River Murray Act 2003
Annual Report 2004-2005
Incorporating the Triennial Review

Prepared for the South Australian Parliament by the Minister for the River Murray

September 2005

Government
of South Australia

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River Murray Act 2003 Annual Report 2004-2005. South Australia.

FOREWORD

No State relies on the River Murray more than South Australia – it has shaped the landscape, our people, our way of life, and our future depends on it. In this dry, harsh landscape, the River is a lifeline for Adelaide and many country towns. Irrigated agriculture and horticulture along the length of the River in South Australia support vibrant and productive communities and contribute significantly to national, State and regional economies. A healthy River is essential to the future viability and reliability of those communities and industries that use and value this important resource. The River also contributes ecological and social benefits to all communities and is integral to Indigenous cultures.

South Australia's Strategic Plan identifies the health of the River Murray as one of the most critical environmental issues facing South Australia. As the downstream State, South Australia is most vulnerable to water allocation and management decisions taken across the Murray-Darling Basin and we are acutely aware of the impacts of those decisions. Establishing a sustainable relationship with the River is essential to community well-being, safeguarding future generations, and the State's prosperity. [1]

To counteract the significant threats to the health of the River, substantial investment of both funding and activity is being undertaken throughout the South Australian Murray-Darling Basin region. It is with pleasure that I present the *River Murray Act 2003* Annual Report for 2004-2005, which highlights some of the excellent work that has been undertaken this past year.

The *River Murray Act 2003*, which came into operation on 24 November 2003, has now been in effect for almost two years. This second annual report also includes the first triennial review of the Act, as required by section 23(4) of the Schedule to the Act.

There is clear evidence that action needs to be taken to return the River Murray to a healthy working river; action that the Government and community are pursuing. This report highlights the issues and the achievements and I commend it to you.

Hon Karlene Maywald MP

MINISTER FOR THE RIVER MURRAY

[1] Taken from the document *Environmental Flows for the River Murray – South Australia's Framework for Collective Action to Restore River Health 2005-2010*. (see References for publication details)

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1. INTRODUCTION

South Australia has a strong history of legislating for important reforms, including environmental reforms. Existing legislation has, in most instances, well-served the needs of our community in achieving positive environmental outcomes. It was clear, however, that the River Murray needed more protection than existing legislation could give – it needed a concerted effort, in part through new legislation and reforms to existing legislation, to ensure that protection and enhancement of the River are of paramount consideration when approving or authorising activities that may adversely affect the River.

The Parliamentary Select Committee on the Murray River (final report tabled on 25 July 2001) investigated the health of the River, the causes and impacts of its deterioration, and the further threats that it faces, at both a national and local level. The Committee's recommendations covered various issues from integrated catchment management to operational and budgetary matters. A number of recommendations also related to legislative gaps, which culminated in the development of the *River Murray Act 2003*.

The River Murray Act 2003 was assented to on 31 July 2003, proclaimed on 20 November 2003 and came into operation on 24 November 2003. For the first time, the River Murray has special protection under its own legislation, in recognition of the importance of the River to all South Australians.

Benefits from this new legislation were predicted to include improved outcomes for biodiversity, tourism, agriculture and recreational values. The object of the Act is to achieve a healthy working River Murray system, sustaining communities and preserving unique values, by ensuring that development and other activities with an effect on the River are ecologically sustainable, and undertaken in a way that does not harm the River.

Consistent with principles of transparency and adaptive management, the Act contains clauses relating to periodic reviews that require an assessment of progress against the objects and objectives.

Section 10 of the Act requires the Minister responsible for the administration of the Act, on or before 30 September of each year, to prepare a report on the operation of the Act for the preceding financial year. This report is contained in Part 1.

Section 11 of the Act requires the Minister to undertake a review of the Act on a three-yearly basis. The review must be undertaken so as to coincide with the end of a financial year and the outcome of the review must be reported on as part of the Minister's annual report to Parliament for that financial year. Section 23 (4) of the Schedule to the Act requires that the first triennial review be undertaken as part of the 2004-05 annual report. The report of the first triennial review forms Part 2 of this document.

PART 1

ANNUAL REPORT

2. ANNUAL REPORT

Section 10 of the Act requires the Minister responsible for the administration of the Act, on or before 30 September of each year, to prepare a report on the operation of the Act for the preceding financial year. The Minister must cause a copy of the report to be laid before both Houses of Parliament within six sitting days of the report being prepared.

The report must include:

i) information on the implementation of the Act (taking into account the provisions of the Implementation Strategy);

ii) information on the extent to which the objects of the Act and the Objectives for a Healthy River Murray are being achieved; and

iii) report on the following matters for the financial year –

   a. the referral of matters to the Minister under any related operational Act;

   b. the enforcement of the general duty of care; and

   c. action taken by the Minister for an authorised officer under Part 8 of the Act (protection and other orders).

This annual report relates to the period from 1 July 2004 to 30 June 2005.

3. IMPLEMENTATION OF THE ACT

The aim of the Act is to achieve a healthy working River Murray system that sustains communities and preserves unique values. More specifically, the aim is to ensure that both existing and new activities that may affect the health of the River are undertaken in a way that protects, maintains and improves River health.

The purpose of the Act is to provide coordination of, and fill the gaps between, the many other Acts applicable to the management of the catchment and its resources. One of the cornerstones of the Act is the referral system, which was designed to be well integrated with existing referral and activity approval systems under other legislation.

The first year of implementation of the Act necessarily focussed on bringing key provisions of the Act into operation. This included the drafting and promulgation of a number of regulations (detailed in section 5 of this report) that activated parts of the referral system.

During 2004-05, implementation of the Act concentrated on drafting of the Implementation Strategy, building relationships with councils, responding to referrals and developing policies relating to various aspects of the referral system (in cooperation with other agencies) and compliance matters.

3.1 IMPLEMENTATION STRATEGY

Section 21 of the Act requires the Minister to prepare and maintain the *River Murray Act Implementation Strategy* (Implementation Strategy).

During 2004-05 a draft Implementation Strategy was prepared for consideration by the Minister as required by the *River Murray Regulations 2003*.

In accordance with the requirements of the Act the draft Implementation Strategy –

- sets out the priorities that the Minister will pursue in order to achieve the objects of this Act and to further the implementation of the Objectives for a Healthy River Murray;
- sets out strategies that the Minister intends to adopt to meet those priorities; and
- is consistent with the State Water Plan (or State NRM Plan), and takes into account the Planning Strategy.

Key stakeholder representative groups will be consulted in respect to the draft Implementation Strategy. The Strategy will be reviewed at least every five years, and may be amended as required.

3.2 SWITCHING ON PROVISIONS

The referral process is a key operational aspect of the Act, which ensures that applications for certain prescribed activities under related operational Acts are referred to the Minister for the River Murray as part of the approval process.

The referral mechanism of most of the related operational Acts is only activated when regulations are made prescribing the class of approval that must be referred (with the exception of the *Mining Act 1971* and the *Petroleum Act 2000* – see section 5 for further information).

The *Development (River Murray) Variation Regulations 2003* and the *Harbors and Navigation (River Murray) Variation Regulations 2003* were brought into effect in November 2003. Further information regarding existing regulations can be found in Appendix 1.

During 2004-05, the numbers of referrals made under existing regulations grew substantially. Information on actions taken in response to the rise is provided in section 5.1.

No new regulations were made during the 2004-05 financial year, therefore no new provisions were activated during this period.

3.3 DELEGATIONS

Section 12 of the Act allows the Minister to delegate functions or powers under the Act or under any related operational Act to a body or person, including a person, for the time being, holding or acting in a specified office or position.

Some of the Minister's functions and powers are delegated to positions within State Government departments and statutory bodies, rather than to specific persons. This provides maximum flexibility for officers acting in positions to which functions or powers have been delegated, as they are able to undertake the functions and powers without further authorisation.

The delegations are assigned on a hierarchical basis, with persons at more senior positions being able, in addition to their specific delegations, to exercise all of the functions and powers delegated to subordinate officers.

All delegations are commensurate with the level of knowledge and responsibility required to undertake specific functions. Delegated officers must undertake their functions consistently with the Act.

Most delegations were put in place shortly after the Act came into operation and have been amended or added to on an as-needs basis.

3.4 APPOINTMENT OF AUTHORISED OFFICERS

Over one hundred officers have been authorised by the Minister under section 13 of the Act. Field officers from several Government agencies and statutory authorities have been authorised. The agencies are:

- Department of Water, Land and Biodiversity Conservation;
- PIRSA Fishwatch;
- Environment Protection Authority; and
- River Murray Catchment Water Management Board[1]

Although no new training was provided specific to the River Murray Act during 2004-05, a number of training sessions were held for officers authorised pursuant to the *Natural Resources Management Act 2004* (which complements the River Murray Act) and included a large number of officers operating in the Murray-Darling Basin area.

The River Murray Act Compliance and Enforcement Guidelines and information sheet (as required under section 14 (11) of the Act) that were written last financial year remain in force without amendment.

3.5 RAISING AWARENESS

Publications produced last financial year to assist users of the Act and the general public to understand the Act and its requirements, namely:

- Fact sheets:
  - Overview of the Act
  - General Duty of Care
  - Referrals
- River Murray Act User's First Guide

remain in effect and continue to be available on the DWLBC web site www.dwlbc.sa.gov.au, and in the offices of relevant government agencies and local councils.

A new fact sheet relating to the exemption of certain outbuildings and farm buildings was produced during 2004-05 (see Appendix 2).

[1] Members of the South Australian Murray-Darling Basin Natural Resources Management Board (NRM Board) were appointed in April 2005. The NRM Board will eventually take on the staff and programs of the River Murray Catchment Water Management Board. However, for this reporting period the relevant authorised staff were employees of the Catchment Water Management Board.

3.6 MANAGEMENT AGREEMENTS

Section 18 of the Act allows the Minister to enter into management agreements with owners of land within the Murray-Darling Basin. The potential scope for management agreements is very wide. Management agreements may relate to:

- the conservation or management of water;
- the preservation, conservation, management, enhancement or re-establishment of any aspect of the natural resources of the River Murray; and
- any other matter associated with furthering the objects or objectives of the Act.

During 2004-05, work continued on the development of a management agreement to assist irrigators in the Angas Bremer Management Zone to meet the requirements of the Water Allocation Plan for the River Murray.

3.7 AMENDMENT BILL

A River Murray (Miscellaneous) Amendment Bill 2005 was drafted during 2004-05, which seeks to make administrative and other minor changes to the *River Murray Act 2003* and two associated Acts (being the *Development Act 2003* and the *Renmark Irrigation Trust Act 1936*). The Bill seeks to clarify certain matters and to reduce current ambiguities associated with administration of, and compliance with, those Acts.

Proposed amendments to the *River Murray Act 2003* include:

- Expanding the definition of activity to include that an activity can be a single act or a series of acts;
- Minor wording changes to correct typographical errors;
- Clarifying that a notice stating where the Implementation Strategy is available is gazetted, rather than the entire document; and
- Expanding the time frames for prosecution of a summary offence from 2 years to 3 years after the date of the alleged offence or with the authorisation of the Attorney General up to 10 years.

Two schedules are also contained within the Bill;

- Schedule 1 provides that under the *Development Act 1993*, the Minister for the River Murray will only receive amendments to Development Plans that relate to an area within the Murray-Darling Basin.
- Schedule 2 provides that under the *Renmark Irrigation Trust Act 1936* the Renmark Irrigation Trust (RIT) can undertake transactions using electronic funds transfer (EFTPOS) or any other form that the RIT agrees to by resolution.

4. MEETING THE OBJECTS OF THE ACT AND OBJECTIVES FOR A HEALTHY RIVER MURRAY

The objects of the Act seek to protect the River Murray by ensuring that all reasonable measures are taken to safeguard, restore and enhance the River. Any existing or proposed activities must be undertaken in a way that benefits the River while providing for the economic, social and physical well being of communities, and promoting ecologically sustainable development.

The Act itself provides both the measures and mechanisms to provide protection for the River. Through regulations, referrals, authorised officers, compliance tools and policies implemented pursuant to the Act, the River and its environs can be protected from inappropriate or damaging activities and developments.

The objects of the Act are:

i. to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the River Murray in recognition of its critical importance to the South Australian community and its unique value from environmental, economic and social perspectives and to give special acknowledgement to the need to ensure that the use and management of the River Murray sustains the physical, economic and social well being of the people of the State and facilitates the economic development of the State;

ii. to provide mechanisms to ensure that any development or activities that may affect the River Murray are undertaken in a way that provides the greatest benefit to, or protection of, the River Murray while at the same time providing for the economic, social and physical well being of the community;

iii. to provide a mechanism so that development and activities that are unacceptable in view of their adverse effects on the River Murray are prevented from proceeding, regulated or brought to an end;

iv. to promote the principles of ecologically sustainable development in relation to the use and management of the River Murray;

v. to ensure that proper weight is given to the significance and well being of the River Murray when legislative plans and strategies are being developed and implemented;

vi. to respect the interests and aspirations of Indigenous peoples with an association with the River Murray and to give due recognition to the ability of those Indigenous people to make a significant contribution to the promotion of the principles of ecologically sustainable development in relation to the use and management of the River Murray;

vii. to respect the interests and views of other people within the community with an association with the River Murray and to give due recognition to the ability of those people to make a significant contribution to the promotion of the principles of ecologically sustainable development in relation to the use and management of the River Murray;

viii. otherwise to ensure the future health, and to recognise the importance, of the River Murray.

The Objectives for a Healthy River Murray, which contribute to the achievement of the objects, are divided into four key result areas, namely river health, environmental flow, water quality and human dimension objectives.

There are a large number of programs and projects undertaken in the Murray-Darling Basin every year and 2004-05 is no exception. Various government agencies (State, local and the Australian Government), industry groups and scores of community groups are involved in a broad range of initiatives designed to improve the health of the River. From codes of practice regarding irrigation of open spaces through to vegetation surveys and salt interception schemes, the work being done in this region is significant. A further list of projects is provided in Appendix 3. A sample of the key programs or projects that directly meet each of the Objectives, which in turn facilitate the achievement of the objects, are briefly described below.

4.1 RIVER HEALTH OBJECTIVES

- the key habitat features in the River Murray system are to be maintained, protected and restored in order to enhance ecological processes;

In mid-2002, the Murray-Darling Basin Ministerial Council established The Living Murray Initiative in response to substantial evidence that the health of the River Murray system is in decline. In November 2003, the Council decided on a 'First Step' for The Living Murray, with a focus on achieving environmental benefits for six significant ecological assets. The First Step initially focuses on delivering water to achieve environmental objectives and outcomes for these assets, namely:

- Barmah-Millewa Forest;
- Gunbower & Koondrook-Pericoota Forests;
- Hattah Lakes;
- Chowilla Floodplain;
- Lower Lakes, Murray Mouth and Coorong; and
- the main River channel.

In the last twelve months, a number of advances have been made. For example, in November 2004, the Murray-Darling Basin Ministerial Council agreed to a business plan for the Living Murray, which included an initial four water-recovery projects. A Living Murray Environmental Watering Plan and the Living Murray Environmental Works and Measures Program were also released.

- the environments constituted by the River Murray system, with particular reference to high-value floodplains and wetlands of national and international importance are to be protected and restored

Chowilla Floodplain has an area of 17 700 hectares and is one of the last remaining parts of the lower Murray floodplain that has not been used for irrigation, so it retains much of the area's natural character and attributes.

It is part of the South Australian Riverland area designated as a Wetland of International Importance under the Ramsar Convention, and is recognised as being nationally significant because it has a high diversity of vegetation communities and contains wetlands in a semi-arid environment.

The interim objective for this area under the First Step is to maintain the high biodiversity values of the Chowilla Floodplain. The expected outcomes of actions include:

- high value wetlands maintained
- current area of River Red Gums maintained
- at least 20% of the original area of Black Box vegetation maintained

In 2004-05 an agreement was reached to remove domestic grazing animals from the Chowilla Floodplain to enhance the conservation of this significant ecological asset and assist in vegetation management.

Successful watering projects have been undertaken on the Chowilla Floodplain using interim prioritisation criteria, with thirteen sites watered during 2004-05. An annual watering plan is currently being developed for 2005-06. Weir pool raising and lowering trials were also held and indications are that the benefits of seasonal weir pool raising and lowering trials include an increase in the zone of aquatic vegetation, increased breeding opportunities for fauna and a more nutritious bottom-of-the food chain biofilm composition for aquatic invertebrates.

- the extinction of native species of animal and vegetation associated with the River Murray system is to be prevented

Launched in May 2003, the *Native Fish Strategy for the Murray-Darling Basin 2003–2013* has an overall goal to rehabilitate native fish communities in the entire Murray-Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation.

The Strategy aims to reduce the threats and threatening processes to native fish stocks such as habitat degradation, water quality, water flows, barriers to fish movement, exotic species and exploitation.

Physical works such as the construction of fishways assist in the delivery of this strategy (see below). Initiatives to improve environmental flows will also assist in delivering outcomes under this strategy.

Steps have also been taken to protect native fish species by removing commercial fishing pressure. A program restructuring the commercial River Fishery commenced in March 2002 to establish a limited entry, non-transferable, non-native fishery in the waters of the River Murray north of Wellington to the NSW border (the River Fishery). Amendments to regulations were made to prohibit the use of gill nets and the taking of Murray Cod and Callop in the commercial River Fishery. A further component of the restructure program was an offer of financial assistance to each licence holder to either exit the River Fishery and surrender their fishing licence, or elect to stay in the fishery under new arrangements. Final payments to licensees were made in March 2005.

The aim of this restructure is to assist in the national carp eradication program and to assist in controlling the abundance of other non-native species in the River. Under the new arrangements, as of mid-2005, five of six licences offered have been taken up, targeting exotic species such as carp, trout, redfin and any other exotic species, together with two abundant native species (bony bream and yabbies).

- barriers to the migration of native species of animal within the River Murray system are to be avoided or overcome

A trial of two fishways at Tauwitchere Barrage between Lake Alexandrina and the Coorong was undertaken during December 2004 and January 2005. The trial was designed to provide important information on fish movement by testing the effectiveness of two different designs of fishways, while also boosting the health of the Coorong.

Data gathered during the trial showed that thousands of fish used the two fishways. Up to 4000 fish - 12 different species - used two fishways at the Tauwitchere barrage to migrate between the lower lakes of the River and the Coorong during a three-week period. Conservative estimates suggest that the fishways will be used by up to 30 different species and more than one million fish in a year.

The fishways at Tauwitchere and Lock and Weir 7 and 8, along with those at Goolwa, are the first fishways in a series to be built along the length of the River Murray from Hume Dam to the sea to improve access for migrating native fish of the Murray-Darling system. The fishways were constructed as a part of the Murray-Darling Basin Commission's Living Murray Initiative, which has provided $25 million for the Sea to Hume Fishway Program.

4.2 ENVIRONMENTAL FLOW OBJECTIVES

- ecologically significant elements of the natural flow regime of the River Murray system are to be reinstated and maintained

As part of the Living Murray First Step[2], an estimated 500 gigalitres of new water[3] per year (long term average) will be recovered by 2009. This is underpinned by the Council of Australian Governments' decision to provide new funding of $500 million over 5 years to address water over-allocation in the Murray-Darling Basin.

The State Government is committed to pursuing a longer-term commitment to return a minimum of 1 500 gigalitres of new water to the River by 2018. This level of restored flow is considered essential for a healthy working river. As a response to the First Step Decision, in October 2004, a draft strategy *Environmental Flows for the River Murray – South Australia's Framework for Collective Action to Restore River Health 2005-2010* was released for public consultation. The draft strategy proposes a framework for collective action to source, deliver and manage environmental flows in South Australia.

Across the Basin, the first 500 gigalitres will be recovered through a variety of infrastructure improvements, on-farm initiatives, efficiency gains and purchase of water from willing sellers. In South Australia, two projects aimed at water recovery have received funding through the Living Murray Initiative (Development of Infrastructure Projects Program) in 2004-05. The first involves investigations on ten wetlands in South Australia to determine the feasibility and cost effectiveness of managing these sites to reduce evaporative losses and recover water to deliver environmental benefits at other sites. The other project aims to achieve a long-term reduction in regional reliance on the River Murray by investigating the feasibility of constructing a seawater reverse osmosis (desalinisation) plant at the top of Spencer Gulf to meet existing and future water demands in the Iron Triangle area and Eyre Peninsula and to provide a supply of water to the Olympic Dam mine site.

- the Murray Mouth should be kept open in order to maintain navigation and the passage of fish in the area, and to enhance the health of the River Murray system and estuarine conditions in the Coorong

Since dredging operations began in October 2002, more than 3 million cubic metres of sand have been removed from the Mouth of the River. Dredging continued through 2004 and the first half of 2005. Funding from the Murray-Darling Basin Ministerial Council is available until October 2005 and contingency funds are available for ongoing dredging if necessary.

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[2] In mid-2002, the Murray-Darling Basin Ministerial Council established The Living Murray Initiative in response to substantial evidence that the health of the River Murray system is in decline. In November 2003, the Council decided on a 'First Step' for The Living Murray, with a focus on achieving environmental benefits for six significant ecological assets.

[3] Water designated for environmental use on or after 29 August 2003 through funding allocated under the *Intergovernmental Agreement on Addressing Water Overallocation And Achieving Environmental Objectives In The Murray-Darling Basin*.

Average flows at the barrages over the past three years have been about 100 gigalitres compared to the long term average annual flow of 3 000 gigalitres. The dredging is a project of national significance and it has ensured the Mouth has remained open, providing great ecological, social and environmental benefits to the Coorong and surrounds. In August 2004, 50 gigalitres of River Murray water was released to flow through the Tauwitchere and Goolwa barrages and out of the Murray Mouth following heavy localised rain in the Lower Lakes area and the Angas-Bremer catchment. Although the release was too small to impact on the sand build up at the Mouth, it was critical in flushing out salt loads in the Goolwa Channel and preventing flooding in the Lower Lakes area.

- significant improvements are to be made in the connectivity between and within the environments constituted by the River Murray system

A project aimed at improving connectivity between environments is being undertaken in the Mallee region. The Mallee dryland corridor that extends several kilometres each side of the Murray Valley in South Australia is a priority location for natural resource management works. The River Murray/ Mallee Dryland Corridor Market Based NRM Investment Program is coordinating the current revegetation devolved grant scheme within the corridor and developing market based and associated community marketing strategies. An investment strategy is being developed for the corridor that integrates the social, environmental and economic objectives of the various stakeholders and considers trade-off issues.

4.3 WATER QUALITY OBJECTIVES

- water quality within the River Murray system should be improved to a level that sustains ecological processes, environmental values and productive capacity of the system

The River Murray and Lower Lakes Catchment Risk Assessment for Water Quality is a joint project between the Environment Protection Authority, River Murray Catchment Water Management Board and SA Water that aims to better understand the water quality risks to the River and to establish priority actions to reduce these risks. The full Risk Assessment Project began in October 2004 in the Mannum to Wellington Local Action Planning (LAP) area, with the report *River Murray and Lower Lakes Catchment Risk Assessment for Water Quality; Mannum to Mypolonga Trial* released in April 2005. The risk assessment process is continuing and will eventually cover the entire River, working with the community through LAP groups.

Information and data being collected include water quality indicators (including pathogens, nutrients, turbidity, heavy metals, organic materials, pesticides, hydrocarbons and salinity) and structural impacts (such as boat ramps, dairy discharge, dredging, landfills, ferries, fuel storage, houseboats, campsites, septic tanks, shacks, stormwater discharges, wetlands, swamp discharges and others).

The agencies involved will use this information to better target and reduce water quality risks through public education, capital works, monitoring and research programs and on-going management actions. In the long term, the Risk Assessment and corresponding actions it results in will help bring improvements to the water quality and ecosystem health of the River Murray.

- the impact of salinity on the ecological processes and productive capacity of the River Murray system is to be minimised

Significant work has already occurred on salinity management in the Murray-Darling Basin. Many landholders and irrigators have been involved in programs to improve their understanding of irrigation systems, soils and water use efficiency. Others have been involved through Local Action Planning and Land and Water Management Planning in the development of district scale Land and Water Management Plans that outline broad actions to address salinity. South Australia has one of the most efficient irrigation industries in the Murray-Darling Basin and a great deal of investment has been made in infrastructure projects through the rehabilitation of irrigation areas and the construction of salt interception schemes.

In 2004-05 construction continued on the Bookpurnong Salt Interception Scheme and commenced on the $21.4 million Loxton Scheme. The salt interception schemes at Loxton and Bookpurnong will provide great benefits to irrigators, communities dependent on the River, and the surrounding environment. Between the two schemes, more than 150 tonnes of salt each day will be prevented from reaching the River Murray, greatly boosting water quality. This is additional to the 350 tonnes of salt per day being removed through the Woolpunda and Waikerie schemes.

In late 2004, the Murray-Darling Basin Commission also approved $600 000 in funding to enable the Bookpurnong floodplains to be developed as a pilot project for the floodplain rehabilitation initiatives of the Living Murray program in South Australia. This project will provide the science to determine the ecological benefits of salt interception and ground water management in conjunction with manipulated environmental flows. This science will assist policy development and management planning for floodplains of the lower River Murray.

- nutrient levels within the River Murray system are to be managed so as to prevent or reduce the occurrence of algal blooms, and to minimise other impacts from nutrients on the ecological processes, environmental values and productive capacity of the system

A project designed to reduce nutrient levels within the River and improve water quality is the rehabilitation of the Lower Murray Reclaimed Irrigation Areas (LMRIA). Commenced in 2003, this project offered financial and other assistance to landowners in the Lower Murray area to improve their irrigation practices and thereby reduce nutrient loads into the River.

In 2004-05, the development of draft Environmental Improvement and Management Plans was completed, as required for all commercial farms flood irrigating in the LMRIA. In February 2005 Pompoota, Cowirra and Neeta each converted to a Private Trust, with Monteith converting in April, Wall Flat, Jervois converting in May 2005 and Mypolonga in Sept 2005.

Current irrigation and farming practices result in large amounts of wastewater that contains high loads of nutrients and bacteria. The primary concern is irrigation and stormwater runoff from farms, which is currently combined with intercepted regional groundwater and other stormwater and discharged to the River Murray. By 2008, the aim is not to discharge polluted wastewater to the River Murray.

- the impact of potential pollutants, such as sediment and pesticides, on the environments constituted by the River Murray system is to be minimised

Zero Waste SA, with the assistance of local government, is undertaking free household hazardous waste collections to help residents dispose of unwanted chemicals in an environmentally safe way. Licensed professional waste management contractors set up temporary collection points in metropolitan and country areas of the State to which householders deliver their unwanted chemicals. Collections throughout the Riverland were held in June 2005.

There are also a number of programs aimed at assisting commercial chemical users. ChemClear is an industry-funded initiative for the safe collection and disposal of rural chemicals managed by Agsafe. The objectives of the ChemClear program are to minimise the generation of unwanted rural chemicals, minimise the accumulation of unwanted rural chemicals and any associated risks of impact to the environment, public health and trade, provide for a collection and disposal service for rural chemicals and provide a management system for unwanted registered rural chemicals.

Another program aimed at reducing the impact of pesticides on the environment is the drumMUSTER program. A national program run in concert with local councils, drumMUSTER facilitates the collection and recycling of empty, cleaned, non-returnable crop production and on-farm animal health chemical containers. Collections occur once to twice a year in the Murray-Darling Basin, depending on the local council.

4.4 HUMAN DIMENSION OBJECTIVES

- a responsive and adaptable approach to the management of the River Murray system is to be implemented taking into account ecological outcomes, community interests and new information that may become available from time to time

The *Water Resources Act 1997* and its successor the *Natural Resources Management Act 2004* set out a planning framework designed to take an adaptive management approach to

catchment planning including catchment water management plans (regional NRM plans) and water allocation plans.

The planning provisions of these two Acts require that environmental needs are taken into account in allocating resources. They also require a significant level of community engagement, to ensure that the interests of the communities and their aspirations and values are reflected in the relevant plans.

All plans require monitoring and evaluation and are subject to a regular review cycle to ensure that trends are identified or new information is incorporated and corrective action can be taken where necessary.

- the community's knowledge and understanding of the River Murray system is to be gathered, considered and disseminated in order to promote the health and proper management of the system

In August 2004, the *Natural Resources Management Act 2004* was assented to. The provisions relating to natural resource management planning processes are closely modelled on the *Water Resources Act 1997*, which requires a high level of community engagement in setting priorities and management directions.

In April 2005, seven local members of the South Australian Murray-Darling Basin community, along with long-standing and well-known Presiding Member of the River Murray Catchment Water Management Board were appointed to the inaugural South Australian Murray-Darling Basin Natural Resources Management Board. This combination of irrigators, land managers and active community members provides an excellent foundation for ensuring local knowledge and understanding is applied to the management of the River system.

Furthermore, Local Action Planning Groups continue to be actively involved throughout the South Australian Murray-Darling Basin and are instrumental in ensuring that the community's knowledge of and aspirations for the catchment inform management decisions.

- the interests of the community are to be taken into account by recognising Indigenous and other cultural, and historical, relationships with the River Murray and its surrounding areas, and by ensuring appropriate participation in processes associated with the management of the River Murray system

A protocol document has been developed by the Nunkeri Kungullun Yannun (Indigenous Partnership Steering Committee) on behalf of the SA Murray-Darling Basin Integrated Natural Resources Management Group and endorsed by Indigenous communities for consultation on natural resource management. The protocol is based on key principles and reflects the cultural values of Indigenous communities during the community engagement process for the SA Murray-Darling Basin Regional Natural Resources Management Plan and the Living Murray Initiative of the MDBC.

Nunkeri Kungullun Yannun believes that the protocol will provide opportunities to develop partnerships that will add value to investment to the environment and communities in the region. Using the protocol to contact the right people in each community and communicating in an appropriate manner will help to build reciprocal relationships and identify investment opportunities that meet environmental targets, and deliver social and economic benefits to all.

- the importance of a healthy River to the economic, social and cultural prosperity of communities along the length of the River, and the community more generally is to be recognised

The importance of the River's health to its community's economic, social and cultural prosperity is obvious and inherent. Without a healthy River, these communities would lose their vibrancy and disappear, taking with them their significant contribution to the economic prosperity of this State.

It is recognition of the critical importance of a health River that prompted the development of the Act itself and continues to propel investment in the region. Many programs aim to achieve a healthy River in order to preserve and allow sustainable expansion of industries based around the River. With one of the most efficient irrigation industries in Australia, communities in the South Australian Murray-Darling Basin clearly demonstrate a recognition of the value of a healthy River as they strive for continuous improvement.

Also, in early 2005, the South Australian Tourism Commission released a draft River Murray Policy in recognition of the River's importance to both local and State tourism industries. The policy emphasises a cooperative working relationship with key stakeholder groups to assist in achieving more sustainable use of the River Murray.

5. REFERRALS, ENFORCEMENT OF THE GENERAL DUTY OF CARE AND ACTIONS TAKEN

The provisions establishing referrals and the general duty of care are important tools in ensuring the protection the River Murray.

The referral provisions of the Act require bodies administering related operational Acts[4] to take the River Murray into account in the preparation of plans and undertaking of functions and seek input from the Minister for the River Murray before granting approval for certain types of activities in certain locations. Most of the referral provisions require regulations to be made, setting out the types of activities that need to be referred. As outlined in section 3.2, a limited number of regulations have been made. Section 5.1 of this document reports on regulations which have been made to date.

The Act also established a duty of care, a duty not to harm the River, enforceable by a River Murray Protection Order or Reparation Order. All persons have a general duty of care to take reasonable measures to prevent or minimise harm to the River Murray through actions or activities. Harm includes the risk of harm and future harm. A breach of this duty does not constitute an offence but compliance may be enforced by the issuing of a protection order or reparation order.

A report on the enforcement of the general duty of care and actions taken is provided in sections 5.2 and 5.3.

5.1 REFERRAL OF MATTERS UNDER RELATED OPERATIONAL ACTS

There was a significant increase in the numbers of referrals during the reporting period. The anticipated projection of referrals for 2004-05 was 550, allowing for an increase over the previous year (the number of referrals received in 2003-04 was 388). However, the actual total of referrals received was 59% higher than projected.

Many of the referrals under related operational Acts require regulations to come into effect. No new regulations have been made during 2004-05, therefore the only Acts currently requiring referrals are the *Development Act 1993*, *Mining Act 1971*, *Petroleum Act 2000* and the *Harbors and Navigation Act 1994*. The majority of referrals are being generated pursuant to the *Development Act 1993*.

5.1.1 DEVELOPMENT ACT 1993

Development applications for prescribed activities within River Murray Protection Area are referred to the Minister for the River Murray. The Minister

[4] See section 7 for further information regarding related operational Acts

may direct the relevant authority to refuse the application or may impose conditions of approval if the application is to be approved by the relevant authority.

Since the *Development (River Murray) Variation Regulations 2003* (Development Regulations) came into effect, the number of referrals has increased significantly. In response to this increase, the following initiatives were undertaken:

- A review of the operation of the referral system, involving all relevant councils, was undertaken in the latter part of 2004. The review identified areas that could be amended to refine types of referrals. Work on possible amendments is continuing.
- An upgrade of the database used for the management and tracking of referred applications was completed in 2004-05.
- Policies and Fact Sheets are being developed that will provide guidance for assessment officers, local councils and the community on how the Minister will assess statutory instruments and authorisations formally referred to her. There are currently 28 policies at varying stages of completion.
- The Minister for the River Murray issued a *Notice of Exemption* pursuant to section 22(18) of *the River Murray Act 2003*. The Notice outlines criteria which, if met, can exempt certain development applications for outbuildings and farm buildings from referral.
- Work has also commenced through Planning SA on an initiative aimed at addressing planning issues along the River. During 2004-05, a study commenced, investigating supply and demand and site suitability analysis for marinas and mooring along the River.

Specific data regarding the numbers of referrals made pursuant to the Development Regulations is provided below.

Development Applications

A total of 874 mandatory and non-mandatory development applications were referred to the Minister during 2004-05. Of the 167 non-mandatory referrals, 121 were land division proposals. It is clear from the number of non-mandatory referrals being made that council officers are keen to ensure that all development applications are assessed consistently and result in good outcomes for the River.

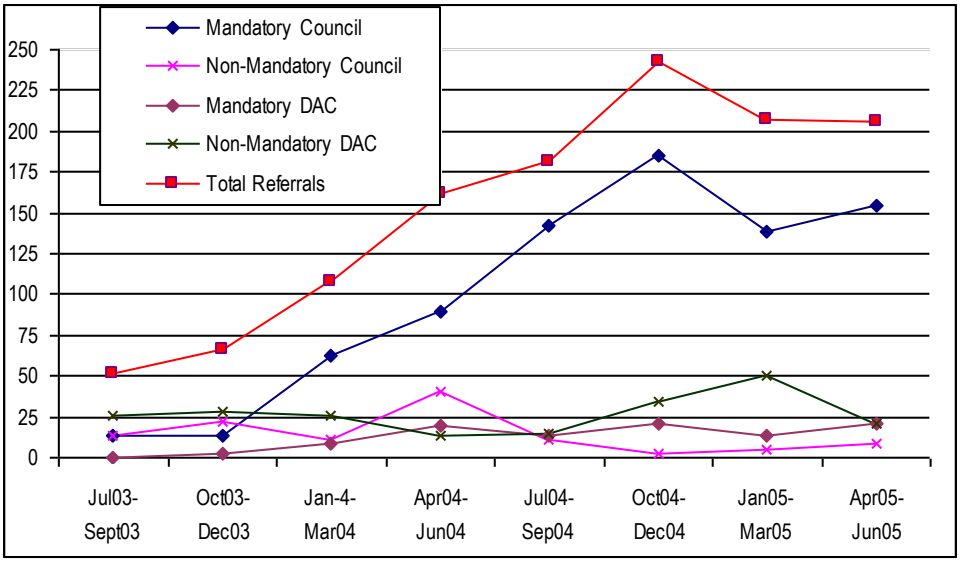
Of the 707 mandatory applications referred, over half related to dwellings, sheds, garages and outbuildings in the River Murray Protection Area with the

remaining portion relating to land use, River use, water use, alteration to the landscape and/or impacts upon riparian zones, vegetation or biodiversity.

Of the mandatory applications referred, 247 had conditions imposed by the Minister, which varied the proposal, while the Minister's delegate negotiated with 143 applicants for better information or amendments to the application so as not to be refused. Fifteen applications were refused, with 4 applicants lodging appeals.

Despite continued growth and high levels of referrals throughout the year (see graph below), a 25% improvement was made on the number of assessments responded to on time, as well as improving the quality of the information provided.

Figure 1. Number of Mandatory / Non Mandatory Referrals 2003-2005



New system improvements in document receipt, tracking, access to GIS databases, and employing additional human resources in proportion to the revenue received from referrals have enabled the improvement.

Additionally, improved linkages between development planning and planning for sustainability outcomes are being facilitated through the implementation of the *Natural Resources Management Act 2004*.

Plan Amendment Reports

Plan Amendment Reports (PARs) are referred to the Minister at several stages of the planning process, including the Statement of Intent phase. Under the

Development Act 1993 the Minister for the River Murray must be consulted on PARs.

Eight PARs were referred to the Minister for the River Murray who made comments and recommendations in regard to the suitability of land use.

During 2004-05 discussions were held regarding the best method for improving the consistency of Development Plans in the South Australian Murray-Darling Basin and to bring them in line with the objects and objectives of the Act. This will be undertaken through the Better Development Plan Project in conjunction with Planning SA.

5.1.2 MINING ACT 1971

Under the *Mining Act 1971*, applications, including renewals, within a River Murray Protection Area must be referred to the Minister for the River Murray for an

- exploration licence,
- mining lease;
- miscellaneous purpose licence;
- retention lease; and
- an authorization to use declared equipment;

There were 27 referrals made for a variety of exploration licences, declared equipment use and mining leases during 2004-05. None were refused, however, one referral resulted in conditions imposed that varied a proposal, as it was adjacent to a Ramsar wetland.

5.1.3 PETROLEUM ACT 2000

Under the *Petroleum Act 2000*, statements for environmental objectives, including a revised statement that applies to any part of the Murray-Darling Basin, must be referred to the Minister for the River Murray.

Two Statements of Environmental Objectives were referred to the Minister during 2004-05. Conditions that varied the proposal were provided on one of the Statements.

In March 2005, a paper detailing implementation issues associated with the Petroleum Act and regulations along with a draft Compliance Policy were

released for public comment. Comments were made on various aspects of both documents.

5.1.4 HARBORS AND NAVIGATION ACT 1994

River events that require a licence under the *Harbors and Navigation Act 1993* that involve a number of motorised vessels as specified in the Regulations, must be referred to the Minister for the River Murray.

Three aquatic activity licences were referred during 2004-05, with none objected to or amended.

5.2 ENFORCEMENT OF THE GENERAL DUTY OF CARE

The general duty of care states that "a person must take all reasonable measures to prevent or minimise any harm to the River Murray through his or her actions or activities". Harm includes risk of harm, future harm and anything declared by regulation to be harm.

Two actions to enforce the General Duty of Care were instigated during the reporting time frame, which resulted in actions taken under part 8 of the Act.

Toward the end of the 2004-05 financial year, a dedicated officer was appointed on an on-going basis to work on compliance specifically related to the River Murray Act.

5.3 ACTIONS TAKEN UNDER PART 8 OF THE ACT – PROTECTION AND OTHER ORDERS

Protection orders may be issued to secure compliance with the general duty of care, a condition of a statutory authorisation or any other requirement. An order may require a person to stop or not start a particular activity, to only carry on an activity at a particular time, to take specified action within a certain time, to undertake tests or monitoring or prepare a plan or report. If urgent action is required, an authorised officer may issue an emergency protection order. It is an offence not to comply with a protection order.

A reparation order can be issued if the Minister is satisfied a person has caused harm to the River Murray by contravening the general duty of care, a condition of a statutory authorisation or any other requirement. A reparation order may require a person to take particular action to make good any damage or make payments to enable action to be so taken. The order may include other requirements to prevent or mitigate further harm to the River. An authorised officer may issue an emergency reparation order.

Authorised officers investigated several matters during 2004-05 and two actions under Part 8 of the Act were undertaken. One River Murray Protection Order and One River Murray

Reparation Order were served during 2004-05 relating to activities that caused harm to the River in Strathalbyn and Tailem Bend, respectively. Remediation has commenced at both sites.

6. SUMMARY

The 2004-05 financial year has been busy and productive in terms of both implementation of the River Murray Act and programs and projects throughout the Murray-Darling Basin.

A significant proportion of the activity surrounding the implementation of the Act has centred on the review of referrals and improving the focus of referral mechanisms. As well as commencing initiatives aimed at streamlining the referrals process, work has continued on policies against which referrals will be assessed. In 2004-05, there were twenty-eight policies in draft format, with work continuing on new issues on an as-needs basis.

Also, the draft River Murray Act Implementation Strategy is being considered by the Minister prior to being released for public consultation. The Strategy will, amongst other things, set out the priorities that will be pursued in order to achieve the objects and objectives of the Act.

As discussed in section 4, extensive investments are being made in the South Australian Murray-Darling Basin in order to achieve the objects and objectives of the Act. A vast number of programs and projects continued or commenced during 2004-05, aimed at improving water quality, environmental flows, key habitat features, protection of native species, and the community's involvement in managing the River.

The River Murray is of strategic importance to the entire State, a status reflected in the levels of investment and activity. The 2004-05 financial year has witnessed significant advances, which will provide an excellent basis for ongoing improvements in River health into the future.

PART 2

TRIENNIAL REVIEW

7. TRIENNIAL REVIEW

Section 11 of the *River Murray Act 2003* requires the Minister on a three-yearly basis to undertake a review of the Act. Section 11 (2) states that "the review must include –

(a) an assessment of the interaction between this Act, the related operational Acts, and any other Act considered relevant by the Minister; and

(b) an assessment of the state of the River Murray, especially taking into account the Objectives for a Healthy River Murray,

and may include other matters determined by the Minister to be relevant to a review of this Act."

The Review must be undertaken so as to coincide with the end of a financial year and the outcome of the review must be reported on as part of the annual report to Parliament for that financial year. Section 23 (4) of the Schedule to the Act (containing the transitional provisions) requires that the first review pursuant to section 11 be undertaken at the end of the 2004-05 financial year and the outcome of that review be reported on as part of the annual report to Parliament for that financial year.

The fundamental raison d'etre of the *River Murray Act 2003* is the protection of the River Murray. The objects are designed to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the River Murray, to develop mechanisms to ensure that any development or activities do not have an adverse effect on the River and are undertaken in a way that best protects and benefits the River while providing for the economic, social and physical well being of the community, and to promote principles of ecologically sustainable development in relation to the use and management of the River.

Supplementing the objects are four sets of objectives, collectively named the Objectives for a Healthy River Murray relating to river health, environmental flows, water quality and the human dimension of a working river. The Act introduces a general duty of care requiring all persons to take reasonable measures to prevent or minimise harm to the River through their actions. Harm includes future harm. Numerous other provisions relating to referrals under a wide range of other Acts, protection orders, land management agreements and significant penalties, all work together with the objects and Objecitves of the Act to provide increased protection to the River.

In the twenty months since the commencement of the River Murray Act, awareness of sustainable development issues in the region has grown with a significant increase in the numbers of referrals made to the Minister for the River Murray. Investment in the Murray-Darling Basin has continued, with many millions of dollars being spent on a variety of programs and projects aimed at restoring and improving River health.

This Review examines the interaction between the River Murray Act and related operational Acts over the last twenty months and also reports on the investments and programs being made to improve the River's health, in accordance with the Objectives of the Act.

8. INTERACTION BETWEEN ACTS

The *River Murray Act 2003* gives the Minister responsible for it a number of powers designed to ensure the protection of the River. These include the obligation to promote the integration of the River Murray Act with other legislation and to have input into statutory instruments (for example, plans) and in some cases provide direction on statutory authorisations (for example, licences). A number of Acts are identified in the River Murray Act as related operational Acts. Activities authorised pursuant to these Acts have the capacity to significantly impact the health of the River, for both positive and negative outcomes.

The first part of the Triennial Review is an assessment of the interaction between the River Murray Act, the related operational Acts, and any other Act considered relevant by the Minister.

The related operational Acts are:
Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986[5]
Aquaculture Act 2001
Coast Protection Act 1972
Crown Lands Act 1929
Development Act 1993
Environment Protection Act 1993
Fisheries Act 1982
Harbors and Navigation Act 1993
Heritage Act 1993
Historic Shipwrecks Act 1981
Irrigation Act 1994
Mining Act 1971
Murray-Darling Basin Act 1993
National Parks and Wildlife Act 1972
Native Vegetation Act 1991
Opal Mining Act 1995
Petroleum Act 2000
Soil Conservation and Land Care Act 1989[6]
South Eastern Water Conservation and Drainage Act 1992
Water Resources Act 1997[7]

The *Aboriginal Heritage Act 1998* was also included within the scope of the review.

[5] repealed 30 June 2005, replaced by the *Natural Resources Management Act 2004*

[6] repealed 30 June 2005, replaced by the *Natural Resources Management Act 2004*

[7] all but the financial provisions repealed 30 June 2005, replaced by the *Natural Resources Management Act 2004*

The interaction between the River Murray Act and the related operational Acts varies. Some provisions were activated immediately when the River Murray Act became operational. Other provisions require the development of regulations, many of which are yet to be made. Any relevant interaction between Acts, the successes and any issues arising are detailed below.

ABORIGINAL HERITAGE ACT 1998

The *Aboriginal Heritage Act 1998* (AH Act) was not amended by the River Murray Act, nor is it a directly linked operational Act. There are however, inevitable interactions between the two Acts, as the AH Act does apply statewide.

The River Murray is very important both culturally and historically to Aboriginal people. The River traverses a number of different traditional tribal and language groups and there are large numbers of heritage sites all along the River, such as scar trees, burials, middens, camping sites, and mythological sites (ie dreaming stories). Site verification in various areas of the SA Murray-Darling Basin has been scheduled to commence in the second half of 2005.

All heritage sites are protected under the AH Act and any activities impacting on sites must have regard to the Act. Section 12 of the Act states that a developer may apply to the Minister for a determination as to whether or not the area of a proposed development is an Aboriginal site or whether there are Aboriginal objects in the area. After the section 12 process is complete a developer may amend the development proposal in order to proceed without damaging sites or objects. In other circumstances, a developer may decide to proceed with the development in a manner that will cause damage, disturbance or interference with an Aboriginal site or object, in which case an authorisation is required pursuant to section 23 of the AH Act.

The AH Act sets out consultation requirements to ensure that local Aboriginal communities are consulted regarding the determination of sites and any proposed interference with them. These consultation provisions contribute to the achievement of the human dimension Objectives of the River Murray Act, which require the interests of the community to be taken into account by recognising Indigenous relationships with the River and surrounding areas.

There are a number of heritage committees along the River Murray operated by local Aboriginal communities to manage and conserve heritage in their areas. These committees work with State and local governments to identify sites and to consider long-term management and conservation options. The committees also assist in the development of tourist projects such as heritage trails, cultural experiences and heritage centres, which also contributes to the achievement of the human dimension Objectives.

ANIMAL AND PLANT CONTROL (AGRICULTURAL PROTECTION AND OTHER PURPOSES) ACT 1986

The *Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986* (APC Act) was amended to require:

- programs applying in the Murray-Darling Basin to seek to further the objects and Objectives of the *River Murray Act 2003*;
- the Animal and Plant Control Commission, when issuing permits for activities in the Murray-Darling Basin to take into account and seek to further the objects of the and Objectives of the River Murray Act;
- the Commission, before issuing permits of a prescribed class for activities in the River Murray Protection Areas, to consult with the Minister and comply with the Minister's directions (if any);
- authorised officers issuing a notice in the Murray-Darling Basin, take into account and seek to further the objects and Objectives of the River Murray Act.

No regulations prescribing classes of activities have been made, therefore there has been no obligation on the Commission to refer matters to the Minister.

One of the key policy commitments of the Government has been to introduce integrated natural resources management legislation. This was foreshadowed to include the integration of animal and plant control boards and programs.

Since 2003, animal and plant control boards and the Animal and Plant Control Commission have been working towards integrating their activities in preparation for the implementation of the *Natural Resources Management Act 2004*.

In 2003-04 training was carried out for authorised officers working in the Murray-Darling Basin, advising them of their responsibilities pursuant to the River Murray Act. Fact sheets and appropriate paperwork were also provided. Anecdotal evidence suggests that officers authorised pursuant to the APC Act and carrying out animal and plant control programs are aware of their responsibilities under the River Murray Act and have modified their programs accordingly.

The APC Act was repealed on 30 June 2005, replaced by the *Natural Resources Management Act 2004*. As this Act came after the River Murray Act, the necessary provisions were automatically carried forward.

AQUACULTURE ACT 2001

The *Aquaculture Act 2001* was amended by the River Murray Act to require any aquaculture policies applying in the Murray-Darling Basin to seek to further the objects and Objectives of the River Murray Act. The amendments also prevent the Minister responsible for the

Aquaculture Act from approving a policy applying in a River Murray Protection Area without the concurrence of the Minister responsible for the River Murray Act.

These provisions do not require any regulations to be made, therefore they became operational on the same day the River Murray Act came into operation. Since that time, however, there have been no new policies (or policy reviews) made pursuant to the Aquaculture Act relating to either the Murray-Darling Basin or a River Murray Protection Area, therefore the provisions have not been tested and no matters have been referred to the Minister responsible for the River Murray Act.

Although a process for referrals pursuant to this Act has not been developed, the relevant agency is aware of the requirements and will take appropriate steps when necessary.

COAST PROTECTION ACT 1972

The *Coast Protection Act 1972* (CP Act) was amended to require the Coast Protection Board to take into account and seek to further the objects and Objectives of the *River Murray Act 2003* if or when taking any action under the CP Act within or in relation to any part of the Murray-Darling Basin. Furthermore, when preparing or reviewing a management plan that could affect the River Murray, the Coast Protection Board must consult with the Minister responsible for the River Murray Act.

These provisions do not require any regulations to be made, therefore they became operational on the same day the River Murray Act came into operation. The relevant management plans have not been reviewed in the time since the provisions became operational.

There has, however, been a reasonable level of interaction between agencies responsible for the two Acts. The Coastal Protection Branch of the Department for Environment and Heritage (DEH) has provided input on the 'River Murray Referral Policy – Coastal Development' (still under development) and the exemption notice relating to the exemption of certain referrals for sheds.

Since the *Development (River Murray) Variation Regulations 2003* came into effect, the Coast Protection Board is no longer referred applications that are within the River Murray Protection Area. A 'one stop shop' operates whereby those referrals that are relevant to coastal land are passed on (by the Department of Water, Land and Biodiversity Conservation) to the Coastal Protection Branch of the Department for Environment and Heritage for advice.

CROWN LANDS ACT 1929

Similar to most of the other operational Acts, the *Crown Lands Act 1929* (CL Act) was amended to require the Minister or authority granting or renewing licenses pursuant to the

CL Act within the Murray-Darling Basin to take into account and seek to further the objects and Objecitves of the River Murray Act. If a proposed licence is within a prescribed class and relates to a River Murray Protection Area, prior to granting or renewing the licence, the relevant authority must consult with the Minister responsible for the River Murray Act and comply with any of the Minister's directions. A further amendment made by the River Murray Act, prevents the acquisition of land within the Murray-Darling Basin solely or predominantly for the purposes of closer settlement.

No regulations prescribing classes of licence have been made, therefore there has been no obligation on the relevant authority to refer matters to the Minister.

Arrangements have been made to pass on all development application referrals relating to the bed or banks of the River Murray, or that are on Crown land or adjoin Crown land to the Crown Lands regional office of the Department for Environment and Heritage for assessment. Referrals number in the order of approximately six per month with approximately half comprising jetty/landing ramp/retaining wall type structures.

DEVELOPMENT ACT 1993

The consequential amendments made to the *Development Act 1993* by the River Murray Act cascade through the planning hierarchy, starting with the Planning Strategy for South Australia, which is taken to include the Objectives of the River Murray Act as of the commencement of the Act.

The amendments intend to ensure the objects and the Objectives of the River Murray Act are taken into account in development planning decisions. One of the significant consequential amendments was to confer upon the Minister responsible for the River Murray Act powers to prevent inappropriate development within the Murray-Darling Basin and particularly within River Murray Protection Areas.

Amendments made by the RM Act, include the following:

- The Planning Strategy to be taken to include the Objectives of the River Murray Act;
- Development Plan Amendment Reports by a council or the Minister that relates to (wholly or in part) to any part of the Murray-Darling Basin must be referred to the Minister responsible for the RM Act for consultation;
- Developments considered significant by the Minister for the River Murray can be referred by the Minister responsible for the Development Act to the Development Assessment Commission;
- Panels considering major developments or projects with significant impacts on any aspect of the River Murray must include a person approved by the Minister for the River Murray;

- Applications for developments in prescribed zones that fall within a class of development prescribed under *Schedule 8* of the Development Act are referred to the Minister for the River Murray for advice and direction.

The *Development (River Murray) Variation Regulations 2003* (Development Regulations) also came into operation on 24 November 2003.

The Development Regulations expand the definition of 'development' to include the placement or construction of infrastructure to take water, or drain water or other substances to, any part of the River. Such use of land has the potential to harm the River (in particular, the cliffs and banks), yet was not previously considered to be development for the purposes of the *Development Act 1993*.

The Development Regulations also reduce the threshold at which development within River Murray Protection Areas is referred to the Environment Protection Authority (EPA), and raise the level of the EPA comment to 'direction' for all referrals.

A significant component of the interaction between these two Acts relates to the referral mechanisms. The number of referrals sent to the Department of Water, Land and Biodiversity Conservation has increased significantly since the commencement of the River Murray Act. In 2003-04, the number of mandatory and non-mandatory referrals in the Murray-Darling Basin alone was 388. The total of referrals received in 2004-05 was 874.

Planning SA reports that timeliness, quality and consistency of responses to referrals has been an issue at times. Several initiatives have commenced in the last twenty months aimed at refining and improving the interaction between the two Acts, including:

- Work on a River Murray (Salinity) Ministerial Plan Amendment Report (PAR) commenced, which will promote the objects and Objectives of the River Murray Act. This PAR will be a vehicle for amending Development Plans relating to relevant River Murray areas to reflect the sensitivity of certain areas to salinity and put in place appropriate policies to ensure that land use/development does not impact on salinity. It is anticipated that the PAR will be available for public consultation in the first quarter of the next financial year.
- A *Notice of Exemption* pursuant to section 22(18) of *the River Murray Act 2003* was issued in May 2005 in order to streamline processes and reduce unnecessary referrals. The Notice outlines criteria that, if met, can exempt certain development applications for outbuildings and farm buildings from referral.
- A *Consolidated Across Government Policy for Marina Development Along the River Murray* was adopted in 2005. This policy consolidates all existing

provisions and policies related to marinas while a more comprehensive strategy is developed.

- Work has commenced on a Strategy for Marina Developments on the River Murray (refer above), the first step of which is a study investigating supply and demand and site suitability analysis for marinas and mooring along the River.

Internal processes, referrals to other agencies and policies relating to referrals types are continuously being evaluated for opportunities to streamline and improve efficiency. Ongoing administrative refinements are being made, and will continue to be made.

ENVIRONMENT PROTECTION ACT 1993

The *Environment Protection Act 1993* (EP Act) was amended via the insertion of a duty on all persons and bodies involved in the administration of that Act to take into account and seek to further the objects of the *River Murray Act 2003* and the Objectives for a Healthy River Murray if or when taking any action under the EP Act within or in relation to any part of the Murray-Darling Basin.

As there are no regulations required, the provisions became active at the commencement of the operation of the River Murray Act.

Following this amendment, the Environment Protection Authority (EPA) now take into account the objects and objectives of the River Murray Act when:

- issuing an authorisation under section 47 ("*criteria for grant and conditions of environmental authorisations"*) of the EP Act;
- making an environment protection policy; and
- providing advice on development applications.

Furthermore, the River Murray Act amended the EP Act so that the *State of the Environment* report now includes a specific assessment of the State of the River Murray, especially taking into account the Objectives for a Healthy River Murray. The first *State of the Environment* report to include a specific River Murray section was released in November 2003.

Information from the EPA indicates that the interaction between the River Murray Act and the EP Act is considered positive, with closer links forged between agencies. The River Murray Act has also facilitated increased EPA input into planning decisions, as the Development Regulations reduced the threshold at which development within River Murray Protected Areas is referred to the EPA. The regulations also raised the level of EPA comment to 'direction' for all referrals.

FISHERIES ACT 1982

Consequential amendments made to the *Fisheries Act 1982* by the River Murray Act were designed to ensure the protection of fish species and stocks in the River Murray. Actions taken under the Fisheries Act must seek to further the objects and Objectives of the River Murray Act. Furthermore, any proposed research, exploration, experiments, works, granting of permits, or operations relating to the River Murray, is subject to consultation with the Minister responsible for the River Murray Act. The Minister responsible for the River Murray Act can request the Minister responsible for the Fisheries Act to make, vary or revoke a declaration in relation to fishing activity in the River Murray. Furthermore, applications for a licence within a prescribed class must be referred for consultation with the Minister responsible for the River Murray Act but there is no power of direction associated with this provision.

Although no regulations have been made in relation to licences and there has been no requirement for referrals of licence applications to date, one informal referral was made during 2004-05 in relation to the use of carp nets.

There is a significant amount of activity relating to fish management in the Murray-Darling Basin. Relevant agencies have been working together through many non-statutory mechanisms such as the Basin-wide Native Fish Strategy[8] and various inter-agency committees.

HARBORS AND NAVIGATION ACT 1993

The *Harbors and Navigation Act 1993* is primarily concerned with safe navigation and includes provisions relating to hazards, pollutants and oil spill responses on the River.

Amendments made to the Harbors and Navigation Act require consultation with the Minister responsible for the River Murray Act before any licence is granted in relation to waters that form part of the River Murray. The Minister's directions must be complied with, however, specific categories of licence may be excluded by regulation.

Harbors and Navigation (River Murray) Variation Regulations 2003 were brought into effect in November 2003. Since the commencement of the River Murray Act, five applications for aquatic activity licenses were referred.

The referral provisions appear to be working satisfactorily.

[8] see section 4.1

HERITAGE ACT 1993

The amendments require that the State Heritage Authority must in granting various permits under the *Heritage Act 1993* relating to a River Murray Protection Area, take into account and seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray. If the permit is of a prescribed class, the Minister administering the River Murray Act must be consulted and any directions of the Minister in relation to the grant of the permit, including that the permit not be granted or must be granted subject to specified conditions, must be complied with.

No regulations prescribing classes of licence have been made, therefore there has been no obligation on the State Heritage Authority to refer matters to the Minister.

Reports from the Department for Environment and Heritage indicate that the interaction between the two Acts is considered positive as it has resulted in increased awareness within Government and the community about protecting State heritage places.

HISTORIC SHIPWRECKS ACT 1981

The amendments to the *Historic Shipwrecks Act 1981* require that if an application for a permit under the Act relates to a shipwreck located in the River Murray, the Minister must in considering the application, seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray. If a permit is of a prescribed class and relates to a River Murray Protection Area, the Minister administering the River Murray Act must be consulted and any directions of the Minister in relation to the grant of the permit, including that the permit not be granted or must be granted subject to specified conditions, must be complied with.

No regulations prescribing classes of licence have been made, therefore there has been no obligation on the relevant authority to refer matters to the Minister.

IRRIGATION ACT 1994

The amendments to the *Irrigation Act 1994* require that an irrigation authority must not breach, or impose requirements that cause another person to breach, requirements imposed under the *Water Resources Act 1997*, or a duty or requirement under the River Murray Act, in determining terms and conditions on the supply or drainage of water.

The Irrigation Act was also amended to allow an irrigation authority to reduce water allocations if necessary to meet a reduction of its allocation under the Water Resources Act 1997. In making any reduction in allocations, the irrigation authority may take into account opportunities for more efficient use of water in the district and the types of crops grown and may reduce various allocations by different amounts or proportions.

These changes were particularly important to allow irrigation trusts to more effectively manage their water resources during drought periods in response to the implementation of the Drought Response Strategy, which resulted in restrictions on the taking of water. In June 2003, licensees were restricted to using 65% of their licensed allocation. This figure progressively rose as rain events improved storage capacities and flows. In January 2005, the restrictions were eased to 95% of licensed allocation.

MINING ACT 1971

Amendments to the *Mining Act 1971* require that decisions on applications for licences or leases in the Murray-Darling Basin must be made taking into account the objects and Objectives of the River Murray Act.

Where applications for licences or leases relate to a River Murray Protection Area, the application must be referred to the Minister responsible for the River Murray Act. However, unlike amendments made to other Acts that require directions to be complied with, amendments to the Mining Act require a dialogue between the two relevant Ministers. Where the Ministers cannot agree on an outcome, the matter is to be referred to the Governor for decision.

These referral provisions became operational on the same day as the River Murray Act. Since the commencement of the River Murray Act, there have been 37 referrals made pursuant to the Mining Act.

Comments from the administrators of the Mining Act indicate a preference not to refer applications for exploration licences and renewals of mining tenement applications, as these were not considered likely to cause significant environmental issues.

As exploratory activities have the potential to be invasive and existing mining activities should not necessarily continue unchecked in all circumstances, there is no evidence to suggest that any amendments are required to the referral provisions at this time. Inter-agency processes and procedures relating to referrals can, however, be reviewed to identify opportunities to simplify and streamline wherever possible.

MURRAY-DARLING BASIN ACT 1993

The amendment to the *Murray-Darling Basin Act 1993* inserts a new subsection that makes clear that the Minister is the Constructing Authority in relation to any works, or measures authorised by, or associated with, the Murray-Darling-Basin Agreement.

There is no further interaction between the two Acts.

NATIONAL PARKS AND WILDLIFE ACT 1972

The amendments made by the River Murray Act to the *National Parks and Wildlife Act 1972* (NPW Act) require that any lease, licence or agreement that relates to a reserve located within a River Murray Protection Area, must be consistent with the objects of the River Murray Act and the Objectives for a Healthy River Murray. The Minister administering the River Murray Act must be consulted on certain classes of lease, licence or agreement and any directions in relation to the lease, licence, permit or agreement must be complied with. Regulations have not been made prescribing classes of lease, licence, permit or agreement, therefore no referrals have been made pursuant to these provisions. Negotiation between the relevant agencies since the commencement of the Act agreed that regulations would be made in due course and would prescribe permits for duck and quail hunting.

The amendments also provide that an objective of managing a reserve located within the Murray-Darling Basin is to promote the objects and Objectives of the River Murray Act. The Minister administering the River Murray Act must be consulted when preparing a plan of management for a reserve located within the Murray-Darling Basin, which must have regard to the objects and Objectives of the River Murray Act.

A proposal to constitute or alter the boundaries of a reserve that relates to land within the Murray-Darling Basin must be submitted to the Minister administering the River Murray Act, and that Minister's views considered.

To date the interaction between the two Acts has been limited. The relevant agency is aware of the requirements and will take appropriate steps when necessary.

NATIVE VEGETATION ACT 1991

The amendments to the *Native Vegetation Act 1991* require the Native Vegetation Council to obtain the approval of the Minister administering the River Murray Act before delegating any of its powers in relation to a matter within the Murray-Darling Basin.

Guidelines in relation to the management of native vegetation prepared by the Council that relate to the Murray-Darling Basin must seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray and a draft must be submitted to the Minister administering the River Murray Act for comment during consultation. The guidelines will only apply to land within the Murray-Darling Basin if they explicitly state that they do.

The amendments also require prescribed classes of applications to clear native vegetation within a River Murray Protection Area to be referred to the Minister administering the River Murray Act, and any directions of the Minister as to the grant of the application or any conditions on the grant must be complied with.

Native Vegetation (River Murray) Variation Regulations 2003 (NV Regulations) were made under the *Native Vegetation Act 1991*, and came into operation on 24 November 2003.

The NV Regulations remove an exemption that allowed the creation of access paths for pedestrians or vehicles within the River Murray Protection (Floodplain) Area. Given the relationship between riverside vegetation and river health, it is not considered appropriate for such an activity to be undertaken without native vegetation clearance consent.

The NV Regulations also modify the exemptions relating to fire management. The amendments require a fire management plan applying within the River Murray Protection (Floodplain) Area to be referred to the Minister for the River Murray before being approved by the Native Vegetation Council.

A new requirement was also included in the Schedule of the Principles of Clearance of Native Vegetation, that vegetation should not be cleared if it would cause significant harm to the River Murray.

These two Acts align well and have complementary objectives.

NATURAL RESOURCES MANAGEMENT ACT 2004

The *Natural Resources Management Act 2004* (NRM Act) became fully operational on 1 July 2005, at which time the *Water Resources Act 1997*, *Soil Conservation and Landcare Act 1989* and the *Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986* were repealed[9]. Detailed commentary on the interaction of each of these Acts with the River Murray Act is provided under separate sub-headings.

Certain provisions of the NRM Act were conferred upon the Minister for the River Murray in early 2005. These provisions relate to the South Australian Murray-Darling Basin Natural Resources Management Board and their regional natural resources management plan (although do not extend to the financial aspects of the plan).

The NRM Act made a consequential amendment to the River Murray Act, namely that the River-Murray Implementation Strategy must take into account the State Natural Resources Management Plan and the Planning Strategy. Although this provision became operational outside the reporting time period of this Review, work on the Implementation Strategy has been undertaken with the commencement of the NRM Act in view.

[9] Except for the Parts 1 and 8 of the *Water Resources Act 1997*, which remain in force to allow levies to be collected for the 2005-06 financial year pursuant to existing processes and mechanisms.

The boards constituted under the three repealed Acts[10], now replaced by the South Australian Murray-Darling Basin Natural Resources Management Board, were responsible for a significant number of programs and projects operating in the region. These projects and programs will continue and are expected to provide improved outcomes now that the administrative structures can facilitate integration across natural resource disciplines.

OPAL MINING ACT 1995

The Minister responsible for the River Murray Act must be consulted regarding any declaration made pursuant to the *Opal Mining Act 1995* in a River Murray Protection Area. This amendment does not, however, indicate that any direction can be given by the Minister responsible for the River Murray Act.

To date, there has been no interaction between the two Acts.

PETROLEUM ACT 2000

Similar to the amendments made to the *Mining Act 1971*, the *Petroleum Act 2000* was amended to require that any statement of environmental objectives applying to any part of the Murray-Darling Basin must have the concurrence of the Minister responsible for the River Murray Act. Where the two relevant Ministers cannot agree, the matter is referred to the Governor for decision.

Three statements of environmental objectives have been referred since the commencement of the River Murray Act.

In March 2005, a paper detailing implementation issues associated with the Petroleum Act and regulations along with a draft Compliance Policy were released for public comment. Comments were provided on various aspects of both documents.

SOIL CONSERVATION AND LAND CARE ACT 1989

The amendments to the *Soil Conservation and Land Care Act 1989* (SCL Act) require that a soil conservation board with a district that is located within the Murray-Darling Basin take into account and seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray in carrying out its functions. The board must also consult with and consider the views of the Minister administering the River Murray Act in developing or revising its district plan. Before the Soil Conservation Council approves a district plan, it must also consult and consider the views of the Minister administering the River Murray Act. Both a district plan or a soil conservation order that relates to land within the Murray-Darling

[10] River Murray Catchment Water Management Board, several soil conservation boards, several animal and plant control boards and the Murray-Darling Basin Integrated Natural Resources Management Group (non-statutory group established to develop plans and investment strategies through which National Action Plan for Salinity and Water Quality (NAP) and Natural Heritage Trust (NHT) funding are delivered)

Basin must seek to further the objects and Objectives of the River Murray Act, insofar as they may be relevant. Also, if a soil conservation order is within a prescribed class and applies to land within a River Murray Protection Area, the Minister administering the *River Murray Act* must be consulted and any direction in relation to the order, including any requirements of the order, must be complied with. No regulations prescribing a class of soil conservation orders have been made.

Many of these amendments made to the SCL Act have been superceded by the development and commencement of the *Natural Resources Management Act 2004* (NRM Act).

Operationally, soil conservation boards and the Soil Conservation Council have been replaced by the natural resources management boards and the Natural Resources Management Council, respectively. Existing soil district plans will remain valid until they are replaced by the relevant regional natural resources management plan. Soil conservation orders no longer exist as such; section 194 of the NRM Act provides for protection orders, however, there is no referral mechanism relating to the River Murray.

Although some of the amendments made to the SCL Act have not been carried forward in the transition to the NRM Act, this is not considered an issue as the objectives of the River Murray Act and the NRM Act are closely aligned and seek to achieve much the same outcomes. As the responsibilities of the two relevant Ministers are very similar pursuant to the two Acts, outcomes relating to the protection and health of the River Murray have not been compromised.

SOUTH EASTERN WATER CONSERVATION AND DRAINAGE ACT 1992

The amendments made to the *South Eastern Water Conservation and Drainage Act 1992* (SEWCD Act) require that in administering the Act or taking any action under the Act that relates to any part of the Murray-Darling Basin, the Minister, the South Eastern Water Conservation and Drainage Board, the Council or any other relevant persons must act consistently with and seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray, insofar as they are relevant.

The Board, in reviewing its management plan is also required to consult with the Minister administering the River Murray Act insofar as the plan affects the River Murray. Any water management works undertaken by the Board that may affect the River Murray must comply with the approved management plan or otherwise have the approval of the Minister administering the River Murray Act.

In granting a licence of a prescribed class to carry out work in relation to a River Murray Protection Area, the Minister administering the River Murray Act must be consulted and any directions of the Minister in relation to the grant of the licence, including that the licence not

be granted or must be granted subject to specified conditions, must be complied with. No regulations prescribing classes of licence have been made.

WATER RESOURCES ACT 1997

A substantial number of amendments were made to the *Water Resources Act 1997* (WR Act) to provide increased powers for the Minister to control activities, particularly those related to water quantity, within the Murray-Darling Basin.

Bodies acting pursuant to the WR Act must act consistently with, and seek to further the objects of the River Murray Act and the Objectives for a Healthy River Murray. Plans made pursuant to the WR Act must likewise seek to further the objects and Objectives of the River Murray Act, and must be consistent with the terms or requirements of the Agreement approved under the *Murray-Darling Basin Act 1993.*

Penalties for breaches relating to water affecting activities include an expiation fee if the offence relates to prescribed conditions of licence within a River Murray Protection Area. A provision was also added to the section relating to water affecting activities to allow the relevant authority to determine not to grant any more permits for the construction or enlargement of dams or other structures without a corresponding reduction in the capacity of other storages.

Certain classes of permit or licence as prescribed by regulation must be referred to, and can be directed by, the Minister responsible for the River Murray Act where the application relates to a River Murray Protection Area. The Minister's decision in relation to any permits or licences must take into account the terms and requirements of the Agreement approved under the *Murray-Darling Basin Act 1993* and any relevant resolutions of the Ministerial Council under that Agreement. No regulations prescribing classes of permit or licence have been made.

An amendment was also made to the WR Act allowing a condition of licence to include that the licensee enter into a bond (in such a sum and subject to such terms as specified by the Minister) to ensure money is available to address the costs of any damage to the River. Licensees can also be required to participate in schemes to protect, restore or otherwise benefit the River.

Amendments also give the Minister the power to amend water licences at any time within the Murray-Darling Basin if it is appropriate or desirable to prevent, reduce or address damage to the River. Head powers were also provided to allow regulations to cancel appeal rights in the Murray-Darling Basin.

The amendments also introduced the concept of schemes to promote the transfer or surrender of allocations. The Minister may establish such schemes by notice in the *Gazette*.

The WR Act was repealed[11] and replaced by the *Natural Resources Management Act 2004* (NRM Act), which commenced on 1 July 2005.

The objectives of the River Murray Act and the NRM Act are closely aligned, seek to achieve much the same outcomes and are administered by the same agency (Department of Water, Land and Biodiversity Conservation). Outcomes relating to the protection and health of the River Murray have not been compromised in the transition of provisions between Acts.

[11] Except for the Parts 1 and 8 of the *Water Resources Act 1997*, which remain in force to allow levies to be collected for the 2005-06 financial year pursuant to existing provisions.

9. STATE OF THE RIVER MURRAY

The River Murray is one of our most important water resources. It provides water not only for important regional irrigation and manufacturing industries and the communities that rely on those industries for their prosperity but also water for the River townships, water for the city of Adelaide, water for growing industries in the Barossa and Clare Valleys, and water for northern regional centres of Whyalla, Port Augusta, Port Pirie and numerous small townships in between.

The River Murray is more, too, than a source of water for consumptive use. It is a living body whose ecological integrity must be maintained. Apart from the obvious value of a healthy river to the economy and the importance of maintaining a prosperous future, it also has significant cultural heritage value to both Indigenous and non-Indigenous people.

While there is a substantial body of work describing present threats to the River's health (see section 9.1) the high level of investment in remediation and rehabilitation, particularly in the last two to three years, should be considered in assessing the future prospects of the River's health.

Current threats and emerging trends are often the result of past actions. It thus stands to reason that the beneficial outcomes of current investments will also take some time to become fully manifest. There is evidence, however, that rehabilitation works can also have immediate beneficial effects. For example, the watering trials on the Chowilla Floodplain resulted in an improvement in River Red Gum health within a short time (see section 4.1).

As well as the scientific data reported by the Environment Protection Authority in its 2003 State of the Environment Report, this report also includes an assessment of the state of the River Murray, taking into account the Objectives for a Healthy River Murray, as required by the *River Murray Act 2003*. To this end, information is provided where possible on how programs are achieving the Objectives (see section 9.3).

9.1 STATE OF THE ENVIRONMENT[12]

In November 2003, the Environment Protection Authority released the first State of the Environment Report that included a section devoted to the River Murray. While identifying a number of key issues and threats, the report also noted that significant work is being undertaken, particularly in relation to the major threats of salinity and water extractions.

[12] The information contained in this section (9.1) has been largely transcribed from the State of the Environment Report (see References for publication details)

The 2003 State of the Environment Report reports the following trends.

Salinity levels in the River Murray: predicted to INCREASE significantly over the next 50 years without further remedial action.

Other water quality in the River Murray (nutrients, heavy metals, algae and faecal coliforms): NO SIGNIFICANT CHANGE since the State of the Environment Report 1998. Water quality in general shows a marked deterioration progressively downstream towards Tailem Bend.

Use of water from the River Murray: INCREASING – too much water is being taken for irrigation from across the Murray-Darling river system.

Health of rivers, streams and wetlands of the River Murray floodplain: DECLINING due to increasing extraction of water for agricultural, industrial and domestic use and the impact of salinity.

A number of indicators have been used to report on the state of the River, which are detailed below.

EXCEEDENCES OF WATER QUALITY GUIDELINES FOR RIVERS AND STREAMS

One of the most significant threats to water quality in the River Murray is rising salinity. The River is a natural drain for all salt moving through regional groundwater systems in the Murray-Darling Basin. Irrigation development and vegetation clearance, however, have compounded salinity in the River.

Monitoring by the Environment Protection Authority indicates that salinity levels in the River have complied with national water quality guidelines over the last few years (and indeed over the last decade) and have often been better than the guideline. However, this is due primarily to a combination of the effect of major salt interception schemes, prevailing hydrological and climatic conditions and the protection that the minimum entitlement flow agreement with the Murray-Darling Basin Commission provides. Modeling indicates that without further action, salinity levels could rise significantly over the next 20 to 50 years. Measures are currently being implemented to address this predicted rise in salinity.

While increasing salinity in the River is of paramount concern, there are other water quality issues associated with pollution from stock grazing, industrial discharges and urban stormwater, agricultural run-off, fuel and other wastes from houseboats and other recreational boating, and seepage from septic tank systems. Information is provided for a range of physical characteristics and a rating is given depending upon how the water is to be used. These ratings are based on national water quality guidelines. A ‘good’ rating means that levels are better than the guidelines stipulate most of the time; a ‘moderate’

reading means that the guidelines are exceeded only occasionally; and a 'poor' rating means that the guidelines are exceeded regularly.

The variability of flow in the River Murray is reflected in a corresponding variability in water quality, making it difficult to determine trends. However, allowing for seasonal variations, overall water quality in the River Murray has been fairly constant over the past five years since the State of the Environment Report 1998, which indicated that most water quality characteristics were well within, or better than, national guidelines.

Salinity was generally rated as good (levels were well within guidelines) at all sites and for all uses, with the exception of the Goolwa Barrages due to marine influences.

Water clarity, or turbidity, was poor at all sites in terms of suitability for drinking and maintaining ecosystem health. Water clarity at Tailem Bend poses a risk for recreation.

Nutrients (soluble phosphate) at Lock 5, Morgan and Tailem Bend were at levels that pose a threat to ecosystem health. High nutrient levels can result in algal blooms, which can impact on plant and animal communities.

Microbiology (faecal coliform levels) was poorest at Tailem Bend, compromising water quality for drinking, irrigation, recreation and livestock use. This is due, in part, to the impact of drainage water from flood irrigated dairy pastures in this section of the River.

Levels of naturally occurring heavy metals (copper and iron) were rated poorly for ecosystem health at Morgan and for ecosystem health, drinking and irrigation purposes at Tailem Bend. The poor rating for drinking water quality is based on iron levels that can rust plumbing.

Algal levels in the Lower Lakes and Goolwa Barrages were rated poorly for ecosystem health. Blooms of toxic algae (cyanobacteria) in the Lower Lakes have also precluded the use of the water for stock, recreational and drinking purposes for lengthy periods on a number of occasions in the past (Australian Water Quality Centre). It is worth noting that blooms of cyanobacteria have been a problem on a number of occasions over the whole length of the River Murray. This problem pre-dates European settlement, but modified flow regimes have been a major contributing factor to the increased risk of blooms in the past two decades.

RIVER HEALTH ASSESSED ACCORDING TO THE AUSTRALIAN RIVER ASSESSMENT SYSTEM (AUSRIVAS)

Since 1994 the EPA has been conducting a comprehensive survey of river and stream health across the State as part of the Australian River Assessment System (AUSRIVAS). AUSRIVAS is assessing river and stream health by monitoring the type and number of aquatic macroinvertebrates found in a particular river or stream and comparing the results with the type and number of aquatic macroinvertebrates found in a similar type of river or stream that has not been disturbed or affected by human activities (referred to as a 'reference' site).

Analysis of the AUSRIVAS data indicates that sites on the River Murray floodplain were generally in poor condition, particularly along the main channel. The poorest sites were around Morgan and Blanchetown, and in the Riverland and lower reaches. Floodplain sites in good condition were the freshwater wetlands and anabranches at Chambers, Katarapko, Pilby and Monoman creeks, Pike River and Little Duck Lagoon.

THE EXTENT AND CONDITION OF WETLANDS

The State of the Environment Report 1998 was not able to comment in detail on the extent and condition of wetlands due to a lack of information. In 2003 more was known about individual wetland complexes, however, there is still no comprehensive, scientifically based information on the condition or extent of wetlands across the State. [Since the publication of the State of the Environment Report 2003, baselines surveys have been undertaken for 39 River Murray wetlands (see Appendix 3 for further information).]

The extraction of water for irrigation, domestic and industrial use has profoundly affected the health of River Murray wetlands and many continue to decline. Grazing on the floodplain is also affecting the health of wetlands via trampling of native vegetation and the impact of faecal contamination on water quality. Only around 400 hectares of relatively natural wetlands remain of an estimated 10 500 hectares of floodplain wetlands in the Mannum to Wellington reach of the River because of reclamation for dairying.

Low flows have seen [many] floodplain wetlands along the River Murray endure 10 years without flooding. This has affected the health of River Red Gums along the floodplain and in the summer of 2002/03 around 20% of these trees died. [During 2004-05, watering projects undertaken on the Chowilla Floodplain demonstrated that the health of River Red Gums could successfully be improved through artificial flooding. An annual watering plan is currently being developed for 2005-06 and a follow-up survey on the health of the Red Gums is underway.] The Murray Mouth closed in 2002 for the first time since 1981 due to low flows and the subsequent build up of sand at the Mouth. This posed a serious threat to the condition of habitats in the Coorong, Lake Albert and Lake Alexandrina. Dredging of the mouth has been undertaken to open the Mouth and restore tidal flows to the Coorong.

USE OF SURFACE WATER RESOURCES VERSUS AVAILABILITY WETLANDS

Five-yearly average figures on water use from the River Murray indicate that of all diversions from the River Murray, 18% is for metropolitan Adelaide drinking water, almost 62% is for highland irrigation and other diversions, and almost 14% is for the irrigation of reclaimed swamps.

The South Australian cap on extractions from the River is 740 gigalitres per year; however, it has been recognised recently that this does not represent a sustainable level of diversions, particularly during extended periods of low flow or drought. This over-use of water from the River is acknowledged across the whole of the Murray-Darling Basin and has been exacerbated by recent drought conditions.

The Murray-Darling Basin Agreement ensures that South Australia receives an agreed share of the available water – this is called our Entitlement Flow. The Entitlement Flow to South Australia is 1 850 gigalitres per year. Due to the prolonged dry conditions, [between 2001 and 2003] South Australia received only Entitlement Flow and there has been insufficient water to release through the barrages and out through the Murray Mouth [during] that time. During 2004-05, short periods of increased flows resulted in small releases being made.

9.2 HALTING THE DECLINE

It is both self-evident and high on the public agenda that the health of the River Murray must be improved and protected for the long-term social, environmental and economic good of South Australia and the other states sharing the resources of the Murray-Darling Basin. Although the State of the Environment Report identifies serious problems in the health of the River Murray, it also notes that significant investment is being made in addressing the critical issues. The Report describes the River Murray Act itself as providing a critical framework for future improvements in the state of the River.

An example of the significant investment being made includes the River Murray Improvement Program (RMIP), announced by the State Government in June 2003, which includes a number of initiatives to improve the health of the River Murray. The initiatives are funded by a River Murray Levy, which all SA Water customers pay in recognition of the importance of this resource to the entire State.

Projects and programs in the South Australian Murray-Darling Basin account for approximately $60 million per annum[13] in government-sponsored[14], environmental-related investment alone. This figure does not take into account vast quantities of in-kind contributions from industry and the community.

The level of activity and investment in this region is indicative of the importance both governments and the community place on the preservation and maintenance of this resource.

Section 4 of this document provides information regarding projects that have been ongoing or undertaken during 2004-05, which achieve or contribute to achieving the Objectives for a Healthy River Murray as contained in the River Murray Act. Further information on programs and projects is also included in Appendix 3.

[13] figure taken from the Regional Options Paper for the SA Murray-Darling Basin NRM Region, SA Murray-Darling Basin NRM Regional Steering Committee, November 2004

[14] 'Government' is used here to denote a collective of all tiers of government (Australian Government, State and local), including administrative and statutory arms such as boards, committees and the Murray-Darling Basin Commission.

RIVER HEALTH OBJECTIVES

The river health objectives primarily relate to the maintenance, protection and restoration of ecological processes and key habitats and features, particularly floodplains, wetlands and native species.

There is an array of strategies, initiatives, plans and activities that contribute to the achievement of these objectives. At the strategic level, the Act itself and the Living Murray Initiative provide broad frameworks and goals. The Act helps to achieve river health objectives by preventing inappropriate development and use of the resources in the region. The Living Murray Initiative focuses on achieving environmental benefits at six significant ecological assets, which contain varying habitats and ecological processes. While restoring the River in six places will not necessarily achieve an improvement in health in the entire Murray-Darling Basin, it is an important first step in understanding the ecological operation of the River in various locations so that future improvements in River health can be made.

In the period 2003-2005, various on-ground works such as wetland watering trials and construction of fishways have clearly contributed to the river health objectives both in the short and longer terms. For example, in the short term, the construction of fishways has met the river health objective "*barriers to the migration of native species of animal within the River Murray system are to be avoided or overcome*". In the longer-term, enabling the migration of native fish will assist in achieving the objective "*the extinction of native species of animal and vegetation associated with the River Murray system are to be avoided or overcome*".

The State of the Environment Report 2003 noted that the health of rivers, streams and wetlands of the River Murray floodplain are declining due to increasing extraction of water and the impact of salinity. The scientific data provides a 'wake-up call' regarding the state of the River, however, it is by no means the death-knell. The success of recent projects and significant decisions that have recently been made (such as the First Step[15] decision to return 500 gigalitres of water to the environment) signals a willingness from both governments and the community to halt the decline and begin restoration of the River towards sustainability.

ENVIRONMENTAL FLOW OBJECTIVES

There are three environmental flow objectives. Two, namely reinstating ecologically significant elements of natural flow regimes and keeping the Murray Mouth open, have significant investment and activity underway. The third, relating to the connectivity of environments between and within the River Murray system has a lower-profile but there are many projects and programs that will indirectly assist in achieving this objective.

[15] In mid-2002, the Murray-Darling Basin Ministerial Council established The Living Murray Initiative in response to substantial evidence that the health of the River Murray system is in decline. In November 2003, the Council decided on a 'First Step' for The Living Murray, with a focus on achieving environmental benefits for six significant ecological assets.

During the past two years, the topic of environmental flows has been of high interest. The State of the Environment Report 2003 notes that extractions from the River are increasing and that extractions exceed sustainable limits.

As a downstream user, South Australia has a vested interest in ensuring overall sustainability of the River. South Australia has strongly lobbied in relation to over-allocation for several years. In June 2004, the *Intergovernmental Agreement to Address Water Over-allocation and Achieving Environmental Objectives in the Murray-Darling Basin* was signed. This agreement supports the decision made by the Council of Australian Governments in August 2003 to commit $500 million to address water over-allocation in the Basin.

In November 2003, the Murray-Darling Basin Ministerial Council agreed to recover 500 gigalitres per year of 'new' environmental water. In October 2004, the South Australian Government released a draft strategy as a response to this decision, entitled *Environmental Flows for the River Murray – South Australia's Framework for Collective Action to Restore River Health 2005-2010*. Although there is much excitement about this important decision, the South Australian Government has made it clear that it will continue to pursue a longer term target of 1 500 gigalitres per year.

While these are positive steps forward, it is recognised that flow regimes are as important as flow quantities. Recent projects involving watering trials at Chowilla floodplain, weir manipulation trials and barrage releases in the lower Murray have provided valuable insights into managing flow regimes and have resulted in the development of Environmental Watering Plans for both sites.

In 2002, the Murray Mouth closed for the first time in over twenty years. Since then, a significant dredging operation has been undertaken to keep the Mouth open to ensure the health of the Coorong. A significant investment has been made to artificially keep the Mouth open as current flows are not sufficient for this to happen naturally. Whilst the objective is to secure natural flows to keep the Mouth open, the Mouth will remain open via dredging operations to preserve the integrity of the estuary environment while the broader and complex inter-State issues of over-allocation are being addressed.

The third environmental flow objective relates to connectivity between and within environments. Up until the recent past, the management of natural resources has been undertaken with a somewhat fragmented approach. Connectivity between and within environments has traditionally not been well understood and in some ways continues to be a peripheral issue against the more visible issues such as environmental flows or water quality concerns.

The introduction of the *Natural Resources Management Act 2004* will provide significant improvement in the integrated management of the catchment's resources. Already, since

the Act was first mooted in 2002, working relationships between the boards responsible for water, soil and pest animal and plant management have strengthened and joint programs have been undertaken. Other initiatives such as the development of biodiversity corridors and sustainable landscapes will also assist in achieving this particular objective.

WATER QUALITY OBJECTIVES

The water quality objectives seek a reduction in salinity, nutrients and pollutants to a level that does not negatively impact on ecological processes and productive capacity.

The State of the Environment Report 2003 identifies salinity as one of the most significant pressures on the River. While the overall water quality has not significantly decreased since 1998, there is a marked decrease in quality downstream from Tailem Bend.

As one of the most significant risks to River health, reducing salinity impacts has rightly been the subject of significant investment. In the last two years, two new salt interception schemes have been built, removing an estimated 150 tonnes of salt each day from the River. Coupled with the existing salt interception schemes throughout the Basin, an estimated 500 tonnes of salt each day is being prevented from entering the River. Furthermore, a Salinity Zoning Policy was adopted in 2005 in South Australia to control the salinity impacts of new developments.

Broader water quality initiatives include improved irrigation and dairy shed management practices, implementation of the Environment Protection (Water Quality) Policy 2003, codes of practice for stormwater management, the dairy industry and houseboat management and a $32 million investment into the rehabilitation of the Lower Murray Irrigation Areas.

These significant investments and outcome-oriented initiatives contribute to the achievement of the water quality objectives now and into the future.

HUMAN DIMENSION OBJECTIVES

The human dimension objectives relate to how the River is managed and for what outcomes. The objectives require responsive and adaptable management, engagement with the community, acknowledgement of the varying interests of that community and the importance of the health of the River in all these facets. These objectives are, perhaps, the most difficult to report and quantify as they are inherently subject to many differing interests.

While the success or otherwise of current management will be judged by future generations, one thing is clear, namely the community at large and particularly communities along the River are clearly interested in improving the current state of the River.

Through involvement on boards, committees, local action planning groups, Landcare groups, WaterWatch groups, community action groups and a plethora of projects, programs, plans and strategies, there can be no doubt about the extent that the community is interested in, and the level of energy many communities give to, improving the health of the River Murray. It is clear that the importance of a healthy river to the economic, social, environmental and cultural prosperity of communities along the River and more broadly is well recognised.

Locally, communities display behavioural changes that will improve the health of the River in the future and engage in projects aimed at immediate remediation of sites important to them. For example, in March 2005 the Brenda Park/Scotts Creek Wetland Group became the first community-based group to be allocated a River Murray Wetland Water Licence for 1 100 megalitres. The Group spent twelve months compiling information about current conditions and wetland species and produced a management plan for the 870 hectare site. This program aims to demonstrate how a wetland, heavily modified over generations, can be managed in a way that restores biodiversity, improves the health of aquatic vegetation and recognises the valuable role the community has to play in ensuring local environments are managed to make a positive difference.

More broadly, citizens from across the State enjoy the River's produce, the prosperity it brings to the State and the recreational values of the River and its environs. Through recent concerted advertising campaigns aimed at improving community education about the importance of the health of the River, there has been a broader behavioural shift demonstrated by a general acceptance of the Save the River Murray Levy and a renewed interest in water conservation.

With regard to recognising Indigenous values and interests in the River, a protocol document for consultation on natural resource management issues has been developed by the Nunkeri Kungullun Yannun (Indigenous Partnership Steering Committee) on behalf of the South Australian Murray Daring Basin Integrated Natural Resource Management Group. Endorsed by local Indigenous communities and adopted in early 2005, the protocol is based on several key principles that reflect the cultural values of Indigenous communities during the community engagement processes.

10. SUMMARY

In the last twenty months, implementation of the Act necessarily focused on bringing the key provisions of the Act into operation. Implementation therefore focused on ensuring the referral mechanism was phased in and delegations and authorisations were in place, concentrating first on the following key areas:

- bringing into operation regulations under the River Murray Act, Native Vegetation Act, Development Act and Harbors and Navigation Act;
- ensuring that the Minister's powers were appropriately delegated to relevant Departmental officers;
- appointing authorised officers to undertake enforcement activity;
- preparing a consultation draft of the *River Murray Act Implementation Strategy*; and
- preparing information to ensure a good understanding of the requirements of the Act in the general community and within State and local Government.

Many of the provisions requiring regulations under related operational Acts other than those listed above have not been activated while existing referral mechanisms are refined and streamlined. Information provided by the agencies administering the related operational Acts indicates that the interaction between Acts is generally proceeding well. Concerns raised by some agencies regarding the quality and timeliness of responses to referrals are being addressed through a number of initiatives already underway (see section 5.1). Further opportunities for improvement will continue to be explored through cooperative approaches between agencies.

On balance, comments indicate a good understanding and appreciation of the objects and objectives of the River Murray Act. The relatively few concerns expressed related mainly to administration of the Act, which is subject to ongoing review for continuous improvement. None of the comments suggest that any legislative changes are required at this time (other than those already identified as part of the River Murray (Miscellaneous) Amendment Bill – see section 3.7).

In terms of achieving the object and objectives of the Act, that is a healthy working River, there has been a significant quantum and breadth of activity invested in the South Australian Murray-Darling region. Left unchecked, the health of the River Murray is under threat, however, much work is underway to combat this.

While there is still much to be done to reduce threats to River health, there is reason for optimism that the significant investments being made by governments and the behavioural changes being made by individuals and communities today will redress the decline.

The Act provides an excellent framework for adaptively managing the River into the future. Coupled with programs being implemented throughout the catchment, the ongoing close monitoring of activities and developments along the River should continue to contribute to improvements in River health.

REFERENCES

Environment Protection Authority, 2003. The State of Our Environment – State of the Environment Report for South Australia 2003, Government of South Australia, ISBN 1 876 562 617

Department of Water, Land and Biodiversity Conservation, 2004. Environmental Flows for the River Murray – South Australia's Framework for Collective Action to Restore River Health 2005-2010, Draft for Consultation, October 2004, Government of South Australia

Murray-Darling Basin Commission, 2004. The Living Murray Environmental Works and Measures Program, November 2004, ISBN 1 876830 44 1

Murray-Darling Basin Commission, 2003. Living Murray Business Plan, November 2004, ISBN 1 921038 21 7

M Bradley and K Billington, River Murray and Lower Lakes Catchment Risk Assessment Project for Water Quality—Mannum to Mypolonga Trial, June 2005, *Environment Protection Authority South Australia* ISBN 1 876562 79 X

J Hill, Second Reading Explanation Introducing the River Murray Bill, South Australian Parliamentary Debates (Hansard) House of Assembly, 5 December 2002

The Living Murray Initiative website: http://www.thelivingmurray.mdbc.gov.au/

Environment Protection Authority website: http://www.epa.sa.gov.au/

Department of Water, Land and Biodiversity Conservation website:
http://www.dwlbc.sa.gov.au/

River Murray Catchment Water Management Board website:
http://www.rivermurray.sa.gov.au/

APPENDIX 1 – REGULATIONS

RIVER MURRAY REGULATIONS

The *River Murray Regulations 2003* (RM Regulations) came into operation on 24 November 2003. The RM Regulations establish the River Murray Protection Areas (RMPAs). There are two RMPAs – one for the main stem, floodplain and cliffs, the other for the tributaries. The RMPAs are the areas in which applications for activities prescribed under the related operational Acts must be referred to the Minister for the River Murray.

The RM Regulations also prescribe a number of minor mechanistic matters, including the prescribed rate of interest for outstanding debts and the manner of notification for certain processes.

The RM Regulations also provide that the Minister will consult certain prescribed bodies in relation to:

- Development of the Implementation Strategy under the Act; and
- Changes to a River Murray Protection Area.

The RM Regulations also require the Minister to consult the Local Government Association and regional local government associations when proposing changes to referrals of development applications under the *Development Regulations*.

NATIVE VEGETATION (RIVER MURRAY) VARIATION REGULATIONS

The *Native Vegetation (River Murray) Variation Regulations 2003* (NV Regulations) were made under the *Native Vegetation Act 1991*, and came into operation on 24 November 2003.

The NV Regulations remove an exemption that allowed the creation of access paths for pedestrians or vehicles within the River Murray Protection (Floodplain) Area. Given the relationship between riverside vegetation and river health, it is not considered appropriate for such an activity to be undertaken without native vegetation clearance consent.

The NV Regulations also modify the exemptions relating to fire management. The amendments require a fire management plan applying within the River Murray Protection (Floodplain) Area to be referred to the Minister for the River Murray before being approved by the Native Vegetation Council.

DEVELOPMENT (RIVER MURRAY) VARIATION REGULATIONS

The *Development (River Murray) Variation Regulations 2003* (Development Regulations) also came into operation on 24 November 2003.

The Development Regulations expand the definition of 'development' to include the placement or construction of infrastructure to take water, or drain water or other substances to, any part of the River. Such use of land has the potential to harm the River (in particular, the cliffs and banks), yet was not previously considered to be development for the purposes of the *Development Act 1997*.

The Development Regulations also reduce the threshold at which development within RMPAs is referred to the Environment Protection Authority (EPA), and raise the level of the EPA comment to 'direction' for all referrals.

APPENDIX 2 – FACT SHEET

Fact Sheet

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River Murray Act 2003

Referrals – exemption of certain outbuildings and farm buildings

This Fact Sheet should be read in conjunction with the Notice of Exemption from the Requirement to refer certain outbuildings and farm buildings which is available from your local Council and the Department of Water, Land and Biodiversity Conservation.

In brief

The River Murray Act 2003 sets up a referral system which means that you might need the approval of the Minister for the River Murray (the Minister) before undertaking certain types of activity. A Fact Sheet on Referrals is available from your local Council and also from the Department of Water, Land and Biodiversity Conservation.

Exemption of certain outbuildings and farm buildings

A domestic outbuilding is a shed, garage or similar building associated with domestic use of land. A farm building is a building associated with agricultural use of land. Development consent from your Council is normally required to construct these types of buildings.

The referral system means that within the River Murray Protection Areas, but excluding prescribed zones which are the main township areas (your Council can tell you where they are), your Council or relevant development authority must refer your development application to construct, extend or replace a domestic outbuilding or farm building to the Minister before approving it. The attached Map shows the River Murray Protection Areas.

The Minister has decided that not all development applications for these types of buildings need to be referred, and has gazetted an Exemption Notice to this effect. Development applications for outbuildings and farm buildings that meet the specifications in the Exemption Notice do not have to be referred to the Minister.

When will my outbuilding application be exempt from referral?

Your development application will be exempt from referral when it meets all of the specifications in the Exemption Notice. However, you will still need development authorisation from your Council or relevant development authority.

If your application is exempt you will not need to pay the referral fee, although you will still need to pay other applicable fees for your Council to process the application.

It is a condition of the Exemption that you must comply with all of the specifications in the Exemption Notice. Failure to comply with the condition is an offence under the River Murray Act 2003.

What specifications are in the Exemption Notice?

The Exemption Notice includes specifications for both domestic outbuildings and farm buildings. The specifications cover a range of topics including size, appearance, location, native vegetation, stormwater, pollution, erosion, landform and hydrology.

Government of South Australia

Department of Water, Land and Biodiversity Conservation

River Murray Act 2003

Referrals – exemption of certain outbuildings and farm buildings

Fact Sheet 38

Stormwater criteria

One of the specifications of the Exemption Notice is that the roof of the outbuilding or farm building must be connected to a rainwater tank if the floor area will be larger than 15m2.

The tank will need to have a capacity of 20 litres per metre squared of roof area. To make it easier for you to work out what size tank you will need, the table below shows the minimum tank sizes for different roof areas.

Native vegetation

For the purposes of the Exemption Notice, native vegetation will be taken to be vegetation that is indigenous to South Australia, was not planted or sown on the site by a person, and has a stem diameter (at its base) of 10 cm or more or is a shrub 50 cm or more in height. Clearance means the destruction of the plant.

Please note that even if you meet the criteria of the exemption notice relating to native vegetation and your application does not need to be referred to the Minister before you obtain development consent, you may still need to obtain a clearance consent or exemption under the Native Vegetation Act if there is to be any clearance of native vegetation. The Native Vegetation Act uses different definitions of 'native vegetation' and 'clearance' than this Fact Sheet. For further information about clearance of native vegetation, contact the Native Vegetation Council Secretariat on 8124 4700.

What if my application is not exempt?

If your application does not meet the specifications in the Exemption Notice, it will not be exempt from referral. You do not need to make the referral to the Minister yourself. The Council or relevant development authority will do this for you, but you will have to pay the prescribed referral fee. Your Council will be able to tell you what the referral fee is.

When an application is referred, the Minister will assess the application to determine what affect it might have on the River.

The Minister may allow your application to be approved, but if there are potential impacts on the river the Minister has the power to direct that conditions be imposed on the approval, should the application be approved by the relevant development authority. Where the impact on the River would be significant, and cannot be offset by conditions, the Minister can direct the relevant authority to refuse the application.

Your appeal rights are governed by the Development Act 1993. At the date of this Fact Sheet, you can appeal against a condition imposed at the Minister's direction, or against a refusal of the application at the Minister's direction (except where the outbuilding is development described in the relevant Development Plan as 'non-complying').

What else do I need to consider?

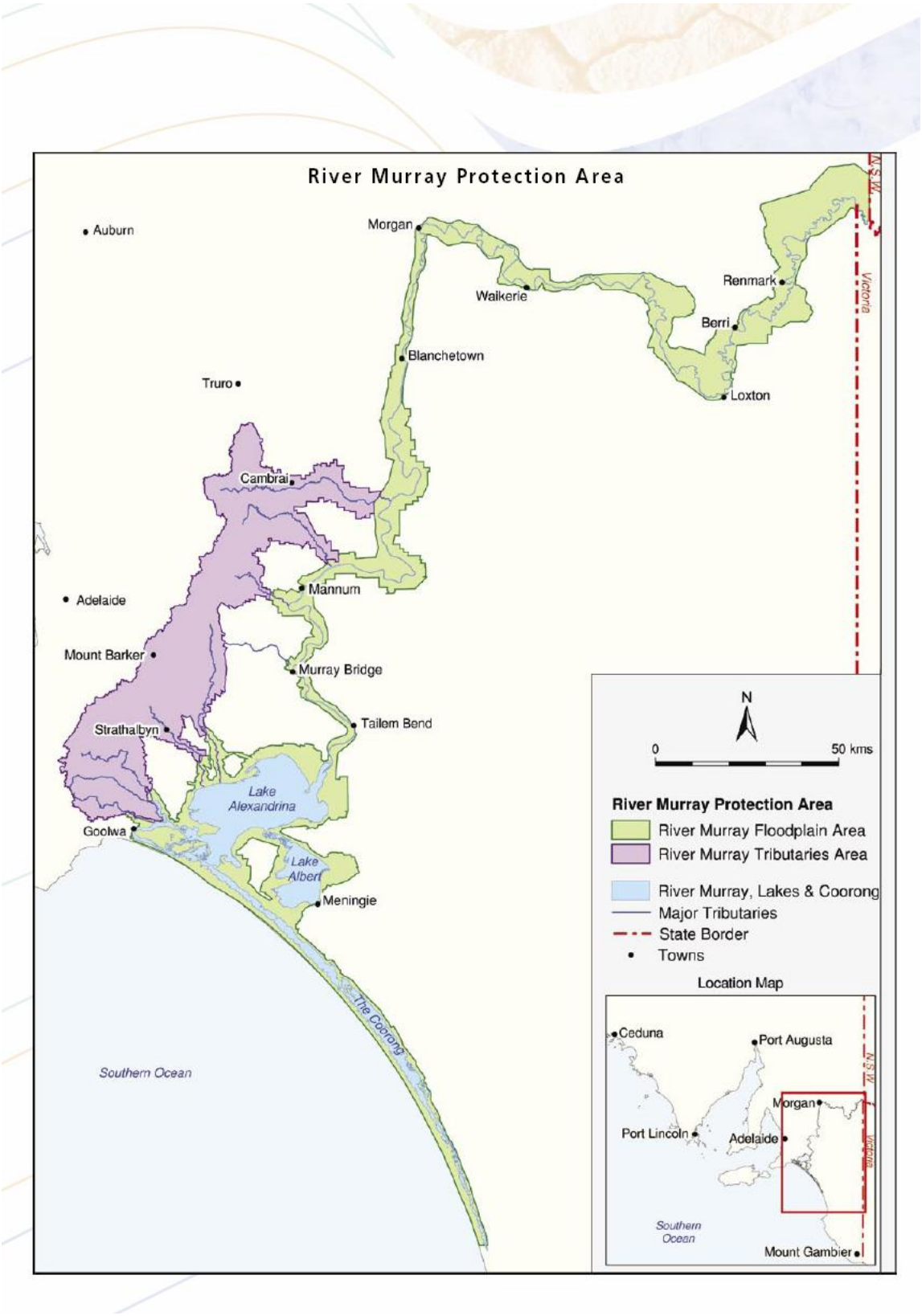
You have a 'duty of care' to take reasonable precautions to ensure that your actions do not cause harm to the River, whether or not your application was referred to the Minister. A Fact Sheet explaining the Duty of Care is available from your Council or the Department of Water, Land and Biodiversity Conservation.

It is recommended that apart from other precautions you might need to take, you do not store large quantities of petrol or other chemicals in an outbuilding.

If you wish to store chemicals, you should contact the EPA for advice on 8204 2004.

Many areas around the River Murray may be of Aboriginal cultural significance. It is an offence under the Aboriginal Heritage Act 1988 to disturb an Aboriginal site or object without authorisation. For further advice you should contact the Department for Aboriginal Affairs and Reconciliation on 8226 8900.

Outbuildings	Domestic or Agricultural					Agricultural only				
Roof area (m2)	15	20	30	40	50	60	70	80	90	100
Tank size (litres)	300	400	600	800	1000	1200	1400	1600	1800	2000


River Murray Protection Area
Auburn
Morgan
Renmark
Waikerie
Berri
Blanchetown
Loxton
Truro
Victoria
N.S.W.
Cambrai
Adelaide
Mannum
Mount Barker
Murray Bridge
Tailem Bend
Strathalbyn
Lake Alexandrina
Goolwa
Lake Albert
Meningie
The Coorong
Southern Ocean
N
0
50 kms
River Murray Protection Area
River Murray Floodplain Area
River Murray Tributaries Area
River Murray, Lakes & Coorong
Major Tributaries
State Border
Towns
Location Map
Ceduna
Port Augusta
Morgan
Port Lincoln
Adelaide
Southern Ocean
Mount Gambier

Further information

Department of Water Land and Biodiversity Conservation
Strategic Policy
Level 11, 25 Grenfell Street
GPO Box 2834
ADELAIDE SA 5001

Contact:
State and National Policy
Phone: (08) 8463 7991
Fax: (08) 8463 6998
Email: rivermurrayact@saugov.sa.gov.au
Website: www.dwlbc.sa.gov.au

Environment Protection Authority
GPO Box 2607
Adelaide SA 5001
Phone: (08) 8204 2004
Fax: (08) 8204 9393
Freecall: 1800 623 445 (country)
Internet: www.epa.sa.gov.au

Fact Sheets on the River Murray Act, the Referral System and the 'Duty of Care' are also available. Copies are available from Local Councils and development authorities along the River Murray, and from the Department of Water, Land and Biodiversity Conservation.

Disclaimer

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APPENDIX 3 – PROGRAMS AND PROJECTS

Programs and projects supported by the South Australian Government which contribute to the achievement of the Objects and Objectives for a Healthy River Murray of the River Murray Act 2003

The South Australian Government supports a wide range of programs that directly contribute towards the objects and Objectives of the Act. These programs are listed below against the relevant Objective. Many programs contribute to a number of Objectives, and for simplicity have only been listed under the Objecitve to which they most clearly relate. Programs have not been listed against the objects and Objectives of the *River Murray Act 2003*, as the Objectives provide a more detailed breakdown and encompass programs that relate to the Objects.

1.1 The key habitat features in the River Murray system are to be maintained, protected and restored in order to enhance ecological processes

- **River Murray Wetland Management Plan**

  A management plan is under development that guides future actions and investment for River Murray wetlands in South Australia.

- **Community Wetland Management**

  The River Murray Catchment Water Management Board has continued to contribute funding to wetland management projects run by community groups. A 'Condition Assessment Framework' for wetlands has been developed and tested, assisting the Board to prioritise works and investment. Baseline surveys of 39 River Murray wetlands have also been undertaken, which involve data collection on physical features, water quality, groundwater, aquatic macro-invertebrates, fish, frogs, birds, aquatic and terrestrial vegetation. This data enables community groups to produce wetland management plans that meet best practice. In March 2005 the Brenda Park/Scotts Creek Wetland Group became the first community-based group to be allocated a River Murray Wetland Water Licence for 1100 megalitres to manage 'their wetland'.

- **Wetlands Strategy for South Australia**

  A Senior Wetlands Officer has been employed to implement the Wetlands Strategy to improve the understanding and conservation of wetlands in South Australia, including in the Murray-Darling Basin.

- **Wetland Guideline Document**

  Wetland Guidelines have been developed, published and distributed that set the management standards that all wetland managers in South Australia must meet before a water licence will be issued.

- **South Australian Revegetation Framework**

  A pilot project has been undertaken in the Murray-Darling Basin to develop a framework to ensure data consistency in regional catchment revegetation programs. This framework will subsequently be applied State-wide.

- **Grazing Impact Assessment Project**

  In partnership with the Mid-North Grasslands Working Group, and funded by Land, Water and Wool Australia, the River Murray Catchment Water Board has a project officer to assess the impacts of different grazing regimes on watercourse health and weed translocation in the Burra catchment.

- **South Australian Land Resource Assessment**

  Soil profile and landscape data have been collected from agricultural districts in South Australia, including the Murray-Darling Basin, in order to maximise the sustainability and productivity of agriculture.

- **Review of Major New Land Releases**

  The Office of Sustainability is engaging with the Government's Land Management Corporation in reviewing major new land releases, to achieve advanced sustainable development outcomes that are consistent with Government policies, desired commercial performance of projects and site constraints.

- **Lower Murray Land use Integration Project**

  A tri-State collaboration between South Australia, New South Wales and Victoria is integrating land use data sources and mapping. This technology and learning can be applied in assessing the impact of farming practices on the River Murray.

- **Forest Land Resumption and Rededication**

  Four Forest Reserves within the MDB are being resumed, and rededicated as Conservation Parks under the National Parks and Wildlife Act. These will be managed as part of the protected areas network.

1.2 The environments constituted by the River Murray system, with particular reference to high-value floodplains and wetlands of national and international importance, are to be protected and restored

- **Coorong, and Lakes Alexandrina and Albert Ramsar Management Plan**

  The Coorong and Lakes Alexandrina and Albert are listed as Wetlands of International Importance under the Ramsar Convention. This status recognises the worldwide importance of the area as a waterbird habitat, particularly for migratory waders and waterfowl, and as a drought refuge. Through the implementation of this management plan awareness of Ramsar issues has been improved amongst key stakeholders. Wetland habitats in the Coorong and Lower Lakes floodplain within the Ramsar area are being identified and rehabilitated.

- **Ramsar Habitat Mapping and Planning Program**

  Detailed mapping provides information to Councils regarding conservation values contained within the Coorong and Lower Lakes Ramsar site. The results of this project will inform decision makers about the manipulation of water levels in the Coorong and Lower Lakes, support improved recreation planning and management and aid future zoning decisions.

- **Riverland Ramsar Site Management Plan**

  The Department for Environment and Heritage is drafting a management plan for the Riverland Ramsar site, in cooperation with landholders and the community. This will form an integral component of the Chowilla Environmental Enhancement Strategy.

- **Chowilla Integrated Natural Resource Management Project**

  A multi-disciplinary project that aims to enhance and restore the environmental values of the Riverland Ramsar Site by delivering environmental and salinity benefits to the Chowilla floodplain and the River Murray. The project takes an integrated natural resource management approach that includes adaptive management, community engagement, management of surface water flows and the construction of a salt interception scheme. Intensive investigations have been commenced into the physical impacts of salinity and flow management affecting the wetland values.

- **Wetland Management Plans at Chowilla**

  Development of wetland management plans is underway for four specific wetlands within the floodplain areas of Chowilla.

- **Integrated Floodplain Management Strategies**

  Integrated Floodplain Management Strategies have been initiated for the priority floodplains at Pike and Murtho. These strategies will be advanced as pilot projects to develop planning frameworks and implementation arrangements for floodplain management.

1.3 The extinction of native species of animal and vegetation associated with the River Murray system is to be prevented

- **Botanical Survey**

  An examination of the botanical composition and plant health of native vegetation within the Lower Murray Basin, with a particular focus on remnant populations was carried out in 2003-04. This was referenced against salt maps and models produced by the program to identify both current and future impacts of salinity on natural ecosystems and to identify biodiversity assets at risk from salinity so that appropriate management actions can be taken.

- **Impacts of Salinity on the Aquatic Invertebrate and Aquatic and Terrestrial Vertebrate fauna of the River Murray Floodplain in South Australia**

  The biological survey is assessing faunal communities and their relationship to salinity in the River Murray Valley from the New South Wales border to Murray Bridge. This survey follows prior groundwater assessments and a vegetation sampling and mapping program in the region, which examined a range of sites from 'natural' to highly salinised. A subset of these sites is being sampled for vertebrates and terrestrial invertebrates, along with sampling of aquatic invertebrates in associated River stretches.

- **Recovery of Threatened Biodiversity in the Murraylands**

  Threatened species and threatened ecological communities are priority issues under Natural Heritage Trust II. This project aims to increase understanding of the requirements of threatened species, in order to develop draft multi-species recovery plans for threatened fauna and nationally threatened plants.

- **Perennial Vegetation Protection and Revegetation Projects**

  Support, both through small grants and technical advice, continues for community groups to undertake investigations that identify high priority sites for biodiversity conservation and to provide incentives to landholders to protect and re-establish perennial vegetation.

- **Implementation of the Black-eared Miner Recovery Plan**

  This project will make a major contribution to the conservation of one of Australia's most endangered birds, the Black-eared Miner (*Manorina melanotis*). It will also directly benefit a number of nationally threatened species such as the Malleefowl (*Leipoa ocellata*), Major Mitchell's Cockatoo (*Cacatus leadbeateri*), White-browed Treecreeper *(Climacteris affinis),* Striated Grasswren *(Amytornis striatus),* Hooded Robin *(Melanodryas cucullate),* Chestnut Quail-thrush *(Cinclosoma castanotus)* and Red-lored Whistler *(Pachycephala rufogularis).*

- **River Red Gum Investigations & Remedial Flooding**

  Following the completion of the MDBC Technical Report '*Preliminary Investigations into Observed River Red Gum Decline along the River Murray below Euston'*, further investigations have been undertaken, including modelling and mapping of tree health at Chowilla and development of future projects.

- **Freshwater Fish Action Plan**

  Specimens of fish in the South Australian Museum are being classified to provide foundational information on the presence of species and their distribution over time. This will feed into the development of statuses for freshwater fish, and actions plans for their conservation. Freshwater fish will also be provided legislative protection through being listed in Schedules of the *National Parks and Wildlife Act 1972*.

- **River Murray Native Fish Monitoring**

  A fishery-independent research and monitoring program has been initiated to facilitate data collection for the assessment and effective management of native

fish populations. A three-year sampling program will monitor biological performance indicators of Murray Cod and Callop, which aims to gain an understanding of the biology, ecology and stock status for South Australian populations of these species.

- **Protecting biodiversity on Narrung Peninsula through integrated vertebrate pest control**

  The impact of feral animals is the single greatest threat to biodiversity in habitat remnants on Narrung Peninsula, which supports migratory waders and the nationally endangered Orange-bellied Parrot and Sandhill Greenhood Orchid. This project aims to build on the Narrung Peninsula Rabbit Eradication Project by completing destruction of all rabbit warrens and by reducing fox, cat, hare, goat and deer numbers through integrated control programs. The near island geography of the peninsula means controls will have lasting benefits for biodiversity.

- **A Landscape Approach to Determine the Ecological Value of Scattered Trees**

  This project runs from 2001 to 2005, investigating the contribution of scattered trees and small remnants to native vegetation cover targets within two regions of agricultural South Australia that are typical of woodland within the Murray-Darling Basin. Critical zones are being identified across the landscape where scattered trees and clumps of trees in cleared agricultural land make a significant contribution to biodiversity conservation. This will result in the development of guidelines that can be used in other regions to evaluate the ecological value of scattered trees, and strategies for identifying revegetation sites on a landscape scale.

- **Carp Ecology in South Australia**

  In order to improve control of carp in the Murray-Darling Basin, this project addresses priority knowledge gaps for carp in South Australia and investigates novel control measures, including pheromone attractants/repellents and Cyprinid (carp) specific biocides. The project is funded by the Pest Animal Control Cooperative Research Centre, and will contribute to the development of an Integrated Pest Management plan for carp in the Murray-Darling Basin, with specific application to “Daughterless Carp” technology.

- **National Park Pest Plant and Animal Control**

  Pest plant and animal control has been undertaken in National Parks along the River Murray on an ongoing basis, working with adjacent landowners in order to maximise the benefits to the community and the effectiveness of control within the Parks.

- **Golden Dodder and Branched Broomrape Eradication Programs**

  Eradication of golden dodder and branched broomrape from along the River Murray has contributed to protection of environmental diversity and the economic viability of local communities.

- **Assessments of Native Vegetation Clearance and Heritage Agreement**

  Applications for native vegetation clearance and Heritage Agreements are assessed and enforced on an on-going basis, to ensure that biodiversity is protected in the Murray-Darling Basin.

- **Stockyard Plain Basin Revegetation**

  Rehabilitation, revegetation and management of the land surrounding the Stockyard Plain Saline Disposal Basin with Indigenous plants of local provenance is continuing.

1.4 Barriers to the migration of native species of animal within the River Murray system are to be avoided or overcome

- **Construction of Fishways**

  As part of the Murray-Darling Basin Commission's plan to restore native fish passage along the River Murray between Lake Hume and the sea between 2003 and 2008, fishways have been constructed at a number of Locks and Weirs. For example, vertical-slot fishways were completed at Lock and Weir 8 in November 2003 and Lock and Weir 7 in June 2004. A vertical-slot fishway and rock-ramp fishway was also completed at Tauwitchere Barrage in June 2004.

- **Murray Barrage and River Murray Fish Passage Assessment**

  As part of the MDBC fish passage program a range of types of fishways are being installed for trials at the barrages at Goolwa and Tauwitchere, prior to wider application. SARDI is collecting baseline data on the potential migratory fish species, comparing the relative efficiency of the fishway options, conducting specific fishway experiments to optimise final fishway design, placement and operation, and gauging the success of the fish passage at the Murray Mouth barrages. Simultaneously, a tri-state collaborative project between SARDI, Arthur Rylah Institute, Victoria, and NSW Fisheries is assessing the success of a series of eleven vertical slot fishways.

- **Swimming Ability of Small Native Fish Species in the Lower River Murray**

  An investigation of the swimming ability of three species of small-bodied native fishes of the lower River Murray is being carried out to optimise the design of culverts and regulators to enhance fish passage within and between in-channel and off-channel habitats (eg. wetlands). The experimental component of the project is being undertaken by an Honours student at the University of Adelaide, with supervision and analysis by SARDI and funding from the River Murray Catchment Water Management Board.

2.1 Ecologically significant elements of the natural flow regime of the River Murray system are to be reinstated and maintained

- **The Living Murray Initiative**

  South Australia has provided pivotal support in the development of the Murray-Darling Basin Ministerial Council's program to restore the health of the River

Murray by recovering 500 Gigalitres per year of new water over a period of five years and focusing on six ecological assets (SEAs). South Australia's contribution has included identification of potential infrastructure projects to recover water, organization of an interjurisdictional drafting group to develop a Living Murray Business Plan, and assessment of the economic impact in South Australia of several water recovery scenarios, including the determination of the value of primary production that derives specifically from Murray River Water. In December 2004, the Murray-Darling Basin Commission released the Living Murray Business Plan, which details how the 'First Step' decision will be achieved.

- **Draft Environmental Flows Strategy**

  In order to deliver the Living Murray Initiative in South Australia, a strategy is currently under development to give a framework for collective action to deliver environmental flows. The strategy will address the 'First Step' of recovering 500 Gigalitres for environmental flows over 5 years, and delivering flows to significant ecological assets. In South Australia ecological assets are the main River channel, the Chowilla floodplain and the Lower Lakes, Murray Mouth and Coorong. The strategy also sets out a clear vision for water recovery and flows beyond this 'First Step', including the State Government's commitment to pursue the return of a minimum of 1500 Gigalitres to the River Murray over 15 years.

- **Asset Environmental Watering Plan: Lower Lakes, Coorong & Murray Mouth Significant Ecological Asset**

  Environmental watering plans are being developed that identify the specific watering regime (volume, timing and security) for each of the six Significant Ecological Assets (SEAs) identified under the Living Murray First Step Decision. A range of investigations have been undertaken to inform the development of the Environmental Watering Plan for the Lower Lakes, Coorong and Murray Mouth SEA. These include a Morphological Model for the Murray Mouth, a Lower Lakes Socio-Economic Study and a Murray Mouth Decision System to inform sand pumping.

- **Save the River Murray Levy**

  The Save the River Murray Levy was introduced on 1 October 2003 under the *Waterworks Act 1932* and establishes the *Save the River Murray Fund* that is held by the Minister for the River Murray. Raising approximately $18 million per annum, the Save the River Murray Levy contributes to a program of works and measures to address the declining health of the River Murray in South Australia and increasing community demands for a high security of good quality water for urban and irrigation purposes. The program, known as the River Murray Improvement Program, is integrated within a larger program of works and measures formulated through the Murray-Darling Basin Initiative.

  The program in 2004-05 contributed to the construction of salt interceptions schemes at Loxton and Bookpurnong, construction of fishways, dredging of the Murray Mouth and the watering trials on the Chowilla Floodplain through the State's contribution to the Murray-Darling Basin Commission. Negotiations are underway on securing additional environmental flows through water recovery

packages as part of South Australia's commitment to the COAG agreement to address over allocation in the Murray-Darling Basin. The Save the River Murray Levy has also contributed to the recovery of the River through the following activities:

- implementation of the River Murray water allocation plan;
- salinity accountability;
- scientific research and information;
- environmental flows and wetland management;
- water quality improvement;
- conserving the River Murray's ecology;
- upgrading the River's waste disposal stations and drainage disposal system.

- **River Murray Environmental Flows Fund**

  A joint South Australia – Victoria fund to secure increased environmental flows for the River Murray as part of The Snowy Package, funding the 'Water for Wetlands' project, 'sewer mining' in Port Augusta and a Lake Mokoan water savings project.

- **National Water Initiative**

  The State Government has contributed funds and expertise to a Council of Australian Governments project which aims to ensure ecosystem health, improve the security of water access entitlements, improve water use efficiency by expanding water markets, and encourage urban water conservation.

- **Wetlands for Water**

  A system of careful management of selected wetlands is being developed to reduce water use while retaining elements of the water regimes that support the biodiversity of the wetlands. The water saved through this management can be used to provide priority environmental flows elsewhere in the River Murray system.

- **Weir Pool Lowering Project**

  In preparation for proposed weir pool level manipulation exercises in 2004-05, ecological baseline information has been collected in selected River reaches, and hydrogeological and hydrological assessment has been undertaken to determine salt returns to the River Murray from wetlands and backwaters.

- **Control of Lake Victoria**

  SA Water is operating this off-stream water storage in New South Wales under a plan of management that protects cultural heritage and enhances vegetation growth on the bed and shores of the lake. The operating regime has been revised from a previous system of filling to full during the winter and drawing down as required for irrigator needs, to an extended period of being held down that facilitates plant establishment.

- **Eastern Mount Lofty Ranges Prescription Investigations**

  A "notice of intent to prescribe" the Eastern Mount Lofty Ranges water resources occurred during 2003-04. A series of hydrological and ecological investigations

were undertaken underpin the prescription of these resources. These included surveying land use, assessing the current status of surface water and groundwater resources, the interaction of surface and groundwater in the Marne/Saunders area, a peer reviewed report published on the environmental water requirements of the Marne catchment and identification and mapping of water-dependant ecological assets in the Angas and Tookayerta catchments.

- **River Murray Drought Response Strategy**

  The extended dry period across much of the MDB between 2001-05 resulted in reduced water availability across the River Murray system, and the introduction of restrictions on the taking of water from the River Murray during 2003-04 that were extended into 2004-05. A simple, transparent policy framework was developed in 2003-04 for the management of River Murray water resources during drought periods, to improve clarity for water users.

- **Water Resource Allocation**

  Ongoing monitoring and enforcement of water extraction from the River Murray within South Australia, in accordance with the requirements of the *Water Resources Act 1997* and the River Murray Water Allocation Plan.

- **Water Use Efficiency Training Program**

  Rural Solutions SA have been providing on-farm training to irrigators in the Murray-Darling Basin on drought management strategies and responding to water restrictions.

- **Controlling water-affecting activities**

  Assessment of applications for water affecting activities, which covers dam construction, excavation in a watercourse, drainage and effluent use has been bolstered by the development of assessment policies and a risk assessment framework using a GIS-based approach.

- **Water Proofing Adelaide**

  A strategy has been developed to ensure a sustainable water supply for Metropolitan Adelaide for 2005 to 2025. The strategy sets out a blueprint for the management, conservation and development of water resources. The strategy was developed with extensive community consultation to ensure it is cost effective, environmentally sustainable and in line with community expectations. The strategy aims, amongst other things, to reduce the reliance of the Adelaide community on the River Murray.

- **Permanent Water Conservation Measures**

  In order to reduce the urban and domestic consumption of water, including water from the River Murray, water restrictions were introduced to parts of the State on the 1 July 2003. These were replaced by permanent water conservation measures on 26 October 2003. In conjunction with extensive community education the conservation measures have resulted in a reduction in water use of approximately 10%, which compares favourably to worldwide results for restriction programs.

- **Water Conservation Home Audit Pilot**

  A pilot study of home water conservation audits by the Riverland Energy and Water Friends group. Audits of individual households have assisted the community to voluntarily reduce domestic water consumption by identifying areas where conservation is possible, and facilitating the adoption of water saving devices within households.

- **Mawson Lakes Dual Reticulation Development**

  The Mawson Lakes project aims to reduce the use of traditional surface water supplies, including the River Murray. Reused water from the Bolivar Wastewater Treatment Plant is combined with stormwater and supplied through a second reticulation system to Mawson Lakes, providing water for non-potable uses, such as landscaping.

2.3 Significant improvements are to be made in the connectivity between and within the environments constituted by the River Murray system.

- **Murray Mouth Management**

  The Murray Mouth Advisory Committee has overseen a group of activities to ensure that the River Mouth is kept open and that the Coorong and Lower Lakes are managed to provide both for the economic and ecological health of the region. Dredging, which commenced in October 2002, has continued throughout 2004-05 to ensure that the River Mouth remains open to protect the ecological health of the Coorong. The development of a sophisticated computer model to describe the sand deposition process at work at the Murray Mouth has continued and the model is now being trialed.

3.1 Water quality within the River Murray system should be improved to a level that sustains the ecological processes, environmental values and productive capacity of the system

- **The Environment Protection (Water Quality) Policy 2003**

  The Water Quality Environment Protection Policy (EPP) came into operation on 1 October 2003. The EPP's main objective is to achieve the sustainable management of South Australian waters, including the waters of the River Murray, by protecting or enhancing water quality while allowing economic and social development. The EPP provides South Australia with a consistent approach to the management of water quality and brings the State in line with the National Water Quality Management Strategy. The launch of the EPP involved targeted communication with Local Government and across agencies, and the Support Unit within the EPA has provided ongoing training and support for Local Government authorised officers.

- **River Murray Water Quality Risk Assessment**

  A River Murray Water Quality Risk Assessment is being conducted that will identify the nature and location of all potential sources of pollution between the South Australian/Victorian border and the Lower Lakes by the end of 2005, so that action can be taken to protect water quality in the River where its needed most. In 2003-

04 joint State and Australian Government funding was secured for the project, a risk assessment unit was established in the EPA Murraylands Office and a trial risk assessment was completed in the section of the River Murray between Mannum and Mypolonga. The trial was used to develop a risk assessment methodology that will be implemented across the entire River and Lower Lakes.

- **Water Quality Codes of Practice**

  A number of industry and activity based water quality codes of practice that relate to the River Murray have been initiated including: Vessels on inland waters, Wastewater Overflow Management, Marina and Boating Management, Materials Handling on Wharves and Industry, Retail and Commercial stormwater management. Consultation on these codes will be integrated with the regional communication strategies on the Water Quality Environment Protection Policy.

- **River Murray Houseboat Waste Disposal Stations Upgrade**

  There are twelve waste disposal stations located along the South Australian length of the River Murray. The stations provide black water pump-out facilities to houseboats using the River Murray. A project funded through the River Murray Improvement Program commenced in 2003-04 to upgrade several of the facilities.

- **Loveday Evaporation Basin Odour Control Project**

  The rehabilitation of the Riverland irrigation areas, combined with improved irrigation practices, has seen a significant reduction in the amount of irrigation drainage water generated. This has allowed a review into the number of irrigation drainage basins required which has resulted in the decommissioning of the Loveday Drainage Basin. The basin is being dried as part of the implementation of a long term management plan for the area, however the drying process has resulted in the generation of disagreeable odours which has had an impact on adjacent landowners and people living in the Cobdogla township. This project is working with a community reference group to address this issue, by means of a controlled drying, together with the trialing of various odour control methods. Investigations have also commenced into the feasibility of rehabilitating the basin to be a functioning wetland.

3.2 The impact of salinity on the ecological processes and productive capacity of the River Murray system is to be minimised

- **Delivering improved Water Use Efficiency Across the Murray-Darling Basin**

  This three-year project is developing methodologies and tools to standardise Water Use Efficiency reporting on a variety of scales, from individual farms to catchments. The project has developed three prototype tools, the Irrigation Inventory Tool, the Water Use Efficiency Module and a Farm Level Water Management Module. The tools are being implemented commencing in 2004 as a component of the Land and Water Management Plan Case Study Project. On-ground activities included 480 irrigators participating in 29 irrigation management courses, 187 irrigators involved in the scheduling program, digging 504 soil survey pits and installing 183 floating flag test wells.

- **Salinity Impacts on Lower Murray Horticulture**

  The 'Tri-State Salinity Project' is a collaborative project between Victoria, New South Wales and South Australia, with cash funding from Land and Water Australia, Murray-Darling Basin Ccommission and the River Murray Catchment Water Managemment Board. Stage 1 of the project, completed in June 2004, concluded that the leaching efficiency of soils could determine the upper limit of irrigation efficiency for salinity sensitive horticulture in the Lower Murray region, and that ambient salinity in the crop root zone increases with increasing irrigation efficiency. This project will expand to include detailed field investigations, model calibration and an economic assessment of the potential salinity impacts on growers' returns from different crops grown under highly efficient irrigation practices. Outcomes from the study will be used for irrigation policy development, River flow regime management and planning and design of salinity mitigation works.

- **River Murray Salt Interception Program**

  This program address the threat of salinity to the River Murray and its floodplain environments by detailed monitoring of salt loads, assessment and prioritization of locations for salt interception infrastructure, and development of a Regional Saline Disposal Strategy. Salt Interception Schemes (SIS) reduce the salinity of the River Murray and its floodplains by pumping saline groundwater to evaporation basins, allowing irrigation induced salinity impacts to be offset. The Woolpunda and Waikerie SIS continue to prevent approximately 350 tonnes of salt per day entering the River Murray. In 2003-04 the Waikerie Stage 2A SIS scheme was commissioned. In 2004-05 construction continued on the Bookpurnong Salt Interception Scheme and commenced on the Loxton Scheme.

- **Salinity Zoning Policy**

  Irrigation development and other actions that will result in salinity impacts on the River Murray are being directed to locations where they will have a low salinity impact, or to salt interception scheme zones, and away from areas where they will have a more significant impact on the salinity of the floodplains and River Murray. A report has been prepared on the socio-economic impacts of separating the Riverland into high and low salinity impact zones. A new salinity zoning policy commenced on 1 July 2005, building on the interim salinity zoning policy that was in place since 2003.

- **River Murray Salinity PAR**

  The Minister for Urban Development and Planning initiated a Ministerial Plan Amendment Report (PAR) in January 2004, which will affect the Development Plans for Councils along the River Murray. The PAR will seek to align land use policies with the levels of risk from salinity along the River Murray by restricting new irrigation to less sensitive areas.

- **Lower Murray Landscape Futures**

  This collobarative project by the Land Technologies Alliance will develop long term planning and evaluation to allow communities and government to assess the impact of regional natural resource management plans and strategies on the well

being of the community. By analysing the impacts of plans on land-use change using integrated models, this project identifies gaps in range of current plans, and develops future options and scenarios for the Lower Murray Region.

- **Assessing Impacts of Land and Water Management on Floodplain Health**
  The aim of this project is to identify those areas of floodplain at greatest risk of degradation and to facilitate improved management of the impacts of land and water management on floodplain health. The first phase of this project involved completion of a GIS based model that predicts floodplain degradation for the entire River Murray floodplain in South Australia and an extensive native vegetation, native vegetation health and physical floodplain survey.

- **Upper South East Dryland Salinity and Flood Management Program**
  This program was developed to combat increasing salinisation in the Upper South East, by constructing drains that remove saline groundwater and surface water and lower the water table. The Coorong sub-program monitors and manages discharges of saline drainage water from this scheme into the Coorong, in order to optimise the ecological character of the Coorong.

  The infrastructure component of the Upper South East Dryland Salinity and Flood Management Program (USE Program) consists of 665km of open drains being constructed of which 255 km of drains were previously constructed under Natural Heritage Trust. Construction of the Northern Catchment Drainage System commenced in April 2004 and was completed in early December 2004. Construction works on parts of the Central Catchment Drainage System commenced in April 2005 and are close to completion.

  The project also includes a Biodiversity Offset Scheme. The function of the Scheme is to conserve biodiversity values through management covenants and incentives and to offer landholders the opportunity to meet their required contribution to the USE Program in kind rather than in cash. Approximately 260 expressions of interest have been received from landholders.

- **Salinity Impact Management System**
  Application and development of GIS based salinity impact assessment tools for the River Murray has continued.

- **Groundwater Salinity Risk in the Murray Basin Assessment**
  Assessment and modelling of future salt trends to the River Murray from native vegetation clearance has continued.

- **South Australian Field Evaluation Program: CRC for Plant Based Management of Dryland Salinity**
  A sub-program of this major project is assessing perennial grasses and legumes as alternative forage in pastures to reduce the level of groundwater recharge close to the River Murray.

- **Multipurpose Biomass Industry Development**

  This project is promoting an understanding of the economic feasibility of commercial production systems based on perennial plants along the River Murray Mallee corridor in South Australia, in order to reduce salt load into the River.

- **Viticare On-Farm Trials**

  This project aims to improve the sustainability of the viticulture industry, including workshops to train vineyard managers in the use of the Viticare Environmental Risk Assessment tool, a demonstration site using Indigenous perennial plant species for mid-row management, and trials for Regulated Deficit Irrigation, which maintains fruit quality while reducing water use.

- **Wine Industry Partnering Strategy**

  This partnering strategy between the South Australian Government and the wine industry has been developed to ensure ecologically sustainable management of South Australia's natural resources.

- **Noora Irrigation Drainage Disposal Basin Assessment**

  The Noora Drainage Disposal Scheme was commissioned in 1982, to take irrigation drainage water from the Berri and Renmark Irrigation districts. This project is working with adjacent landholders to finalise individual agreements.

3.3 Nutrient levels within the River Murray system are to be managed so as to prevent or reduce the occurrence of algal blooms, and to minimise other impacts from nutrients on the ecological processes, environmental values and productive capacity of the system

- **Lower Murray Reclaimed Irrigation Areas Restructuring and Rehabilitation Program**

  This project aims to restructure and rehabilitate reclaimed irrigation areas used principally for dairy farming. Its benefits will be improved long-term viability of farm businesses, increased irrigation water use efficiency and reduced discharge of nutrients and pathogens to the River Murray. This project includes introducing increased and more easily tradeable water allocations, funding a restructuring package to promote farm rationalisation, providing financial assistance to irrigators with the cost of infrastructure works, developing an Environment Improvement Program for each farm in the reclaimed irrigation areas and introducing and enforcing new environmental standards for irrigated dairying. Supporting this work has been extensive water quality monitoring, a trial of drainage water reuse to reduce water use and runoff-levels, and GIS land capability assessment to determine which alternative industries may be suitable for the land.

- **Improved Effluent Management along the River Murray**

  A desk top audit on centralised domestic effluent volumes was completed, including current and proposed effluent re-use projects, as the basis for a wastewater re-use strategy for the region.

3.4 The impact of potential pollutants, such as sediment and pesticides, on the environments constituted by the River Murray system is to be minimised

- **Stormwater management**

  All River Murray and Lower Lakes Councils now have stormwater management plans, with the completion of Alexandrina and Coorong Council's plans in 2003-04. Water quality community grants went to stormwater quality monitoring in the Rural City of Murray Bridge, and the design and construction of a Gross Pollutant Trap and the Narooma Wetlands.

- **Reuse of stormwater and drainage water**

  A desktop audit detailing Councils and townships that are proposing to undertake stormwater harvesting for re-use was completed as the basis for a comprehensive Stormwater Re-use Strategy for the region.

4.1 A responsive and adaptable approach to the management of the River Murray system is to be implemented taking into account ecological outcomes, community interests and new information that may become available from time to time

- **River Murray Integrated Environmental Monitoring Program**

  A biophysical monitoring program was developed to determine the ecological benefits to the River Murray system of flow manipulation, salinity and other management actions.

- **Active Adaptive Management Guidelines**

  The project is developing Active Adaptive Management guidelines and initiating 13 demonstration projects covering the range of on-ground works being undertaken in the region including revegetation, biodiversity management, wetland management, erosion control, grazing management, weed and pest animal control and protection of Indigenous culture and resources.

- **Adaptive Management Wetland Demonstration Site**

  Management of the degraded Loveday Swamp is being carried out to restore its ecological values. Ongoing monitoring of the wetland will enable refinement of the management system, resulting in a 'best practice' wetland management system that will provide a template for wetland management initiatives across the Murray-Darling Basin.

- **Lower River Murray Draw-down Monitoring Project**

  As part of the National Action Plan for Salinity and Water Quality Monitoring, monitoring was undertaken to assess the draw-down in water level on the ecosystem components of the Murray River below Lock 1, specifically the Lower Lakes and Coorong. Monitoring included tracking the impact of changing water levels on trees, fish, birds, water quality or groundwater in the River and lake systems. The results will form the basis of a Drought Monitoring Report.

- **Monitoring Ecological Outcomes from Barrage Releases**

  Monitoring has been carried out on the ecological impacts on the Murray Mouth and Coorong from a managed release of freshwater through the barrages. The sampling included water quality, phytoplankton, zooplankton, macro-invertebrates, fish and food resources for birds. A key component was focusing on the impact of native fish ecology, and spatial and temporal variations of the catch of key commercial species.

- **Sustainable Rivers Audit**

  The South Australian component of the Basin-wide Sustainable Rivers Audit (SRA) was implemented in 2003-04. The SRA is a framework for assessing the health of the Murray-Darling river system that aims to provide a robust environmental assessment and reporting process in a consistent, comparable and ongoing manner, across Basin valleys through time.

- **State of the Environment Report**

  The EPA is responsible for the preparation of a State of the Environment (SoE) Report at least every five years. The latest State of the Environment Report was released in November 2003, and specifically assessed the state of the River Murray against the *Objectives for a Healthy River Murray* under the *River Murray Act 2003,* in accordance with the requirements for such an assessment under Section 112 (3)(ab) of the *Environment Protection Act 1993*.

- **On-ground Stream monitoring**

  Stream flow and salinity loggers, water level probes and rainfall station gauges were installed in the Eastern Mount Lofty Ranges in 2003-04 and continue to be monitored.

- **Ongoing Monitoring of the Lower Lakes and Coorong**

  Extensive monitoring including water levels, water quality, salinity, and ecology has been enacted on an on-going basis. Selected sites were upgraded with telemetered capability, with data managed and delivered through conventional and web-based systems.

- **State Groundwater Monitoring**

  Groundwater levels and salinity levels have been monitored to provide an ongoing assessment of the state and condition of State groundwater resources, especially with regard to land clearing, extraction and irrigation and salt interception schemes. This includes the River Murray and Eastern Mount Lofty Ranges regions.

4.2 the community's knowledge and understanding of the River Murray system is to be gathered, considered and disseminated in order to promote the health and proper management of the system

- **Aboriginal Consultation Program**

  A formal meeting was held in the Riverland with members of the Riverland Aboriginal Organisation Forum. A significant outcome of the meeting was recognition that considerable research had already taken place in the Riverland, but it was not coordinated, and Indigenous people have a strong desire to have it published in a way that will respect their ownership of this knowledge. A pilot project was undertaken with the Gerard Community, recording Indigenous stories on the meaning and changing nature of the River and its effect on the community's health.

- **Baseline community attitude survey**

  An extensive qualitative and quantitative survey of people within the River Murray catchment was undertaken in order to understand community attitudes, levels of understanding, and barriers to behavioural change. The survey was completed in 2003-04 and a detailed market research document was produced.

- **Drought Liaison Committee**

  A Drought Liaison Committee was established that consists of irrigators and industry representatives from along the length of the River Murray in South Australia. The Committee has provided significant input into decision-making on water restrictions and the Drought Response Strategy.

- **National Parks and Wildlife Consultative Committees**

  Consultative Committees for the Murraylands and Coorong and Lower Lakes provide avenues for community input into the management of parks and reserves.

- **River Parks visitor Facilities Development**

  Indigenous community representatives have provided advice to the Department for Environment and Heritage to protect and recognize sites of cultural heritage significance in the development of visitor facilities in the Murray River National Park.

4.3 The interests of the community are to be taken into account by recognising Indigenous and other cultural, and historical, relationships with the River Murray and its surrounding areas, and by ensuring appropriate participation in processes associated with the management of the River Murray system

- **Indigenous Engagement**

  Development of a comprehensive Indigenous Action Plan has commenced in line with CoAG directions to all Ministerial Councils. Site specific engagement process have been implemented for all major projects and where appropriate the local Indigenous community has been actively involved in the project, such as the

employment of two Indigenous Rangers as part of the Murray Mouth Sand Pumping Project.

- **Community Involvement and Awareness Strategy**

  The River Murray Catchment Water Management Board has developed a comprehensive three-year communications strategy, which aims to provide a coordinated and planned approach to driving community involvement and awareness. The strategy was based on research and consultation that identified target audiences, attitudes, understanding, and levels of involvement by the community in catchment management.

- **Regional Support Program - Land and Water Management in the Lower Murray.**

  This project supports and assist irrigators and communities to develop district level Land and Water Management Plans in the Lower Murray. The aim is to improve the sustainability of irrigation and reduce the impacts of irrigation activities on the River Murray. Local Guidelines for Land and Water Management Plans in the South Australian Murray-Darling Basin have been completed. 'Case Study' regions have been established which provide knowledge on effective delivery of facilitation and coordination services in the area. Three communities were focused on in 2003-04, specifically the Lower Murray Reclaimed Irrigation Areas, Mypolonga Woodlane irrigators and other highland irrigators.

- **Maintaining the Momentum**

  Commenced under the guidance of the INRM Group of the South Australian Murray-Darling Basin Inc (superceeded by the South Australian Murray-Darling Basin Natural Resources Management Board) this project seeks to ensure that the confidence and capacity of the community to undertake change continues to develop and that engaged communities are not lost. The project uses financial incentives and provision of technical advice to build on the work undertaken through LAP devolved grant on-ground works programs in the region, capitalising on the investigations undertaken by the Mallee Sustainable Farming Project. The skills of landholders were developed to evaluate and implement options to address a range of natural resources management issues such as dryland salinity, recharge, soil erosion, watercourse management and biodiversity decline.

- **Building community capacity and support for NRM in the South Australian Murray-Darling Basin**

  This project aims to provide resources that will enable community groups and individuals to further develop their understanding and capacity to play a meaningful role in natural resource management in the South Australian Murray-Darling Basin. The project employs a team of officers with a complementary skills base to provide effective linkages between the community, government and industry. These officers support the community to manage its natural resources, to successfully manage complex NRM issues in a rapidly changing institutional environment, to build capacity in areas such as leadership, education, team building, group development, managing change, adaptive management and the

development of partnerships and to recognise, incorporate and protect Indigenous assets, values and knowledge.

- **Regional Biodiversity Support**

  This project supports Landcare groups and landowners to develop implement and evaluate integrated programs to achieve regional biodiversity and natural resource management priorities. Landowners (including private landowners, State and local government and statutory authorities) will be supported to establish and effectively manage their land to contribute to a comprehensive, adequate and representative system of protected areas. Biodiversity conservation, vegetation protection programs (ie Heritage Agreements) and best practice management strategies will be promoted to landowners and recipients of Bushcare funding supported.

- **Salinity Response Team**

  The salinity response team provided expert knowledge to the regional INRM Group, community groups and landholders, supporting the development of technically sound Land and Water Management Plans and targets for salinity and water quality outcomes. Ensuring that the economic, environmental and social considerations are all incorporated in the plans, the salinity response teams also assisted community groups to identify and implement on-ground salinity management strategies.

- **Targeting the Long-term Protection and Active Management of Biodiversity "Hot-Spots"**

  The aim of this project is to target the long-term protection of significant areas of remnant vegetation outside the protected area network in the South Australian MDB region, and to increase the capacity and motivation of landowners to undertake required management and maintenance activities.

- **Eastern Mount Lofty Community Engagement Strategy**

  As part of the "notice of intent to prescribe" the Eastern Mount Lofty Ranges water resources, a community engagement strategy was developed and implemented. Media communication and fact sheets were utilised to inform the community about prescription, its implications for the community, ecology, and the water resources of the Mount Lofty Ranges. This was followed by a series of public meetings and a period for public submissions.

- **River Murray Youth Council**

  Development of a youth council, that addresses the management of the River Murray and the role of youth is continuing. The Council builds capacity, developing informed and active young leaders who can influence their generation. The Council attended and presented at the International River Health Conference and the OzGreen MyRiver conference in Goolwa. A junior youth environment group has also been established to open a pathway between primary and secondary school students.

- **Waterwatch**

  This is a major community education and engagement project. Waterwatch involves:

  - Water quality monitoring with 13 community groups and 42 schools at 90 sites
  - Quality control and data systems for community water quality monitoring
  - Delivering education sessions on water quality and catchment health to around 2800 students
  - Building teachers' capacity for environmental education through professional development sessions and writing four 'Teacher Resource Packs'
  - Holding forums for environmental education providers and teachers, to improve delivery and integration of environmental education in the South Australian Murray-Darling Basin. Recommendations from these forums, including mapping and printed resources, are now being progressed by working groups
  - Working in partnership with the Lions Club of Berri, Glossop High School and Berri Barmera Local Action Planning Group to develop interpretive signs about the environmental values and issues at Martins Bend
  - Mentoring students on the OzGreen MyRiver program, which involved water quality testing, identifying values, issues and concerns about the River Murray, and developing local action plans to achieve a vision for a healthy River

- **River Murray/ Mallee Dryland Corridor Market Based NRM Investment Program**

  As part of the revegetation investment strategy a thorough review is being undertaken of the social, economic and environmental setting for this project including the demography and aspirations of land managers, land & biological resources, groundwater resources, land use and production systems and the presence of salt interception schemes.

- **Community Engagement Strategy for Weir Pool Manipulations**

  A strategy was written to engage the community in weir pool manipulations planned for 2004-05. The strategy combines informing the community about the proposed manipulations and the resource and ecological issues, and engaging the community in the decision making about the implementation of these manipulations.

- **Friends of Riverland Parks**

  Supported by the Department for Environment and Heritage, this community group has undertaken a range of on-ground monitoring and rehabilitation programs, including surveys of Regent Parrots, Bush-stone Curlews, possums and rabbits, and revegetating areas of Murray River National Park with Native Pines.

- **South Australian Biodiversity Advisory Group**

  An advisory group was established to coordinate biodiversity conservation actions across the Murray-Darling Basin in South Australia, resulting in the development of the investment strategy for the Murray-Darling INRM Group. The group comprised members of Local Action Planning groups and biodiversity project staff from the Environment and Conservation portfolio and the RMCWMB.

4.4 The importance of a healthy River to the economic, social and cultural prosperity of communities along the length of the River, and the community more generally, is to be recognised

- **Greening Parliamentary Public Works Committee Submissions**

  All Parliamentary Public Works Committee submissions are now required to incorporate consideration of Ecologically Sustainable Development (ESD) principles. Criteria have been developed for agencies to address ESD in major projects, and in assessing projects for incorporation of appropriate sustainable building technology.

- **The River Festival**

  The second River Festival was held over a week in November 2003, with local residents learning about environmental issues by participating in workshops on sculpturing, handcrafts and film-making. A family day was held in Berri that celebrated the River Murray and showcased the results of these workshops, concluding with a dinner with speakers discussing their views on the current state of the River Murray environment.

- **Water Conservation Community Education**

  SA Water embarked on a major program of community education to inform the public about restrictions and permanent water conservation measures. This included the “Slow the Flow” TV, radio, press and bus back advertising, a “Slow the Flow” brochure delivered to all homes in South Australia, a range of fact sheets, SA Water website updates, presentations to community and interest groups and a two day gardening industry and community event at the Botanic Gardens. To support this campaign, SA Water also employed dedicated water conservation officers, established a 1800 hotline on water conservation, initiated a rebate scheme for water efficient household items, and formed partnerships with the Botanic Gardens of Adelaide and the Nursery & Garden Industry Association SA to educate the community about water wise gardening.

- **South Australian Museum Educational Program**

  Two projects were undertaken by the River Murray Catchment Water Management Board in collaboration with the South Australian Museum to bring science and environmental education about the River Murray to the community. An education display and activity called “Water our Most Precious Treasure” was developed and set-up at the South Australian Museum in Adelaide. During National Science Week 2004, the Museum held a road show in Mannum, with a debate between South Australian scientists for adults, and school students participating in science-based activities.

- **Maritime Heritage Program**

  This program protects and enhances community awareness of maritime heritage, including heritage along the River Murray. In 2003-04 information on maritime heritage sites was refined, updating the on-line GIS intragovernmental 'Coast Maps' and public access 'Atlas of South Australia', and distribution of the heritage booklet 'River Boat Trail' continued.

- **Waterwatch Curriculum Resource**

  The Waterwatch Curriculum Resource was completed in 2003-04, assisting teachers to integrate education on water quality and catchment health into the school curriculum, and plan their involvement in the Waterwatch program.

- **Community Information Material Development**

  Materials were published to inform the community and all levels of government about the *River Murray Act 2003*, including a First Users Guide, website and Fact Sheets. These publications are available on the DWLBC website: www.dwlbc.sa.gov.au.

- **Riverland television campaign**

  Four television commercials were developed to enhance community awareness and knowledge on aspects of catchment management, focusing specifically on Water tips, Community Grants, Waterwatch, and Irrigation Efficiency. These commercials were aired on WIN TV in the Riverland from August 2003 to February 2004.

- **Sustainable Recreation Support**

  A Sustainable Recreation Officer has been employed to enhance the amenity of the River Murray, and ensure that recreation is compatible with the sustainable use of the River. As part of this program, a River Murray Sustainable Recreation Site Planning and Implementation Guide has been developed.

- **Adelaide Thinkers in Residence**

  Adelaide Thinkers in Residence is bringing world-leading thinkers to live and work in Adelaide to assist in the strategic development and promotion of South Australia. Thinkers are challenging our beliefs, sparking fresh ideas and setting new directions for South Australia. As part of this program, Peter Cullen worked across agencies to bring his expertise and external perspective on water resource management in South Australia, culminating in papers and presentation on "Water and Sustainable Landscapes for SA" in 2004.