

Adelaide Dolphin Sanctuary

Management Plan
June 2008



Department
for Environment
and Heritage

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ADELAIDE
Dolphin
SANCTUARY



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Introduction

The objects of the ADS Act are to protect the dolphins in the Port River and Barker Inlet area and to protect the habitat on which they rely.

The Adelaide Dolphin Sanctuary (ADS) was established as a result of community concerns about the safety of the dolphins living in the Port Adelaide River and Barker Inlet and their environment. During 2002 the Government of South Australia undertook public consultation to gain an understanding of how the community wanted to care for these dolphins. In response to widespread support for increasing their protection, the government developed a specific Act of Parliament to provide more security for the dolphins and their environment. The Adelaide Dolphin Sanctuary Act 2005 (the ADS Act) was proclaimed in June 2005.

The objects of the ADS Act are to protect the dolphins in the Port River and Barker Inlet area and to protect the habitat on which they rely. It details six objectives as the means to achieve the objects (see Appendix 1).

The protection is provided through related content in 11 other Acts (Appendix 2) with operational and regulatory responsibilities in the area. The ADS Act establishes an advisory board of community members to advise the Minister for Environment and Conservation. It also requires preparation of a management plan to set out how the objects and objectives are to be achieved.

A draft of the Adelaide Dolphin Sanctuary Management Plan, informed by advice from the Adelaide Dolphin Sanctuary Advisory Board (see Appendix 3) and input from a range of government agency and community stakeholders, was prepared in 2007 and distributed to stakeholders for comment. This feedback has been incorporated into this final Plan.

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The Adelaide Dolphin Sanctuary environment

The ADS is an area of 118 square kilometres, located along the eastern shore of Gulf St Vincent. It includes the Port Adelaide River and Barker Inlet and from there it stretches around to North Haven Marina, then north around Outer Harbor and up the coast to the Port Gawler Conservation Park (see map in Appendix 4). The ADS is home to an estimated 30 or more resident Indo-Pacific bottlenose dolphins (*Tursiops aduncus*), with some 300 more dolphins thought to visit or have visited the area.

The area includes mangroves, seagrass, saltmarsh, tidal flats, tidal creeks and estuarine rivers all combining to provide habitat for the ADS dolphins and for their food resources. The ADS is also economically, socially, culturally and historically important. It contains infrastructure such as power plants that supply electricity for metropolitan Adelaide, a wastewater treatment plant for nearly 70% of the metropolitan area, significant industries employing many hundreds of South Australians, the state's major port with approximately 2,000 large vessel movements every year, new developments representing billions of dollars of investment, significant European and Aboriginal cultural and historical relationships, and important recreational activities including fishing, bird watching and dolphin watching. It is possibly the most intensively used marine waterway in South Australia. Despite the environmental impact of these human actions, the ADS still manages to sustain both this broad range of activities and an ecosystem that is able to support a range of marine life, including bottlenose dolphins.

There are, however, significant warning signs that remind us that the quality of the environment is diminishing. *Caulerpa taxifolia* has invaded the sea bed, extensive saltmarsh environments have been lost, water quality is not as high as it should be and some fish stocks within Gulf St Vincent waters are decreasing.

The Adelaide Dolphin Sanctuary is about much more than protecting dolphins, because we cannot protect them without protecting the environment where they live. The ADS must be about managing existing and future activities to support the viability of the environment on which we all rely.

The common goals – achieving the ADS objects and objectives

Historically, one of the main barriers to integrating environmental management in the Port area has been the lack of coordination across government agencies. The many diverse activities in this small area, both on land and in the water, may each be individually well managed, but they are not necessarily managed in consideration of each other, or in consideration of the cumulative environmental impacts of the activities.

There is currently no established process to collectively assess a range of diverse activities to determine their combined, long-term environmental impact. For example, it is relatively straightforward to look at one vessel's environmental impact on one voyage, but it is a very different prospect to consider all of the Port's vessel activities together over the course of a year. It is even more complicated to consider these vessel impacts in conjunction with the impacts of developments, industrial discharges and fishing activities. However, it is essential to attempt to gain this full understanding because it is the only way to assess the true nature and extent of the human influence on this environment.

The ADS Act provides a mechanism for integrated management of activities by defining specific environmental outcomes – protection of the dolphins and their habitat. The Act helps integrate management of the wide range of activities in the sanctuary area, including boating, fishing, pest management, mining and development activities, by requiring decision makers administering other legislation to have consideration of the ADS objects and objectives.

While it will still be difficult to assess the impacts of all activities, the unification of purpose is the first step in achieving this capacity and will also give a means of assessment over time.



The ADS Management Plan

Commitment

The purpose of the ADS Management Plan is to set out the Government of South Australia's plans to achieve the objects and objectives of the Act. It broadly charts the direction for government to pursue in partnership with the wide range of stakeholders who use and care about the area, the dolphins and their environment. This is a seven-year plan, and actions will be completed in stages over this period.

The Plan is structured around the achievement of each of the six ADS Act objectives. For each objective, the Plan describes issues to support its achievement, defines a strategic direction, makes a priority assessment, identifies government agency responsibilities and proposes actions to fulfil the strategy.

The Minister for Environment and Conservation through the Department for Environment and Heritage (DEH) is responsible for preparing and administering this Plan and managing the ADS. DEH will work with the other agencies responsible for furthering the objects and objectives of the ADS Act to implement the actions outlined in this Plan.

Supporting documents

The Management Plan is supported by four companion documents:

- **Three Reference Papers** compile specific information about the three main environmental objectives – Dolphins, Key Habitat Features and Water Quality. They are factually based and provide a summary of the information that has informed this Plan and may be updated as new scientific research becomes available and new initiatives begin. Additional reference papers may be compiled as required.
- **An Annual Implementation Program** forms part of the Minister for Environment and Conservation's Annual Report to the Parliament. This Implementation Program will set specific annual targets and tasks for the coming year to achieve the actions established by the Management Plan, and assess the achievement of the previous year's program.



developing an ethos of environmental stewardship throughout the community is the best way to achieve genuine ecologically sustainable development



This is the first time the Government of South Australia has attempted management of a complex marine environment by legislating requirements across government. The government is committed to ensuring that existing and future economic, social and recreational activities are ecologically sustainable. It will take time to make the changes necessary to achieve this ambitious goal, but developing an ethos of environmental stewardship throughout the community is the best way to achieve genuine ecologically sustainable development.

Further commitment to our marine environment was shown by the Government of South Australia in 2007 when the Marine Parks Act 2007 was passed, paving the way for the establishment of 19 new marine parks in South Australia by 2010.

The Adelaide Dolphin Sanctuary Management Plan



Objective 1 – Protection of dolphins

The protection of the dolphin population of the Port Adelaide River estuary and Barker Inlet from direct physical harm is to be maintained and improved.

ADS Act Section 8(1)(a)

Two types of activities will achieve this objective:

- Management of human activities to reduce the risk of potential physical harm to dolphins; and
- a range of long-term scientific research to increase understanding of the dolphin population and what is needed to ensure its sustainability.

Notes on Objective 1 issues

All of the issues identified to achieve this objective require education activities to support them. Specific education actions are detailed under Objective 5 – Promotion of the environmental importance of the ADS (Issue 5.1).

ISSUE 1.1

Lack of scientific knowledge about ADS dolphins

- Limited site-specific studies about South Australian dolphins have been undertaken.
- Comprehensive understanding about ADS dolphin demographics including information about numbers of males and females, age distribution, mortalities, and interactions with non-resident animals has not been reached. Without baseline knowledge, it will not be possible to assess the ongoing health of the population.
- Scientific research on dolphins within the ADS needs to be low impact and non invasive.

PRIORITY – High

STRATEGY

Increase knowledge about the ADS dolphins.

GOVERNMENT RESPONSIBILITY

- Protection of native animals and administration of ADS Act and Management Plan – Department for Environment and Heritage (DEH)
- Oversight of scientific research and provision of active guidance in respect to dolphins within the ADS – DEH

ACTIONS

- DEH will develop ADS dolphin research and monitoring requirements and, in conjunction with the Wildlife Ethics Committee, appropriate research criteria.
- DEH will support ongoing research into ADS dolphins and other South Australian dolphins where relevant and appropriate, and seek partnerships with local and interstate universities, the SA Museum and other researchers to explore possibilities for collaborative, low impact, non invasive research in the ADS.
- ADS staff will continue the collection of dead dolphins for examination by the SA Museum's Dolphin Trauma Group to inform the ADS dolphin research and monitoring program.

ISSUE 1.2

Vessel strike (commercial shipping, fishing and recreational vessels)

- Vessel strikes are a threat to marine mammals around the world.
- Dolphins may be struck by moving vessels resulting in injury or death. It can be difficult to determine if a strike occurs before or after death and strikes are not always fatal. The correlation between speed and type of vessel and the likelihood of strike is not certain.
- Since 1998, ADS dolphins have had one probable and one possible fatality. Considering the number of vessel and animal movements, the number of strikes is not high. The number of ADS animals with scars from non-fatal strikes is unknown.

PRIORITY – Medium

STRATEGY

Increase understanding of the number and nature of strikes in the ADS and implement preventative measures if required.

GOVERNMENT RESPONSIBILITY

- Vessel management and speed – Department for Transport, Energy and Infrastructure (DTEI)
- Animal welfare and safety – DEH
- Harbour management – DTEI and Flinders Ports

ACTIONS

- DEH will investigate reported vessel strikes and monitor the number of incidents as well as the specifics of incidents to determine any connections between vessel type and speed. The work of the Dolphin Trauma Group will support determination of vessel strike incidents.
- DEH and DTEI will review speed limits in the ADS to assess dolphin safety.
- DEH and DTEI will implement preventative measures as required.

ISSUE 1.3

Entanglement – in vessel and fishing gear

- Dolphins may become entangled in discarded fishing nets and other fishing gear (such as hooks and line from either commercial or recreational vessels), rope from any type of vessel, or from land-based fishing activities.
- Discarded fishing line is common in the ADS. There are a number of reports of non-fatal entanglements. Since 1998, one ADS animal is known to have died from infection from an embedded hook and one animal was rescued four times from entanglement.
- Comparison of the number of incidents against the number of animal movements and amount of discarded rope and gear, shows entanglement is not frequent.

PRIORITY – Medium

STRATEGY

Reduce the amount of fishing gear/discarded rope in the ADS.

GOVERNMENT RESPONSIBILITY

- Animal welfare and safety – DEH
- Commercial and recreational fishing regulation – Primary Industries and Resources SA (PIRSA) Fisheries
- Vessel management – DTEI
- Management of litter and debris – local councils, Environment Protection Authority (EPA)

ACTIONS

- ADS staff will maintain regular litter observations, including a litter monitoring program on Torrens Island.
- Undertake regular litter clean-ups.
- ADS staff will work with existing community education programs and undertake specific ADS education programs to increase awareness of the impacts of litter on dolphins and their habitat.

ISSUE 1.4

Intentional harm

- Intentional harm to dolphins is difficult to anticipate and prevent. While consequences for individual dolphins are high, intentional harm does not seem to be a major threat to the population.
- In 1998, two ADS dolphins were shot and the calf of one subsequently died. In 1999 one dolphin was stabbed. No perpetrators were found and no known incidents have since occurred.
- Penalties for causing deliberate harm to dolphins have been increased from \$30,000 to \$100,000 by the ADS Act.

PRIORITY – Low/Medium

STRATEGY

Maintain watching brief on ADS dolphins and carcasses collected to promptly identify any new incidents of deliberate harm.

GOVERNMENT RESPONSIBILITY

- Animal welfare and safety, administration of National Parks and Wildlife Act 1972, administration of ADS Act – DEH
- ACTIONS
- ADS staff will continue regular land and sea patrols of the ADS to ensure compliance.
- ADS education programs will increase awareness of the dolphins and support members of the public who report observations of any actual or potential incidents.

ISSUE 1.5

Impacts from human interaction

- ADS dolphins experience regular interactions with humans resulting in impacts from vessels (noise, movements, litter, people seeking interactions with the animals), other human caused noises, development activities, dredging and fishing. Such interactions are known to cause behavioural changes in dolphins. The extent and consequence of these are unknown.

PRIORITY – Medium

STRATEGY

Monitor behaviour of ADS dolphins to assess any changes that may occur.

GOVERNMENT RESPONSIBILITY

- Animal welfare and safety – DEH
- Vessel management – DTEI
- Commercial and recreational fishing regulation – PIRSA Fisheries
- Assessment of new developments – relevant planning authorities and prescribed referral authorities, including DEH (for Coast Protection Board) and EPA

ACTIONS

- ADS staff will maintain regular observation of resident animals to observe any major behavioural changes.
- DEH will maintain an overview of Australian and international studies of impacts of human interactions on dolphins to review findings that may be applicable to the ADS.



Objective 2 – Protection of key habitat features

The key habitat features in the Port Adelaide River estuary and Barker Inlet that are necessary to sustain the dolphin population are to be maintained, protected and restored.

ADS Act Section 8(1)(b)

Studies indicate that in order to survive in a location, a mammal population needs sufficient food, physical safety and a healthy ecosystem. It is not known why dolphins live in ADS waters but several reasons can be hypothesised.

It is likely that one reason dolphins remain in the ADS is because of the ready availability of their prey species, a fundamental component of the habitat supporting the dolphins. Habitat features, such as other animals and/or vegetation, necessary to sustain the fish and other marine animals on which dolphins feed must also be available. Features of any habitat are interconnected. The most certain way to protect one part of an environment is to protect the wider ecosystem of which it is a part.

It is also possible that dolphins live in ADS waters because they are sheltered from their main predators, sharks.

There are several water quality issues that fundamentally impact on many aspects of the ADS habitat. These include nutrient and pollutant discharges, and the introduction of ballast water that potentially contains pollutants and pest species. Although they impact on habitat features, these issues will be examined under Objective 3 – Water quality.

Notes on Objective 2 issues

The following key actions apply to most issues supporting achievement of this objective:

- development of a habitat research and monitoring program;
- development of management plans for Port Gawler and Torrens Island Conservation Parks.

Specific education actions are detailed under Objective 5 – Promotion of the environmental importance of the ADS (Issue 5.1).

ISSUE 2.1

Food supply

- Studies of South Australian bottlenose dolphins have identified their favoured prey species, some of which are present in ADS waters. While closures and net buy backs have reduced some fishing effort, stocks of some species may be under pressure due to habitat loss.
- No specific study of prey species of ADS dolphins has been done.

PRIORITY – High

STRATEGY

Identify favoured prey species of ADS dolphins and undertake any actions required to protect these species.

GOVERNMENT RESPONSIBILITY

- Conservation of marine biodiversity – DEH
- Commercial and recreational fishing regulation – PIRSA Fisheries
- Vessel management – DTEI
- Evaluation of new developments – DEH (for Coast Protection Board), EPA, relevant planning authorities with strategic support from Planning SA
- Improvement of water quality – EPA
- Catchment management and protection of native vegetation – Department of Water, Land and Biodiversity Conservation (DWLBC) (for Native Vegetation Council, and for Adelaide and Mount Lofty Ranges NRM Board)

ACTIONS

- Support research to determine specific prey species of ADS dolphins.
- DEH will work in partnership with PIRSA Fisheries and South Australian Research and Development Institute (SARDI) to build on existing research into the population health of prey species when identified.



ISSUE 2.2

Loss of vegetation: seagrasses, mangroves and supporting species

- Seagrasses and mangroves are key ADS habitat elements, directly supporting overall ecosystem health.
- Seagrass meadows have been lost and are under threat in a number of ADS locations.
- Mangrove health throughout the ADS is variable with some areas under threat and others expanding.
- Additional coastal vegetation and intertidal habitats (e.g. saltmarsh communities, intertidal mud flats and waterways) support the functions of the important vegetation habitats. Their functions in the maintenance of potential prey species are not fully understood. Significant saltmarsh losses have already occurred and existing stands are under threat from developments and mangrove encroachment.
- The potential impacts of climate change, including sea-level rise and increased storm action, may also impact on ADS habitat.
- All South Australian native vegetation is protected pursuant to the Native Vegetation Act 1991, except in some metropolitan areas. Much of the ADS is protected. In addition, the Fisheries Management Act 2007, section 77, prohibits removal of or interference with aquatic or benthic flora, including mangroves within aquatic reserves.

PRIORITY – High

STRATEGY

Determine overall health of ADS vegetation types and take action to address threats to specific communities.

GOVERNMENT RESPONSIBILITY

- Conservation of marine biodiversity and management of Crown Lands and Conservation Parks – DEH
- Protection of native vegetation – DWLBC (for Native Vegetation Council)
- Vessel management – DTEI
- Commercial and recreational fishing regulation, protection of aquatic and benthic flora – PIRSA Fisheries
- Assessment of new developments – relevant planning authorities and prescribed referral authorities, including DEH (for Coast Protection Board) and EPA
- Improvement of water quality – EPA

ACTIONS

- Building on existing work, undertake surveys of seagrasses, mangroves and supporting vegetation (including saltmarsh) in the ADS to determine overall health and possible areas for rehabilitation action; and to monitor possible impacts of climate change.
- ADS staff will support government agency, local council and community group efforts to rehabilitate and re-establish vegetation.
- Support ongoing seagrass research and rehabilitation programs undertaken by SARDI, Adelaide Coastal Waters Study and Coast Protection Board.

ISSUE 2.3

New developments

- New and proposed residential and industrial developments are underway in the ADS area. Any development has the potential to impact on its surrounding environment. Careful planning and employment of ecologically sustainable development (ESD) principles (see Appendix 1) can minimise these impacts.
- The Planning Strategy for South Australia includes the ADS Act objectives. In addition, the ADS Act requires that the Planning Minister must consult with the ADS Minister when amending a relevant Development Plan.
- The actions listed below will also support the achievement of actions under Issues 2.1, 2.2 and 2.4.

PRIORITY – High

STRATEGY

Ensure that new developments minimise impacts on dolphins and their habitat.

GOVERNMENT RESPONSIBILITY

- Assessment of new developments – relevant planning authorities and prescribed referral authorities, including DEH (for Coast Protection Board) and EPA
- Conservation of marine biodiversity – DEH
- Improvement of water quality – EPA
- Protection of native vegetation – DWLBC (for Native Vegetation Council)

ACTIONS

- DEH will continue to work with proponents of new and existing developments to ensure that ADS objectives are appropriately considered.
- DEH will work with Planning SA and local councils to develop performance guidelines to support achievement of ADS objectives.
- DEH to work closely with Planning SA on the Planning Strategy for Greater Metropolitan Adelaide, associated Development Plan Amendments and whether there is a need for referrals of significant types of development to the Minister for the ADS.

ISSUE 2.4

Marine pests: *Caulerpa taxifolia*, *Caulerpa racemosa* and others

- *Caulerpa taxifolia* has been identified in a number of areas in the ADS. It is a highly invasive, pest algae species with the potential to spread through the ADS, and possibly further into Gulf St Vincent. Its spread poses one of the most serious known threats to the ADS habitat and dolphins' prey species.
- *C. racemosa* has been identified in the ADS and its potential impacts are not fully understood. It has quickly colonised degraded areas of the Port River and Barker Inlet but its impacts in other areas are uncertain. *C. racemosa* is an Australian species, but is not native to ADS waters.
- A range of introduced marine pests have been identified in the ADS. Their singular and collective impacts on the ecosystem are not defined.

PRIORITY – High

STRATEGY

Support the programs of PIRSA Fisheries and other government agencies to control the spread of *C. taxifolia*. Increase knowledge of *C. racemosa* and ADS marine pests and support control and eradication actions as needed.

GOVERNMENT RESPONSIBILITY

- Management of pest marine species – PIRSA Fisheries
- Natural resources management – DWLBC (for Adelaide and Mount Lofty Ranges NRM Board)
- Vessel management – DTEI
- Conservation of marine biodiversity – DEH
- Commercial and recreational fishing regulation – PIRSA Fisheries
- Evaluation of new developments – DEH (for Coast Protection Board), EPA, relevant planning authorities with strategic support from Planning SA
- Improvement of water quality – EPA

ACTIONS

- ADS staff will continue to support compliance efforts to control the spread of *C. taxifolia*, including restrictions on anchoring and the use of fixed and temporary moorings for recreational use.
- Where possible, support coordination of research efforts into prey species and vegetation health with priorities for research into controlling *C. taxifolia* and other pest species.
- Support PIRSA initiatives and research in identifying and controlling introduced species.

ISSUE 2.5

Recreational fishing

- Recreational fishing is arguably the most popular recreational activity in the ADS. Impacts on habitat include direct removal of target and incidental species, bait digging and impacts on vegetation and water quality from physical disturbance from vessel wake, vessel discharges, anchors and fishers travelling through vegetation to access fishing areas.

PRIORITY – Medium/High

STRATEGY

Initiate education programs with fishers to improve existing practices.

GOVERNMENT RESPONSIBILITY

- Commercial and recreational fishing regulation – PIRSA Fisheries
- Vessel management – DTEI
- Protection of native vegetation – DWLBC (for Native Vegetation Council)
- Conservation of marine biodiversity and management of Crown Lands and Conservation Parks – DEH

ACTIONS

- ADS staff will undertake on-ground education activities with fishers and encourage minimal impact fishing practices, such as the use of drogues and environmentally friendly equipment and packaging.
- ADS staff will continue to patrol conservation parks to ensure no illegal fishing activity occurs in parks and continue to support PIRSA Fisheries compliance efforts in the ADS, including activities in aquatic reserves.
- Ascertain current fishing effort and take in the ADS to determine impacts on prey species and vegetation habitat.
- Ascertain existing bait digging activities to determine locations and quantify the extent of activity to increase understanding of bait digging impacts.



Objective 3 - Improvement of water quality

Water quality within the Port Adelaide River estuary and Barker Inlet should be improved to a level that sustains the ecological processes, environmental values and productive capacity of the Port Adelaide River estuary and Barker Inlet.

ADS Act Section 8(1)(c)

The condition of the water in the ADS affects all life forms reliant on it. Good water quality is essential for maintenance of the entire food chain, including prey species of the dolphins. Direct impacts of poor water quality on prey species include ingesting or absorbing toxins from the water and indirect impacts include habitat losses from toxins and sediment coverage.

According to the EPA, the Port waterways are suffering from serious nutrient pollution. In addition, water quality levels in these waters are classified as poor due to heavy metal levels. Important progress has been made to improve the water quality by reducing pollutants and debris going into the water, but more can be done. In addition, efforts to protect habitat elements such as seagrass may also have a secondary effect of improving water quality.

The government has undertaken studies relevant to the ADS, including the Port Waterways Water Quality Improvement Plan and The Adelaide Coastal Waters Study, which outline key water quality issues and make recommendations to address these issues. DEH staff will support relevant agencies and industry to implement strategies and recommendations outlined in these plans.

Notes on Objective 3 issues

Every issue identified to achieve this objective requires supporting educational activities. Specific education actions are detailed under Objective 5 – Promotion of the environmental importance of the ADS (Issue 5.1).

New developments must be assessed for their impacts on water quality for the achievement of Issues 3.1, 3.2, 3.3 and 3.5.

ADS staff will continue to support EPA compliance efforts for all types of illegal discharge activities.

ISSUE 3.1

Discharges – nutrients

- The main sources of nutrients in ADS waters are point source discharges from SA Water Bolivar wastewater treatment plant and Penrice Soda Products Osborne plant. Discharges also originate from other industries, stormwater, vessels and atmospheric fallout.
- Excess nutrients negatively impact on mangroves and seagrass and encourage the growth of pest species, posing a serious threat to both vegetation and prey species' habitat.
- The EPA's Port Waterways Water Quality Improvement Plan addresses the problem of nutrient discharges into ADS waterways and The Adelaide Coastal Waters Study outlines recommendations to guide future management actions relating to water quality along Adelaide's metropolitan coast.

PRIORITY – High

STRATEGY

Support the EPA and other agencies' ongoing work to reduce nutrient discharges by utilising ADS education and research programs.

GOVERNMENT RESPONSIBILITY

- Improvement of water quality – EPA
- Catchment management and protection of native vegetation – DWLBC (for Adelaide and Mount Lofty Ranges NRM Board, and for Native Vegetation Council)
- Vessel management – DTEI
- Conservation of marine biodiversity – DEH
- Stormwater management – local councils, DWLBC (for Adelaide and Mount Lofty Ranges NRM Board)
- Management of pest marine species – PIRSA Fisheries

ACTIONS

- Work with the EPA to implement the Port Waterways Water Quality Improvement Plan and address recommendations outlined in The Adelaide Coastal Waters Study which are relevant to the ADS.
- Support research efforts into the effects of excess nutrients, particularly as they relate to prey species, vegetation health and pest species.



Good water quality is essential for maintenance of the entire food chain, including prey species of the dolphins.

ISSUE 3.2

Discharges – pollutants

- The EPA licenses around 130 operators who are in the catchment of the ADS waterways. Less than 10 of these hold licenses that allow discharge to the ADS waterways. These have strict controls including independently verified monitoring programs and the requirement to have approved contingency plans for spillages. Comprehensive monitoring programs ensure that the risk of discharge of pollutants is continually assessed and minimised.
- Polluted discharges also enter through stormwater. Some of these discharges may potentially include heavy metals and organochlorins which can accumulate in sediments and bioaccumulate up the food chain, posing risks to top order predators such as dolphins. Pathogens may also be discharged.
- EPA studies on toxins found that some sediments, generally associated with stormwater sumps and slipways, have heavy metals and traces of organochlorins.
- Exposure to these toxins may cause a range of impacts including disease, impaired reproductive success and potentially death.
- Thermal discharges occur in ADS waters. Their impacts on dolphins and their habitat are currently unknown.
- The Adelaide Coastal Waters Study outlines recommendations to guide future management actions relating to water quality along Adelaide's metropolitan coast.

PRIORITY – High

STRATEGY

Support the EPA and other agency and community programs to reduce pollutants in ADS waterways.

GOVERNMENT RESPONSIBILITY

- Improvement of water quality – EPA
- Catchment management and protection of native vegetation – DWLBC (for Adelaide and Mount Lofty Ranges NRM Board, and for Native Vegetation Council)
- Fisheries management – PIRSA Fisheries
- Conservation of marine biodiversity and management of Crown Lands and Conservation Parks – DEH
- Stormwater management – local councils, DWLBC (for Adelaide and Mount Lofty Ranges NRM Board)
- Evaluation of dredging applications – relevant planning authorities with strategic support from Planning SA, EPA, DTEI, DEH (for Coast Protection Board)

ACTIONS

- Provide information to support the use of the world's best practice methods for any new dredging and other sediment disturbance activities to minimise distribution of possibly contaminated sediments and introduced species such as *Caulerpa taxifolia*.
- Support the EPA to address recommendations outlined in The Adelaide Coastal Waters Study which are relevant to the ADS.
- Consider the potential for discharged pathogens to infect ADS dolphins.
- Support research efforts into the effects of thermal pollution, particularly as it relates to prey species, vegetation health and pest species.
- ADS staff will maintain litter management activities in the ADS.

ISSUE 3.3

Discharges of ballast water

- Shipping vessels discharge ballast water that may contain pollutants and pest species. Discharge of ballast water from international sources is prohibited. These activities are regulated by Australian Quarantine and Inspection Service (AQIS) for international vessels.
- Under the proposed National System for the Prevention and Management of Marine Pest Incursions, domestic ballast water will be managed on a day-to-day basis by a Commonwealth agency through the Single National Interface (SNI). However, it is likely to be administered under South Australian legislation and some minor elements will be the responsibility of the states. Management and legislative arrangements for this issue are still under development.

PRIORITY – Medium

STRATEGY

Educate commercial vessel users of the Port of Adelaide about the ADS to ensure they understand and comply with requirements to protect dolphins and their habitat.

GOVERNMENT RESPONSIBILITY

- Management of internationally sourced ballast water – Australian Quarantine and Inspection Service (AQIS)
- Management of pest marine species and domestic ballast water discharges – PIRSA Fisheries
- Vessel management – DTEI
- Conservation of marine biodiversity – DEH
- Commercial and recreational fishing regulation – PIRSA Fisheries
- Improvement of water quality – EPA

ACTIONS

- Support PIRSA Fisheries in the development of policies and regulations to address the discharge of Australian sourced ballast waters.
- ADS staff will support compliance efforts.

ISSUE 3.4

Turbidity and release of toxins from sediment

- Turbidity is a significant issue in the ADS, impacting on both vegetation and marine life. Activities such as dredging, some developments and some vessel activity can cause turbidity.
- Turbidity can cause two direct physical impacts: blocking sunlight necessary for plant photosynthesis; and, contributing particles that collect on plants and small organisms, impeding their natural functions.
- Losses of seagrasses from turbid conditions may result in further losses as sediments are no longer held in place by the plants.
- Some sediments contributing to turbidity can also contain toxins. Heavy metals and organochlorins can bind with sediments. If sediments are disturbed, toxins may be released into the water column and cause further impacts.

PRIORITY – Medium

STRATEGY

Ensure existing and new activities are accurately assessed for potential to cause turbidity and sediment disturbance, and appropriate actions are taken to minimise any necessary activities that may cause disturbance.

GOVERNMENT RESPONSIBILITY

- Improvement of water quality – EPA
- Catchment management and protection of native vegetation – DWLBC (for Adelaide and Mount Lofty Ranges NRM Board, and for Native Vegetation Council)
- Vessel management – DTEI
- Stormwater and wastewater management – local councils and DWLBC (for Adelaide and Mount Lofty Ranges NRM Board)
- Evaluation of new developments, including dredging – relevant planning authorities with strategic support from Planning SA, DEH (for Coast Protection Board), EPA
- ACTIONS
- Undertake work on vegetation protection to support stabilisation of sediments (see Issue 2.2).
- Ensure aquatic licence assessments address activities with the potential to cause turbidity.





Objective 4 – Community participation

The interests of the community are to be taken into account by recognising indigenous and other cultural, and historical, relationships with the Port Adelaide River estuary and Barker Inlet and surrounding areas, and by ensuring appropriate participation in processes associated with the management of the Port Adelaide River estuary and Barker Inlet.

ADS Act Section 8(1)(d)

While the management of the environment is the primary focus of the ADS Act, this objective adds the requirement to manage this environment taking into account the full range of existing and historical activities in this intensively used and highly valued area.

Without support from all of the diverse users of the ADS environment, it will not be possible to achieve the ADS Act objectives of protecting the dolphins and their habitat.

ISSUE 4.1

Inclusion of all stakeholders

- People who value the ADS environment and the dolphins live locally and elsewhere in Adelaide and Australia. Interest in the ADS has also been noted from overseas. All may count themselves as stakeholders.
- Public consultation has been undertaken at each development stage for the ADS and this policy will continue. Public consultation on this Plan, and any amendments to it, is mandated by the ADS Act.

PRIORITY – Medium/High

STRATEGY

Ensure views of stakeholders are considered by including stakeholders in all phases of implementation of the ADS Act.

GOVERNMENT RESPONSIBILITY

Administration of the ADS Act and Management Plan – DEH

ACTIONS

- Public consultation on any ADS Management Plan amendments will follow the statutory process.
- The Minister for Environment and Conservation's Annual Report and Annual Implementation Program will be made available to all stakeholders.
- ADS officers will continue to work with key stakeholders and community volunteers to protect the dolphins and improve their environment, and will continue to seek new opportunities for partnerships.
- The ADS Advisory Board of community representatives will continue to provide the Minister for Environment and Conservation with advice as required by the ADS Act.
- ADS education materials will be developed with the diversity of stakeholders in mind.

ISSUE 4.2

Support of recreational users

The ADS hosts a range of recreational uses including fishing, sailing events, speedboat events, jet ski activities, bird watching, canoeing and kayaking. These activities may sometimes conflict with each other and with the achievement of other ADS objectives.

PRIORITY – Medium/High

STRATEGY

Work with all users to improve practices, coordinate activities and improve understanding among user groups to support broad achievement of all ADS objectives.

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Vessel management – DTEI
- Fisheries management – PIRSA Fisheries
- Tourism support – South Australian Tourism Commission

ACTIONS

- DEH will continue ongoing assessment of referrals for aquatic licences (under section 26 of the Harbours and Navigation Act) and work with licensed and unlicensed recreational users to ensure best practices are undertaken.
- Collaborate with community groups to develop ADS education materials.
- Work with South Australian Recreational Fishing Advisory Council (SARFAC) to develop a code of practice specific to the ADS to support ecologically sustainable recreational fishing practices.
- Investigate the creation of codes of practice for other regular recreational users, as required.

ISSUE 4.3

Support of industry interests

- The ADS is home to billions of dollars of economic activity with direct and indirect connections to many South Australians.
- The ADS is about finding ways to support both new and existing development while providing appropriate protection to the dolphins and their habitat.
- The ADS Act amended the Planning Strategy of South Australia to include the ADS objectives to guide planning decisions for new developments. In addition, the ADS Act requires that the Planning Minister must consult with the ADS Minister when amending a relevant Development Plan.

PRIORITY – Medium/High

STRATEGY

Work with existing and proposed industries and developments to intelligently achieve ESD outcomes (also addressed in Objective 6).

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Sustainability – Sustainability and Climate Change Division, Department of the Premier and Cabinet
- Planning – relevant planning authorities with strategic support from Planning SA
- Administration of industry (fishing, aquaculture, mining) legislation - PIRSA

ACTIONS

- DEH will investigate establishment of an industry stewardship program for the ADS area to provide opportunities to best achieve ESD in collaboration with each other and with government.

ISSUE 4.4

Protection of indigenous values in the area

- Kurna people have lived in the ADS area for thousands of years and it still holds important values. Historical and current associations need to be protected.
- Several traditional stories are connected with the ADS area including The Wanderings of Tjirbruke.

PRIORITY – Medium

STRATEGY

Work with Kurna people to ensure activities respect and nurture Kurna cultural values.

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Protection of Aboriginal heritage sites – Aboriginal Affairs and Reconciliation Division, Department of the Premier and Cabinet

ACTIONS

- Work with ADS Advisory Board Kurna members and other Kurna people to ensure ADS information reflects Kurna culture accurately and appropriately.
- ADS education programs will, where appropriate, include information about Kurna culture in the ADS.
- DEH will investigate opportunities to develop a reference paper on Kurna culture and heritage in the ADS area.



ISSUE 4.5

Support for tourism activities

- Tourism initiatives have the capacity to help deliver environmental outcomes by educating the community and attracting economic resources.
- If not appropriately managed, tourism can degrade the environment which is the attraction.
- Currently, on-water dolphin tourism activities are limited in the ADS.

PRIORITY – Medium

STRATEGY

Work with existing and future tourism operators to ensure activities are compatible with all ADS objectives. Ensure the cumulative impact of tourism activities is assessed.

GOVERNMENT RESPONSIBILITY

- Marine mammal interactions and administration of the ADS Act – DEH
- Vessel management – DTEI
- Fisheries management – PIRSA Fisheries
- Tourism support – South Australian Tourism Commission

ACTIONS

- DEH will liaise with existing operators to assess the current cumulative impact of activities and work with operators to develop appropriate ADS interpretive material.
- DEH officers will work with operators and the public to ensure understanding of the National Parks and Wildlife (Whale and Dolphins) Regulations 2000 and, when adopted, the draft National Parks and Wildlife (Protected Animals – Marine Mammals) Regulations 2007 and support compliance with these Regulations.

Objective 5 – Promotion of the environmental importance of the ADS

Public awareness of the importance of a healthy Port Adelaide River estuary and Barker Inlet to the economic, social and cultural prosperities of the local communities, and the community more generally, is to be promoted.

ADS Act Section 8(1)(e)

The achievement of the ADS Act objectives is dependent on a well informed community of users and supporters. Users of the ADS – from government agencies to individuals – need to assess current practices for their potential to achieve ADS Act objects and objectives.

The scientific understanding of complex ecosystem functions is growing every day and all activities must remain open to change as knowledge of the area increases. A healthy environment is necessary to support the economic, social and cultural prosperity of the community.

ISSUE 5.1

Supply of informative, timely and accessible information about the ADS

- Communication with both the general public and specific stakeholders is essential. Information may be printed, online, in the media, and/or communicated personally. Different stakeholders prefer different media.
- Users must receive messages that are culturally appropriate and easy to understand.
- Incorrect and inadequate information may hinder achievement of ADS objectives.

PRIORITY – Medium/High

STRATEGY

Create and implement an appropriate and cost effective communications strategy for the ADS.

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Vessel management – DTEI
- Fisheries management – PIRSA Fisheries
- Tourism support – South Australian Tourism Commission
- Improvement of water quality and working with industry – EPA
- Information provision – local councils, DWLBC (for Adelaide and Mount Lofty Ranges NRM Board)

ACTIONS

- Compile an ADS communications strategy, including an assessment of existing information, and ensure the strategy includes appropriate actions to support implementation of this Plan.
- DEH will work with stakeholders to maximise communication opportunities, including:
 - relevant government agencies, including PIRSA Fisheries, DTEI and the EPA, to ensure consistent delivery of messages
 - Flinders Ports to supply all incoming vessels with information about the ADS and requirements to maintain habitat and dolphin safety
 - recreational boating organisations and SARFAC to develop information about interactions with dolphins and maintaining their habitat, possibly including a code of practice specific to the ADS.
- DEH will continue to develop promotional and educational materials for school students, the general public and specific stakeholders on dolphins and the importance of a healthy Port River/Barker Inlet estuary.
- DEH will continue to support and distribute the ADS Education Resource Kit.

ISSUE 5.2

ADS sign strategy

- Existing state government, local council and industrial/development related signs in the ADS area have been posted ad hoc, and are uncoordinated and inadequate.
- Signs are an important educational tool for on-water and on-ground users of the ADS and need to communicate a range of messages about the ADS area.

PRIORITY – Medium/High

STRATEGY

Establish an effective system of signs which meets the needs of state government agencies, local councils and developments in the ADS.

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Vessel management – DTEI
- Fisheries management – PIRSA Fisheries
- Tourism support – South Australian Tourism Commission
- Improvement of water quality and working with industry – EPA
- Information and sign provision – local councils

ACTIONS

- In collaboration with DTEI, PIRSA Fisheries, Port Adelaide Enfield Council and City of Salisbury, ADS staff will develop a sign strategy for the ADS area and investigate funding opportunities.
- ADS and DTEI officers will determine the best means to sign-post vessel speed limits as part of the overall sign strategy for the area (see also Issue 1.2).





Objective 6 – Promotion of the principles of ecological sustainable development

The principles of ecological sustainable development in relation to the use and management of the Port Adelaide River estuary and Barker Inlet are to be promoted.

ADS Act (Section 8(1)(f))

This objective further articulates the implementation of the other objectives as they apply to development and use of the ADS environment. Objective 6 provides a mechanism to specifically assess the quality of new and existing uses to help achieve all ADS objects and objectives.

ISSUE 6.1

Promote the implementation of ESD principles with local industries and new developments

- The ADS Act provides a tangible goal for achieving ESD principles for all users of the area (see Appendix 1).
- The effective employment of ESD principles requires government agencies, local councils, community groups and industries to work together to achieve their implementation.

PRIORITY – Medium/High

STRATEGY

Work with industries and other users to develop and implement ESD principles in everyday practice.

GOVERNMENT RESPONSIBILITY

- Administration of the ADS Act – DEH
- Evaluation of new developments – relevant planning authorities with strategic support from Planning SA
- Sustainability – Sustainability and Climate Change Division, Department of the Premier and Cabinet
- Implementation of ESD principles – local councils and state Government agencies

ACTIONS

- In conjunction with other agencies, DEH will work with new and existing industries to support the achievement of ESD principles.
- DEH will investigate interest and level of support for the establishment of an industry stewardship program for the ADS area to provide opportunities to best achieve ESD in collaboration with each other and with government.
- Prepare industry specific ADS information as required.



Appendix 1. The Adelaide Dolphin Sanctuary Act 2005, Objects and Objectives

The objects and objectives of the ADS Act are found in Sections 7 and 8 as follows:

7—Objects

The objects of this Act are -

- (a) to protect the dolphin population of the Port Adelaide River estuary and Barker Inlet; and
- (b) to protect the natural habitat of that population.

8—Objectives

(1) The following objectives will apply in connection with the operation of this Act:

- (a) the protection of the dolphin population of the Port Adelaide River estuary and Barker Inlet from direct physical harm is to be maintained and improved;
- (b) the key habitat features in the Port Adelaide River estuary and Barker Inlet that are necessary to sustain the dolphin population are to be maintained, protected and restored;
- (c) water quality within the Port Adelaide River estuary and Barker Inlet should be improved to a level that sustains the ecological processes, environmental values and productive capacity of the Port Adelaide River estuary and Barker Inlet;
- (d) the interests of the community are to be taken into account by recognising indigenous and other cultural, and historical, relationships with the Port Adelaide River estuary and Barker Inlet and surrounding areas, and by ensuring appropriate participation in processes associated with the management of the Port Adelaide River estuary and Barker Inlet;
- (e) public awareness of the importance of a healthy Port Adelaide River estuary and Barker Inlet to the economic, social and cultural prosperities of the local communities, and the community more generally, is to be promoted;
- (f) the principles of ecological sustainable development in relation to the use and management of the Port Adelaide River estuary and Barker Inlet are to be promoted.

(2) For the purposes of subsection (1) (f), the following are declared to be principles of ecologically sustainable development:

- (a) that the use, development and protection of the environment should be managed in a way, and at a rate, that will enable people and communities to provide for their economic, social and physical well-being and for their health and safety while—
- (i) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and
- (ii) safeguarding the life-supporting capacity of air, water, land and ecosystems; and
- (iii) avoiding, remedying or mitigating any adverse effects of activities on the environment;
- (b) that proper weight should be given to both long and short term economic, environmental, social and equity considerations in deciding all matters relating to environmental protection, restoration and enhancement;
- (c) that, if there are threats of serious or irreversible environmental harm, lack of full scientific certainty should not be taken to justify the postponement of decisions or measures to prevent the environmental harm.

Appendix 2. Acts amended by the Adelaide Dolphin Sanctuary Act 2005

The amended Acts are:

- *Aquaculture Act 2001*
- *Coast Protection Act 1972*
- *Development Act 1993*
- *Environment Protection Act 1993*
- *Fisheries Management Act 2007*
- *Harbors and Navigation Act 1993*
- *Historic Shipwrecks Act 1981*
- *Mining Act 1971*
- *National Parks and Wildlife Act 1972*
- *Native Vegetation Act 1991*
- *Petroleum Act 2000*.

The administration of these Acts is the responsibility of the following Ministers and their agencies:

- Minister for Environment and Conservation – DEH, DWLBC and EPA

- Minister for Agriculture, Food and Fisheries – PIRSA Fisheries and Aquaculture
- Minister for Transport – DTEI
- Minister for Urban Development and Planning and Minister for Mineral Resources Development – Planning SA, PIRSA Minerals, and PIRSA Petroleum and Geothermal.

Appendix 3. Adelaide Dolphin Sanctuary Advisory Board

The ADS Act requires the appointment of an 11 member Advisory Board to provide advice to the Minister for Environment and Conservation on a range of matters, including the preparation of this Plan. The Board is composed of community experts in the following areas:

- dolphin conservation and research
- community education programs management
- conservation of marine ecosystems
- fisheries management
- local government
- tourism and recreation management
- industry development and management
- port and harbour management
- Kaurna culture and heritage from the male perspective
- Kaurna culture and heritage from the female perspective.

The Board provided advice that made this Plan a significantly better and more useful document. Members of the Board who provided advice on this Plan include:

- Ms Peri Coleman, Presiding Member (resigned December 2006)
- Dr Mike Bossley (current Presiding Member)
- Ms Lynette Crocker
- Ms Jenny Daly (appointed January 2007)
- Ms Sue Gibbs
- Ms Pat Harbison
- Ms Philippa Holt
- Mr Carl Kavina
- Ms Jane Sloane (resigned June 2006)
- Mr Trevor Watts
- Mr David Wilson
- Mr Tony Zappia (resigned October 2007)

Appendix 4. Adelaide Dolphin Sanctuary map



Abbreviations

ADS	Adelaide Dolphin Sanctuary
ADS Act	Adelaide Dolphin Sanctuary Act 2005
AQIS	Australian Quarantine and Inspection Service
DEH	Department for Environment and Heritage
DTEI	Department for Transport, Energy and Infrastructure
DWLBC	Department of Water, Land and Biodiversity Conservation
EPA	Environment Protection Authority
ESD	ecologically sustainable development
NRM	natural resources management
PIRSA	Primary Industries and Resources SA
SARDI	South Australian Research and Development Institute
SARFAC	South Australian Recreational Fishing Advisory Council
WQIP	Water Quality Improvement Plan