

Our Seas & Coasts

*A marine &
estuarine strategy
for South Australia*



Government
of South Australia



Leafy Sea Dragon (Phycodurus eques), a rare species in South Australian waters.
(Source: South Australian Research and Development Institute)

OUR SEAS AND COASTS: A MARINE AND ESTUARINE STRATEGY
FOR SOUTH AUSTRALIA, August 1998

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Point Sinclair, western Eyre Peninsula. (Source: Department for Environment, Heritage and Aboriginal Affairs)

Near Marion Bay, eastern Yorke Peninsula. (Source: Department for Environment, Heritage and Aboriginal Affairs)

Mangrove habitat (Avicennia marina), Barker Inlet, Gulf St Vincent. (Source: K. Edyvane)

Pilchard fishery vessel using purse seine netting method. (Source: South Australian Research and Development Institute)



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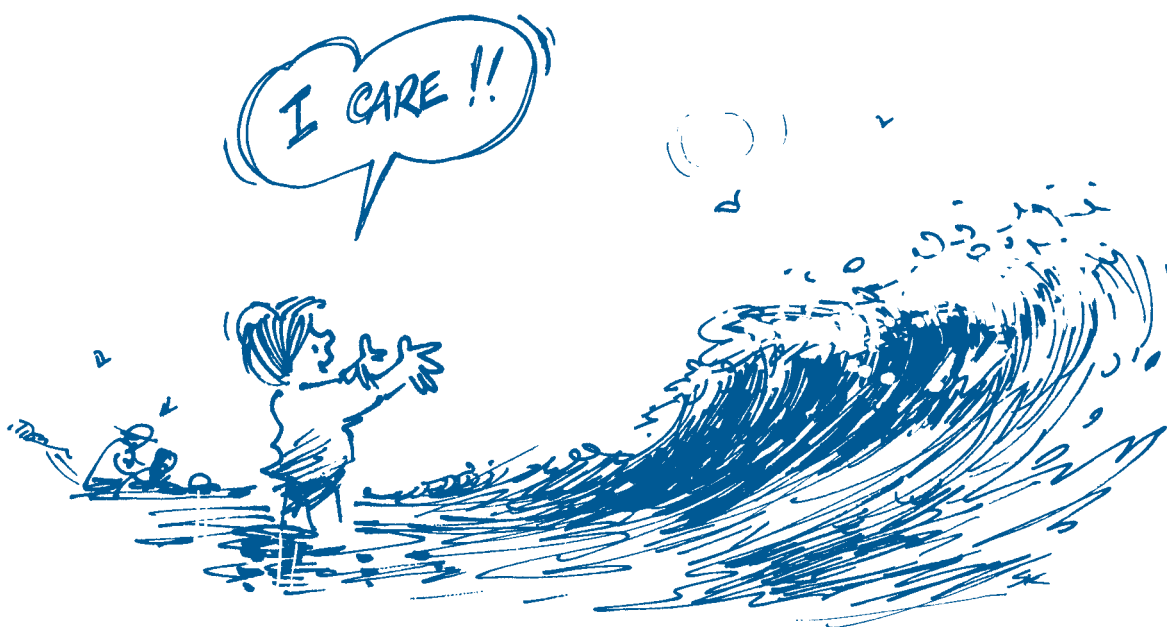


Caring for our seas & coasts...

*the foundation for a marine and estuarine strategy
for South Australia*

- People cherish the sea and coastal waters and want to see them well managed.
- Uses must be ecologically sustainable, respecting both biodiversity and cultural heritage.
- Coastal and marine resources are important for the State's economy.
- Common property marine resource implies responsible community and impartial government involvement.
- All marine management decisions should be based on sound knowledge.

*These values reflect the opinions of South Australians who contributed
to development of this Strategy.*



Our marine and estuarine environments hold important biological and economic values as well as providing a source of inspiration and well being for many South Australians.

The State Government has a responsibility to protect marine habitats and their biodiversity by providing community leadership and direction. With this in mind, the Government initiated development of a marine and estuarine strategy in May 1996. The resulting Strategy, Our Seas and Coasts, is the culmination of a diverse range of input, from recreational users, industry representatives, conservation interests, government agencies and the general public.

Our Seas and Coasts is a framework for better management. It signals the way ahead for innovative management, effective conservation and ecologically sustainable use of our marine and estuarine environment. It provides for both short and long term benefits for South Australia, and positions us well for cooperative management with adjoining states and the Commonwealth.

Our Seas and Coasts has two parts: the Strategy which identifies major issues of concern and commitments for action; and a comprehensive technical reference document which provides a scientific and general reference about the nature and use of our unique marine environment.

Clearly, South Australians cherish the sea and coastal waters and want to see them well managed. They also have a critical role in stewardship of our seas and coasts, in helping to bring this Strategy alive. Government is committed to working with industry and community to make this happen. I am confident that together we can safeguard our seas and coasts for now and for the future.

*The Hon John Olsen MP
Premier of South Australia*



Vision

Conservation and ecologically sustainable use of South Australia's marine and estuarine environment through partnerships between community and government.

Principles

- South Australia values highly its diverse and special marine and estuarine environment.
- The marine and estuarine environment is a community resource.
- Environmental, economic, equity and social considerations are integral to a marine and estuarine strategy.
- The community has an important role in management and allocation of marine resources.
- Ecosystem based management is critical to the ecologically sustainable use¹ of our marine and estuarine environments.

Goals

- Maintain clean seas and conserve marine biodiversity, including recovery or restoration of marine habitats where achievable.
- Achieve ecologically sustainable use of the marine environment.
- Understand and monitor the health of marine systems.
- Encourage economic development based on ecologically sustainable marine industries
- Develop partnerships between government and the community in caring for the marine environment.
- Recognise and support multiple uses which are compatible with biodiversity conservation.
- Provide adequate community education and understanding based on technical information.
- Apply principles of environmental policy from the Intergovernmental Agreement on the Environment to marine issues and decisions.²

¹ Ecologically sustainable use: "Use of living things or areas within their capacity to sustain natural processes while maintaining the life support systems of nature and ensuring that the benefit to present generations of the use does not diminish the potential to meet the needs and aspirations of future generations" (Australian Committee for IUCN *Towards a strategy for the conservation of Australia's marine environment*. Eagle Press, Adelaide South Australia ACIUCN 1994).

² See Appendix



Contents

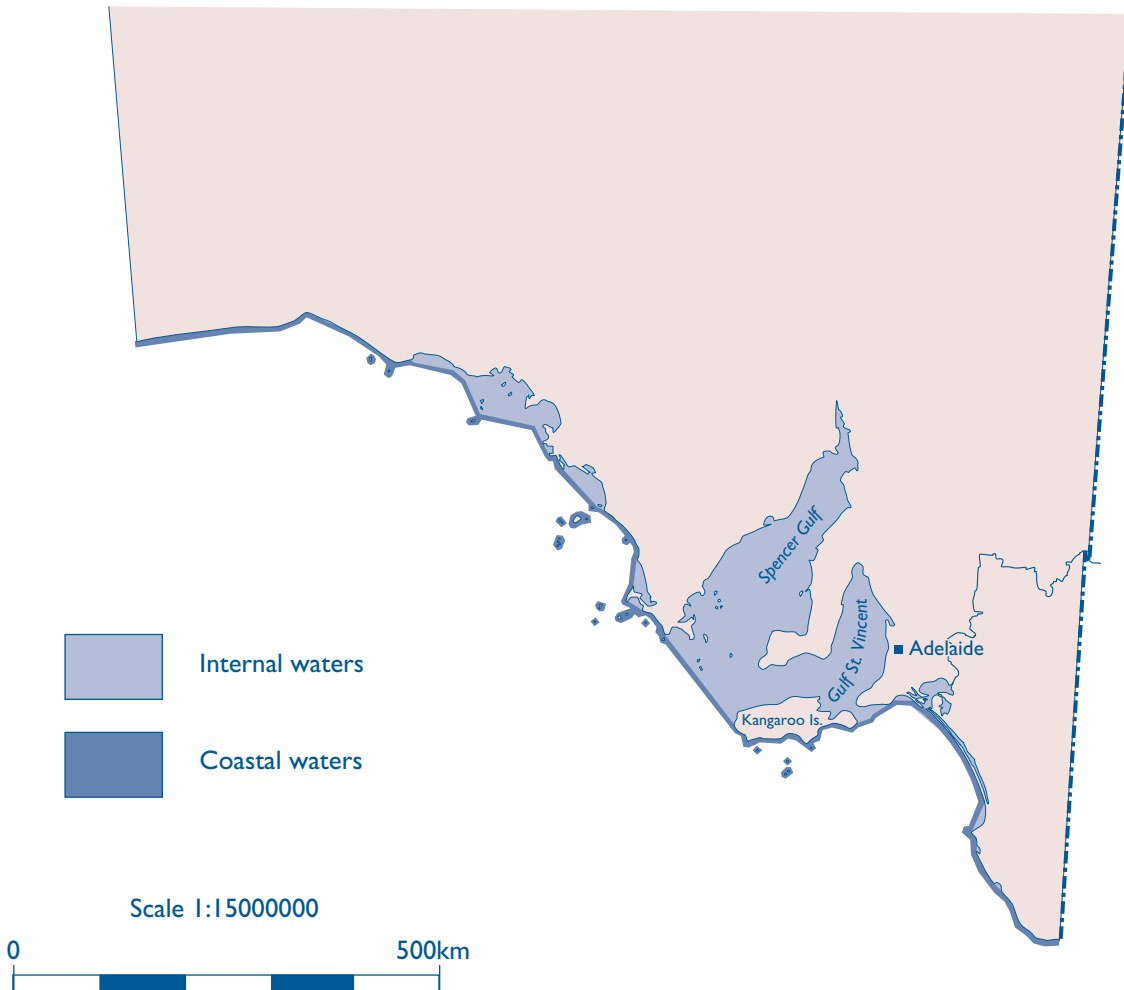
| | |
|--------------------------------------|-----------|
| Foreword | 5 |
| Summary | 8 |
| | |
| THE NEED | 10 |
| | |
| Why have a Strategy? | 10 |
| Valuing our seas and coasts | 12 |
| Responsibility and care | 15 |
| | |
| THE WAY AHEAD | 17 |
| | |
| Clean, healthy seas | 18 |
| Sustainable use | 20 |
| Conserving biodiversity and heritage | 23 |
| Working together | 26 |
| Better understanding | 28 |
| | |
| Appendix | 31 |
| More information | 32 |

Summary

South Australia’s marine and estuarine environments have substantial social, biological and economic value. We have 59 800 square kilometres of territorial waters used for a wide range of purposes, yet the increasing impacts of these activities require better understanding and carefully considered decisions for now and the future. Marine and coastal management has traditionally been piecemeal, with the various industry and government sectors concentrating on their specific needs and aspirations.

This Strategy establishes a framework for protecting marine habitats and their biodiversity by providing leadership and direction for sustainable use, improved management and conservation of the State’s marine and estuarine environment. This framework is important for both existing economic activity and for future development reliant on marine resources. It also recognises South Australia’s national and international responsibilities. An associated technical reference document provides important supporting information about the nature of and impacts on our marine environment.

SOUTH AUSTRALIA’S MARINE ESTATE: Internal and coastal waters covered by this Strategy



Our Seas and Coasts identifies strategies to achieve five major commitments:

ONE Clean, healthy seas

There are disturbing signs of deterioration from pollution, particularly in locations adjacent to populated areas. While sewage effluent and stormwater are the major problems, industrial waste disposal is often another source. Contents of ship ballast water, run off from rural catchments and marine dredging are other issues. Locations requiring critical attention include Holdfast Bay, Port River estuary, Barker Inlet and parts of upper Spencer Gulf.

TWO Sustainable use

Principles of Ecologically Sustainable Development (ESD)¹ underpin the way in which we need to manage, develop and conserve our marine resources and coastal lands. Resource users and government must develop policies which recognise these internationally accepted principles and apply them so that our development activities do not negatively affect us or other species' survival and integrity.

THREE Conserving biodiversity and heritage

A foundation for any comprehensive marine and estuarine strategy is protection of marine habitat, species assemblages, individual species and their genetic origins. Our marine conservation system should protect both cultural heritage and the biodiversity fundamental to long term sustainable use of marine and estuarine resources. It should also accommodate the national and international dimensions of biodiversity conservation and the associated responsibilities for South Australia.

FOUR Working together

The whole community has a stake in the condition and future management of the environment. While government has traditionally taken a lead role in environment and natural resources management, it is keen to share that responsibility in partnership with the community. Community comments have reinforced the need for effective coordination to integrate and implement marine based activities. The common property nature of the marine environment presents opportunities for effective partnerships between the community, industry and government. Associated with those opportunities is a collective duty of care from all users.

FIVE Better understanding

Marine and coastal systems are important ecologically, culturally and economically. Understanding and monitoring ecosystem processes and habitats is essential for maintaining our marine natural heritage and the economic value of the marine resource base. Good information supports planning and development decisions for ecologically sustainable use of both marine and terrestrial resources and the relationship between the two. We currently have little information about some common marine species and less about community assemblages, genetic capabilities and rare and endangered species.

1. Refer Intergovernmental Agreement on the Environment 1992

The Need

Why have a Strategy?



Marine and estuarine environments have substantial social, biological and economic value to South Australia. We have a diverse range of valuable marine ecosystems on which the impact of human activities increasingly requires careful management and effective decision making. While natural environments often are resilient to human use we should not unthinkingly abuse them for short-term gain and likely long-term loss.

A complex array of issues including wild and farmed fishing, land and marine based pollution, biodiversity conservation, coastal development, mineral exploration, tourism and recreation need to be considered in an integrated way. Traditionally, most of these issues have been dealt with sectorally, reinforcing a piecemeal approach to conservation and ecologically sustainable use of marine resources. A continuation of this approach means ineffective management, ongoing conflict and increasing damage to our seas and coasts.

The Government also recognises the content of international marine treaties and conventions and domestic intergovernmental agreements. For example, the 1992 Intergovernmental Agreement on the Environment acknowledges the importance of adopting sound practices as a basis for ecologically sustainable development for the benefit of both the environment and the community. In addition, the Commonwealth Government's *State of the Environment* report (1996) identified the top five national concerns for the marine environment as:

- declining marine and coastal water quality
- loss of marine and coastal habitat
- unsustainable use of marine and coastal resources
- lack of marine science policy and lack of long term research, and
- lack of strategic, integrated planning.

These concerns arise from both direct pressures and downstream impacts from land-based activities. The Commonwealth Government has responded to these concerns by developing *Australia's Oceans Policy*. It involves Australian governments, industry and a wide cross section of interest groups in planning, marine biodiversity, pollution, sustainable marine industries, research, community input, climate change and international responsibilities.



WHAT MUST A STRATEGY COVER?

The scope of the Strategy was continuously refined throughout the consultation process, culminating in the following list:

- extent of knowledge of marine ecosystems
- water quality - land and marine based discharges
- marine conservation and Marine Protected Areas (MPAs)
- coastal planning and development
- community involvement and responsibility
- economic importance and sustainability of commercial fishing and other marine-based industries
- opportunities for aquaculture
- ship transport
- mineral exploration and development
- marine tourism
- Aboriginal and non-Aboriginal heritage
- recreational uses of the coast and marine environment
- sea safety and enforcement
- education and information
- cooperation with adjoining states and the Commonwealth
- marine access and ownership
- integration and coordination for overall management.

An associated Marine Science and Technology Plan provides a framework for integrated and innovative marine science, technology and engineering in the national interest.

South Australia is progressing well with a nationally coordinated bioregional planning program, substantially improving information for marine conservation and resource management. Also, we are well placed geographically to work cooperatively with adjoining states and the Commonwealth to foster ecologically sustainable marine industries based on research and associated development.

Our Seas and Coasts: a marine and estuarine strategy for South Australia will provide short and long term benefits to the State and its regions through improved management and sustainable use of marine habitats, ecosystems and resources. It should also place South Australia at the forefront of conservation and planning proper use of its marine resources, both regionally and nationally.

‘... providing leadership and direction for sustainable use, improved management and conservation of the marine and estuarine environment.’

WHAT WILL THE RESULTS BE?

An effective marine and estuarine strategy creates a framework to manage marine ecosystems so that they:

- are ecologically sustainable
- have sustained values and products
- have the values and products used equitably
- maintain evolutionary processes.

Valuing our seas and coasts

South Australia's marine and estuarine environments are major contributors to environmental quality, an important source of economic wealth and key components of social and cultural life. The following briefly summarises marine and coastal values and activities. Details are provided in *The State of Our Seas and Coasts: A marine and estuarine technical reference document*.

Biodiversity

South Australia's marine and estuarine waters are among the most biologically diverse in Australia and globally. The State has many coastal landforms and marine habitats, including a variety of oceanographic conditions.

Considerable endemism is evident in our marine fauna and flora, which includes the typical cold temperate biota of Tasmania, Victoria and southern New South Wales, and the transitional warm to cool temperate biota of southern Western Australia. The sheltered, tidal Gulf St Vincent and Spencer Gulf ecosystems provide habitat for some of the largest areas of temperate mangrove, seagrass and tidal saltmarsh communities in Australia.

Marine pollution

The marine environment has been used as a convenient sink for land-based pollutants due to the higher capital and recurrent costs of alternative arrangements.

These pollutants include sewage, stormwater, industrial effluent, polluted discharge from catchments containing agricultural chemicals, heavy metals, organic sediments and algal blooms. No information is available on the cost of this pollution to the marine environment from loss of fisheries production, effects on biodiversity, nuisance and loss of amenity and access.

Commercial fisheries and aquaculture

The 1996/97 South Australian commercial fish catch was worth \$197 million, plus substantial additional value of downstream processing and multiplier effects.

Fisheries management aims at optimising the economic development of fishery resources, while maintaining sustainability and biodiversity as critical factors.

Aquaculture is a growing industry component, with a target commercial production value exceeding \$175 million at 1996 prices by the year 2000. Aquaculture has expanded due to local availability or introduction of species suited to the State's relatively unpolluted waters, and recognised national and/or international markets. Activity has so far concentrated largely on the high value commodities for export. Government, in partnership with the private sector, is seeking a nationally coordinated approach to assessment, research and development of expertise.

Sea transport

Sea transport is the most convenient and efficient way to move bulk commodities such as grain, soda ash, iron and steel, vehicles, petroleum products, salt and gypsum.

Smaller fishing ports around the coast are valuable safe anchorages for off-loading produce and storage of boats and equipment. Use of recreational fishing boats is estimated to be about 200 000 boat trips or 989 000 boat hours per year.



Replacement value of these boats is suggested at over \$800 million. This estimate does not include other boat uses, such as yachting and water sports.

Mineral and petroleum resources

Much of our marine environment is unexplored, although the Duntroon, Stansbury and Otway basins have potential for oil and gas. There is also interest in Commonwealth waters off the Great Australian Bight.

Lack of information about the potential of the major basins and other locations prevents assessment of possible value. Any decisions on future use need to recognise this situation.

Marine conservation

Marine conservation has been receiving increasing attention nationally and internationally over the last decade as the valuable attributes of the marine environment come under increasing pressure.

Twenty seven marine protected areas (MPAs) established under the *Fisheries Act* cover 270 900 ha of State waters and protect marine and estuarine ecosystems, while permitting sympathetic uses and promoting public education. Another 94 reserves established under the *National Parks and Wildlife Act* cover 210 000 ha of coastal and estuarine habitats, including offshore islands. However, many types of marine habitats are either not represented or poorly represented. The State has obligations under several international treaties for improving marine conservation and is working to meet an intergovernmental commitment for establishing a national system of marine protected areas.

Coastal development

The market shows clearly that property values are influenced by proximity to the coast for easy access, aesthetic pleasure and existence value.

Residential coastal developments are largely predicated on attempting to satisfy this demand, leading to higher property values and significant investment in real estate and structures including marinas, boat harbours and hotels. The public sector adds value through infrastructure such as jetties and other public facilities. The environmental condition of the coast, beaches and nearshore waters is basic to retaining these values.

Industries involving raw materials processing are often located along the coast to take advantage of sea transport, population centres for a work force and plentiful water supply to assist manufacture and discharge waste.

Marine-based tourism

Tourism is a significant employer in South Australia, generating \$1.9 billion annually, with income from this sector expected to grow by \$40 million per annum.

The State Tourism Plan is built around key themes including culture and the environment. The coast is an icon of Australian culture, providing both a principal tourist attraction and enhancing visitor experiences. Activities include sailing, swimming, diving, fishing and education. Key locations are metropolitan beaches, Kangaroo Island, coasts of Fleurieu Peninsula, Yorke Peninsula, lower Eyre Peninsula, offshore islands and the Great Australian Bight Marine Park. International, intrastate and interstate tourism is estimated to grow by 7.5%, 1% and 0.8% respectively over the next 10 years.

Recreation and inspiration

The coast and nearshore waters are an extremely valuable recreation and cultural resource dependent on scenic sandy beaches, uncluttered headlands and unpolluted waters. Important aspects of community culture, lifestyle and social values are developed and applied in marine environments. They inspire art, writing, music and wilderness values, and provide improved health and well being.

Studies have shown that seven out of ten people regard the beach as extremely or fairly important compared with other recreational resources. Sand replenishment, management of urban stormwater, treatment of sewage discharges and other forms of pollution were seen as essential to retain the value of these assets for recreation and community benefit.

Between 13% and 35% of fish harvested in State waters are thought to be taken by recreational fishers, with the greatest activity in Gulf St Vincent. A 1994-96 survey showed that about 450 000 people partake in recreational fishing and spend about \$350 million per year on their pastime and associated costs.

Heritage and cultural values

South Australia has many maritime heritage sites including shipwrecks, jetties, wharves, buildings, Aboriginal middens, fish traps and navigational aids.

Legislation protects listed items of cultural significance to present and future generations. This cultural significance is expressed through the physical material, spatial location and relationship of the heritage item with the land or seascape. Changes to this material can remove or devalue its cultural significance and appreciation. It is particularly important that any planning for change allows for understanding that significance from both a non Aboriginal and Aboriginal perspective.

‘South Australia’s marine and estuarine waters are among the most biologically diverse in Australia and globally.’

OUR INTERNATIONAL TREATY OBLIGATIONS

International treaties and their associated obligations influence how the Commonwealth and states exercise their responsibilities in managing Australia’s marine and ocean resources. Principal international treaties to which the Commonwealth is party include:

- Climate Change Convention 1992
- Convention on Biological Diversity 1992
- Convention on the Continental Shelf 1958
- Convention for Protection of World Cultural and Natural Heritage 1972
- Convention on Wetlands of International Importance especially for Waterfowl (Ramsar) 1971
- International Convention on Prevention of Marine Pollution by Dumping of Wastes 1972
- International Convention for Prevention of Marine Pollution from Ships (MARPOL) 1973
- United Nations Convention on the Law of the Sea 1982
- International Convention on Regulation of Whaling 1946
- Convention for Conservation of Antarctic Seals 1972
- Convention on International Trade in Endangered Species of Wild Flora and Fauna 1973
- International Convention for Safety of Life at Sea 1974
- Convention on Conservation of Southern Bluefin Tuna 1993



Responsibility and care

Ecologically sustainable use and effective protection of our marine and estuarine environment can only be achieved if we are all willingly responsible for its care.

The community

We all have a role in better management of the marine environment. This requires better understanding of what is at stake and the cost and difficulty of dealing effectively with long standing problems. It also means accepting responsibility for individual and group behaviour, recognising the contribution that small individual decisions collectively can make. Aboriginal groups have cultural and in some cases, economic interests in parts of the coastline. The Strategy acknowledges these interests.

Developing and implementing public policies is invariably enhanced by organised and genuine community consultation. Conversely, poor understanding and lack of information disempowers the community and creates a climate of potential mistrust and frustration. As the marine environment and much of the estuarine environment is common property, the community should know about and be involved in decisions on use and resource allocation. Associated with such rights is a duty of care. Government cannot do it alone.

'We all have a role in better management of the marine environment.'



Industries

This Strategy recognises industry's role in use of the marine environment to generate wealth and employment opportunities across the State. Fishing, tourism, recreation, mineral exploration, sea transport and manufacturing industries requiring coastal locations are all part of the essential fabric of the State.

This Strategy has been developed with industry needs in mind and would be incomplete if it did not also consider industry responsibilities. Industry has a key role in making the Strategy work, providing community leadership and operating in a way that is sympathetic to its principles and goals. Both government and the community are keen for industry stability and development where sustainable, and for short and long term costs of particular industry activities to be considered along with the benefits.

'Industry has a key role in making the Strategy work.'

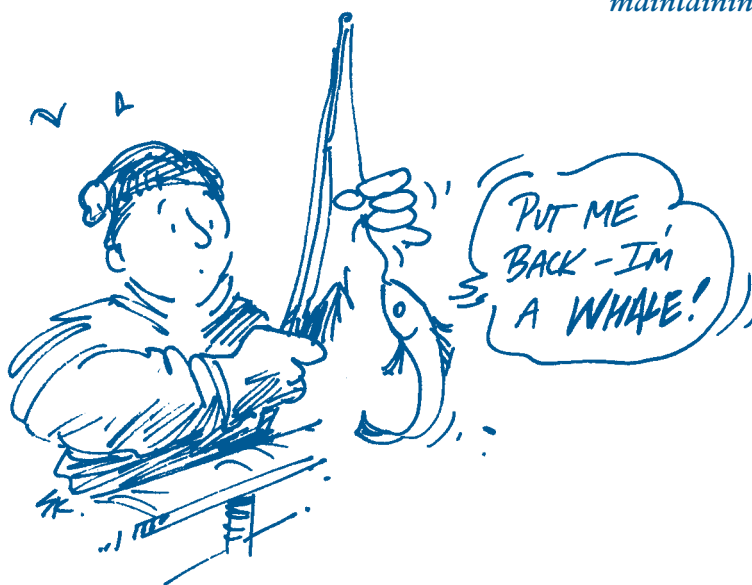
Governments

The public nature of the marine environment and the extent of community interest predisposes a continuing policy setting and management role for the three spheres of government.

This role is also significant given the relatively small amount of information on our marine environment. Government can protect the community's interest by maintaining commitment and involvement, and keeping options open into the future as more information becomes available. Government therefore has a continuing role in research and development, either singly or with other governments and the private sector.

As with other states, South Australia has laws, administrative arrangements and programs affecting management of the marine environment. These are sometimes disconnected, complex and confusing, with unclear outcomes for government, industry and other user groups. This situation can be improved by a more strategic approach and greater involvement of community and sector groups in the management of the State's marine and estuarine environment.

'Government can protect the community's interest by maintaining commitment and involvement.'



The Way Ahead



While South Australia has shown innovation in managing, using and conserving its marine and estuarine environment, achievements have largely been on a sectoral basis. Integrated management requires clear strategic directions to avoid continuing inefficiency and unexpected effects of actions within one sector on another.

This Strategy embraces five commitments:

- clean, healthy seas
- sustainable use
- conserving biodiversity and heritage
- working together
- better understanding.

These are the product of community and industry feedback and acknowledge present government policy and community benefit. The strategies identified to achieve each of these commitments require specific actions by community, industry and government. While some can be met sooner than others, all the strategies are important. Planning and action by the community, industry and governments should provide for satisfying these commitments within seven years.

*'While some can be met sooner than others,
all the strategies are important.'*

Clean, healthy seas

Current situation

While much of our marine environment is in good condition, there are disturbing signs of deterioration from pollution in locations adjacent to highly populated areas. These locations are often used for several purposes, all of which are affected differently by such pollution. While it is not great by world standards, marine pollution problems in South Australia are exacerbated by coastal geomorphology, with most of the discharges occurring in the relatively sheltered gulfs. These water bodies do not provide much opportunity for mixing and dispersal of pollution loads.

South Australia's Environment Protection Policy provides the Environment Protection Authority (EPA) with legal power to either enforce compliance with water quality criteria, or to require users of the marine environment to show they do not cause particular kinds of environmental harm, before 25 March 2001. In 1995, the EPA endorsed Environment Improvement Programs for Adelaide's four sewage treatment works (STW) and the State Government is committed to fund their completion. Work is well advanced on the Bolivar to Virginia treated wastewater supply pipeline and a similar concept is envisaged for vineyard expansion in McLaren Vale, using treated water from the Christies Beach STW. Major clean up works are also being undertaken by BHP at Whyalla and Pasminco at Port Pirie. CSIRO and State agencies are exploring opportunities for sustainably injecting and reusing high nutrient effluent from aquifers under the Northern Adelaide Plains. The EPA is also developing a proposed major study of Adelaide coastal waters covering reduction in nutrient loads, beach and nearshore sediment balances, rates of seagrass loss and recommendations for future actions.

Catchment water management boards for the Patawalonga, River Torrens and Onkaparinga have been established and funded through a catchment levy administered by local government. This provides a working model for development of other catchment boards to improve water quality and reduce quantity discharged to the marine environment. Construction of wetlands within the catchments to trap pollutants is an integral part of this initiative.

Imperative

Locations requiring critical attention to minimise pollution include Holdfast Bay, the Port River estuary, Barker Inlet and parts of upper Spencer Gulf.

Pollution from sewage and stormwater are the major issues, followed by industrial waste discharges and polluted runoff from farming. Other pollution includes oil spills, dumping of dredge spoil and unregulated use of hull antifoulants. Ship ballast water, sludge and hull fouling all introduce exotic organisms which can compete with existing native marine species, disturbing natural ecosystems and creating growing international concern. South Australia is committed to the national Coastal Voyage Ballast Water Management Guidelines, which will be an important component of the *Australia's Oceans Policy*.

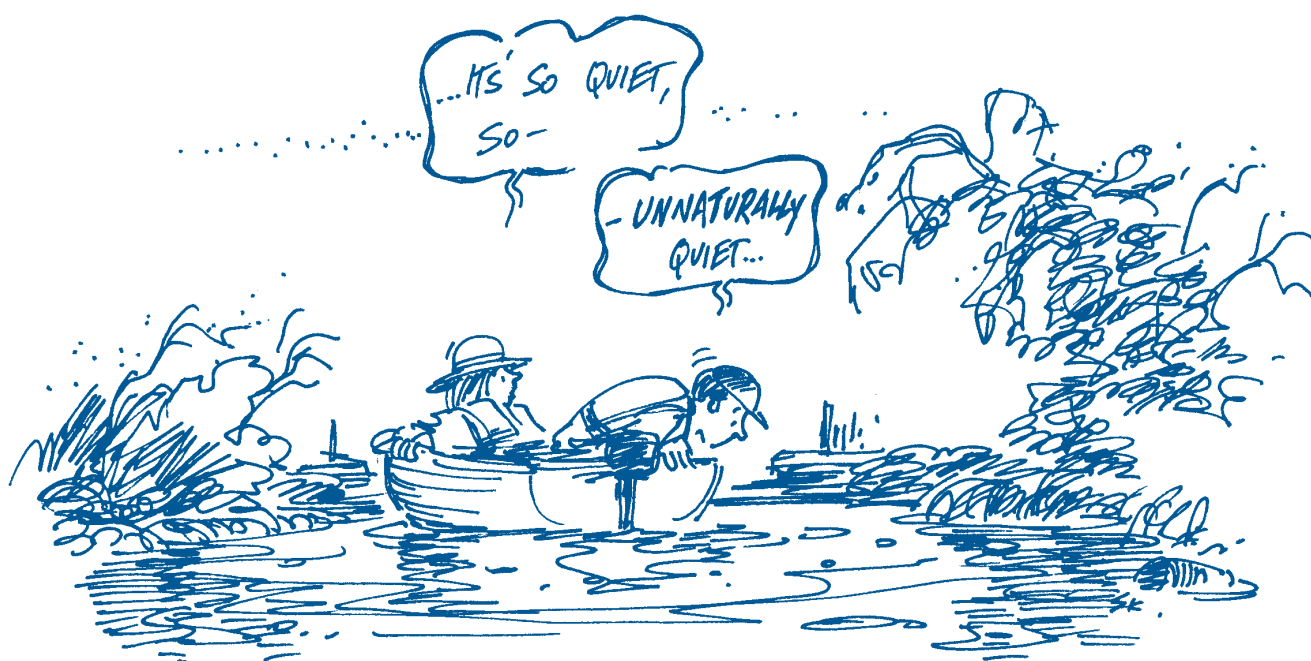
Decisions and actions are needed to reduce the extent and type of pollution impacts of both terrestrial and marine origin, combined with community and industry education and support for managing the effects and restoring degraded areas.

'Locations requiring critical attention to minimise pollution include Holdfast Bay, the Port River estuary, Barker Inlet and parts of upper Spencer Gulf.'



Strategies

- Continue to pursue statutory environment improvement programs funded through a sewage management levy to minimise high nutrient sewage discharge to the marine environment. Preferably, this should be achieved by re-using wastewater for irrigation or, alternatively, by nutrient removal (where re-use is not economically and environmentally possible) to improve marine habitat and remove environmental harm.
- Ensure increased integration of government planning and decision making for managing and remediating all forms of pollution, with effective industry/government interactions and better community access to services and information.
- Continue developing innovative stormwater management and beneficial re-use programs with the aim of minimising discharge to the marine environment. This should include increasing emphasis on whole catchment management involving local communities and on-property use or disposal.
- Carry out a study of Adelaide's coastal waters to gain clear understanding of the relationship between seagrass loss, coastal erosion and water pollution resulting from large scale modification of the coast and discharges into eastern Gulf St Vincent.
- Apply the Australian Ballast Water Management Guidelines in our ports and in State waters in conjunction with the Commonwealth, States and New Zealand, and provide information to visiting ships about possible regional impacts of their practices.
- Reinforce the work of catchment water management boards, particularly in badly degraded locations such as the Port River catchment, and investigate and report within three years on the need for similar arrangements for other catchments affecting regional coastal processes.



Measures of success

- A minimum of 40% of the discharge from wastewater treatment plants to the marine environment in Gulf St Vincent diverted to land based re-use by 2001.
- Clear focus for overall pollution management by government and industry by 2001.
- Coastal stormwater management by local government included in environmental criteria for engineering design and works by 2005.
- An effective national code of ballast water management implemented in South Australia by 2001.
- Understanding of Adelaide and nearshore coastal processes and interactions used as a basis for decision making by 2002.
- Catchment management policies and practices recognising the terrestrial/marine interface being applied successfully in the more intensively settled and used regions.

Sustainable use

Current situation

The principal direct use of the marine and estuarine environment is for commercial and recreational fishing. While major State commercial fisheries have had stable catch rates over the last five years suggesting sustainability, catch levels for some species such as whiting and snapper are of concern, especially in Gulf St Vincent. The rock lobster fishery has attracted attention from other states as a good example of cooperative management between industry and government. Industry driven fishery management committees are extending this cooperative approach, and both government and industry administrative arrangements are being re-structured for greater flexibility and better service.

The decline in global stocks of wild fish is likely to create demand for more fish farms in Australia. South Australia has over 160 marine aquaculture enterprises. Aquaculture continues to expand and is already an increasingly important export earner for the State, contributing to regional employment and stability. The industry has specific site needs, increasing demand for sea and coastal areas. The State Government is committed to improve administrative arrangements for sustainable industry development. Potential impacts on the marine environment and conflicts with other marine users are better understood, with a range of issues continuing to be actively considered to ensure sustainable outcomes.

Marine-based tourism is particularly important in regional coastal locations. In Adelaide and southern coastal areas, sandy, clean beaches are essential for tourism and associated recreation. Over 450 000 South Australians are recreational fishers, spending about \$350 million a year. Coastal recreation management continues dealing with access to sand dunes and other sensitive areas, the significant recreational fish take, physical disturbance and take in crabbing, and foraging on reefs by scuba divers. Recreational boating has some impacts through hydrocarbons, antifoulants and both moorings and propellers, which can cause physical disturbance to the seabed near marinas and popular boat ramps.

Seabed exploration for minerals and petroleum is in the early stages. Petroleum exploration by drilling is being undertaken in Gulf St Vincent this year.

Planning and development decisions are dealt with through coastal councils and the Development Assessment Commission. Both depend on assessing the information provided against Development Plan policies which implement the State Planning Strategy.



The complexity of the issues means that decisions can take time and often require negotiation on conditions before approval can be given. Use of planning frameworks such as regular review of council Development Plans, adoption of aquaculture development plans and improving the quality and flow of information, should assist the decision-making process.

'Principles of Ecologically Sustainable Development relating to risk, intergenerational equity and conservation of biological diversity should underpin the way in which we manage and conserve our marine resources.'

Imperative

Principles of Ecologically Sustainable Development relating to risk, intergenerational equity and conservation of biological diversity should underpin the way in which we manage and conserve our marine resources. This approach is essential if we are to balance immediate development opportunities with long term sustainability of the resource. The common property nature of the marine environment predisposes a role for government as custodian of the resources, but in a way that is encouraging and collaborative. This requires efforts by both resource users and government to bridge gaps in policy development and application to achieve industry aspirations and revise management practices.

Laws controlling commercial fishing are designed to ensure that living resources within State waters are not endangered or over exploited, and to achieve optimum utilisation and equitable distribution of those resources. South Australia is becoming an Australian leader in marine aquaculture for finfish and shellfish and aquaculture management plans have assisted in providing a better management framework. However, they require more detailed information on marine habitats and biodiversity in locations suitable for aquaculture, the impact of aquaculture on those habitats and possible effects on surrounding land use.

The benefits of competing commercial activities such as recreational access, eco-tourism and aquaculture need balance through integrated planning. Individual sectoral decisions should not unwittingly foreclose on multiple or sequential use, requiring better communication between the sectors and an understanding of each others needs and proposals.

The clear interrelationship between management and use of land and the effects of that use on the marine and coastal environment must be factored into the planning process. Continuing population pressures on the coast and associated development of housing, industry and support infrastructure means coming to grips with these issues. If this does not occur, we will see the continuing degradation and decline of beaches, marine and estuarine habitats and species and an inability to develop and sustain new and existing marine industries.

Strategies

a. Use of marine resources

- Gain involvement and support of marine-based industries in reviewing State and local government development application and approvals systems to gain agreement about effective arrangements needed to protect the environment and community interests.
- Manage fisheries and habitat condition as a partnership between government and fishers, with community input from groups such as recreational fishers and conservationists with a clear interest in marine resource management.



- Develop a Seas and Coasts Users' Code of Conduct to guide tourists, boat, jet ski and other recreational craft users, fishers and recreationalists in adopting environmentally friendly and safety conscious behaviour in coastal reserves and on all State waters.
- Provide for recreational fishers to have more input to decisions on marine species management and research as part of collaboratively developing an equitable recreational fishing user pays system. This system should be directed towards sustainable management of resources and improving recreational fishing opportunities by better management and research.
- Adopt multiple use management in State waters recognising ecosystem integrity, wealth generation and resource use, equity and participatory decision-making.
- Re-assess the developing aquaculture industry, concentrating on needs for ecologically sustainable development and consultation with interested sectors, as a basis for a State Aquaculture Management Plan. This Plan should deal with all aspects of the industry including aquaculture development zones, socio-economic benefits and environmental impacts.
- Encourage closer links between marine based industries and community by providing information and encouraging interaction to increase public understanding of the nature of industries, management issues involved and benefits they provide.

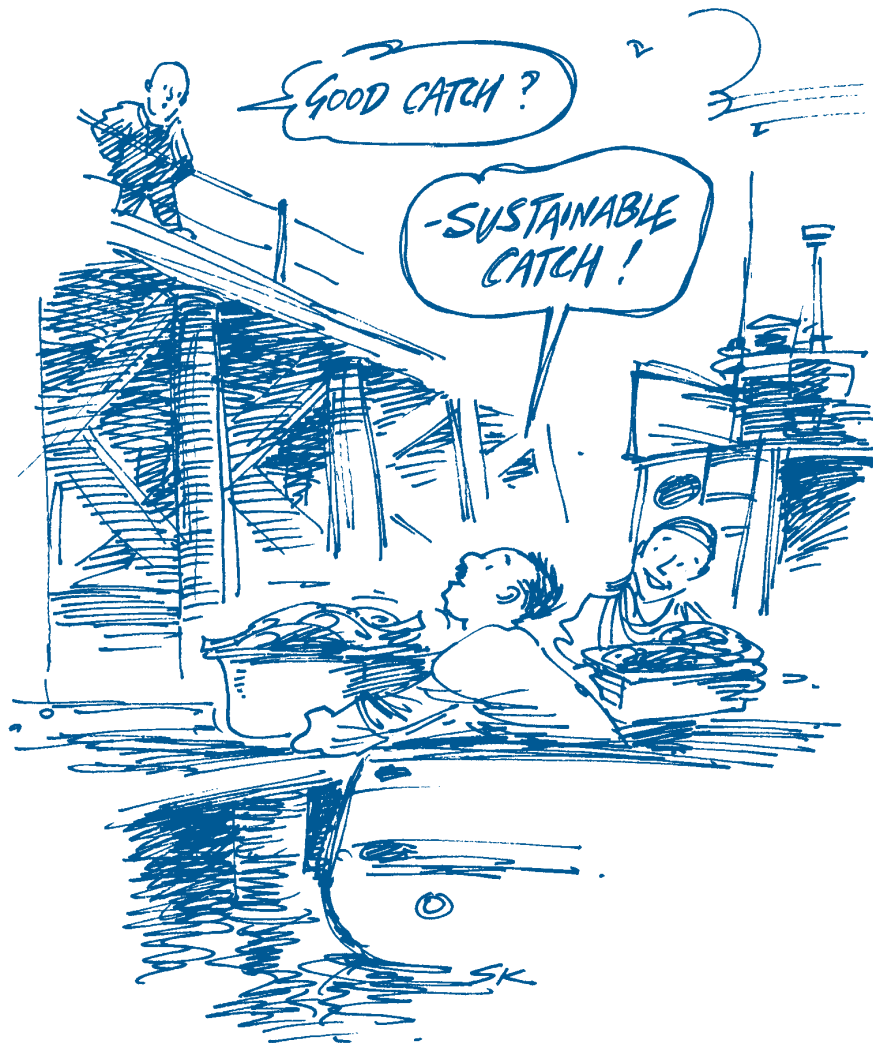
b. Planning and development

- Incorporate this Strategy into the State Planning Strategy to ensure consistent application of planning criteria to marine and coastal environments.
- Involve regional tourism boards and regional development boards in preparing a South Australian marine tourism policy, based on this Strategy, to gain a realistic and environmentally responsible framework for coastal and marine tourism development and management by both the private sector and government.
- Produce planning and development guidelines for coastal settlements and towns, in conjunction with local government, dealing with sewage, stormwater, vegetation management, setbacks, power and water supply.
- Maintain the partnership between State and local government for sand management on metropolitan beaches, including shared funding and effective community consultation.
- Ensure that marine project proposals funded by government, including those from Commonwealth funding sources, support the commitments identified in this Strategy.

Measures of success

- Ecologically sustainable and profitable fisheries and aquaculture enterprises being professionally managed, including input from all interested groups.
- Confidence by industry groups with interests in the marine environment to invest in existing and new ventures.
- Consistency between marine project proposals and the commitments identified in this Strategy.
- Collaboration between community, industry and government on systems of assessment and approvals for ecologically sustainable use of the marine environment.
- Sensitive and responsible use of marine and coastal environments by all users.
- Effective integration of marine and terrestrial planning and management.
- A clear and comprehensive State marine tourism policy adopted and applied by industry and government.





Conserving biodiversity and heritage

Current situation

We do not yet have a well planned approach to marine conservation. While the 'icon' species of whales, sea-lions and white sharks have attracted attention, conservation of habitat, species, genetic biodiversity and maritime heritage is still in the early stages.

The Commonwealth Government's *Clean Seas* program focuses on conservation and sustainable use of marine and estuarine environments. It includes a commitment to a national representative system of marine protected areas (MPAs), fulfilling one of Australia's international obligations as signatory to the Convention on Biological Diversity (1992).

The national Intergovernmental Agreement on the Environment (1992) recognises that 'a representative system of protected areas is a significant component in maintaining ecological processes and systems'. The Commonwealth supports establishing a representative system of MPAs throughout Australia to conserve biodiversity and biological processes. The need for these MPAs is reinforced through *Australia's Oceans Policy* (1998).

The Conservation Council of South Australia has been seeking better marine conservation following a 1996 conference on the nature of the State's marine habitats. Resource users, including the South Australian Fishing Industry Council, acknowledge the role of MPAs but are concerned about continuing access to areas from which they derive income and

contribute to the economy. Proponents for an MPA system recognise that marine conservation decisions can provide both for continuing sustainable industry activity and protection of biodiversity, both at large and in an MPA system. Experience elsewhere in Australia has shown that an effective MPA system is acknowledged and supported by resource users who have a role in MPA management.

The Commonwealth's Interim Marine and Coastal Regionalisation of Australia (IMCRA) divides Australia's waters into nine bio-provinces and many smaller bio-regions. One bio-province and eight bio-regions have been identified within our waters. Twenty seven MPAs cover 270 900 ha of State waters, with 168 320 ha being the Great Australian Bight Marine Park within one bio-region. In addition, 94 coastal and estuarine government reserves cover 210 000 ha, including offshore islands. The present MPA system does not represent and conserve the State's marine biodiversity. The State is developing an objectively-based framework for a more representative MPA system, with assistance from Commonwealth funding.

South Australia has a rich, yet only partly appreciated maritime heritage. This is expressed through coastal locations of early settlement and endeavour, and a wide variety and spread of shipwreck sites, navigational aids and sites of Aboriginal significance.

Imperative

An essential component of any marine and estuarine strategy is protection of marine habitat, species assemblages, individual species and genetic resources. This need relates not only to the intrinsic value of species and ecosystems and our obligation to protect them under international conventions and national and State legislation and policies, but also to comply with the principles of Ecologically Sustainable Development.

A marine conservation system should both protect biodiversity and be fundamental to long term sustainable use of marine and estuarine resources. A balance is needed between overall biodiversity protection and sustainable commercial and recreational fishing, aquaculture, mining and tourist industries, along with the needs of the community. The locations and types of new MPAs and their implications should be debated between industry, community sectors and government. This consultation must cover financial implications for potentially displaced activity where locations identified for protection are being used by existing licensed operators.

Conservation and interpretation of maritime heritage structures and places helps us understand history and provides lessons for now and the future.

Strategies

- Using interim guidelines for establishing the national system of MPAs, the IMCRA methodology and existing marine habitat maps, identify and recommend areas of South Australian waters to be part of a system of MPAs.
- Review legislative framework for provision of MPAs in South Australia, including arrangements for community and industry input.
- Audit and report regularly on use of marine habitats by applying simple, repeatable habitat condition indices for assessing areas used for resource harvesting. This will provide information on conservation and sustainable use of marine species and their habitats for resource users and the community.
- Develop a comprehensive system for legally protecting marine species and communities under threat in State waters and seek public comment on such a system.

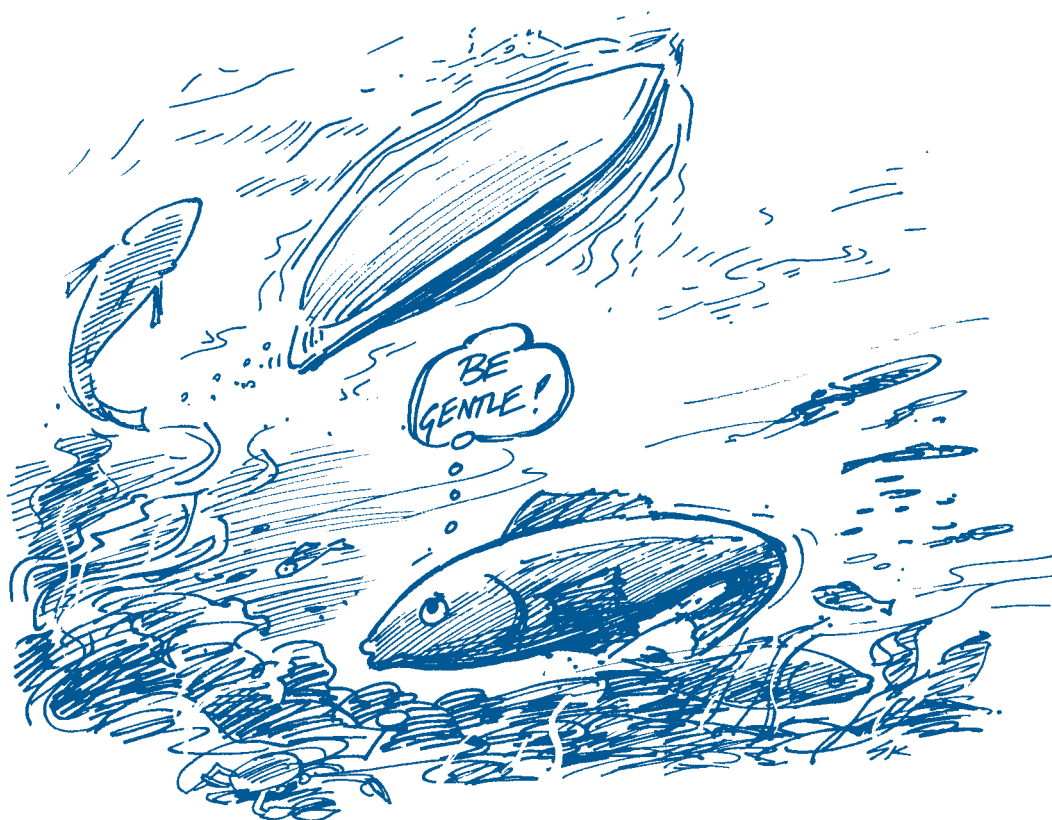


- Develop guidelines for commercial and recreational use of sensitive marine habitats such as mangroves, saltmarsh and seagrass meadows.
- Develop a coastal and maritime heritage places program involving coastal councils for better information, understanding, interest and care for both Aboriginal and non-Aboriginal maritime heritage.

Measures of success

- A system of MPAs by 2003, acknowledging ecologically sustainable multiple use except where special conservation needs are identified, including use of exclusion zones for effective habitat or species management.
- A list of marine species with legislative protection by 2000.
- Recognition and application of a maritime heritage initiative supported by community and industry.
- Include an audit every 5 years on conservation and use of the marine environment as part of state of environment reporting.

‘A balance is needed between biodiversity protection and commercial and recreational fishing, aquaculture, mining and tourist industries, along with the needs of the community.’



Working together

Current situation

Community input to marine environmental issues is often in a reactive climate, responding to incidents and issues as they arise. These are usually responses to environmental impact assessment reports and other government processes, or media reporting on activities covering development, pollution, whale sightings, etc. Specific interest community groups have an important role in generating community interest and awareness.

Shore based industries and marine industry groups have not actively encouraged the involvement of the broader community, even though most have information available for community use if sought out. They are increasingly recognising the advantages of proactive consultation.

While specific marine sector groups interact with government on issues of concern to that sector, there is no forum for integrated discussion on the marine environment as a whole. Regional marine strategy workshops and other consultations highlighted this fact and the willingness of people to put their points of view, providing those views are taken constructively.

The Landcare movement is a successful example of how communities and government can work together to achieve common goals. Although property ownership does not apply to the marine environment, Landcare provides a useful model for empowering community effort and giving a focus for activities. Dunecare groups as an offshoot of Landcare are operating in some regional locations. A marine focused community awareness model along these lines may be an effective and positive way of working together.

Imperative

As the marine environment is common property, the community has a right to know about and be involved in decisions on use and resource allocation. Associated with those rights are responsibilities for protection and stewardship in the State interest. Preparation and application of public policies are considerably enhanced by effective community consultation. Discussion of the issues generates a higher level of confidence and understanding about management actions. The marine strategy workshops clearly showed strong support for a coordinated strategy transcending local, vested interests and individual government agency decision-making. Community and industry also want quick, but well thought through decisions and resources to address major problems such as pollution. Use of collective knowledge is a key to success and a necessary safeguard against decisions based on little knowledge or interest in local issues.

Coastal Aboriginal communities have a range of interests in the marine environment and want to participate in strategy development and application, particularly dealing with access to their traditional fishing locations. As with others in the community, Aboriginal people can undertake commercial fishing in accordance with provisions of the *Fisheries Act 1982*. Marine native title claims are being processed in accordance with the law.

The duty of care concept for all marine environment users needs strong reinforcement by government, industry and community. Duty of care is about all users acknowledging that they have a role and responsibility to care for and look after the marine environment. A better informed community develops from early input by parents and the education system, teaching children about the natural values of the marine environment and opportunities for conservation and resource management.



Government has traditionally taken a lead role in overall environmental and natural resource management. While it will continue to do so, it is keen to share that responsibility in partnership with the community. Given its size and complexity, it is neither possible nor reasonable for government alone to be left with the whole task.

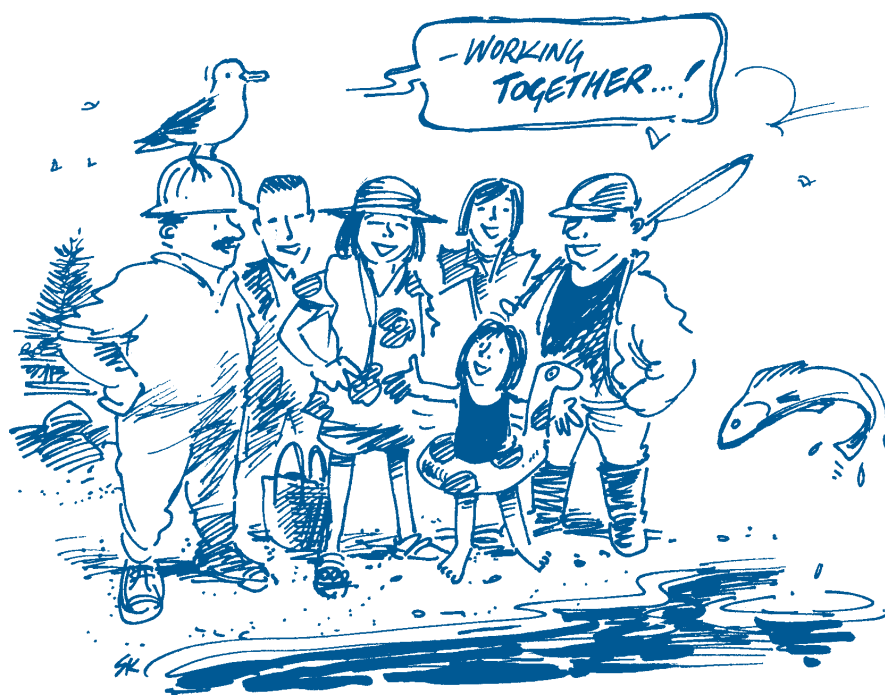
This Strategy includes several ways for greater and more effective community involvement. The challenge for the community and the three spheres of government is to develop a multi-sectoral approach to the marine environment and be prepared to understand and accommodate reasonable sector needs.

The Strategy has many issues and resulting actions needing an effective arrangement to achieve results. Sector representatives, government agencies, local government and community comments have reinforced the need for an effective low cost coordination framework. There is a wealth of talent and ideas in the community on issues raised in the Strategy and we look to the emergence of cooperative models for management and problem solving between government and community.

It will also be important for actions arising from Australia's *Oceans Policy* to be dealt with in a similar way to ensure that South Australia benefits from its formulation.

Strategies

- Gain support and broadly-based sponsorship to promote an overall duty of care theme - *caring for our seas and coasts* - through government, industry and the community. This would provide a popular way to explain the wonders of and threats to our marine and estuarine environment, and the management challenges we face, and to emphasise that we all have an important role to play.
- Provide opportunities for encouraging more community involvement in decision-making on local marine issues, leading to a greater sense of responsibility, understanding and 'ownership' of marine environment decisions.
- Review access for Aboriginal traditional marine food gathering and ensure appropriate access arrangements.



- Initiate an annual coastal councils forum involving government agency representatives and key stakeholders to discuss and deal with marine and coastal problems of mutual concern.
- Ensure inclusion of effective material in the primary and secondary curricula to develop an understanding of the importance of the marine environment as a life support system and the implications of unsustainable resource uses.
- Facilitate the formation of a small marine users group with representation from key sectors and government to meet twice yearly with clear purpose to drive achievement of the Strategy and its commitments.

Measures of success

- Positive interactions between the community, industry and government about the marine environment.
- Effective recognition of traditional access needs of Aboriginal communities to marine resources.
- Development of partnerships between marine environment users.
- Widespread support for and use of a 'SEAsure' style logo as a symbol and focus for marine stewardship.
- An accessible forum for marine users to discuss any issues of mutual interest and achieve action.

'There is a wealth of talent and ideas in the community on issues raised in the Strategy'

Better understanding

Current situation

South Australia has a wide range of marine habitats including the rough-water rocky shores and sandy beaches of the south-east and west coast to the extensive calm-water mudflats, seagrass and mangrove habitats of the gulf regions. Major urban centres and industrial development are located adjacent to the sheltered gulf ecosystems, which are particularly prone to loss of marine habitat. Extensive seagrass loss has occurred in the Adelaide nearshore waters due to sewage and stormwater pollution. Loss of samphire and mangrove habitat continues due to urban and industrial developments, and damage to the sea bottom continues due to trawling activities.

We have some understanding of our impacts on the marine environment and recent monitoring has recorded initial localised seagrass recolonisation after stopping sewage sludge discharge into Gulf St Vincent off Port Adelaide. However, we know little about the ability of most marine organisms to cope with human-induced stresses.

Rare and endangered species require specific management strategies. Critical habitats for breeding and bearing young and the key ecological processes which sustain these habitats, are currently either not known or not fully understood.

Knowledge and status of fish species in South Australia is limited. Three hundred and seventy species of fish have been recorded, with about 75 used commercially, although only about 20 are consistently part of the commercial fish catch. While no fish species is



regarded as endangered, the status of the southern bluefin tuna is of concern.

The status of invertebrates of economic importance, such as the southern rock lobster, western king prawn and green and blacklip abalone, are relatively well-known. Only the western king prawn is considered 'overfished' in Gulf St Vincent and remedial action is being taken. However, the status of the remainder of the invertebrate fauna is poorly known, due in part to the lack of taxonomic knowledge and research. Of over 6000 species estimated to occur in State waters, only a third have been collected and described to date.

South Australia has established an international reputation for marine based research, particularly through the South Australian Research and Development Institute's Aquatic Sciences Centre and the Flinders University Lincoln Marine Science Centre. New resources have been provided for aquaculture research, stock assessment, genetics, hatchery production methods and catch sampling/field surveys.

Knowledge of the potential for petroleum and mineral deposits is sparse, but such deposits could be significant as is the case with other productive offshore basins.



Imperative

South Australia's diverse marine and coastal ecosystems and their resources are of great ecological, cultural and economic importance. Understanding and monitoring the fundamental ecosystem processes and habitats which produce and maintain these resources is essential for maintaining the natural heritage and resource base of our marine environment. Acquiring this knowledge provides the basis for conserving and managing these values in accordance with intergovernmental commitments for Ecologically Sustainable Development and biodiversity conservation.

Notwithstanding our increasing use of the marine environment, we currently have little information about the basic biology of some of our most common marine species. In addition, we need to examine closely the biology of commercially exploited species and the known rare and endangered species. It is important that the need for research be understood as necessary to guide resource management, biodiversity conservation and pollution management.

Strategies

- Ensure reasonable balance between fisheries production-based research and pure research on critical marine biodiversity and ecosystem functions, species taxonomy and interrelationships, human induced impacts and physical and chemical water quality attributes, to give a better information base for decision-making on marine habitat and species management.
- Develop a coordinated system of measurable indicators for effective monitoring of ecological, social and economic changes in the marine environment based on bioregions, for use by both private and public sectors.
- Develop a 10 year temperate marine research program proposal, with advice from marine industries, and including funding options in conjunction with Victoria, Western Australia, Tasmania and Commonwealth governments and university researchers. This will create the basis for collaborative research activities on southern temperate marine environments funded through joint public/private sector beneficiaries.
- Develop an integrated system for collection and storage of all marine data collected from public funded research, and develop systems for access and transfer to bona fide users. This will allow sharing of research data and inventories on ecological systems, taxonomy, systematics and biodiversity for better decisions on resource conservation and use.
- Develop an electronic inventory of South Australian marine ecological systems (including taxonomy, systematic and biodiversity research) for use by government agencies, universities and industry on an agreed basis.

Measures of success

- Continuing growth of information and understanding on all aspects of South Australia's marine environment to assist decisions on resource use and conservation.
- A user friendly, accessible system for storage of scientific information on the State's marine environment.
- Agreement between industry, the community and government on a collaborative marine research program.

'Notwithstanding our increasing use of the marine environment, we currently have little information about the basic biology of some of our most common marine species'.



Appendix

INTERGOVERNMENTAL AGREEMENT ON THE ENVIRONMENT 1992 (PART)

Section 3 - Principles of environmental policy

- 3.1 The parties agree that the development and implementation of environmental policy and programs by all levels of Government should be guided by the following considerations and principles.
- 3.2 The parties consider that the adoption of sound environmental practices and procedures, as a basis for ecologically sustainable development, will benefit both the Australian people and environment, and the international community and environment. This requires the effective integration of economic and environmental considerations in decision-making processes, in order to improve community well-being and to benefit future generations.
- 3.3 The parties consider that strong, growing and diversified economies (committed to the principles of ecologically sustainable development) can enhance the capacity for environmental protection. In order to achieve sustainable economic development, there is a need for a country's international competitiveness to be maintained and enhanced in an environmentally sound manner.
- 3.4 Accordingly, the parties agree that environmental considerations will be integrated into Government decision-making processes at all levels by, among other things:
- (i) ensuring that environmental issues associated with a proposed project, program or policy will be taken into consideration in the decision making process;
 - (ii) ensuring that there is a proper examination of matters which significantly affect the environment; and
 - (iii) ensuring that measures adopted should be cost-effective and not be disproportionate to the significance of the environmental problems being addressed.
- 3.5 The parties further agree that, in order to promote the above approach, the principles set out below should inform policy making and program implementation.
- 3.5.1 precautionary principle -
Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- In the application of the precautionary principle, public and private decisions should be guided by:
- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
 - (ii) an assessment of the risk-weighted consequences of various options.
- 3.5.2 intergenerational equity -
the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- 3.5.3 conservation of biological diversity and ecological integrity -
conservation of biological diversity and ecological integrity should be a fundamental consideration.
- 3.5.4 improved valuation, pricing and incentive mechanisms -
- environmental factors should be included in the valuation of assets and services
 - polluter pays ie. those who generate pollution and waste should bear the cost of containment, avoidance, or abatement
 - the users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes
 - environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.

More information

The State of Our Seas and Coasts: A marine and estuarine technical reference document describes the physical and biological resources of South Australia's marine and estuarine environment. It identifies uses and their impacts, giving the basis for issues considered in the development and application of the Strategy. Where relevant, it addresses issues that have national and/or international significance. While it is an important complement to the Strategy, the document stands in its own right as a long-term scientific and general reference. It has been compiled from published and unpublished information, including material from interstate and overseas. Independent review by two leading marine science academics has added potency and relevance.

The State of Our Seas and Coasts: A marine and estuarine technical reference document is available for perusal in coastal council libraries, universities, the State Library of South Australia and libraries of government agencies with marine management responsibilities. It can be purchased from the Natural Resources Information Centre, 77 Grenfell St Adelaide.

