/coasts/estuaries.html#regional_eips**

PIRSA Aquaculture **www.pir.sa.gov.au/aquaculture**

PIRSA Fisheries **www.pir.sa.gov.au**

Planning SA **www.planning.sa.gov.au**

SARI Aquatic Sciences **www.sardi.sa.gov.au/aquatic/index.html**

Marine Planning Framework for South Australia **www.environment.sa.gov.au/coasts/planning.html**

Stokes Bay, Kangaroo Island.
Photo: David Mudge

LAND

Achievements/commitments

The introduction of the N*atural Resources Management Act 2004* has resulted in an integrated framework for managing the impacts of land use change on South Australia's natural resources.

Land and crop management practices are improving in many regional areas of South Australia as a consequence of the adoption of new agricultural and communication technologies. Soil loss associated with agricultural land, for example, has reduced considerably over the last 50 years and continues to decline directly as the result of better land management practices. From 2002–03 to 2006–07 there has been a slow but steady improvement in the protection of agricultural crop land from erosion.

Since 2003 the risk of dryland salinity has generally reduced. Influencing factors include below average rainfall with the resulting falling groundwater levels, changes in land use to reduce recharge and the effect of an artificial drainage network constructed in the Mid and Upper South East.

In November 2007, the Parliament of South Australia passed the Environment Protection (Site Contamination) Amendment Act 2007. This legislation assigns responsibility for site contamination, establishes a statutory audit system for South Australia and gives the Environment Protection Authority (EPA) powers to retrospectively deal with site contamination.

Trends

- Residential land use is INCREASING in peri-urban regions with resulting pressures on biodiversity, water resources and agricultural land.
- Change from relatively low intensity land use (such as grazing) to higher intensity uses (such as viticulture and plantation forestry) is INCREASING.
- Extent of acid soils and rates of soil acidification in South Australia is INCREASING.
- Awareness of site contamination is INCREASING.

Recommendations for Action

R4.1 Preserve suitable land for economic agricultural production and biodiversity conservation, recognising that land supply is finite and the demand for housing is growing.

R4.2 Ensure that any potential expansion of commercial tree planting does not compromise natural resources, including local biodiversity, and is accounted for within water allocation planning.

R4.3 Continue to improve soil conservation through appropriate crop selection, fertiliser use and good land management practices.

R4.4 Use targeted revegetation to better manage surface water and groundwater, and achieve both economic and biodiversity benefits.

Moving forward

The continuing spread of residential developments into the Mount Lofty Ranges and into coastal areas needs to be controlled to avoid potential loss of critical ecosystems and biodiversity, reduced water quality, and loss of primary production land. Land use planning and assessment of any additional plantation forests need to consider potential negative impacts on regional water resources and/or biodiversity.

The impacts (especially on water resources) of the increase in irrigated agriculture should be monitored and sustainable land use practices in fertiliser use and crop selection, insofar as these contributes to soil acidification, should be promoted. Without continued intervention, groundwater discharge and surface runoff to the River Murray will increase its salinity.

Ongoing support is required for research and development to deal with biodiversity impacts of dryland salinity and its management through integrated natural resource management.

Further information

Department for Water Land and Biodiversity Conservation
www.dwlbc.sa.gov.au/land/index.html

Environment Protection Authority
www.epa.sa.gov.au

Future Farm Industries CRC
www.futurefarmcrc.com.au/

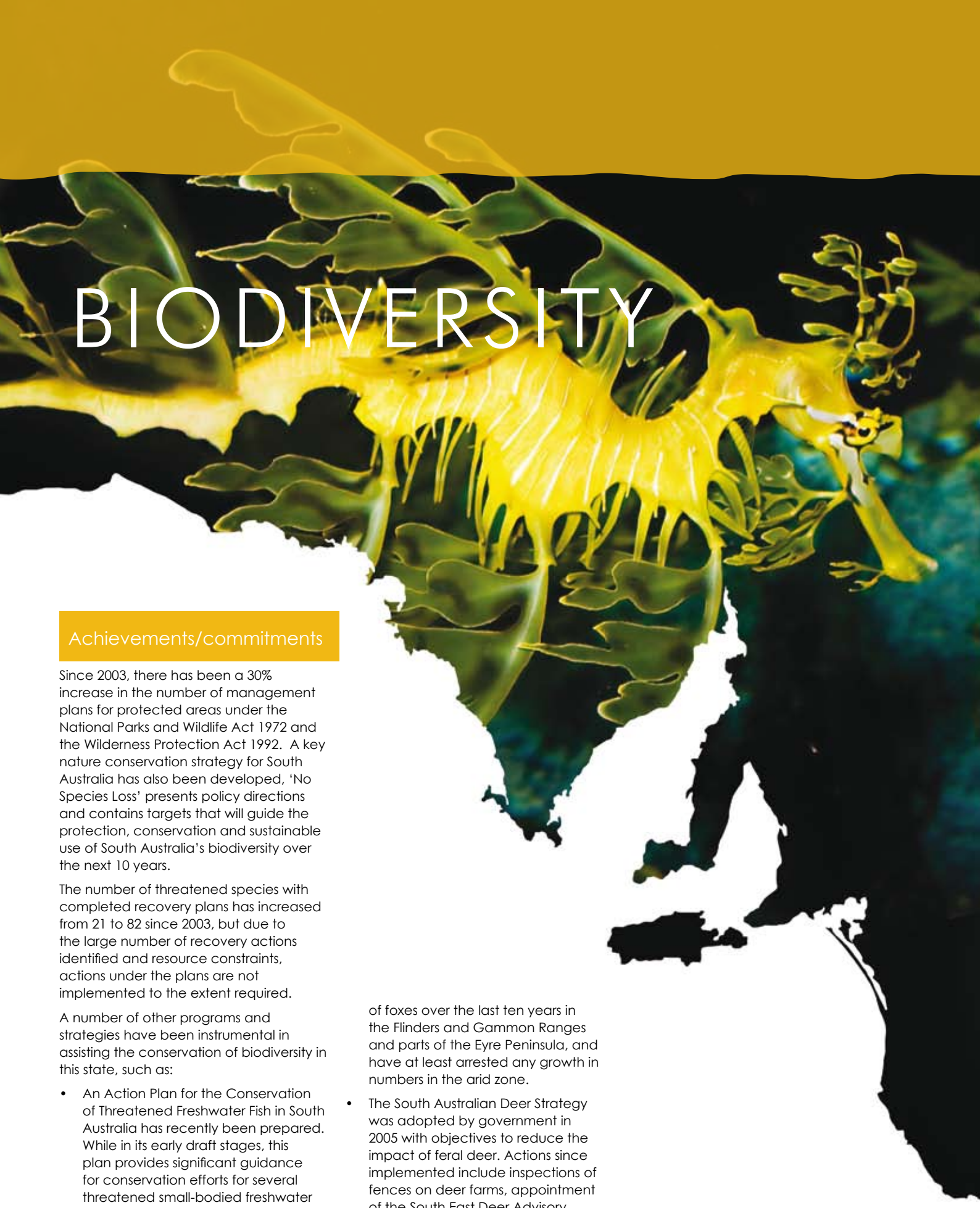
Phylloxera and Grape Industry Board of South Australia
www.phylloxera.org.au/statistics

Planning SA
www.planning.sa.gov.au

Upper South East Dryland Salinity and Flood Management Program
www.dwlbc.sa.gov.au/land/programs/use/index.html

Sowing a crop using the direct drill method. The adoption of improved land management practices, particularly no-till sowing and direct drill sowing combined with stubble retention, has greatly increased the protection of cropping land from soil erosion. Photo: DWLBC

BIODIVERSITY



Achievements/commitments

Since 2003, there has been a 30% increase in the number of management plans for protected areas under the National Parks and Wildlife Act 1972 and the Wilderness Protection Act 1992. A key nature conservation strategy for South Australia has also been developed, 'No Species Loss' presents policy directions and contains targets that will guide the protection, conservation and sustainable use of South Australia's biodiversity over the next 10 years.

The number of threatened species with completed recovery plans has increased from 21 to 82 since 2003, but due to the large number of recovery actions identified and resource constraints, actions under the plans are not implemented to the extent required.

A number of other programs and strategies have been instrumental in assisting the conservation of biodiversity in this state, such as:

- An Action Plan for the Conservation of Threatened Freshwater Fish in South Australia has recently been prepared. While in its early draft stages, this plan provides significant guidance for conservation efforts for several threatened small-bodied freshwater fish species at risk from wetland habitat drying due to worsening drought conditions.
- Operation Bounceback activities have achieved a decline in numbers of foxes over the last ten years in the Flinders and Gammon Ranges and parts of the Eyre Peninsula, and have at least arrested any growth in numbers in the arid zone.
- The South Australian Deer Strategy was adopted by government in 2005 with objectives to reduce the impact of feral deer. Actions since implemented include inspections of fences on deer farms, appointment of the South East Deer Advisory Committee, landholder surveys for the Mid North and South East on the distribution and impact of feral deer, and an eradication program for feral deer on Kangaroo Island.

Recommendations for Action

R5.1 Improve revegetation and restoration through detailed information on techniques and selection of species.

R5.2 Incorporate the protection of important ecosystems into land use planning.

R5.3 Develop conservation legislation to protect and restore threatened species and communities.

R5.4 Increase investment in landscape-scale habitat reconstruction to achieve South Australia's Strategic Plan target T3.1 (Lose no species) and to facilitate adaptation of ecosystems and species to climate change.

R5.5 Improve incentives and support for environmental stewardship on private land, including for the control of invasive plants and feral animals by 2012.

R5.6 Promote a national weed labelling scheme that identifies the weed potential of species to plant buyers and sellers.

R5.7 Include the regulation of introduced freshwater fish species under natural resource management legislation.

R5.8 Improve the early identification of pest incursions to reduce their impacts and the cost of eradication.

Red Mallee (Eucalyptus oleosa) over Triodia, NW of S.Aust. Photo: Peter Lang

Trends

- The number of vulnerable and endangered plants, animals and ecological communities is INCREASING.
- Abundance of rabbits is INCREASING.
- Abundance of feral camels is INCREASING.
- Distribution of feral olives and silverleaf nightshade is INCREASING.
- Abundance of foxes is DECLINING in high priority conservation areas and where livestock protection is required in response to broadscale management and STABLE in other parts of the state.

Moving forward

A systematic and coordinated approach is required for the identification and reporting of threatened species and communities across South Australia, including the development of benchmarks that provide a baseline to assess change. In addition, there is a need to develop a consistent approach to the assessment of vegetation and collection of more detailed information on revegetation and restoration activities being undertaken.

Continuing emphasis need to be given to considerations of short- and long-term benefit in balancing protection of remnant native vegetation with developments such as mining and exploration activities. There is a need for incentives for sustainable environmental stewardship on private land including for the control of invasive plant species and feral animals.

Further information

Australian government weeds web portal
www.weeds.gov.au

Biological Survey Program
www.environment.sa.gov.au/biodiversity/biosurveys.html

National feral animal information database
www.feral.org.au

National weeds website
www.weeds.org.au

NatureLinks
www.environment.sa.gov.au/naturelinks

No Species Loss—A Nature Conservation Strategy for South Australia 2007–2017
www.environment.sa.gov.au/biodiversity/pdfs/nsl_strategy.pdf

Threatened Species in South Australia
www.environment.sa.gov.au/biodiversity/threatened.html

HUMAN SETTLEMENT

Achievements/commitments

In 2006, Planning the Coast Park project was awarded the United Nations Association of Australia—World Environment Day Award for Excellence in Marine and Coastal Management.

The Planning Strategy facilitates higher density housing in targeted locations and transit focused neighbourhoods to increase the viability and efficiency of public transport systems.

Lochiel Park residential development, undertaken by the South Australian Government, created a leading edge green village of more than 80 allotments as a demonstration project for sustainable development.

A heavy vehicle emissions test facility was commissioned at Regency Park in 2006 to conduct vehicle exhaust emissions testing and pollutant level evaluation. Emissions testing services will encourage heavy vehicle fleet owners to reduce vehicle emissions and monitor fuel economy. This will become increasingly important with projected growth in the freight task and the likely air quality impacts associated with it.

Wind generation contributed around 90% of the state's renewable electricity generation in 2006–07 and further wind projects are likely to come online in the next two years. Geothermal exploration projects underway could potentially provide low emission base load power for much of the state.

In light of water restrictions and with the support of state and local government rebates, the community has taken up alternative water supply options such as rainwater tanks and greywater re-use systems. South Australia's household water consumption per capita is third lowest of all states and territories.

Greater volumes of wastewater and stormwater are being recycled and re-used in South Australia than anywhere else in urban Australia. For example, at Mawson Lakes a recycled water system delivers a combination of recycled and stormwater to the entire suburb for use in gardens and toilet cisterns, and is estimated to save about 800 ML of potable water each year. Several other projects in the City of Salisbury re-use stormwater to irrigate sporting fields and parklands.

The South Australian Government established a new legislative framework, the South Australia's Waste Strategy 2005–2010, to enable state and local government, industry and the community to work together to drive waste avoidance and reduction, waste re-use and recycling, and better waste disposal.

South Australia has experienced significant improvement in recycling activity for recyclables and green waste collected at the kerbside, and for building and demolition materials such as concrete, steel, timber and fly ash.

Recommendations for Action

R6.1 Include complementary indicators to those already in the SASP to assess the interactions between targets and progress across economic, social and environmental targets, for example environmental impacts in measuring growth, by 2012.

R6.2 Reduce transport related greenhouse gas and other emissions through land use planning policies, stricter emission standards for vehicles, investment in public transit options, and registration and stamp duty concessions for lower emission vehicles.

R6.3 Increase energy efficiency and renewable energy requirements for all economic sectors

R6.4 Include all government enterprises within South Australia's Strategic Plan Government energy efficiency targets

R6.5 Increase thermal performance minimum standard from 5 stars to 7.5 stars in the short term.

R6.6 Introduce a domestic scale gross (currently nett) feed-in tariff and extend feed-in tariffs to all renewable energy sources (not just solar)

R6.7 Move to a user pays system that reflects the true cost of water and provides an incentive for reduced demand

R6.8 Expand use of existing waste and recycling infrastructure to enable collection of a broader range of waste types eg 'e-waste' and improve access to collection facilities for hazardous wastes.

R6.9 Improve information systems for better management of different waste types.

R6.10 Adjust SASP Target 3.8—Zero waste, applying a target for reduced waste generated per capita by, say, 25% by 2018.

R6.11 Make state government support for major events contingent upon a waste management plan based on the waste hierarchy.

R6.12 Improve enforcement of litter legislation.

Trends

- South Australia's population growth rate is INCREASING.
- Passenger-kilometres by road passenger vehicle transport are INCREASING.
- Road freight task (tonne-km) is INCREASING.
- Proportion of the State's electricity sourced from renewable resources is INCREASING.
- Re-use of treated wastewater is INCREASING.
- Materials consumption as demonstrated by per capita waste generation is INCREASING.
- Amount of solid waste sent to landfill is DECREASING.

Moving forward

The tension between targets in South Australia's Strategic Plan (SASP) for population growth and reducing the ecological footprint requires greater integration of policies and coordinated implementation of targets. For example, the target to reduce the state's ecological footprint by 30% would, with a population of two million people, require a per capita reduction in ecological footprint of approximately 54%. Similarly, expansion of mining in South Australia will place significant pressure on targets to reduce energy use and emissions.

Effective zoning policies must continue to balance the demands for residential development with the need to maintain adequate and proximate agricultural land, and protection of areas of biodiversity significance.

Greater efforts need to be made to reduce the impacts of transport on greenhouse gas emissions and air pollution. Car ownership is continuing to increase and policies are needed to reduce private vehicle use and complement transit-oriented planning.

Further information

Australian Bureau of Statistics (ABS), Australian Demographic Statistics
www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0

Department of Transport, Energy and Infrastructure
www.dtei.sa.gov.au

Planning SA (including Planning and Development Review)
www.planning.sa.gov.au

SA Water
www.sawater.sa.gov.au/sawater

South Australia's Waste Strategy
www.zerowaste.sa.gov.au/waste_strategy.php

HERITAGE

Achievements/commitments

Heritage Directions (2003) identified a number of strategies to address complexity and duplication within the planning and heritage systems in South Australia. Department for Environment and Heritage, Planning SA and a number of other agencies have been working to progress these strategies and identify mechanisms to reduce red tape to improve services to property owners, developers and the community.

Heritage Directions also contains strategies that are being implemented with the aim of building capacity within local government to look after local heritage places.

Capacity has been enhanced for Aboriginal groups to manage their heritage and to address their own priorities for recording and conserving sites of significance to them. Training programs have been and continue to be conducted, in conjunction with Flinders University, for groups in situ across SA in site recording and conservation. Aboriginal people are able to work in partnership with developers and exploration companies, leading to increased recording and reporting of sites.

Some funding for Aboriginal participation in maintaining heritage sites is being provided through natural resource management projects such as the South Australian Arid Lands Arid Rivers Natural and Cultural Heritage Program, site conservation planning at Chowilla in the Murraylands and through grant funding from the Eyre Peninsula NRM Board.

Protected Zones, with an entry permit process, have been established for two of the state's significant shipwreck sites in Gulf St Vincent (Zanoni and ex-HMAS Hobart).

Trends

- Number of State Heritage Places in the South Australian Heritage Register has INCREASED.
- Number of local heritage places designated in council development plans has INCREASED.
- The number of sites listed on the Central Archive (including the Register of Aboriginal Sites and Objects) has INCREASED.
- The number of protected South Australian shipwrecks has INCREASED.
- Documentation of geological heritage has DECREASED.

Moving forward

The consolidation of currently separate pieces of heritage legislation would likely improve the coordinated management of heritage in South Australia. Consistency of standards for recording and conserving cultural heritage is necessary to improve conservation outcomes. A review of the Aboriginal Heritage Act 1988 should be conducted to incorporate these and other best practice conservation techniques.

Heritage legislation should be amended to include the identification and conservation of geological and landscape cultural heritage within the broader context of heritage management in this State.

Improved legislation to simplify council planning processes is necessary to enhance the protection of local heritage and reduce the administrative burden on local government.

Management of heritage buildings must be flexible enough to encourage their adaptive re-use and retention as a sustainable alternative to creating new developments, avoiding the loss of embodied energy associated with redevelopment.

There are reducing numbers of skilled craftspeople working in heritage conservation. This has and will affect the management of heritage properties in South Australia. It may be necessary for the government to engage with relevant non-government organisations and training providers to determine the feasibility of targeted assistance to these professions.

Recommendations for Action

R7.1 Provide councils with a simplified process, and appropriate safeguards, for listing and removal of places from a local heritage schedule.

R7.2 Consolidate heritage legislation

R7.3 Review the Aboriginal Heritage Act to improve the recording and protection of cultural heritage.

Further information

Australian Heritage Directory
www.heritage.gov.au/

DEH Heritage website
www.heritage.sa.gov.au/

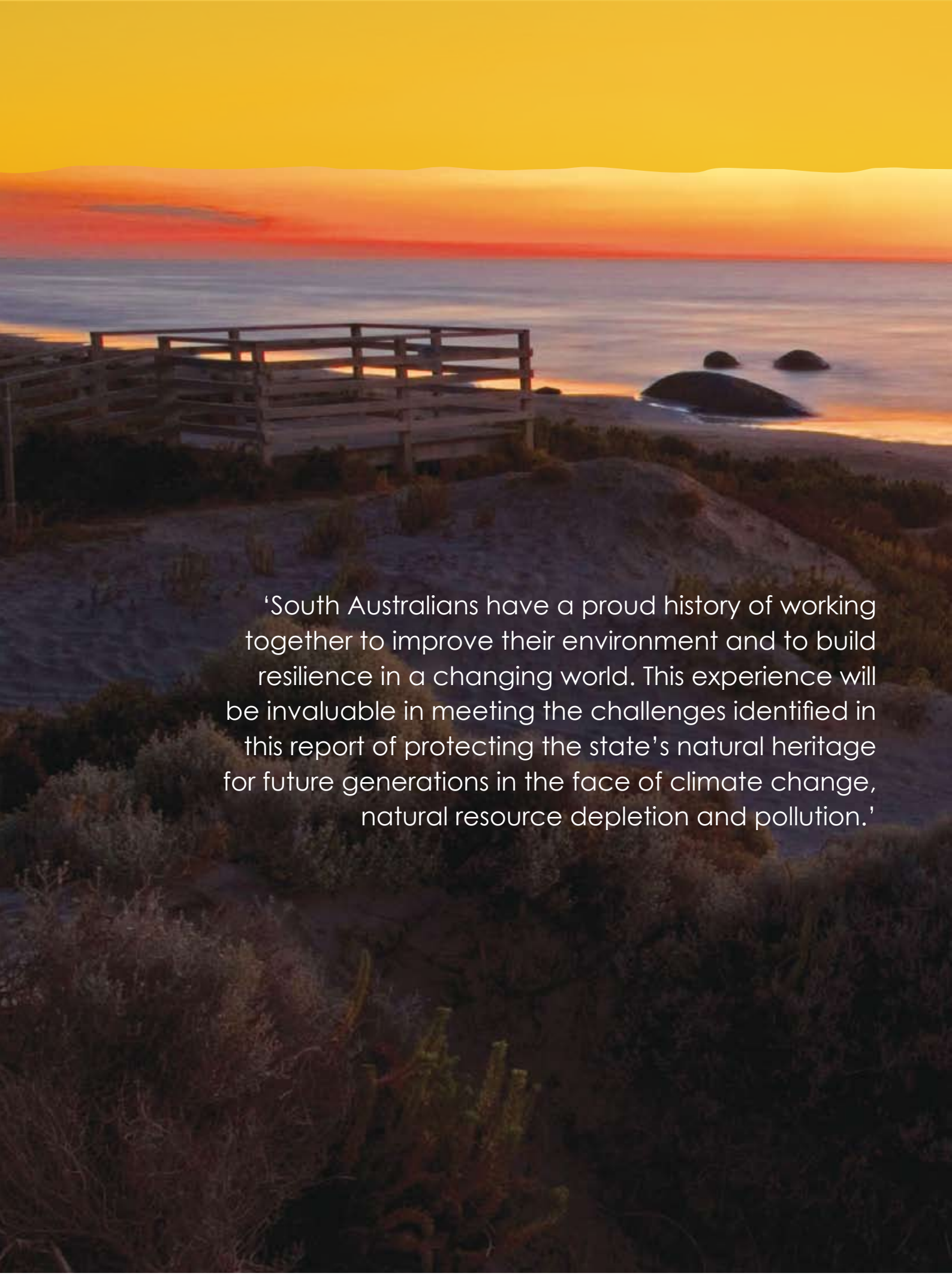
Department of Premier and Cabinet, Aboriginal Affairs and Reconciliation Division
www.premcab.sa.gov.au/dpc/department_aard.html

Heritage Planning Bulletin
dataserver.planning.sa.gov.au/publications/704p.pdf

PIRSA Geological Monuments
www.pir.sa.gov.au/minerals/geology/geological_monuments

Ships' Graveyards of South Australia
www.shipsgraveyards.sa.gov.au

Sturt Street School, an example of adaptive reuse. Photo: Woodhead Architect



‘South Australians have a proud history of working together to improve their environment and to build resilience in a changing world. This experience will be invaluable in meeting the challenges identified in this report of protecting the state’s natural heritage for future generations in the face of climate change, natural resource depletion and pollution.’

STATE OF THE ENVIRONMENT REPORT 2008

For further information please contact:
Information Officer
Environment Protection Authority
GPO Box 2607
Adelaide SA 5001
Telephone: (08) 8204 2004
Facsimile: (08) 8204 9393
Freecall: 1800 623 445 (country)
Website: www.environment.sa.gov.au/soe2008