

MARINE AND COASTAL

SPECIAL INVESTIGATION

PROPOSED RECOMMENDATIONS



 LAND CONSERVATION COUNCIL



LAND CONSERVATION COUNCIL

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Reference:

AMENDMENT - Page 38

The wording in recommendations 3.57(ii), 3.60(ii), 3.61(ii) and 3.66(ii) be replaced by the following text:

the consent of, or consultation with, the Minister responsible for management of the zone in which the proposal occurs, as required by the application of the categories set out in the preamble and in recommendation 3.56.



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PROPOSED RECOMMENDATIONS

LC LAND CONSERVATION COUNCIL

**Keeping you Informed of the Land Conservation Council's
Marine and Coastal Special Investigation - Issue No 5**

CONTACT: Ian Miles or Hania Bibrowska

☎ (03) 628 5142 Country Calls: 008 134 803

SUBMISSIONS INVITED UNTIL 6 JULY 1995

THE LAND CONSERVATION COUNCIL - VICTORIA'S PUBLIC LAND PLANNING AGENCY

The Land Conservation Council is an independent body established under the *Land Conservation Act 1970*. The Council's primary function is to carry out investigations and make recommendations to the Government 'with respect to the use of the public land in order to provide for the balanced use of land in Victoria'.

TERMS OF REFERENCE

The Governor in Council under section 8 of the *Land Conservation Act 1970*, has required the Land Conservation Council to carry out an investigation of marine, coastal and estuarine areas in the State of Victoria and to make recommendations by 30 November 1995 on the protection of significant environmental values and the sustainable use of these areas.

The area being investigated extends from the Victorian off-shore territorial limit (5.5 km) to a distance of approximately 1 km inland from the high-water mark.

Islands surrounded by marine and estuarine waters are included in the investigation. On French and Phillip Islands the landward boundary of the area is approximately 1 km inland from the high-water mark. The bed and associated waters of the Gippsland Lakes are excluded from the Investigation.

The Council's recommendations apply only to public land.

In making recommendations to provide for the balanced use of land in Victoria, the Council takes into consideration the social and economic implications relevant to its recommendations.

INVESTIGATION PROCESS

- Resources Report (released for public comment in June 1993)
- Close of first submission period (October 1993)
- Proposed Recommendations (released for public comment in April 1995)
- Close of second submission period (July 1995)
- Final Recommendations to Government (November 1995)

PROPOSED RECOMMENDATIONS

The Council's Proposed Recommendations are published to allow all those with an interest in the future use of Victoria's marine and coastal areas to comment before the Council prepares its Final Recommendations.

The Proposed Recommendations emphasise the importance of integrated planning and management across Victoria's entire marine and coastal environments, including bays, inlets and estuaries, as well as foreshore land and the catchments that drain to the coast.

The proposals include:

- Recommendations relevant to the whole of Victoria's Marine, Estuarine and Coastal Area (VMECA) as well as more specific planning principles and recommendations on the following:
 - risk assessment and management; habitat and species conservation; environmental quality; introduced plants and animals; harvesting and production of marine resources; recreation; visual resources; cultural heritage; earth resources; public/private land interface; coastal dynamics; development and infrastructure; community education; compliance; inventory, auditing and research; and Aboriginal interests.
- Recommendations for the major bays, inlets and estuaries in recognition of their particular biophysical characteristics and environmental, social and economic significance.
- The whole of Victoria's Marine Area is divided into five zones. The five zones and their primary objectives are:
 - * **Sanctuary Zone:** to provide for the maintenance of natural ecosystems as a reference for scientific research and for monitoring the state of the marine environment.
 - * **Conservation Zone:** for conserving representative examples of habitat type by providing high levels of protection for marine flora and fauna and their associated ecological processes.
 - * **General Protection Zone:** to provide for the protection of specific habitats or flora and fauna, and for appropriate recreation and resource use.
 - * **General Use Zone:** to provide for a diverse range of recreational and commercial activities consistent with the zone's long-term sustainable use.
 - * **Services, Utilities and Facilities Zone:** to provide for port and shipping operations, or development of major recreation boating facilities.

- A proposal for a system of 14 marine parks along the Victorian coast, 5 of which incorporate the existing marine and coastal parks in Port Phillip Bay, Bunurong, Shallow Inlet, Wilsons Promontory and Corner Inlet/Nooramunga. Marine parks include Sanctuary, Conservation and General Protection Zones.

SUBMISSIONS ARE WELCOMED

Public consultation is a required and important part of the Council's process. Public submissions are now invited on the Proposed Recommendations. After considering these submissions, Council will prepare its Final Recommendations which are presented to the Government for its consideration.

It is important to note that the Council is an independent body and any comments should be directed to it so that they can be considered prior to the formulation of Final Recommendations. It is then the role of the Government to decide on the Council's recommendations.

Who should be involved?

Anyone with an interest in the use of Victoria's marine, estuarine and coastal areas.

How to make a submission

A submission is a positive way to provide information, to express your opinion, and to suggest alternative approaches.

- Make sure your comments are clear - it would help us if you list points or break up your submission into subject headings.
- It can be brief, or even in point form - your information and ideas are more important than presentation.
- If you wish to make a confidential submission, or discuss particular issues of concern to you, or have difficulty preparing a written submission, please contact the Council's staff.

What happens to your submission?

Submissions are welcomed and all are actively considered. It is a legislative requirement that the Land Conservation Council only make recommendations after considering submissions.

The Council may want to ask you for additional information or discuss the issues raised in your submission, so please provide your name and address.

This also enables the Council to acknowledge receipt of your submission.

Send your submission to:

Secretary
Land Conservation Council
1st Floor, 477 Collins Street
Melbourne 3000
Fax: (03) 628-5080

SUBMISSIONS CLOSE

Submissions must reach the Council's offices by Thursday, 6 July 1995.

COPIES OF THE PROPOSED RECOMMENDATIONS

The recommendations may be inspected at:

- * Department of Planning and Development - Library
477 Collins Street, Melbourne and regional offices of the Department at Geelong, Ballarat, Morwell, Bendigo and Wodonga.
- * Public Libraries along the coast
- * Municipal Offices

Copies may be purchased over the counter from:

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318 Little Bourke Street, Melbourne
- * Department of Planning and Development - Bookshop
477 Collins Street, Melbourne
- * Department of Conservation and Natural Resources offices at:
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Melbourne (Outdoors Information Centre - 240 Victoria Parade,
East Melbourne), Dandenong, Wilsons Promontory, Yarram, Bairnsdale
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MARINE AND COASTAL

SPECIAL INVESTIGATION

PROPOSED RECOMMENDATIONS

APRIL 1995



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ABBREVIATIONS

ANZECC	Australian New Zealand Environment and Conservation Council
APEA	Australian Petroleum Exploration Association
CAMBA	Agreement Between the Government of China and the Government of Australia for the Protection of Migratory Birds
CNR	<i>Department of Conservation and Natural Resources</i>
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAEM	Department of Agriculture, Energy and Minerals
DEM	Department of Energy and Minerals
DHCS	Department of Health and Community Services
DPD	Department of Planning and Development
DoA	Department of Agriculture
DoT	Department of Transport
EES	Environment Effects Statement
EIA	Environment Impact Assessment
EPA	Environment Protection Authority
GIS	Geographic Information System
JAMBA	Agreement Between the Government of Japan and the Government of Australia for the Protection of Migratory Birds
LCC	<i>Land Conservation Council</i>
MPA	Marine Protected Area
PMA	Port of Melbourne Authority
RAC	Resource Assessment Commission
RAOU	Royal Australasian Ornithologists Union
SEPP	State Environment Protection Policy
TAC	Total allowable catch
VMECA	Victoria's Marine, Estuarine and Coastal Area

GLOSSARY

- acute*** – having a sudden onset, lasting a short time. (Opposite to chronic)
- aquaculture** – farming of plants or animals in water of any kind
- ascidians** – sessile chordate animals of the class Ascidiacea, may be solitary or colonial and there is usually a free-swimming larva
- Australian Fishing Zone*** – proclaimed 200 nautical mile-wide zone around the coast within which Australia controls domestic and foreign access to fish resources
- bathymetry*** – the measurement of ocean depths to determine the sea floor topography
- benthos (benthic)** – the flora and fauna of the bottom of the sea
- biodiversity*** – the variety of all life forms: the different plants, animals and micro-organisms, the genes they contain and the ecosystems they form. It is a concept that emphasises the inter-relatedness of the biological world. It is often considered at three levels: genetic diversity, species diversity and ecosystem diversity
- biogeographic*** – relating to large regions with distinct fauna and flora
- biomass*** – as measured by ecologists, the dried weight of all organic matter in the ecosystem
- bioregion*** – a large area with distinct fauna and flora
- biota*** – collectively, the plants, micro-organisms and animals of a region
- bloom*** – a proliferation of plants (such as macroalgae or phytoplankton) during favourable growing conditions generated by nutrient or sunlight availability
- bryozoans** – sessile colonial animals of the invertebrate phylum Bryozoa, sometimes known as 'moss animals' which form tuft-like or moss-like aggregate masses
- by-catch*** – species taken incidentally in a fishery where other species are the target. By-catch species may be of lesser value than the target species, and are often discarded
- cephalopods** – group of highly organised molluscs characterised by distinct head with arms or tentacles attached (includes cuttlefish, octopus, etc.)
- chronic*** – having a continuous or persistent effect. (Opposite to acute)
- cnidarians** – animals of the invertebrate phylum Cnidaria, possessing nematocysts or stinging cells, and including hydroids, corals and sea anemones
- community** – assemblage of plant and animal species living together in a particular place
- contaminant*** – any physical, chemical or biological substance (usually human-made) which is introduced into the environment. Does not imply an effect (see pollution)
- crustaceans** – arthropod animals, mostly aquatic, characterised by a hard close fitting shell which is shed periodically (includes crabs, lobsters, shrimps, etc.)
- demersal** – living on or near the sea bottom
- dredge spoil*** – sediments and materials removed from the seabed as a result of dredging activity
- ecologically sustainable development*** – development which meets the needs of the present without compromising the ability of future generations to meet their needs. A development which is

- compatible with the continuing functioning of essential ecological processes.
- ecology*** – study of living organisms and their relationships to one another and the environment
- ecosystem*** – the physical and chemical environment of a community of organisms, and all the interactions among those organisms and between *organisms and their environment*
- ecotourism*** – nature-based tourism that involves education and interpretation of the natural environment and is managed to be ecologically sustainable
- effluent*** – a complex waste material which is a by-product of human activity (e.g. liquid industrial discharge or sewage)
- endangered species*** – a plant, animal or micro-organism that is in immediate danger of biological extinction
- endemic*** – ‘native’ species confined to a given region (e.g. a species endemic to southern Australia is not found anywhere else)
- environment effects statement** – a document prepared as a part of environmental impact assessment process on proposals which could have a *significant impact on the environment*. The EES describes the proposal, any feasible alternatives to it and its expected effects on the environment. The Minister for Planning makes decisions on the need for the EES under the *Environment Effects Act 1978*.
- epibenthos** – benthic organisms living on (not within) the sea bottom
- estuarine water** – found in estuaries usually having variable salinities sometimes well below that of ocean water and sometimes above
- estuary** – tidal mouth of a river where salinity is usually less than that of the sea
- eutrophication*** – increase in the nutrient status of a water body, and consequently the rapid growth of plants, both natural and as a result of human activity. Excessive plant production may deplete oxygen and suffocate animals
- filter feeding** – a feeding strategy sieving plankton from the water. It is used by *many molluscs and a very few species of fin-fish*.
- food chain*** – a specific nutrient and energy pathway in ecosystems proceeding from producer to consumer
- gillnets*** – fishing nets designed to ensnare fish by the gills
- grow-out stage** – *final stage of mariculture in which the adult form is on-grown or fattened prior to harvest*.
- habitat*** – a geographic area that can provide for the key activities of life
- hazardous waste*** – any harmful solid, liquid or gaseous waste product of manufacturing or other human activities which by its nature is inherently dangerous to handle or dispose of
- heavy metals*** – metallic elements with relatively high atomic weights (over 5.0 specific gravity), such as lead, cadmium, arsenic and mercury. Generally toxic in relatively low concentrations to plant and animal life.
- high energy coastline** – areas of coast subject to the effects of storms and large waves
- hydroids** – animals of the class Hydrozoa, order Hydroida, often occurring as sessile colonies of polyps

hydrocarbons* – organic molecules containing hydrogen and carbon. Major components of petroleum released during the incomplete combustion of organic fuels

larva – a pre-adult developmental stage of many invertebrates which hatches from the egg and often leads a different life from that of the adult

longline* – a fishing line consisting of many hooks or lures which may be bottom set or drifting

macroalgae* – large algae (e.g. kelp)

mariculture – a form of aquaculture in which the crop is grown in sea or estuary water

marine environment* – the maritime area extending, in the case of watercourses, up to the freshwater limit and including intertidal zones and the shoreline, estuary, bay, harbour, nearshore and offshore waters

marine mammals* – animals of the Class Mammalia having glands for nourishment of young, and living in or depending upon the sea (e.g. whales, seals, dugongs)

molluscs – group of soft bodied animals which usually have a hard shell (includes snails, bivalves, limpets, tooth shells as well as cephalopods)

monitoring* – routine counting, testing or measuring of environmental factors or biota to determine their status or condition

non point-source pollution* – diffuse source of pollution such as an eroding field, urban and suburban lands, and forests. (Compare with point-source pollution)

nursery stage – where a second, separate stage of care is needed between the hatchery and grow-out stages

nutrients* – elements or compounds essential as raw materials for organic growth and development such as carbon, oxygen, nitrogen and phosphorus

pelagic – living in the water column as distinct from near the bottom

photic zone – surface waters to the depth to which sunlight penetrates

phycology – study of algae

phylum – high level taxonomic division, containing plants or animals of the same general form, ideally reflecting common ancestry

phytoplankton – planktonic plant organisms collectively

plankton* – aquatic, free drifting, suspended organisms (plants: phytoplankton; animals: zooplankton)

planktonic – occurring in the water column, movement controlled by currents and tides

point-source pollution* – easily discernible stationary source of pollution such as a factory. (Compare with non-point source pollution)

pollution* – the introduction by humans, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as to harm living resources and marine life, be hazardous to human health, hinder marine activities, including fishing and other marine uses, or impair the quality of sea water and reduce amenities

polychaetes – class of worms characterised by numerous bristles on the footstumps

purse seine – seine net which is also brought together from underneath to prevent fish from escaping downwards in deeper water

Ramsar Convention – convention on wetlands of international importance especially as waterfowl habitat

seine – fishing net which hangs vertically in the water, the ends being brought together to enclose the fish

serial spawning – spawning which takes place several times over the breeding season

sessile – attached to the substrate, immobile

shellfish –organism living within biologically produced shells and exoskeleton: molluscs and arthropods.

siltation* – sediments deposited by water in channels, harbours etc.

spat – first sessile stage of a mollusc, where small adult-like forms are found fixed to a hard surface.

species – populations of animals or plants that are able to interbreed and produce fertile offspring

stock – genetically similar group of fish that can be managed as a single entity

subtidal* – below the low-water mark

suspended solids* – any solid substance present in water in an undissolved state, usually contributing directly to turbidity

toxicity* – the inherent potential or capacity of a material to cause adverse effects in a living organism

* These entries are from *Our Sea, Our Future : Major Findings of the State of the Marine Environment Report for Australia*, Ocean Rescue 2000 Program Report, February 1995.

1. INTRODUCTION

This report contains the Land Conservation Council's proposed recommendations for Victoria's marine, estuarine and coastal area. The recommendations provide for the protection of significant environmental values and the sustainable use of the area's resources.

Six general recommendations are given at the end of this chapter while chapters 3, 4 and 6 to 12 contain more specific recommendations. Chapter 2 describes the economic activity associated with the Victorian coast and the implications of the Council's recommendations. It is intended that this chapter be read in conjunction with relevant following chapters. Accompanying the text is a map at the scale of 1:350,000 which covers the entire Victorian coast and gives a broad view of the recommendations proposed for specific areas. Additional information on area boundaries is available from the Council.

The Land Conservation Council

The Land Conservation Council was established by the *Land Conservation Act 1970*. One of its main functions as defined by the Act is to carry out investigations for, and make recommendations to, the Victorian Government about public land in order to provide for its balanced use.

Terms of Reference for the Investigation

On 24 September 1991, the Land Conservation Council was required by the Victorian Government to conduct the following investigation:

The Governor-in-Council, under Section 8 of the Land Conservation Act 1970, requires the Land Conservation Council to carry out an investigation of marine, coastal and estuarine areas in the State of Victoria and to make recommendations by 30 November 1994 on the protection of significant environmental values and the sustainable use of these areas.

The area to be investigated extends from the Victorian offshore territorial limit (5.5km) to a distance of approximately 1km inland from the high-water mark; it includes the land (terrain, and overlying water) affected by marine, estuarine, and coastal processes. Islands surrounded by marine and estuarine waters are included in the investigation. On French and Phillip Islands the landward boundary of the area is approximately 1km inland from the high-water mark.

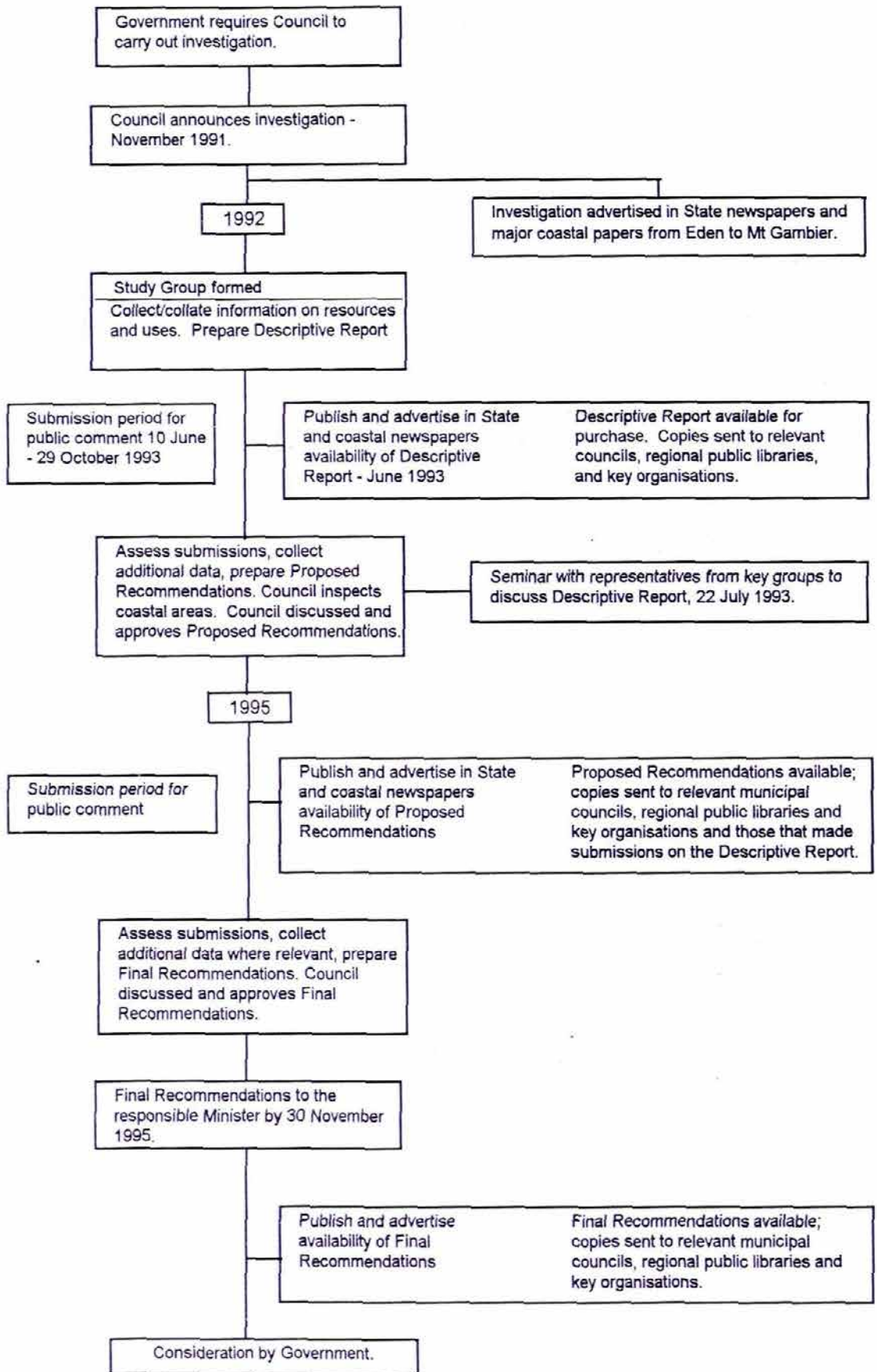
The bed and associated waters of the Gippsland Lake are excluded from the investigation.

Recommendations will apply only to public land.

In making recommendations to provide for the balanced use of land in Victoria, the Council is to have regard to the social and economic implications relevant to its recommendations.

In October 1994 the completion date for the investigation was extended to 30 November 1995.

Figure 1.1: Marine and Coastal Special Investigation Flowchart



Scope of the Investigation

In accordance with the *Land Conservation Act 1970*, this investigation covers 'public land' as defined by that Act. Freehold land is not subject to these recommendations, nor is Crown land within cities and rural cities. The Terms of Reference also excluded the bed and associated waters of the Gippsland Lakes.

Background

In Victoria, debates over the use of marine, estuarine and coastal areas have been similar to those raised at national and international forums. They cover issues such as the discharge of sewage to coastal waters; the risk of oil and other spills; the concentrations of heavy metals and hydrocarbons in marine sediments (such as those of Port Phillip Bay); algal blooms; changes to coastal estuaries as a result of vegetation clearance and river regulation; the status and allocation of fish stocks; the introduction of exotic organisms from ballast water discharges; and the conservation of marine flora and fauna. The task is to determine how to use such resources on a sustainable basis, and ensure that appropriate planning and management decisions are taken.

The coast plays a significant part in the lives of most Victorians. A summer holiday by the sea is a part of the lifestyle of many of us, and it is important that water be suitable for swimming and the fish safe to eat. The State's fish and shellfish industries make a valuable contribution to the economy. The little penguins, the southern right whale, and other marine animals are growing tourist attractions. Coastal and marine waters are used for shipping and the major ports are vital for trade.

In Victoria, most of the coastline is public land and therefore accessible for the enjoyment of all. At the same time, as population, leisure time, and tourism increase, the coast is coming under greater pressure from different uses. Despite these increased pressures, our coast and marine areas remain relatively undisturbed by major or destructive developments when compared with many highly polluted and disturbed coastal areas in other parts of the world. However, this should not make us complacent, as environmental stresses are already clearly evident in Victoria's marine waters, as described in the major findings of the State of the Marine Environment Report for Australia, *Our Sea, Our Future*, published in February 1995.

It is therefore timely and important to plan for the wise use and management of Victoria's marine, estuarine and coastal areas and to ensure the protection of natural resources, sustainable harvesting of fish, and environmentally sensitive development.

Coastal planning for diverse uses on a sustainable basis has not yet been applied to the entire Victorian coast. To be effective, planning must take into account activities beyond the State's marine, estuarine and coastal areas such as in the adjoining Commonwealth and States' waters and in the catchments draining to the sea. This is of particular importance for marine and estuarine areas because of the connectedness of the marine systems and the land/sea interface. As outlined in the Descriptive Report this relationship is a transition zone for many natural processes, rather than the boundary that it is often considered to be in both State and Commonwealth legislation and administrative arrangements.

Recent Initiatives in Marine and Coastal Planning

This section outlines major initiatives that have occurred since the release of the Descriptive Report in June 1993. It is current at February 1995.

The Resource Assessment Commission's **Coastal Zone Inquiry** was the most comprehensive national inquiry to deal with the use and management of Australia's coastal zone resources. The final report for the inquiry was released in November 1993. It focused on integrated coastal-zone management arrangements and provided 65 recommendations. These included details for a National Coastal Action Program to be implemented by the three levels of government in consultation with community and industry groups that have responsibility for, or interests in, coastal-zone management.

A **National State of Marine Environment Report** has been prepared as part of the Commonwealth's Ocean Rescue 2000 program. The report, *Our Sea, Our Future*, was released in February 1995. It describes Australia's marine environment, issues related to its sustainable use and environmental status, and directions for the future. Detailed technical papers were also produced.

A discussion paper on the creation of a **Coastal and Bay Management Council** for Victoria was released in February 1994 for public comment. A Reference Group was then appointed by the Minister for Conservation and Environment to provide independent advice on the establishment of such a council, on the outcome of public consultation associated with the proposal, and comment on the draft legislation that would be required. The Reference Group believed that the proposal to establish a council was sound and had substantial

community support, as evidenced by the strong support expressed in submissions received (Coastal Reference Group 1994, *Recommendations on the Establishment of the Coastal and Bay Management Council*). Subsequently, the Victorian Government introduced the Coastal Management Bill to Parliament late in 1994 and debate will take place in the 1995 Autumn session.

Protecting Water Quality in Port Phillip Bay, a document incorporating a revised State environment protection policy for Port Phillip Bay, was released by the EPA for comment in February 1995. The draft Schedule addresses the key issues of controlling diffuse source contamination from both urban and rural areas and the need to build on the substantial achievements of the last twenty years in controlling point sources. The draft Schedule seeks to ensure that activities capable of polluting the Bay are identified and addressed before major environmental damage occurs. Addressing nutrient enrichment of the Bay is a particular concern.

Management plans for particular coastal areas and fish species have been undertaken by the Department of Conservation and Natural Resources (CNR). These are listed below.

Victorian Southern Rock Lobster Fishery – A discussion paper was released in July 1993, and a paper on options for future management released in August 1994.

Victorian Abalone Fishery – A background and issues paper was released in December 1993, and a workshop to discuss management arrangements held in August 1994.

Victorian Scallop Fishery – Preparation of a draft plan is due to commence in 1995.

Port Phillip Fishery – Preparation of a draft plan is due to commence in July 1995.

Victorian Eel Fishery – A draft management plan was released in May 1994.

The **Corner Inlet Fishery Management Planning** process commenced in October 1993. The plan covers Corner Inlet and Nooramunga. The plan will review the management of the commercial and recreational fishery; address any issues or conflicts; ensure that the use of the fish resource is sustainable; and that the management of the fishery is consistent with other conservation planning objectives.

The **Corner Inlet and Nooramunga Marine and Coastal Parks Management Plan** is currently being developed. The plan will highlight the resources and provide objectives for conservation and use; reconcile conflicting activities and interests; specify appropriate management; and facilitate public understanding of and involvement in marine and coastal environments.

Both the above plans relate to the same area and are being developed in a coordinated manner.

Management planning by the Australian Fisheries Management Authority for the **Southern Shark Fishery**, part of which is located in Victorian waters, commenced in 1993. Its aim is to ensure that fishing is consistent with the principles of ecologically sustainable development; that fisheries resources are efficiently utilised; and management is efficient and cost-effective.

Fisheries arrangements under the **Offshore Constitutional Settlement (OCS)** are being implemented for fisheries adjacent to Victoria, including those for crustaceans, molluscs, scallops, finfish, pelagic species, sharks and echinoderms. The arrangements

will rationalise the management of fisheries in southern Australian waters, facilitate ecologically sustainable development, and provide a clearer division of responsibility between governments. This will reduce the need for multiple government agency involvement in the management of specific fisheries and result in simplified and more effective management.

New and proposed legislation

The **Catchment and Land Protection Act 1994** sets up a framework for the integrated management and protection of catchments; encourages community participation in the management of land and water resources; establishes a system of controls on noxious weeds and pest animals; and repeals and amends various Acts concerning catchment and land management.

The intention of the Act is to improve catchment management. This should reduce catchment-based impacts, such as sedimentation and poor water quality, on bays, inlets and estuaries.

The present Victorian Fisheries Act was passed in 1968. **New fisheries legislation** is currently being drafted and is intended to be the primary statute for fisheries conservation, management and regulation in Victoria.

The **Coastal Management Bill**, as noted above, was introduced to Parliament in December 1994. The purpose of the legislation is to provide for coordinated strategic planning and management for the Victorian coast. It proposes the establishment of a Coastal and Bay Management Council and several Regional Coastal Boards to carry out the coordinating function. The boards will prepare and implement management plans and provide a coordinated approach to approvals for the use and development of coastal Crown land.

Administrative Arrangements

Victorian legislative and administrative arrangements current at April 1993 were outlined in the Descriptive Report. There have been several recent changes and a revised description of these arrangements is given in Appendix I. Commonwealth arrangements were also outlined in the Descriptive Report. A description of the Victorian territorial boundary is given in Appendix II.

Australian Heritage Commission and the National Estate

A statutory authority, the Australian Heritage Commission, was established under the *Australian Heritage Commission Act 1975* as the Commonwealth Government's policy, advisory and administrative body responsible for the National Estate. The National Estate is defined in the legislation as 'those places, being components of the natural environment of Australia, that have aesthetic, historical, scientific or social significance or other special value for future generations, as well as for the present community'. Australia's National Estate is thus a wide-ranging concept that covers a variety of features. Many features along the Victorian coast are included on its register. They range in size from the existing national parks to individual historic buildings in coastal towns.

It is stressed that the Council's process remains independent of the Heritage Commission process. The Council has ensured that areas recommended for protection or resource use meet its own established criteria. Its recommendations also take into account consideration of socio-economic factors in determining the balanced use of land (which is not a requirement of the Commission's process).

Issues Raised following the Release of the Descriptive Report

A four-and-a-half month submission period closing on 29 October 1993 followed the release of the Descriptive Report on 10 June 1993. The submission period initially closed on 9 September 1993, but was extended in recognition that this was the first time a major planning exercise had been carried out for Victoria's entire coastline and marine waters. Consequently, the Council wished to ensure that all interested groups had adequate time to seek responses from their constituents and to prepare their submissions.

During and following the submission period the Council received 146 submissions and over 20 letters.

Written submissions were received from a cross-section of the community. See Table 1 for a summary of the source and type of submissions, and Appendix IV for a detailed list.

All submissions received by the Council are available for public inspection at its office. The content of any submission marked by the author as 'confidential' will be made available under the *Freedom of Information Act 1982*, but only after the removal of any information that would identify authorship.

The Council appreciates the significant time and effort put into the preparation of the submissions.

On 22 July 1993, the Council conducted a day-long seminar attended by representatives of over 50 key community, industry, conservation, recreation, Aboriginal and government organisations. This provided the opportunity for people with different interests and perspectives to meet and hear a range of views about marine and coastal areas. Seminar participants raised many

issues, which are included in the summary given in Appendix V.

At the seminar it was proposed that the Council release a scoping document that described the framework to be used for the proposed recommendations. After discussion, the Council considered that it would be more appropriate to proceed with the release of the proposed recommendations as the next step. This would ensure that people would be able to consider both the practical application and implications of the Council's approach at the same time.

The Council also met separately with key non-government groups and local, State and Commonwealth organisations. The Council's Chairman attended public meetings, convened at the request of local government, to facilitate community input to the investigation.

The Chairman and some Council members also attended a meeting with representatives of Aboriginal communities to discuss issues of interest to them.

The submission period on the Descriptive Report coincided with, or closely followed, requests for submissions on several other coastal and marine studies. For example, Commonwealth or national programs included the Resource Assessment Commission's Coastal Zone Inquiry and the development of the national strategy for ecologically sustainable development. Victorian programs included the Ports Land Use Plan study and the Western Port Bay Strategy.

Consequently, for some people or organisations, there was uncertainty as to which study would take precedence and the extent that existing arrangements would be supported or changed by a subsequent study. The extent to which this influenced the comments provided to the Council

varied considerably, and resulted in some groups not making submissions. Wherever submissions for other programs formed part of the public record, information from them was provided to the Council in summary form.

Table 1: SOURCE AND TYPE OF SUBMISSIONS

	No. of submissions
<i>Place of origin:</i>	
Melbourne	63
Victoria (outside Melbourne)	
Coastal areas	74
Hinterland	20
Interstate	7
Overseas	1
Not known	2
<i>Type of group making submission:</i>	
State Government	6
Local Government	15
Aboriginal groups	2
Individual	74
Academic	3
Conservation and other interest groups	29
Industry	4
Recreation	24
Commercial/business	6
Community	4

The Council was also conducting a Review of the Melbourne Area – District 2. It decided to consider certain marine and coastal issues in the Melbourne area as part of the Marine and Coastal Special Investigation.

There have also been several major changes since the close of submissions that address some of the issues raised. These include the amalgamation of local government areas, the proposal to establish a Coastal and Bay Management Council, a major initiative to prevent the illegal harvesting and processing of abalone, and a review of the Draft Dredge Protocol.

Submissions, letters and notes from meetings were considered by the Council prior to the preparation of these draft recommendations. They provided information and views on the uses and values of specific areas, the strengths and weaknesses of planning and management arrangements that are currently in place, suggested approaches to the future planning, use and management of the coast in general, and the use of specific areas. These views are summarised in Appendix V.

In general, individuals and organisations appreciated the detail and breadth of the Descriptive Report, indicating that it provided a valuable planning and education resource which promoted the importance of the coast and marine waters. Some would have appreciated a shorter report, while others felt it was too general and did not detail the values of significant areas. There was concern about the way some material was presented, about certain omissions and errors of fact, and the apparent lack of direction in terms of the likely nature of the recommendations and the direction of the investigation. Some expressed a preference for a more issues-oriented report.

It was implicit in the matters raised that the Victorian coastline and marine waters are a very valuable resource that require careful planning and management to ensure that their conservation and sustainable use are not diminished. For the first time, Victoria's marine, estuarine and coastal environments were receiving the attention they deserved, particularly the sea, which tended in the past to be considered as an almost limitless fishing resource and a dump for wastes.

A few submissions had clear expectations that the Council's recommendations should help solve some immediate issues, such as identifying areas where mariculture farms, marinas, boat ramps and other tourist facilities could be approved subject to specific guidelines.

Other submissions had a longer time-frame in mind. They pointed out that the coastal population was growing faster than elsewhere in the State. The south-east growth corridor of Melbourne, north of Western Port, is planned to accommodate much of Melbourne's growth in the next 20 years. In a longer time-frame, the doubling of the population over the next 50 years would have major implications for environmental quality and recreational activities such as fishing and tourism.

The process by which existing marine reserves have been recommended was also of concern, particularly for Wilsons Promontory. The Council, in its South Gippsland Area – District 2 study, only referred to a marine park in its final recommendations and then left the development of a zoning plan to the managing department. It was considered that the consultative process for the zoning was inadequate.

Details of the specific issues raised are given in Appendix V. They cover the following topics: the extent of the study area, the scope and conduct of the investigation; database for the investigation and research; coastal planning and administrative arrangements; recreation and tourism; harvesting of fish and other living marine resources; education and enforcement; environmental quality; services and utilities; coastal dynamics; scenic values; introduced plants and animals; and the public/private land interface.

Development of Recommendations

Many studies and reports have shown that the administrative arrangements and legislation applying to the coast and marine areas are complex, often confusing to the public, and create difficulties for those who are responsible for using and managing these areas. Administrative and legislative responsibility often overlap and

management objectives can conflict. It has been claimed that to address these issues alone would substantially improve coastal management.

The Council believes that the protection of important marine and coastal values and the sustainable use of resources must be based on a strategic planning framework that allows an integrated approach, not only to Victoria's marine, estuarine and coastal area as a whole, but also to catchments that drain to the coast and to the sea beyond the Victorian territorial limit. This framework must be linked to clear management objectives implemented by a properly resourced agency or agencies with well-defined and legislated responsibilities. Recommendations to this end are outlined in Chapter 3.

This framework is the context for planning principles that cover the wide range of activities that may affect or promote the sustainable use of Victoria's marine, estuarine and coastal area; and the economic, recreation and conservation opportunities that it provides the community now and in the future. These recommendations are also given in Chapter 3. Chapter 4 lists additional specific recommendations for bays, inlets and estuaries.

Chapters 6 to 12 contain recommendations for specific areas along the coast. In providing recommendations for these areas the Council emphasises that they form part of Victoria's marine, estuarine and coastal area, and must not be managed in isolation from it or become the only focus of management actions and community interest, thereby leaving the rest to 'fend for itself'. This does not mean that planning actions are necessarily of equal priority across the entire planning area.

GENERAL RECOMMENDATIONS

Recommendation 1.1 qualifies those in the body of this document.

The Council wishes to stress the need for adequate resourcing for the management and protection of Victoria's marine, estuarine and coastal area. It has made its recommendations on the assumption that sufficient staff and finance will be provided for appropriate management. Unless these resources are provided, the Council's recommendations cannot be effectively implemented. However, it must be recognised that most of the area is managed by the one authority – the Department of Conservation and Natural Resources – regardless of the current or proposed recommendations. New resources will be required where the intensity of management increases as a result of these recommendations.

The Council considers that the provision of new resources does not necessarily mean that the resources allocated to the management of the public estate must increase, or that these resources need only be provided by the Victorian Government. The Council believes that savings can be made by improving the coordination of Government activities and with more efficient use of available resources. At the same time it is recognised that enforcement is a difficult task for managers and involves significant resources. The Council therefore recommends:

- 1.1 That the public authorities responsible for managing and protecting Victoria's marine, estuarine and coastal area be allocated the resources necessary for the task.

Recommendations 1.2 to 1.6 concern the implementation of recommendations.

The Council recognises that, in some cases, existing legislation may have to be amended or new legislation passed in order to effectively implement some recommendations. It is aware that this may result in a delay, perhaps of several years, before some of its recommendations can be implemented. The Council is concerned that, where implementation of the recommendations involves a change of land tenure, actions during the delay period could affect identified values or reduce management efficiency.

1.2 That until the formal procedures for the implementation of those recommendations approved by Government are completed, the present legal status and management responsibilities continue, except that the area be managed in accordance with the approved recommendations.

1.3 That the boundaries of areas, if they have not been precisely surveyed, be

subject to minor modifications and other adjustments that may be necessary.

1.4 That in cases where occupation does not agree with title, the Department of Conservation and Natural Resources may at its discretion make adjustments to boundaries of public land when implementing these recommendations.

1.5 That the recommendations in this report do not change the status of roads passing through or abutting public land that are at present declared roads under the *Transport Act* 1983.

1.6 That where areas of public land are not specifically referred to in these recommendations, present legal uses and tenure continue.

2. ECONOMIC ACTIVITY AND IMPLICATIONS

This chapter describes the economic activity associated with the Victorian coast and the implications of the Council's proposed recommendations.

Economic Activity

This section of the chapter provides an indication of the size of various economic activities occurring along the Victorian coast. However, in referring to these figures, the following points should be noted:

- The techniques, assumptions and, in some cases, the geographic areas used to calculate the values are different for the various activities. There is, therefore, no common basis for comparison between the uses or for calculating the total value of the uses.
- For some uses there are adequate data available to determine whether the current levels of activity are sustainable, but for other uses this is not the case.
- Data for activities that are incidentally located on the coast, such as domestic building and construction, have not been included.
- No attempt has been made to place a value on the natural environment generally, and that which might be protected in reserves in particular. No estimates of the value of these assets are available for Victorian waters. Omission of these dollar valuations does not imply that they are financially immaterial.

Port activities

There are four major port centres for Victoria, at Portland, Geelong, Melbourne and Hastings, with Melbourne being Australia's largest container and general cargo port.

The 1992 value of overseas cargo through Victorian ports was \$23,698 million (\$13,681 million discharged, \$10,017 million loaded), see Table 2.1.

Table 2.1: Value of Overseas Cargo (1992)

Port	Discharged (\$ million)	Loaded (\$ million)
Melbourne	13,203	8,756
Geelong	387	351
Portland	44	577
Western Port	40	332

Note: Only major ports are included.

Source: Australian Bureau of Statistics

The economic significance of the Port of Melbourne was recently reviewed (Brain 1994 – National Economic Review 30:7–35). For 1992–93 the review found the 'total contribution to Victorian gross State product by the Port of Melbourne (the economic significance of the port) was \$4.0 billion. The port supported a total employment level of 83,000, wages and salaries of \$3 billion, gross output of \$8.7 billion and State tax revenue of \$123 million'.

Associated ports

The replacement value of the assets and the estimated recurrent expenditure on the associated ports are given in Table 2.2.

Table 2.2: Associated Ports – Assets And Recurrent Expenditure

Associated port	Replacement value of assets (\$million)	Estimated recurrent expenditure 1994–95 (\$million)
Port Fairy	6.8	0.22
Warrnambool	4.0	0.05
Port Campbell	0.7	0.01
Apollo Bay	8.3	0.45
Lorne	1.2	0.03
Barwon Heads	0.4	0.02
Queenscliff	10.5	1.25
Port Phillip	121.4	1.50
Western Port and Andersons Inlet	16.0	0.45
Corner Inlet	11.3	1.00
Gippsland Lakes	43.5	4.45
Snowy River	0.5	0.02
Mallacoota	1.5	0.07

Source: Department of Conservation and Natural Resources

Sea-floor cables, pipelines, telecommunication links and ocean outfalls

There are several sea-floor installations in Victoria. These include links between off-shore oil and gas production platforms and on-shore processing facilities, a major gas pipeline across Port Phillip Bay, the optic-fibre links with Tasmania from Sandy Point (estimated replacement value \$30 million) and the planned optic-fibre link from Inverloch which is proposed around the year 2000.

Waste discharges

There are no data available to calculate the cost advantage of discharging to the marine environment compared with other forms of waste management or waste disposal. Table 2.3 lists the estimated costs, calculated in 1992, as part of an action plan to ensure that ocean discharges comply with the State Environment Protection Policy - Waters of Victoria.

Table 2.3: Costs (1992) to Ensure Coastal Discharges Comply with SEPP - Waters of Victoria

Works approval	Estimated cost (\$million)
Black Rock (Geelong) Additional treatment and main sewer	59
Warrnambool New treatment plant	9 to 25
Portland New treatment facilities	3
Leongatha New treatment facilities	0.7
Port Fairy Study of treatment options and installation of new screens	0.18
Yarram Treatment and re-use to eliminate ocean discharge	1.5
Apollo Bay New treatment facilities	1.0
Lorne New treatment facilities	4.1
Anglesea Upgraded treatment and disposal facilities	3.1 to 7.9
Wonthaggi Upgraded treatment and disposal facilities	0.55
Cowes Upgraded treatment facilities	1.08

Source: Environment Protection Authority

Commercial fishing

In 1993 the commercial fishing industry directly employed 1,890 licensed fishers (master fisherman and crew) on a fleet of 1,004 Victorian registered vessels. This fleet draws on stocks from both within and beyond the Victorian territorial limit. For example, some species such as abalone, come exclusively from within the territorial limit, some such as rock lobster come from within and beyond the territorial limit, while some scale fish are taken mainly in Commonwealth waters. Therefore, it is difficult to place a precise value on the commercial fishing industry in Victorian waters, to which Council's study is confined.

The first sale price of catch landed in Victoria in the 1993–94 was approximately

\$110 million (Table 2.4). It should be noted that the prices of abalone and rock lobster have risen dramatically and are currently at high levels.

Tourism and recreation

International tourism

In 1991, 2.37 million tourists visited Australia, spending 65.2 million visitor-nights here. Of these, 87% of all visitor-nights were spent in coastal regions with 24% of these nights outside capital cities. Of the tourists coming to Australia, 9% (220,400) visited Phillip Island and 4% (99,600) visited the Twelve Apostles - Great Ocean Road. [Source: Bureau of Tourism Research: cited in Resource Assessment Commission (1993)]

Domestic tourism

In 1992-93 domestic tourism in Victoria involved 35.4 million overnight stays with an associated expenditure of \$2,800 million. Of the overnight stays 67% were outside Melbourne. About half of these non-Melbourne overnight stays were in tourism

regions that abut the coast and had an estimated associated expenditure of \$930 million. (Source: Tourism Victoria)

Penguin Parade

This employs (depending on the season) 60-100 people who provide for visitors to the Penguin Parade, and carry out research and management of the penguin population. Table 2.5 describes the visitor numbers and income generated.

Recreational fishing industry

The recreational fishing 'industry' covers fishing in marine, estuarine and fresh waters. The marine waters that are fished include areas beyond the 5.5km territorial limit.

Note that in the figures given below, it is generally line fishing that is valued, and to which the statistics have most relevance. Line fishing is by far the most popular catching method, being used by at least 80% of all recreational fishers.

Table 2.4: Annual Fish Catch Landed Commercially in Victoria

Fish catch	Production (live weight '000 tonnes)					Value (\$million)				
	89-90	90-91	91-92	92-93	93-94	89-90	90-91	91-92	92-93	93-94
Scale fish	6.62	7.74	7.24	8.35	6.94	14.24	14.25	13.14	16.28	14.14
Cephalopods ¹	0.28	0.23	0.44	0.53	0.42	0.90	0.60	0.89	0.93	0.85
Abalone	1.29	1.29	1.36	1.44	1.41	23.07	23.66	22.82	30.98	52.48
Scallop	0.27	1.68	4.17	12.55	8.76	0.24	3.08	7.69	23.16	16.00
Other shellfish ²	0.23	0.13	0.22	0.16	0.09	0.45	0.28	0.46	0.31	0.15
Rock lobster	0.40	0.37	0.46	0.44	0.50	7.33	7.31	9.29	9.81	14.51
Other crustaceans ³	0.08	0.08	0.15	0.27	0.24	0.62	0.44	0.82	1.33	2.01
Sharks	1.79	1.53	1.51	1.76	1.82	7.49	6.51	7.18	8.81	9.66
Total	10.95	13.04	15.54	25.48	20.17	54.34	56.13	62.29	91.60	107.97

1 Calamari, cuttlefish, octopus, arrow squid.

2 Mussel, sea urchin, etc.

3 Prawn, giant crab, yabby, etc.

Notes:

1. Includes some estuarine/fresh water species with a first sale value of just over \$1 million.
2. Shark data are calculated for the calendar year and figures for some shark species are not currently available.
3. Abalone data are calculated for the quota year (April to March).
4. Data excludes landings from the demersal trawl component in Commonwealth waters of the South East Fishery.
5. Dollar values are estimated from Melbourne Fish Market Auction records, except for abalone, scallop, eel, rock lobster and giant crab from processor information.

Source: CNR: Victorian Fisheries Catch and Effort - Information Bulletin 1994.

Table 2.5: Penguin Parade: Visitor Numbers and Income Generated

Year	Number of visitors ('000)	Income generated (\$million)
1988-89	477	3.0
1989-90	471	3.3
1990-91	460	3.3
1991-92	480	3.4
1992-93	477	3.7
1993-94	496	4.1

Source: Penguin Parade

Roy Morgan polling for the second and third quarters of 1994 found 526,000 and 437,000 Victorians (14+ years) fished in those quarters respectively.

There have been various estimates of the total number of fishing trips a year. Dragan (1991) cites figures of 10 and 23 million fishing trips a year from different survey approaches. Roy Morgan found that Victorians (14+ years) made 2.3 million and 1.3 million trips the second and third quarter of 1994 respectively. It is estimated that three-quarters of fishing trips are in the warmer months. This suggests that Victorians make in the order of 10 million fishing trips a year, some of which are to interstate waters. The use of Victorian waters by interstate and overseas visitors is not included in these estimates.

Data on the fishing pattern of Victorians between freshwater (lakes and rivers), marine waters (estuaries, surf and rock fishing, and open ocean fishing) and interstate waters are reasonably well known from statistically valid sampling, and suggest that 45-55% of fishing takes place in marine waters.

An unpublished 1987 Morgan research indicated that well over 50% of all Victorian recreational fishers fish at least once a year in local bays, inlets, estuaries, or coastal waters, and that about 48% fish mostly in these waters. Port Phillip Bay is

by far the most popular salt-water fishing location in the State, being used at least once a year by about 29% of all Victorian recreational fishers, and being the fishing location most frequently used by about 22%. The next most popular salt-water locations are open coastal waters (fished by 23%; preferred by 13%), the Gippsland Lakes (fished by 11%; preferred by 6%), Western Port (fished by 9%; preferred by 5%) and other bays and inlets (fished by 4%; preferred by 1%).

A 1984 report by PA Management Consultants estimated that national expenditure on recreational fishing in 1983-1984 was about \$45 a trip. (This did not include expenditure on fishing trip accommodation or other expenses incidental to a fishing trip.) Estimates of the expenditure on fishing by Hume (1987) translated to 1994 prices using appropriate CPI indices gives an expenditure of \$51 per angling day. These figures indicate that the recreational fishing industry has an estimated expenditure of \$500 million per year with one-half of this (\$250 million) being attributable to Victoria's marine and estuarine waters.

Surfing

At the end of 1992, Victoria had around 90 surfshops employing some 300 people, with at least 700 more employed in other retail outlets and the manufacturing industry. Major worldwide surfing labels are located in Victoria, with many companies operating in coastal towns. Annual turnover of the surfing industry nationally is conservatively estimated at more than \$806 million. Unfortunately, no data are available for Victoria alone (Source: Australian Surf-riders Association Ltd).

Dive industry

Although there is no formal register of scuba divers, Victoria probably has about 100,000 qualified divers and the industry

considers the number to be growing at 25% per annum. Dive Australia, the organisation representing the recreational scuba diving industry in Australia, estimates that the number of people who dive in Australia is over 700,000. Assuming that 15% of the diving is in Victoria, the values, derived from Australia-wide data, listed in Table 2.5, would apply.

Table 2.5: Current Annual Value of the Dive Sector

Value of the recreational diving business (\$ million)	Retail sales of diving equipment (\$ million)
Australia 360	64.3
Victoria 54	9.6

Source: Dive Australia

Boat industry

The available data on the value of the boat industry in Victoria include both inland and coastal waters. Although it is known that about 50% to 60% of boating activities take place in Victorian coastal waters, including the major embayments, the percentage of expenditure on boating in coastal waters cannot be determined. Types of boats and duration of boat trips vary between inland and coastal waters.

For the year ended June 1983 the expenditure related to the use and ownership of recreation boats in Victoria was \$366m (see the table below). Using CPI indexation, this equates to \$655m in 1994.

Table 2.6: Victorian Boat Related Expenditure – Year Ending June 1983

Category	(\$million)
Boat trailers, etc. (new)	8.9
Boats and accessories	44.7
Boat operating costs (fuel etc.)	60.9
Motor vehicle operating costs	169.4
Accommodation, food, bait	82.0

Source: State Boating Council

Earth resources

Oil and gas

The annual value of the current offshore oil and gas production, which comes exclusively from waters beyond Victoria's territorial limit, is approximately \$3,300 million, as follows:

Oil and condensate: \$2,600 million (value calculated @ US\$18/barrel of oil)

Natural gas: \$300 million (value calculated to industrial and domestic users)

Liquid Petroleum Gas: \$400 million (value of LPG approximated to be similar to oil)

The 1993–94 expenditure on offshore petroleum exploration was \$33 million and was mainly in waters beyond the territorial limit.

The replacement value of the existing offshore platforms and pipelines is approximately \$7,600 million (Source: Department of Energy and Minerals).

Minerals

Several occurrences of mineralisation have been identified along the coastline and inland areas adjacent to it. They are not economic now or in the foreseeable future. The offshore areas are essentially unexplored and therefore the prospectivity is yet to be ascertained. The potential for finding economic resources is currently considered to be low (Source: Department of Energy and Minerals).

Other products

There are a number of other products of minor economic value which are harvested or derived from Victoria's marine, estuarine and coastal environment; these include shellgrit, sand, stone, salt and kelp.

Synthesis

On the basis of the information available to the Council the most significant contribution to the Victorian economy of all the coastal-related industry sectors, is that associated with the major ports and the oil/gas industry, the latter operating in Commonwealth waters.

Socio-economic Implications of the Council's Recommendations

This section highlights the socio-economic implications that arise from the Council's proposed recommendations. The implications are based on information derived from various sources, and, in most cases, the figures are indicative, rather than precise. The Council is hopeful that further details about the uses of particular areas may be obtained from user groups and that discussions about the proposed recommendations will assist with obtaining these details.

The Council acknowledges that its recommendations, if implemented, may have some short-term implications for existing users and may affect the potential use of some areas in the future. However, the Council believes that these proposals will, in the longer term, be of net social and economic benefit because their implementation will contribute to the sustainable use of the marine, estuarine and coastal environment and protection of significant environmental and recreational values.

The recommendations have implications for three inter-related geographic regions: catchments that drain to the coast, foreshore areas and the marine environment.

Catchments that drain to the coast

These areas are mostly outside the study area and therefore the Council has not

provided any specific proposals about the use of these areas. Nevertheless, the Council considers that the proper management of these catchments is critical for the long-term conservation and sustainability of the marine and estuarine environment, particularly the bays, inlets and estuaries. Therefore, an important implication of the Council's recommendations is that those responsible for planning and management of Victoria's coastal catchments must take into account the impact of their actions on the marine and estuarine environment. This will be particularly relevant to the newly established Victorian Catchment and Land Protection Council, the Regional Catchment and Land Protection Boards and the Council and Boards proposed to be established under the Coastal Management Bill.

Foreshore areas

Foreshore public land, above high-water mark, outside cities and rural cities is included in the study area. The Council's proposed recommendations do not change the status of any of the land above high-water mark, although, as set out in Chapter 12, the Coastal Reserve has been divided into two zones: Coastal Protection and General Use.

It is not anticipated that the Council's recommendations will have any significant implications for use of the foreshore areas; however, they may help to direct proponents of coastal works and developments to the most suitable sites. In the longer term it could be expected that the proposed Council and Boards to be established under the Coastal Management Bill will refine the use and management of the Coastal Reserve.

The Council recognises that the long-term conservation and sustainability of the near-shore marine environment and intertidal

area is dependent on the way in which the adjacent foreshore is managed and used. Table 2.7 summarises the foreshore tenure adjacent to the proposed marine parks. It is essential that the planning and management authorities responsible for the coastal and marine environments ensure that the uses of adjacent areas of land and water are compatible.

Marine areas

The most direct and measurable implications arising from the Council's recommendations would result from the establishment of Sanctuary Zones, where uses inconsistent with their reference and monitoring function would not be permitted.

There are 11 such zones proposed (the Sanctuary Zone in the proposed Wilsons Promontory Marine Park consists of two parts), most approximately 2km wide, representing a very small proportion (1.4%) of Victoria's 10,091sq.km marine and estuarine waters. Most extend to the 5.5km territorial limit.

The other zones proposed for the marine and estuarine environment (Conservation Zone, General Protection Zone, General Use Zone, Services, Utilities and Facilities Zone and Special Management Areas) may have implications for certain activities, but decisions on these will, in most cases, be addressed through the management planning process which must provide the opportunity for community consultation and participation.

Effects of the Council's Proposals by Economic Sector

Ports

Port-related activities are the recommended primary use in the Services, Utilities and

Facilities Zone, which would include the four major port areas and Port Welshpool under the Council's proposals. If appropriate, other associated ports could be included in this zone. The proposals provide for the safe and secure operation of the ports and their requirements for expansion. The exact boundaries would be determined by CNR in consultation with the port authorities.

The Council's proposals do not affect the existing facilities or those areas that have been identified as potentially required for port operations in the next 20 years.

However, the following proposals may have some implications for port operators and, if adopted, may impose additional costs:

- The proposal that the port authorities audit their environmental management practices for shipping operations and associated facilities in consultation with the EPA.
- The proposal that port managers adopt international best practice relating to discharges, particularly of heavy metals, and the potential risk of introducing exotic organisms.
- The proposal that coastal developers accept liability for off-site impacts, specifically beach erosion that could have been reasonably anticipated.

Sea-floor cables, pipelines, telecommunication links and ocean outfalls

All existing sea-floor cables, pipelines, telecommunication links and ocean outfalls are located outside the Sanctuary and Conservation Zones. The Council's proposals would have no direct economic impact on the existing facilities.

Table 2.7: Status of Land Adjoining Council's Proposed Marine Parks

Proposed marine park	Adjoining foreshore land tenure
Discovery Bay • Conservation Zones • Sanctuary Zone	Discovery Bay Coastal Park
Lake Gilleear • Conservation Zones • Sanctuary Zone	Private land (from the western boundary of the marine park to the area adjoining the western end of Lake Gilleear) and Bays of Islands Coastal Park (some is outside the study area)
Port Campbell • Conservation Zones • Sanctuary Zone	Port Campbell National Park
Moonlight Head • Conservation Zones • Sanctuary Zone	Port Campbell National Park
Harold Holt • Swan Bay General Protection Zone	Commonwealth land, private land and Crown land (some is outside the study area)
• Mud Islands General Protection Zone	Not applicable
• Point Cook General Protection Zone	Outside the study area - Crown land
• Williamstown General Protection Zone	Outside the study area - Crown land
• Popes Eye General Protection Zone	Not applicable
• Point Lonsdale General Protection Zone	Coastal Reserve
• Point Nepean (Conservation and Sanctuary Zone)	Point Nepean National Park, Commonwealth land
Nobbies • Conservation Zone • Sanctuary Zone	Coastal Reserve (Phillip Island State Park ¹)
Bunurong • Conservation Zones • Sanctuary Zone • General Protection Zones	Coastal Reserve ²
Shallow Inlet • General Protection Zone	Shallow Inlet Marine and Coastal Park
Wilson's Promontory • Conservation Zone • Sanctuary Zone • General Protection Zone	Wilson's Promontory National Park
Ewing Marsh • Conservation Zones • Sanctuary Zone	Ewing Marsh Wildlife Reserve
Rame Head • Conservation Zones • Sanctuary Zone	Croajingolong National Park
Cape Howe • Conservation Zone • Sanctuary Zone	Croajingolong National Park
Western Port • Northern Western Port Conservation Zone • Rhyll-Newhaven Conservation Zone	State Park (French Island National Park, Reference Area ¹) Coastal Reserve (Phillip Island State Park ¹)
Corner Inlet/Nooramunga • Corner Inlet Conservation Zone • St Margaret's Conservation Zone • General Protection Zone	Wilson's Promontory National Park Nooramunga Marine and Coastal Park Corner Inlet Marine and Coastal Park, Nooramunga Marine and Coastal Park, Coastal Reserve

Notes:

1. Recommended tenure—Final Recommendations Melbourne Area, District 2, Review
2. The Proposed Management Plan for this area (Bunurong Marine and Coastal Park) incorporated the seaward and adjacent foreshore public land as a single integrated marine and coastal park.

The Ewing Marsh Conservation Zone could influence the location of an outfall associated with a new pulp mill if such a mill were to be built between Lakes Entrance and Marlo.

The possible interconnection between the Tasmanian and mainland electricity systems (BASSLINK) and the proposed second optic-fibre link with Tasmania would not be affected as none of the proposed sea-floor cable corridors or land-based connection points are in Sanctuary or Conservation Zones.

The location of the Sanctuary and Conservation Zones near Port Campbell may have implications for future sea-floor pipelines associated with the development of new offshore oil and gas fields.

Tourism

It is not anticipated that the Council's recommendation would have any adverse impact on the international or domestic tourism industries, including the Penguin Parade.

In the long-term there may be a positive impact through the protection of the natural values and establishment of marine parks as an attraction for tourists.

Some development proponents may consider that the recommendations restrict their opportunities, but in all cases it should be a matter of whether a proposed development is appropriate at that location.

Surfing industry

On the basis of information available to the Council no adverse impacts on swimming or surfing would result from Council's proposals.

Dive industry

The Council's recommendations will have no adverse impact on recreational diving; in fact the protection afforded to certain areas should result in enhanced pleasure diving.

The restriction on spearfishing in the Sanctuary and Conservation Zones may have implications for some people, although it is unlikely to have any economic impact on the dive industry.

Boating industry

No adverse impacts on the boating industry are anticipated from the Council's proposals.

Commercial fishing

The Council's proposals for Sanctuary Zones would mainly affect industries harvesting 'sedentary' species such as abalone and rock lobster. Any impact on industry would be exacerbated if that sector were over-capitalised or where current fishing levels are unsustainable. Both circumstances apply to the rock lobster fishery.

Other commercial fishing activities, line and net fishing probably occur in Sanctuary Zones, however limits on the spatial resolution of Victoria's fish catch-and-effort database precludes calculating the catches of fish other than abalone and rock lobster for these zones. It is estimated that the impact on commercial line and net fishing would be very small.

On the basis of information available to the Council, the proposed exclusion of trawling, involving disturbance to the seabed, from the Conservation and Sanctuary Zones is also likely to have a small impact on the industry.

Table 2.8: Estimated Abalone Catch for the Proposed Sanctuary Zones

Sanctuary Zone	Average annual catch (kg) ¹	Zone catch (%)	State catch (%)	Value (\$)²
Discovery Bay	7,000	2.6 western	0.5	224,000
Lake Gillear	100	<0.1 central	<0.1	3,200
Port Campbell	300	<0.1 central	<0.1	9,600
Moonlight Head	1,200	0.2 central	<0.1	38,400
Harold Holt	<1,000	0.2 central	<0.1	<32,000
Nobbies	4,200	0.7 central	0.3	134,400
Bunurong	700	0.1 central	<0.1	22,400
Wilson's Promontory ³	7,300	1.2 central	0.6	233,600
Ewing Marsh	None recorded	- eastern	-	
Rame Head	3,200	0.7 eastern	0.2	102,400
Cape Howe	7,400	1.7 eastern	0.6	236,800
TOTAL:	<32,400		<2.5	<1,036,800

Notes:

1. Average annual catch is calculated for the 5-year period from 1989 to 1993 inclusive, based on information contained in the Victoria Fisheries catch-and-effort database.
2. Based on average 1994 prices of \$32 per kilogram live weight.
3. The Sanctuary Zone in the Wilsons Promontory Marine Park consists of two parts.

Abalone

On the basis of the information available to the Council, it is estimated that the Sanctuary Zones currently provide less than 2.5% of the Victorian Total Allowable Catch of abalone, see Table 2.8. The above catch levels are those which are currently being achieved. The Council is aware that there is, at present, an unacceptable level of illegal harvesting of abalone, which, in turn, affects the amount available for the Total Allowable Catch (the legal commercial catch).

The Council recognises that additional resources have recently been provided to tackle the problem of illegal harvesting and believes that, if possible, this problem should be resolved before the Council's recommendations are implemented.

The Council anticipates that further information on the precise location of abalone

reefs will become available as a result of the publication of the proposed recommendations.

A positive benefit to the abalone industry of establishing Sanctuary Zones may be that these areas could act as replenishment sources for nearby areas that have been depleted and as representative reference sites to provide better information on abalone in its undisturbed environment.

Rock lobster

Rock lobster catch data are available at 10' west to east increments along the Victorian coast. The coarse spatial resolution of the data limits the accuracy with which the rock lobster catch from Sanctuary Zones can be calculated. The figures provided in Table 2.9 have been derived by calculating the proportion of catch in a 10' grid, equivalent to the proportion of the area of sanctuary zone in the same 10' grid.

Table 2.9: Estimated Rock Lobster Catch for the Proposed Sanctuary Zones

Sanctuary Zone	Average annual catch (kg) ¹	Zone catch (%)	State catch (%)	Value (\$'000) ²
Discovery Bay	3100-3800	0.8-0.9 western	0.6-0.8	104.5-128.0
Lake Gillear	600-700	0.1-0.1 western	~0.1	20.2-23.6
Port Campbell	1600-2000	0.4-0.5 western	0.3-0.4	53.9-67.4
Moonlight Head	1200-1500	0.3-0.4 western	0.2-0.3	40.4-50.6
Harold Holt	900-1100	1.1-1.4 eastern	~0.2	30.3-37.1
Nobbies	<200	<0.3 eastern	<0.1	<6.7
Bunurong	250-350	0.3-0.4 eastern	<0.1	8.4-11.8
Wilson's Promontory ⁴	250-350	0.3-0.4 eastern	<0.1	8.4-11.8
Ewing Marsh	<100	<0.1 eastern	<0.1	<3.3
Rame Head	<100	<0.1 eastern	<0.1	<3.3
Cape Howe	<100	<0.1 eastern	<0.1	<3.3
TOTAL:	<8400-10300	—	<1.7-2.0	<283.0-347.1

Notes:

1. Average annual catch is estimated for the 5-year period from 1989–93 by interpolation of data held in the Victoria Fisheries catch-and-effort database maintained by CNR.
2. Based on average 1994 prices of \$33.7 per kilogram live weight.
3. Figures are rounded as follows: 0-100 = <100kg; 0-200 = <200kg; 200-500kg, to nearest 50kg; >500, to nearest 100kg.
4. The Sanctuary Zone in the Wilsons Promontory Marine Park consists of two parts.

On the basis of the information available to the Council, the Sanctuary Zones together represent less than 1.7–2.0% of the average annual State catch for the 5-year period 1989–93.

It is hoped that publication of the proposed recommendations will generate some more useful information on the precise location of rock lobster fishing grounds which is not currently available to the Council

A positive benefit to the industry through the establishment of Sanctuary Zones may be that these areas could act as 'nursery' sites for the replenishment of nearby areas and as representative research sites to provide a better understanding of the ecology of the species.

Recreational fishing

Wherever possible, Sanctuary Zones have been located in the least accessible areas of

the coast. However, the following Sanctuary Zones may affect local recreational fishing, although there are usually other alternative opportunities in adjacent areas.

Harold Holt: Part of a larger area used for recreational abalone fishing and other forms of recreational fishing.

Nobbies: Summerland Bay Beach (Penguin Parade Beach) lies within the eastern side of the Sanctuary Zone. It is popular for a range of beach activities, including some recreational fishing.

Bunurong: Near the shore the Sanctuary Zone corresponds with the proposed Sanctuary Zone within the Bunurong Marine and Coastal Park where recreational fishing is excluded. There may be some implication for fishing beyond the existing 1km limit of the Sanctuary Zone, although it is unlikely to be significant.

Wilsons Promontory: Part of the Sanctuary Zone corresponds with the existing Sanctuary Zone for Anser Island where recreational fishing is currently excluded. In Waterloo Bay the section within 300m of shore is also part of the existing Sanctuary Zone. Very little (less than 500 fishing days a year) recreational fishing takes place in the remainder of the Waterloo Bay and the effect of excluding this activity is likely to be small.

The implications of the Council's proposals for spearfishing have been mentioned above (see Dive Industry).

While it can be anticipated that there will be some local concern over the inability to fish in the Sanctuary Zones, the number of people affected will be small and, in most cases, there are alternative sites nearby. No economic impact on the recreational fishing industry is likely.

Earth resources

Oil and gas

Oil and gas production currently occurs in Commonwealth waters beyond the study area. The Council's proposals therefore have no impact on currently producing fields. The newly discovered Minerva Field is also wholly within Commonwealth waters and, if the field is developed, will require a pipeline connection to shore in the vicinity of Port Campbell, but no decision on the route has yet been made. The nearby Sanctuary Zone is to the east of the shortest link between Minerva and the adjacent coast.

It is possible that future exploration for oil or gas may take place in Victorian waters, in which case the Sanctuary Zones may provide some constraints. However, to keep this in perspective, the Sanctuary Zones occupy only a very small proportion of Victoria's marine, estuarine and coastal

area (1.4%) and, even there, the Council has made provision for certain exploration activities (see the recommendations for Sanctuary Zones).

Minerals

While occurrences of mineralisation have been identified along the coastline and inland areas adjacent to it, none has been identified in the Sanctuary zones. The off-shore areas are essentially unexplored and therefore their prospectivity is yet to be ascertained. The potential for finding economic resources is currently considered to be low.

Industrial minerals and stone

Industrial minerals and stone have low intrinsic value and high transport costs. While the Council's proposals exclude sea-floor dredging from Sanctuary and Conservation Zones, extensive resources are available close to population centres where they are most likely to be required. There is therefore no effective impact on the availability of this resource.

Summary

The Council's proposals will have an impact on the abalone and rock lobster fisheries. The maximum effect would be a reduction of less than 2.5% in the take of abalone and less than 1.7-2.0% in the take of rock lobster. However, decisions about the permissible long-term take of abalone and rock lobster will also need to take into account the degree of success achieved by CNR in controlling illegal harvesting.

The Council has endeavoured to provide for a system of representative Sanctuary Zones along the Victorian coast and has located them in order to provide for the protection of representative habitat in defined biophysical regions and to minimise any impacts on commercial and recreational

activities. Based on current information available to the Council, it was not possible to locate all the Sanctuary Zones without some level of impact. The Council is, however, prepared to adjust the boundaries of the Sanctuary Zones if information is provided which can further reduce the current levels of impact while maintaining the representative system.

References

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- Hume, D (1987), *Creel Survey Report 1984-85*. Fisheries Management Report No. 16, Department of Conservation, Forests and Lands.
- PA Management Consultants (1984), *National Survey of Participation in Recreational Fishing - Report No. 1*. Report to Australian Recreational Fishing Confederation.
- Resource Assessment Commission (1993), *Coastal Zone Inquiry - Resources and Uses of the Coastal Zone*. Information Paper No. 3, AGPS.

3. VICTORIA'S MARINE, ESTUARINE AND COASTAL AREA (VMECA)

Victoria's marine, estuarine and coastal area (VMECA) contains a wide variety of habitats. These include sandy beaches, cliffs, shore platforms, extensive subtidal reefs, soft-bottom sediments, open water with a range of pelagic environments and bays, inlets and estuaries with mangroves, intertidal flats and channels, and seagrass meadows. Along the State's 2,000km coastline there are more than 80 named islands that vary in size from less than one hectare, such as the Lawrence Rocks, to the largest, French Island, at 17,300 hectares.

Victorian coastal waters within the 5.5km territorial limit cover more than 10,000sq.km and, at the territorial limit, range from 20m to 110m deep.

Bays, inlets and estuaries comprise over 30 semi-enclosed waterbodies which cover an area in excess of 3,100sq.km. The largest is Port Phillip Bay at 1,950sq.km, but most are much smaller than the fifth largest – Mallacoota Inlet – at 40sq.km.

The coastal, estuarine and marine environment forms one of the State's most valuable natural assets. It is of incomparable importance for recreation, tourism, commerce and industry, scientific research, education and conservation, as well as for its own intrinsic value.

Many Victorians live within a short drive of the sea or of a bay, inlet or estuary. Excellent recreational fishing opportunities, internationally recognised surfing venues, and the wildlife and scenic beauty of our coastline are major tourist attractions. Victoria's major ports handle domestic and international trade, and are the home ports

for fleets that fish Bass Strait. The abalone, rock lobster and scallop fisheries are major export industries and parts of the seabed are highly prospective for oil and gas.

The rocky reefs of Australia's temperate waters (including Victoria) have a very high species diversity and a high proportion of endemic species. The subtidal soft sediments are also very diverse and some offshore communities are the most diverse known anywhere in the world.

Most of the coastline and the subtidal sea-floor is publicly owned, thus providing a significant opportunity to develop a coordinated planning approach for the area.

A Framework for Strategic Planning

The Council wishes to emphasise the importance of integrated planning across the whole of Victoria's marine and coastal environments, including the bays, inlets and estuaries as well as the adjacent foreshore land and catchments that drain to the coast.

The Council, therefore, has provided general recommendations relevant to the entire marine, estuarine and coastal area, and more specific recommendations for particular areas within it. The Council has also addressed the issue of activities in catchments that drain to the coast. In doing so, the Council is conscious of the wide range of views presented in submissions. These varied from an 'activities-based approach', where planning and management outcomes are achieved by the use of performance standards implemented by self-regulation or enforced under legislation, to the designation of a system of reserves over

the entire area, where the uses are specified by legislation. Other proposals suggested various combinations of the above.

When considering the various approaches and developing its recommendations, the Council has taken account of the strengths and weaknesses of different approaches, particularly in regard to short-term and potential long-term social, economic and conservation outcomes; and has kept in mind the principles of ecologically sustainable development.

While addressing the immediate needs of *this generation at the local and regional level*, the Council considers it must look 50 to 100 years ahead when considering State, national and international issues.

The Council also believes that decisions regarding management of the marine, estuarine and coastal area and its resources should be guided by:

- careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment;
- an assessment of the risk levels and consequences of various options;
- the potential for the accumulation of effects.

The Council's recommendations for the entire Victorian marine, estuarine and coastal area have been developed with the intention of conserving biological diversity and essential ecological processes, while allowing for sustainable use as appropriate. These recommendations are outlined in the next section of this chapter.

Given the specific conditions that occur in bays, inlets and estuaries, the Council has provided additional recommendations for these areas in Chapter 4. Recommendations for particular parts of the marine, estuarine and coastal area have also been made. The

location of these areas and recommendations for their use are given in Chapters 6 to 12.

While some areas of public land along the coast were excluded from this investigation – for example, the Gippsland Lakes and land within cities and rural cities – the Council believes that many aspects of these recommendations could be equally applied to these areas.

Administrative Arrangements

It is the Council's view that the Government requires a source of clear and ongoing advice on the multitude of arrangements for the coast and that this can be best achieved by a focused body whose authority is established by legislation. To overcome the existing fragmentation of responsibility and legislative deficiencies, such legislation could also be used to give effect to the Council's recommendations for this investigation.

At the present time, there are various Acts under which reservation of marine, estuarine and coastal environments can occur. In some cases, reservation of the same area under more than one Act is necessary in order to provide the ability to achieve various recommended uses or levels of activity. A list of legislation applying to Victoria's Marine, Estuarine and Coastal Area is provided in Appendix I.

The Council wishes to emphasise the importance of the entire marine, estuarine and coastal environment being considered in a unified approach. The proposed Coastal Management Bill should achieve this for the coast. The Council discussed the option of developing a new Marine and Estuarine Management Act as 'umbrella' legislation for Victoria's marine and estuarine areas, but decided to recommend the use of existing legislation to implement these recommendations, recognising that various

amendments to that legislation would be required.

Council is also aware that new fisheries legislation is being developed, but does not believe that this would be in conflict with the following recommendations.

Victoria's Marine, Estuarine and Coastal Area

RECOMMENDATIONS

3.1 The Land Conservation Council recommends that Victoria's Marine, Estuarine and Coastal area be used to:

- (i) conserve natural ecosystems and their associated biota;
- (ii) maintain the water quality characteristics of natural ecosystems and, where these are degraded, progressively improve them;
- (iii) conserve features of archaeological, historical, social, geological and geomorphological and landscape significance;
- (iv) provide opportunities for open space recreation and education;
- (v) provide opportunities for sustainable harvesting of fish, shellfish and other biota from wild stock;
- (vi) provide opportunities for mariculture;
- (vii) provide for the exploration and extraction of earth resources, including oil and gas;
- (viii) provide for the development of renewable energy resources;

(ix) provide for shipping operations and associated port infrastructure and navigation aids;

(x) provide for sea-floor pipelines and communication links

(xi) the discharge of waste be permitted under licence, where no other practical alternatives exist and after relevant social, economic and environmental factors have been considered;

(xii) the area be managed in accordance with the planning principles and recommendations outlined below, unless otherwise specified in the recommendations contained in Chapters 6 to 12.

3.2 (i) the broad principles for management of Victoria's Marine Estuarine and Coastal Area as outlined in Chapter 3 of these Recommendations be incorporated in the *Crown Land (Reserves) Act 1978*;

(ii) Sanctuary Zones be proclaimed under the Reference Areas Act and that Act be amended, if necessary, to accommodate the requirements of Sanctuary Zones;

(iii) the Sanctuary Zone, Conservation Zone, General Protection Zone and the General Use Zone be permanently reserved under the *Crown Land (Reserves) Act 1978*;

3.3 Victoria's marine, estuarine and coastal area remain public land.

and that

3.4 Management of the entire marine, estuarine and coastal area, other than certain ports, be the responsibility of the Department of Conservation and Natural Resources or its delegated agents.

Note

1. Consideration should be given to the control and management of Marine Parks being the responsibility of the Director of National Parks, as provided for in the *Crown Land (Reserves) Act 1978* and the *National Parks Act 1975*.

2. The Council believes that the implementation of the zoning system will involve the development of management plans, and that public involvement in the development of those plans is essential.

Planning Principles and Recommendations for Victoria's Marine, Estuarine and Coastal Area (VMECA)

This section outlines planning principles and recommendations that will assist the sustainable use of resources, help protect significant environmental values, and maximise long-term social and economic benefits within Victoria's Marine, Estuarine and Coastal Area. For convenience, they are described under the following subject headings:

- Risk assessment and management
- Habitat and species conservation
- Environmental quality
- Introduced plants and animals
- Harvesting and production of marine resources
- Recreation
- Visual resources
- Cultural heritage
- Earth resources
- Public/private land interface
- Coastal dynamics

- Development and infrastructure
- Community education
- Compliance
- Inventory and auditing
- Aboriginal interests

Most of the subject areas are inter-related and must be considered together when decisions are being made about the future management of the marine and coastal environment. For example, recommendations relevant to fish management are found in many sections including habitat and species conservation, environmental quality, introduced plants and animals, harvesting and production of marine resources and compliance.

Risk Assessment and Management

A wide range of activities pose a risk to the sustainable use and protection of the significant values of VMECA, and these risks need to be assessed and managed.

In the absence of a systematic and coordinated approach to the management of these risks, the Council has chosen to focus as a priority on those activities that pose a risk to the ecosystem as a whole and on the way in which it functions.

RECOMMENDATIONS

That

3.5 the Department of Conservation and Natural Resources (CNR) report annually on progress toward the identification and assessment of risks to the conservation and sustainable use of marine and coastal resources within VMECA and the implementation of action plans to address them, including an assessment to ensure that priority is given to those risks that will result in the greatest long-term, widespread and potentially irreversible damage.

3.6 the immediate priorities for action be an examination of:

- nutrient and other inputs to waters, particularly in enclosed waters such as Port Phillip Bay and Western Port;
- the introduction and spread of exotic marine organisms including algae (especially dinoflagellates), starfish, molluscs, polychaetes, fishes and *Spartina*;
- changes in catchment uses, including the loss of indigenous riparian vegetation, that affect sediment deposition and runoff patterns, and that may result in the degradation or loss of marine habitats;
- coastal erosion and loss of foreshore land;
- dredging and spoil disposal in enclosed waters;
- excessive fishing effort and techniques that result in significant habitat impacts or affect non-target species or size ranges;
- potential hazards associated with the transportation and handling of petroleum products;
- changes in coastal population, visitor use and demand for coastal resources.

3.7 where appropriate, the framework of the *Flora and Fauna Guarantee Act 1988* continue to be used to consider the nomination of the potentially threatening processes and the development of plans to address them.

Note

Action plans under the *Flora and Fauna Guarantee Act 1988* for potentially threatening processes relating to marine and estuarine environments have yet to be developed.

Habitat and Species Conservation

Conservation of individual species and those that live together to form communities is directly dependent on the protection of their habitats. Several marine habitats, mainly in the bays and estuaries (e.g. seagrass), are under threat and the losses to date have had economic, social and conservation implications. Habitats can be affected by many activities including those that result in reduced water quality, burial under sediments and the introduction of pest plants and animals. Habitat conservation must systematically address these issues.

The Flora and Fauna Guarantee Act is designed to protect threatened species. The Council believes it should continue to be used for this purpose in relation to marine biota.

Removal of biomass (fish, shellfish, seaweed, etc.) from the ecosystem through harvesting can affect ecosystem function through predator-prey and other relationships. When, for example, fish (including non-target species) are caught, it is important to ensure that not only are the populations self-sustaining but also that sufficient population remains to maintain the integrity of the ecosystem.

Wildlife watching has grown rapidly in recent years. The educational and economic benefits of this activity need to be managed to ensure both the adequate protection of wildlife and the continuation of economic and social benefits arising from this activity.

RECOMMENDATIONS

That

3.8 habitat and species conservation be managed in accordance with relevant recommendations elsewhere in this chapter, particularly those in the

sections 'Environmental quality' and 'Introduced plants and animals'.

- 3.9 following the acceptance of these recommendations, within one year a priority list of habitats be established, and within two years an action plan be prepared for their conservation or restoration where degraded, with particular emphasis on seagrass (particularly Western Port), mangrove, saltmarsh, wading bird habitat and reefs within bays, inlets and estuaries.
- 3.10 where biomass is to be harvested, the manager ensure that sufficient stocks of target species, and those that may be harvested incidentally, are retained in the environment to ensure that the integrity of the ecosystem is maintained.
- 3.11 the *Flora and Fauna Guarantee Act* 1988 continue to be used to provide for the protection of threatened flora, fauna and indigenous communities.
- 3.12 where relevant, guidelines be established by CNR in association with relevant organisations to ensure wildlife-watching activities are sustainable; that individual animals or populations are not unduly affected; and that economic and social benefits are maintained.
- 3.13 where necessary, appropriate regulations be enacted to protect marine habitats and species.

Note

Submissions have identified issues associated with dolphin watching in the southern end of Port Phillip Bay.

Environmental Quality

A wide range of activities has the potential to degrade the quality of the marine

environment, particularly water quality, and its suitability for other uses such as recreation, harvesting of fish and nature conservation. Historically, the sea has been seen by many as a convenient and free dumping ground for a wide variety of wastes with an almost unlimited capacity to absorb them. It is now recognised that this is not the case for most forms of waste, particularly in areas with restricted water exchange such as estuaries.

It is also now recognised that there are major economic and planning benefits to be gained from waste-management strategies that involve reduction at source or re-use. Environmental planning should provide for a progressive reduction in discharges to the marine environment.

Diffuse sources from catchments that drain to the coast have been identified as a significant risk to the environmental quality of the estuaries to which they drain. While catchment-management techniques to reduce sediment, nutrient and toxicant loads are known, there is no clear measure of the success of these techniques in terms that are relevant to estuaries or to the allocation of resources between different catchments in relation to the impacts on estuarine areas.

RECOMMENDATIONS

That

- 3.14 disposal of waste to marine and estuarine waters be avoided or phased out wherever possible and that appropriate facilities be provided, such as pump-out stations for pleasure craft, to allow this to occur.
- 3.15 the principles of waste minimisation expressed in the Government's current Industrial Waste Minimisation Policy continue to be implemented and that waste-management initiatives adopt the following order of priorities: waste avoidance, waste

reduction, or both; waste re-use and recycling; waste treatment; and improved methods of waste disposal.

3.16 economic, social, structural, technical and administrative issues be considered by the EPA in consultation with relevant agencies to meet this order of priorities.

3.17 the Council supports the Government policy that all coastal sewage discharges receive secondary treatment by 1997;

and that

(i) current secondary treated waste discharges to marine waters be allowed to continue subject to ongoing water quality monitoring, including chronic toxicity studies and ecological impact surveys approved by the EPA, the findings of which should be progressively incorporated in licence conditions;

(ii) if zero discharge to the marine environment is ultimately not practicable, existing discharges continue subject to the implementation of tertiary treatment and removal of contaminants through the adoption of best technology and the maximisation of re-use opportunities.

3.18 new proposals for discharges to the marine environment requiring licences be permitted subject to an Environment Effects Statement or, if an EES is not required by the Minister for Planning, an appropriate environmental study and only when all other alternatives such as waste minimisation, waste re-use and land disposal have been considered.

3.19 the following zones be added to Schedule A1 of the State Environmental Protection Policy – Waters of Victoria:

- Sanctuary Zones
- Conservation Zones
- General Protection Zones

3.20 the Special Management Areas within the General Use Zone, with the exception of Mallacoota Inlet, remain or be added to Schedule A2 of the State Environmental Protection Policy – Waters of Victoria (see Note 1).

3.21 spill-response planning be based on the biological sensitivity of marine and coastal habitats to the effects of a spill and clean-up operations (see Note 2).

3.22 the Government clearly allocate responsibility for spill-response planning and a digital atlas identifying sensitive areas be prepared and maintained by CNR.

3.23 each Port Authority undertake an audit of environmental management practices for shipping operations and associated facilities in consultation with the EPA. The audit must address the requirement to fund and implement measures to protect and monitor marine and coastal resources, and the extent to which standards set by international best practice are met.

3.24 a single body whose primary function is environmental management have sole responsibility for the approval of dredging. That body shall also coordinate the approvals of CNR and port authorities as relevant for spoil disposal and beach renourishment operations (see Note 3).

3.25 the EPA, together with CNR and other relevant organisations, identify water quality criteria and monitoring standards covering suspended and particulate matter levels, nutrients and toxicants in the waters of bays, inlets and estuaries;

and that

3.26 catchment management programs be progressively implemented to enable these standards to be met and for catchments draining urban areas, priority be given to the management of rainwater and stormwater runoff.

Notes

1. Mallacoota Inlet is currently listed on Schedule C of the SEPP for the Waters of Far East Gippsland.
2. The Council is aware of the environmental management plans and oil-spill contingency plans that have been – or are being – developed by companies operating in Commonwealth waters along the Victorian coast.
3. The Trial Dredge Protocol is currently undergoing an independent review.

Introduced Plants and Animals

Unless controlled, introduced plants and animals have the potential to greatly alter marine and coastal environments, affecting habitats, displacing indigenous species and disrupting ecosystems. Substantial and irreversible economic and social impacts may result if, for example, fisheries are affected. Species may be reduced in abundance or become unsafe to eat. *Spartina*, an introduced grass used in intertidal areas, is of particular concern because of its anticipated impact on wading birds, recreation and other values.

At least twenty introduced species are known to occur in Victorian waters. It is likely that ballast water discharges and fouling organisms associated with shipping

are the major factors in the introduction process.

Once introduced to the marine environment, control of pest species is particularly difficult. A proactive preventative approach is therefore essential.

RECOMMENDATIONS

That

- 3.27** enforceable and consistent Commonwealth and State standards or codes of conduct to control the risk of introducing marine organisms in ballast water be developed and their effectiveness monitored (see Note).
- 3.28** the Government support the Commonwealth initiative to establish a working group to develop national guidelines for the control of fouling organisms on ships.
- 3.29** the Government clearly identify an agency responsible for the monitoring and management of introduced marine organisms;

and until this occurs

- (i) CNR, in consultation with the EPA, undertake monitoring of all introduced marine species, including their distribution and rate of spread; ecological, social and economic implications; new introductions and their means of establishment; and control methods and their success;
 - (ii) CNR and other relevant agencies be provided with adequate resources to control or eliminate exotic species where possible.
- 3.30** CNR finalise guidelines and implement measures to control the spread of *Spartina* and other pest species in

areas where it is already established and to prevent their entry into new areas.

Note

In November 1994, the Parliament of Victoria Environment and Natural Resources Committee, as part of its examination of the environmental impact of Commonwealth activities and places in Victoria, recommended that it be charged with the conduct of an inquiry into the introduction of exotic marine organisms in Victoria. It also recommended that the Victorian Government nominate a specific Minister to have responsibility for implementing effective control measures on the discharge of ballast water.

Harvesting and Production of Marine Resources

A wide range of resources is harvested along the Victorian coast, including fish, shellfish, live and dead seaweed and seagrass. In these recommendations the term 'fish' is used to describe all those resources. Some fishing techniques and the historic levels of catch of certain species are not sustainable. This has implications at the ecosystem, habitat and species levels. Such implications require recognition and it is essential that they be addressed in fisheries management plans.

Catch and effort data are vital for fisheries management. Appropriate data should be collected for both commercial and recreational fisheries. For commercial fisheries, provision of the data must be considered an essential condition of licences, and this condition must be enforced.

From an international perspective, there is every indication that the coming decades will see a change in emphasis from the harvesting of wild stock to the breeding and farming of selected species – a change as profound as that which took place on land

thousands of years ago when wild animals were domesticated. Because of the physiochemical character of Victorian marine waters, it is expected that this change will be more limited here.

However, there may still be implications for the planning and management of the marine environment, with a change from managing people (the fishers) to more actively managing and manipulating fish stocks. This change will provide many opportunities, but it is a change that must be managed in a way that recognises the current poor state of knowledge of marine ecosystems and the role that commercially and recreationally important species play in maintaining a viable and healthy ecosystem.

The Government's fishing policy states that the initial identification of a range of suitable mariculture sites will be undertaken by the Council. Because of the generality of the information available on prospective mariculture sites and changing mariculture technology and markets, the Council is unable to identify sites that could be expected to remain relevant in the long term. For this reason the Council has instead made recommendations on the circumstances under which mariculture may be a permitted use, and has identified some areas where it would not be permitted. The final approval of a proposal would be based on an evaluation of the specific circumstances that apply. This is the role of the managing authority.

Recommendations that provide for the sustainable management of marine resources are also given in the sections of this chapter on 'Environmental quality' and 'Introduced plants and animals'.

RECOMMENDATIONS

That

3.31 fish stocks, including those that may be harvested incidentally, be managed

to be sustainable in the long term, with sustainability demonstrated at the following levels: ecosystem, habitat and species.

- 3.32** fisheries management be undertaken through formally approved management plans, which provide opportunities for community-wide input and are consistent with the objectives for VMECA; and that they be in place within five years of the acceptance of these recommendations by Government (see Note 2).
- 3.33** critical fisheries habitats, particularly spawning and nursery habitats, continue to be identified, and the conservation of these habitats be addressed in fisheries management plans.
- 3.34** fishing techniques that involve towing a dredge or similar implement on the sea-floor be restricted to areas currently fished by such methods (Port Phillip Bay and off the Gippsland coast);

and that

- (i) before additional areas are made available, an environmental assessment of the sea-floor be undertaken and, if the technique is to be permitted in a new area, subsequent monitoring involve the establishment of control sites.
- 3.35** the fisheries manager ensure that the allocation of fish resources is divided equitably among all user groups, including consumptive recreational, commercial and traditional users, and non-consumptive users.
 - 3.36** fish catch and effort data be collected and analysed in a manner that provides a reliable basis for providing

sustainable resource use by both the commercial and recreational sectors as appropriate;

and that

- (i) a quality assurance program be implemented to ensure the accuracy of the catch and effort data and to progressively improve its spatial and temporal resolution.
- 3.37** the fisheries manager publish annually a report on the state of fish stocks and an assessment of the extent to which they are being managed sustainably, including the extent to which factors other than fishing are affecting sustainability.
 - 3.38** commercial seaweed and seagrass harvesting proposals be subject to an environmental plan approved by CNR.
 - 3.39** the application of the Shellfish Protection Regulations be reviewed to ensure that areas and species are adequately protected.

That

- 3.40** mariculture be permitted subject to a permit or licence and that:
 - (i) the approvals process provide opportunity for community comment;
 - (ii) the granting of a licence for an area take into account other existing and potential uses, including boating and shipping, recreational and commercial fishing, diving, swimming, and conservation of natural, cultural and landscape values;
 - (iii) other uses of the area not be unnecessarily limited, except

- where they affect the safe, secure and efficient operation of the venture;
- (iv) attention be given to the incremental effect of granting additional licences to ensure that mariculture does not become the predominant and exclusive use of key areas along the coast or within a single region with respect to local, regional and state perspectives;
 - (v) indigenous species, and only stock local to the area, be used to ensure the protection of genetic diversity;

but
if the use of non-indigenous stock is proposed, it must be demonstrated that there is no risk of escape of eggs, larvae, juveniles or adults with the ability to reproduce and establish 'feral' populations and that such ventures be conducted in localised areas;
 - (vi) the control of species that prey on mariculture stock be initially on prevention of access, and only when this has been demonstrated not to be feasible using best available technology, other means be used subject to approval by CNR;
 - (vii) no therapeutic chemicals, pesticides or polluting substances be added to the marine environment, except that formulated food may be used in localised intensive operations subject to EPA approval;
 - (viii) quarantine regulations be developed and enforced to protect the marine ecosystem and mariculture stock from the spread of pathogens and other pest plants and animals;
 - (ix) in providing tenure for mariculture or any form of sea farming, wild stocks within the tenured area remain the property of the community;
 - (x) mariculture licences be subject to efficient and adequate environmental monitoring;
 - (xi) the manager ensure that the granting of a licence provides for the proponent to undertake the required monitoring and restoration of the site should the venture be abandoned or destroyed.

Notes

1. Under current legislation, fisheries are managed by regulation. It is proposed that the new Fisheries Act currently under development is intended to provide a legislative basis for the development and enforcement of management plans.
2. Fisheries management plans should specifically identify how allocations of target species, and those that may be taken incidentally, have been made to ensure that the populations are self-sustaining and that sufficient population remains to maintain the integrity of the ecosystem.

Recreation

Victoria's marine, estuarine and coastal area offers outstanding opportunities for an extensive range of recreational activities. The Council believes that most activities that are dependent upon or enhanced by coastal or marine environments can be accommodated somewhere without detriment to other values and uses. It has left the

details in terms of zoning and determining appropriate levels of recreational activity to the managers.

Provision of recreational opportunities and the interaction between different recreational activities and other users, requires ongoing active management to ensure that social and economic benefits are maximised while environmental values are protected.

Some issues, such as safety, protection of habitats, economic benefits of organised events, management of conflict between recreational activities which were highlighted in submissions, need to be specifically addressed by the resource managers and those agencies who may be involved in regulating recreational activities.

RECOMMENDATIONS

That

- 3.41 public land in the VMECA continue to be available for a wide range of recreational uses.
- 3.42 private or commercial development not preclude public access to the foreshore or offshore areas other than for safety and security reasons.
- 3.43 planning ensure that:
- environmental values are protected;
 - a range of recreational opportunity settings is provided and maintained along the Victorian coast;
 - special attention is given to the cumulative impact of small changes that may affect recreational settings;
 - compatibility of various recreational activities with each other is considered;
 - safety considerations are addressed;

- demand, especially peak demand, is managed to ensure that the recreational and other values of the resource are maintained;
- user groups are involved in the planning and management process.

3.44 codes of practice be developed to encourage responsible recreational use of the coast.

3.45 appropriate community use of Victoria's recreational resources be encouraged through the preparation and publication of information about these resources.

3.46 where necessary, the marine, estuarine and coastal environment be zoned to provide for more effective management of recreational opportunities.

3.47 agencies responsible for the management of Victoria's marine, estuarine and coastal area ensure the recreational interests of all recreational user groups are taken into account when management decisions are being made.

Visual Resources

Scenery along the Victorian coast is stunning and of world renown. It provides a significant backdrop for many recreational and tourist opportunities, and consequently has important commercial and social values. Protection of this resource will be enhanced by the completion of existing work to identify the significant visual landscapes along the Victorian coast, particularly those most sensitive to change.

As most management and planning decisions on both public and private land have some visual consequences, it is important to ensure that the wide range of existing visual resource management tools

is used to maintain and restore the visual resource when changes in land use along the coast are being considered.

RECOMMENDATIONS

That

- 3.48** a comprehensive and comparative assessment of visual resources along the Victorian coast be undertaken to identify those areas where these resources are sensitive to change and to identify those that are significant and require protection.
- 3.49** the land manager ensure the visual values of the marine and coastal environment, including those underwater, are recognised and protected.
- 3.50** visual resources as seen from offshore and onshore, and from private land as well as public land, be taken into consideration in managing the visual environment.

Note

Until the assessment of visual resources outlined in Recommendation 3.48 is undertaken, the Council's recommendations for scenic coasts should continue to apply. Sections of the coast recommended as scenic coast include: Warrnambool to Lorne (167km); Lorne to Point Roadknight (24km); Point Nepean to West Head, Flinders (46km); Griffith Point, San Remo, to Black Head, Kilcunda (10km); Cape Paterson to Entrance Point including Wilsons Promontory (180km); Lake Corringale to Pearl Point (45km); Tamboon Inlet to Mallacoota Inlet (78km); and Lake Barracoota to Cape Howe (12km).

Cultural Heritage

The cultural resources of VMECA reflect human occupation and association with the marine and coastal environment that spans more than 13,000 years. Evidence of this

human association is very diverse, ranging from shell middens to shipwrecks.

Many of the values are sensitive to disturbance and activities which cause disturbance are best managed when the distribution of cultural places is known. This can only be established by ongoing surveys. Continued allocation of resources to identify significant places or areas of particular vulnerability is therefore necessary.

Existing legislation requires land managers to provide for the protection and conservation of heritage places.

In the case of Aboriginal places, designated Aboriginal communities have identified responsibilities for sites and it is critical that community approval be sought prior to the public interpretation of these sites.

RECOMMENDATIONS

That

- 3.51** the relevant Government agencies continue to identify, assess and document heritage places in coastal areas.
- 3.52** relevant government agencies periodically review their registers of heritage places to establish a priority list of significant places to guide the allocation of resources.
- 3.53** management strategies and day-to-day management practices in marine and coastal areas provide for the protection and conservation of heritage places, including those not currently entered on Government registers as well as those of recognised significance, according to the priorities established above.
- 3.54** the planning and management of cultural places involve consultation with relevant community interest groups, particularly in regard to

interpretation of and public access to heritage sites.

Notes

1. A register of Aboriginal sites under the Archaeological and Aboriginal Relics Act is maintained by the Aboriginal Heritage Unit – Aboriginal Affairs. It is proposed to develop a Victorian Heritage Register that will comprise sites listed on the registers of the Historic Buildings Act and Historic Shipwrecks Act, as well as post-contact sites listed under the Archaeological and Aboriginal Relics Act. This register would be maintained by Heritage Victoria, which is a part of the DPD.

2. Discussions are now taking place regarding the future of lighthouses currently owned by the Australian Maritime Safety Authority. These lighthouses have specific cultural values which will require attention if they are acquired by the Victorian Government.

Earth Resources

The orderly identification and, where appropriate, development of earth resources provides a significant benefit to the Victorian community. The approval of specific projects is the role of the Department of Agriculture, Energy and Minerals (DAEM) in association with other agencies.

Of the earth resources, oil and gas are currently considered to be the most prospective in parts of VMECA. Exploration and production of offshore oil and gas resources are issues of widespread community interest and debate. As a contribution to this debate, the Australian Petroleum Exploration Association has published a report, *Environmental Implications of Offshore Oil and Gas Development in Australia – The findings of an independent scientific review*. (Swan, J.M., Neff, J.M. & Young, P.C. 1994), which summarises the extent of available knowledge about this issue.

The 1993 amendments to the *Mineral Resources Development Act 1990* identified three categories of Crown Land with regard to exploration and mining: exempted (exploration and mining not permitted); restricted (consent from CNR required); and unrestricted (referral to CNR required). The Council has adopted this framework for the exploration and mining of mineral deposits, but has indicated that it will reconsider its position if changes are made to that Act.

Council has not provided specific recommendations regarding use of VMECA for the development of tidal, wind or geothermal energy sources. However, relevant recommendations are given in the section 'Development and Infrastructure'.

RECOMMENDATIONS

The following recommendations do not apply to the Sanctuary Zones.

Mineral exploration and extraction:

That

- 3.55** coastal and offshore areas be available for mineral exploration.
- 3.56** areas designated as coastal reserve, marine parks or 'Special Management Areas' listed in the schedule for the General Use Zone be 'restricted Crown land', while remaining offshore areas be classified as 'unrestricted Crown land' in accordance with the *Mineral Resources Development Act 1990*.
- 3.57** any proposal for the extraction of minerals be subject to (see Note 3):
- (i) an Environment Effects Statement or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;

- (ii) the consent of the responsible Minister where the proposal involves a zone which is designated as 'restricted Crown land';

Stone exploration and extraction:
(see Notes 3 and 4)

That

- 3.58** onshore areas be available for exploration and extraction of stone or similar material, where tenure permits, subject to the approval of the land manager.
- 3.59** offshore areas be available for exploration of stone, subject to the approval of the land manager.
- 3.60** any proposal for the extraction of stone in offshore areas be subject to:
 - (i) an Environmental Effects Statement or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;
 - (ii) the consent of the Minister responsible for management of the zone in which the proposal occurs;

Oil and gas exploration:

That

- 3.61** coastal and offshore areas of Victoria be available for oil and gas exploration, subject to:
 - (i) an EES or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;
 - (ii) the consent of the Minister responsible for management of

the zone in which the proposal occurs.

3.62 the Department of Agriculture, Energy and Minerals (DAEM) and CNR together establish appropriate licence conditions prior to the release of areas for exploration within the three nautical mile limit.

3.63 DAEM continue to conduct regional geological investigations aimed at identifying areas that are prospective for oil and gas.

3.64 drilling undertaken as part of exploration be conducted, wherever possible and feasible such that there is no discharge of drilling cuttings and muds to the marine environment (see Notes 1 and 2).

3.65 exploration be carried out using the best available technology.

Oil and gas production:

That

- 3.66** where economic reserves are proven, specific proposals for production be subject to:
 - (i) an Environment Effects Statement or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;
 - (ii) the consent of the Minister responsible for management of the zone in which the proposal occurs.
- 3.67** production drilling and associated development, such as platform and pipeline installation, be carried out using the best available technology to mitigate any environmental risks, with particular emphasis on the

installation of sea-floor pipelines, and the disposal of drilling cuttings, muds, and produced formation waters.

3.68 the Government seek industry funding of a biological inventory and monitoring program which will assess the environmental consequences of offshore production and assist with the development of improved production techniques; and the program be conducted as a tripartite arrangement between industry, government and research agencies and include an assessment of impacts following the abandonment of the field.

3.69 installations be removed when they cease to be operational or when the field is abandoned (see Note 5).

Notes

1. As at 1994 there are more than 30 drilling rigs in existence around the world that are capable of meeting these requirements.

2. In 1988 the Australian Petroleum Exploration Association Limited published a *Code of Environmental Practice – onshore and offshore* to assist member companies.

3. The Departments of Planning and Development, and Agriculture, Energy and Minerals have developed draft guidelines to assist the mining industry in preparing an EES. The guidelines have a terrestrial focus. They cover administrative and procedural arrangements that will apply to mining projects subject to an EES, and outline the typical content. The guidelines are to be reviewed in June 1995.

4. 'Stone' is defined under the Extractive Industries Act as 'sandstone or other building stone, basalt, granite, limestone, or rock of any kind ordinarily used for building manufacture or construction purposes, quartz, slate, gravel, clay, sand, earth, soil or other similar materials'.

5. International Maritime Organisation (1988) guidelines provide for the removal of infrastructure to a depth of 55m. Victorian waters within the three nautical mile limit are up to 110m deep.

Public/Private Land Interface

The quality of the marine and coastal environment is dependent not only on sound planning and management of public land, but also on activities and uses of adjoining private land and in catchments that drain to the coast. Poor decisions on private land can adversely affect public land values. The converse is also true.

While these recommendations relate specifically to public land, it is recognised that issues such as habitat protection, foreshore erosion, weed control, protection of visual resources and the control of nutrient, toxicant and sediment input from coastal catchments require an integrated approach that is based on sound land-use planning and management for all land, irrespective of tenure.

RECOMMENDATIONS

That

3.70 the Government ensure that the planning and development of both public and private land along the coast and in the catchments that drain to the coast are effectively coordinated and take into account the quality of water reaching the coast, the protection of habitats and visual resources, the mitigation of foreshore erosion, and the control of introduced plants and animals.

Note

The new *Catchment and Land Protection Act* 1994 provides an excellent opportunity to address this issue.

Coastal Dynamics

The coast is an ever-changing environment shaped by wind, waves, ocean swells, tidal currents and river flows. Natural sand movement up and down the coast and between foredunes and offshore areas constantly reshapes beaches, sand dunes and offshore sandbars. Such changes can be particularly rapid as a result of storms and floods. Furthermore, there is a natural sand deficit along many sections of the Victorian coast, resulting in net erosion and landward retreat of the shoreline.

Interference with natural processes often exacerbates the extent of natural change. For example, construction of harbours can result in major changes to the nearby coastline. Breakwaters intercept natural sediment flows along the shoreline, causing major localised accumulation, thereby starving adjacent beaches of the sediments that would otherwise provide for their replenishment. This interference has resulted in the loss of facilities, the loss of private and public land, and costs to the community through attempts to address this problem.

The impact of dredging and dredge spoil disposal is, in general, poorly understood, but as large volumes of spoil are often involved, the overall impact is likely to be significant.

Management decisions must recognise both the natural dynamics of the land-sea interface and the changes that can occur as a result of inappropriate activities or development. Areas along the open coast and in bays, inlets and estuaries that are vulnerable to coastal retreat or flooding have been identified by the Coastal Vulnerability Study which was prepared by the Port of Melbourne Authority in 1992. Developments in these vulnerable areas require particular consideration and a strong emphasis on

avoiding human-induced change or the building of structures that will be threatened by coastal retreat.

RECOMMENDATIONS

That

- 3.71 the proponent of any structure likely to cause interference with sediment movements be required to demonstrate that any negative impacts, including off-site impacts, have been addressed and that provisions for mitigation have been incorporated in the proposal.
- 3.72 all dredging and dredge-spoil disposal proposals, including beach renourishment proposals, be required to comply with guidelines and standards at least equivalent to those outlined in the EPA Trial Dredge Protocol (see Note 2).
- 3.73 sea-level and coastline changes be monitored by CNR on an ongoing basis, and the findings (including likely impacts on recreational assets, public infrastructure and private property) be progressively incorporated into management decisions.

Notes

1. The Council's attention has been drawn to a number of sites where erosion issues are of particular concern, including Portland Bay, McCrae and Somers.
2. The Trial Dredge Protocol is currently undergoing an independent review.

Development and Infrastructure

The public land along much of Victoria's coastline is generally narrow and, as a result of natural processes and human activity, there is ongoing beach erosion and coastal retreat in many areas. While the foreshore is continuing to diminish, demands for its use and further development are increasing.

Poor planning of some developments and associated infrastructure has led to irreversible changes in marine and coastal environments, and it is often the community at large that has to absorb the resulting loss of natural amenity and economic costs. Both public and private land have been affected in this way.

In particular, poorly sited buildings and other structures in coastal areas can initiate or rapidly accelerate erosion problems, and nearby beaches or infrastructure may be threatened as a result. If developments are proposed for foreshore land they should be set back from the current shoreline sufficiently to ensure that the useful life of buildings is not reduced by coastal recession.

Decisions regarding the future use and development of foreshore and nearshore areas must consider the natural dynamics of the land-sea interface, and that changes in the position of the coastline occur both naturally and in response to human uses. Human-induced changes must therefore be avoided, or appropriate provision be made to mitigate any adverse impacts. For example, a decision to build a structure which will affect sediment transport along the coast might include a budget allocation to enable ongoing transfer of sediment past the development to ensure replenishment of beaches.

RECOMMENDATIONS

That

3.74 where developments are proposed, their design should ensure that equitable access to public land and water is maintained

3.75 design and conditions of approval for developments must take into consideration the need for mitigation of environmental impacts, and possibilities for removal of structures, site

restoration, or facility re-use, in the event of their abandonment, obsolescence or destruction.

3.76 coastal development, and conditions for approval, must take into account natural coastal processes and be located or designed to avoid or to minimise disruption to those processes.

3.77 proponents of coastal developments accept liability for any off-site impacts that could reasonably have been anticipated at the time of approval and proponents provide ongoing funding where necessary to overcome any adverse impacts.

3.78 coastal setbacks be developed based on vulnerability to erosion, inundation and coastal stability and which use a minimum 50-year time-frame (see Note 2).

3.79 an assessment of the visual impact of development proposals, including all associated infrastructure, be incorporated into the approvals process.

3.80 when development proposals that may have an impact on marine habitats are considered, the hierarchy of management options given below be applied to either mitigate the impact or ensure that there is 'no net loss' in environmental quality or productive capacity of the habitat;

and that

to ensure the following hierarchy of management options operates in an effective manner, the associated costs be met by the proponent;

- initially the aim will be to maintain without disruption the natural productivity of habitats. This may be achieved by encouraging the proponent to redesign the project,

to select an alternative site, or to mitigate potential damages using proven techniques, such as the installation of adequate pollution minimisation and control techniques;

- only after it proves impossible or impractical to maintain the same level of habitat productive capacity using the above approach, and that in the interest of the State the development must proceed, the following alternatives should be considered: first, restoration of degraded natural habitat at or near the site; or second, should this not be feasible, restoration of habitat in a different locality.

3.81 existing developments that have resulted in human-induced change to the coastline, and developments that are currently being adversely affected by coastal processes, be reviewed and the following options considered:

- continued maintenance of the development;
- removal or relocation;
- purchase of alternative facilities or land.

3.82 construction of protective engineering structures be undertaken only as a last resort.

Notes

1. The Council believes that the above recommendations could be implemented by the proposed Coastal and Bay Management Council and the proposed regional boards, as provided for in the Coastal Management Bill 1994.

2. The Council is aware that setback provisions apply in other States and it believes these provide a useful starting point.

Community Education

An informed community that appreciates and understands the values, diversity and sensitivity of marine and coastal environments and the impact of different uses will facilitate the achievement of planning and management goals. Active participation in planning, management and implementation is to everyone's benefit.

However, because the marine environment is largely inaccessible for many people it is often less appreciated and understood by the community. Therefore, effective community education is an essential part of any strategy to protect and ensure sustainable use of the marine environment.

RECOMMENDATIONS

That

3.83 the Government, in consultation with existing organisations involved in marine education, develop a Victoria-wide marine and coastal education strategy in order to coordinate education programs and evaluate current and future programs; and that the strategy be appropriately resourced.

3.84 community education and awareness programs continue to encourage an appreciation and understanding of the marine and coastal environment; the resources and values it contains; the economic, social and conservation benefits of its sustainable use; and an awareness of those activities which adversely affect these benefits.

Note

The Government has recently announced 'Coast Action', which is designed to increase awareness and understanding of coastal issues through community participation in coastal management and works.

Compliance

High levels of compliance are fundamental to achieving sound planning and management outcomes. Failure to achieve compliance can make some goals such as sustainable use of fish stocks, protection of habitats, maintenance of environmental quality and the protection of cultural resources, either very difficult or impossible to achieve. The damage can be irreversible and can be significant in social and economic terms.

The difficulty of achieving compliance for marine and coastal areas is recognised. A particular circumstance that applies to the sea is that it may be more difficult to identify and retrieve evidence, or to detect offences that occur underwater. Legislation must take this into account to facilitate prosecution of offences. Community-based programs for the voluntary reporting of offences should be encouraged.

RECOMMENDATIONS

That

- 3.85** managing agencies continue to recognise the importance of education and extension as integral components of a compliance strategy; and that priorities for compliance be in accordance with the risk that offences pose to the values and sustainable use of the marine, estuarine and coastal areas.
- 3.86** CNR should ensure that agencies responsible for particular activities have clearly defined and coordinated compliance strategies, and that these strategies contain provisions for community involvement and self-regulation
- 3.87** the legislative framework for compliance strategies be periodically

reviewed to ensure that the objectives are being achieved in an efficient manner and in accordance with established priorities.

Inventory, Auditing and Research

The responsible use and management of marine resources depends upon a good information base about the resources themselves. During this investigation the Council has identified a paucity of data on the marine environment, particularly biological data.

In part, the paucity of data reflects the narrow focus, lack of coordination or ad hoc nature of some past data acquisition programs even though, in 1973, Victoria led the world in coordinated data acquisitions as the basis for the planning of Port Phillip Bay and Western Port.

Research is an essential component of environmental management. There is considerable scope for research into the biology and ecology of marine biota and communities. Governments have a responsibility to support research, both directly and through encouragement of the private sector with direct interests in the marine, estuarine and coastal environment.

In the absence of data, some decisions may need to be conservative because of the high levels of risk attached to them. The Council believes that some data, such as that acquired through airborne remote sensing, can at comparatively modest cost improve the certainty with which some decisions can be made. Other data, particularly biological data, will take longer and be more costly to obtain. However, it is important that this data be progressively obtained and used in decision-making. Only in this way can Victorians maximise the social and economic benefits of the marine, estuarine and coastal environment while at the same time protecting significant environmental values.

The priority in coming years should be the integrated collection (inventory) of broad-scale natural resource data using a systems approach. Data are required to enable resources, particularly biological resources, to be described, their distributions mapped, and their current status assessed. An audit involves an assessment of how the resource varies in response to natural fluctuations and human activities. This requires establishment of a base-line or benchmark from which to measure changes over time, particularly in relation to ensuring that performance targets set for activities lead to the mitigation of impacts on the marine and coastal environment.

The collation of existing resource data in geographic information systems should continue, to ensure that the data are in a format that can assist and expedite decision-making. The consolidation of some datasets will provide a better return for effort than the collection of new data, and these datasets need to be systematically identified.

Involvement of those in the community with interest and expertise in marine issues in collecting data and measuring change is particularly important. Such involvement can provide valuable information and foster local commitment to the marine environment and lead to an awareness of its environmental problems and solutions. If this data are to become a useful part of an overall inventory and audit program it needs to be collected to agreed standards and priorities. This may involve training of volunteers and provision of specialist equipment for the task.

RECOMMENDATIONS

That

3.88 the Government, in consultation with industry, research and community organisations, coordinate a program of integrated data collection to enable

an inventory and audit of Victoria's marine and coastal resources and their uses to be collected.

3.89 support be given to relevant research programs to assist with the informed management of plants, animals and ecological communities of the marine, estuarine and coastal areas.

3.90 the Office of Geographic Data Coordination continue to be involved in overseeing the consolidation of existing marine resource and environmental data in digital form to facilitate the use of that data, as well as data collected in the future.

3.91 the data collection program include the distribution and biological character of marine habitats within the context of the biophysical regions, with particular reference to the influence of lithology on subtidal rocky reefs and the influence of particle size on sandy beaches and subtidal soft substrates.

3.92 the program be developed within two years and implementation commence within three years of the Government's acceptance of these recommendations (see Note).

3.93 the EPA, in consultation with CNR and other relevant organisations, establish a systematic network of sites and a set of appropriate indicators – for example, physical, chemical and biological indicators – in order to audit the state of the marine environment.

3.94 CNR establish a set of appropriate indicators to monitor the sustainable use of Victoria's marine resources and that this be appropriately funded, with the 'user-pays' principle being applied where possible.

3.95 data collected by volunteers as part of an overall Government inventory and audit program be collected to standards and priorities agreed by the custodian of the data.

3.96 the results of inventory and auditing be used to progressively refine management activities.

Note

The time-frame proposed allows time to develop the programs from planning to implementation stages.

Aboriginal Interests

As part of its consultative process for this investigation, Council members and staff met with representatives of Aboriginal coastal communities to explain the Council's process and how Aboriginal communities could contribute to the investigation.

A major outcome from early meetings was a request from Aboriginal community representatives to appoint a Liaison Officer to consult with the various communities regarding their interest in the Marine and Coastal Special Investigation.

Funding of the Liaison Officer position was provided by the Commonwealth's Contract Employment Program for Aboriginals in Natural and Cultural Resource Management.

Along with many other groups and individuals, Aboriginal communities expressed concern about environmental quality, management of catchments that drain to the coast, the status of a range of natural resources, including fish, and the need for an integrated approach to coastal planning.

The Council has specifically addressed these concerns in its proposed recommendations.

This chapter outlines a series of management principles which cover these issues as they apply to the whole of Victoria's marine, estuarine and coastal area. Recommendations in other chapters also address these issues.

Protection and management of Aboriginal places and objects and appropriate consultation are major issues of concern to Aboriginal communities. These sites and their protection and management are controlled by two very important pieces of legislation, as described below.

The Aboriginal and Torres Strait Islander Heritage Protection Act 1984

This a Commonwealth Act and was developed with the specific purpose of increasing the decision-making role of Aboriginal communities in the protection and management of their cultural heritage (which includes archaeological sites and objects, traditional places of significance and intellectual property).

The regulations made under the Act define the boundaries of the 'local Aboriginal communities' which have standing under the legislation.

All parts of Victoria are covered by these 'local community areas' and under the Act these communities have the right to request the Minister to make declarations to protect endangered Aboriginal places or objects. These declarations may contain whatever conditions are considered necessary or appropriate to protect the site or place; for example, control of access or prohibition of disturbance. These provisions have been used in two recent Victorian cases, both of which were on coastal land—at Portland and at Port Fairy. Penalties for contravention of such declarations are considerable.

Local Aboriginal communities may also enter into Cultural Heritage Agreements

with landowners or managers, where appropriate, to protect sites or objects.

The Act therefore provides a basis for protecting Aboriginal cultural property in Victoria. However, it also provides for a process whereby a person or organisation may apply to the relevant community for consent to legally disturb or damage a site, although in relation to this provision it is not clear what sites or objects are included.

Difficulties arise from the interpretation of the definitions for 'Aboriginal object' and 'Aboriginal place' and which of these can be defined as being of 'particular significance to Aboriginals in accordance with Aboriginal tradition'.

Aboriginal Affairs Victoria takes the view that the Commonwealth Act mirrors the 'blanket' protection provided by the State Act (described below) which covers all Aboriginal sites and relics on both public and private land.

Archaeological and Aboriginal Relics Preservation Act 1972

Under this State legislation important sites can be declared permanent or temporary Archaeological Areas, restricting access and providing suitable management arrangements. To date, only nine such areas have been declared (one of which is on the coast at Thunder Point in western Victoria), the small number reflecting the time consuming procedures involved and perhaps indicating that declaration may not be the most suitable means of achieving protection.

Under this legislation all archaeological relics and sites are protected. Damage or disturbance (whether deliberate or inadvertent) without a permit is prohibited.

The Council believes that the legislative provisions in these Acts are sufficient to provide for the protection of Aboriginal

places and relics. However, Aboriginal communities see the legislative mechanisms as a last resort and would prefer to be involved in discussion and assist with management at a very early stage, rather than invoking the provisions in the legislation when a problem arises.

It should be noted that involvement of the Aboriginal community in the identification, protection and management of sites of particular cultural significance is required under the Commonwealth legislation. However, communities also wish to be involved with land managers in the protection of other sites, but there is no formal mechanism for this to occur.

There is a need for improved communication and consultation mechanisms between Aboriginal communities, Aboriginal Affairs Victoria and the Department of Conservation and Natural Resources and other agencies. It is clear that the major threat to sites is a lack of information about their location and significance. Aboriginal people are often best placed to provide this information to land managers, but it may also mean that Aboriginal communities need to ensure appropriate access by land managers to sites to allow proper protection and maintenance of values.

Council is aware that similar problems occur on private land and the need to establish more effective communication links here is also necessary. This is perhaps an appropriate role for local government.

Aboriginal communities are also seeking a more active involvement in the day-to-day management of sites and their appropriate interpretation. The Council believes that this is a valuable resource for land managers and planners and can lead to cooperative management and protection with benefits to both the land managers and the Aboriginal community. The Council supports further

development of cooperative ventures of this nature.

Traditional rights and ownership

A number of issues raised by Aboriginal communities stem from the view that Aboriginal people have a traditional right to ownership or use of the land and the sea and the resources they contain.

The Commonwealth Government has recently established the Native Title Claims Tribunal under the *Native Title Act* 1993 and all claims to establish such titles for land and resources are to be considered by that Tribunal. The Council believes that any claims of this nature raised by Aboriginal communities in Victoria should be referred to the Native Title Claims Tribunal and that associated issues, such as the allocation of royalties from the use of marine resources, can only be determined following the resolution of native title claims. Furthermore, the Council wishes to emphasise that these recommendations are not intended to influence, in any way, future claims for native title.

The allocation of marine resources and the need for traditional uses to be recognised in the allocation process has also been raised as an issue. Throughout these recommendations, Council has essentially determined that decisions regarding the allocation of resources should be made through the management planning processes and traditional uses should be included in these processes.

Furthermore, the Government is currently preparing a new Fisheries Bill which will

update and replace the *Fisheries Act* 1968. One of the objectives in the proposed Bill is to: Facilitate access to fisheries resources for commercial, recreational, traditional and non-consumptive uses'. The term 'traditional' in this context presumably includes Aboriginal use. This would mean that fishery management plans would have regard to, amongst other things, traditional uses.

The Council therefore considers that, if adopted, the suggested legislation would provide an appropriate mechanism for the allocation of fisheries resources to traditional uses.

The Council also notes that the Bill to establish the new Coastal and Bay Management Council provides that one member of that Council is to be a community representative with 'experience in issues relating to indigenous peoples'.

RECOMMENDATIONS

That

- 3.97** CNR, local government, Aboriginal Affairs Victoria and Aboriginal communities continue to work together to improve their communication links to ensure more effective identification, protection and management of Aboriginal sites on public land.
- 3.98** decisions regarding traditional use of marine, estuarine and coastal resources be considered during the relevant management planning processes.

4. BAYS, INLETS AND ESTUARIES

Bays, inlets and estuaries are a significant part of Victoria's marine and coastal environment. They have biophysical characteristics that clearly distinguish them from the open coast and they function, to a large extent, as separate ecological units.

They are typified by predominantly soft substrates, restricted water exchange patterns and low wave energy. Two habitat types, mangroves and intertidal flats with associated channel systems, occur only in these areas. Intertidal flats and adjacent shorelines provide feeding areas and sheltered roost sites that are necessary for the survival of large numbers of migratory and resident wading birds.

Some areas within bays, inlets and estuaries are covered by the Ramsar Convention. Some bird species are covered by bilateral agreements between Australia and Japan, and Australia and China, to protect them. Bays, inlets and estuaries are also used as breeding and nursery areas by numerous fish species, including many species of commercial and recreational importance.

As well as fulfilling a unique ecological role, bays, inlets and estuaries are a major recreational resource, being used for a wide range of water-based activities such as swimming, sailing, power boating and fishing. They also support valuable commercial and recreational fisheries and provide opportunities for mariculture.

Many of Victoria's coastal population centres are concentrated around the larger bays and estuaries, with most of the State's population being found around Port Phillip Bay and Western Port. These two bays are also the focus of major ports and associated facilities at Geelong, Melbourne and Hastings.

Because of the residential, industrial and recreational focus around these areas, it is important that access to the marine and coastal environments of bays, inlets and estuaries is equitable, and that particular uses do not lead to conflict between different sectors of the community or result in further adverse changes to these environments.

In the past, some bays, inlets and estuaries have been used as places to dispose of industrial and domestic wastes. This has led to long-term contamination of sediments and reduced water quality. They also receive nutrients and sediments from their catchments and other sources. Water diversions from their catchments have further changed their ecological function. There is clear evidence that the bays, inlets and estuaries have not been used sustainably and the failure to do so has been at considerable economic and social cost. Popular swimming beaches have been closed in summer due to water pollution, catches of fish associated with seagrass have been reduced due to its loss, and beach fronts eroded due to the building of structures that affect the movement of sand.

Several strategic planning documents have been prepared for various bays, inlets and estuaries.

The 1992 *Western Port Bay Strategy*, that followed extensive community consultation by a broad-based steering committee, recognised the impact of catchment activities on the bay and recommended actions, established priorities and identified responsible agencies. Despite this, as yet there has been no systematic approach to its implementation. The strategy contains many valuable recommendations but would be strengthened by further consideration of the

impact on the bay of the South-East Growth Corridor and future requirements for transport and effluent treatment infrastructure. It would also be desirable for the strategy to examine the environmental carrying capacity of the bay and how this may affect its ability to cope with the expansion of boating and fishing activities and associated facilities. Subject to these qualifications, the Council endorses the general direction of the strategy.

Strategic planning documents such as *Making the Most of the Bay* have been produced for Port Phillip Bay. However, many of these are specific to shoreline activities or only cover particular catchments that drain to the bay. To date there has been no plan that has as its focus the integrated use of the bay itself and the catchments that drain to it. The bay is currently the focus of a major CSIRO study funded by Melbourne Water to determine its environmental status in relation to nutrients and toxicants, and to provide the basis for the long-term management of point source and diffuse source inputs. The study will be completed in 1996.

The EPA is also completing a review of its State Environment Protection Policy for Port Phillip Bay and a draft for public comment was released in February 1995. If adopted, this would require CNR to prepare an *environmental management plan* which will allow responsibilities, resources, priorities and timelines to be established for activities within the catchment and the bay.

Given the range of uses occurring in bays, inlets and estuaries and their catchments and the intensity with which they are undertaken, planning and management issues come sharply into focus in these areas compared with the rest of the coast.

The Council believes that, for many of the planning principles outlined in Chapter 3, bays, inlets and estuaries will be priority

areas for action. It recognises that there is widespread community concern about the future planning and management of these areas. It is also clear that past arrangements have, in many instances, fallen short of community expectations.

The Council also acknowledges that some of its previous recommendations accepted by Government for these areas have not been successfully implemented, including those for Wildlife Management Cooperative Areas in, for example, Western Port and Mallacoota Inlet.

The Council considers that, in part, these failures have been a result of lack of coordination of activities in a particular water body and the catchments that drain to it, and because no single agency was made, or could be held, accountable for the overall sustainable use of these areas. The Council believes that it has now made recommendations that address these issues and that it has also identified priority actions which should substantially improve the ability of managers to ensure the sustainable use of bays, inlets and estuaries.

Very few of the estuaries or their catchments along the Victorian coast are in an essentially unmodified environmental condition and many are subject to a wide range of uses. However, those in far east Gippsland between *Wingan Inlet* and the *Betka River* – in particular the *Easby*, *Red* and *Benedore Estuaries* – are in good environmental condition. The Council's 'Rivers and Streams' and 'Wilderness' investigations identified the catchments to these estuaries as having very high biophysical naturalness and remoteness.

Given the high level of protection already afforded to these areas and the fact that very few other estuaries are in such condition, the Council believes that they should remain free of human influence as far as possible to provide a benchmark against

which the condition of other estuaries can be measured. In this context, the Council considers that the harvesting of biological resources, including fishing, in these three small estuaries should not be permitted. These would be the only estuaries in Victoria to which such a provision would apply. The implications of this proposal are negligible, as they are not currently used for commercial fishing and their use for recreational fishing is small.

RECOMMENDATIONS

That

4.1 in addition to the recommendations provided in Chapter 3, the following recommendations apply to bays, inlets and estuaries:

- they be planned and managed in an integrated manner that recognises that they and their catchments function as complex ecological units;
- where appropriate, they continue to be used for a wide range of activities and the production of goods and services required by the community;
- the conservation of seagrasses, intertidal flats, saltmarsh, mangroves, reefs and critical habitat for wading birds and fish, be given management priority;
- agencies responsible for the allocation of water within catchments that drain to the coast consider the environmental water requirements of bays, inlets and estuaries and address this issue when planning the use of water resources;
- artificial changes to the openings of river and estuary mouths, particularly those that may become closed periodically, continue to be subject to a permit issued by CNR following consideration of environmental and other relevant factors;
- priority be given to:
 - reducing sediment and nutrient

input to bays, inlets and estuaries, particularly Port Phillip Bay and Western Port;

- implementation of the State Environment Protection Polices;
- protection of wading bird habitat;
- addressing the need for, and impact of, dredging and spoil disposal, including that undertaken for beach renourishment.

4.2 CNR coordinate the preparation of an integrated management plan for each bay, inlet and estuary as appropriate and that such plans ensure the long-term sustainable use of these ecosystems.

4.3 the Western Port Bay Strategy be implemented subject to the qualifications described above (pages 48–49).

4.4 CNR review the implementation of the Western Port Bay Strategy by January 1998: to determine the extent to which actions have been implemented and the need to review priorities; or to reallocate responsibilities or resources in order to continue to restore or maintain the ecological function and productivity of the bay and to address the issues identified above.

4.5 for the Corner Inlet and Nooramunga area, current planning processes for fisheries and the Marine and Coastal Park be integrated to cover the entire area and catchment-related issues.

4.6 the Easby, Red and Benedore estuaries and their catchments be used in accordance with existing Government-approved recommendations and that the harvesting of biological resources be excluded.

Note

A fisheries management plan for Port Phillip Bay is due to commence in July 1995.

5. BIOPHYSICAL REPRESENTATION

The basis of any use or management of marine resources must be an understanding of their distribution, abundance and factors affecting their ongoing survival, use, or potential for use. Within the marine environment, such information is unknown for many resources, is limited in extent, or may be difficult and expensive to obtain.

The marine environment is a complex system with many interactions both within and external to it. To facilitate planning and management there is a need to develop a regionalisation or classification that can group similar areas together and thereby distinguish distinctive relatively homogeneous regions in terms of their biological and physical characteristics. This enables planners and managers of such areas to understand and describe more easily the attributes of particular regions and how such regions can be distinguished from those elsewhere. It also assists the community in understanding the complexities of the marine environment.

Such regionalisations enable a systematic approach to planning, inventory and audit of the marine environment and its resources.

In the terrestrial environment, the Council has developed regionalisations on the basis of physical and biological attributes to derive what are known as 'land systems'. These regions or areas have similar geology, topography, climate, and vegetation assemblages. At a broader scale, a group of land systems makes up a 'geomorphic unit', which is an area of land with similar large-scale geomorphological characteristics.

Over the past 30 years or so other terrestrial regionalisations have been developed to

assist in the classification and mapping of flora and fauna.

These terrestrial regionalisations have been progressively enhanced as the volume of data has increased and techniques for data storage and manipulation have improved. This has been coupled with a general increase in the conceptual understanding of the systems. However, it is clear that there is no single correct regionalisation: the outcome depends largely on the data analysed and the extent of the area to which the regionalisation applies. Whatever the outcome, it must be clearly understood how it was derived and the limitations on interpretation that this may impose.

In an Australian marine context, Ray and McCormick-Ray in a 1992 consultancy report for the then Australian National Parks and Wildlife Service, described a national regionalisation, developed in 1985, that identifies six biogeographic regions. Victoria is a part of one such region. This is of limited value when planning the use and management of Victoria's marine waters, but it does provide a framework on which to construct a more detailed biophysical classification specific to this State.

Marine regionalisations funded under the Ocean Rescue 2000 program, an initiative of the Commonwealth Government, are currently under development in each State. Progress was reviewed at the ANZECC's Marine Biogeographic Regionalisation Workshop (March 1994). A continental scale regionalisation is also being developed by the Commonwealth for waters within the 200 nautical mile economic exclusion zone. Regionalisations have also been developed and used for marine planning in countries such as New Zealand and Canada.

For Victoria's marine environment, the Council and CNR jointly initiated the development of a biophysical regionalisation using external consultants.

Development of the Biophysical Regionalisation

The development of the regionalisation is briefly described here. More detail is provided in reports listed at the end of the chapter, which are available from the libraries of DPD and CNR.

It was decided to first develop a regionalisation based on the physical parameters and then consider the biological data in order to produce a biophysical regionalisation if possible. This approach reflected the greater detail and availability of relevant physical datasets.

Physical regionalisation

Given that the open coast and bays, inlets, and estuaries as a group are so physically different, it was considered unnecessary to quantitatively prove this to be the case. It was, therefore, decided to develop a physical classification for only the open-ocean coast.

Graphs and scatter plots were used to assist the interpretation of the geographic variation of the physical data. These showed that major sections of the coast were clearly distinguishable from each other. This was supported by statistical analysis of the data.

Six physical regions were identified following consideration of the physical data:

1. Bays, inlets and estuaries: no differentiation was made between any of the bays, inlets and estuaries
2. South Australian border to Cape Otway

3. Cape Otway Region (about 25km west to east) which occurs around Cape Otway
4. Cape Otway to Wilsons Promontory
5. Wilsons Promontory (about 75km west to east) which occurs between about Cape Liptrap and about Seaspray
6. Wilsons Promontory to the New South Wales border

It should be noted that the Cape Otway and Wilsons Promontory regions have characteristics that are both unique to the regions and also transitional between the adjacent regions. The influence of these entrances to Bass Strait is also evident in the regionalisation for Bass Strait as a whole, which is discussed in Hamilton (1994).

Biological regionalisation

The data used for the biological classification were based on records of the Marine Research Group for the distribution of 282 common intertidal invertebrates. Distribution data were compiled for 95 grid cells which were about 15km long and based on latitude and longitude intersections of the coastline. This data was analysed statistically. There were no suitable data for offshore areas.

Three biological regions were identified:

1. Bays, inlets and estuaries: no differentiation was made between any of the bays, inlets and estuaries.
2. South Australian border to Wilsons Promontory; South Australian border to Cape Otway is a weakly defined subset of this region
3. Wilsons Promontory to the New South Wales border

Biophysical regionalisation

The biophysical classification was derived by manually overlaying the physical and biological classifications.

As a result of the overlay process, no additional regions were distinguished. The geographic concordance of regions identified from physical and biological regionalisations does not necessarily constitute a cause and effect relationship between the biology and the prevailing physical conditions. However, it should be noted that the division between the open coast and bays, inlets and estuaries arising from statistical analysis of the biological data is consistent with the separation based on the qualitative consideration of physical parameters.

The biophysical regionalisation thus identified six regions (Box 5.1) and these are shown on Map 5.1.

Box 5.1: Biophysical Regions

1. Bays, inlets and estuaries: there was no differentiation made between the individual water bodies.
2. South Australian border to Cape Otway (Western Region)
3. Cape Otway (about 25km west to east) which occurs around Cape Otway (Otway Region)
4. Cape Otway to Wilsons Promontory (Central Region)
5. Wilsons Promontory (about 75km west to east) which occurs between about Cape Liptrap and about Seaspray (Wilsons Promontory)
6. Wilsons Promontory to the New South Wales border (Eastern Region)

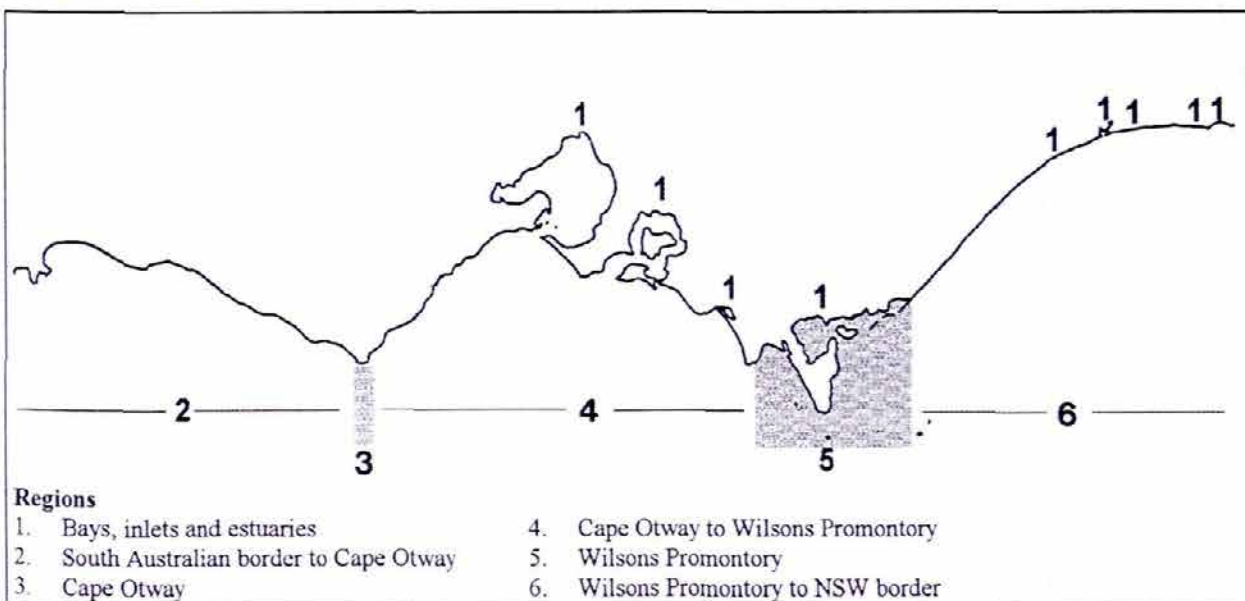
Identification of Representative Areas

To meet a requirement of the Order in Council for this investigation, the Council needs to make recommendations on the protection of significant environmental values. The identification of marine areas with significant environmental values is a difficult task, as comprehensive environmental data, particularly on biology and ecology, are lacking (see Appendix VI for further discussion). However, the task is

achievable by using the concept of representativeness based on regionalisation described above.

Representativeness in the context of this investigation refers to the identification of areas containing examples of the range of marine habitats within each biophysical region. The Descriptive Report describes the major marine habitats along the Victorian coast. The procedure for the identification of marine representative areas is outlined in the five steps below.

Map 5.1: Biophysical Regionalisation of Victoria's Marine Waters



Step 1

Subdivide biophysical regions according to the eight major habitat types identified in the Descriptive Report. Forty-eight potential region-habitat combinations were identified (see Table 5.1). Intertidal rocky shores and subtidal rocky reef habitats were also subdivided according to major rock types of the substrate (see Table 5.2).

Step 2

Identify specific coastline and offshore sections for each biophysical region-habitat combination that have known biological or ecological values (see Appendix VI).

Step 3

Using areas with known values as a core, delimit sections of the coast from high water to the territorial limit to include the variability associated with increasing water depth and distance from shore.

Step 4

For these sections of the coast:

- where clear alternative areas exist, choose the area in the best environmental condition;
- adjust longshore boundaries to avoid recreation nodes, outfalls, etc. This generally resulted in a reduction in the longshore length of the area.

Step 5

Consider the social and economic implications of choosing particular areas and the identification of the range of appropriate uses.

The choice of representative areas in bays, inlets and estuaries recognised that:

- while the biophysical regionalisation clearly identified bays, inlets and estuaries as different from the open-ocean coast, it did not seek to distinguish between individual bays, inlets and estuaries;

- there are number of features specific to bays, inlets and estuaries. Two very important habitats – mangroves and sheltered intertidal flats, including tidal channels systems – occur only in bays, inlets and estuaries. Other characteristic features include extensive areas of seagrasses and restricted water exchange patterns;
- the predominant substrates in bays, inlets and estuaries are soft sediments with corresponding flora and fauna. Therefore, no distinction has been made for the ‘intertidal rocky shore’ and ‘subtidal rocky reef’ habitats according to substrate type.

Representation of habitats

The following specific issues were addressed when considering the representation of habitats in the five steps outlined above:

Intertidal rocky shores

The Marine Research Group (Handreck and O’Hara, 1994) showed that intertidal invertebrate diversity varied with the following rock types: basalt, granite, limestone, calcarenite and sandstone. It is probable that the faunal assemblages also differ. Floral diversity and composition are also likely to be influenced by substrate rock type.

Each of the five substrate rock types, where present, was therefore represented in each biophysical region (see Table 5.2).

Subtidal rocky reefs

Although the relation between substrate rock type and the biology of offshore subtidal rocky reefs has not been studied specifically, it appears that the flora and fauna on subtidal rocky reefs may differ according to rock type in a similar way to that of intertidal rocky shores. Subtidal reefs also display differences in erosion patterns resulting in differing textures, sizes

and shapes of microhabitats which are strongly influenced by rock type. However, for a given rock type the erosion patterns may differ between intertidal and subtidal areas.

It has been assumed that intertidal rocky shores and subtidal rocky reefs in the same area are likely to consist of the same broad rock type. Therefore, by including the adjacent offshore area it is assumed that the subtidal reefs of a particular rock type will also be represented. This assumption for reef areas was applied with care, as it also assumes that subtidal reefs occur in the adjacent areas. In some areas, nearshore geology can be determined with some certainty. For example, the granite islands off Wilsons Promontory, and basalt islands such as Lawrence Rocks and Lady Julia Percy offshore from Portland and Port Fairy respectively, provide a good indication of the rock type of offshore rocky reef habitat.

In addition, the rock type of some subtidal reefs is known from specific underwater studies.

Variation in sea-floor habitats with water depth

It is also known that the flora and fauna on subtidal rocky reefs change with depth, and as the sea-floor gently slopes away from the coastline with distance from shore. Algal species change with increasing depth, from green through brown to red. Plant life declines due to reduced light penetration at about 20m depth, sometimes extending to 50m in clear water. In addition, nearshore areas are subject to the dissipating energy of incoming waves, currents and the abrasive effect of mobile sand. This also leads to variations in the particle size and structure of soft sediments and consequently changes in biology.

Along the Victorian open coast the sea slopes gently offshore. At the territorial

limit, water depth varies from about 30m to 110m, although in some areas like Wilsons Promontory the water depth increases rapidly at first. Therefore, by extending areas from the shoreline to the territorial limit, the biological variability of subtidal rocky reef habitat and subtidal soft substrate habitat related to water depth is incorporated.

Pelagic environments

Pelagic environments within Victorian waters are unlikely to be uniform. Although there are no systematic studies of Victorian marine waters, based on work in other geographic regions such as the tropics, larvae and other propagules for example probably have very patchy distributions and are most likely confined to limited areas. However, an absence of distributional and site-specific data, particularly for zooplankton, phytoplankton or for adult fish, means it is impossible to make definite statements. As representative areas were extended to the territorial limit to include variation in sea-floor habitats with depth, the inclusion of the overlying water should therefore incorporate the variability of this habitat.

Intertidal sandy beaches

The paucity of data on this habitat did not allow the identification of sandy beaches with important ecological and biological values. It is, however, a distinct and important habitat characterised by low diversity of specialised fauna. Some data indicate that major differences may occur between ocean beaches only a few kilometres apart. In some instances intertidal sandy beach habitat was included in mainly rocky areas identified as having important ecological and biological values. Where this did not occur, and it was appropriate, adjacent sandy beaches were included by extending the core areas identified in Step 3 above.

Seagrasses

This habitat has an extensive distribution in bays, inlets and estuaries, but on the open coast has not been systematically mapped. Wherever practicable, this habitat was included in representative areas.

Other considerations

In the offshore direction the size of representative areas along the open coast is restricted to 5.5km, the limit of Victorian territorial jurisdiction.

In the longshore direction, the initial longshore size was that originally identified in the 'Sites of Biological and Ecological Importance' paper (see Appendix VI). The choice of location and size of representative areas was also determined by the degree of naturalness.

Where there was a choice in the longshore boundaries of an area, or in choosing between two locations which equally represented habitats in a region, areas of known disturbance, particularly from ocean outfalls, were avoided. While other activities occur along the coast which may disturb natural processes, they tend to be more widespread and could not be as easily incorporated into the decision-making process at an early stage. They were, however, considered in finalising the proposed number and location of representative areas.

Using the information available to Council, social and economic issues were identified by determining the current and potential use of the area for recreation, fisheries, earth resources, and other services and utilities. These are outlined in Chapter 2.

Table 5.1: Major Habitats by Biophysical Region

Habitat	Bays/ estuaries/ inlets	Open Coast Regions				
		South Aust. border to Cape Otway	Cape Otway	Cape Otway to Wilsons Prom.	Wilsons Prom.	Wilsons Prom. to NSW border
Intertidal rocky shores						
Seagrass beds			None known			None known
Mangroves		Not present	Not present	Not present	Not present	Not present
Intertidal sandy beaches						
Sheltered intertidal flats		Not present	Not present	Not present	Not present	Not present
Subtidal rocky reefs	Limited occurrences					
Subtidal soft substrata						
Pelagic environment						

Notes:

Shading indicates habitat/region combinations that occur along the Victorian coast.

Table 5.2: Major Substrate Rock Types by Biophysical Region

Substrate rock type	Open Coast Regions				
	South Aust. border to Cape Otway	Cape Otway	Cape Otway to Wilsons Prom.	Wilsons Promontory	Wilsons Prom. to NSW border
Basalt		Not present		Not present	Not present
Granite	Not present	Not present	Isolated occurrences only		
Limestone		Not present	Isolated occurrences only	Not present	Not present
Calcarenite		Not present		Isolated occurrences only	Offshore reefs only
Sandstone				Isolated occurrences only	

- Notes:
1. Shading indicates areas where a particular substrate occurs.
 2. Minor and isolated occurrences of particular substrate rock type, such as greenstone, are not included.
 3. Minor or isolated occurrences of the five substrate rock types occur in some but not all bays, inlets and estuaries.

References

Consulting Environmental Engineers (1992), *Inventory of Victoria's Marine Ecosystems – Stage 1: Review of Information Sources*. An unpublished report to the Land Conservation Council and Department of Conservation and Natural Resources

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Handreck, C.P. and O'Hara, T.D. (1994), *Occurrence of selected species of intertidal and shallow subtidal invertebrates at Victorian locations*. An unpublished report by the Marine Research Group of Victoria Inc. to the Land Conservation Council

Victorian Institute of Marine Sciences, Consulting Environmental Engineers, Dames and Moore, Museum of Victoria (1994), *Environmental Inventory of Victoria's Marine Ecosystem – Stage 1: Biophysical Classification*. An unpublished report to the Land Conservation Council and Department of Conservation and Natural Resources

6. A ZONING SYSTEM FOR VICTORIA'S MARINE, ESTUARINE AND COASTAL AREA

As outlined in Chapter 3 of these recommendations, Council emphasises the importance of integrated planning and management across the whole of Victoria's Marine, Estuarine and Coastal Area (VMECA).

While all of the study area is important, it is clear that certain parts will require particular management regimes which differ from other parts. For example, areas used as ports will require a different management regime compared to an area which is important for ecosystem conservation.

Different zoning schemes for marine areas have been used around Australia and there is no nationally agreed zoning system. The number of zone categories and objectives vary between jurisdictions.

Zoning has been used to plan and manage the very large ecosystems such as the Great Barrier Reef, where about seven zones have been used for an area of 350,000sq.km.

Zoning schemes have also been used to plan and manage discrete marine conservation reserves, such as Jervis Bay, where three zones have been used to manage 125sq.km.

Four zones have previously been used in management plans for Victoria's marine and coastal parks. These are sanctuary zone, recreation zone, conservation zone and general use zone.

Taking into account these approaches, the Council is recommending that five zones be established covering the entire VMECA (10,090sq.km), as follows:

- Sanctuary Zone (140sq.km)
- Conservation Zone (910sq.km)
- General Protection Zone (520sq.km)

- General Use Zone (8,520sq.km)
- Services, Utilities and Facilities Zone (less than 50sq.km)

The objectives for the zones are summarised below; further details and the recommendations applying to them are described in the following chapters and their extent is shown on Map A. Detailed maps showing the location of the Sanctuary, Conservation and General Protection Zones are available on request from the Council.

Zone Objectives

Sanctuary Zone: Provide for the maintenance of natural ecosystems as a reference for scientific research and for monitoring the state of the marine environment.

Conservation Zone: Conserve representative examples of habitat type by providing high levels of protection for marine flora and fauna and their associated ecological processes.

General Protection Zone: Provide for the protection of specific habitats or flora and fauna, and for appropriate recreation and resource use.

General Use Zone: Provide for a diverse range of recreational and commercial activities consistent with the zone's long-term sustainable use.

Services, Utilities and Facilities Zone: Provide for port and shipping operations, or development of major recreation boating facilities.

Note

Together, the Sanctuary Zones and Conservation Zones provide a representation of the major biophysical regions and habitats occurring in Victoria's marine, estuarine and coastal environment.

Marine Parks

The Council is also proposing that a system of marine parks be established along the Victorian coast and that the zones to be included in marine parks will be:

- Sanctuary Zones
- Conservation Zones
- General Protection Zones

The Council is recommending that 14 new marine parks be established, five of which will incorporate the existing marine and coastal parks in Port Phillip Bay, Bunurong, Shallow Inlet, Wilsons Promontory and Corner Inlet/Nooramunga. The zones present within each proposed marine park are indicated in Table 6.1.

RECOMMENDATIONS

- 6.1 That Victoria's Marine, Estuarine and Coastal Area be divided into five zones, as follows:
- Sanctuary Zone
 - Conservation Zone
 - General Protection Zone
 - General Use Zone
 - Services, Utilities and Facilities Zone
- 6.2 That a system of 14 Marine Parks (as listed in Table 6.1) be established along the Victorian coast.
- 6.3 That Conservation, Sanctuary and General Protection Zones be confined to Marine Parks.

Table 6.1: The Area and Intertidal Length of the Zones Proposed for Each Marine Park

Proposed Marine Park	Sanctuary Zone - sq.km (km)	Conservation Zone - sq.km (km)	General Protection Zone - sq.km (km)
Discovery Bay	16 (3)	90 (19)	
Lake Gillear	16 (3)	55 (10)	
Port Campbell	14 (3)	101 (26)	
Moonlight Head	11 (2)	58 (13)	
Harold Holt			
Swan Bay			25 (27)
Mud Island			6 (10)
Point Cook			1 (1)
Williamstown			<1 (<1)
Popes Eye			<1 (<1)
Point Lonsdale			<1 (<1)
Point Nepean	13 (1)	20 (7)	
Nobbies	4 (3)	7 (6)	
Western Port			
Northern Western Port		29 (10)	
Rhyll-Newhaven		20 (21)	
Bunurong	11 (3)	25 (5)	11 (10)
Shallow Inlet			16 (35)
Wilsons Promontory	11 (15)	177 (45)	61 (104)
Corner Inlet/Nooramunga ²		117 (95)	396 (383)
Ewing Marsh	12 (2)	99 (18)	
Rame Head	20 (4)	67 (10)	
Cape Howe	15 (2)	45 (13)	

Note

1. The presence of a zone in a marine park is indicated by shading.
2. The area and length of the Corner Inlet and St Margaret Conservation Zones are 97sq.km (44km) and 20sq.km (51km) respectively.

7. SANCTUARY ZONE

The Council considers the identification of areas as benchmarks for scientific reference to be an important planning principle. While this has been mainly applied to terrestrial systems, the principle is equally important for marine systems. For example, the assessment of the implications of scallop fishing in Port Phillip Bay would have been assisted if suitable areas had remained unutilised to provide a baseline for comparison with utilised areas.

Terrestrial reference areas are tracts of public land containing viable samples of one or more land types that are relatively undisturbed and that are reserved in perpetuity. People concerned with studying land for particular comparative purposes may then refer to such areas, especially when attempting to solve problems arising from the use of land. In the marine context, areas set aside for scientific reference should include typical examples of the range of marine environments, including those that have been used elsewhere for activities such as fishing, dredging and spoil disposal or intensive recreation. The cause and effects of human alteration and utilisation now and in the future can be measured against relatively stable natural environments located within such areas.

The Council acknowledges that areas set aside for scientific reference in the marine environment will be managed in a different way from terrestrial reference areas given that it will be necessary to allow a greater range of uses in the marine areas. For this reason the Council is proposing to use the term Sanctuary Zone to distinguish between the areas set aside for scientific reference in the marine environment and terrestrial reference areas.

In common with references and standards used in other fields, Sanctuary Zones should not be tampered with, and natural processes should be allowed to continue undisturbed. They should be sufficiently large to be viable.

Setting aside such areas will enable continued study of natural features and processes – for example, the inter-relationship of flora, fauna and habitat. For marine areas there are many uses that require benchmark sites if their impacts are to be assessed. These include physical, chemical and biological impacts of changes in water quality due to discharges or run-off from cleared catchments; changes due to the harvesting of a particular size and species of fish or shellfish; and impacts of human trampling on intertidal rock platforms.

In the marine environment Sanctuary Zones may act as nursery areas and be a potential source of replenishment of marine resources through movement to adjacent waters.

Together, the Sanctuary Zones and Conservation Zones provide a representation of the major biophysical regions and habitats occurring in the Victorian marine and estuarine environment, (see Table 8.2).

The Council is proposing that Sanctuary Zones be proclaimed under the *Reference Areas Act 1978* which provides for the Minister to issue directives for protection, control and management. An advisory committee, established under the Act, assists the Minister. It may be desirable to amend the Act to provide for the different uses to be accommodated in the Sanctuary Zones.

Wherever possible, Sanctuary Zones have been located within the Conservation Zones to facilitate their protection from damaging processes and to provide a buffer for management purposes.

Eight of the eleven Sanctuary Zones described below extend offshore from high-water mark to the Victorian territorial limit of 5.5km. Most are 2km wide in the long-shore direction. The remainder have differing configurations which are described below and shown on Map A.

RECOMMENDATIONS

That

7.1 the areas described below and shown on Map A:

- (i) be used to maintain natural ecosystems as a reference to which those concerned with studying the marine environment for particular comparative purposes may be permitted to refer, especially when attempting to solve problems arising from the use of the marine environment;
- (ii) be available, if necessary, as sources of biota for restocking depleted areas either by natural or artificial means;

that the following activities be permitted:

- (iii) nature observation, scuba diving, snorkelling, surfing, swimming, boating using motorised or non-motorised craft, and wind surfing;
- (iv) research, subject to a permit.
- (v) oil and gas exploration from an aeroplane or from a ship (such as hydrophone surveys) that does not cause disturbance to

the sea floor or the biota, and is essential for completion of a wider exploration program;

- (vi) oil and gas extraction provided that it does not cause disturbance to the sea floor or the biota and which is undertaken from a point outside the zone and subject to the consent of the Minister responsible for Sanctuary Zones

that

- (vii) other activities not be permitted

and that

- (viii) they be permanently reserved under the *Crown Land (Reserves) Act 1978* and proclaimed under the *Reference Areas Act 1978* (which may have to be amended to accommodate the Sanctuary Zones) and managed by the Department of Conservation and Natural Resources.

Notes

1. A more detailed description of the biophysical character, and uses of the region in which the Sanctuary Zones occur is given in the description of the relevant Conservation Zones (see Chapter 8).
2. For the location of the Sanctuary Zones, see Map A. More detailed maps are available on request from the Council.

Sanctuary Zones

Discovery Bay

This zone extends from the headland north of Whites Beach into Discovery Bay. This area is flanked by the Discovery Bay Conservation Zone and includes examples of rocky (basaltic) and soft substrate intertidal and subtidal habitats within the Western Biophysical Region (see Table 8.2).

Lake Gillear

This zone extends some 2km west from a point 3.5km west of Childers Cove. It is flanked by the Lake Gillear Conservation Zone and contains examples of rocky (calcarenite) intertidal and subtidal habitats and soft substrate subtidal habitat within the Western Biophysical Region (see Table 8.2).

Port Campbell

This zone begins on the headland immediately to the south-east of Loch Ard Gorge and extends in a south-easterly direction along the coast for some 2km. It is flanked by the Port Campbell Conservation Zone and includes examples of rocky (limestone) and soft substrate intertidal and subtidal habitats within the Western Biophysical Region (see Table 8.2).

Moonlight Head

This zone extends in an easterly direction along the coast from Lion Headland. It is flanked by the Moonlight Head Conservation Zone and contains examples of rocky (sandstone) intertidal and subtidal habitats and soft substrate subtidal habitat within the Otway Biophysical Region (see Table 8.2).

Harold Holt

This zone adjoins the Harold Holt Conservation Zone and extends east from Sierra Nevada Rocks for some 600m along the shore to London Bridge. It contains examples of rocky (calcarenite) intertidal and subtidal habitats and soft substrate subtidal habitats within the Central Biophysical Region (see Table 8.2).

The Nobbies

This zone extends west for 2km from Kennon Head at Summerland Bay and extends 2km offshore. It adjoins The

Nobbies Conservation Zone and includes examples of rocky (basalt) and soft substrate intertidal and subtidal habitats within the Central Biophysical Region (see Table 8.2).

Bunurong

This zone extends west for 2km from Eagles Nest and is flanked by the Bunurong Conservation Zone. It includes examples of rocky (sandstone) and soft substrate intertidal and subtidal habitats within the Central Biophysical Region (see Table 8.2).

Wilson's Promontory

The Wilson's Promontory Sanctuary Zone consists of two parts: an area extending 300m from high-water mark around Anser Island; and Waterloo Bay, between Waterloo Point and Cape Wellington. Both parts are flanked by the Wilson's Promontory Conservation Zone and contain examples of rocky (granitic) and soft substrate intertidal and subtidal habitats within the Wilson's Promontory Biophysical Region (see Table 8.2).

Ewing Marsh

This zone is located due south of Waygara Township and extends eastward from a point some 3.5km east of the Hartland River entrance to Ewing Marsh. It is flanked by the Ewing Marsh Conservation Zone and includes examples of soft substrate intertidal and subtidal habitats and rocky (calcarenite) subtidal habitat within the Eastern Biophysical Region (see Table 8.2).

Rame Head

This area extends eastward from Wingan Point for some 3km. The zone excludes The Skerries and is flanked by the Rame Head Conservation Zone. It includes examples of rocky (granite) and soft substrate intertidal

and subtidal habitats within the Eastern Biophysical Region (see Table 8.2).

Cape Howe

This zone extends from the Victorian/NSW border to a point 0.5km west of Iron Prince

Reef and offshore to 5.5km. It adjoins Cape Howe Conservation Zone and contains examples of rocky (sandstone) and soft substrate intertidal and subtidal habitats within the Eastern Biophysical Region (see Table 8.2).

8. CONSERVATION ZONE

Conservation Zones have been selected on the basis that they are representative of the biophysical regions identified along the Victorian coast and the habitats and substrate types occurring in those regions (see Table 8.2). Where more than one site within a region was identified as representative, a choice was made on the basis of other information, especially in relation to known important biological and ecological values and other existing uses. The process of selection in these areas is described in more detail in Chapter 5. Where possible, areas which remain in an essentially natural state and have had least development have been selected as Conservation Zones.

Size of the areas

The protection of representative marine environments and their associated biota is best achieved by setting aside areas which are large enough to contain viable examples of the range of marine environments along the Victorian coast. A small area may not adequately protect the full range of values, and may be less capable of withstanding the impacts of pollution, habitat change and other activities in adjoining areas. With these issues in mind, the Council has identified areas as Conservation Zones which are as large as practicable, taking into account social, economic and other factors.

Uses and Activities Within Conservation Zone

The primary objective of Conservation Zones is the conservation of representative examples of habitat type by providing high levels of protection for marine flora and fauna and their associated ecological processes. Opportunities for other activities that do not affect long-term conservation values could also be provided.

It is important that the level of access to the zones be compatible with the objectives and maintenance of the identified values. One of the potential human effects on coastal and marine environments is habitat destruction through incidental damage from recreational activities and tourism. The locations and levels of the various recreational activities must be addressed in the management plans for marine parks.

There are a number of activities which may or may not affect the long-term conservation values of the Conservation Zones. These include:

- the installation of sea-floor cables and pipelines
- coastal engineering works
- earth resources exploration and extraction
- oil and gas exploration and extraction
- mariculture
- recreational fishing (abalone, rock lobster, long-lining)
- commercial fishing (abalone, rock lobster, long-lining, seine-netting, mesh-netting)
- research.

The Council proposes that where any of these activities are planned for the Conservation Zones, they be subject to an appropriate level of environmental assessment to determine whether a specific proposal is compatible with the objectives of the Conservation Zone [see Recommendation 8.2(i) to (iv)].

Research activities could be undertaken in the Conservation Zones subject to a permit from the land manager.

There are some activities that the Council considers are incompatible with the primary objective of the Conservation Zones be-

cause of the likely impacts they may have on long-term conservation values. These are trawling where this involves disturbance to the seabed, scallop dredging, dredging and spoil disposal, waste discharges, shipping ports, main shipping routes, spearfishing and seaweed harvesting. The Council is proposing that these activities not be permitted in the Conservation Zones (see Table 8.1).

Table 8.1: Summary of Uses and Activities Within Conservation Zones

Activities which are appropriate in Conservation Zones:

- nature observation
- scuba diving
- snorkelling
- surfing
- swimming
- boating:
 - motorised craft
 - non-motorised craft
 - sailing
 - wind surfing

Activities which could be permitted in Conservation Zones subject to conditions specified in the recommendations:

- commercial fishing:
 - abalone
 - rock lobster
 - long-lining
 - seine-netting
 - mesh-netting
- installation of sea-floor cables and pipelines
- mariculture
- coastal engineering works
- recreational fishing:
 - abalone
 - rock lobster
 - line-fishing
- earth resources
 - exploration
 - extraction
- oil or gas
 - exploration
 - extraction

Activities not permitted in Conservation Zones:

- trawling involving disturbance to the seabed (including scallop dredging)
- waste discharges
- dredging and spoil disposal
- shipping ports
- shipping routes
- spearfishing
- seaweed harvesting

RECOMMENDATIONS

That

8.1 the areas described below and shown on Map A be used:

- (i) to conserve and, where appropriate, to protect marine fauna and flora and their associated ecological processes and representative habitats;
- (ii) to conserve and, where appropriate, take action to protect archaeological, geological and geomorphological values;
- (iii) to protect and, where appropriate, take action to enhance water quality;
- (iv) to provide opportunities for planned utilisation and public access that does not affect long-term conservation values.
- (v) to provide for planned recreation and education associated with the enjoyment and understanding of natural environments (see Table 8.1).

That

8.2 where consistent with the recommendations for the VMECA, the activities identified in Recommendations 8.2(i), (ii), (iii), (iv) and (v) be permitted in Conservation Zones:

- (i) the installation of sea-floor cables and pipelines, coastal engineering works and mariculture (in accordance with the conditions specified in Note 1 below), subject to:
 - an EES or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;

- the consent of the Minister responsible for management of Conservation Zones, and only after alternatives outside the Conservation Zones have been considered and the Ministers for Energy and Minerals and Conservation and Environment are satisfied that no other appropriate alternative is available;
- (ii) earth resources and oil/gas exploration, subject to:
- an EES or, if an EES is not required by the Minister for Planning, the Minister should require an appropriate environmental study;
 - the consent of the Minister responsible for management of the Conservation Zones;
- (iii) extraction of earth resources and oil/gas subject to an EES and the consent of the Minister responsible for management of the Conservation Zone (see Note 2);
- (iv) recreational fishing (abalone, rock lobster, line-fishing) and commercial fishing (abalone, rock lobster, long-lining, seine-netting and mesh-netting) subject to:
- a management plan, which includes baseline studies for later comparisons and monitoring, and which outlines the process and time-lines for review of the plan and any permits (see Note 3);
- and
- close monitoring of the level of fishing and environmental impact;

- (v) research, subject to permit by the land manager.

That

8.3 the following activities not be permitted in Conservation Zones:

- (i) trawling involving disturbance to the seabed (including scallop dredging), dredging and spoil disposal, waste discharges, shipping routes and ports, spearfishing, and seaweed harvesting (see Note 4);
- (ii) collection of marine organisms for human consumption or educational purposes other than where provided for in a management plan (see Note 5);

and that

the areas be permanently set aside under the provisions of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation and Natural Resources.

Notes

1. Any proposals for mariculture should be subject to the general principles outlined in Chapter 3, Section: Harvesting and Production of Marine Resources.
2. The Council is aware that this recommendation differs from the current provisions of the *Environment Effects Act 1978* which gives the Minister for Planning absolute discretion to determine whether an EES is required or not.
3. The management plan would detail which types of fishing are to be permitted, the level of fishing allowed and any other conditions applying to that fishery.
4. Shipping refers to commercial deep-sea cargo and passenger ships of approximately 1,000 tons and above. It does not include smaller commercial and recreational boats up to 50m in length which may require up to 6m of water depth. Commercial deep-sea cargo and passenger ships in transit usually

travel at a distance of at least 9km from the shore, while oil tankers generally travel at distances further offshore and therefore are well outside the Conservation Zones.

5. Collection of marine organisms refers to shore-based collection, including collection for human consumption or educational purposes by hand, pumping, digging, dip-nets or other means, but does not include line fishing.

Conservation Zones

Open Coast

Discovery Bay
Lake Gilliear
Port Campbell
Moonlight Head
Harold Holt
Nobbies
Bunurong
Wilson's Promontory
Ewing Marsh
Rame Head
Cape Howe

Bays

Northern Western Port
Rhyll-Newhaven
Corner Inlet
St Margarets

The Conservation Zones are shown on Map A and detailed maps showing their location are available on request from the Council.

Conservation Zones: Open Coast

Discovery Bay

This zone extends in a north-westerly direction from Cape Duquesne into Discovery Bay for a distance of some 19km and extends offshore from high-water mark to the Victorian territorial limit of 5.5km. The north-western boundary of the zone is located approximately 1.5km to the

south-east of the dune-buggy access to Discovery Bay from the Swan Lake Road.

Biophysical representation and other values

This zone is representative of rocky (basaltic) and soft substrate intertidal and subtidal habitats within the Western Biophysical Region (see Table 8.2).

The zone is a part of the largest coastal basalt formation in western Victoria, which extends from Discovery Bay to Blacknose Point near Portland. It is exposed to high wave energy, among the highest in the State. The diversity of intertidal and shallow subtidal invertebrates in this area is high even though field-work effort is low.

The area adjoins sites of geomorphologically significant basaltic sea caves, and significant sites for a number of flora and fauna species, including a largely unvegetated extensive dune system and dune lakes that support wetland vegetation. The zone also adjoins the Discovery Bay Coastal Park.

Recreation

Whites Beach in Descartes Bay is the only location within the zone that is readily accessible. It is used by some local people for recreational shore-based fishing and recreational diving.

Commercial uses

Rock lobster and abalone are both harvested within the zone and limited trawling (blue warehou), mesh-netting, troll and line-fishing may also occur.

Limited earth resources exploration has occurred in the zone, and therefore its prospectivity is yet to be fully ascertained. The Discovery Bay/Cape Duquesne area contains a similar geological structure to that present across the border in South Australia that may contain trapped oil and gas. There are encouraging indications of

high oil or gas prospectivity and this significantly raises the potential for discovering economic quantities of these resources in the area. The potential for finding new economic resources of metallic minerals is currently considered to be low. Construction materials may be present.

Lake Gilliear

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km, from 3km east of Logans Beach Whale Viewing Platform to a point 1.3km west of Childers Cove.

Biophysical representation and other values

This area is representative of rocky (calcareenite) intertidal and subtidal habitats and soft substrate subtidal habitat within the Western Biophysical Region (see Table 8.2).

The zone is characteristic of a larger area of calcarenite rocks which extends from west of Warrnambool to west of Childers Cove and has a high diversity of intertidal and shallow subtidal invertebrates.

Recreation

The only land access to the zone is via a track adjacent to Lake Gilliear and some locals fish at the nearby rocky platform using this access point. Boats can be launched at Warrnambool 5–10km west of the zone, and some recreational boat fishing for sweep, snapper, reef fish and rock lobster occurs. The sea conditions are often difficult with high swell. Although boats can shelter in small coves and bays, fishers go out only on the relatively few calm days.

Commercial uses

Abalone and rock lobster are harvested within the zone. Some limited mesh-netting, troll-line fishing and inshore trawling also occur.

Limited earth resources exploration has occurred in the zone and therefore its prospectivity is yet to be fully ascertained. Data collected to date indicate a highly prospective geological structure for oil and/or gas. The potential for finding new economic resources of metallic minerals is currently considered to be low. Calcareenite occurs along the margin and within the zone, and offshore areas may be prospective for calcareous sand.

Port Campbell

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km, and from the Crown of Thorns to Gibsons Steps.

Biophysical representation and other values

This area is representative of rocky (limestone) and soft substrate intertidal and subtidal habitats within the Western Biophysical Region (see Table 8.2).

This area contains good examples of the well-known and spectacular limestone cliffs and narrow intertidal rocky shores found along the western coast of Victoria. The zone is characteristic of a larger area which extends from Childers Cove to Gibsons Steps. It has the highest diversity of intertidal and shallow subtidal invertebrates occurring on limestone in Victoria.

The zone contains breeding colonies of the short-tailed shearwater on Muttonbird Island and the black-faced shag in the area between London Bridge and the Twelve Apostles. Little penguin breeding colonies occur on the adjoining coastline.

The area includes sites of geological and geomorphological significance displaying coastal erosion processes and karst topography. The adjoining coastline has sites of significance for flora and fauna species, and has significant beach habitat for shorebirds.

Recreation

There is limited recreational boat fishing between the Crown of Thorns and Gibsons Steps because of the heavy sea conditions, the need to use larger boats, and difficult access. The only boat-launching location near the zone is at Port Campbell, which is not suitable for large boats.

Access from the land to the intertidal zone is very difficult due to the sheer cliff faces. However, some rock fishing occurs from the cliff tops, for example, at Point Hesse. The two accessible beaches are located at Sherbrook River, used by a relatively small number of local fishers, and at Loch Ard Gorge, used by limited numbers of people for swimming, snorkelling and, occasionally, scuba diving. Most swimming activity occurs at Port Campbell beach.

A number of shipwrecks within the zone reflect the hazardous nature of the coastline in this area. Notable among the wrecks is the *Loch Ard*. Although sea conditions are often unsuitable, the wreck sites are visited by recreational divers.

Commercial uses

Abalone and rock lobster are harvested within the zone. Limited earth resources exploration has occurred in the zone, and therefore its prospectivity is yet to be fully ascertained. However, the zone lies directly between the recently discovered Minerva offshore gas field about 11km south of Point Hesse and the currently producing Paaratte onshore gas field. Present indications are that a similar geological structure is present between these two fields, making the area highly prospective for oil and/or gas. Given current knowledge, the region, of which this zone is a part, is one of the most prospective areas for oil and/or gas in Victoria. There is joint Commonwealth-State agreement that the offshore development will be subject to a single EES/EIS process covering both

offshore Commonwealth waters, and land and waters under Victorian jurisdiction. This process is underway.

The potential for finding new economic resources of metallic minerals is currently considered to be low. Limestone occurs along the margin and within the area. Offshore areas may be prospective for calcareous sand.

Moonlight Head

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km, and from 1km east of The Gable Viewing Point to the western end of Sutherlands Beach.

Biophysical representation and other values

This area is representative of rocky (sandstone) and soft substrate intertidal and subtidal habitats within the Otway Biophysical Region (see Table 8.2).

The zone contains a range of coastal orientations and microhabitats with extensive rock platforms. It also features a number of biologically interesting coves, including Rocky and Deep Sea Coves.

The zone generally has a high diversity of intertidal and shallow subtidal invertebrates, including some of the highest in the State on sandstone substrates.

Recreation

Because access to the zone from land is difficult, and sea conditions can restrict access from the nearest boat-launching facility at Port Campbell, recreational fishing opportunities are limited. Fishers launching boats at Apollo Bay rarely venture to this area, preferring the shorter journey to the comparatively safer waters east of Cape Otway.

Public foreshore access is essentially limited to three locations: Moonlight Head, Cape Volney and Ryans Den. The roads to these localities, except for Moonlight Head, are four-wheel-drive tracks which are closed in winter. The roads lead to cliff-tops and, in most locations, the shore can only be reached by a steep and difficult descent. Apart from some recreational fishing, other activities include some snorkelling and occasional scuba diving.

Commercial uses

Abalone and rock lobster are harvested from within the zone. Limited line and troll-fishing, some mesh-netting, and fishing for the live-fish trade also occur.

The area is essentially unexplored with respect to earth resources and therefore mineral or oil and/or gas prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low.

Harold Holt

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km between Point Nepean and the Sierra Nevada Rocks, west of London Bridge, on the south coast of the Mornington Peninsula. Within Port Phillip Bay, the zone extends from high-water mark to 300m offshore between Point Nepean and Observatory Point on the north coast of the Mornington Peninsula.

Biophysical representation and other values

This zone is representative of rocky (calcarenite) and soft substrate intertidal and subtidal habitats within the Central Biophysical Region (see Table 8.2).

The zone contains extensive intertidal shore platforms, including rock pools and surge channels, interspersed with sandy beaches.

It has a diversity of intertidal and subtidal invertebrates, with significant populations of certain faunal taxa such as colonial ascidians, sponges and bryozoans.

The intertidal areas within the zone have been protected from human access since the turn of the century. Cheviot Beach, in particular, has become a crucial reference site for studies of human-induced change.

The adjoining Point Nepean National Park includes a number of sites of geological and geomorphological significance showing development of sandy shorelines. Point Nepean and the Sorrento coastline support a significant proportion (5 per cent) of the Victorian population of sooty oystercatchers and has several roosting sites for gulls and terns.

Recreation

Shore access within the zone is restricted because of the danger of unexploded munitions. Boats, however, can access the adjacent waters from launching areas within Port Phillip Bay. It is a popular area for sport diving for abalone and rock lobster, and boat fishing for pelagic species.

The wreck of the *Sierra Nevada*, off Portsea Back Beach, is occasionally visited by scuba divers when sea conditions are favourable.

Commercial uses

Abalone and rock lobster are harvested within the zone. Some line and troll-fishing, and fishing for the live-fish trade also occur.

Nobbies

This zone extends from the rocky shore platform south of Cowrie Beach 2km offshore in a westerly direction, then southward around Seal and Black Rocks, and to the east to the rocky headland some 0.5km west of Phelan Bluff.

Biophysical representation and other values

This zone is representative of rocky (basalt) and soft substrate intertidal and subtidal habitats within the Central Biophysical Region (see Table 8.2).

Phillip Island Penguin Reserve, adjoining the zone, has the largest colony of little penguin in Victoria and significant numbers of short-tailed shearwaters. Seal Rocks have the largest colony of Australian fur-seal in the world (12,000 individuals or 22 per cent of population), and the only Victorian breeding site of the kelp gull.

Recreation

The area is popular for rock fishing, particularly from the protected western shores between the Nobbies and Cowrie Beach. Other recreational activities include bird watching, photography, painting and weather-dependent snorkelling and scuba diving.

Commercial uses

Abalone and rock lobster are harvested from within the zone. With respect to earth resources the area is essentially unexplored, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low.

Bunurong

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km, and from the headland 0.75km west of The Oaks to The Caves.

Biophysical representation and other values

This area is representative of rocky (sandstone) and soft substrate intertidal and subtidal habitats within the Central Biophysical Region (see Table 8.2).

Bunurong has extensive intertidal rock platforms and subtidal rocky reefs which extend several kilometres from shore but which are in relatively shallow water (most of the nearshore area is between 6m and 9m deep, with the maximum depth recorded at 15m). These platforms and reefs have numerous microhabitats interspersed with sandy and shelly sediments.

Major habitats and biological communities include: intertidal rocky shores, subtidal rocky reefs dominated by a brown alga (*Cystophora* sp.) community with many green and red algae, *Amphibolis antarctica* seagrass, rocky reefs dominated by sponges and bryozoans, and sandy beaches.

The complex topography of the extensive intertidal and subtidal rocky areas within the zone has provided for the development of a rich and diverse marine flora and fauna. Such extensive platforms are uncommon along the Victorian coast.

The zone is characteristic of this section of coastline, which has by far the most diverse intertidal and shallow subtidal invertebrate fauna in eastern Victoria. A high proportion of some invertebrate species from the taxa included in the 1984 Marine Research Group database has been recorded there: for example, 7 of 8 brittle stars, 9 of 11 sea cucumbers, 8 of 11 barnacles, all 5 sea anemones, and 15 of 20 chitons.

The chiton fauna recorded for the area from Hamers Haven to Flat Rocks is, according to the Marine Research Group, matched by only one other locality in Victoria, Western Port. This area appears also to be a particularly rich location for sponges and bryozoans.

The zone adjoins a fossil dinosaur locality at Eagles Nest. This zone also provides habitats for peregrine falcons and hooded plovers.

Recreation

Bunurong is a popular snorkelling and scuba diving area. Under current regulations recreational fishing is not permitted between high-water mark and 1km offshore within the zone. In the remainder of the zone some recreational fishing occurs, including boat fishing for yellowtail kingfish and thresher sharks, diving for abalone and rock lobster, and spearfishing.

Commercial uses

Commercial fishing is currently excluded in the zone between high-water mark and 1km offshore. Abalone and rock lobster are harvested from the zone further offshore and limited line and troll-fishing and inshore mesh-net fishing also occur.

With respect to earth resources the zone is essentially unexplored, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low. Construction materials may be present. Black coal has been extracted in the past from coastal cliffs west of Cape Paterson.

The Council's proposed Conservation Zone here includes part of the existing Bunurong Marine and Coastal Park for which a draft management plan has been prepared.

Wilsons Promontory

This zone extends from high-water mark at the landward end of Norman Point on Wilsons Promontory in a westerly direction to 5.5km offshore, then south-east in a straight line to Cleft Island, and as far south as the inshore shipping traffic zone defined on Admiralty Chart AUS 801. The boundary then parallels the inshore shipping traffic zone, then runs in a northerly direction along the 5.5km State territorial limit and west to the shore immediately south of Refuge Cove.

Biophysical representation and other values

This area is representative of rocky (granitic) and soft substrate intertidal and subtidal habitats within the Wilsons Promontory Biophysical Region (see Table 8.2).

The granite cliffs at Wilsons Promontory, plunging abruptly to the sea-floor, and sandy beaches sloping gradually to 30m–50m within 3km offshore, create distinct combinations of habitats and biological communities which are uncommon along the Victorian coast.

The major communities represented within the zone are:

- high-energy wave-exposed subtidal rock faces dominated by macroalgae *Phyllospora-Ecklonia* communities with numerous fish species;
- subtidal rocky surfaces near sandy flats with green alga *Caulerpa* communities containing rich microfauna, especially of opisthobranchs;
- caves, crevices and the undersides of boulders and ledges with encrusting invertebrate *Anthozoan* (Cnidaria including sea pens, sea anemones, sea fans and corals) communities;
- soft intertidal and subtidal substrates in sheltered bays and deeper water having seagrass communities with a high number of invertebrates and fishes;
- soft bottom benthos with bryozoans, sponges and red algae;
- intertidal rocky shores with lichen, barnacles, mussels, chitons, ascidians and encrusting red algae, and large brown algae communities;
- sandy beaches dominated by crabs and snails and;
- pelagic environments.

The seagrass *Heterozostera tasmanica* has been recorded in Oberon Bay and

Amphibolis antarctica is also common. It is possible other species of seagrasses also occur in the zone as they are found elsewhere around Wilsons Promontory.

Sandy beaches generally contain specialised fauna but are characterised by relatively low diversity. There is a presumed, but not yet analysed, rich infauna of polychaetes and crustaceans in the 20m to 50m depth-range offshore from Wilsons Promontory, examples of which are within the Conservation Zone.

There are a number of rare or uncommon species within the zone area. The kelp *Durvillea potatorum*, more common west of Wilsons Promontory, is particularly well developed here.

The highly diverse coastal vegetation adjacent to the zone demonstrates links with Tasmanian vegetation, with many Tasmanian species reaching the northern limit of their range here. The area adjacent to the zone also provides nesting sites for white-bellied sea-eagles and is important for the hooded plover in Victoria.

The islands around Wilsons Promontory are used for breeding by Australian fur-seals and many oceanic birds, including little penguins, short-tailed shearwaters, fairy prions, and silver and pacific gulls.

Recreation

Within the zone, boat fishing targeting yellowtail kingfish and thresher sharks is limited by access, but boats can be launched over the beach at Tidal River or launched at Shallow Inlet, Port Welshpool and Port Albert.

Over the past 150 years, more than 40 ships have been wrecked in the waters off Wilsons Promontory. Only a small number have been located, but within the Conservation Zone various wreck sites such as those at Oberon Point, South-east Point and

Waterloo Point are visited by recreational divers.

Commercial uses

Rock lobster and abalone are harvested from the zone and limited Danish seine-trawling, scallop harvesting, line and troll-fishing and fishing for the live-fish trade also occur.

The area is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low. Construction materials may be present. Granite dimension stone occurs along the landward margin of the area, as do deposits of siliceous sand.

Other issues

All lighthouses, associated facilities and Commonwealth land are controlled by the Australian Maritime Safety Authority, and these properties are to be sold. The Wilsons Promontory Lighthouse is situated immediately adjacent to the proposed Conservation Zone. The Council believes that any future use of this facility should be compatible with the values of the Wilsons Promontory National Park and the proposed Conservation Zone.

The Council is also aware that the Environment and Natural Resources Committee of the Parliament of Victoria, in its report on the environment impact of Commonwealth activities and places in Victoria, has recommended that all Victorian light-stations proposed for disposal by the Australian Maritime Safety Authority be transferred at zero cost to Victoria and be included within adjacent national or State parks.

The Council's proposed Conservation Zone here is part of the existing Wilsons Promontory Marine Park for which a draft management plan has been prepared.

Ewing Marsh

This zone extends offshore from high-water mark to the Victorian territorial limit of 5.5km, and from a point some 3.5km west of the Hartland River entrance to Ewing Marsh to a point 5.4km west of the boat ramp at The Slips near Corringale Beach.

Biophysical representation and other values

This zone is representative of rocky (limestone) and soft substrate subtidal habitats and soft substrate intertidal habitat within the Eastern Biophysical Region (see Table 8.2).

The zone contains a number of low-relief calcareous reefs, which may be remnants of dune systems that formed when sea-levels were lower, and unbroken, probably granitic, reefs.

The calcareous reefs support populations of sponges, bryozoans and ascidians. Some with higher relief support a more typical reef flora and fauna.

The results of two studies which included the Conservation Zone showed an exceptionally high diversity of subtidal soft sediment fauna, higher than has been found in any survey of similar substrates in the world.

There was little difference in species diversity in longitudinal offshore sections up to 10km offshore. In total, 570 species have been identified within 6km of the shore from three areas: east of Lake Tyers, off Waygara (near Marlo), and off Cabbage Tree (between Point Ricardo and Cape Conran). It is likely that the Conservation Zone (which includes the Waygara site) is representative of species diversity characterising the Lake Tyers to Cape Conran area in relation to soft subtidal sediments.

This zone adjoins sites significant for a number of flora and fauna species in a relatively undisturbed primary dune scrub, and in sedgeland, herbland and wetland habitats. The zone also includes habitat for the hooded plover.

Recreation

The area within this zone is not a significant boat-fishing or beach-fishing destination due primarily to its limited accessibility.

Commercial uses

Limited scallop harvesting has been undertaken from an area including the zone, but since the 1970s this represents less than 2 per cent of the average annual catch of the Lake Entrance Fishery. A commercial fishing fleet is based at Lakes Entrance, which forms part of the South-East Trawl fishery. Inshore trawling for school whiting occurs along Ninety Mile Beach, as does trawling for crab, other crustaceans, and a variety of fish. Purse-seining for pilchards and anchovies, and limited line fishing also occur.

The area lies on the eastern margin of the geologically significant Gippsland Basin. Offshore areas of the basin in Commonwealth waters currently produce oil and gas. A number of undeveloped fields are known in that area and will be developed when considered economic. Given the history of the basin, the inshore area could be prospective for oil and gas. However, it should be noted that though the area has not been fully explored, prospectivity is considered to be greater with increasing distance offshore.

Rame Head

This zone extends offshore from the high-water mark to the Victorian territorial limit of 5.5km and from the 'large isolated rock', some 2.8km west of Rame Head to the mouth of Red River.

Biophysical representation and other values

This area is representative of rocky (granitic) and soft substrate intertidal and subtidal habitats within the Eastern Biophysical Region (see Table 8.2).

The rocky coast of East Gippsland is of considerable biogeographic interest because it occurs close to the boundary between two continental scale biogeographic provinces. There is considerable affinity between the faunal assemblages of intertidal rocky shores in eastern Victoria and those in southern New South Wales. This is probably related to higher sea temperatures resulting from the pronounced influence here of the relatively warmer East Australian Current. The periodically sharp temperature gradient (approximately 5°C) generated by the juxtaposing of the warm East Australian Current and intermittent summer upwelling of cooler water may also be a contributing factor. This biogeographic boundary is probably also associated with past major geological and climatic events which have resulted in the broad configuration of Bass Strait.

Rame Head has one of the highest intertidal invertebrate diversities for granite substrates in Victoria.

The Conservation Zone adjoins significant sites for a number of flora and fauna species, including species of waterbirds and amphibians in wetland habitats. It also abuts the Croajingolong National Park.

The Skerries, small islands off Wingan Inlet, support breeding colonies of crested tern and Australian fur-seal.

Recreation

Public road access adjacent to the zone occurs at Wingan Inlet and, during summer, to the rear of Petrel Point beach on a four-wheel-drive track. A number of walking tracks lead to the beaches – for example

Petrel Point and Red River – but walking on some sections of coastline is limited because of rugged cliffs and a number of deep, wide gutters.

Boat access is also limited due to the distance from the launching ramps at Cape Conran and Mallacoota, but there is access for small boats via Wingan Inlet.

The main recreational activity in the Conservation Zone is nature observation. For example, one of the great attractions is observing Australian fur-seals on the Skerries near Wingan Point either from the shore, boat or while scuba diving. There are many sea birds, such as gannets, giant petrels, terns and cormorants, that can be seen quite frequently. Generally, the underwater scenery is spectacular and recreational diving is undertaken.

Limited recreational fishing occurs mainly in Wingan Inlet, which is not within the Conservation Zone. There is limited ocean-beach fishing for Australian salmon, tailor and, occasionally, gummy shark at, for example, Wingan Inlet and Fly Cove immediately west of Rame Head. Some recreational diving for abalone and rock lobster, along with spearfishing, also occur but these activities are minor.

Commercial uses

Rock lobster and abalone are harvested from the zone. Trawling also occurs within the zone in depths of between 60m (2–3km offshore) and 100m (4–6km offshore). Gill-nets are also used. Sea urchins are harvested in East Gippsland but the catch within this zone is unknown.

The zone is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low, though occurrences of heavy mineral sands have been reported

in some parts of East Gippsland. Construction materials may be present. Dimension stone (granite) and siliceous sand occur along the landward margin of the area.

Cape Howe

This zone extends offshore from high-water mark to 5.5km from the mainland, and from 0.5km west of Iron Prince Reef to the wreck of *The Riverina*, some 1.5km west of the northern tip of Gabo Island. The area includes waters around Gabo Island.

Biophysical representation and other values

This zone, together with the adjacent Sanctuary Zone, is representative of rocky (sandstone and granite) and soft substrate intertidal and subtidal habitats within the Eastern Biophysical Region (see Table 8.2).

The area consists of sandy beaches, intertidal rocky shores and subtidal reefs. Like the Rame Head area, this section of coastline is of considerable biogeographic interest for the reasons outlined earlier.

The zone, including Iron Prince reef near Cape Howe, contains a high diversity of intertidal and shallow subtidal invertebrate species. A number of 'New South Wales' species which are not recorded elsewhere in Victoria are recorded from this region.

This zone, as well as all others that contain some shallow coastal waters with rocky reef habitat, provides important breeding, nursery and feeding grounds for sedentary, territorial reef fish such as leatherjackets, wrasses, boarfish, dusky morwong, rock cod, rock ling, flathead and grass whiting. It also may be an important nursery and feeding ground for more mobile species such as Australian salmon, short- and long-fin sea pikes, barracouta, juvenile blue and spotted warehou, blue mackerel, yellowtail kingfish, yellowtail scad and calamari squid.

The zone abuts the Cape Howe section of the Croajingolong National Park which is zoned as wilderness.

Recreation

There is no public vehicle access to the coast adjoining the Conservation Zone. Most of the coast consists of sandy beaches interspersed with intertidal rocky reefs. Walking along the shoreline is possible but the area is very remote from vehicle access.

Boating access from Mallacoota Inlet to the sea can be difficult and therefore limits, to some extent, offshore boating. The area is used for nature observation, scuba diving (particularly reef diving) and photography. Gabo Island, in particular, is known for its good underwater scenery. Most of the boat-based recreational fishing from Mallacoota occurs between Gabo Island and Mallacoota. Fish taken include flathead, snapper, bream and kingfish. The area, particularly around Gabo Island, is used by recreational abalone and rock lobster divers and for spearfishing.

Commercial uses

Rock lobster and abalone are harvested from within the zone and it is also fished by the South-East Trawl fishery in waters deeper than 60m (2–3km offshore), subject to sea-floor conditions. Danish seine boats from Lakes Entrance and trawlers from Eden also fish the area, but these activities are regarded as minor.

The area is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low.

Other issues

All lighthouses, associated facilities and Commonwealth land are controlled by the Australian Maritime Safety Authority, and

these properties are to be sold. Gabo Island, along with its lighthouse is situated immediately adjacent to the Cape Howe Conservation Zone. The Council believes that any future use of this facility should be compatible with the values of the Conservation Zone.

The Council is also aware that the Environment and Natural Resources Committee of the Parliament of Victoria, in its report on the environment impact of Commonwealth activities and places in Victoria, has recommended that all Victorian light-stations proposed for disposal by the Australian Maritime Safety Authority be transferred at zero cost to Victoria and be included within adjacent national or State parks.

Conservation Zones: Bays

Northern Western Port

This zone extends along the northern and north-eastern shoreline of French Island, for approximately 10km eastwards from the Duck Splash and approximately 3km offshore. On the landward side it abuts the French Island State Park.

Biophysical representation and other values

The zone provides a good example of a well-developed tidal channel system that is more complex here than elsewhere in the bay. Channel depths, profiles and orientations vary considerably, thereby contributing to the high diversity of habitats.

The zone provides good representation of seagrass beds, subtidal soft substrata, mangroves, and sheltered intertidal flats with a variety of tidal channel systems.

The dominant seagrass species are *Zostera muelleri* at shallower depths and *Heterozostera tasmanica* at greater depths. The area has a large tidal range of more than 3m

and intertidal flats are particularly well developed. The flats provide significant wader foraging habitat and are used by the 32 migratory species regularly recorded at Western Port. The adjoining shoreline within the French Island State Park comprises an extensive mangrove and saltmarsh fringe.

The tidal watershed here is of State, and possibly national, geological and geomorphological significance.

Recreation

The nearest boat ramp is at Lang Lang, some 3km from the Conservation Zone, and the area is accessible only by small boat. For this reason, most boats tend to avoid the area except for transit purposes at high tide.

Access to the site at low tide is restricted by the extensive areas of soft mud. Walking is virtually impossible.

Commercial uses

Being very shallow, the area is generally not used by commercial fishers, with fishing effort being focused on the deeper channels to the west.

The area is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low.

Rhyll–Newhaven

This zone is bounded by the north-eastern coastline of Phillip Island and a straight line extending from Rhyll to approximately 1.5km north-west of Newhaven.

The site does not include the developed foreshore area adjoining Rhyll township. It surrounds, but does not include, Churchill Island, which is a reserve for the preservation of areas of ecological significance,

natural beauty and historic interest. The island is managed under the provisions of Section 19A of the *National Parks Act* 1975.

Biophysical representation and other values

The area contains a more complex mosaic of habitat types than the Northern Western Port zone. It includes intertidal rock platforms and sandy beaches, intertidal mudflats and tidal channels, and mangroves along some sections of the shoreline. Onshore, the zone is backed by areas of saltmarsh and cliffs. The mudflats support a variety of seagrasses and algae. Areas dominated by *Zostera muelleri* and *Heterozostera tasmanica* are interspersed with areas of *Amphibolis antarctica* and the species of green alga, *Caulerpa*. The area is highly significant for roosting and feeding migratory wading birds, and supports a moderately rich invertebrate fauna.

This zone includes a number of geological and geomorphological sites of significance, with features indicative of higher sea levels, and examples of active and relict marine cliffs.

Recreation

Much of the area is backed by farmland and is therefore difficult to access from the shore, but in the vicinity of Newhaven the shoreline is reasonably popular with walkers and sightseers.

The area is accessible by boat and is popular with recreational fishers familiar with the channel system in the area. Some flounder spearing also occurs.

Commercial uses

Because of its shallow nature, the zone is not used for commercial fishing. It is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic

minerals is currently considered to be low. Construction materials may be present.

Corner Inlet

The northern boundary of this area begins from a point 4km south of Duck Point, and then extends in an easterly direction along the southern edge of Middle Channel to a point immediately north of Freshwater Cove. All the waters south of this boundary are included in the Conservation Zone.

Biophysical representation and other values

This zone is representative of a range of tidal channel systems and *Posidonia* seagrass meadows, as well as mudflats, sandflats, and other seagrass beds. The *Posidonia* seagrasses, particularly dense and extensive within this zone, occur on the edges of tidal channels to a depth of about 5m. The channel system converges on the main entrance between Wilsons Promontory and Snake Island. The area also includes the most southerly mangrove stands in Australia, at Millers Landing.

This zone, as with the whole inlet, is very important as a spawning, nursery and feeding habitat for a variety of fish including whiting, calamari, rock flathead, dusky flathead, flounder and sea garfish; and less so for Australian salmon, yellow-eye mullet, pilchards and silver trevally.

The zone is also important as a feeding and roosting area for international migratory waders. Four of the most important roosting sites for waders in Corner Inlet/Nooramunga are included in this zone.

This area contains a number of sites of geological and geomorphological significance. These are the Chinaman Creek delta, a major deltaic feature indicating environmental change; Barrys Hill-Bennison Point, an example of a recent and rapidly changing coastline; Corner Inlet, a

major tidal inlet with tidal channels; Bennison Island, with weathering features that are unusual on granitic coasts; and Long Island, with a shoreline showing recent and rapid retreat.

The zone abuts the Wilsons Promontory National Park, much of which is a declared wilderness area.

Recreation

The Corner Inlet/Nooramunga area as a whole is one of the best recreational fishing areas in Victoria. Nearly all recreational fishing in the inlet is boat-based due to limited shoreline access. The zone is important for boat-based recreational fishing but not as important as other parts of the system. King George whiting and flathead are the fish species that are most often sought, with a much smaller number of anglers targeting snapper, gummy shark and Australian salmon. King George whiting and flathead are generally caught over seagrass, and long-nosed and sand flathead on sandy bottoms. In general, however, fishing tends to take place in the deeper channels of Corner Inlet. Although boat access to Corner Inlet is mainly from Port Welshpool and Port Franklin, there is also access from Duck Point via Middle channel, adjacent to the Conservation Zone.

Commercial uses

Commercial fishing effort is spread throughout the inlet. The exact location used (for example, channel, channel edge or shallows) is dependent on the species sought and the techniques employed. The total recorded catch has remained fairly constant over the past 50 years, although this pattern is not necessarily followed by all species and some catches have actually increased.

The area is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently

considered to be low. Though Corner Inlet has been explored for alluvial tin, no economic concentrations were located. Construction materials may be present.

St Margarets

This zone extends from Kate Kearney Entrance in an easterly direction along the northern shorelines of several barrier islands (most of which are unnamed) to McLoughlins Entrance; and then in a westerly direction along the south-eastern shoreline of St Margaret Island and the southern margins of Farmers and Tarra Channels back to Kate Kearney Entrance.

Biophysical representation and other values

This zone is representative of saltmarshes, mudflats, extensive mangroves, channels, seagrasses (*Zostera muelleri* and *Heterozostera tasmanica*) and some sandy areas, all occurring within the complex system of barrier islands. These islands form the physical barrier between Bass Strait and the lagoon system comprising Nooramunga.

This area, as a feeding and roosting area for waders, is the most important within the Nooramunga Barrier Island complex. Six out of the seven most important roosting sites identified within Nooramunga Barrier Island complex occur in the Conservation Zone.

The zone includes sites of geological and geomorphological importance, including good examples of tidal channels, inlets and deltas.

Recreation

The sheltered waters of Nooramunga Inlet as a whole are frequently used by recreational fishers but the importance of recreational fishing in the Conservation Zone is difficult to determine with respect to other parts of Nooramunga. A major recreational fishing activity in the

Nooramunga area is hand-spearing for flounder. The main launching locations for small fishing boats are Port Albert, Manns Beach and McLoughlins Beach. Port Albert or McLoughlins Beach are used mainly by those who wish to fish outside the inlet along Ninety Mile Beach.

Commercial uses

Commercial effort is spread throughout the inlet. The exact location used (for example, channel, channel edge or shallows) is dependent on the species sought and the

techniques employed. The total recorded catch has remained fairly constant over the past 50 years, although this pattern is not necessarily followed by all species and some catches have actually increased.

The area is essentially unexplored with respect to earth resources, and therefore its prospectivity is yet to be ascertained. The potential for finding new economic resources of metallic minerals is currently considered to be low. Construction materials may be present.

Table 8.2: Conservation Zones: Representation of Habitats by Biophysical Region

Habitat		Biophysical region					
		Western (South Aust. Border to Cape Otway)	Otway (Cape Otway region)	Central (Cape Otway to Wilsons Prom.)	Wilsons Prom. (Wilsons Prom. region)	Eastern (Wilsons Prom. to NSW border)	Bays/ estuaries/ inlets
Intertidal rocky shores and	Basalt substrate	Discovery Bay		Nobbies			Rhyll-Newhaven
	Granite substrate			*3	Wilsons Prom.	Rame Head	Corner Inlet
Subtidal rocky reefs	Limestone substrate	Port Campbell		*3			
	Calcarene substrate	Lake Gilliear		Harold Holt		Ewing Marsh subtidal reefs only	
	Sandstone substrate	*3	Moonlight Head	Bunurong		Cape Howe	
Seagrass beds		*4	*5	Bunurong	Wilsons Prom.	*5	All zones
Mangroves							All zones
Intertidal sandy beaches		Discovery Bay, Port Campbell ²	Moonlight Head	Harold Holt; Bunurong	Wilsons Prom.	All zones	Corner Inlet St Margarets
Sheltered intertidal flats							All zones
Subtidal soft substrata		All zones	Moonlight Head	All zones	Wilsons Prom.	All zones	All zones
Pelagic environment		All zones	Moonlight Head	All zones	Wilsons Prom.	All zones	All zones

Notes

- 1 Shading indicates areas where particular habitat, or substrate does not occur.
- 2 This habitat is restricted in occurrence within this zone.
- 3 Minor or localised occurrences of substrate only.
- 4 This habitat occurs in Portland Bay and has been identified as a Special Management Area.
- 5 No available data.

9. GENERAL PROTECTION ZONE

General Protection Zones occur within some of the proposed marine parks. The primary objective of the zone is to provide for the protection of specific habitats or flora and fauna and for appropriate recreation and resource use.

These zones may be extensive areas within marine parks having high conservation values and/or high sensitivity to some uses. While protection of the conservation values is a priority, all other uses compatible with that priority are permitted.

RECOMMENDATIONS

That

9.1 the areas described below and shown on the Map A be used:

- (i) to conserve marine flora and fauna and their habitats;
- (ii) to provide for planned recreation and education associated with the enjoyment and understanding of natural environments;
- (iii) to provide opportunities for planned utilisation and public access that does not adversely affect identified conservation or recreation values;

that

- (iv) levels of use for various activities appropriate to the zone be determined through the preparation of a management plan;
- (v) the land manager be responsible for identifying and implementing appropriate protection measures for the 'Special

Management Areas' listed in Schedule 1 below;

and that

- (vi) the areas be permanently reserved under the *Crown Land (Reserves) Act 1978*.

General Protection Zone

The zone occurs in five discreet areas which are described below. They are: Harold Holt; Bunurong; Shallow Inlet; Wilsons Promontory; and Corner Inlet/Nooramunga.

Harold Holt

Swan Bay

The Swan Bay General Protection Zone includes the existing Swan Bay Marine Reserve as well as Stingaree Bight, the former shellgrit area south of Burnt Point, the channel and small boat harbour associated with Swan Bay jetty, the waters of the bay between Queenscliff and Swan Island, and Sand Island lagoons. These areas were proposed for inclusion in the marine reserve in the Swan Bay Marine and Wildlife Reserves Proposed Management Plan, published in 1991.

Swan Bay with its intertidal mudflats, salt marshes and seagrass beds is an important nursery for a large numbers of fish species and a feeding ground for resident and migratory birds.

The special values of seagrasses and of Swan Bay as a habitat for waders are described in Schedule 1.

Mud Islands

The Mud Islands General Protection Zone includes the existing marine reserve which covers a 2.5km square area of intertidal and

subtidal flats around the islands. The zone does not include the islands themselves which are currently a wildlife reserve.

Mud Islands and environs, as for Swan Bay, are biologically important for their sea-grasses and as a habitat for numerous bird species. These values are further described in Schedule 1. The issue of unrestricted access needs to be addressed by the managers to ensure that the birds are not unduly disturbed.

Point Cook

This zone includes the existing marine reserve which extends offshore for approximately 1km from Point Cook. It is approximately 2km long. The reserve has rich intertidal and subtidal communities and these are described further in Schedule 1.

The Jawbone

The Jawbone General Protection Zone includes the area adjacent to the former Williamstown Rifle Range which was recommended by the Council as a flora and fauna reserve in 1987. It incorporates the foreshore and nearshore areas, extending 100m seaward from high-water mark. It is also proposed that an additional area of intertidal flat at the mouth of Koroit Creek be included in the zone. This suggestion was made in the proposed management plan for the reserve, published in 1989. The whole zone includes a variety of habitats ranging from saltmarsh, rocky reef, seagrass, intertidal flats, sandy beaches and an important relic population of mangroves.

The values of Jawbone intertidal and subtidal communities are described further in Schedule 1.

Popes Eye

The Popes Eye General Protection Zone includes the existing marine reserve which encompasses an artificial rock structure just

inside Port Phillip Heads. The zone occupies a circular area of some 200m diameter around the structure.

Popes Eye is a semi-circular wall of blue-stone built on the Popes Eye shoal in southern Port Phillip Bay. Originally intended to form part of the Port Phillip fortifications, it was never completed, but now provides an excellent rocky substrate which provides habitat for a wide variety of marine life including colourful algae, bryozoans, sponges, sea squirts and soft corals. Reef fish such as leatherjackets, wrasse and sweep can also be readily seen.

The recreational values of Popes Eye are described further in Schedule 1.

Point Lonsdale

The Point Lonsdale General Protection Zone includes the existing marine reserve which extends from the jetty west to a point opposite Fellows Road. It extends some 300m offshore. The zone contains some of the most extensive and accessible intertidal reefs and shore platforms in the State and the area is a very popular destination for visitors to Point Lonsdale. The shore platforms, with extensive rock pools, contain a high diversity of marine life which makes them an important teaching and recreational resource.

Bunurong

The Bunurong General Protection Zone consists of two parts adjoining the Bunurong Conservation Zone. Both extend 1km offshore from high-water mark. The western part extends along the coast from a point 0.8km east of the Oaks west to Coal Point. The eastern part extends from the Caves to Wreck Creek near Inverloch.

Bunurong has extensive intertidal rock platforms and rocky reefs in relatively shallow water which extend several kilometres from shore. The complex

topography of these platforms and reefs and the light availability encouraged development of a rich and diverse fauna and flora. The region has, by far, the most diverse intertidal and shallow subtidal invertebrate fauna in eastern Victoria. Bunurong also contains a community of the seagrass *Amphibolis antarctica*.

Flat Rocks and Cape Paterson are particularly popular as recreational destinations and have high visitor numbers. This popularity is partly due to the proximity of camping facilities at Inverloch and Cape Paterson. The underwater recreation values of these two sites are described further in Schedule 1.

Shallow Inlet

The proposed Shallow Inlet General Protection Zone covers the whole Inlet, which is a Marine and Coastal Park.

Shallow Inlet, as with most other estuaries, includes sheltered intertidal flats and seagrass beds. The area contains many species of migratory and resident waders, and two species of seagrasses, *Zostera muelleri* and *Heterozostera tasmanica*. Shallow Inlet together with Corner Inlet, has been ranked by the RAOU as the most important area for wading birds in Victoria and these values are identified in Schedule 1. This area is also used for a range of recreation activities including fishing, boating, swimming and wind surfing.

Wilsons Promontory

This zone consists of two parts, on the western and eastern side of the Promontory. They form part of the existing Wilsons Promontory Marine Reserve.

The western part extends north from Norman Point where it adjoins the Conservation Zone to the mouth of Shallow Inlet. This part of the zone extends from the high-

water mark to 300m offshore around Norman, Pillar, Leonard and Tongue Points, and Shellback Island. It includes Norman and Leonard Bays and the waters contained within straight lines joining Leonard and Tongue Points and Tongue Point to the mouth of Shallow Inlet.

The eastern part extends north from Refuge Cove where it adjoins the Conservation Zone to Entrance Point – the most northerly point on the east coast of Wilsons Promontory. This part of the zone extends from high-water mark to 300m offshore along the Promontory and also around Rabbit Island.

The granite and calcarenite cliffs (on the western shore) and rock platforms, the gently sloping sandy beaches, along with both high energy and sheltered conditions, create unusual combinations of habitats and biological communities at Wilsons Promontory. As a result, the marine waters surrounding the Promontory contain a high number of invertebrate, alga, seagrass, mammal, bird and fish species. At least three seagrass species occur here: *Amphibolis antarctica*, *Halophila ovalis* and *Heterozostera tasmanica*. More interesting animals and new records can be expected when all of the numerous sites sampled in waters along Wilsons Promontory are fully analysed.

The waters off Wilsons Promontory are used for a range of recreational activities including boating, diving, swimming and surfing. The special recreational values of Picnic Bay are described in Schedule 1.

Corner Inlet/Nooramunga

This zone incorporates the whole of Corner Basin and Nooramunga, apart from the two proposed Conservation Zones which are currently part of the Corner Inlet and Nooramunga Marine and Coastal Parks.

The whole zone is a complex marine ecosystem with a diversity of habitats and biological communities. Eight distinct communities have been described: salt-marsh, mangroves, bare mud and sandflats, eelgrass (*Zostera muelleri*), *Posidonia* seagrass, tidal channels, rock and sand associations, and brackish swamps.

The Corner Inlet *Posidonia* meadows are far more extensive than any known elsewhere in Victoria and are the most faunally diverse of all habitats studied in the Corner Inlet/Nooramunga area. The diversity of invertebrate communities in soft sediments in Corner Inlet/Nooramunga is also high.

Corner Inlet and Nooramunga provide breeding, feeding, and resting areas for oceanic birds, such as fairy, little, crested, and Caspian terns. Corner Inlet is the most important area for waders in Victoria both in terms of numbers and species diversity. It supports up to 50% of Victoria's migratory waders and 21.5% of Victoria's total wading bird populations. These values are further described in Schedule 1.

Two management plans are currently in progress for the existing marine and coastal parks: one for the parks and the other for the fisheries.

Schedule 1

SPECIAL MANAGEMENT AREAS IN GENERAL PROTECTION ZONES

1. Harold Holt

The areas described in this section are all currently part of the Harold Holt Marine Reserves complex.

1.1 Swan Bay seagrass and wading bird habitat

Seagrass ecosystems represent the main biological and ecological values of this area.

The main species are *Zostera muelleri*, *Heterozostera tasmanica*, *Halophila australis* and *Halophila decipiens*.

Z. Muelleri and *H. tasmanica* grow in the more sheltered sections of the Bay where *H. tasmanica* forms extensive underwater meadows. *H. australis* and *H. decipiens* grow mainly in the north-west section of Swan Bay and form monospecific stands.

The seagrass beds provide an important food source for black swans and are directly utilised as a habitat by juvenile commercial fish including stranger, rough leatherjackets, six-spined leatherjackets, flounder, King George whiting and the adult rock flathead. There are 44 fish species known from Swan Bay.

Swan Bay also supports the most diverse range of wading bird species in Port Phillip Bay. The RAOU regards Swan Bay (along with Mud Islands) as second only to Corner Inlet in terms of its international and national importance for waders and it is also one of the wetlands listed under the Ramsar Convention.

Issues to be considered by the land manager:

1. Activities which result in disturbance to the seabed and the associated seagrass habitat.
2. Toxicant and pollutant levels in Swan Bay which may adversely affect seagrass beds.
3. Wading bird habitat.

1.2 Mud Islands bird and seagrass habitats

Mud Islands are listed under the Ramsar Convention and are of international and national importance for migratory wading birds. Apart from migratory wading birds, Mud Islands are the home of terns and one of the very few breeding locations for white-faced storm petrel. The area also

includes extensive seagrass meadows which provide abundant food for birds and other marine fauna.

1.3. *Point Cook intertidal and subtidal habitats*

The site includes an isolated rocky reef surrounded by sands and muds supporting a rich intertidal and subtidal faunal community.

1.4 *Williamstown intertidal and subtidal habitats*

This site contains an unusually diverse array of habitats, including saltmarsh, rocky basalt reefs, seagrass beds, intertidal flats, mangroves and shelly beaches. The rocky shores along this section of coast, include boulder fields and basaltic shore platforms which are uncommon in Port Phillip Bay.

The white mangrove (*Avicennia marina*) at Williamstown grows amongst the jointed basalt rocks that provide some protection from wave energy, rather than on intertidal flats. This situation is unique in Victoria.

The area has a diverse intertidal and shallow subtidal invertebrate fauna. The abundance and size of common faunal species on the intertidal rock platform clearly indicate that some species are significantly smaller and/or less common beyond the limits of this site.

Apart from Point Nepean, no other coastal area close to Melbourne has been protected to such a degree from human use, and the rock platforms have become significant reference sites for studies on the effects of shellfish harvesting.

The site also provides a habitat for a large number of bird species, including many migratory waders that roost on the basalt shore platform and feed on the intertidal flats at low tide.

1.5 *Popes Eye underwater recreation values*

Although the swells can be strong at times, the structure provides sheltered moorings for boats. Seals are often seen in the area. Suitable snorkelling conditions at slack tide and interesting plant and animal life and the shallow sandy inner area make the site popular with snorkellers and divers, particularly novices. Numerous dive-tour operators use the area.

1.6 *Point Lonsdale underwater recreation values*

When conditions are suitable, the on-shore and off-shore reefs and rock pools in this area are readily accessible to snorkellers and divers, and provide opportunities to observe a diverse and interesting array of marine life. At the Point itself, a gutter separating the inner and outer reefs supports a large kelp forest and associated fish life, and a number of shipwrecks on the seaward side of the rock platforms, provide added interest for divers. The large protected rockpools of the Glaneuse Reef are ideal at low tide for novice snorkellers.

2. **Bunurong**

The areas described in this section are part of the existing Bunurong Marine and Coastal Park.

2.1 *Cape Paterson underwater recreation values*

On the western side of the boat ramp at Cape Paterson, a gently sloping reef of sedimentary rock provides good snorkelling and diving opportunities. The water is shallow and clear and a colourful suite of brown, red and green algae can be seen. There is diverse invertebrate life and fish species typical of the Bunurong area.

2.2 *Flat Rocks underwater recreation values*

As the name suggests, the intertidal rock platform at this site is broad and flat. Intertidal and subtidal marine communities are diverse, giving rise to a scenic underwater landscape. Overhangs, crevices, boulders and channels provide a variety of different microhabitats, each with its characteristic flora and fauna. Colourful and varied algae, invertebrates and a variety of fish increase the area's appeal for recreational divers. The site is easily accessible from the shoreline for recreational snorkellers and divers.

3. **Wilsons Promontory**

3.1 *Picnic Bay underwater recreation values*

This area is within the existing Wilsons Promontory Marine Park.

The gently sloping granite boulders at the southern end of Picnic Bay provide a scenic underwater setting for snorkellers and divers. The site is generally sheltered, with good water clarity, and is easily accessible from the shore or by boat. Invertebrate life is diverse and abundant, including sea-tulips, hydroids, bryozoans and sponges. Fish such as the herring cale, long-finned pike and blue-throat wrasse are common in the kelp, with red mullet, smooth toadfish and others found in sandy areas.

4. **Corner Inlet, Shallow Inlet and Nooramunga Wading Bird Habitats**

These areas are currently part of the existing South Gippsland Marine and Coastal Parks.

Corner and Shallow Inlets and Nooramunga contain the most important roosting sites for resident and migratory wading birds in

Victoria. The migratory species breed in various localities in the northern hemisphere including Siberia, Mongolia, Northern China, Japan and Alaska and return each year along the Western Pacific and through eastern Asia to spend spring, summer and early autumn in the southern hemisphere. Australia is the main non-breeding area for the majority of long-distance migratory waders using this route, and supports almost the entire world population of many species during the summer months.

Energy requirements are critical for species that need to build up sufficient energy reserves to undertake long migrations to their breeding grounds. The birds are able to feed only when intertidal flats are exposed and they conserve energy by utilising roosting sites at high tide in close proximity to feeding areas. Beaches, rocky outcrops and other high points provide high-tide roosting sites. Interference with feeding, (including loss of feeding time or habitat) or with roosting, causing the birds to waste energy, is likely to upset their energy balance and reduce their chances of survival.

Extensive feeding areas usually surround roosting sites and may include intertidal flats, lagoons or other shallow inshore waters with beds of algae or seagrasses providing food for the waders.

Some species are able to utilise a combination of different roosting and feeding areas. Others return with their offspring to the same localities each year, and are unable to exploit alternative areas if their traditional sites are disturbed or become unsuitable.

Australia is signatory to three international treaties designed to protect wading birds and their habitats. The *Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat* (Ramsar Convention) identifies specific areas of

wetland habitat, including marine areas, to be protected. The *Agreement Between the Government of Japan and the Government of Australia for the Protection of Migratory Birds* (JAMBA) and the *Agreement Between the Government of China and the Government of Australia for the Protection of Migratory Birds* (CAMBA) list the species and their habitats to be protected.

Issues to be considered by the land manager:

1. The roosting birds are very susceptible to disturbance by people walking too close to the roosting sites, and by boats approaching or landing near the roosting sites at high tide. This disturbance can, as explained above, affect the long-term survival of the birds.
2. The feeding areas surrounding roosts are extremely important to the well-being of the birds. The feeding areas closest to the roosts, which provide the longest feeding time, are particularly significant. The impacts of activities which may disturb the bird feeding patterns or the flats themselves should be taken into account.

10. GENERAL USE ZONE

The General Use Zone occupies the major portion of Victoria's Marine, Estuarine and Coastal Area. The primary objective for the zone is to provide for a diverse range of recreational and commercial activities, consistent with the zone's long-term sustainable use and the integrated management of Victoria's marine, estuarine and coastal area.

All existing legal uses or activities are permitted in the General Use Zone, subject to:

- the maintenance of its long-term sustainability;
- the compatibility of different uses of the same area; and
- the achievement of the integrated management of all zones in Victoria's marine, estuarine and coastal area

RECOMMENDATIONS

That

10.1 the area shown on the Map A be used:

- (i) to provide for a diverse range of recreational and commercial activities consistent with the maintenance of the long-term sustainability of the marine environment;
- (ii) in accordance with the recommendations and planning principles for Victoria's Marine, Estuarine and Coastal Area as outlined in Chapter 3 of this report;

that

- (iii) the land manager be responsible for the 'Special Management Areas' listed in Schedule 2 below with management plans

identifying appropriate protection measures;

and that

- (iv) the area be permanently reserved under the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources.

Schedule 2

SPECIAL MANAGEMENT AREAS IN GENERAL USE ZONES

Special Management Areas have been grouped into the following categories: Intertidal Areas, Bays and Inlets and Underwater Recreation Areas.

Intertidal Areas

Areas 1 to 8 below contain particularly diverse intertidal rocky shores and shallow subtidal reefs to 1m below low-tide level, as evidenced by high diversities of marine invertebrates.

The diversity indices for the invertebrates recorded by the Marine Research Group for each intertidal site are provided in Table 10.1.

Issues to be considered by the land manager:

1. The trampling effect of large numbers of people visiting an intertidal rocky shore.
2. Collection of intertidal fauna which can have major impacts on the diversity and abundance of organisms in intertidal areas.
3. Provision of information to facilitate the protection of these areas and public education about the values of the areas

and ways in which the community can assist with their protection.

1. Cape Bridgewater

The Cape Bridgewater intertidal area extends between Cape Duquesne and the southern end of Fisherman Cove in Bridgewater Bay. It is a part of the largest coastal basalt formation in Western Victoria which extends from Cape Duquesne to Blacknose Point to the east of Portland. The diversity of intertidal invertebrates along this section of coast is high. It is a good example of the intertidal and shallow subtidal basalt habitats in the Portland area.

2. Port Fairy

The basaltic shore platforms and shallow subtidal reefs at Port Fairy have the highest recorded invertebrate diversity in western Victoria, exceeded in the State only by the sites at Flinders and Shoreham as described below.

3. Point Flinders, Cape Otway

Point Flinders has a high diversity of intertidal invertebrates and is characteristic of the faunally rich Otway area.

4. Point Danger, Torquay

In addition to the high invertebrate diversity for limestone substrates recorded in Victoria, Point Danger has a very rich opisthobranch (seaslug) fauna. Of the 96 species of opisthobranchs recorded from this site, approximately 20% are undescribed. In addition, 20 of the opisthobranchs species recorded here do not occur at the San Remo site.

5. Mushroom Reef, Flinders

[Note: This site is a combined intertidal and underwater recreational site.]

Mushroom Reef at Flinders and Honeysuckle Reef at Shoreham support the most diverse rocky intertidal communities in Victoria. This high diversity may be due to the particularly rich variety of microhabitats often occurring on basalt substrates (through various substrate textures, crevices) and a range of coastal orientations providing a combination of exposed and sheltered environments.

Further offshore, the reef also provides excellent opportunities for underwater recreation. The kelp beds in the shallow

Table 10.1: Intertidal Invertebrate Diversity

Site	Rocky substrate type	Diversity index (%) ¹	Diversity index level ²
Cape Bridgewater ³	basalt	43	high
Port Fairy	basalt	55	high
Point Flinders	sandstone	31	medium
Point Danger, Torquay	sandy limestone	27	high
Mushroom R. (Flinders)	basalt	65	high
Honeysuckle Reef	basalt	64	high
Cape Woolamai	granite	21	medium
Walkerville North	sandstone	40	high

Notes

1. The diversity index represents the percentage of species present at a given site where 100% is equivalent to 282 common invertebrate species recorded by Marine Research Group along the Victorian coast.
2. Each rocky substrate type has its own criterion for invertebrate diversity. For example, a high diversity index level for sandstone is above 36%, limestone above 26% and basalt above 40%.
3. The Diversity Index for Cape Bridgewater site is derived from data for seven sampling locations.

waters shelter a variety of small fish, the larger species becoming more abundant in the deeper water. The site is easily accessible from the beach for both snorkellers and divers, and nearby headlands provide some protection from rough weather conditions.

6. Honeysuckle Reef, Shoreham

Like Mushroom Reef, Honeysuckle Reef provides a wide range of microhabitats and supports the most diverse intertidal rocky reef community in Victoria, along with Mushroom Reef.

7. San Remo

The San Remo site appears to be unique among the intertidal and shallow subtidal sites in Victoria, and possibly in southern Australia, and has been listed under the *Flora and Fauna Guarantee Act* 1988. The site comprises an extremely rich opisthobranch and bryozoan community. 125 species of opisthobranchs have been recorded at San Remo of which eight are known only from this site. Only 2,000 species are known world wide.

The diversity of substrate types including patches of sand, mud, boulders and vesicular, weathered basalt, the north-facing aspect, the low wave energy and proximity to a fast-flowing tidal channel are some of the factors that contribute to the existence of this apparently rare community. The site includes the edge of a deep and fast-flowing tidal channel which is the most diverse part of the community.

8. Walkerville North, Waratah Bay

The diversity of intertidal invertebrates at Walkerville North in Waratah Bay is high. The site occurs on sandstones which also outcrop extensively at Cape Liptrap.

Bays and Inlets

Localities 9 to 13 below have been identified as 'Special Management Areas' primarily because of the importance of these bays and inlets as habitat for migratory wading birds and/or because they contain significant marine and estuarine ecosystems.

9. Portland Bay

This area incorporates an extensive *Amphibolis* seagrass meadow which is located between 1km and 4km offshore in Portland Bay.

The seagrass ecosystem represents the main biological and ecological values of this site which is the only known area of *Amphibolis* seagrass on the open coast in Victoria. The site is also one of only two locations where the rare brown alga, *Cystophora cymodocea*, occurs. This species is an epiphyte on *Amphibolis antarctica*.

Issues to be considered by the land manager:

1. Sand transport operations associated with the maintenance of Portland Harbour which may affect the seagrass habitat.
2. Activities which result in disturbance to the seabed and the associated seagrass habitat.

10. Western Port

Western Port is listed under the Ramsar Convention and many of the migratory waders are protected under CAMBA and JAMBA.

The bay supports 12.3% of the State's coastal wading bird population. Thirty-seven species of waders have been recorded here. The bay provides a stronghold for the whimbrel and eastern curlew. Ten species of waders occur here in their highest densities within the State.

Three broad areas have been identified in Western Port as important habitats for migratory waders. These are:

- the north and north-east Western Port and southern side of French Island (part of this area has been included in the Northern Westernport Conservation Zone)
- Rhyll Inlet
- Reef Island–Bass River

The Council previously recommended these areas as a Wildlife Management Cooperative Areas.

11. **Crawfish Rock**

Crawfish Rock is an unusual littoral/sublittoral reef located in the north-west of Western Port Bay. The high diversity of flora and fauna at this site was described in a 1971 report by the Underwater Study Group of Victoria. Due to the high water turbidity around Crawfish Rock reducing light penetration, many deep-water species of algae, hydroids and sponges occur at unusually shallow depths. Overall there are probably more than 500 species present here. High numbers of species have been recorded for some groups – for example, 150 species of sponges, 123 species of algae, 40 species of hydroids and 34 species of ascidians. Crawfish Rock has also a number of distinct communities characterised by differing combinations of light, current energy and substrate types. From a recent visit conducted by divers from the Marine Research Group, it appears that the area has remained largely intact since the original 1971 survey.

12. **Andersons Inlet**

Anderson Inlet is the sixth most important area in Victoria recognised by RAOU for international migratory wading birds and is thought to have the eighth largest population of waders in Victoria. The migratory waders include knots, plovers, sandpipers and numerous other species.

The Council previously recommended this area as a Wildlife Management Cooperative Area.

13. **Mallacoota Inlet**

Mallacoota Inlet is the largest estuarine lagoon system in south-east Australia and provides habitat for a wide range of flora and fauna. A wide variety of birds depend on the inlet, including Caspian, and little and crested terns. Some of these birds are listed under the JAMBA agreement. At least two species of seagrasses occur in Mallacoota Inlet and provide habitat for fish species.

The Council previously recommended this area as a Wildlife Management Cooperative Area.

Underwater Recreation Areas

Sites 14 to 24 below have been identified as important areas for the provision of opportunities for snorkelling and diving associated with the enjoyment and understanding of natural environments.

Scuba diving and snorkelling are becoming increasingly popular and there are 27 dive clubs affiliated with the Scuba Divers Federation of Victoria. In addition, many people who do not belong to clubs participate in these activities. Commercial dive-tour operators regularly visit some of the more popular and distant sites.

Shipwreck diving sites, visited mainly to explore human-made structures rather than to observe marine life in its natural environment, have not been considered here.

The underwater recreation sites described below have been selected because of the interesting or spectacular underwater scenery, clear water and varied and

colourful marine life. Most sites are accessible by boat and some from the shore, providing safer conditions for less experienced snorkellers and divers. The sites are all very small, most less than 10ha. The boundaries shown on the plans are nominal and may need to be modified to facilitate management.

Issues to be considered by the land manager:

1. The removal of marine biota, particularly of sedentary and territorial species, which would diminish the values of these sites for observing of marine life.
2. Feeding of fish and other marine life may have a number of undesirable effects. It may alter the behaviour of marine fauna by making them aggressive and dependent on supplied food, and by attracting large numbers of primarily carnivorous fish. It may create an artificial situation where the opportunity to observe normal species interactions is lost. Most of the foods in common use are unsuitable for fish.
3. Other recreational activities or the level of use associated with some sites may require some control to ensure that the quality of experience for snorkellers and divers is maintained.

14. Little Henty Reefs, Marengo

The Little Henty Reefs are two small reefs at Marengo near Apollo Bay that provide excellent diving and snorkelling opportunities mainly for experienced divers. The values of the reefs at this site were identified in submissions to Council.

The Henty reefs are the only offshore reefs between Cape Schanck and Peterborough that are exposed at low tide and therefore have a good mix of nearshore and offshore

subtidal species. The leeward side of the reefs is relatively sheltered and can provide protected conditions unusual for the reef habitat in this high wave energy coastline. The Henty Reefs are only 2km to 3km from the harbour at Apollo Bay and, in suitable weather conditions, are readily accessible by small boats. Divers often swim the 100m from the beach to the inner reef.

Because of their location and configuration, the reefs provide a wide variety of micro-habitats in a very small area. Different orientations (west, south and south-east), rock formations (boulders, rock joints, crevices, ledges and gutters) and exposures to wave action (sheltered and exposed), all create additional habitat niches. Tidal currents are funnelled through the channel between the two reefs, bringing increased water flows and nutrients to the area.

Bull kelps and other seaweeds grow densely on the reefs, with an abundance of soft corals, sponges and marine invertebrates including blacklip abalone and rock lobsters. Preliminary surveys indicate a similar but more diverse assemblage of reef fish compared with other inshore reefs along the Otway coastline. Australian fur seals use the reefs as a resting area and seabirds for feeding and resting.

The remains of two ships wrecked on the reefs provide additional interest for divers, although very little of the structures is still identifiable.

15. Eagles Nest Reef, Aireys Inlet

This series of shallow, offshore limestone reefs provides opportunities to observe prolific marine life in its natural environment. The site can be accessed from the beach and, when weather and sea conditions are suitable, it is a good location for snorkellers and divers.

16. Lonsdale Wall – Port Phillip Heads

The water depths change rapidly in the Port Phillip Heads area from 15m to more than 70m. The underwater cliff faces, caves, rocky ledges and other spectacular features provide one of the most popular diving locations in Victoria. The area is used by divers and commercial dive charter operators.

The Lonsdale Wall provides a wide variety of habitats at a range of depths, and marine life is prolific. The area is particularly noted for the range of giant bryozoans, sponges, soft corals, gorgonians (fan corals), jewel anemones and sea whips. Large numbers of reef and pelagic fish species can also be seen.

Strong currents in the vicinity of The Rip can be dangerous, and diving is possible at slack water only. The site is suitable only for experienced divers.

Note

The Lonsdale Wall is currently within a 'Prohibited Anchorage Zone'. The Council has been advised by the PMA that the 'zone' boundary cannot be changed to exclude the Lonsdale Wall, due to shipping safety considerations.

17. The Sponge Garden, Queenscliff

The Sponge Garden, a small area near Queenscliff, contains a high diversity of sponges and associated epizoic species and is a very attractive diving locality. This site is suitable only for experienced divers.

18. Portsea Hole

A popular diving location, the Portsea Hole in southern Port Phillip Bay is approximately 28m deep. Interesting marine life includes numerous blue devil fish and gorgonians (fan corals).

19. South Channel Fort

South Channel Fort, in southern Port Phillip Bay, was built for naval defence purposes and completed in 1888. Since then, it has been used for a number of purposes including an explosives store and a weather station. More recently, it has become a popular boating destination, and it is readily accessible by boat from Rye and other bayside localities. The area supports an abundance of marine life. The Fort is also significant because it is one of only three nesting sites in Victoria used by the white-faced storm petrel. A small number of little penguins also breed there.

20. Ricketts Point, Beaumaris

The shallow waters at Ricketts Point are close to Melbourne's south-eastern suburbs and provide a location that is both interesting and safe for novices and experienced snorkellers and divers. Fissures and ledges in the sandstone reef areas create a varied underwater environment, and there is a great diversity of marine invertebrates and other marine life not generally seen at other dive locations. Species such as gobies, shore eels, snapping shrimps and juvenile flounder also occur in the area.

21. Balnarring

This site, below Palmer Bluff at Balnarring, contains a mosaic of substrate types, with patches of rock and weed, and supports a high diversity of invertebrate life and small fish. The site is shallow and generally safe, with easy access from the shore.

22. Shelly Beach, Kilcunda

The spectacular rocky subtidal area at Shelly Beach is readily accessible and provides an interesting location for snorkellers as well as divers. An interesting array of marine life can be seen.

23. Cape Conran

Cape Conran provides an interesting and relatively accessible site for divers. Beds of bull kelp and steep granite drop-offs support a rich array of marine life. Water clarity is generally good.

24. Point Hicks (Cape Everard)

The Point Hicks area is rich in marine life, with colourful algal growth and a wide variety of reef fishes.

11. SERVICES, UTILITIES AND FACILITIES ZONE

In marine and coastal areas services and utilities occupying public land include shipping and port facilities together with associated infrastructure and navigational aids, roads, pipelines, electricity installations, and communications and survey structures. Except where indicated in these recommendations, no change is proposed for the areas currently used for these purposes. It is intended that existing legal uses and tenure should continue.

Ports

Victoria is served by four major commercial ports: Melbourne, Geelong, Portland and Hastings. Three port authorities are currently responsible for these ports and for fourteen smaller port areas declared as 'associated ports'.

The various ports cater for commercial shipping, coastal trading, the offshore oil and gas industry, commercial fishing and recreational boating. The commercial ports provide deep protected waters suitable for shipping and accessibility to markets and raw materials. Surrounding areas have been developed for port infrastructure and associated industries.

The Government has recently announced that future control of the ports will change.

The onshore port assets of the Ports at Geelong, Portland and Hastings will be offered for sale to private enterprise with the underwater assets in Portland and Hastings to be retained in public ownership and leased to future owners.

A new Statutory Authority to be known as Channel Corp will be established with

responsibility for all channels in Port Phillip Bay and the Ports of Melbourne and Geelong.

The Government has also determined that the fourteen 'associated ports' will be divested from the Port Authorities. Funds have been allocated in the annual budget and forward estimates to cover the cost of these non-commercial assets, which are of considerable importance to local tourism, recreational and fishing industries. Negotiations are under way with a range of potential managers for these facilities.

Commercial shipping trade is extremely important to Victoria. The Port of Melbourne is the largest container port in the southern hemisphere and, in 1988, ranked 27th in the world in terms of container throughput. The Port of Hastings is used by more than 300 merchant ships in excess of 2,500 tonnes and trades predominantly in petroleum products. The Port of Geelong trades in a variety of cargoes including petroleum products, steel, woodchips, grain and fertiliser. Portland operates primarily for grain export and to service the nearby aluminium smelter.

Future requirements for the development of these four ports have recently been reviewed in the Victorian Ports Land Use Plan. The plan recognises that, in view of the capacity available at these facilities and the existing investment in their infrastructure, the only reason for considering the development of port facilities at a new site would be to decrease the risk associated with handling hazardous materials. The plan also recognises the uncertainty in predicting future port requirements and the importance, therefore, of maintaining options to use sites close to

existing ports that would enable further development in the very long term. Point Lillias in Port Phillip Bay and Tyabb in Western Port are two such sites. The ports of Geelong, Portland and Hastings also have capacity for further expansion. Nevertheless, some areas within the major ports that are not required for future port use have been identified.

Additional harbour facilities, especially facilities for commercial fishing and recreational boating, are provided in the associated ports. These include berthing and mooring facilities, boat ramps, slipways, and associated breakwaters and piers.

In reviewing current shipping activities and port operations, it is important not only that port requirements are identified, but that other issues are addressed. These include:

- environmental values in port areas
- water quality
- implications of dredging and spoil disposal
- public safety
- the use of anti-fouling agents
- the transfer of marine organisms in ballast water and by other means
- impact on recreational opportunities
- the amenity of nearby urban areas.

Other Utilities and Services

The Council has made a number of recommendations in previous investigations that are relevant to other services and utilities in marine and coastal areas. In this report, relevant recommendations are contained in Chapter 3, particularly in the sections 'Environmental quality', 'Recreation', 'Visual resources', 'Coastal dynamics', and 'Development and

infrastructure'. Issues relating to dredge spoil disposal and wastewater discharge are especially significant in the marine environment.

RECOMMENDATIONS

That

- 11.1** existing reserves used for public utilities, services and facilities continue to be used for those purposes.
- 11.2** a review of facilities within associated ports, including facilities for commercial fishing and recreational boating, be undertaken by CNR in conjunction with other bodies as appropriate, to ensure that provision of such facilities is coordinated to meet State and regional needs, and that environmental issues are addressed.
- 11.3** areas identified as surplus to port requirements, but with conservation, recreation or other community values, be managed by CNR (see Note).
- 11.4** areas not currently required for port purposes but which may be required in the future, be managed in the interim by CNR to maintain or restore their conservation, recreation or other community values while maintaining options for future port use.

Note

The landward sections of the ports of Melbourne and Geelong lie within city boundaries and are therefore outside the study area. However, the Council believes that the management of port areas within and beyond city boundaries needs to be considered in an integrated manner.

12. COASTAL RESERVE

Victoria is extremely fortunate in that along most of its coastline, the beach and immediate foreshore remain in public ownership and are available for public use. This is a priceless asset which is not enjoyed in many other parts of the world. Care must be taken to ensure that this asset is used wisely and that access to, and use of, the coast is available to all.

The Council's past recommendations for foreshore and hinterland areas along the Victorian coast reflect a wide range of values and uses. At one end of the spectrum are areas with high environmental values that the Council has recommended be included in land-use categories where protection of their natural features and values is the primary management aim (e.g. national and State parks, nature conservation reserves and reference areas). At the other end of the spectrum are areas required for ports and port-related industrial developments, transport links, and electricity and gas installations. The Council's services and utilities category recognises the community requirement for these uses.

Land-use categories such as those referred to above reflect specific and well-understood public land values and management objectives, and the Council's recommendations provide clear guidelines for their use. On the other hand, within the Council's coastal reserve category there is a wide diversity of land types, including areas which support flora or fauna of State or national significance, sections of coastline that are noted for their outstanding scenic and recreation values, reclaimed land and areas that have been degraded due to inappropriate use. Approximately 420km, or 20 per cent, of the length of Victoria's coastline is currently recommended by the Council as coastal reserve.

Proposed Zones

Two zones within the coastal reserve are proposed: one with a focus on conservation and protection of natural values; and one with a focus on recreational use and associated development.

For both zones, detailed planning would be achieved through the processes which are proposed under the Coastal Management Bill. The characteristics of the zones are described below.

Coastal Protection Zone

Much of this zone is in a relatively natural condition. It includes those parts of the coastal reserve which have botanical, zoological, geological or geomorphological significance, or include important archaeological or historic sites. In many areas of the Coastal Protection Zone road access is currently limited and only basic visitor facilities, if any, are available.

The primary aim of the Coastal Protection Zone is to protect natural and cultural values. Opportunities may exist to improve public access, provided this is compatible with the protection of identified values.

Activities that are generally not appropriate in the Coastal Protection Zone include developed picnic areas, playground areas, camping grounds, major car-parking areas, and boat-launching facilities.

In order to maintain the values of this zone, such uses, where they already exist in the zone, should not be extended; or where facilities are in disuse or disrepair, they should be removed.

General Use Zone

General Use Zones are capable of providing opportunities for enjoyment for large numbers of people without undue loss of natural and cultural values. Detailed management planning would determine areas within the zone which would be appropriate for more *intensive recreation* (e.g. boat-launching ramps, sailing clubs, or organised events such as surf carnivals), while taking into account the need to balance uses to ensure that opportunities for general public access for activities such as swimming, picnicking and nature observation are maintained.

Although not necessarily requiring a location on the coastal reserve, the following activities are considered to be appropriate in the General Use Zone provided they do not interfere with public access or significantly impinge on other values:

- picnic and barbecue facilities
- car-parking areas
- toilet and change-room facilities
- camping areas
- boat launching facilities.

Detailed management planning within the General Use Zone should ensure that environmental values are protected and that development is appropriate.

Within the General Use Zone, it is proposed that areas suitable for appropriate development be identified by CNR. In developing these areas, the aim would be to enhance the experience of users by providing high-quality facilities which complement their coastal setting. Continued public access and enjoyment of the coast should remain a high priority. Examples of such areas include the Lorne and Cowes foreshores.

In many parts of the world, developers or their clients have sought and gained exclusive access to parts of the beach or foreshore. This can significantly reduce the

enjoyment of users. The Council believes that development rights should not confer exclusive access rights to any organisation or its clients at the expense of public enjoyment of the coast.

Because they contain facilities catering for large numbers of people, areas of intense development are likely to be relatively localised. The identification of locations where such development might proceed would give greater certainty to the community than the current system, where development proposals are considered on an ad hoc basis for all areas within the Council's coastal reserve category. Proposals would still be subject to other necessary planning approvals processes.

Privately-owned structures

The Council is aware that many structures and facilities owned and operated by individuals, clubs or other organisations currently occupy, or are proposed for, the coastal reserve on either a permanent or temporary basis. Structures and facilities such as surf life-saving clubs, sailing clubs, boating clubs, restaurants and kiosks are considered appropriate within the General Use Zone provided they are sited to take account of other uses and values of the coast, and provided that community access is not restricted by private development.

Other facilities on the coastal reserve, including bowling clubs, tennis clubs, and sporting clubs where water-based activities are not the primary focus, were established many years ago. Given that coastal public land is a scarce resource and demand for its use is increasing, but recognising the long-standing use of some of these facilities, the Council believes that, wherever possible, alternative sites for these facilities should be identified with a view to phasing out their use of the coastal reserve. New facilities of this type should not be permitted on the coastal reserve.

The Council is also aware that many privately owned structures on the coastal reserve are not available for use by the general public. Such structures include bathing boxes and boat sheds. These often occupy beaches which are used intensively for recreation, for example, on the eastern side of Port Phillip Bay. The Council believes that, as a long-term objective, these structures should be phased out.

RECOMMENDATIONS

That

12.1 the coastal reserve shown on Map A continue to be used to:

- (i) provide opportunities for recreation for large numbers of people at appropriate sites, and also for recreation related to enjoying and understanding nature
- (ii) protect and conserve coastal landscapes, ecosystems and significant geomorphological, archaeological and historical features for public enjoyment and inspiration and for education and scientific study
- (iii) ensure the protection and conservation of important aquatic and terrestrial fauna and flora
- (iv) ensure the protection of fishing and facilities for boating, together with the necessary navigation aids

that

- (v) new roads not be sited along the coast; rather, they be located far enough inland to avoid damaging sensitive environments or impairing the scenic qualities of the coastal landscape

- (vi) the coastal reserve be zoned, as shown on map A, and managed in accordance with the principles for each zone, as described below

and that

- (vii) the coastal reserve be permanently reserved under the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources.

Coastal Protection Zone principles:

- (a) protect natural coastal landscapes and ecosystems, indigenous flora and fauna, and significant geological, geomorphological, archaeological and historical features
- (b) provide opportunities for recreation associated with the coast and related to enjoying and understanding natural and cultural values, consistent with objective (a) above.
- (c) provide for educational and scientific study.

General Use Zone principles:

The Council anticipates that the proposed Coastal and Bay Management Council and Boards will have a major role in the development of policies and detailed management plans for this zone, as well as the implementation of the principles outlined below.

- (a) provide opportunities for recreation associated with the coast for large numbers of people.
- (b) protect natural coastal landscapes and ecosystems, indigenous flora and fauna, and significant geological,

geomorphological, archaeological and historical features for public enjoyment and inspiration

- (c) the management planning process involve community consultation to identify areas within the General Use Zone in which more intensive development can be undertaken
- (d) where consistent with zone objectives, major development projects (such as jetties, marinas, seawalls, reclamation and non-maintenance dredging) be permitted subject to detailed environmental studies and public consultation prior

to commencement of work by the body proposing such development

- (e) public access to the zone to be maintained and protected
- (f) no new non-coastal dependant facilities, including those used for sport, be permitted on the coastal reserve.
- (g) wherever possible, existing non-coastal dependent facilities should be removed from the coastal reserve. The Council believes that any review of such facilities should be the role of the proposed Coastal and Bay Management Council and Boards.

Appendix I

PRINCIPAL VICTORIAN LEGISLATION FOR THE COAST (DECEMBER 1994)

Act	Aim	Responsible Minister/agency
Archaeological and Aboriginal Relics Act 1972	Provides for the recording and protection of archaeological sites and Aboriginal relics.	AA/DHCS
Catchment and Land Protection Act 1994	Provides a framework for the integrated management and protection of catchments; encourages community participation in the management of land and water resources; sets up a system of controls on noxious weeds and pest animals and repeals and amends various Acts concerning catchment and land management.	NR/CNR
Conservation, Forests and Lands Act 1986	Provides for land management codes of practice and other administrative arrangements for Crown land.	CE/CNR
Crown Land (Reserves) Act 1978	Provides for the management of reserved Crown land. It specifies conditions for the use and lease of Crown land and the establishment of committees of management; establishes the Coastal Management and Coordination Committee, which advises the Minister for Conservation and Environment on development works on all coastal Crown land (excluding Port Phillip Bay, national and State parks, and land vested in port authorities), and is empowered to develop management plans and reserve land for the purpose of environment protection.	CE/CNR
Environment Protection Act 1970	Establishes the Environment Protection Authority. Outlines its powers, duties, and responsibilities and makes provision for the protection of the environment.	CE/EPA
Environment Effects Act 1978	Provides for 'public works' reasonably capable of having a significant effect upon the environment to be subject to an environment effects statement.	P/DPD
Extractive Industries Act 1966	Provides for the issue of licences and leases and safe operating standards for extractive industry; the rehabilitation of land affected by extractive industry; and maximising the use of the non-renewable stone resources while minimising the possible impact on the environment.	EM/DEM
Fisheries Act 1968 (See Note 4)	Provides the legal basis for fisheries management in Victoria including: issue of commercial and amateur fishing licences, aquaculture permits, and special permits for experimental or research fishing; establishment and management of marine protected areas for conservation, scientific, educational, or recreational purposes; management and control of fisheries by regulation.	NR/CNR
Flora and Fauna Guarantee Act 1988	Provides for Victoria's flora and fauna; that taxa except for those specified, survive, flourish and retain their potential for evolutionary development in the wild; the conservation of Victorian communities; the management of threatening processes; sustainable use; and maintenance of genetic diversity.	CE/CNR
Forests Act 1958	Provides for the management and protection of State forests.	NR/CNR
Heritage Rivers Act 1992	Concerned with use and protection of significant rivers.	CE/CNR
Historic Buildings Act 1981	Establishes the Historic Buildings Council and outlines its powers, duties and responsibilities, including the establishment of a register of historic 'buildings'.	P/DPD
Historic Shipwrecks Act 1981 (See Note 3)	Applies to wrecks on dryland and in internal waters (within the baseline) and allows for controls on access to designated historic shipwrecks.	P/DPD

Appendix I - Principal Victorian Legislation for the Coast (December 1994) (continued)

Act	Aim	Responsible Minister/agency
Land Act 1958	Provides for the granting of leases and licences for various uses of Crown land.	CE/CNR
Land Conservation (Vehicle Control) Act 1972	Restricts the use of vehicles in sensitive areas, including the coastline.	CE/CNR
Land Conservation Act 1970	Establishes the Land Conservation Council and outlines its powers, duties, and responsibilities.	P/LCC
Litter Act 1987	To prohibit and regulate the deposit of litter in the environment of Victoria; and provide for the enforcement of the Act.	CE/Various
Marine Act 1988 (See Note 1)	Covers the registration of vessels and the pollution of State waters, implementation of certain international conventions, and the efficient and safe operation of vessels on State waters.	RP/MBV
Mineral Resources Development Act 1990 (See Note 5)	To encourage an economically viable mining industry which makes the best use of mineral resources in a way that is compatible with the economic, social and environmental objectives of the State.	EM/DEM
National Parks Act 1975	Provides for the creation, protection, and management of national, State, and wilderness parks and other parks and reserves.	CE/CNR
Petroleum (Submerged Lands) Act 1982	Regulates offshore exploration and production of oil and gas. This Act is 'mirror' legislation to the Commonwealth PSLA 1967 and operates in the area between mean low-water mark (outside the 'baseline') to the three nautical mile limit. Major matters covered by the Act include the relationship between the Commonwealth and the State Acts' jurisdiction and management; issue of Exploration Permits, Retention Leases, Production Licences for Petroleum; issue of Pipeline Licences.	EM/DEM
Petroleum Act 1958	Regulates onshore exploration and production of oil and gas and waters within the 'baseline' such as Port Phillip Bay, Western Port and Corner Inlet.	EM/DEM
Pipelines Act 1967	Selects the on-shore route from low-water mark for pipelines to be laid within Victoria. Prescribes engineering standards to be used in construction and operation of the pipelines.	EM/DEM
Planning and Environment Act 1987	Provides a framework for planning the use, development, and protection of land in Victoria. The Act has a number of aims related to environmental protection, social equity, and facilitation of appropriate development.	P/DPD
Pollution of Waters by Oil and Noxious Substances Act 1986	Covers the pollution of State waters.	RP/DT
Port of Geelong Authority Act 1958	Establishes and specifies the functions and responsibilities of the Authority. The responsibility of the Authority relative to the associated ports is limited to the management of navigation and port facilities and specifically excludes the adjacent land	RP/PGA
Port of Melbourne Act 1958	Establishes and specifies the functions and responsibilities of the Authority. The responsibility of the Authority relative to the associated ports is limited to the management of navigation and port facilities and specifically excludes the adjacent land	RP/PMA
Port of Portland Authority Act 1958	Establishes and specifies the functions and responsibilities of the Authority. The responsibility of the Authority relative to the associated ports is limited to the management of navigation and port facilities and specifically excludes the adjacent land	RP/PPA
Reference Areas Act 1978	Provided for the reservation in perpetuity of reference areas; areas of public land to be preserved in its natural state as far as possible, because the area is of ecological interest and significance, and the establishment of the Reference Areas Advisory Committee.	CE/CNR
Victorian Conservation Trust Act 1972	Enables the establishment of conservation covenants on land titles and the tax-deductible donation of land or money for conservation purposes.	CE/VCT

Appendix I - Principal Victorian Legislation for the Coast (December 1994) (continued)

Act	Aim	Responsible Minister/agency
Victorian Institute of Marine Sciences Act 1974	Establishes the Institute and provides for its mandate in marine research and education.	CE/VIMS
Water Act 1989	Includes provision for the integrated management of all elements of the terrestrial phase of the water cycle; the protection and enhancement of the environmental qualities of waterways and their in-stream uses; and the protection of catchment conditions.	NR/CNR
Wildlife Act 1975	Enables the establishment of controls over the taking of wildlife.	CE/CNR

Abbreviations

Minister:

AA Minister for Aboriginal Affairs
 CE Minister for Conservation and Environment
 EM Minister for Energy and Minerals
 NR Minister for Natural Resources
 P Minister for Planning
 RP Minister for Roads and Ports

Agency:

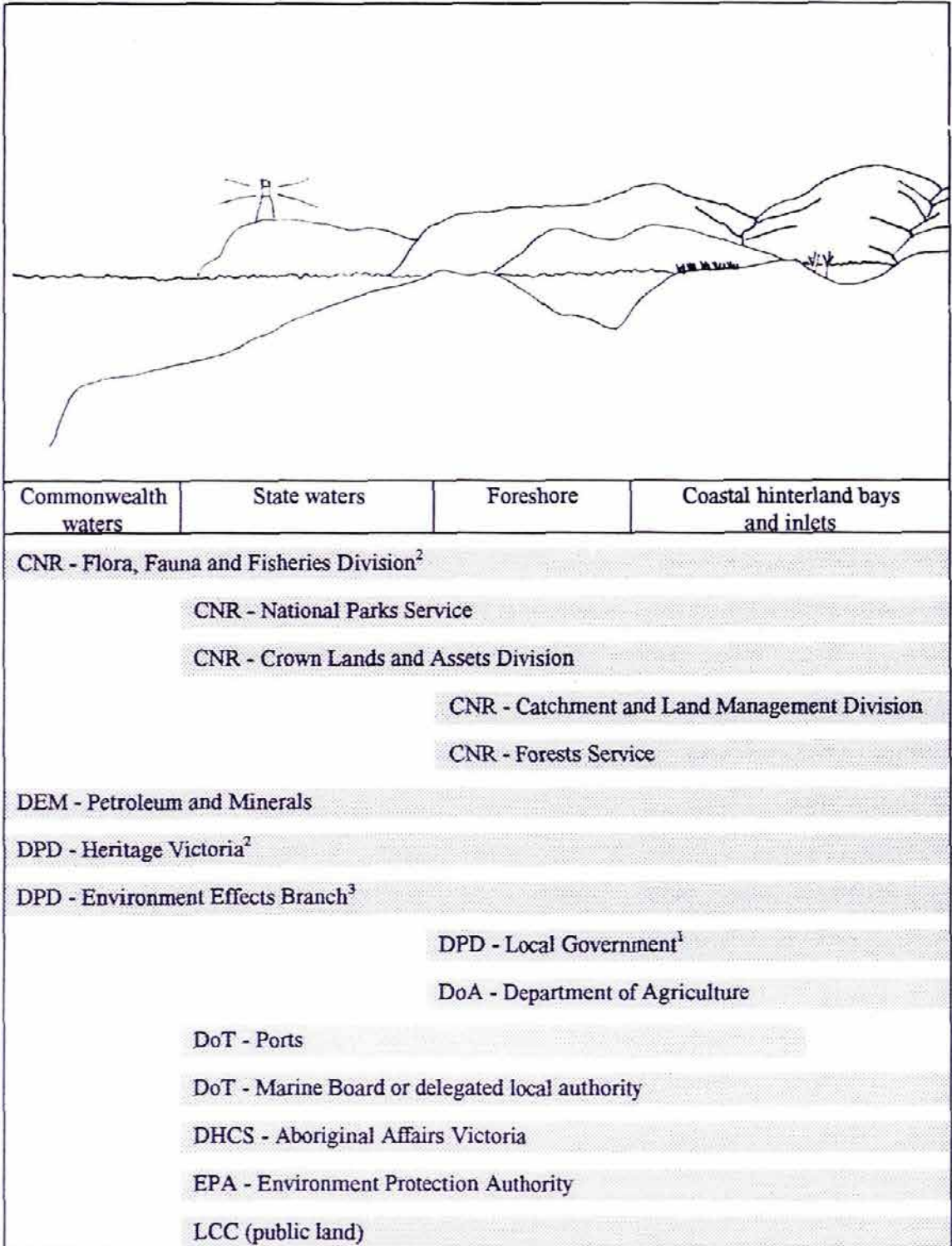
CNR Department of Conservation and Natural Resources
 DEM Department of Energy and Minerals
 DPD Department of Planning and Development
 EPA Environment Protection Authority
 LCC Land Conservation Council
 MBV Marine Board of Victoria
 PGA Port of Geelong Authority
 PMA Port of Melbourne Authority
 PPA Port of Portland Authority
 VCT Victorian Conservation Trust
 VIMS Victorian Institute of Marine Sciences

Notes:

1. The Marine Act 1988 applies to all Victorian recreational vessels, Victorian commercial fishing vessels, and other commercial vessels on intrastate voyages. The Commonwealth Navigation Act 1912 does not appear to apply to such vessels and voyages. Doubts have been raised regarding the State's extra-territorial jurisdiction in marine matters and these concerns are currently being addressed through the Australian Transport Council.
2. Under the provisions of the Marine Act 1988 local bodies such as Government Departments, municipal councils and authorised Committees of Management can be appointed as 'local authorities'. These local authorities are able to enforce certain provisions of the Marine Act 1988 as they impact on the waters under their control. They are also able to recommend local vessel-operating rules to the Board for consideration and approval - they cannot make the rules themselves and the Board cannot make rules of its own volition. Any such rules made under the Act must relate to the 'efficient and safe operation of vessels'.
3. This Act was amended in 1993 to bring certain aspects of the legislation into line with the Commonwealth Historic Shipwrecks Act 1976 and increases the effectiveness with which historic shipwrecks and relics can be protected and preserved. One of the most significant amendments was to make all shipwrecks over 75 years old historic.
4. Currently under review.
5. In 1993, the Act was amended to specify the nature of the consent required for activities on categories of public land.

Appendix II

PRINCIPAL VICTORIAN RESOURCE PLANNING AND MANAGEMENT AGENCIES FOR THE COAST



1. 600m offshore in Port Phillip Bay.
2. These Departments operate on behalf of the Commonwealth in Commonwealth waters.
3. Commonwealth waters for Environment Effects Statements only.

Appendix III

VICTORIAN TERRITORIAL BOUNDARY

Matters related to the territorial boundary are complex and are subject to confirmation in the Courts.

The Surveyor General of Victoria has advised the Council of the following:

'the sovereignty of Victoria is limited to its emergent land (mainland and islands) and to its Coastal Waters. The Coastal Waters (or Victoria's territorial sea) extend three nautical miles to the seaward of low-water mark (specifically Lowest Astronomical Tide), to the seaward of connecting lines across estuaries and mouths of bays as set out in Article 7 of the Convention on the Territorial Sea and to the seaward of proclaimed 'baselines'. Only one such baseline has been proclaimed for the Victorian coastline. It is located to the south-west of Wilsons Promontory, such that the baseline is formed by a series of lines joining the following islands and incorporates the outer Low-water mark coastline of each - South Point on the mainland to Wattle Island, thence to Kanowna Island, Cleft Island, Citadel Island and the Glennie Group, to Norman Island and rejoining the mainland at Tongue Point (see the Commonwealth Gazette of 9 February 1983).

The boundary between Victorian and Tasmanian sovereignty derives from the separation of Van Diemen's Land from New South Wales in 1825. At its inception, Victoria's seaward boundary appears to have been overlooked or at least so obvious as to not require stating.

The statute separating Van Diemen's Land referred to the parallel of latitude 39°12'S and this parallel has been accepted as the dividing line between the States. However, several legal opinions suggest that the purpose of this line is to divide the islands of Bass Strait into those of Victoria and those of Tasmania, not to divide the seabed.

It is also likely that this reference to latitude 39°12'S should be taken as being by astronomical determination, not in terms of the Australian Geodetic Datum (AGD66) as has been the practice in recent times. The astronomical parallel lies about 50 metres north of the AGD66 parallel.

Further, early coastal charts depicted the southern-most point of land of Wilsons Promontory [latitude 39°08'18"S (AGD66)] being close to 39° 12' south latitude.

By any definition, Forty Foot Rock is clearly within Tasmanian jurisdiction. For the Hogan Group: Seal Rock is clearly north of 39°12'S by either definition; Boundary Islet (previously North East Islet and 150 metres long) is divided by the 39°12' (AGD66) and probably also divided by the 39°12' astronomical determination. The rocks to the north of Twin Islets (possibly those charted as N(North) Boulder in 1886 by HMS *Myrmidon*) are probably just north of latitude 39°12' and thus probably Victorian.

An opinion by the Victorian Government Solicitor in 1987 has argued that the boundary between New South Wales and Victoria seaward of Cape Howe was never defined and certainly is not the extension of the line from Forest Hill (headwaters of the Murray River) to Cape Howe. By deduction he determined that the seaward boundary line would be at right angles to the tangent to the coast at the low-water mark.

Although this opinion has been used and accepted in several court cases, this definition has yet to be referred to New South Wales for comment and agreement.

Similarly, the seaward boundary between Victoria and South Australia would also be at right angles to the tangent to this coast at the low-water mark.

In respect to the status of Victoria's sovereignty offshore from Commonwealth reserves, e.g. Gabo Island and other lighthouse reserves, the reserves are part of Victoria being Victorian freehold land for which the Commonwealth holds title. The land has never been ceded or annexed to the Commonwealth, in the same manner as the Australian Capital Territory or at Jervis Bay. The coastline around Commonwealth reserves is the land boundary of Victoria. Victoria's Coastal Waters are continuous along the entire coastline and are not interrupted by the presence of Commonwealth reserves.'

Appendix IV

LIST OF SUBMISSIONS

Sub. no.	Name	Affiliation (if applicable)
1	Wilson	Sharkbusters
2	Van Boom	
3	Brown	
4	Price	Shire of Warrnambool
5	Heatlie	Allies of Local Flora
6	Conway	
7	Moore	
8	Thompson	Aireys Inlet and District Association Inc
9	Borowiak	
10	Bond	
11	Cape	
12	O'Toole	
13	Tucker	
14	Vickery	Marengo Association
15	Tansley	Westernport Regional Planning and Co-ordination Committee
16	Tatterson	Shire of Rosedale
17	Rozenberg	Shire of Hastings
18	Buckley	Torquay Public Reserves Committee of Management Inc
19	Woollard	Victorian Fossickers Club Inc
20	Ridgway	
21	Gilbert	
22	Parsons	Marine Board of Victoria
23	Gillies	
24	Swan	
25	Saunders	
26	McDowall	Childers Cove Progress and Tourist Association Inc
27	Stevenson	Shire of Heytesbury
28	Chinner	Walkerville Ratepayers Association
29	Thompson	Latrobe Valley Field Naturalists Club
30	Maddox	Shire of Heywood
31	Wilson	Balnarring Foreshore and Parks Reserve Committee of Management Inc
32	Wade	
33	Bremner	Venus Bay and Anderson Inlet Foreshore Committee of Management Inc
34	Tieman	
35	Dosser	Mann's Beach Improvement Committee Inc
36	Ashion	
37	Zhuang	
38	Wallis	The Victorian Metal Detector and Prospectors Association Inc
39	Lee	
40	Innis	Quicksilver
41	White	Angair Inc
42	Porto	
43	Wescott	
44	Pearson	
45	Collins	City of Sandringham
46	Williams	Aireys Inlet Foreshore Committee of Management
47	Miles	
48	Smith	
49	Baker-Gabb	Royal Australasian Ornithologists Union
50	Atkins	
51	Erler	Swan Bay Environment Association Inc

Sub. no.	Name	Affiliation (if applicable)
52	Matthews	
53	Aitken	Miner's Den
54	Churchill	Otway Forum
55	Op Den Brouw	Mallacoota Surf Riders Inc
56	Mullett	West Gippsland Aboriginal Community Co-Operative
57	Robertson	
58	Hamilton	Seaford Life Saving Club
59	Rimmer	Federation of Victorian Walking Clubs Inc
60	Agar	
61	Yates & Dunn	Frankston Angling and Boat Owners Club Inc
62	Halligan	Preston Angling Club and Fish Protection Society Inc
63		The Offbeat 4x4 Club
64	McNabb	
65	Sneath, A & P	
66	Bray	Walkerville Foreshore Reserve Committee of Management Inc
67	Chapple	
68	Henderson	
69	Wynd	Mallacoota and District Angling Club
70	Barlow	Port of Melbourne Authority
71		Victorian Seekers Club
72	Salter	Scuba Divers Federation of Victoria Inc
73	Hanson	
74	Taylor	Victorian Speleological Association Inc
75	Graham-Measor	
76	Evans	City of Sale
77	Wright	
78	Stove	South Gippsland Water Board
79	Baird	Phillip Island Hooded Plover Study Group
80	Smith	
81	Douglas	
82	Handreck	Marine Research Group of Victoria Inc
83	Harty	
84	Siyelaud	
85	Curtis	
86	Lampe	
87	Smallsman	
88	Godfrey	
89	Thomas	Anglesea Motor Yacht Club Inc.
90	Warner	Nissan Four Wheel Drive Club of Victoria Inc
91	Morgan	Westernport Field and Game Association Inc
92	O'Hara	Marine and Coastal Society Inc
93	Benbow	Shire of Heywood
94	March	
95	Jackson	Wye River and Separation Creek Progress Association
96	Jones	
97	Riley	
98	Clifford	
99	Bolger	Nelson Reserves Committee of Management Inc
100	Robb	

Appendix IV (continued)

Sub. no.	Name	Affiliation (if applicable)
101	McKinnon	
102	Ashworth	Port Phillip Bay Dolphin Research Inc
103	Rolington	Victorian Rifle Association Inc
104	Ward	
105	Jarrett	Maritime Heritage Advisory Committee - City of Portland
106	Ward	
107	McDonald	Bird Observers Club of Victoria
108	McBain	Glenelg River Cruises
109	Davies	Marine Diving Group
110	McFarlane	
111	Weatherall	Shire of Orbost
112	Thomson	Waratah Park Country House
113	Mirabella	Port Phillip and Westernport Bay Professional Fishermens Association
114	Ward	
115	McCosh	Koroit and District Angling Club Inc
116	Matthews	
117		The Recreational Fisheries Council of Victoria
118	Atkins	Victorian Canoe Association Inc
119	Hewitt	Maritime Achaeology Association of Victoria
120	Humann	Victorian National Parks Association Inc
121	Wilkins	Tourism Mount Gambier
122	Hewitt	Dive Experience Pty Ltd
123	McRae	Greenpeace
124	McDonnell	City of Mount Gambier
125		Marine Education Society of Australasia
126	Beekhuizen	
127	Smith	
128	Stevens, R. and M.	
129	Sandy	South Gippsland Game Fishing Club Inc
130	Thomas	Phillip Island Penguin Reserve
131	Caine	Caulfield Environment Group
132	Lourey	South Western District Association of Angling Clubs
133	Whelan	
134	McDonald	

Sub. no.	Name	Affiliation (if applicable)
135	Swan	
136	Virtanen	
137	Bustard	
138	Werner	
139	Bell	Environment Protection Authority
140	Napthine	Member for Portland
141	Beddoe	City of Port Melbourne
142	Confidential	
143	Giles	Friends of the Earth
144	Ridgway	
145	Hill, D & B	
146	Studd, A & W	
<i>Letters received following the close of submissions:</i>		
L1	Butt	
L2	Taylor	
L3	Moore	
L4	Clarke	
L5	Bryl and others	
L6		Victorian Fishing Industry Federation Inc
L7	Tavener	Shire of Tambo
L8	Thomson, A. and C.	
L9	Yeates	Foreshore Residents Association Inc
L10	Chapman	Ocean Grove Foreshore Committee Inc
L11	Schultz	Natural Resources Conservation League of Victoria
L12	Ziolkowski	Abalone Fishermen's Co-Operative Ltd
L13	MacDonald	
L14	Hayes	
L15	Thompson	Department of Conservation and Natural Resources
L16	Mutch, L & M.	
L17	Hayes	
L18	Dalton	Central Gippsland Aboriginal Health & Housing Co-Operative Ltd
L19	Caron	
L20	O'Hara	
L21	Whiteway	
L22	Noble	South Gippsland Boardriding Club

Appendix V

ISSUES RAISED FOLLOWING THE RELEASE OF THE DESCRIPTIVE REPORT

This is a summary of issues raised following the release of the Descriptive Report in June 1993. It does not contain a response by the Council. The inclusion of issues in this section does not imply the Council's endorsement or rejection of the opinions expressed. The Council is also aware that some statements made in submissions are not factually correct. Since June 1993 there have been several major initiatives that address some of these issues. Some of these include: a review of the Fisheries Act, the proposed Coastal Management Act, fisheries management plans, a Western Port State of Environment Review and a major enforcement initiative.

To simplify the presentation, the issues raised have been grouped for convenience under the headings listed below. It is realised that some issues are interrelated or some topics could have been as equally considered under separate headings.

1. Study area, scope and conduct
2. Database for the investigation and research
3. Coastal planning and administrative arrangements
4. Recreation and tourism
5. Harvesting of fish and other living marine resources
6. Education and enforcement
7. Environment quality
8. Services and utilities
9. Coastal dynamics
10. Scenic values
11. Introduced plants and animals
12. Public/private land interface.

1. Study Area, Scope and Conduct

Several issues have been grouped under this heading. These include comments on the size of the study area, the social and economic tools the Council may use to assess the implications of its recommendations, and the status of past recommendations.

Comments made on the study area were generally to suggest its expansion. Areas to be included were those within the then newly formed Greater City of Geelong, the Gippsland Lakes and freehold land where it directly affected coastal public land. These comments reflected a need to provide consolidated and integrated planning arrangements for the entire coast.

Concerns arose as a result of the inclusion of land adjacent to the study area on the maps included with the Descriptive Report, and the identification of sites of significance within cities.

It was noted that activities in the entire catchment that drain to the sea and the sea itself for long distances offshore affected the study area.

Social and economic assessment

On a number of occasions the Council was asked whether it considered the costs of implementing its recommendations when developing them. Many submissions emphasised the need to include social and economic considerations when developing recommendations, but also pointed out that the information base was lacking, particularly in regard to multiplier effects, such as those generated by commercial fishing. No clear guidance was given on the methodologies that should be used, except that non-monetary values and a long-term perspective should be used. It was suggested that the development of a method to derive the monetary value for Port Phillip Bay and Western Port may be a useful exercise.

The 'user pays' concept was proposed as one way of facilitating planning and management. This concept should be based on the capability of the area to support an activity, not on the criterion that if you had enough money you can do as you wish. Some people however had reservations about paying to use a common property resource such as a beach. It was considered that for discharges, the discharging company should pay for the privilege to discharge.

Implementation of existing the Council recommendations

Some people considered that the Descriptive Report should have reviewed the extent to which Government-approved the Council recommendations had been implemented. Many people recognised that it was necessary to fully implement the recommendation if the land-use goals were to be achieved. Several of the Council's recommendations were given as examples, including the 284sq. km Wildlife Management Cooperative Area in Western Port, Venus Bay-Waratah Bay Coastal Park and coastal reserves. For coastal reserves the reasons for lack of implementation were variously attributed to lack of time, staff and money; low priority; lack of will; and the political influence of groups who may resist change.

Communities also wish to be actively involved in coastal management, pollution control and environmental restoration and feel that this may be achieved through employment strategies and closer links between communities, local Government and land and sea managing agencies.

2. Database for the Investigation and Research

Many comments were made about the limited nature of the data presented in the Descriptive Report and that additional data was available and that this should be used. Reference was made to published and unpublished reports held by both government and non-government organisations, and the recollections of people who have had a lifetime of experience working along the coast, such as fishers, divers, naturalists and others.

Others felt that the amount of data that was available to the Council was limited and sometimes of unknown quality and that this should therefore limit the range and nature of the recommendations made. Without comprehensive data, it would be difficult for the Council to know if the right areas or key processes were protected. Others countered this argument with the comment that the scarcity of data should not prevent planning, and that the precautionary

principle must be used and decisions must be made, despite uncertainties, on the best available information and advice.

The data provided in submissions covered a wide range of topics. The lack of data for marine systems, particularly for biota, compared with terrestrial systems was highlighted.

The selective gathering of data and its selective use were also a concern. This has arisen through the conduct of post-impact studies only or the design of a research program. Where research results are of community interest, some people felt that it was important to provide for community input to the research design.

Some submissions proposed that the Council should identify the major data gaps and recommend research to address them, otherwise planning and management will continue to be carried out in a data vacuum, with no means of estimating whether the coast is being used sustainably. It was also considered important that existing data and all future data be audited for quality and reside within a computerised information system so that it can be readily used. It was also proposed that 'benchmark areas' be established so that research can be undertaken on comparatively unaltered marine systems.

3. Coastal Planning and Administrative Arrangements

Planning

Several guiding principles, including those developed as part of the ESD program, were suggested for planning the future use of the coast. In particular the 'precautionary principle' and 'coastal-dependency' were suggested for determining the location of facilities on the foreshore, the equitable allocation of resources, and the encouragement of the maximum economic efficiency in the commercial use of marine resources/environments.

There was a general agreement that a planning approach based on an integrated management framework must be used. Reasons were 'it is hard to build a fence in the sea to keep things in or out', control of land-based inputs from rivers, drains and outfalls are needed, and the linear nature of the intertidal/foreshore zone makes it difficult to deal with human and biological activities across it. The impact of river management on aquatic fauna that may migrate from the sea to within the catchment was also raised. It was also argued that planning should be based on biophysical or geocultural boundaries rather than simply on administrative (local and state government) boundaries. Few considered that the current arrangements were entirely satisfactory, however some cautioned against change for change sake and suggested that current arrangements should continue unless change is clearly justified.

There was a range of opinion about the approach to planning. These could be broken into those described in the Descriptive Report: activities-based approach, reserve-based approach, or a combination of both.

Few submissions opposed the use of reserves as a planning tool, with many emphasising the role of marine reserves and buffers around them, particularly for the protection of sedentary marine species, and breeding, feeding and nursery areas.

Many submissions emphasised three areas of concern which require improvement if an integrated approach to management is to be achieved: education, research, and monitoring.

Comments were also made on the complex terminology used in coastal planning: terms such as 'marine protected area', 'marine reserve' and 'conservation'. This terminology is a source of confusion and may divide groups on matters on which they may otherwise agree, and the Council should be aware of this.

The general view was that a strategic management framework should be developed for the marine waters along the open coast as a whole and for the larger bays, such as Western Port. Many people referred to the framework used to manage the Great Barrier Reef as a possible model. In developing such a framework the Council should seek to reduce the more than 20 land-use categories that currently cover the coast.

It was suggested that zoning be based on two needs: the first to separate uses that conflict with the underlying capability of the area; and the second to resolve conflict between different uses which are compatible with the capability of the area.

Detailed zoning schemes (up to 11 zones) were outlined in a number of submissions. Some saw benefit in having flexible zone boundaries, while others saw this as a disadvantage.

A wide range of considerations was suggested for identifying areas which should be reserved for specific uses. Most submissions covered the need to ensure the maintenance of biological diversity, ecological processes, biological productivity for either utilitarian (fishing) or intrinsic reasons.

Some submissions emphasised the benefit of approaches based on representativeness. A biophysical classification was proposed as the basis, as too little was known in general terms about the marine environment to systematically ascribe significance to a species and that a 'species-accounting' process was also inappropriate.

Other considerations included the need to protect entire river catchments, and to clarify the effectiveness of buffers. When developing the recommendations for the uses of catchments, it was important that the control of uses was according to the nature of the threat. It is important to maintain social equity, and if particular activities (uses) are to be restricted then restrictions should apply to all participants in that activity.

Protection against 'threatening processes' that may result in long-term adverse impacts was also considered important. These included: siltation through catchment runoff and diffuse source pollution, alterations to shorelines resulting in the destruction of habitat, introduction of exotic organisms, especially through ballast water, dredging and reclamation works, and over-exploitation of living marine resources.

Foreshore areas

Principles for the use and management of the foreshore were usually incorporated within comments for the broader marine areas. The coastal dependency approach to siting structures on the foreshore was considered important. Planning issues included, the incremental degradation and exclusive use of the foreshore. Users of these structures, however, generally

supported their retention, although comments on the need to site facilities further away from the shoreline were common.

For foreshore areas outside parks, it was argued that the Council's planning recommendations and legislation used to reserve them were too general, creating tension between development and conservation interests. Several suggestions were made as to how this could be addressed. It was also suggested that where terrestrial coastal habitats were not represented within the existing park system that they should be added to it. There was a concern that a reduction in the protection of coastal values may occur.

Administrative arrangements including legislation

The need to improve the administrative arrangements for coastal and marine resource management was raised repeatedly. The arrangements were considered too complex and unfriendly to the lay user, making it difficult to understand who is responsible for what, and the mechanisms by which the community can express points of view on particular issues. It was apparent that the best planning and management objectives would fall short unless supported by adequate administrative arrangements.

It was argued that the current legislation covering the marine and coastal areas is deficient. There was also uncertainty about which Commonwealth Acts covered Victorian waters. Regulations covering fishing activities along parts of the coast appeared to be unnecessarily complex.

Given the prevailing biophysical conditions, the artificial nature of some jurisdictional boundaries was identified.

It was suggested that coordination could only be achieved by an independent body with a good overview of the system involved, a good information base and scientific expertise. Links between State and Commonwealth jurisdictions and sectoral areas of government management, including local government, were considered critical. The opportunity for public input was also seen to be vital. Some suggested that an independent body should be able to consider both public and private land issues. A source of technical expertise, particularly for shoreline works, that is either State or Federally funded was also seen as important.

Other issues central to coordination were that activities within catchments draining to the coast and areas beyond Victorian territorial waters must be considered, and that while integration of marine and terrestrial systems is desirable this may not always be an overriding consideration. There was concern about the tendency for the terrestrial issues to dominate coordination and integration activities. Recent restructuring of Government departments and changes in staff were also a concern.

Local Government

Views on the role and efficiency of local government varied. Some considered that the solution to many of the problems was for State and Commonwealth cooperation rather than national or state intervention with local government.

Small local government areas along the coastline has lead to administrative fragmentation of the coast, which is a particular problem in the more intensively used areas of the coast. The failure to enforce local government regulations was also considered a problem.

It was suggested that municipal planning schemes should be extended below high water to facilitate shoreline and nearshore planning for facilities such as marinas.

Local government was also considered to be financially disadvantaged. Funding arrangements for capital works should ensure that all beneficiaries contribute to the costs; for example, the upgrading of sewage facilities in coastal tourist towns benefits the whole Victorian community, including tourists and locals, yet the costs are often not shared in this way.

Committees of Management (CoM)

Local government's role in foreshore areas, particularly through Committees of Management, is considered to be understated and this role must be considered by the Council when making recommendations.

Other issues arising from the management of foreshore areas by committees were also identified. While local committees should be recognised as having an important role, they must be accountable and manage the areas in accordance with approved coastal policies.

Suggestions to improve the accountability and effectiveness of committees were made, focusing on the need for a management plan with ongoing review and monitoring and adequate funding for works and availability of technical advice.

4. Recreation and Tourism

Comments were made on most of the recreational activities along the coast. Recreational fishing is described in the fishing section below.

Access to the coast for recreation is an important issue. Vehicle access to the coastline needed to be maintained, particularly in areas where access was already limited by the road network. It was also pointed out that managers should be aware that beaches can also be approached from the sea and that recreational groups doing this may need access to legal camping areas, particularly along the major coastal parks and offshore islands.

It was also indicated that beach-access roads should not be upgraded without considering the possible impact this would have on the number of visitors or the need to keep parts of the coast relatively remote.

There is a need to assess the impacts on the environment of the expanding range of coastal activities, and to provide the necessary infrastructure to meet the demand where the impacts and safety considerations were acceptable. The need to separate incompatible activities such as swimming and sun-baking from boat-launching and boating activities, including jet-ski use for example, was recognised.

The development of coastal walks was seen as a means of improving public appreciation of the coast by allowing access to the coast and its scenic landscape. Several existing and

proposed coastal walks were identified such as the 'Bass Strait Stroll' (Phillip Island to Wilsons Promontory) and from Anglesea to Portland.

The importance of scuba diving and snorkelling to the Victorian economy was highlighted. Divers are involved in clean-up programs and have an appreciation of Victoria's underwater areas that are essentially unknown to others. It was proposed that sites should be recognised or protected for scuba diving instruction.

The importance of surfing was considered to be understated in the Descriptive Report. The Victorian participation rate is currently estimated at 9 per cent. There are 90 surf shops, and companies with major world-wide surfing labels located in coastal towns. The effect of outfalls on water quality, potential ribbon development and shipping spills were important considerations for surfers. The possible adverse impacts on surfing of break-water construction was raised, as was the use of artificial reefs to develop new surf breaks.

It is considered that no further restrictions were necessary on the hunting of ducks, deer and vermin along the coast. Instead it was suggested that opponents of hunting and hunters should work together to restore areas. Several hunting groups indicated their commitment to the environment through habitat restoration, vermin control, and litter collection.

It was also considered that the use of the coast should remain 'free', and that no charges be levied for the use of this public asset by the wider community.

Tourism

Tourism based on coastal fauna (whales, dolphins, seals) is growing and is illustrated by the recent development of tours based around whales and dolphins in the southern end of Port Phillip Bay. For operators, mandatory codes to ensure that natural values are not compromised, such as occurs through hand-feeding, and formal accreditation to protect consumers, are considered necessary. The creation of artificial habitat to attract animals of interest to tourists – for example, artificial haul-out sites for seals – have been suggested.

Marine and terrestrial areas, including National Parks which are one of Victoria's major tourism attractions, need to be identified for different types of tourism development. The development of tourism nodes could reduce the impact on other more sensitive areas, particularly close to Melbourne. A balance between environmental values, tourism development and local community expectations needs to be struck and could be addressed by involving State government departments, local government and private developers.

5. Harvesting of Fish and Other Living Marine Resources

There was a wide range of opinion on this topic.

Both commercial and recreational fishers recognise that it is in their interest to protect habitat and conserve fish stocks and that information to do this effectively was urgently required. There was considerable agreement on how this could be achieved for those threatening processes unrelated to fishing. There was also agreement that existing regulations should be enforced, for example, in relation to size. It was evident that there is strong competition between these two sectors for the some fish stocks with social, economic and who finally

consumed the fish suggested as criteria for allocation. However, it was clear that members within each sector did not hold the same view on all issues.

Submissions also raised questions as to the methods by which access to fish stocks, and the social, economic and environmental implications of commercial and recreational fishing would be assessed. Some recreational and commercial fishers considered that the establishment of marine conservation reserves would impact on their activities. Others recognised the need for representative examples of marine and estuaries ecosystems to be excluded from all forms of fishing activity for reference, scientific study and for educational purposes. It was also suggested that 'fish recovery areas' should be established to allow depleted fisheries to regenerate.

It was also argued that commercial fishing exhausts fish resources generally, as evidenced by the decline in a number of fisheries.

The need to recognise traditional and/or subsistence fishing by Aboriginal communities was also identified. Some submissions indicated that Victoria may lead the way in the development of planning principles based on ESD and the development of a better interaction between commercial and recreational fishers.

One principle suggested was an 'environmental quota' for fish stocks, similar to an environmental water requirement for freshwater aquatic systems whereby a component of the fish stock is set aside to ensure that those parts of the marine system dependent on them are not adversely affected.

Commercial fishing

It was emphasised that the fishing of Victorian waters was a family-based activity which was not just a business but a lifestyle. Bays and inlets have been commercially fished with techniques that have remained much the same over the last 150 years and have caused no harm to fish stocks, habitat, or to the environment in which fishers operate. The industry is regulated by strict gear controls and the number of commercial fishers has gradually decreased.

The industry argues that it has often led the debate on the introduction of enforceable codes of practice, but has encountered delays through Government inaction. The need for a continuing commercial industry was emphasised, although some submissions suggested that changes are necessary.

The industry's social contribution to providing Victorians with access to the fish resource at reasonable prices and the commercial returns for domestic and export trade are considered to be undervalued. There is also concern by the industry that anecdotal evidence is used to portray the industry in a negative way.

Haul netting over seagrass areas in Corner Inlet, the use of scallop dredges and bycatch rates for fin fisheries were issues of concern, as was the increase in effectiveness of commercial fishing.

Reference was made to the Parliament's Natural Resources and Environment Committee recommendations on particular fishing techniques, such as scallop harvesting and the need for commercial fishing to be phased out without delay in some of the smaller inlets such as Tamboon, Lake Tyres, Shallow Inlet and Anderson Inlet.

In developing the argument for a reduced commercial fishery, the mismanagement of commercial fisheries for which there was no recreational involvement, e.g. orange roughy was raised. It was also proposed that the snapper fishery should be protected from commercial use and developed as a tourist fishery. The need for value-adding of the commercial fish catch was identified. Some considered that fish, herring and pilchards at the bottom end of the marine food chain should not be fed to domestic cats and that some other species, used for this purpose, for example salmon, were also prized by recreational fishers.

Recreational fishing

It was considered that the economic and social importance of recreational fishing must be recognised, particularly when considering the availability of waters for fishing and the allocation of the catch between commercial and recreational fishers. Recreational fishing techniques are considered to be environmentally benign compared with commercial techniques. The 'tag and release' approach to conserve game fish stocks and collect information was highlighted. The impact of taking territorial fish through techniques such as spear fishing on scuba is an issue that required monitoring at a minimum, or banning.

Evidence that recreational fishers may have greater impact on some fish stocks than commercial fishers was cited, hence the need for an education program to encourage them to limit their take. Fishing clubs were seen as having an important role in such programs. However this evidence was also disputed.

Some recreational fishers suggested that commercial fishing should be phased out of the bays and inlets, and along some areas of the open coast, to provide for better recreational fishing opportunities, through the reduction in fishing pressure and removal of commercial activities that affect habitat.

Phasing out in the bays and inlets could be achieved by 'buy out' funded by a recreational fishing licence that covered all coastal waters or by making commercial licences non-transferable.

It was also suggested that recreational fishing would be improved if the commercial take of abalone and rock lobster were reduced and recreational bag limits halved in some areas of the open coast.

The use of artificial reefs and other structures for diving and fishing were also described.

Shellfish and the harvesting of intertidal reefs

The allocation of responsibility for monitoring the quality of commercially harvested shellfish for human consumption is an issue, as is the allocation of rights to harvest shell fish around artificial structures.

The need to extend shellfish regulations from the Port Phillip Heads to Cape Otway, instead of applying them to small isolated areas, was suggested, together with bag limits in permitted areas. Bait collection by recreational fishers was emphasised as having a rarely recognised major impact on shellfish. The cumulative impact of intensive shell fishing, for human consumption, in intertidal and shallow subtidal areas can result in the stripping of some areas and needed to be addressed more effectively.

Seaweed harvesting

The potential for the expansion of seaweed harvesting in Victoria was raised. The approvals process for harvesting living seaweed and seaweed washed on shore was an issue. It is not clear whose responsibility it is to consider the environmental implications on both nearshore and shoreline ecosystems, particularly the habitat and food supply of shore birds, and approve harvesting.

Mariculture

It was proposed that the Council should develop a list of suitable public 'land' sites for mariculture with a suggestion that development should be first encouraged on private land. Alternate uses of the same area must be considered, such as other forms of fishing, the presence of fish nursery areas, recreation and nature conservation. It was also suggested that only native species should be cultivated.

Advantages and disadvantages of mariculture were raised in various submissions.

It was indicated that proponents required secure leases for mariculture sites and the Government, when considering fees, should recognise the costs carried by the operator, due to the risks associated with the experimental nature of the industry and the time it takes for such a venture to provide a financial return.

6. Education and Enforcement

Education and enforcement were seen as the carrot and stick approach to protecting the coast. Enforcement was a major issue, particularly for the management of fish stocks and marine reserves. Other enforcement issues related to littering, discarding of fishing line and hooks, planning controls for coastal private land and the use of vehicles on beaches. It was pointed out that the considerable body of local government bylaws relevant to coastal management was rarely enforced.

Fisheries enforcement

Fish thieving is reported to vary widely in scale. The theft of abalone was reported to be high and particularly well organised, as abalone have high value and can be easily harvested and transported. The risk of being caught and the penalties are low compared with the potential profits.

Failure to enforce regulations was seen as a major issue because it can lead to the destruction of some habitats and the stripping of shellfish from intertidal and subtidal areas. It can also affect the viability of some fisheries through the taking of undersize and spawning stock.

It was also considered that the declaration of 'no-take' zones for fish, for whatever purpose, would fail as they would become a fish thief's paradise. This was often raised as a major argument against the use of conservation reserves as a marine planning and management tool.

It was considered that additional enforcement resources would assist, although it was noted that the number of government staff allocated to enforcement was sometimes overstated. However legislation must be framed in such a way to allow efficient and effective enforcement. A clear and single philosophical approach to compliance, either enforcement or education, was also considered necessary. For abalone, difficulties of access, and the presence of licensed divers were seen as important deterrents to thieves.

Education

Education was important to build support for coastal planning and management. Education is used as an extension activity in fisheries management and as part of nature study programs to increase the general understanding of marine and coastal systems. Tourism was also identified as a means of educating the public. The impact of educational and scientific collection activities, particularly of intertidal areas is an issue requiring consideration.

7. Environmental Quality

Adverse changes in the environmental condition of the coast and marine waters, often attributed to human use, were the subjects of many submissions. The lack of measurement and understanding of these changes and the fact that they had occurred within living memory were of particular concern.

One issue raised repeatedly was the loss of seagrass in Western Port. Many submissions expressed frustration that, given there was no doubt as to the extent of the loss, the Government had not responded to this evidence and had not monitored the changes since the loss was reported in 1983.

Within Western Port the risks and possible environmental degradation as a result of an oil spill were raised. People were concerned at the proposed increase in tanker traffic which would greatly increase the risk of oil and other spills along the coast. The incorrect perception, held by some people, that white sandy beaches were more sensitive to oil spills than muddy intertidal areas required attention.

Open public consultation over the production of oil-spill response plans and on topics such as how the public may assist in the event of a spill and the toxicity of the oil and dispersants, should be undertaken before a spill, not when the clean up is in operation, or has taken place.

It was further suggested that the impacts of offshore oil extraction on coastal aquifers and the discharge of large volumes of formation water may be understated.

Ocean outfalls were the subject of many submissions which generally advocated stricter controls, cessation of the 'longer-pipe' approach to disposal and phase-outs, with a move to a policy of no discharges to the sea. The need for systematic, independent and ongoing monitoring of the effects of outfalls, (and other forms of emissions, such as discharges to the atmosphere along the coast) on biota were outlined.

The identification of areas of high conservation value is essential when determining the locations and types of waste discharges. It was also important that the values be made explicit to facilitate the consideration of the social and economic implications of limiting discharges to that area. Likewise it must be recognised that if an area is to be used as a wastewater outfall, then this may preclude other activities such as swimming.

The establishment of a database for monitoring change in marine systems should be given high priority and the areas in which change is most likely should be targeted. A proactive approach is required. Too much research and monitoring to date has been reactive. The monitoring system must be able to measure small but potentially important long-term changes against a suitable baseline. The question of how this baseline is set and the indicators to be used requires further consideration.

Catchment uses were commented on. These included the impact of sedimentation on fisheries, reduced water quality, and changes in the volume or timing of the water flows as a result of stream regulation. It was suggested that a change was needed in the way we look at catchments. A bottom up (from the estuary), rather than a top down (from the catchment rim), view is needed with catchment advisory committees having the expertise to consider water quality, biology and conservation needs.

Comments were made on the impact of dredging and the application of the draft dredge protocol. The draft protocol was criticised as it was not enforceable, and provided only guidance on environmental impacts. It was considered that compliance should be mandatory with input from the EPA and CNR increased, and the role of the port authorities and bodies that fund dredging such as the State Boating the Council reviewed. Monitoring should be carried out during and following dredging. The need to dredge some areas should, where relevant, be tied to problems with catchment clearing and the resultant increase in sediment loads.

8. Services and Utilities

Submissions provided several comments on services and utilities. These included their impact on scenic values, the incremental upgrading of roads, and the provision of port and boating facilities.

In several areas such as Port Phillip Bay and the Otway Coast roads have been developed along the coast. These roads can service two potentially conflicting purposes. They act as a tourism corridor where coastal scenery is important and also as direct transport corridor where distance and time between two points is important. These purposes have different adjacent land-use implications. With the passing of time, transport development, especially when driven by time and distances considerations, will require additional foreshore areas for roads and possibly road maintenance purposes. This is a concern in areas of extensive private land as this has meant that the remaining public land and the purposes it serves are further diminished, for example on the northern and eastern side of Port Phillip Bay.

Port and boating facilities

Ports are considered to be essential to the State and national economies and are an important use of the waterfront. It was considered important to provide for port expansion as trade grew

and to continue to provide access for the maintenance and installation of navigation aids along the coastline.

Perspectives varied on the environmental effects associated with shipping. Spills and dredging associated with ports were considered to be minor compared with other activities that affect water quality such as catchment use. Others, however, cited issues such as the use of antifouling agents and the introduction of exotic organisms as concerns.

The current uncertainty about the future administration and funding arrangements for associated ports generated many comments related to the potential impact of increases in berthing or mooring fees on the commercial fishing industry and the costs that may need to be met by local government.

It was considered that the most suitable boat-launching sites along the coast have been identified, through a process of self-selection. There were a number of suggestions for the upgrading of additional facilities, although some thought this may encourage less experienced recreational boaters to put to sea, thus creating a safety problem. The need for access to safe havens, especially to the east of Wilsons Promontory was highlighted.

Views on the demand for additional marinas also varied. Some thought that there was an unmet demand, others thought that this was not the case. It was also considered that there were already too many boats in some areas, such as Western Port, and actions were required to manage the existing numbers, not to cater for further expansion.

It was suggested that recreational boaters should have a licence that would ensure a minimal level of boating skills and an understanding of the environment and its sensitivity to boating, particularly the disturbance of roosting birds and running aground on mud flats at low tide.

The absence of a single peak group representing recreational boaters was also seen as an issue that made consultation with them difficult.

9. Coastal Dynamics, including Greenhouse and Other Physical Constraints

Most comments on these issues concerned the physical character of the coast, though people also commented on fluctuations in plant and animal numbers and the implications this may have for their harvesting.

The failure to understand or appreciate the movement of sand alongshore and between offshore reservoirs and those onshore such as in primary dunes, and the implications this has for the siting of boat ramps and other facilities was of particular concern.

For some, there was a sense of frustration as responsible authorities failed to recognise this lack of understanding and were either unwilling or unable to accept responsibility for the adverse impacts of previous decisions. The community collectively seemed unable to learn from past mistakes. Submissions highlighted the need for high quality technical advice to identify problems with proposals and to provide solutions to existing ones. It was suggested

that CNR provide a technical advisory service to local government and interested organisations on coastal management.

The results of flash flooding that occurs in some of the short coastal streams, for example, in the Wye River in 1985, also needed to be recognised when bridges across coastal estuaries and other facilities are constructed. The risks associated with recreational and tourist use of the top and the base of unstable cliffs was also raised. The Council's recommendations must also consider the changes in sea level forecast as a result of the greenhouse affect.

10. Scenic Values

Scenery was identified by many as important to their recreational enjoyment of the coast and that scenic values were susceptible to irreversible and adverse change, mainly as a result of developments on private land, but in some instances also on public land.

It was considered that electricity, telecommunication and road construction agencies should ensure that through good design scenic values are maintained. Too often the wrong trade-offs had been accepted when balancing scenic values against other considerations.

The development and application of a scenic assessment methodology was supported¹ and considered important in terms of assessing economic, recreation and aesthetic issues. It was suggested that the Council should consider the regionally-based landscape classifications that cover the coast developed by the National Trust.

Until these methodology issues have been resolved the Council's overlay recommendation 'Scenic Coast' should remain, with a need to ensure that scenic values, as seen from the sea, rather than just from along the coastline are included.

11. Introduced Plants and Animals

The problem of pest plant and animals in the terrestrial, intertidal and marine environments was raised in many submissions. Management to minimise the potential for introductions and deal with current introductions that threaten natural ecosystems was considered vital.

There is uncertainty as to whose responsibility it is to ensure that exotic organisms are not introduced by ballast waters transported from other countries or in waters transported between Australian States. Questions were raised as to what was being done to prevent introductions, and monitoring to record introductions.

12. Public/Private Land Interface

Private land use and its implications for planning on public land and vice versa was raised in many submissions.

1. No suggestions were provided on such a methodology or how the coast should be assessed.

The fact that privately owned land and land held by Commonwealth agencies, such as lighthouse reserves, occur at strategic locations along the coastline and in sensitive environments such as river mouths, wetlands, and dunes was highlighted.

The values of the public estate can diminish as a result of private land uses in the catchment that drain to the coast. Private land use may significantly affect the maintenance of the visual amenity as many vistas along the coast contain both private and public land.

Areas of the coast where certain forms of private land development have been considered inappropriate were identified.

It was proposed that the Council should recommend that local shires investigate the implementation of 'conservation titles' on private land around estuaries, wetlands, and in visually significant areas. The application of other planning controls could also be appropriate.

It was suggested that developers should meet the additional costs of foreshore management where they develop areas adjacent to the coast, especially when they gain direct benefits from such a location. Other options included the gradual purchase of private land when they become available, or their compulsory acquisition by Government. Others suggested that funds for acquisition programs could be derived directly from public subscription or Government sources.

Along the coast where the strip of public land is narrow, issues requiring resolution included straying stock where the boundary was unfenced, unlicensed grazing of public land, and the trade off between the need to maintain the natural values of the public land and management of pest plants and animals, which sometimes may be best achieved by the adjacent landowner.

The possible creation of 'private land' through the construction of artificial islands for resorts on what is considered as 'cheap vacant Crown land', rather than the purchase of private land, was also seen as an issue.

The issue of financial responsibility for the protection of private land where public foreshore land had been lost by erosion, or where the erosion was a direct result of the use of public land elsewhere on the coast required attention.

Appendix VI

PROCESS FOR THE IDENTIFICATION OF SITES WITH IMPORTANT BIOLOGICAL AND ECOLOGICAL VALUES

The Descriptive Report identified the paucity of marine biological data as an issue. The level of biological data for the whole Victorian marine environment allowed only a general description of eight marine habitats, primarily defined by tidal level, substrate type, exposure to wave energy, and, where applicable, dominant flora. They were: intertidal rocky shores; subtidal rocky reefs; seagrass beds; sheltered intertidal flats; mangroves; sandy beaches; subtidal soft substrates; and pelagic environments. Data that would allow distinctions to be made between areas within the same habitat, were generally not available.

Submissions suggested that there may be additional data that the Council could use that may assist with a systematic description of the biology of the marine environment. A proforma was developed to allow data to be compiled so that a consistent comparison could be made across the entire coast. To assist individuals and organisations to provide biological data a list of values, criteria and levels of significance that could be used to define biological sites was compiled. The availability of this list was indicated in the third newsletter for the investigation. The Council also commissioned a report from the Marine Research Group on the biology of the intertidal rocky shore habitat.¹ The report was based on 282 species of well known intertidal and shallow subtidal macroinvertebrates, recorded at some 215 locations along the Victorian coast. The diversity of these invertebrates varied with substrate rock type. Consequently, the coast was divided into sections on the basis of predominant substrate and each section described in terms of the number of species recorded, sampling effort, substrate type and wave energy regime. As a result, rocky shores and shallow subtidal reefs could be further characterised by substrate rock type: basalt, granite, limestone, calcarenite and sandstone.

Using all the relevant data that could be located, and the report by the Marine Research Group, a working paper *Sites with Important Biological and Ecological Values* was prepared by the Council. Five criteria were used to systematically assess and compare all data. They were:

- high diversity of habitats
- high diversity of species
- habitats for rare, endangered, uncommon, depleted species
- nursery, feeding, breeding or rest areas
- rare or unique habitats.

The paper was sent to peak groups inviting comments on the technical accuracy of the material and whether any relevant data sources had been overlooked.

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1. Handreck, C.P. and O'Hara, T.D. (1994). *Occurrence of selected species of intertidal and shallow subtidal invertebrates at Victorian locations*. An unpublished report by the Marine Research Group of Victoria Inc to the Land Conservation Council.

Of all data and studies used for identification of the sites of biological and ecological importance, the study by the Marine Research Group, although limited to one faunal group – common intertidal invertebrates – was the only high resolution, marine biological dataset which covered the entire Victorian coastline. Other studies of the Victorian coast included an inventory of estuaries and overviews of shorebirds and seabirds. Most of the other sources were studies containing detailed data on marine intertidal and subtidal flora and fauna but limited to specific areas. These areas were Port Phillip Bay, Western Port, Bunurong, Wilsons Promontory, Nooramunga/Corner Inlet, Ninety Mile Beach, East Gippsland and Portland.

Most of the studies reported varied greatly not only in the quality of the data but also in data collection methods, sampling strategies, different levels of taxonomic identification, and in ways data had been analysed.

The available data could, however, be compared cautiously, with appropriate qualifications, particularly in regard to varying quality of the information. The revised working paper identified 18 large sites, eight sites important as seabird colonies and three additional small sites with a high diversity of intertidal invertebrates.

The search for available data confirmed that the knowledge of Victoria's marine communities is poor in comparison with terrestrial vegetation communities. Detailed descriptions have only been produced for a few major habitat types and no State-wide survey has been carried out. Few quantitative data have been collected. Particular regions or specific groups of flora and fauna have received detailed attention, but many information gaps remain. Several factors, that are not restricted to Victorian or Australian circumstances for that matter, account for this poor state of knowledge: taxonomic impediments, restricted biological sampling, selective nature of available data, inaccessibility of many marine environments, and the high cost of scientific survey.

Taxonomic impediments – Of the 33 recognised animal phyla, 32 are invertebrates and 13 – for example, echinoderms, brachiopods – are exclusively marine. Many invertebrate phyla, such as sponges, bryozoans, and nematodes are poorly known world wide; they have a large percentage of undescribed species and taxonomists give them limited attention.

Richardson (1983) estimates that less than half of all the fauna species thought to live in Australia have been described so far. In 1983, information was available on almost all families of vertebrates and insects, but more than 40% of the remaining faunal groups lacked any data.

No estimate can be made of the total number of marine species in Victoria. Some of the inadequately understood groups may also be very species-diverse, increasing the task of describing them. Most sampling programs of benthic organisms in Victoria will yield undescribed species. Other groups – for example, cnidarians – although relatively well known on a world scale (with some exceptions) have not been described in Victoria because of limited local taxonomic expertise. Even when taxonomic expertise is available, many species are small and so require careful and time-consuming examination for identification.

Restricted biological sampling – Only a few regions have been examined in detail. Environmental studies of the 1970s–1980s included comprehensive studies of soft-bottom marine environments in Port Phillip Bay, Western Port, and the Gippsland Lakes, but with few exceptions nearshore marine areas of Bass Strait have never been surveyed systematically.

Selective nature of available data – The available data is fragmented not only systematically and geographically, but also by the nature of data collected. More is known about morphology and taxonomy of Victorian marine biota for example, than about functional ecology.

Inaccessibility of many marine environments – The exposure of much of the Victorian coastline to high wave action and onshore winds makes it necessary to use large and expensive vessels for safety. Divers cannot safely survey areas deeper than 30m, and diver bottom-time is severely limited at depths greater than about 15m. Remote-controlled underwater video is a potential tool for surveying otherwise inaccessible habitats, but such equipment is expensive and provides qualitative rather than quantitative information.

High cost of scientific survey – One of the greatest impediments to comprehensive surveys of Victoria's marine environment is the high cost of ship time, equipment, diving and technical assistance, and subsequent laboratory analysis. For example, to sort and identify (where possible) a 0.10sq.m sediment sample takes approximately three person-days.