

6 COASTAL AND ESTUARINE HABITAT MANAGEMENT

6.1 Introduction

Though resource allocation plays an important role in promoting the ecologically sustainable development of fisheries resources, restoration and preservation of habitat is a more fundamental factor in achieving sustainable fisheries. Resource allocation debates are becoming more acute and complex due to competition between growing user groups for dwindling fish stocks or the habitats that support them. While much time and resources are expended in determining equitable resource allocation outcomes, the impact on fish stocks due to accumulated habitat damage is often ignored.

The plight of fish stocks has often been described as the “tragedy of the commons” in that resource users have not been given an incentive to exploit or protect common property resources in a sustainable manner. However, the primary problem of declining fish stocks is habitat degradation rather than the common property nature of the resource. Governments have encountered difficulty in effectively regulating the intensity and diversity of activity in these fragile environments.

The tragedy of the ocean is not the tragedy of the commons, but the tragedy of overuse. Overuse may result from fragmented and ineffective ownership. Overuse may also result from short term profit taking by private owners. It is a red herring to link overuse to common ownership.²

The regulation of activities which have an impact on fish habitats is one of the primary mechanisms through which government can improve the quality and quantity of the resource.

¹ For further information on coastal management legislation refer to Stewart Smith, Parliamentary Research Service Briefing Papers 4/95, 34/95, 25/96, 5/97 and 9/97.

² S S Hanna (1990). “The Eighteenth Century English Commons: A Model for Ocean Management”, *Ocean and Shoreline Management* 14, pp 155-172

Mr Stan Moberly, US fisheries expert, has argued:

The greatest threat to the resource is not over harvesting or competition amongst fishermen; it is the loss of habitat, and pollution! Human population growth, ignorance, poverty, irresponsible land activities and developmental practices have endangered water resources and destroyed habitat essential for sustainable aquatic resources.³

6.2 The Condition of Fish Habitat in New South Wales

Worldwide, coastal and estuarine habitats play a central role in the life cycles of many fish species. These areas receive nutrient run-off from the adjacent land and provide sheltered fish breeding and nursery areas.

Australia, with its relatively nutrient poor oceans, is particularly dependent on coastal and estuarine habitats. New South Wales is especially reliant on its estuaries, which act as nutrient "sinks" supporting substantial stocks of adult and juvenile fish which supply the commercial and recreational fisheries.

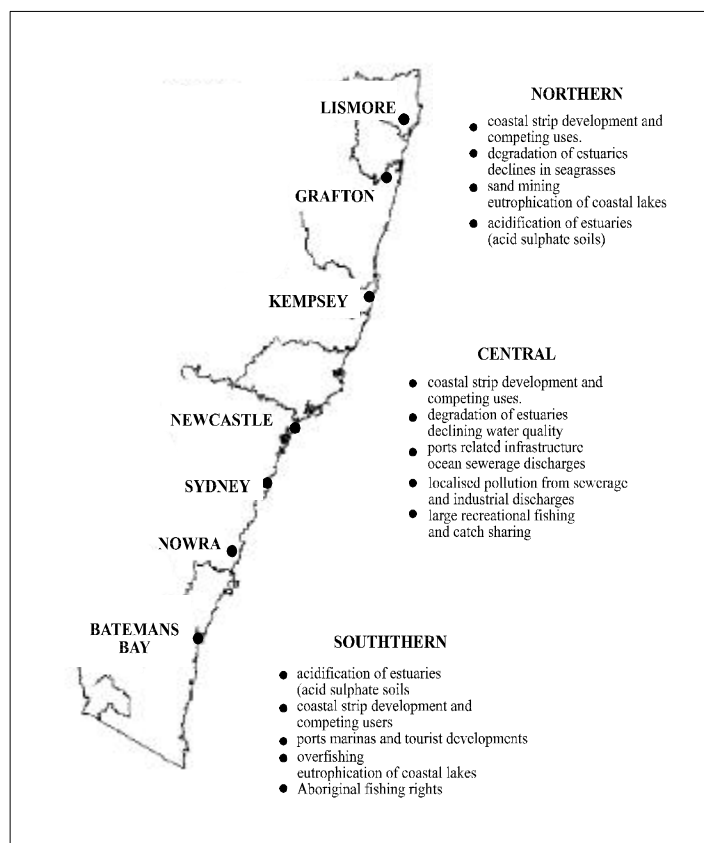
In NSW 75 per cent of the population lives in the coastal zone.⁴ Policies intended to promote sustainable fisheries must effectively manage population pressure and the effects of development to maintain the health of the habitat on which fish depend.

The relationship between population density and habitat degradation is evident in Figure 6.1.

³ S J Moberley (1992). "Habitat is where it's at! It's more fun to fight over more fish than less fish", *Key note address, Sustainable Fisheries Through Sustaining Fish Habitat, Proceedings of Australian Society for Fish Biologists Workshop*, Department of Primary Industries and Energy, D A Hancock (Ed), p 4

⁴ NSW Government (1992). *Estuary Management Manual*, New South Wales Government, Sydney, p 27

Figure 6.1 - Impacts on the NSW Coastal Zone ⁵



Factors that have contributed to the loss of coastal and estuarine habitat in New South Wales include:

- shoreline development;
- dredging and drainage schemes;

⁵ Adapted from L P Zann (1995), *Our Sea Our Future, Major Findings of the State of the Marine Environment Report for Australia*, Department of Environment, Sport and Territories, Canberra, p 73

- changes in salinity due to altered river flows and artificial opening of lakes and estuaries to the sea;
- eutrophication (fertilisers and sewerage);
- sediment deposition as a result of poor land use;
- impact from fishing methods (trawling and dredging);
- contaminants (for example, heavy metals and hydrocarbons); and
- introduction and translocation of exotic species.

The health of the aquatic environment adjacent to many urban and industrial areas is generally regarded as poor.⁶ Mr Michael Geary, Manager - Coastal and Flood Plain Riverine Resources, Department of Land and Water Conservation (DLWC), told the Standing Committee:

We have done the worst things to our estuaries. We have filled them and drained them, either for industry, urban development, and most significantly for agriculture, so we have made a massive change to the natural processes of our estuarine ecosystems over the past hundred years.

In the last 20 or 30 years a lot of legislation has been brought in to constrain adverse impact, probably not enough in many peoples' eyes but more than used to exist. Going back 20 years, coastal wetlands were regarded as swamps, which were used for tips and there was Government funding provided so that they could be, "usefully farmed". That sort of attitude no longer prevails. Legislation no longer allows that.

The biggest impact has already happened. We are now in an era of trying to hold the status quo in terms of impacts and starting to invest in physical restoration. I think we

⁶ Zann (1995). *Our Sea, Our Future, Major Findings of the State of the Marine Environment Report for Australia*, p 12

physically lost 50 per cent of our coastal wetlands. We are in an area where we have to physically replace them.⁷

6.3 Federal, State and Local Jurisdictions

Administration of the coastal zone is divided between Commonwealth, State and local governments. States have jurisdiction from the high water mark out to three nautical miles from shore. In practice, the states delegate much of the administrative responsibility for the area between the high and low water marks to local government. It is this zone that is most heavily impacted by land use decisions. The Commonwealth has sole territorial responsibility for the area between three and 200 nautical miles from shore. The Commonwealth may also influence marine and coastal zone activities under s.51 of the Australian Constitution. Federal financial grants, such as those used to fund the Ocean Rescue 2000 programme and the National Land Care Programme, are made under s.96 of the constitution.

6.4 Coastal Zone Administration

The Commonwealth exercises control over its coastal zone jurisdictions through 26 agencies. The New South Wales Government maintains a further 18 authorities, administering over 60 Acts, involved in coastal zone management, although day to day administration is often in the hands of local government.⁸

There have been 29 major state and Commonwealth inquiries into the coastal zone between 1980 and 1992, including two reports by the Standing Committee on State Development in 1991 and 1992.⁹ More recently, Commonwealth and State governments have released the following reports.

⁷ Evidence of Mr Geary, 5 May 1977, p 59

⁸ Coastal Committee of New South Wales (1994). *Draft Revised Coastal Policy for NSW*, p 3

⁹ J Woodford (29 May 1995). "\$53m Plan to Care for the Nation's Coastline", *Sydney Morning Herald*, p 5

- 1993 Commonwealth of Australia - Resource Assessment Commission - *Coastal Zone Inquiry*, including 20 consultancy reports to the Commission.
- 1994 NSW Government- *Draft Revised Coastal Policy for NSW as Proposed by the Coastal Committee of NSW*.
- 1995 Commonwealth of Australia - State of the Marine Environment Report for Australia.
- 1995 Commonwealth of Australia - Living on the Coast. The Commonwealth Coastal Policy.

A common criticism of these inquiries is the lack of coordination among the public authorities charged with regulating coastal zone development and protection. For example, the Commonwealth Resource Assessment Commission's 1993 report made the following conclusions in regard to current coastal zone management:

- There remains a plethora of acts affecting coastal zone management, mostly reflecting the traditional sectoral approach to such management.
- Whilst there have been improvements in the level of coordination among the large number of institutions involved in coastal management, coordination and integration between institutions remains inadequate.
- Management and use of resources spanning marine and terrestrial areas is particularly impeded by a lack of integration and coordination of management systems.
- Existing systems do not provide for effective long term management of coastal zone resources.
- Developmental approval procedures are complex, time consuming and often sequential rather than concurrent, making them costly for applicants and governments.

- Although some Commonwealth, State and Local Government agencies have developed policies to achieve coastal zone management objectives, the policies and objectives are often not implemented and they are rarely integrated with social, economic and environmental goals.¹⁰

Despite repeated calls for coastal policy reform, governments at all levels have shown a reluctance to implement such wide ranging and complex recommendations. The Standing Committee on State Development has itself been frustrated in this way in relation to the Government's response to its 1991 *Report on Coastal Planning and Management in New South Wales: A Framework for the Future, Volume 1*. The Standing Committee wrote in 1992:

... the Committee is disappointed to conclude that, for a number of reasons, the Governments response is both less than adequate and inappropriate... Specifically, the response is inadequate in that several critical aspects of the Committee's report were completely ignored and were not commented upon.¹¹

The Standing Committee subsequently received a more comprehensive response in the form of "New South Wales, Facing the World", a document which outlined Government environmental policies.¹²

The Standing Committee considers the present lack of defined coastal policy to be detrimental to fish habitat and recommends:

Recommendation 17

¹⁰ Resource Assessment Commission (1993). *Coastal Zone Inquiry: Final Report*, AGPS, Canberra, p 84

¹¹ Standing Committee on State Development (1992). *Coastal Planning and Management in NSW: the Process for the Future*, Vol 2, Legislative Council of NSW, Sydney, p 201

¹² NSW Government (April 1992). *New South Wales Facing the World*, Policy Statement, Sydney

That the Government release its Coastal Policy without further delay.

6.5 Major Habitat Protection Legislation in New South Wales

There are four primary pieces of New South Wales legislation which are concerned with the protection of fish habitat. These are the *Catchment Management Act 1989*, the *Environmental Planning and Assessment Act 1979*, the *Marine Parks Act 1997* and the *Fisheries Management Act 1994*.

6.5.1 The *Catchment Management Act 1989*

The *Catchment Management Act 1989* relates to estuaries, rivers and their tributaries. The aim of the Act is to provide for a more holistic approach to land use management through Total Catchment Management. Total Catchment Management is defined as the coordinated and sustainable use and management of land, water, vegetation and other natural resources on a water catchment basis which balances resource utilisation and conservation. Section 5(1) contains the objectives of the Act as follows:

- to co-ordinate policies, programs and activities as they relate to catchment management;
- to achieve active community participation in natural resource management;
- to identify and rectify natural resource s degradation;
- to promote the sustainable uses of natural resources; and
- to provide stable and productive soil, high water quality and protective and productive vegetation cover within each of the State's water catchments.

The Act provides for a network of Catchment Management Committees and Catchment Management Trusts which are overseen by a State Co-ordinating Committee.

The New South Wales Government has formulated four State policies within the framework of Total Catchment Management. These include a State Ground Water Policy, State Trees Policy and a Rivers and Estuaries Policy.

The objectives of the Rivers and Estuaries Policy are:

To manage the rivers and estuaries of New South Wales in ways which:

- slow, halt or reverse the overall rate of degradation in their systems;
- ensure the long term sustainability of their essential biophysical functions; and
- maintain the beneficial use of these resources.

These objectives are to be achieved through the application of the following principles:

- those uses of rivers and estuaries which are non-degrading should be encouraged;
- non-sustainable uses which are not essential should be progressively phased out;
- environmentally degrading processes and practices should be replaced with more efficient and less degrading alternatives;
- environmentally degraded areas should be rehabilitated and their biophysical functions restored;
- remnant areas of significant environmental value should be accorded special protection; and
- an ethos for the sustainable management of river and estuarine resources should be encouraged in all

agencies and individuals who own, manage or use those resources, and its practical application enabled.¹³

6.5.2 *Environmental Planning and Assessment Act 1979*

Coastal development is controlled through the *Environmental Planning and Assessment Act 1979*. Planning instruments of this Act include:

- State Environmental Planning Policies (SEPPs)
- Regional Environmental Plans (REPs)
- Local Environmental Plans (LEPs)

SEPPs and REPs are initiated by State Government instrumentalities and provide a framework for local governments to prepare LEPs. LEPs outline the zoning boundaries for different types of land use. Local governments are therefore major participants in the environmental management of the State. The two planning instruments most applicable to the coastal zone are SEPP 14 - Coastal Wetlands and SEPP 26 - Littoral Rainforests.

A number of witnesses were critical of the ability of local governments to effectively and responsibly manage coastal development. The “tyranny of small decisions” has been cited as one of the primary factors responsible for the present inadequate management of coastal and estuarine habitats. For example, Mr Jeff Angel, Director of the Total Environment Centre, questioned the ability of local governments to implement responsible environmental planning. Mr Angel stated:

... it is no good giving local councils with low skill levels, low resource levels and frankly often a culture that is more disposed towards local development than strict environment controls, important pollution control activities—and in the case of Wallis Lake it was septic tanks. It is probably worth noting in passing that the new

¹³ NSW Water Resource Council (1993). *The NSW State Rivers and Estuaries Policy*, NSW Government, p 45

protection of the environment operations legislation just released by the Government only reinforces that problem by giving more environmental regulatory roles to local government, which, frankly, will not be capable of implementing it to any level of adequacy.¹⁴

6.5.3 Fisheries Management Act 1994

The passage of the *Fisheries Management Act 1994* introduced significant new provisions for the maintenance and protection of aquatic habitats. The objects of the Act, listed in s. 3(2) include a commitment:

to conserve fish stocks and protect key fish habitats; and

to promote ecologically sustainable development.

The primary provisions for the protection of coastal and estuarine habitat are contained in Part 7 - Protection of Aquatic Habitats (see section 3.2.7 of this Report), which encompasses the preparation and implementation of Habitat Protection Plans (HPP), the protection of marine vegetation and the declaration of aquatic reserves. Habitat Protection Plans set out guidelines for activities and practices within the area covered by the plan, "whether the habitat is critical to the survival of the species or required to maintain harvestable populations of the species".¹⁵

HPP 1 was gazetted on 10 March 1995. This plan provides greater protection for marine habitat by ensuring that individuals who wish to reclaim fish habitat, remove snags, destroy marine vegetation or create a new structure or modify a structure that impedes fish passage must seek a permit from NSW Fisheries. A second HPP (gazetted 26 September 1997) has been developed specifically for seagrasses, with a third, jointly funded by the Nepean Catchment Management Trust, being drafted for the Hawksbury-Nepean River system.

¹⁴ Evidence of Mr Angel, 2 April 1997, p 60

¹⁵ *Fisheries Management Act 1994*, s. 192(1)

There are no penalties associated with breaches of HPP guidelines, although public authorities have a statutory obligation to consult with the Minister before carrying out or approving any actions contrary to a HPP under s. 193(3) of the Act.

The Standing Committee heard that a lack of funding to implement the habitat protection provisions of the *Fisheries Management Act 1994* has rendered them ineffective.

For example, Duncan Leadbitter, Executive Director of Oceanwatch, commented:

Most of the damage that was done to flood plains was done long before the Fisheries Management Act even recognised environmental management as an issue. The advent of the habitat protection provisions under the previous Act, and increasingly so under the new Act, have slowed the rate of degradation. I acknowledge that. There has been very little pull back and very little gain of habitat. There are a number of reasons. First, it is relatively recent that we have legislative power to go out and do that. Second is the lack of funds. Third, there is still some jockeying between agencies as to who has the power. For years Fisheries was steamrolled over by agencies such as Public Works and the Water Resources Commission in its various forms. There is still not a strong enough constituency out there to chivvy Fisheries along. They are not as pro-active as they could be, largely due to the small size of the habitat section and the main focus being on the resolving of fisheries management issues.¹⁶

The *Fisheries Management Act 1994* has also been criticised for making the Department responsible for both habitat protection and the management of resource exploitation. For example, Mr Angel stated:

It is our view that additions should be made to the Act so that accountability is improved and a coherent management

¹⁶ Evidence of Mr Leadbitter, 3 April 1997, pp 68-69

system can be put into place. Further there is a clear need to improve the capacity of the Department of Fisheries. In this regard it will be important to separate the conservation and economic exploitation aspects of the fisheries agency. Past experience, for example, shows that these two duties cannot be placed in the one agency as economic factors inevitably degrade delivery of environmental regulation.¹⁷

The Department's conservation and resource management roles may be separated to some degree through the formation of the NSW Fisheries Office of Conservation. The Office of Conservation has a staff of twelve, including five field officers, six field managers and the principal manager, Dr Darryl Grey. Dr Glaister outlined the role of the Office of Conservation as follows:

The most recent change has been the creation of the Office of Conservation, which will bring together all of the Department's activities concerned with the area of conservation. This has been a quite deliberate decision to highlight the importance that is placed on conservation issues. Paul O'Connor is acting in that capacity as head of that unit at the moment. It includes elements of research, management, compliance and information. It has, in addition to the identified areas of conservation, in particular, rivers and coastal, also the responsibility for threatened species, marine parks and some other recent innovations. It is primarily to act as a renewed area of interest for us.¹⁸

6.5.4 Marine Parks Act 1997

Prior to the introduction of the *Marine Parks Act 1997*, marine protected areas were declared under the *Fisheries Management Act 1994* or the *National Parks and Wildlife Act 1974*. This crossover of responsibilities led to some confusion and exposed deficiencies in the legislation relating to the protection of all marine

¹⁷ Submission 74, Total Environment Centre, p 1

¹⁸ Evidence of Dr Glaister, 19 May 1997, p 4

life. The previous legislative arrangements were also criticised for failing to provide a transparent process for the identification of marine reserves which combine marine and terrestrial activities.

The objects of the *Marine Parks Act 1997* are outlined in s.3 as follows:

- (a) to conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive system of marine parks,
- (b) to maintain ecological processes in marine parks,
- (c) where consistent with the preceding objects:
 - (i) to provide for the ecologically sustainable use of fish (including commercial and recreational fishing) and marine vegetation in marine parks, and
 - (ii) to provide opportunities for public appreciation, understanding and enjoyment of marine parks.

Part 3 of the Act provides for the regulation of activities in a marine park. Marine Parks are to be established following the multiple zone model. Under s. 16(1):

The regulations may make provision for or with respect to classifying areas within a marine park for different uses (for example, sanctuary areas, habitat areas and general use areas) by a means of zoning plans set out in the regulations.

The largest of the zones in each of the Parks will be the “general use zone” in which a broad range of ecologically sustainable activities will be permitted. Only the sanctuary zones, which represent a small proportion of the total area declared, will exclude all fishing activity.¹⁹

¹⁹ NSW NPWS (1997). *Marine Parks Information Booklet*, NSW National Parks and Wildlife Service, Sydney, p 2

Sections 17, 18 and 19 provide for the regulation of various activities within marine parks, including commercial activities, navigation and the use of marine vessels, where vessels may be moored or anchored, mining activities, the carrying out of development, and the fees payable in respect of the use of a marine park.

Section 29 establishes the Marine Parks Authority, consisting of the Director General of the Premiers Department as chairman, the Director of Fisheries and the Director General of the NSW National Parks and Wildlife service. The functions of the Authority are described in s.30 as follows:

- (a) to investigate, assess and consider proposals for marine parks or variations for the areas of marine parks,
- (b) to make recommendations as to the appropriate classification of areas within marine parks,
- (c) to prepare an operational plan in respect of each marine park,
- (d) to manage and control activities that may affect marine biological diversity, marine habitats and marine ecological processes in marine parks,
- (e) to provide for and regulate the ecologically sustainable use (including commercial and recreational fishing) of marine parks,
- (f) to disseminate information about marine parks,
- (g) to encourage public appreciation, understanding and enjoyment and, where consistent with the other functions of the Authority, public recreation in marine parks,
- (h) to encourage and permit, when appropriate, scientific research into the ecology of marine systems.

The Act provides for consultation on two levels: at the State level through a Marine Park Advisory Council and at a local level through Advisory Committees established for each park. In accordance with s. 32(2), the Marine Park Advisory Council consists of the director of Fisheries, the Director General of the National Parks and Wildlife Service and the following members appointed from public nominations by the relevant Ministers:

- (a) one member representing the Commonwealth Government,
- (b) two members to represent the interests of marine conservation, at least one being an expert in marine conservation,
- (c) one member with expertise in marine science,
- (d) one member to represent the interests of aboriginal people,
- (e) one member to represent the interests of the tourism industry,
- (f) one member to represent the interest of the commercial fishers,
- (g) one member to represent the interests of recreational fishers, and
- (h) one member to represent the interests of recreational divers.

The Advisory Council is, on the request of the relevant Ministers or the Authority, to advise on any of the following matters:

- (a) proposals for marine parks and variations of the areas of marine parks;
- (b) the appropriate classification of areas within marine parks;

- (c) the conservation of marine and biological diversity within marine parks;
- (d) the ecologically sustainable use of marine parks;
- (e) the public use and enjoyment of marine parks; and
- (f) any other matter relating to the operation of this Act and the regulations.

Section 35 requires the establishment of Marine Parks Advisory Committees as follows:

- (1) The Authority must establish an advisory committee for each marine park.
- (2) An advisory committee is to include at least 9 members representing the interests of the national parks and wildlife service, NSW Fisheries, marine conservation, Aboriginal people, the tourism industry, commercial fishers, recreational fishers, scuba divers and local councils.
- (3) The Authority is to nominate a member of an advisory committee to be the chairperson of the advisory committee
- (4) The principal function of an advisory committee is to advise the Authority on the management of the marine park or marine park for which it was established.

The declaration of marine protected areas is an integral part of the New South Wales Government's strategy to protect sensitive fish habitat. There are presently 22 marine protected areas in the State's waters, including seven aquatic reserves established under the *Fisheries Management Act 1994*, 14 terrestrial national parks and nature reserves with estuarine or marine components established under the *National Parks and Wildlife Act 1974*, and

two marine parks established under the *Marine Parks Act 1997*.²⁰ The Minister announced on 8 August 1997 that the Cook Island Aquatic Reserve would also be declared.

The *Marine Parks Act 1997* has been criticised for not containing stronger provisions regarding zoning arrangements and its failure to include compensation mechanisms for commercial fishers for the declaration of a Marine Park. For example, the Hon Ian Cohen stated, during the second reading of the Marine Parks Bill in the Legislative Council:

The Bill does not identify clearly what will be allowable within a marine Park or the criteria of each zone, providing certainty to neither commercial fishers nor the conservationists. The Bill does not identify adequate investigation of the compensation for commercial fishers - a vexed problem that both the conservation movement and the commercial fishing fraternity have been seeking to solve.²¹

6.6 Departmental Responsibilities

There are numerous New South Wales Government Departments and Agencies that have some responsibility for the coastal zone. These include the Department of Public Works, NSW Agriculture, the Department of Mineral Resources, the Department of Land and Water Conservation, the Soil Conservation Service, the Environment Protection Authority and the National Parks and Wildlife Service. This section of the report will examine the key pieces of legislation which govern the activities of the above agencies, to assess the effectiveness of the current legislative mechanisms in managing estuarine and coastal habitats. The coordination of the habitat protection functions or responsibilities of all these agencies has long been a difficult proposition.

²⁰ J Burchmore, D Pollard, (1995). *Marine Conservation and Marine Protected Areas in NSW, the Past 25 Years*, State of the Marine Environment Report for Australia, Technical Annex.

²¹ I Cohen (25 June 1997). *Second Reading of the Marine Parks Bill 25/6/97*, Hansard, p 11144

In an attempt to coordinate State agencies, the Coastal Council of NSW was constituted under the *Coastal Protection Act* in 1979. The function of the Council was to advise and report to the Minister on the coordination of the activities of Government Authorities and the development of new coastal policies. The term of Council members was not extended beyond 1985. In October 1988 the Council was re-established as the Coastal Committee under s. 22 of the *Environmental Planning and Assessment Act 1979*. The Coastal Committee was then reformed in 1995 as the Coastal Council. Stewart Smith, Parliamentary Research Officer, wrote in his review of NSW coastal policy:

It appears that the current direction of coastal management is cyclical rather than moving forward. The State coastal advisory body, the Coastal Council of NSW, disbanded and then renamed the NSW Coastal Committee, and now again reformed as the Coastal Council is a good example.²²

The Department of Land and Water Conservation has acknowledged the need for a more integrated legislative approach to habitat management. Mr Geary stated:

I believe that the habitat management and water quality management, certainly of the coastal zone, needs to be in some form or another integrated. ... There is water quality legislation, rivers and foreshores legislation about banks and so on. There is a vast raft of legislation which controls what people can and cannot do in and around the coastal zone and waterways. At the moment that legislation is not integrated. There is no good tool for bringing it all together at the present moment.²³

6.6.1 Estuary Management Plans

²² S Smith (1995). *Coastal Protection*, NSW Parliamentary Library Research Service, Sydney, p 24

²³ Evidence of Mr Geary, 5 May 1997, p 57

Estuary management plans are being developed as part of the Government's estuary management policy. Estuary Management Committees, consisting of representatives of relevant authorities, local community groups and users of the estuary, have been set up to formulate the Estuary Management Plans and provide a link between the Department of Land and Water Conservation and the local community. The Department of Land and Water Conservation provides Estuary Management Committees with technical expertise and advice on biological and policy considerations.²⁴

During the formulation of an Estuary Management Plan, government agencies and community groups with commercial, ecological or other interests in the estuary, will be able to present their preferences and requirements for the future conservation, rehabilitation, development and use of the estuary to the Estuary Management Committee. The Estuary Management Committee will then determine a list of management recommendations and objectives to be implemented by local government, State Government and community groups.

6.6.2 Coordination of Coastal Policy.

A lack of integration and coordination of coastal policy between government agencies has long been a major problem for habitat protection in New South Wales. The Standing Committee wrote in 1991:

The difficulty of coordinating formally autonomous but functionally interdependent organisations constitutes a major obstacle to the implementation of policy and related strategy.²⁵

The Standing Committee recommended in the same report:

... that the State Government establish an agency, to be called the State Coordination Agency, vested in the

²⁴ New South Wales Government, *Estuary Management Manual*, October 1992

²⁵ Standing Committee on State Development (1991). *Coastal Planning and Management in New South Wales: A Framework for the Future*, Vol 1, Legislative Council of NSW, Sydney, p 57

Premier, to facilitate coordination between government agencies.²⁶

Referring to this lack of coordination, Dr David Pollard, habitat researcher and manager, NSW Fisheries, wrote in 1992:

... the management of "fish" and their habitats in most areas of the marine/estuarine system involves the piecemeal management (sometimes successful but often not) of individual species, stocks, habitats and uses, carried out by a plethora of different and often competing management authorities, each often working within in its own narrow and conflicting legislative and jurisdictional framework. While this is obviously an improvement over the previously unmanaged state, in my view this approach cannot hope to assure the maintenance of biodiversity, and thus equity of use, in the longer term. What I therefore suggest is needed is a much more holistic approach to aquatic ecosystem management.²⁷

The Standing Committee received evidence supporting this approach. In evidence, Mr Angel stated:

It would be sensible to treat the natural environment, at least in the higher order regulatory functions like pollution and threatened species, as one system, which is what it really is. It is one system that you must devote regulatory resources to resolve some of the critical problems that are essentially canary warnings. Yes, we never actually

²⁶ Standing Committee on State Development (1991). *Coastal Planning and Management in New South Wales: A Framework for the Future*, Vol 1, p 58

²⁷ D A Pollard (1992). "Maximising the potential for both sustainable fisheries and alternative uses of fish habitat through marine harvest refugia", *Sustaining Fisheries Through Sustaining Fish Habitat. Proceedings of Australian Society for Fish Biologists Workshop*, D A Hancock (ed), Department of Primary Industries and Energy, Canberra, p 157

believed that the Fisheries Management Act of necessity only required one agency's effort.²⁸

Determining a lead agency under which estuarine and coastal management can be coordinated has been suggested as a possible means of improving the coordination between regulatory authorities.

Mr Geary agreed, provided that care was taken in the choice of the lead agency:

When you get down to agencies, I think in terms of the natural resource players, you probably need an agency that has not got a particular industry agenda to pursue. Provided in each location you pick one who is not going to represent a high profile interest of a particular industry group or community group, it almost does not matter which one it is as long as it is competent.

That agenda issue needs to be watched very carefully because a lot of agencies certainly have the government as their primary client and they represent the government, but they also, on the other hand, represent the interests of an industry within government. It is that element that can be dangerous.²⁹

Mr Geoffrey Wright, Acting Director of Water Resources, Department of Land and Water Conservation, added:

I just make the comment that I think equally important in any legislation that was developed a clear definition of the roles of various agencies. One of things that we suffer from, not just on the coastal areas but right across New South Wales, is the lack of clarity into the various roles of say EPA which one might think is a environmental policeman. However, it does get involved in resource

²⁸ Evidence of Mr Angel, 2 April 1997, p 62

²⁹ Evidence of Mr Geary, 5 May 1997, p 61

management issues which one would have thought Land Conservation might be primarily interested in, and it is. But at the edges there are some very grey areas and the legislation, I think, would need and presumably would make very clear where the boundaries were so that with each agency, there could be some way of arbitrating as to which agency should have responsibility in a particular case. I think that is at least as important as picking a lead agency.³⁰

Habitat management of the NSW coastal environment is shaped by the political, legislative and administrative overlap of interest and responsibilities between NSW Government agencies. The Standing Committee considers that the continuing decline in the condition of coastal and estuarine habitats indicates that the present habitat protection mechanisms should be reviewed. The Standing Committee recommends:

Recommendation 18

- 1) **The Office of Natural Resources and Policy review, as a priority, all natural resource legislation relating to integrated land and water management and development in the coastal zone.**
- 2) **The performance measures for the review shall be:**
 - a) **to rationalise, simplify and strengthen the legislative framework (60 Acts) which currently manage NSW Coastal zone.**
 - b) **the creation of clear and accountable lines of responsibility and management of coastal resources by state agencies.**
 - c) **a clear separation of the roles of resource management, resource use or extraction regulation, and the monitoring and reporting of the State of NSW coastal resources.**

³⁰ Evidence of Mr Geary, 5 May 1997, p 61

- d) provision for a compulsory mechanism whereby agencies share and consult in a strategic manner regarding decisions which affect natural resources in the coastal zone.
- 3) That the coastal resources review be implemented in this calendar year and report back to Government by June 1998.

6.7 Urban Marine Parks

In response to concern over an increase in the use of the intertidal areas bordering urban areas, 14 Intertidal Protected Areas (IPAs) have been created by regulation around Sydney. They extend from the mean high water mark to 10 metres beyond the mean low water mark. These areas have been chosen to preserve and protect intertidal animals and habitat and act as reservoirs to repopulate other areas.

Interest has been expressed in an extension of this policy in order to create Urban Marine Parks to protect the urban marine environment and provide a sense of awareness of the importance of marine conservation in the more populous areas along the NSW coast. For example, Mr Howie Cooke, Secretary of Ocean S, argued:

I am coming from a people's value point of view in marine conservation, anthropomorphic or an urban social point of view. If the community is to be involved in marine conservation, all users within the community deserve representation. I think the community will resist participation if it does not have a sense of ownership, stewardship and an understanding of marine environment. The current Fisheries policy of bioregional strategies is a good one to protect significant habitats, but if people feel isolated or alienated from those strategies because, in a lot of cases, they are offshore or away from dense urban areas, they do not feel they are in a position to contribute or participate.³¹

³¹ Evidence of Mr Cooke, 3 April 1997, p 44

NSW Fisheries does not support the establishment of urban marine parks without good scientific justification. Dr Glaister stated:

There is a lot of interest along the coast to establish marine reserves, intertidal protected areas—a whole bunch of generic marine protected areas. I think it is fair to say that in the past a number of these have been declared for other than biological reasons. People have said that there has been an unacceptable impact by non-resident gatherers. People from western Sydney and other places have harvested resources from areas around Sydney. Local government councils have been very sensitive to that and have said that they wanted an area protected—presumably for biological reasons but really to act as a deterrent and to be able to stop people doing that. My view is that the more of those that are set up without good justification the more the activities will be concentrated in fewer and fewer areas. It is a mistake to declare things without having a solid foundation on which to declare them. Biodiversity is certainly worth protecting and it is appropriate to protect unique areas and I am very supportive of that.

... I have asked my researchers to provide a series of criteria that might be used to identify areas that need that kind of protection. But with increasing population it is a challenge. Many areas previously were declared with criteria as loosely based as, "There are a lot of flora and fauna in this area." It was not specifically stated what and why.³²

6.8 Protection of the Environment Operations Bill 1996

The Protection of the Environment Operations Bill 1996 proposes to update or replace the *Clean Air Act 1961*, *Clean Waters Act 1970*, *Pollution Control Act 1970*, *Noise Control Act 1975*, and the *Environmental Offences and Penalties Act 1989*. The NSW Government released a draft exposure bill in December

³² Evidence of Dr Glaister, 7 July 1997, p 29

1996 in recognition of the need to consolidate and improve the present legislation. The associated Green Paper stated:

The major pollution control laws in NSW are up to thirty five years old. Parliament passed each of these Acts separately in response to then pressing environmental issues. Although the Acts met the environmental needs of their day, they now form an overlapping and often confusing network of responsibilities and requirements .

... The proposed Protection of the Environment Operations Bill will, when it is enacted by Parliament, be the pivotal legislative mechanism for reducing pollution and protecting the environment in NSW.³³

The Green Paper also stated:

Under the existing legislation the pollution control licensing scheme does not provide a comprehensive system of integrated environment protection. The requirements relating to each media - air, noise, water and waste - are spread across five acts, with offences and penalties set out in the sixth.

... The draft Bill shifts the emphasis away from the existing water legislation's 'licence to pollute' towards environmental protection licensing that controls and minimises the combined environmental impacts of activities.³⁴

The Bill has the following objects:

³³ NSW Government Green Paper (1996). *Protection of the Environment Operations Bill 1996, Public Discussion Paper*, NSW Government, Sydney, p 1

³⁴ NSW Government Green Paper (1996). *Protection of the Environment Operations Bill 1996, Public Discussion Paper*, p 10

- (a) to rationalise, simplify and strengthen the regulatory framework for environment protection;
- (b) to improve the efficiency of administration of the environment protection legislation
- (c) to provide mechanisms to protect the environment, consistently with the objectives of the EPA (d) as set down in section 6 of the *Protection of the Environment Administration Act 1991*,
- (d) to assist in the achievement of the objectives of the *Waste Minimisation and Management Act 1995*.

The centrepiece of the draft legislation are Protection of the Environment Policies (PEPs). Currently the EPA has a range of environment protection mechanisms available to protect the environment, including: regulation and enforcement; community education; economic instruments and environmental reporting. Existing legislation does not provide for any formal means for establishing plans, policies and strategies to secure positive environmental outcomes.³⁵ The Green Paper stated:

Protection of the environment policies provide a flexible tool to assist in environmental protection programs to an extent not available to government beforehand and provide a means for regulatory authorities to target specific areas that require specialised programs to protect it.

PEPs may be made for the whole of NSW or to specified areas. They may deal with any aspect of the environment, or with any activity may impact detrimentally on the environment. Examples of possible PEPS include: water quality objectives for a specified river catchment.³⁶

³⁵ NSW Government Green Paper (1996). *Protection of the Environment Operations Bill 1996, Public Discussion Paper*, p 7

³⁶ NSW Government Green Paper (1996). *Protection of the Environment Operations Bill 1996, Public Discussion Paper*, p 8

While the Bill offers tools for a uniform approach to regulating activities that impact on the coast and estuaries, the enforcement provisions have been criticised for only requiring authorities to “take into account” the guidelines set down in any Protection of the Environment Policy.³⁷

6.9 Case Study: Acid Sulphate Soils

The deficiencies of the current mechanisms to deal with habitat damage to the State’s estuaries and coastline is evidenced by the inability of the responsible agencies to effectively control land use practices which exacerbate run off from acid sulphate soils. A major difference between the management of the terrestrial and marine habitats is that fish habitat can be destroyed without much visible evidence. A primary example is the destruction of fish habitat and existing populations due to the effects of drainage from acid sulphate soils.

The effect of acid sulphate soils on the State’s waterways has not been extensively studied but is believed to pose one of the most severe threats to the productivity of the State’s waterways.

Acid sulphate soils are the greatest potential pollution risk to estuaries and aquatic ecosystems in coastal NSW. Disturbance of these soils by drainage, development or agricultural practice can produce huge quantities of sulphuric acid which run into drains and water ways.³⁸

Acid sulphate soils are the result of long-term bacterial activity in organic rich sediments. These soils are found in the estuarine areas of all NSW coastal catchments and cover an area of at least 400 000 ha. Acid sulphate soils are not a problem as long as they are left undisturbed. When acid sulphate soils are excavated or drained, oxygen is allowed to enter the soil, oxidising the pyrite and producing sulphuric acid (H₂SO₄). This causes severe soil

³⁷ J Johnson (1997). “The solution to pollution?”, *Pollution Perspectives*, Program and Conference Papers 20 March 1997, p 17

³⁸ J Williams (1996). *Land Management Water Quality and Acid Sulphate Soils: A Report From the Acid Sulphate Soils Management Advisory Committee*, Acid Sulphate Soils Management Advisory Committee, Wollongbar Agricultural Institute, Wollongbar, p 2

acidification and pollution of local ground water and surface water bodies. In turn, the acidification process increases the solubility of many metals. Metals of concern which can be acutely toxic to macroinvertebrate and fish populations include aluminium, iron, manganese and cadmium. These toxic species can be produced in great quantities. Drainage waters from areas of acid sulphate soils will affect water quality and can lead to the death or disease of aquatic organisms. These factors can cause environmental degradation, including: inhibiting or killing vegetation through acidification, reduced soil fertility and increased salinity, stunting or killing aquatic life, such as fish (red spot disease) and long-term destruction of aquatic ecosystems. Extensive deposits have been identified in the Tweed, Richmond, Clarence, Macleay, Hunter, Hawkesbury-Nepean and Shoalhaven catchments; Newcastle Harbour and Tuggerah Lakes.³⁹

Mr Jesmond Sammut, Lecturer, Department of Geography, University of NSW, who has carried out the only comprehensive survey on the impact of acid sulphate soils in NSW, commented on the cause and effect of acid sulphate soils on the Richmond River system in northern NSW:

I have been doing research for the last three years looking at the role of acid sulphate soils in triggering fish diseases. That work has also looked at fish kills and the patterns and processes in association with acid discharges coming out of drained wetland environments. The work that I have done rings a lot of alarm bells because it has shown that a lot of our estuaries have major problems with acid sulphate soils that have been heavily developed. For example, my main study site, which is on the Richmond River in northern New South Wales, called Tuckean Swamp, has about a thousand tonnes of sulphuric acid sitting in the flood plain, largely because of extensive drainage works. That one thousand tonnes of sulphuric acid is continuously being replenished every dry period. In a moderate flood I have measured being discharged from the floodgates about 950 tonnes of sulphuric acid, approximately 500 tonnes of toxic

³⁹ J Williams (1996). *Land Management Water Quality and Acid Sulphate Soils: A Report From the Acid Sulphate Soils Management Advisory Committee*, Acid Sulphate Soils Management Advisory Committee, p 3

species of aluminium, and several hundred tonnes of toxic species of iron. There were fish kills associated with those events, and fish diseases. For about 36 months the catchment upstream of the floodgates had continuous acidity in most of its major drains. Downstream of the floodgates there were periods of up to eight weeks when it was continuously acidic. Every month for 36 months there were acid discharges going through what used to be a quite important commercial fishery. So I think that there is quite a lot that needs to be addressed in terms of trying to manage acid sulphate soils.⁴⁰

Acid sulphate soils have been shown to contribute to fish kills in the effected systems. Mr Sammut described the pathology and potential impact on the commercial industry of acid runoff as follows:

The work that I have done has been with people from New South Wales Fisheries. We have proven unequivocally that the acid causes fish kills. It causes severe skin and gill damage, leading to the fish kills. We have also proved that fish which are sub-lethally exposed go on to suffer various fish diseases. One of the main ones is called red spot disease. It can affect about 80 per cent of the commercial catch on the Richmond River. So there is quite a lot of economic impact from that disease. The people from New South Wales Fisheries and I believe that the only way that we can manage these fish kills and fish disease outbreaks is essentially to manage the acid discharges.⁴¹

The practices of the sugar and tea tree industries which are located on acid sulphate soils have come under close scrutiny. Poor farming practices and the run off from cuttings used to drain these areas are one of the major causes of acid runoff and have brought fishermen and landowners into serious conflict. Dissatisfaction of the current management of the affected estuaries has been heightened by the perceived inability of government to ameliorate the impact

⁴⁰ Evidence of Mr Sammut, 2 April 1997, p 3

⁴¹ Evidence of Mr Sammut, 2 April 1997, p 3

of acid runoff. Mr Sammut is critical of the lack of action taken compared to other areas of environmental damage.

At present I have reservations about how the environment is being managed. I do not think that there has been much response to the problem. Lip service has been paid to it. I believe there have been attempts to give the impression that it is being managed, yet throughout New South Wales these problem soils occur in all the major estuaries. Their impact varies: it is probably more severe in parts of northern New South Wales and parts of the south coast. It concerns me that those areas are receiving less attention than, say, the salinisation problems that occur out west. The problems are probably in a similar ballpark yet a lot of money is injected into trying to manage salinisation and not much is injected into acid sulphate soil management.⁴²

Associated with the lack of government agencies' abilities to recognise the existing and potential damage to habitat from acid sulphate soils is the inability to resolve the conflicting land use problems which are required to effectively manage the acid sulphate problem. Mr Sammut comments on the failure of the present strategies to provide effective management plans due to the politicisation of the process:

I will go back to the example of my study site. About \$200,000—I am not sure of the exact figure—was injected into the management of Tuckean Swamp. I worked at the Wollongbar Agricultural Institute. My office was about three or four doors away from the team that was intended to manage Tuckean Swamp and they developed a land and water management plan. The whole point of that land and water management plan was to address the issues that the fishermen had raised regarding acid sulphate soils. On that committee there were quite a lot of farmers; I think about 51 per cent of the committee were actually farmers. I believe that there was a lot of political interference in that

⁴² Evidence of Mr Sammut, 2 April 1997, p 3

process as well, because there were politically oriented farmers being represented on that group.

That committee for the first year and a half really side-stepped the issue of acid sulphate soils, and the focus became how can we improve agricultural productivity by trying to manage floods in the system, for example. It was not until later that acid sulphate soils really came through as perhaps a very important issue, but even when it did there was continuous interference in really trying to address that problem. I did some consulting work for that particular committee, and quite a lot of my recommendations were not taken on board or were heavily criticised. The words of some people were, "You are going to upset the farmers." What that committee felt was important was to appease the farmers, to really have them on side. In the end the farmers were all convinced that the land and water management plan was going to improve their agricultural productivity, and water quality never became a real issue. It was mentioned; it was raised a few times, but it really was not the actual driving force for that committee.

... The fishermen are not represented on that committee—they were never invited to be—and there are other interest groups which were intentionally kept off that committee.⁴³

In a report to the Tuckean Swamp Land and Water Management Plan, Management Committee, Mr Sammut recommended that;

The Land and Water Management Plan should review legislative controls and policies that may influence the

⁴³ Evidence of Mr Sammut, 2 April 1997, p 5

management strategy. State, regional and local planning and development policies should be especially reviewed.⁴⁴

Mr Sammut indicated what impact acid sulphate soils would have on estuarine habitats and fishstocks if more effective measures were not taken to address the problem.

With the rate of coastal development that is taking place, and if development keeps following the path that it has taken, I believe that most of our estuarine flood plains will become highly acidic. There will be scenarios where for every dry period there will be acid production in the flood plain of around 200 kilograms per hectare per year, which is an average for northern New South Wales. For every wet period for every estuary that is affected by acid sulphate soils, there would be at least 2,000 to 3,000 tonnes of sulphuric acid being pumped into the system by drainage works. That means that we will have recurrent fish kills and recurrent fish diseases.

Attempts to control the acidified water have been complicated by the conflicting aims of the *Drainage Act (1939)*, *Clean Waters Act (1970)*, and the *Environmental Planning and Assessment Act 1979*. Drainage unions or trusts were originally conceived and embodied within the *Drainage Act (1939)*. Drainage Unions provided a mechanism by which landholders could be organised to ensure that adjoining land could be effectively drained to provide for farming practices.

The objectives of the Act are set out in s. 8:

Wherever any tract of land is so circumstanced that from any permanent or occasional cause, considerable quantities of water accumulate thereon or flow there over, and by reason of the absence of sufficient or artificial drainage or

⁴⁴ J Sammut (1996). *Processes and Impacts of Soil and Water Acidification in Tuckean Swamp, Lower Richmond River Northern NSW: A report to the Management Committee*, The Tuckean Swamp Land and Water Management Plan Management Committee, p 66

of flood prevention works or of works for the mitigation of the effects of tides, accumulate thereon or flow there over to the injury of such land application may be made to the Ministerial Corporation for the formation of a drainage union for compulsory drainage and mitigation of the effect of floods or tides.⁴⁵

Subsequent modification of the land use practices coupled with further development of wetlands areas have exacerbated the problems associated with maintaining an effective drainage and many of the current practices do not comply with the existing guidelines set down by the *Clean Waters Act*, the *Environmental Planning and Assessment Act* and State Environmental Protection Plans.

An examination of the causes and effects of acid sulphate soils indicates not only the real threat to the States fisheries resources but illustrates the deficiencies of the current regulatory mechanisms to ensure responsible development of coastal and estuarine environments. Government agencies need to take decisive and coordinated action to ameliorate this threat to fish habitat. The Standing Committee recommends:

Recommendation 19

That an adequately resourced task force, including representatives of the Department of Land and Water Conservation, NSW Agriculture and NSW Fisheries, be established immediately. This task force should be charged with concurrently:

- **reviewing the legislative framework related to acid sulphate soil run-off with a view to removing contradictory provisions so that the regulatory agencies (for example, EPA, DLWC, NSW Fisheries) can more effectively manage impacted areas; and**

⁴⁵ Drainage Act 1939 No 29 (Reprinted as at August 1988)

- **assessing the effectiveness and necessity of existing drainage works with a view to recommending the removal, redesign or relocation of drainage works to the relevant Minister[s].**

6.10 Conclusions and Recommendations

The Standing Committee recognises that there is an obligation on behalf of government to preserve critical marine habitats to ensure the viability of fish populations. The Standing Committee considers that providing stricter management controls over these areas will ensure the maintenance of sustainability and diversity of marine ecosystems and the productivity of fish stocks for all user groups. Comprehensive identification and assessment areas for protection will facilitate consultation and the development of management plans, including compensation for affected parties. Accordingly, the Standing Committee recommends:

Recommendation 20

That NSW Fisheries, in consultation with the National Parks and Wildlife Service, conduct an extensive research survey to identify key areas of habitat along the New South Wales coast for classification as Marine Parks.