

## CHAPTER 4

### RESPONSES TO THE PROBLEM

4.1 Since the mid-1990s, there has been increasing commitment from the South Australian authorities to counteract the pollution problems in the Gulf. Many programs and works, involving all levels of government, industry and the community, are being undertaken to address water quality issues. Many of these programs utilise the latest in scientific knowledge and innovation and others are as simple as increasing awareness in the community.

4.2 Environment groups and some local councils who made submissions to this inquiry questioned whether enough is being done to turn the trend of increasing pollution of Gulf waters and damage to the surrounding lands. Terrestrial discharge impacts on the ecological processes in the Adelaide coastal waters are poorly understood. For example nutrients in treated sewage effluent are implicated in the loss of seagrass off the metropolitan coast, however, the assimilative capacity of the waters, the impact of other toxicants, the legacy of past influences and other issues, are poorly understood. Similarly even today, the relative environmental significance of stormwater as compared to other discharges is not understood.<sup>1</sup>

#### Adelaide Coastal Waters Study

4.3 In recognition of this problem, the South Australian Environment Protection Agency has decided to undertake a detailed, integrated study of the Adelaide coastal waters to redress many of the shortfalls in the current knowledge base and to assess the current status of, and the impact of future changes in, nutrient levels.

What we are endeavouring to do is raise \$4 million to conduct a detailed investigation with a view to developing what we call a seagrass adaptive management system, where we have a much better handle on the mechanisms causing that decline and then, based on that, develop a monitoring program and target what I would call environmental capital to make sure future investment in improvements to the catchments, the sewerage plants and any other activities causing decline are properly targeted.<sup>2</sup>

4.4 The CSIRO undertook a scoping study to develop a program of work that would achieve an integrated understanding of the ecological, physical, biological and chemical processes in the sediments, water and biota of the coastal waters.<sup>3</sup>

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1 Office of Catchment Water Management Boards, Submission 3, p 2.

2 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 3.

3 CSIRO, Division of Marine Research, Adelaide Coastal Waters Study, Scoping Report, p i.

This integrated study will deliver an assessment of the state of the system now, a set of tools to support management, and a continuing program of monitoring and adaptive management which would take account of, and continually reduce, uncertainty.<sup>4</sup>

4.5 This set of management tools will be invaluable in giving confidence to long-term sustainable management not only in the Gulf, but possibly in other waterbodies as well.<sup>5</sup>

4.6 The CSIRO estimated that the study would cost \$3.5M over 3-4 years. \$2.1M has been pledged thus far but applications for Commonwealth Coasts and Clean Seas funding to make up the shortfall of \$1.5M were twice refused. The Coasts and Clean Seas Program - a part of the Natural Heritage Trust (NHT) - generally limits grants to a maximum of between \$80 000 - \$250 000 over the life of the project depending on which of the 3 primary NHT objectives the project contributes. Priority for funds is given to capital works projects and on-ground activities.

4.7 In the Committee's view, it is vitally important for this type of study to be undertaken so that appropriate responses to the problems identified can be put in place. Accordingly,

### **Recommendation 7**

**The Committee recommends that the Commonwealth provide additional funding for the Adelaide Coastal Waters Study.**

### **Marine and Estuarine Strategy**

4.8 On a related front the Committee was told that the South Australian Government released a marine and estuarine strategy, published as "Our Seas & Coasts", in September 1998. According to the Environment Protection Agency the release demonstrates that a more strategic approach to managing the coastal environment is being taken.<sup>6</sup> The strategy was prepared with input from industry representatives, conservation groups, government agencies, recreational users and the general public. It provides general strategies for sustainable use, improved management and conservation of South Australia's marine and estuarine environment.

4.9 The Marine and Estuarine Strategy establishes a framework for protecting marine habitats and their biodiversity. It embraces five major commitments, each of which will require specific actions:

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4 CSIRO, Division of Marine Research, Adelaide Coastal Waters Study, Scoping Report, p ii.

5 *Proof Committee Hansard*, Adelaide, 3 February 2000, pp 4-5.

6 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 1.

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- clean, healthy seas - to address wastewater, stormwater, ballast water and coastal processes
  - sustainable use - to ensure that the principles of ecologically sustainable development underpin all uses of the marine environment
  - conserving biodiversity and heritage - to ensure protection of the marine habitat and species therein
  - working together - the community has a right to be involved in decisions on use and resource allocation
  - better understanding - acquiring the knowledge that will provide the basis for conserving and managing the natural heritage and resource base.

4.10 The component of the strategy on which the Environment Protection Agency has been concentrating is the pollution control aspects.<sup>7</sup> In addition, there is a complementary initiative that is being pursued through the Coastal and Marine Planning Program, a part of the Coasts and Clean Seas Program. The State Government has sought funding, in conjunction with the Local Government Association, to carry out a planning strategy for Gulf St Vincent, Spencer Gulf and the Kangaroo Island area.<sup>8</sup> The Committee supports this approach:

### **Recommendation 8**

**The Committee recommends that the Commonwealth provide funding through the Coastal and Marine Planning Program for the Environment Protection Agency of South Australia to develop a planning strategy for Gulf St Vincent.**

4.11 The Committee notes that some groups expressed concern about the willingness of the Environment Protection Agency (EPA) to take strong action on controversial environment issues. For example, Henley and Grange Residents Association Inc, expressed concerns about the lack of will of the agency to intervene on issues of environmental importance; the damaging aspects of the South Australian Government Development Act which overrides the Environment Protection Act, giving no third party rights of appeal or requiring a proper EIS to be conducted; a failure by the EPA to consult effectively with communities; and its failure to enforce the conditions of the Act on environmental offenders.<sup>9</sup>

4.12 Mr Robert Thomas, the Executive Director of the Environment Protection Agency admitted that the EPA needed to be strengthened in certain areas and he has given the State Government an indication of what sort of resources are required. He

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7 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 3.

8 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 3.

9 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 55.

also made the point that in terms of resources it is not just about numbers, it is about quality:

All EPAs are facing the same problem: increasingly our salaries are just not competitive with the private sector and we are finding it increasingly difficult to recruit environmental scientists and environmental engineers, particularly in the brown side of the business, as I describe it – the pollution management side. Those sorts of people are not being trained up at a rapid rate and the experienced people are in high demand and are very hard to recruit. We are very dependent on those sorts of people so it is really about quality as much as quantity.<sup>10</sup>

4.13 The Committee was concerned to hear that there appears to be a lack of trained professionals with appropriate qualifications in the area of environmental protection. In the Committee's view it is important that governments play a role in encouraging more people to enter this field with major implications for future development of resources in this country.

### **Recommendation 9**

**The Committee recommends that both the Federal and State Governments give consideration to sponsoring an increased number of scholarships in the field of environmental science.**

### **Call for action**

4.14 A number of the submissions received by the Committee expressed frustration that there have been too many inquiries into the Gulf without any concrete results. They argue that the nature of the problems facing the Gulf is clear.

... probably a thing that frustrates us is that as a result of these inquiries you get policy changes. We need policy, you have to have policy; I am not saying you do not but the actual on the ground changes, where the lay person sees what is happening and what is not happening – they do get frustrated.<sup>11</sup>

However, we also recognise that enough research has been done to demonstrate the areas and causes of greatest negative impact. Further, enough technical knowledge and proven examples exist to support the benefits of dedicating considerable funds towards speeding up the processes to curb further degradation.<sup>12</sup>

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10 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 6.

11 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 34.

12 South Australian Fishing Industry Council Inc (SAFIC), Submission 33, p 13.

4.15 Notwithstanding these comments, there are gaps in the knowledge base as to: the specific effects on certain ecosystems; the integration of ecosystems; and fundamental baseline data. A precautionary approach is needed when considering new developments and other projects that are likely to have an impact on the Gulf.

4.16 Dr John Hails, a Foundation Director of the Mawson Centre for Environmental Studies at the University of Adelaide, submitted that data on coastal processes has been obtained from discrete studies commissioned by Government and from Environmental Impact Studies associated with proposed developmental projects. This data is collected at infrequent intervals over extended periods and does not necessarily relate to the most significant natural events that are required to verify laboratory investigations and model studies. Knowledge is limited because of a lack of interdisciplinary studies over the past two decades.<sup>13</sup>

4.17 Enough is known, however, to begin redressing pollution issues in the Gulf. Remedial action should not be delayed until the outcome of the Adelaide Coastal Waters Study is available some time in 2003/2004. Indeed, this does not seem to be the case and the Committee recognises that many positive programs are being undertaken by both the South Australian Government and local municipal councils in the Gulf region. However, the Committee is of the view that the Environment Protection Agency could achieve more positive results if it was given enhanced powers to act independently of government in environmental matters.

### **Recommendation 10**

**The Committee recommends that the South Australian Government give enhanced statutory powers and greater flexibility and independence to the South Australian Environment Protection Agency to take action to protect the environment more effectively.**

### **Federal Programs**

4.18 The Federal government also provides funds for programs that can enhance environmental protection such as the Natural Heritage Trust Oceans Policy and the Living Cities Program.

4.19 Around half of the Living Cities funding of \$50 million goes towards improving urban waterways and reducing coastal pollution. \$11 million is allocated to address the consequences of stormwater runoff.

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13 Dr John R Hails, Submission 23.

### *Introduced Marine Pests - Ballast Water Strategy*

In September 1999, the Federal Minister for Agriculture, Fisheries and Forestry announced that Australia would unilaterally implement new rules to make it compulsory for foreign ships to manage their ballast water so that it will not introduce exotic pests in Australia's marine environment. These rules will come into force in mid-2001 and interim arrangements have been established as a prelude to the enactment of legislation.

### **State Legislation**

4.20 The South Australian Government administers environment protection legislation and exercises control through Catchment Water Management Boards. South Australia has legislation in place to support the Marine and Estuarine Strategy in the Gulf. Relevant legislation includes:

- *Environment Protection Act 1993* (incorporating the Environment Protection (Marine) Policy 1994)
- *Harbours and Navigation Act 1993*
- *Fisheries Act 1982*
- *National Parks and Wildlife Act 1972*
- *Pollution of Waters by Oil and Noxious Substances Act 1987*
- *Petroleum Act 1940.*

### *Environment Protection Act 1993*

4.21 The Act came into operation on 1 May 1995 and is the primary pollution control legislation in South Australia. The objectives of the Act are to:

- promote defined principles of ecologically sustainable development; and
- ensure that all reasonable and practical measures are taken to protect, restore and enhance the quality of the environment having regard to the principles of ecologically sustainable development.

4.22 The Act provides for standards of care that apply to industry and the community by means of:

- the general environmental duty;
- offences under the Act; and
- Environment Protection Policies and regulations.

4.23 The general environmental duty places an obligation on everyone not to harm the environment. It states:

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A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

4.24 Failure to comply with this duty is not an offence, however, the Environment Protection Authority may enforce the duty by issuing an Environment Protection Order or a Clean-up Order, or seeking an order from the Environment, Resources and Development Court.

4.25 Environment Protection Policies are subordinate legislation under the Environment Protection Act and can be developed for any purpose directed towards securing the objects of the Act. As a consequence of the Environment Protection (Marine) Policy which was introduced in 1994, dischargers are required to demonstrate by March 2001 that they are complying with minimum standards. Environmental monitoring and Environment Improvement Programs are required as a condition of all discharge licenses.

4.26 A review of the Environment Protection Act is now in progress. The review will cover issues such as the powers and responsibilities of the Environment Protection Authority, enforcement provisions, site contamination matters, the policy making process, licensing and the interrelationship with certain other legislation such as the Public and Environmental Health Act. Consultation will be undertaken of all components of the review through the release of a series of consultation documents that include discussion papers and draft Bills.

4.27 The review of the Act is separate from the inquiry being conducted by the Environment, Resources and Development Committee of the State Parliament. However, recommendations arising from the findings of the State parliamentary committee will be considered as a part of any proposed amendments to the Act.

4.28 Dr John Hails made the comment that since the late 1970s successive governments in South Australia have focussed on “public image” decision-making rather than implementing, and auditing, long-range interdisciplinary management plans for the Gulf. He submitted that there needs to be a commitment by the present and future Governments to implement an ongoing interdisciplinary management program rather than disparate studies from time to time.<sup>14</sup>

4.29 Some South Australian environmental groups argue that other states have updated their coastal management legislation and they support the introduction of a new Coastal and Marine Planning Management Act to replace the *Coast Protection Act 1972*.<sup>15</sup> The Senate Committee sees merit in this and recommends that the South Australian government consider this option.

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14 Dr John R Hails, Submission 23.

15 Caton, B “A New Coastal and Marine Planning Management Act for S.A.?, *South Australian Regional Ripples*, Vol. 6 No. 1 Autumn 99, 1-3

## **Recommendation 11**

**The Committee recommends that the South Australian Government consider an overhaul of the current coastal protection legislation with the introduction of a new Coastal and Marine Planning Management Act.**

### *Licences*

4.30 Persons who are undertaking activities deemed to be of major environmental significance are required to hold an environmental authorisation in the form of a licence, an exemption or a works approval. Conditions are attached to the authorisation and must be complied with.

### *Environment improvement programs*

4.31 The Environment Protection Agency told the Committee that Environment Improvement Programs are attached to licences for significant industries that discharge into the Gulf, including BHP, various electricity utilities and SA Water. The South Australian Government submission states that hundreds of millions of dollars have been spent by industry on these programs over the last five years.<sup>16</sup>

4.32 SA Water is required to undertake Environment Improvement Programs for each wastewater treatment plant. Under these programs the 4 metropolitan wastewater treatment plants at Bolivar, Port Adelaide, Glenelg and Christies Beach are to be upgraded, primarily to remove nitrogen from the discharges. The South Australian government has committed \$210 million to these upgrades.

4.33 The Environment Protection Agency informed the Committee that its preference is for there to be no discharge to the marine environment. This would be in accord with the Planning Strategy for Metropolitan Adelaide. The Environment Protection Agency has encouraged effluent reuse schemes to lower discharges and to decrease the pressures on groundwater and on the Murray River.

4.34 In September 1997 Cabinet approved construction of a \$30 million Bolivar Dissolved Air Flotation/Filtration (DAFF) plant to provide high quality treated wastewater from the Bolivar Waste Water Treatment Plant for irrigation in the Virginia market gardening region. A smaller reuse scheme has also been established in the Willunga Basin in the McLaren Vale district. The winegrowers themselves funded a pipeline from the Christies Beach Waste Water Treatment Plant to carry treated effluent for irrigation of vines.

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16 South Australian Government, Submission 45, p 14.



4.35 The Environment Protection Agency anticipates that once the Environment Improvement Programs are implemented there will be an approximate 77% reduction in nitrogen discharged to Gulf St Vincent from treated wastewater.<sup>17</sup> The reuse of treated effluent is anticipated to be 22 000 megalitres per annum from the Bolivar plant and 2000 megalitres per annum from the Christies Beach plant. This compares with a total of about 80 000 megalitres of treated effluent from the four major Adelaide plants disposed of to the Gulf in 1997.<sup>18</sup> These amounts of effluent reuse could increase as on-farm irrigation systems and other supporting infrastructure are put in place.<sup>19</sup>

### Reuse schemes

4.36 Aside from the two schemes mentioned above, there is an increasing emphasis on recycling sewage effluent, primarily for watering ovals, parks, golf courses, nature strips and community open spaces. This should have a positive impact on the Gulf, as there will be a lesser amount of nutrient-rich effluent entering its waters.

4.37 It is hoped that the waste water treatment plant upgrades and reuse schemes will limit the decline in water quality in Gulf St Vincent and that seagrass beds will regenerate. The Environment Protection Agency is unsure, however, whether the destruction is due solely to sewage discharges. It believes that stormwater runoff also has a role to play in the demise of seagrass.

4.38 Because the impact of nitrogen on the marine environment is being targeted in the sewage plant upgrades, it is quite possible that once this problem has been brought within acceptable levels, the Environment Protection Agency will find that the other pollutants in waste water become of issue.

4.39 It is a concern that SA Water dismisses bio-available phosphorus as “not an issue for the marine environment” in relation to the Heathfield Waste Water Treatment Plant.<sup>20</sup> Whilst phosphorus may not be important in the marine environment, the Heathfield plant discharges into the Sturt River which enters the Gulf via the Patawalonga. The Committee heard that this plant produces very high levels of nutrients - far higher than the metropolitan sewage plants.<sup>21</sup>

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17 South Australian Government, Submission 45, p 22.

18 Environment Protection Authority, *Protecting Gulf St Vincent, A statement on its health and future*, September 1997, p 6.

19 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 4.

20 SA Water, Submission on the Third amendment to the Assessment Report for the Environmental Impact Statement (as amended) for the Glenelg Foreshore and Environs, Barcoo Outlet Proposal, Appendix B to the Fourth amendment, January 2000.

21 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 46.

## Catchment Water Management Boards

4.40 Following the repeal of the *Catchment Water Management Act 1995* (SA), it is under the *Water Resources Act 1997* (SA) that Catchment Water Management Boards are now established to manage and improve water quality. The Boards have the role of taking a lead position to focus attention on an overall coordinated catchment plan to integrate existing programs and to pinpoint any gaps. Prior to their establishment, no State or Local Government agency could take a lead position. Catchment management had been considered a Local Government responsibility, yet Councils lacked a funding base or expertise, or there were problems that extended outside their boundaries and agreement could not be reached with other Councils.<sup>22</sup>

4.41 The general functions of these Boards are:

- to prepare and implement a catchment water management plan in accordance with the *Water Resources Act 1997* (in many areas this also includes preparation of water allocation plans for prescribed water resources);
- to provide advice to the Minister and the constituent councils for the board's area in relation to the management of the water resources in accordance with the *Water Resources Act 1997*;
- to promote public awareness of the importance of the proper management of the water resources in the board's area and of the sustainable use of those resources; and
- such other functions as assigned to the board by or under the Water Resources Act or any other Act.<sup>23</sup>

4.42 There are four catchment boards that have catchments that discharge to Gulf St Vincent. They are the Onkaparinga Catchment Water Management Board, the Patawalonga, the Torrens, and the Northern Adelaide and Barossa. Members of the Boards are skills- and expertise-based rather than representatives or advocates of other bodies. They are appointed by the Minister responsible for the catchment program.

4.43 The Boards are funded through levies on ratepayers of approximately \$15-\$20 each per annum. They can attract additional funding by developing partnerships with Commonwealth, State and local Governments, as well as with the private sector. To be fully effective, the Boards must link with Local Government and State Government agencies to broker in-kind partnerships so that they can implement their catchment plans. These plans are developed in conjunction with the local community. Similar relationships are developed with Soil Conservation Boards and major Landcare groups

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22 Office of Catchment Water Management Boards, Submission 3, Attachment, pp 2 & 3.

23 South Australian Department for Water Resources, website at

<http://www.environment.sa.gov.au/water/catchment.html>

to ensure that the Boards' work can complement (rather than replace) existing initiatives.<sup>24</sup>

4.44 According to the Torrens and Patawalonga Catchment Water Management Boards, opportunities to implement broad-scale innovative water sensitive designs and appropriate waterway management strategies, particularly in existing urban areas, are limited. The ability to 'retrofit' appropriate designs is related to planning approval legislation that, in turn, is linked to the economic climate and local councils' interest in enforcing improvements. The role of the Boards, through their catchment plans, is to ensure consistency across all Local Government areas in the catchments and strengthen the connection with their own environmental plans.<sup>25</sup>

4.45 The Catchment Water Management Boards have invested significant funds in installing gross pollutant traps, silt traps and trash racks. These devices intercept gross pollutants and silt before they enter the Gulf. Since 1996 more than 5000 tonnes of gross pollutant solids have been prevented from reaching Gulf St Vincent.<sup>26</sup>

#### *Torrens and Patawalonga Catchment Water Management Boards*

4.46 The Torrens and Patawalonga Catchment Water Management Boards together cover catchments with a total area of about 800 km<sup>2</sup> which accommodate a population of around 700 000 Adelaide metropolitan and hills residents. The rural and urban runoff from these catchments has an impact on the Port River and the waters of the Gulf, adjacent to the Adelaide metropolitan area.

4.47 The Boards' objectives include the removal of solid and dissolved impurities from catchment water currently discharging to the Gulf to improve both inland and marine aquatic environments and to allow for reuse of stormwater where possible. The Boards are working towards these objectives through the implementation of a range of initiatives including construction of physical works, education programs and planning measures.

4.48 In the urban areas, wetlands and gross pollution traps have been constructed whereas in the rural parts of the catchment, fencing and revegetation of watercourses, in partnership with landholders, has been the major focus of the Boards' physical works programs.<sup>27</sup>

4.49 A joint initiative of the Torrens Water Catchment Management Board and the Cities of Port Adelaide Enfield, Prospect, and Charles Sturt, is the Northwest Region Pollution Prevention Project - or more commonly - the "Street Smart - River Clean" project. This project is aimed at improving the stormwater management practices of

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24 Office of Catchment Water Management Boards, Submission 3, Attachment, p 4.

25 Office of Catchment Water Management Boards, Submission 3, Attachment, p 5.

26 South Australian Government, Submission 45, p 23.

27 Office of Catchment Water Management Boards, Submission 3, p 1.

the approximately 9000 businesses and industries within the Port River and environs. It involves a team of 6 project officers circulating among Port Adelaide businesses, talking to them about stormwater issues and working with them to solve any stormwater pollution problems or other environmental management problems that they may have.<sup>28</sup>

### *Wetlands*

4.50 Wetlands act as a self-sustaining natural filtration and water treatment system. The reed beds, open water (shallow and deeper), sedimentation ponds and gross pollutant traps are all part of a system designed to maximise the removal of pollutants from stormwater by retaining flows for as long as possible — desirably, a minimum of ten days. As flow rates are reduced, sediments and pollutants settle out, organic matter is consumed by aquatic organisms, and nutrients are taken up by aquatic plants. Outflows from wetlands are usually of excellent quality, enabling reuse for aquifer recharge and storage, irrigation or commercial uses.<sup>29</sup>

4.51 There can be some difficulty in accessing land to construct wetlands that are large enough to deal with stormwater from an entire catchment.

One of the problems [the Patawalonga Catchment Management Board has] is to find suitable land space to be able to introduce the size of the wetland required that would equate to the size of the Patawalonga Basin, which has been basically the settlement area. There is not a huge amount of land available unless the government, of course, is prepared to pay a lot of money to get some of that land made available.<sup>30</sup>

4.52 There are other constraints on the construction of wetlands apart from the availability of land. The Committee was told that wetlands were required to improve stormwater flowing into the Patawalonga Lake but adequate wetlands cannot be constructed at the end of the catchment because of the airport bird strike issue.<sup>31</sup>

4.53 There is also the difficulty for the catchment boards of being unable to control various land uses. An article in the December 1999 issue of “Patawalonga Water”, reports that the Adelaide City Council effectively ruled out any hope of developing an urban wetland in the South Park Lands in favour of sporting and recreational uses.<sup>32</sup>

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28 Torrens and Patawalonga Catchment Water Management Boards website at <http://www.cwmb.sa.gov.au/programs/ssrc>.

29 City of Salisbury website at <http://www.salisbury.sa.gov.au/environment/wetlands.htm>.

30 *Proof Committee Hansard*, Adelaide, 3 February 2000, pp 58-59.

31 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 49.

32 *Patawalonga News*, Patawalonga Catchment Water Management Board, December 1999, p 2.

### *Northern Adelaide and Barossa Catchment Water Management Board*

4.54 The Northern Adelaide and Barossa Catchment Water Management Board has a total catchment area of approximately 2000 km<sup>2</sup>. The catchment drains into the Gulf and the Barker Inlet. In partnership with key stakeholders, the Board will implement a program of works and management initiatives to ensure the sustainable use of water resources and the preservation and enhancement of associated ecosystems. The Board has a direct concern with the ecology of the Barker Inlet and invests significant funds on environmental improvement programs within the catchment to minimise the impact of development on the marine environment.<sup>33</sup>

### *Onkaparinga Catchment Water Management Board*

4.55 The Onkaparinga Catchment Water Management Board is responsible for an area of approximately 920 km<sup>2</sup> with a population of over 174 000. The Board's Catchment Water Management Plan is being prepared. It, and a Water Allocation Plan for the McLaren Vale Prescribed Wells Area, provide the basis for the operations of the Board for five years, commencing July 2000.<sup>34</sup>

4.56 All of the catchment boards are introducing a range of capital works programs to improve the quality of stormwater that flows into the Gulf. The boards have developed wetlands which, depending on their design, can absorb 50-80% of pollutants from stormwater runoff before it enters the Gulf. The wetlands also reduce sediment loads. According to the South Australian Government, the greatest contribution of the catchment boards is to invest in capital works that can remove gross pollutants and sediments from stormwater discharges to the Gulf.<sup>35</sup>

### *Criticisms of the catchment boards*

4.57 The Committee heard that whilst witnesses praised the work of the Catchment Water Management Boards, there was some feeling that with the formation of the Boards, the South Australian Government was distancing itself from responsibility for water quality and that there are limits on actions which the Boards can take because they are answerable to the State Minister for the Environment:

It appears to us that a great level of responsibility is now being passed on to the catchment management board and handballed away from the government and its various authorities to be put fairly and squarely on the shoulders of the catchment management board to try to rectify some of the problems. I think they should be concerned about that.<sup>36</sup>

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33 Northern Adelaide and Barossa Catchment Water Management Board, Submission 13.

34 Onkaparinga Catchment Water Management Board, Fact Sheet No. 1.

35 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 9.

36 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 59.

4.58 There was also concern that the South Australian Government lacks faith in total catchment management:

The South Australian government has made a major commitment to total catchment management. It is evidenced by the number of catchment management boards which have been set up in this State now, the latest being one in the arid areas. The construction of the Barcoo Outlet will clearly indicate to the levy paying community that total catchment management is not the solution to the problems of water quality in receiving waters. In addition to their catchment levy which they pay, they will as taxpayers now fund the \$20 million pipeline to divert all stormwater straight out to sea.<sup>37</sup>

4.59 In some instances, frustration was expressed that although the local councils manage wetlands the catchment boards are not accountable to them but to the State Government:

The establishment of the water catchment boards, whilst in principle is something that the councils have no problem with – and, in fact, I think would be generally supportive of – has also meant that the body now tends to establish policies and strategies for the prevention of further pollution of the waters is not accountable to the councils but, rather, to the state government; that is the catchment boards themselves.<sup>38</sup>

4.60 Wakefield Regional Council praised the Water Management Catchment Boards, yet made the comment that:

Unfortunately much of the work is long overdue and it will take many decades to resolve problems. There must be continual and ongoing commitment by Government to these programs ... so that long term solutions can be developed without fear that a project may only be partly completed before funding ends.<sup>39</sup>

## **Local Government**

4.61 Local Councils have invested in a range of measures aimed at improving the marine environment in their jurisdiction. The Committee heard that there were many frustrations for Councils in not being able to control activities that affected their council areas. Development decisions too are made which have adverse impacts in areas of local council control.

The reality is that our council can only do so much because we are only in control of a portion of the area where discharge occurs and, secondly, we are only in control of matters that local government has direct control over.

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37 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 50.

38 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 76.

39 Wakefield Regional Council, Submission 15, p 3.

For example, the Bolivar treatment plant is a State government responsibility and we have no control over that.<sup>40</sup>

4.62 Some of the activities undertaken by Councils who made submissions to the inquiry and which are expected to improve the state of the environment of Gulf St Vincent appear below. The Committee did not receive evidence from all Councils whose areas have an impact on the Gulf.

#### *City of Adelaide*

4.63 Accepting that it has a role in the state of the environment of Gulf St Vincent, the Council has endorsed the following actions:

- undertaking a feasibility study with catchment boards, SA Water and other Councils into the reuse of waste water from the Glenelg Waste Water Treatment Plant;
- investigating the effective use of sewage closer to source in the City;
- investigating the recycling and reuse of Adelaide Aquatic Centre water;
- implementing a stormwater pollution prevention education program with the catchment boards;
- installing gross pollutant traps to prevent hard rubbish from entering the waterways and ending up in the Gulf; and
- investigating stormwater retention options for domestic and commercial buildings in the City.<sup>41</sup>

#### *City of Onkaparinga*

4.64 The Onkaparinga Council has made a commitment of working to restore and enhance the environment in partnership with its community as well as relevant government and non-government institutions. The environmental strategies include:

- the development of a coastal management plan with a key focus on the sustainable use and management of the coastal environment; and
- the implementation of partnership projects which improve the quality of water entering Gulf St Vincent with a major focus on catchment management initiatives, including those which may be located in areas beyond the coast.<sup>42</sup>

4.65 Management approaches include:

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40 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 74.

41 City of Adelaide, Submission 18, p 4.

42 City of Onkaparinga, Submission 36.

- limited pedestrian access to beaches;
- fencing of sensitive dune areas together with vegetation;
- community information, education and involvement;
- examination of cliffs to ensure safety and identify future measures;
- litter control;
- development and promotion of visitor/tourist features along the coast consistent with education and care of the marine environment;
- stormwater management for sustainable use of stormwater and protection of the marine environment; and
- water sensitive design in urban coastal environments.

### *City of Salisbury*

4.66 The City of Salisbury has for many years been active in the development of wetlands, riverine corridors and innovative environmental strategies to address the decline of urban waterways and the receiving waters of the Barker Inlet. Council has a general vision to work towards the elimination of all polluted wastewater from entering the marine environment.

4.67 In 1984, the City of Salisbury established the St Kilda Mangrove Trail which is the longest such trail in the world. It, and the attached Interpretive Centre, draw attention to the coastal ecology, provide environmental education and attract over 20 000 visitors annually.

4.68 Wetlands are an integral component of stormwater drainage systems in the City of Salisbury and are being developed as part of the drainage infrastructure wherever opportunity permits. Nearly 30 wetlands are operating constructively in the Salisbury area.<sup>43</sup> These wetlands range from small, simple stormwater detention ponds, to a complex system extending over 114 hectares. Where practicable, wetlands are included and integrated into the drainage of new subdivisions, providing landscape enhancement, water quality improvement and a reduction in peak stormwater flows.<sup>44</sup>

4.69 The Council is also investigating aquifer storage and recovery of wetland water. A feasibility trial, conducted at the Paddocks Wetlands by Council and Mines and Energy, South Australia, demonstrated that significant volumes of good quality water could be harvested and stored this way. During the high rainfall period in winter, excess stormwater filtered and cleaned by the wetlands, is pumped into the aquifer, 164 metres below the ground. During the dry summer, the water is recovered,

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43 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 77.

44 City of Salisbury website at <http://www.salisbury.sa.gov.au/environment/wetlands.htm>.



as needed, to irrigate the sports fields and turf areas of the paddocks. This eliminates the demand on mains water for irrigation.<sup>45</sup>

4.70 The Committee was told that the quality of the aquifer storage and recharge water is exceeding the quality of mains water in areas such as salinity. An average of approximately 80 megalitres of the water per year is used for irrigation of recreational areas.<sup>46</sup>

### Barker Inlet Summit

4.71 In March 1999, the Salisbury Council held a one day “Barker Inlet Summit” which provided a vehicle for the presentation of research results on the decline of key aspects of the ecosystem of the Inlet. One of the outcomes of the Summit was the formation of the Barker Inlet Port Estuary Committee (BIPEC).

4.72 The objectives of BIPEC are to:

- coordinate, oversee and provide the strategic development of a regional management planning program; and
- facilitate a comprehensive review of the existing regulatory and institutional framework relating to the Barker Inlet Port River Estuary in order to determine its adequacy and suitability in addressing the multitude of complex environmental, economic, recreational and land use problems.

4.73 BIPEC is presently seeking funding from the relevant catchment boards to undertake the review of the current institutional management frameworks for the area. When BIPEC achieves its objectives it should have a positive impact on both the Barker Inlet area and the Gulf. BIPEC hopes to come up with a model of legislative and management instruments that can be applied not only to Barker Inlet but also to other areas such as Gulf St Vincent.<sup>47</sup>

### *City of Port Adelaide Enfield*

4.74 The City of Port Adelaide Enfield carries out similar programs to Salisbury. It also employs three officers who are currently engaged in an education program with industry. They focus on industrial discharges and encourage industry to look at other ways of dealing with industrial pollution. The City’s total program for Coastcare, Waterwatch and education is in excess of \$300 000 - \$400 000 per annum.<sup>48</sup>

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45 City of Salisbury website at <http://www.salisbury.sa.gov.au/environment/water.htm>.

46 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 79.

47 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 86.

48 *Proof Committee Hansard*, Port Adelaide, 4 February 2000, p 78.

4.75 In the City of Port Adelaide Enfield most of the stormwater channels have gross pollutant traps in one form or another and most of the new urbanised areas have stormwater catchment detention areas which would have gross pollutant traps as part of the process. Aquifer recharge as part of the process to remove stormwater from going into the stormwater channels is also being considered by the Council.

4.76 The evidence put to this inquiry suggests that many efforts are now being made to address the problems of water quality, the protection of the coastal environment and of the wildlife supported by Gulf St Vincent. It will be some time before the results of those efforts can be appreciated. However, the Committee is of the view that the outcome would be more positive if there was greater coordination of the efforts being made by various agencies. Accordingly,

### **Recommendation 12**

**The Committee recommends improved mechanisms for liaison between State and local government agencies in relation to the management of Gulf waters and the coastal environment of the Gulf.**

### **Recommendation 13**

**The Committee recommends that representatives of the Catchment Water Management Boards, local Councils and relevant State government agencies meet at regular intervals to discuss and implement an integrated approach to programs aimed at improving water quality and the general environment of the Gulf.**

### **Monitoring programs**

4.77 The Environment Protection Agency undertakes monitoring programs in the Gulf environment. These programs include:

- water quality monitoring along the metropolitan bathing waters and the Port River estuary. Samples are collected monthly for key characteristics including nutrients, heavy metals, chlorophyll, and indicators of faecal contamination. Based on this data water quality of these areas has been classified as moderate;
- a routine sediment monitoring program in the Port River estuary. Samples are collected every six months and analysed for heavy metals, pesticides and organochlorines. The results generally indicate low levels of sediment contamination;
- hot spot monitoring to assess localised impacts. For example, the detection of elevated levels of PCBs in dolphins in the Port River area prompted a survey of

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local stormwater drains to determine if PCBs are entering the waterways from that source;

- aerial photography is used to assess changes in seagrasses over the last 50 years;
- satellite imagery has been used to assess changes to seagrasses; and
- regular surveying of the temperate reef systems off the Adelaide coast to assess their condition.<sup>49</sup>

4.78 Local councils too are engaged in extensive water monitoring programs of their waterways and stormwater systems.

### *Audits*

4.79 In 1999 the Environment Protection Agency undertook an audit of industries, of slipways and other boat type activities in the immediate vicinity of the Port River. The results of these findings were not available to the Committee as they had not been released by the Minister. A more complete audit of industries in the area is currently being done.<sup>50</sup>

4.80 The Committee recognises the need for ongoing monitoring and evaluation of the programs aimed at improving water quality and conserving the Gulf environment that are currently in place. Catchment Water Management Boards for example are involved in a number of programs and it is essential that these be properly monitored and evaluated so that those that are achieving results can be duplicated elsewhere and the others improved.

### **Recommendation 14**

**The Committee recommends that the Federal and South Australian governments provide increased funding for the monitoring and evaluation of programs aimed at cleaning up the waters and environment of the Gulf.**

### **Education and awareness raising programs**

4.81 All levels of government are involved in programs designed to raise awareness of the need to protect the coasts and waterways of Australia. Waterwatch is a national community water quality monitoring program. A range of physical, chemical and biological parameters are monitored. The South Australian Office for Waterwatch is located in the Environment Protection Agency. Funding support for

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49 Environment Protection Authority, Submission 40, pp 2 & 3.

50 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 7.

Waterwatch comes from the Natural Heritage Trust, the State Government, Catchment Water Management Boards and Local Councils.<sup>51</sup>

4.82 A number of the agencies interested in the protection of the Gulf environment are involved in programs designed to raise the awareness of the community relating to threats to the Gulf, its wildlife and its surroundings. In 1997 the Environment Protection Authority produced *Protecting Gulf St Vincent: A statement on its health and future* which was targeted at the general community to raise awareness about some of the problems facing the Gulf and what is being done about these problems. A similar pamphlet - *Cleaning up the Port Waterways, A strategy to protect and restore the waters of the Port River, West Lakes, North Arm and Barker Inlet* - was released in relation to the Port River and surrounds.

4.83 The City of Salisbury has initiated and promoted the Yellow Fish Project whereby all the drains within the city will be marked with a yellow fish to remind people that the water ultimately ends up in the sea and will affect fish life. The Council too engages stormwater project officers who primarily focus on industries. The aim is to ensure that the polluted runoff from industries goes into wetlands rather than straight down the drain.

4.84 The Patawalonga and Torrens Catchment Water Management Boards conceived of the "WaterCare" program which is designed to accelerate behavioural change. WaterCare is a generic education campaign that will tell people about the state of the waterways and provide practical ways for individuals and businesses to help clean and protect them.

4.85 "Our Patch" is a hands-on program which encourages the community to be involved in activities to help clean up waterways. People monitor the health of their local waterway, revegetate the area with locally indigenous plants, remove weeds, pick up litter and generally care for the area. The program provides workshops, free seminars and field days as well as small grants and technical advice.

4.86 The Northern Adelaide and Barossa Catchment Water Management Board has a "Yellow Fish Road program" coordinated by Waterwatch throughout the Northern Adelaide and Barossa Catchment Water Management Board region. This program is a stormwater awareness program which involves stencilling yellow fish on drains followed up by letter box drops, the use of car bumper stickers and posters which explain the significance of the yellow fish. Volunteers such as scouts, girl guides, schools and community groups are encouraged to help prevent water pollution by joining the program and becoming involved.<sup>52</sup>

4.87 Reef Watch is an environment-monitoring program which is run by the community and coordinated by the Conservation Council of South Australia Inc.

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51 EPA News, Issue 1, 1999, p 15.

52 City of Salisbury website at [http://www.salisbury.sa.gov.au/whats\\_new/yellowfish\\_launch.htm](http://www.salisbury.sa.gov.au/whats_new/yellowfish_launch.htm).

Recreational divers gather data about the health of the reefs they dive on. Diver involvement develops community awareness about the state of reefs and triggers action for their protection. The majority of the funding is provided by Coastcare with additional support from the Environment Protection Agency of South Australia. The Committee was told:

In terms of Reef Watch itself, whilst it is a marvellous educational tool getting recreational divers to think about what it is that they are diving on and looking at and also a good tool for collecting data, it should not be the only thing that an agency relies on, other than occasional surveys by scientists. There really is a need for much more widespread and detailed monitoring in the Gulf, particularly in an area of such high impact which the State relies on so much economically.<sup>53</sup>

4.88 The Committee commends all the groups involved in educating the community about the importance of the Gulf to South Australia and the need to protect its waters and coastal areas. Some of this effort is concentrated in schools. In the Committee's view it is vitally important to identify the older age groups that may be missing out on education programs about the state of the Gulf and to target information at them.

### **Recommendation 15**

**The Committee recommends that all levels of government increase the level of resources currently available for raising awareness of the environmental threats to the Gulf and for community education programs about possible solutions to some of the pollution and degradation problems.**

### **Tourism potential of dolphins**

4.89 Most people find dolphins highly "charismatic" animals and they are the focus of tourism in many parts of the world. In almost all cases the dolphins are either wild animals seen from a boat, or a small group of trained dolphins which have been lured to a tourist destination for a feeding demonstration. In both cases the dolphins' natural behaviours are impacted on by the tourism and there is the potential for this impact to be detrimental to the well-being of the dolphins.

4.90 Adelaide's Port River is home to a substantial colony of resident dolphins as well as to frequent visiting animals. According to Dr Mike Bossley from the Australian Dolphin Foundation, the relative narrowness of the river provides an internationally unique opportunity for shore-based tourists to view the animals in a totally non-intrusive manner.

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53 *Proof Committee Hansard*, Adelaide, 3 February 2000, p 20.

4.91 Dr Bossley believes that there is a substantial opportunity for a dolphin-based eco-tourism operation to be developed. Ideally this would involve an interpretive centre on the river bank which could be linked electronically to passive underwater microphones which could give the location of any dolphins in the area. The centre could also have electronic displays which can be updated from information obtained by observers out in the field.

4.92 The “authenticity” of the experience would be enhanced by the provision of background information on individual dolphins which has been obtained from 13 years of monitoring of individual dolphins in the area. This would mean that when dolphins swim past, the tourists would see not just generic dolphins but would be able to identify individual animals with a known life history.

4.93 The Committee supports this type of development and believes it could generate useful tourist dollars for the area as well as play a valuable educational role. It would very much depend however, upon the success of the clean-up programs for the Port River and its environs in order to ensure the continued existence of the resident dolphins and other visiting animals in the area.

**Senator Lyn Allison**

**Committee Chair**