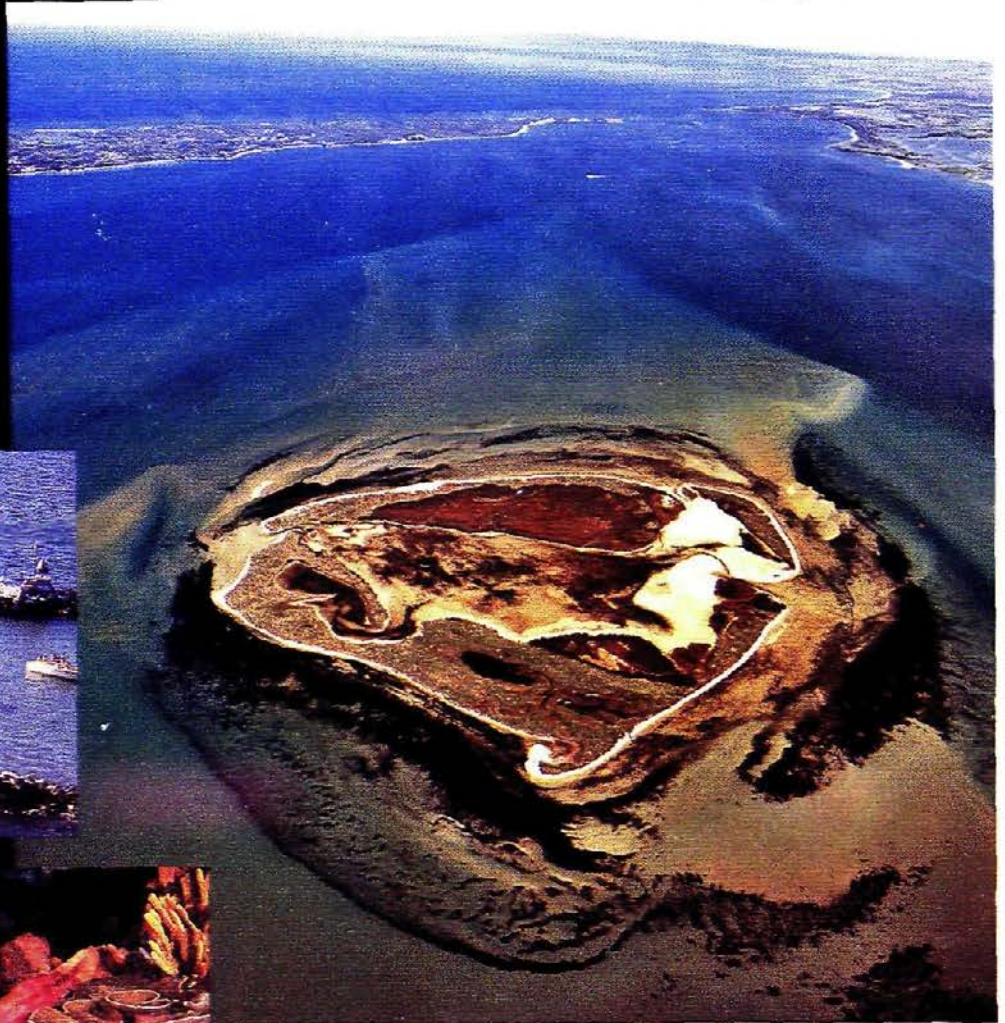


Marine, Coastal & Estuarine Investigation

Interim Report



Environment Conservation Council

Marine, Coastal and Estuarine Investigation

Interim Report

FEBRUARY 1998

ENVIRONMENT CONSERVATION COUNCIL

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THE ENVIRONMENT CONSERVATION COUNCIL

The Environment Conservation Council advises the Victorian Government, through the Minister for Conservation and Land Management, on the balanced use or development of public land. The Council is appointed under the *Environment Conservation Council Act 1997*.

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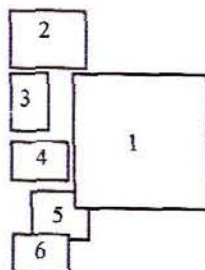
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* These are draft papers — comments are welcomed.

EXECUTIVE SUMMARY

The Environment Conservation Council is carrying out an investigation of Victoria's marine, coastal and estuarine areas. The current investigation builds on earlier work by the Land Conservation Council and also takes into account work done by the Victorian Coastal Council and the development of an Australian Oceans Policy.

For this interim report Council was required to recommend at least one marine park and one area suitable for marine aquaculture. A full report is due to be finished by 30 June 1998 and this will make recommendations for the whole of Victoria's marine, coastal and estuarine areas.

1. The Marine Park. Council recommends establishment of a major marine park of 17 453 ha at the southern end of Port Phillip Bay. The Port Phillip Heads Marine Park has outstanding natural, environmental and recreational values and has the potential to be a marine protected area of world standing. Some features of the marine park and its management are:
 - two sanctuary zones totalling 2917 ha based on Swan Bay and the Great Sands area including Mud Islands;
 - five special nature sites totaling 608 ha based on the Lonsdale area, Point Nepean, Cheviot, Portsea Hole and Popes Eye;
 - sanctuary zones and special nature sites to be 'no-take' areas; these cover 20% of the marine park;
 - the remainder of the park to be available for recreational fishing and commercial fishing except for netting, long-lining and fish trapping which are not permitted throughout the marine park.
2. Aquaculture Areas. Council supports the move for a strong and healthy aquaculture industry in Victoria and, at this stage, recommends:
 - a marine aquaculture area of two blocks totaling 1000 ha in the Pinnacle Channel area, east of the Great Sands. This area only to be used for filter-feeding shellfish at this time;
 - a land-based area of approximately 50 ha for marine aquaculture in the Avalon area north of Point Lillias.
3. General. As a basis for the protection and sustainable use of Victoria's marine, coastal and estuarine areas, Council has developed a number of background papers which are included in this report:
 - a framework for strategic planning and recommendations for management guidelines for the whole of Victoria's marine, coastal and estuarine area;
 - principles for the selection and management of marine parks;
 - principles and criteria for the selection and management of marine aquaculture areas.

Submissions

The recommendations for Port Phillip Heads Marine Park and the two aquaculture areas are final and all submissions related to these have been considered.

Council, however, welcomes submissions on other sections of this report or on matters related to marine parks or aquaculture outside those recommended in this report.

Closing date for submissions is 30 April 1998.

1. INTRODUCTION

This Interim Report on the Investigation of Victoria's Marine, Coastal and Estuarine Areas has been prepared in accordance with the Terms of Reference provided by the Minister for Conservation and Land Management, the Honourable Marie Tehan MP.

The Terms of Reference, quoted in full below, required the Environment Conservation Council to

provide an Interim Report by 30 November 1997 recommending options for the early establishment of at least one marine park and at least one area suitable for the priority development of marine aquaculture. The date for reporting was amended to 31 January 1998 under the provisions of S.24 of the *Environment Conservation Council Act 1997*.

Terms of Reference for the Environment Conservation Council's Investigation of Victoria's Marine, Coastal and Estuarine Areas

The Minister, under Section 17 of the *Environment Conservation Council Act 1997* requires the Environment Conservation Council to complete a Marine and Coastal Special Investigation by 30 June 1998.

The investigation area extends from the Victorian offshore territorial limit (5.5 km) to a distance of approximately 1 km inland from the high-water, it includes the land (terrain, and overlying water) affected by marine, coastal and estuarine processes. Islands surrounded by marine and estuarine water are included in the investigation. On French Island 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. Land within Cities and Rural Cities may be included at the discretion of the Council.

The Council is to investigate this area and make recommendations on the protection of significant environmental values and the sustainable use of these areas with priority given to:

- (a) a preferred approach and priorities for the progressive establishment of a representative system of marine parks in the State of Victoria; and
- (b) areas suitable for marine aquaculture, which can be developed on an environmentally sustainable basis.

In making these recommendations the Council is to have regard to:

- (a) the matters to be taken into account in investigations as provided in Section 20 of the *Environment Conservation Council Act 1997*;
- (b) the work undertaken by the Land Conservation Council and the Victorian Coastal Council; and
- (c) the Prime Minister's announcement on 3 March 1997 of the development of an Australian Oceans Policy.

The Council is to provide an interim report by 30 November 1997¹ recommending options for the early establishment of at least one marine park and at least one area suitable for the priority development of marine aquaculture.

¹ Extended to 31 January 1998

Section 20 of the Act directs the Council to have regard to:

- (a) the ability of any existing or proposed development or use of the land or resources to be ecologically sustainable and economically viable;
- (b) the economic and social value of any existing or proposed development or use of the land or resources;
- (c) the existence of and need to conserve and protect any areas of ecological, historical, cultural or recreational value or areas of landscape significance on the land;
- (d) the need for the creation and preservation of a comprehensive, adequate and representative system of parks and reserves within the State;
- (e) any international obligations entered into by the Commonwealth and any national agreements entered into with or obligations undertaken in conjunction with the Commonwealth and the other States and Territories which relate to the subject matter of the investigation;
- (f) the need to protect and conserve biodiversity.

LAND CONSERVATION COUNCIL

The Land Conservation Council, which was established by the *Land Conservation Act 1970*, commenced an Investigation of Victoria's Marine, Coastal and Estuarine environment under terms of reference provided by the Victorian Government in September 1991.

In June 1997 the *Land Conservation Act 1970* was repealed and replaced by the *Environment Conservation Council Act*. Under this Act the Land Conservation Council (LCC) ceased to exist and the Environment Conservation Council (ECC) was established to respond to specific references from the Minister for Conservation and Land Management.

During the investigation, which began in September 1991, the LCC produced a number of important reports; in particular:

- Marine and Coastal Special Investigation Descriptive Report, June 1993

- Marine and Coastal Special Investigation Proposed Recommendations, April 1995

- Marine and Coastal Special Investigation Draft Final Recommendations, June 1996

Each of these reports was widely distributed as a basis for public comment. The LCC also commissioned various studies and research projects which added considerably to our knowledge of the marine environment.

The Environment Conservation Council has access to all of the past work of the LCC and is making extensive use of it in the current investigation.

VICTORIAN COASTAL COUNCIL

The Victorian Coastal Council (VCC) was appointed under the *Coastal Management Act 1995*. One of the Council's major tasks was to prepare a strategic plan for the whole of the Victorian coast; that plan, the Victorian Coastal Strategy, was endorsed by the Victorian Government and released in November 1997.

When preparing the plan, the Victorian Coastal Council liaised closely with both the LCC and the ECC to ensure compatibility between the studies. Although there was some overlapping, generally the VCC placed greatest emphasis on the land, whereas the LCC/ECC investigations are more strongly related to the marine and estuarine environments. Another significant difference is that the LCC/ECC investigations are confined to public land whereas VCC planning relates to public and private land.

Much of the information and many of the recommendations contained in the Victorian Coastal Strategy are similar to earlier LCC recommendations and could have been repeated in this report. However, Council has made a deliberate decision to avoid unnecessary repetition. Therefore, for a more comprehensive picture, this report should be read in conjunction with associated sections of the Coastal Strategy. The background to development of the strategy and the overall vision statement are included in Appendix III.

The Victorian Coastal Strategy has identified two 'activity nodes' in the southern part of Port Phillip Bay, at Queenscliff and Sorrento. These could become the focus of significant development and have not been included in the marine park.

AUSTRALIA'S OCEANS POLICY

The Commonwealth Government, through Environment Australia's Portfolio Marine Group, in conjunction with the Intergovernmental Committee on Ecologically Sustainable Development (ICESD) — Oceans Policy Working Group, is currently developing the Australian Oceans Policy.

It is anticipated that a Draft Policy will be made available for public comment in June/July 1998.

Council is monitoring the progress and development of the Oceans Policy whilst providing Environment Australia and ICESD with details of the ECC's current investigation.

Council has adopted the Interim Marine and Coastal Regionalisation for Australia (IMCRA), developed under the auspices of Environment Australia, as one of the criteria for selecting marine parks; it is expected that this classification system will be part of the Oceans Policy.

The recommendations relating to Port Phillip Bay in this report are unlikely to conflict with the Oceans Policy.

CONSULTATION

This investigation was advertised in the general press and in local newspapers along the coastline. The advertisements also called for public submissions and 110 of these have been received.

Throughout the consultation process, Council has emphasised that it would be taking into consideration the written submissions which had previously been made to the LCC. These submissions, which are a vast resource of information and informed comment, were in three groups.

- Descriptive Report: 164 submissions
- Proposed Recommendations: 739 submissions
- Draft Final Recommendations: 1094 submissions

In addition, Council has invited and held discussions with peak user groups and has organised meetings with interested groups and individuals at Port Campbell, Portsea and Queenscliff as well as in Melbourne. These meetings were advertised and the public were invited to attend.

Council has also undertaken inspections of the Port Campbell coastline, southern Port Phillip Bay, Swan Bay and the Cheetham aquaculture venture at Lara.

Another important source of expertise has been the Marine, Coastal and Estuarine Advisory Group which Council established to provide comment on various papers and proposals. It is intended that the Advisory Group will continue until the final report is completed.

ECONOMIC AND SOCIAL IMPACT OF COUNCIL'S RECOMMENDATIONS

It is apparent that some individuals or groups may suffer a commercial disadvantage due to the creation of parks and/or no-take zones or aquaculture sites. Conversely, others may benefit — for example diving and charter boat operators — because of increased visitation to parks.

Any commercial impact on professional fishers arising as a result of the ECC recommendations might be dealt with under S6.3 of the Victorian *Fisheries Further Amendment Act 1997*. Other commercial issues could be handled through negotiation and/or the provisions of the *Land Acquisition and Compensation Act 1986*.

Renegotiation of license conditions, short phase in periods for any changes, or retraining of operators should also be addressed as necessary.

Council has not made a detailed costing of its recommendations. This is consistent with its role as a broad strategic planner. It has, however, sought advice

as to the socio-economic implications of its recommendations and obtained an indication from management agencies as to the costs of implementation. It considers, in the context of ensuring the balanced and sustainable use of Victoria's marine and coastal environment for the longer term, that the cost of implementation is reasonable and commensurate with the high value placed on the coast and marine environment by the public.

More details of costs and benefits are provided in Appendix II.

THE FINAL REPORT

Under the Terms of Reference, Council is required to present a final report on the Marine, Coastal and Estuarine Investigation by 30 June 1998.

Although the recommendations for a marine park and aquaculture areas in this Interim Report relate primarily to Port Phillip Bay, the principles, policies and management guidelines set out in Chapter 2 of this report, which guided Council in framing its recommendations, are intended to apply to the whole of Victoria's marine, coastal and estuarine environment. Council seeks comment on these so that they can be refined for the final report.

When investigating the most appropriate area to be recommended for a marine park in the Interim Report, Council looked closely at Port Campbell as a possible area for an example of an open-coast marine park and held discussion with locals in this region.

Council decided not to recommend any parks on the open coast in the Interim Report. The non-

inclusion of Port Campbell does not mean that it will not be considered in the Final Report.

During consultation the issue of what should be the basis for selecting representative areas for marine parks was frequently raised. In particular, it was questioned whether the rock substrate should be used as one of the main criteria. A further study on substrates has been commissioned by Council to test whether this criteria should be used.

The recommendation for the Port Phillip Heads Marine Park fulfils the requirements for the Interim Report. The entire coastline including Westernport Bay and the remainder of Port Phillip Bay will be considered for the final report.

The Port Phillip Heads Marine Park will be significantly different from any other marine park in Victoria, with its combination of a very high level of recreational use, major shipping activity and outstanding natural values. The proposed restrictions on commercial netting, long-lining and fish trapping and acceptance of dredging in shipping channels within the park, should not be taken to apply generally to marine parks across the rest of the State.

There are many policies, plans, management guidelines and agreements in place or proposed which apply to Victoria's marine, coastal and estuarine environments. These are framed at all levels: international, national, state, regional and local. They have not been documented in this Interim Report but will be covered in the final report. Meanwhile the State Coastal Strategy and the previous publications of the Land Conservation Council can be used as references to most of these documents.

2. OBJECTIVES AND MANAGEMENT GUIDELINES

— Victoria's Marine, Coastal and Estuarine Areas —

PART 1 — OBJECTIVES FOR USE AND MANAGEMENT

The following objectives are aimed at achieving the sustainable use of resources, protecting significant environmental values, and maximising social and economic benefits in marine, coastal and estuarine areas.

Objectives for use and management of Victoria's marine, coastal and estuarine public land are to:

- conserve natural ecosystems and associated biota;
- maintain the water quality characteristics of natural ecosystems and, where these are degraded, progressively improve them;
- protect significant environmental and cultural heritage features;
- provide opportunities for traditional use and cultural activity by Aboriginal communities;
- provide opportunities for open-space recreation, education, and tourism;
- provide opportunities for sustainable harvesting of fish and other biota from wild stock;
- provide opportunities for ecologically sustainable marine aquaculture;
- provide for the exploration and extraction of earth resources, including oil and gas;

- provide for the development of renewable energy resources;
- provide for shipping operations and associated port infrastructure and navigation aids;
- provide for sea-floor pipelines, and communication lines.

Council emphasises 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.

Several recent initiatives, such as the Coastal Strategy, provide the opportunity for coordinated marine and coastal management. To achieve this there will need to be close liaison between the Department of Natural Resources and Environment (the primary overall manager of marine and coastal public lands) and Parks Victoria, Victorian Coastal Council, Regional Coastal Boards, Fisheries Co-Management Council, Catchment Management Council, Catchment Management Authorities, Victorian Channels Authority, and other State Government agencies and Local Government.

Recommendations

- R2.1** Allocation of resources for sustainable use should follow an impact assessment, apply the precautionary principle, and take into account:
- inter-generational equity
 - public access and public good aspects
 - the user-pays principle
 - the degree of coastal dependence of proposed uses
 - links between terrestrial and marine systems
 - the continuous nature of the marine and estuarine environment
 - the identification of all values of resources
 - long-term and cumulative impacts on these uses
- R2.2** The public land of Victoria's marine, coastal and estuarine areas is to be managed in accordance with the management guidelines and recommendations outlined below, unless otherwise specified.

PART 2 — MANAGEMENT GUIDELINES AND RECOMMENDATIONS

The following management guidelines and recommendations for specific actions relate to public land across the whole marine, coastal and estuarine area. They are published in the Interim Report as a draft reflecting Council's current views and public comments are welcomed.

The guidelines are described under the following headings:

- Biodiversity Conservation
- Catchment Planning
- Coastal Dynamics
- Aboriginal Interests
- Community Education and Involvement
- Heritage Values
- Compliance
- Environmental Quality
- Introduced Plants and Animals
- Bays, Inlets and Estuaries
- Development and Infrastructure
- Earth Resources
- Harvesting and Production of Marine Biological Resources
- Recreation and Tourism
- Research, Inventory, Monitoring and Auditing
- Risk Assessment and Management
- Scenic Values

Most of the subject areas are interrelated and should 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 Biodiversity Conservation, Environmental Quality, Introduced Plants and Animals, Harvesting and Production of Marine Resources, and Compliance.

The Victorian Coastal Strategy (VCS) recommends many actions and directions, a considerable number of these being previously addressed in the published Proposed Recommendations and Draft Final Recommendations of the former LCC's Marine and Coastal Investigation. Guidelines which are now in the VCS

are generally not reproduced below although in some cases the ECC proposes additional points.

The VCS concentrates largely on the coastal strip, and catchments draining to it, whereas the following guidelines have an emphasis on marine and estuarine areas.

Biodiversity Conservation

As defined in *Victoria's Biodiversity Strategy*, biodiversity means the natural diversity of all life: the sum of all our native species of flora and fauna, the genetic variation within them, their habitats, and the ecosystems of which they are an integral part.

Animals and plants are closely associated with their habitat; survival of individual species and communities depends directly on habitat protection. Biodiversity conservation therefore is best achieved in situ (i.e. in the natural environment rather than in a zoo or aquarium) and effected by maintaining viable ecosystems.

As the Strategy states, a comprehensive, adequate and representative reserve system in the marine environment 'still needs to be addressed'. That is part of the role of this investigation. One important strategy for the protection of habitats and species is the establishment of conservation reserves, such as marine parks. Different strategies will be required to ensure the conservation of wide-ranging pelagic (i.e. open water) species.

Several marine habitats, mainly in the bays and estuaries (e.g. seagrass meadows), are under threat and the losses to date have had economic, social and conservation implications. Marine and coastal habitats can be affected by reduced water quality, burial under sediments, disturbance to the seabed, and the introduction of pest plants and animals.

Seagrass beds, giant kelp (*Macrocystis*) forests, sea-dragons and certain species of sharks and marine mammals are examples of communities and species that could benefit from targeted protection. Temporary restriction of access may be required to protect

significant species; in some areas, such as denuded seagrass beds, eroded mangrove forests or stripped shallow reef areas, replanting and restocking may be required.

The removal of biomass from the ecosystem by harvesting can affect the functioning of the ecosystem by changing predator-prey relationships, and other ecological associations. When fish (including non-target species) are caught, it is important that the remaining population is self-sustaining and that it is sufficient to maintain the integrity of the ecosystem. The creation of marine parks offers the opportunity to study the impact of harvesting on target and associated

species and to compare the community structure and ecological relationships in adjoining protected areas.

The *National Strategy for the Conservation of Australia's Biological Diversity* has the goal of ensuring biological diversity survives and flourishes. This includes adequate genetic variability, without which a species is less able to evolve or adapt to changing environments or new diseases.

Australia also has obligations to provide for the conservation of bird species listed under international agreements, and for the conservation and wise use of wetlands.

Recommendations

- R2.3 Managers aim at conserving biodiversity in situ, based around the establishment of a comprehensive, representative and adequate system of protected areas.
- R2.4 Managers ensure that uses have minimal adverse impacts on regional biological diversity and processes, sites of significance, and areas subject to international agreements.
- R2.5 Where biomass is to be harvested, sufficient stocks of target species, and those that may be harvested as by-catch or affected incidentally, be retained in the environment to maintain the integrity of the ecosystem.
- R2.6 Further research be undertaken to identify the effects of harvesting of abalone, rock lobster and other species on community structure and biodiversity in marine parks.
- R2.7 Regulatory mechanisms be sufficient to control access and activities that may adversely affect species and habitats vulnerable to disturbance.
- R2.8 New information on species and habitats, especially those that are threatened, be assessed and incorporated into decision-making.
- R2.9 The *Flora and Fauna Guarantee Act 1988* should be used much more actively to protect threatened marine, coastal and estuarine flora, fauna, communities and habitat.

Catchment Planning

Although Council's recommendations relate only to public land, many issues require an integrated approach based on sound land-use planning and management, irrespective of tenure. Vegetation clearance, run-off, polluted groundwater, or changes to the visual landscape on private land can affect adjoining public land and water. Activities on public lands and water, such

as traffic generation and noise, can affect private land.

Five Catchment Management Authorities are responsible for regions draining to the Victorian coastline. The needs of the marine and coastal area should be addressed in catchment management planning, with participation of the Regional Coastal Boards.

Recommendation

- R2.10 Catchment management authorities ensure that their regional catchment strategies address the impacts of land management and use on the marine and estuarine environment, particularly where important physical, biological or habitat features may be affected.

Coastal Dynamics

The coast is an ever-changing environment shaped by wind, rain, waves, ocean swells, tidal currents and river flows. Storms and floods can cause particularly rapid changes. Natural sand movement constantly reshapes beaches, dunes and offshore sandbars. Some sections of Victoria's coast have a limited sand supply, so they experience net erosion and landward retreat of the shoreline.

Management decisions must take natural processes into account. Interference with coastal processes often exacerbates the extent of natural change, sometimes resulting in the loss of private and public facilities.

The 'greenhouse effect' may induce variations in extremes of storm and flood events and, in particular, a rise in sea level.

Impacts of dredging and spoil disposal have in general been poorly monitored, but where large volumes are involved the impact is likely to be significant. Adoption and application of a code of practice for dredging works is vital. In the interim, the Environment Protection Authority (EPA) has developed a Trial Dredge Protocol as a first step to this end. See recommendation 2.40 for further details.

Recommendations

R2.11 Planning and management must ensure that:

- natural physical processes are safeguarded;
- the dynamics of the land-sea interface are taken into account;
- dredging and dredge-spoil disposal proposals including beach renourishment are subject to specific consideration of their effects on coastal and marine processes;
- modification of beach systems and dune environments, and use of structures as erosion control devices, are avoided wherever possible;
- maintenance programs are in place for all protection works and structures.

R2.12 Information on sea-level and coastline changes be reviewed by the Department of Natural Resources and Environment (NRE) on an ongoing basis, to provide a basis for assessing the adequacy of development controls and management strategies.

Aboriginal Interests

Council supports the VCS proposal that protocols be established for consultation with and involvement of Aboriginal people along the coast, and that a communications strategy be prepared to coordinate and promote coastal Aboriginal community activities and as an aid

to improved coordination.

Decisions regarding the allocation of marine resources are to be made through the management planning processes, which should address traditional uses where relevant.

Recommendations

R2.13 Planning and management decisions relating to traditional use of coastal and marine areas be based on the following principles:

- the interests of indigenous users of marine and coastal resources should be recognised;
- resource conservation and sustainability, together with public safety, should be the overriding planning and management considerations in coastal areas, and may require some restriction on traditional uses;
- Aboriginal communities should be consulted and involved in marine, coastal and estuarine resource management;
- marine and coastal resources should generally be managed for multiple uses and to minimise conflicts between users.

R2.14 NRE, in collaboration with Aboriginal communities and Aboriginal Affairs Victoria, undertake a study into the nature of traditional uses in Victorian coastal and marine areas.

(continued)

Aboriginal interests — Recommendations (continued)

R2.15 NRE, in conjunction with Aboriginal Affairs Victoria, the Fisheries Co-Management Council and the Victorian Coastal Council, review laws and policies restricting or inhibiting traditional cultural use of public land in coastal and marine areas with a view to removing unnecessary restrictions.

Community Education and Involvement

Community education and involvement are vital for the sustainable management of the marine and coastal areas.

An informed community that appreciates and understands the values, diversity and sensitivity of these environments and the impacts of uses will enjoy these areas more, and facilitate management goals. Active participation in planning and implementation enhances a sense of community responsibility and stewardship, to the benefit of all concerned.

Community, recreational club and school education programs play an important part in increasing community awareness. Other programs, notably Landcare and the Coast Action program, enable people to be directly involved in local planning and management. The Fish for the Future and Fishcare programs aim at sustainable fish populations. The national Coastcare program builds on existing community activities and management arrangements. Council considers it important that such community programs are supported.

Recommendation

R2.16 Planning and management should ensure:

- a communication strategy is developed and implemented;
- local communities are encouraged to participate in the planning and management of marine, coastal and estuarine areas;
- community education, awareness and involvement programs form an integral part of management plans;
- marine education organisations are consulted in the early phases of these plans;
- provision is made for the evaluation of education and awareness programs.

Heritage Values

The cultural resources of Victoria's marine and coastal area reflect human occupation and association spanning many thousands of years. Evidence of this human association is very diverse, ranging from shell middens to shipwrecks and historic lighthouses. Many resources are sensitive to disturbance and can be inadvertently damaged if their locations are not known by managers. Ongoing surveys, and the continued allocation of resources to identify significant places of particular vulnerability, are essential.

Natural heritage sites include biological, geological and geomorphological features. Many sites such as the volcanic features at Cape Bridgewater are large and robust, and would be affected only by major earthworks. Some such as Fossil Beach and Dinosaur Cove are more localised and sensitive to disturbance.

A register of Aboriginal places and sites is maintained by the Heritage Services Branch of

Aboriginal Affairs Victoria. The Victorian Heritage Register comprises historic buildings, shipwrecks, and some non-Aboriginal archaeological sites. The register of the National Estate maintained by the Australian Heritage Commission aims at including all aspects of Australia's natural and cultural heritage.

Many shipwrecks are of special historic and heritage value. At present, 414 Victorian shipwrecks in open waters fall under the protection of the Commonwealth *Historic Shipwrecks Act 1976*, and 259 more lie in Port Phillip Bay, Western Port, Corner Inlet or estuarine and inland waters protected by provisions of the *Victorian Heritage Act 1995*.

Some fishery techniques, such as scallop dredging, have damaged shipwreck sites. Irresponsible divers can also cause damage or remove artifacts. Under the Heritage Act, a protected zone of up to 100 ha can be declared to protect a historic shipwreck site.

Recommendations

R2.17 Planning and management ensure that:

- places, sites and objects on Government heritage registers are protected and conserved;
- other places, sites and objects with heritage value or potential heritage value are taken into account and considered for protection;
- relevant community interest groups are encouraged to participate in the identification of cultural values and heritage sites;
- relevant community interest groups are consulted, particularly in regard to the interpretation of heritage sites and public access to them.

R2.18 Relevant Government agencies continue to identify, document and assess heritage places in coastal areas.

R2.19 Government heritage agencies periodically review their registered places to establish a priority list of significant places to guide the allocation of resources.

Note: The LCC's Historic Places South-western Victoria Special Investigation has documented and assessed many places of historical significance in coastal areas of South-western Victoria and, where appropriate, made recommendations for their management and protection.

R2.20 NRE, Coastal Boards, 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 areas of cultural significance to Aboriginal communities on public land.

Compliance

A high level of compliance with laws and regulations is essential to ensure sustainable use of fish stocks, protection of habitats, maintenance of environmental quality and protection of cultural resources. As understanding increases, it is anticipated that respect for local areas will also increase, leading to higher compliance.

Marine parks involve the exclusion of some uses and activities from particular areas. Illegal marine resource harvesting is a significant problem. If the envisaged benefits of these recommendations are to be realised, pursuit of sound, implementable and adequately funded compliance programs is essential.

Enforcement is difficult in isolated or remote areas. It is hard to identify and retrieve evidence at sea, or detect offences underwater. People who use marine and coastal areas can assist official surveillance and enforcement. A variety of education and enforcement approaches tailored to particular situations are needed.

Having marine parks adjoining terrestrial parks is of major benefit in assisting with compliance work.

The success of any compliance strategy will at least partly depend on whether affected users have a clear understanding of the areas to which regulations apply, with boundaries clearly identifiable. Approaches currently used include use of markers on the land, buoys and markers in the sea, and the distribution of maps and charts. Strong visual landscape features, north-south boundaries, depths, longitude and latitude references and distances from shore all assist users. Electronic navigation aids — particularly Geographical Positioning Systems (GPS) — are now relatively inexpensive and enable boat-based commercial and recreational fishers to accurately determine their position. Boundaries of all reserves have been chosen, as far as practicable, to be readily identifiable from the land and sea. Ignorance of one's location when harvesting sea produce should not be a legitimate legal defence.

Recommendations

R2.21 Clear objectives and responsibilities for compliance be established and compliance strategies, including enforcement and effectiveness measures, be developed by NRE to meet those objectives.

(continued)

Compliance — Recommendations (continued)

- R2.22 Managing agencies continue to recognise the importance of enforcement, education and extension as integral components of a compliance strategy.
- R2.23 Priorities for compliance and enforcement be in accordance with the risk that offences pose to the values and sustainable use of the marine, estuarine and coastal area.
- R2.24 Compliance strategies contain provisions to actively encourage community involvement and self-regulation.
- R2.25 When changes to management regimes and regulations are made (such as those arising from Council's recommendations for marine parks and sanctuary zones), the changes be well publicised, apply to clearly defined areas and be accompanied by an appropriate level of enforcement.
- R2.26 The general compliance framework, including the legislation for enforcement, be periodically reviewed to ensure that the objectives are being achieved in an efficient manner and in accordance with established priorities.

Environmental Quality

Many activities have the potential to degrade the quality of the marine environment, particularly its water quality. A high standard of water quality is essential for recreation, fish harvesting and nature conservation. In the past the sea has been seen by many as a convenient and free dumping ground for a wide variety of wastes. It is now recognised that there is only a limited capacity to absorb most forms of waste, particularly in estuaries.

Water authorities, the main dischargers to the marine environment, are expected to ensure that discharges from sewage treatment works do not create adverse impacts on the environment or endanger public health. In recent years the quality of discharged waters has been progressively improved. Victorian Government policy is that all coastal sewage discharges receive secondary treatment. With work currently underway all domestic outfalls will be treated by the end of 1998. By the end of 2001, with treatment of a milk-waste outfall to Venus Bay, all outfalls will comply with the policy. State Environment Protection Policies (SEPPs) outline principles and goals for waste minimisation and one of the aims stated in the *Waters of Victoria SEPP* is to reduce nitrogen inputs to Port Phillip Bay by 1000 tonnes per year by 2006. EPA licence conditions now require the discharger under certain circumstances to monitor not only the quality of wastes but also the condition of the receiving environment.

There are major economic and planning benefits to be gained from waste management strategies that involve re-use and reduction at the source. The ultimate goals are zero point source waste discharge to the marine environment and all stormwater discharges to be non-polluting.

The VCS proposes progressive upgrading and continuous improvement of discharge points. Decisions on new proposals to discharge effluent to marine waters would be fully assessed, involve community input, and only proceed where there is no reasonable alternative.

Diffuse sources of sediments, nutrients and toxicants from catchments draining to the coast pose significant risk to the environmental quality of estuaries in particular. Catchment management techniques such as those outlined in regional catchment strategies should address these.

The condition of Port Phillip Bay has recently been assessed by the CSIRO, but there is generally no measurement of the success of catchment techniques in terms of the condition of inlets, estuaries and bays.

Turbidity and resettlement of sediment arising from dredging operations may also affect environmental quality. Dredging operations require approval under the *Planning and Environment Act 1985*, with the EPA as a referral authority.

Recommendations

- R2.27 The principles of waste minimisation expressed in the State's Industrial Waste Minimisation Policy continue to be implemented.
- R2.28 Waste minimisation priorities be adopted in the following order: waste avoidance, waste reduction, waste re-use and recycling, waste treatment, and waste disposal by improved methods (including land disposal).
- R2.29 A strategy be developed by the EPA and relevant local authorities to phase out the disposal of waste to estuarine waters.
- R2.30 State Environment Protection Policies address underwater noise pollution.
- R2.31 Environmental monitoring and auditing of shipping operations and associated facilities be established.
- R2.32 All coastal sewage discharges receive at least secondary treatment, in accordance with Government policy.
- R2.33 Proposals for new waste discharges to the marine environment be subject to licence conditions which take into account available data and ensure that the licensed discharge has only a low probability of causing detrimental environmental effects.
- R2.34 Recommended marine parks be added to Schedule A1 of the State Environment Protection Policy – Waters of Victoria to provide the highest level of water quality protection.
- R2.35 Work continue to develop contingency plans for oil spills for each port and for the whole Victorian coastline.
- R2.36 Oil spill response planning continue to be the prime responsibility of the Marine Board of Victoria.
- Note: Several organisations are involved with management of environmental issues related to oil spills – the Victorian (National Plan) Marine Pollution Committee oversees response planning and includes members from the Marine Board of Victoria, port authorities (Port of Portland, Victorian Channels Authority, Toll Westernport, Gippsland Ports Incorporated), EPA, Australian Marine Safety Authority, NRE and oil companies.*
- R2.37 Oil spill response plans be reviewed at 5-year intervals, and contact and equipment lists be updated annually.
- R2.38 Oil spill response planning continue to include an assessment of the biological sensitivity of marine and coastal habitats to the effects of a spill and clean-up operations.
- Note: The Australian Marine Oil Spills Response Centre, the National Plan to Combat Pollution of the Sea by Oil, and State and regional environmental management plans and oil-spill contingency plans have been developed for companies and individuals operating in State and Commonwealth waters along the Victorian coast.*
- R2.39 A digital atlas identifying areas sensitive to spills be completed and maintained by NRE and be made generally available.
- R2.40 That all dredging proposals, including dredging for beach renourishment, be consistent with any adopted code of practice
- Note: Following a recommendation of the independent review of the Trial Dredge Protocol for the preparation of a code of practice, the EPA is developing 'Best Practice Environmental Management Guidelines'; this will be completed in mid-1998 after public review. Beneficial uses are those declared under the relevant State Environment Protection Policy. Under the Waters of Victoria SEPP, schedule 6 Port Phillip Bay, dredging in the bay is subject to an attainment program to achieve water quality objectives and protect beneficial uses.*
- R2.41 The EPA, together with NRE and other relevant organisations, ensure that the results of water quality monitoring, as well as the audits of licensed point source discharges, are regularly reported and readily available to the public.

Introduced Plants and Animals

Introduced plants and animals can become pests and greatly alter marine, coastal and estuarine environments, affecting habitats, displacing indigenous species and disrupting ecosystems. Substantial and irreversible economic and social impacts may result if, for example, fisheries are affected and species become less abundant or unsafe to eat.

Ship ballast water and hull fouling are major sources of introduced organisms in the marine environment, but reform is complicated by the number of organisations with an interest in the issue. For example, stakeholders in Victoria alone include the EPA, NRE, the Victorian Channels Authority, port authorities, industry groups, and ship owners and operators.

The Victorian Parliamentary Environment and Natural Resources Committee report on ballast water and hull fouling — released in October 1997 — makes

15 recommendations, including implementation of a ballast water management system in Victoria in cooperation with the Australian Quarantine and Inspection Service, and managed by the EPA.

Effective management of ballast water and hull fouling requires a coordinated response involving agencies beyond Victorian waters.

Even with good management of ballast water and hull fouling, the control of existing and future pest plants and animals will continue to be a major issue. The 1997 Environment and Natural Resources Committee report recommends the development and implementation of an incursions management plan, and the VCS recommends the preparation and implementation of response plans, contingency plans and monitoring programs for targeted pests. Both nominate NRE as the lead agency.

Recommendations

- R2.42** Enforceable and consistent Commonwealth and State standards and codes of conduct to control the risk of introducing marine organisms from ballast water and ship fouling be developed and implemented, and their effectiveness monitored.
- R2.43** NRE, in consultation with the EPA, Victorian Channels Authority, and port authorities:
- review the ecological, social, and economic implications of introduced plants and animals and their management;
 - investigate new introductions and how they became established;
 - identify and implement methods to measure the success of control programs; and
 - develop measures for the treatment of seawater associated with the live fish trade between Tasmania and Victoria, to minimise the risk of the Northern Pacific sea star and other pest species entering Victoria's marine environment.

Bays, Inlets and Estuaries

Bays, inlets, and estuaries differ from other marine and coastal areas in a number of key respects — biophysically, as foci for locations of cities, towns, and major ports, and for recreational users. In addition to the general recommendations provided above, the following recommendations have been developed to

address the particular management requirements of bays, inlets, and estuaries.

The current policy of non-transferability of commercial fishing licences for most inlets and estuaries is supported.

Recommendations

- R2.44** Development proposals that may adversely affect water quality take into account the restricted water circulation and exchange of most bays, inlets and estuaries.
- R2.45** 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 these when planning the use of water resources, including the allocation of bulk water entitlements.

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Bays, Inlets and Estuaries — Recommendations (continued)

R2.46 The artificial opening of river and estuary mouths that become closed periodically, continue to be subject to a permit issued by NRE, and this only occurs when in accordance with a defined strategy for each estuary that has been adopted following consideration of environmental and other relevant factors and public comment.

Development and Infrastructure

The coastline is a naturally attractive place for recreation, and is the essential location for a number of maritime industries and transport systems. Development and infrastructure may be for use by an individual (e.g. a mooring) or an organisation (e.g. a boat clubhouse), and may be generally available for a fee (a marina berth) or free to all (a beach path). There can be conflicts between desired uses and support facilities for other uses — a balance is required.

Public land includes 96 per cent of all coastal land and the entire marine area. This offers significant opportunities to ensure use and development are sound and appropriate, and result in a high level of public benefit. The VCS and Coastal Action Plans provide mechanisms for establishing directions and priorities for recreational and tourism use and development and allocation of resources.

Public land along Victoria's coastline is generally narrow, and natural processes and human activities are causing beach erosion and coastal retreat in many areas. Demands for foreshore use and further development are increasing. Poor planning of some developments and infrastructure has led to irreversible changes in coastal environments. Decisions about future foreshore and nearshore use and development must consider the natural dynamics of the land-sea interface, and take into account both natural and human-induced changes in the coastline. Provisions for a structure which will affect sediment transport along the coast, for example, might include a budget allocation to enable the ongoing transfer of sediment past the site.

The following recommendations build on the integrated planning and approval process for proposed development outlined in the VCS, and the siting and design guidelines developed by the VCC.

Recommendations

R2.47 Priority be given to uses and development:

- with the greatest community benefit for present and future generations;
- that are particularly dependent on coastal locations or coastal resources;
- that provide for the greatest range of appropriate beneficial uses, including protection of environmental values, and which minimise conflict between uses;
- that are in accordance with pre-determined strategic plans; and
- that take into account the possible impacts of the development on adjoining land.

R2.48 When development proposals that may have an impact on marine and coastal habitats are considered, the following be applied to either mitigate the impact or to ensure that there is 'no net loss' in habitat quality:

- (a) initially, aim at maintaining the environmental quality of the habitat without disruption, by:
 - encouraging the proponent to redesign the project;
 - selecting an alternative site;
 - mitigating potential damage using proved techniques, such as installation of adequate pollution minimisation and control techniques;
 - not proceeding with the proposal;
- (b) if it proves impossible or impractical to maintain the level of environmental quality of the habitat, and the significance of the development is higher than that of other values, pursue the following alternatives:
 - restoration of degraded natural habitat at or near the site; or if not feasible
 - restoration of habitat in a different locality.

R2.49 To ensure that the management options above operate in an effective manner, the proponent meet the associated costs, and a financial surety be required against failure to complete or attain satisfactory development standards.

Earth Resources

The orderly identification and utilisation of earth resources provides significant benefits to the Victorian community. The potential for finding new economic mineral resources along the coast or in marine areas is currently considered low; other earth resources such as dimension stone, limestone and sand for construction and glass-making have more potential. Although sand and gravel resources suitable for general construction occur offshore, there are extensive terrestrial resources comparatively close to the major urban areas.

Oil and gas are currently considered to be the most prospective marine earth resources. In the light of recent discoveries, much of the area within the 5.5 km State limit is now considered highly prospective and there are parties with interest in having such areas made available for exploration.

Production of oil and gas involves large platforms or submerged seabed facilities which remain in place for the life of the well (10 to 30 years). Sea-floor pipelines

from the drill site to onshore treatment facilities are also required.

The disposal of drilling muds and cuttings, and the prevention and control of oil spills are important issues. However, oil spills arising from oil and gas exploration and production, other than very minor spillage, have been very rare in Australia.

The proponents of works capable of having a significant effect on the environment should be required to prepare an Environment Effects Statement (EES). A Works Approval under the *Environment Protection Act 1970* may also be required.

There are three main categories of Crown land under the *Mineral Resources Development Act 1990*: exempted (exploration and mining not permitted); restricted (consent required from the Minister responsible for the land); and unrestricted (referral required to the Minister responsible for the land).

Recommendations

- R2.50** Exploration and extraction of earth resources be subject to meeting the detailed requirements outlined below, and the following areas be considered exempted Crown land:
- marine parks (however, specified oil and gas exploration may be permitted under certain conditions in marine parks, outside sanctuary zones and special nature sites – see details in marine park recommendations);
 - sanctuary zones;
 - special nature sites.
- R2.51** NRE, EPA and other relevant planners and managers ensure that all operators have an approved environmental management plan in place to cover waste management, monitor discharges and key environmental indicators, assess and minimise environmental impacts and risks (taking into account the area affected, decommissioning and rehabilitation), and provide response mechanisms.
- R2.52** Exploration and extraction be carried out using the best available technology, and in a manner which reduces or avoids adverse impacts on marine biota sensitive to high frequency or high volume sounds.
- R2.53** Drilling undertaken as part of exploration or extraction activities be conducted so that there is minimal discharge of only non-hazardous, non-toxic drilling cuttings and muds to the marine environment and no discharge in marine parks and special nature sites.
- R2.54** Installations be removed when they cease to be operational or when an oil or gas field is abandoned, unless the manager seeks the retention of structures for the creation or maintenance of habitat and the structures are unlikely to be a hazard to shipping or to restrict current fishery techniques. Any retention of structures should require approval of the managers of the area.
- Note: International Maritime Organisation (1988) guidelines, and the APEA Code of Environmental Practice – Onshore and Offshore (1991) provide for the removal of infrastructure to a depth of 55 metres.*
- R2.55** Appropriate guidelines be established by NRE before a marine area is released for exploration, consistent with the objectives of the respective park or zones, aiming at minimising environmental risks, disturbance to natural systems and impacts on other users.

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Development and infrastructure — Recommendations (continued)

- R2.56 Any proposal for extraction of earth resources be subject to an Environment Effects Statement (EES) or, if an EES is not required by the Minister for Planning and Local Government, an appropriate environmental study, which is to be made available for public comment.
- R2.57 The Government seek industry contribution to the compilation of a publicly accessible biological inventory and monitoring database, and a program to fill data gaps to enable the assessment of the environmental consequences of offshore extraction of earth resources; this program be conducted as a tripartite arrangement between industry, government and research agencies.

Harvesting and Production of Marine Biological Resources

A wide range of resources is harvested along the Victorian coast, including many types of fish and some seaweed and seagrass. In these recommendations 'fish' includes scale and cartilaginous fish, aquatic molluscs, crustaceans and echinoderms.

Recreational fishing, mostly in the major bays, is a widespread leisure activity of considerable social and economic importance. It forms a significant part of the pressure on the total fishery resources. The activity is subject to regulation, by way of controls on gear, size limits, bag limits and length of season.

Commercial fishing is an important part of Victoria's food industry and supplies both domestic and export markets. The commercial sector is dynamic; changes to practices include the introduction of total allowable catch or quotas for some sectors, closure of some fisheries, and the modification of gear to reduce by-catch or to reduce pressure on juvenile fish.

Fish harvesting has implications for ecosystem, habitat and species conservation, and some fishing techniques and current catches may be unsustainable. It is essential that these implications are addressed in management. See recommendation 2.5 above.

The *Fisheries Act 1995* facilitates the sustainable use of fish resources. Under the Act the Fisheries Co-Management Council (FCC) oversees the preparation of fisheries management plans; four peak bodies represent commercial and recreational fishing, aquaculture and conservation interests; fisheries reserves may be established to protect critical fisheries habitats such as spawning and nursery habitats; and commercial, recreational, conservation and other users

have greater involvement in fisheries management. The development of fisheries management plans includes community consultation and consideration of biological and ecological aspects.

Some Victorian fish resources are part of wide-ranging fisheries mainly in Commonwealth waters, notably the South East Trawl Fishery. Others are mainly in Victorian waters but extend into Commonwealth waters or the waters of other States. The *Offshore Constitutional Settlement* provides for these fisheries to be managed by the most appropriate body. This allows the opportunity to rationalise fisheries management and facilitate ecologically sustainable resource use.

Catch and effort data are vital for fisheries management but, although commercial catch data are systematically collected, the data are not always reliable and they are not systematically validated. Unknown but sometimes large illegal catches and the largely unknown recreational catch together mean it is difficult to estimate total catch. It is also difficult to obtain area-specific figures for smaller areas.

The level of recreational catch can be assessed by creel surveys, and aided by aerial and household census. These surveys indicate that recreational fishing is a notable part of the total fishing pressure: in some areas recreational catch can equal half or more of the total (commercial plus recreational) catch, for species harvested by both groups. Few surveys show the level and nature of the catch by recreational spearfishers.

Commercial fishing techniques have different seabed and by-catch impacts. Four main fishing techniques affect the seabed: otter-board trawling,

Danish seining, haul seining (if nets are dragged across the sea-floor), and scallop or other dredging. In most cases, these techniques also have potentially significant by-catches.

Bait collection (including species other than 'fish', such as worms and sea squirts (ascidians)) can have

localised but lasting impacts on benthic communities where collection pressure is high.

The VCS proposes an integrated program to improve conservation and management of intertidal flora and fauna, including shellfish. Council strongly supports this proposal.

Recommendations

- R2.58** Fishery planning ensure that the allocation of fish resources recognises all user groups, including recreational and commercial fishers, traditional users, and no-take users.
- R2.59** Fish stocks, including target and non-target species, be managed to be sustainable in the long term, with sustainability demonstrated at the ecosystem, habitat, and species levels.
- R2.60** Fisheries management planning provide opportunities for community input and be consistent with the objectives outlined in Part 1 of this chapter.
- R2.61** Fisheries management plans for all major fisheries be in place within five years.
- Note: The fisheries management plan being prepared for Port Phillip Bay has been on hold pending acceptance by Government of the recently completed Fisheries Co-Management Council Review of Bay and Inlet Fisheries.*
- R2.62** Where fishing involves towing a dredge or similar implement along the sea-floor, such as scallop dredging, otter-board trawling, Danish seining, and haul seining (if nets are dragged across the sea-floor), the development of fisheries management plans include:
- an assessment of the impact of these techniques on the seabed;
 - consideration of introducing technology that reduces impacts on the sea-bed; and
 - the establishment of control sites.
- R2.63** Fish catch and effort data, including information on retained and discarded by-catch, be collected and analysed in a manner that provides a reliable basis for sustainable resource use by both the commercial and recreational sectors as appropriate.
- R2.64** A quality assurance program be introduced by NRE to improve the accuracy of the commercial and recreational catch and effort data and to progressively improve their resolution in location and time.
- R2.65** Fisheries Victoria publish a triennial report on the state of fish stocks and an assessment of the existing state of knowledge of the extent to which they are being managed sustainably, and how factors other than fishing are affecting sustainability.
- R2.66** Commercial harvesting proposals for any new or developing fishery (including live reef fish and bait species) or for non-fish resources such as seaweed and seagrass harvesting be subject to an environmental assessment by NRE that takes account of physical, environmental and ecological processes and involves community consultation.
- R2.67** The regulations affecting spearfishing be amended to prohibit the use of air-assisted devices (such as scuba) for spearfishing.

Recreation and Tourism

Victoria's coastal waters offer outstanding opportunities for an extensive range of recreational and tourist activities, and are of particular importance to many pursuits such as surfing, swimming, boating, recreational fishing, scenery and wildlife viewing and scuba diving and snorkelling. In some areas, particular high-profile attractions make a very significant contribution to the tourism industry at the local, State and

national levels — for example the spectacular scenery along the Great Ocean Road, the exceptional whale watching opportunities at Warrnambool, the dolphins in Port Phillip Bay, and fascinating historic features, such as lighthouses and historic towns.

For both local communities and Victoria as a whole, the economic benefits of existing recreation and

tourism industries are substantial, and there is considerable potential for further benefits from future development.

The major planning vehicles for development and promotion of coastal tourism have been Tourism Victoria (through its Tourism Development Plans) and the VCS. NRE and Parks Victoria continue to play an important role in providing tourism opportunities and delivering services. The VCS provides a framework for the coordinated long-term development and promotion of tourism and recreational events, facilities and access along the coast, focusing on 'Activity Nodes'. It has identified strategic priorities for the development of recreation and tourism facilities, in particular,

the 'Plan for the Bay', with the Regional Coastal Boards as the main lead agencies for implementation.

The provision of tourist and recreational opportunities and the interaction between different activities and other users require ongoing planning and management to maximise long term social and economic benefits while protecting environmental values. Examples of integrated development include proposals for a Victorian Scenic Coastal Drive, and a Great Victorian Coastal Walk, and general recommendations for improved signage and access. Council strongly supports strategic integrated planning of recreation and tourism in marine, coastal and estuarine areas.

Recommendations

- R2.68 Public land continue to be available for a wide range of tourism and recreational uses, and development not preclude public access to foreshore or offshore areas, other than to meet safety and security requirements that cannot be achieved in other ways.
- R2.69 The Recreational Opportunity Settings (ROS) approach be formally applied so that development provides for a range of experiences and levels of use, reflecting the variety of Victoria's natural features and their sensitivity to change.
- R2.70 The compatibility of various tourist and recreational activities be considered, and provision made for all appropriate activities.
- R2.71 Public land recreation, tourism and associated infrastructure complement, rather than duplicate, opportunities on private land.
- R2.72 Special attention be given to the cumulative impact of small changes that may adversely affect tourism and recreational settings and environmental values.
- R2.73 Demand, especially peak demand, be managed so that the tourism, recreational and other values of the resource are maintained.
- R2.74 User groups be involved in the planning and management process.
- R2.75 Codes of practice be developed with relevant tourism and recreation bodies to encourage responsible use of marine and coastal areas.
- R2.76 Appropriate community uses of tourist and recreational resources be encouraged through the preparation and publication of information about these resources.
- R2.77 Recreation and tourism infrastructure be sited at strategic points of robust physical capability and not be located within, or detract from, areas of high landscape quality.
- R2.78 Where relevant, mandatory or voluntary codes of practice be established, and their implementation monitored, by NRE in association with other relevant organisations to ensure that wildlife watching activities are sustainable, that individual animals or populations are not unduly affected and that economic and social benefits are maintained.
- R2.79 Close liaison be maintained with ecotourism operators and any permit granted require that ecotourism activities be carried out in a manner that protects the natural and cultural values of the areas accessed.
- R2.80 Activities that disturb the amenity value of particular areas, where appropriate, be discouraged through management plans.

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Recreation and tourism — Recommendations (continued)

- R2.81** Where tourism activity occurs on public land a contribution be made where practicable, by the tourist operator or individual tourist, through appropriate fees or licences, which can be applied to the maintenance and protection of the area or relevant values.
- R2.82** Information, interpretation, and training be provided by NRE and Tourism Victoria to tourist operators to raise awareness of coastal environmental values, and provide guidance on the protection and care of areas used for tourism.

Research, Inventory, Monitoring and Auditing

The responsible use and management of marine resources depends upon the collection of reliable and relevant data, and its prompt and effective assimilation into the decision-making process.

At present, there is a shortage of environmental data, particularly biological data, on southern Australian marine waters, and the collection of data to overcome these deficiencies is a high priority. However, it is also critical that both new and current data collections are carefully targeted, and

integrated into a broader research and monitoring program to maximise its utility.

Council supports the VCS proposals for regular forums, including a regular Coastal and Marine Conference, and, subject to a feasibility study, establishment of a Southern Australian Marine Research and Education Centre as an appropriate means of achieving more coordinated data collection, research and monitoring.

Recommendations

- R2.83** The Government, in consultation with industry, research and community organisations, establish a framework for the acquisition, quality control, analysis and retrieval of environmental data relating to Victoria's marine, coastal and estuarine resources, and coordinate a program of integrated data collection.
- R2.84** NRE commence implementation of the framework within one year subject to agreement by Government.
- R2.85** NRE, in conjunction with the EPA and other relevant organisations:
- review the existing network of monitoring sites and indicators (physical, chemical and biological) in order to ensure the systematic monitoring of the state of the marine and coastal environment, the sustainable use of Victoria's marine and coastal resources, and the achievement of relevant State Environment Protection Policies; and
 - develop protocols to achieve consistency of approach to site selection and reporting by monitoring agencies.
- R2.86** Priority be given to establishing and maintaining monitoring programs:
- for marine parks and sanctuary zones to determine the extent to which these reserves are meeting their objectives; and
 - for areas of resource use to help assess whether sustainability is being achieved and initial impact assessments are accurate.
- R2.87** Responsible agencies ensure that:
- data collection by both Government agencies and volunteers as part of the overall Government data collection and monitoring program conform to standards and priorities agreed by the custodian of the data;
 - whenever public resources and funds are involved in acquisition of information, the information be made available in the public domain unless there are valid and documented reasons for withholding information, such as the location of threatened species that may be subject to collection;

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Research, inventory, monitoring and auditing — Recommendations (continued)

- the data collection program include the distribution and biological character of marine habitats within the context of the biophysical regions, and the influence of the subtidal rocky reef geology and particle size of sandy beaches and soft substrates on marine life; and
- the results of monitoring and auditing be used to progressively refine management activities and, where necessary, revise the use of resources.

R2.88 Where data collection, research and monitoring is associated with resource use, the user-pays principle be applied as appropriate.

Risk Assessment and Management

Council supports the Victorian Coastal Strategy proposal for a vulnerability and risk assessment program to identify coastal buffer zone widths required to maintain biological and physical processes, and to accommodate public infrastructure, access } and use. Priority is to be given to key activity nodes, development areas or access points.

NRE is identified as the lead agency for this program.

NRE is also the best-placed agency to assess and coordinate management of specific risks to major ecosystems, where actions additional to the establishment of buffer zones are required, as recommended below.

Recommendations

R2.89 NRE, in conjunction with other relevant bodies such as the EPA and CSIRO, develop methods to assess and report each year on risks to the conservation and sustainable use of marine and coastal resources within Victoria's marine, estuarine and coastal area.

R2.90 NRE develop action plans to address identified risks, including an assessment to ensure that priority is given to those risks that will result in the greatest potentially irreversible damage and ensuring that the assessment of risk be an integral part of management planning and decision making processes.

R2.91 The priorities for examination should be:

- nutrient and other inputs to waters, particularly semi-enclosed waters such as Port Phillip Bay and Western Port;
- the introduction and spread of non-indigenous marine species, including algae (especially dinoflagellates and *Undaria* (seaweed)), sea-stars (especially the Northern Pacific sea-star, *Asterias amurensis*), molluscs, polychaetes (especially the sabella worm, *Sabella spallanzanii*), fishes and *Spartina* (cord or rice grass);
- past and present changes in catchment uses and the loss of indigenous riparian vegetation which affect run-off patterns and may result in erosion, sediment deposition and the degradation or loss of marine habitats;
- dredging and spoil disposal in semi-enclosed waters;
- excessive fishing effort and techniques that significantly affect habitat, non-target species or size ranges;
- potential hazards associated with the transportation and handling of petroleum and other products; and
- changes in coastal populations, visitor use and demand for coastal resources.

Note: Risk assessment and management is a component of a number of planning instruments, such as performance standards, Flora and Fauna Guarantee Action Statements, State Environment Protection Policies, and best practice protocols.

Scenic Values

Significant and sensitive visual resources should be protected. A systematic survey is an essential prerequisite for this approach. In addition, it is

important that scenic values are adequately protected in the interim.

Recommendations

R2.92 The Victorian Coastal Council undertake a comprehensive and comparative assessment of scenic values along the Victorian coast to identify areas where these resources are sensitive to change, and to identify those that are significant and require protection.

R2.93 Planning and management approval processes ensure:

- visual values of the marine and coastal environment, including the underwater environment, are recognised and protected;
- scenic values as seen from offshore and onshore, and from private land as well as public land, are taken into consideration; and
- special emphasis is given to the protection of the outstanding natural landscape qualities of coastlines previously identified by the LCC as 'scenic coasts' (see Note) until the results of the assessment recommended above are known.

Note: Sections of the coast previously recommended by the LCC as 'scenic coast' include Warrnambool to Lorne (167 km); Lorne to Point Roadknicht (24 km); Point Nepean to West Head, Flinders (46 km); Griffith Point, San Remo, to Black Head, Kilcunda (10 km); Cape Paterson to Entrance Point including Wilsons Promontory (180 km); Lake Corringale to Pearl Point (45 km); Tamboon Inlet to Mallacoota Inlet (78 km); and Lake Barracoota to Cape Howe (12 km).

3. MARINE PARKS

PART 1 — PRINCIPLES FOR THE SELECTION AND MANAGEMENT OF MARINE PARKS

OBJECTIVE

To create a system of marine parks which will contribute to the protection and conservation of biodiversity and ecological processes and to the wise use, understanding and enjoyment of the marine environment in perpetuity.

Marine parks are designated primarily to provide protection for the habitats and associated biota represented in the parks. Activities which disturb the habitat are generally prohibited.

Biota and pollutants move freely in the marine environment and this mobility makes it desirable to use ecological, rather than artificial administrative boundaries for management wherever practicable.

The following principles for the selection of sites for marine parks and their management have been adopted by Council following extensive consultation.

There will be a system of protected areas within the marine, coastal and estuarine areas of Victoria which will be representative, comprehensive and adequate.

Marine parks will be located to achieve the following representation:

1. The five biophysical regions which have been identified in the Interim Marine and Coastal Regionalisation for Australia (IMCRA):
 - Western — SA border to Cape Otway
 - Central — Cape Otway to Cape Liptrap
 - Wilsons Promontory — Cape Liptrap to the Ninety Mile Beach
 - Eastern — Ninety Mile Beach to NSW border
 - Bays, inlets and estuaries.

2. Seven main habitat types as they occur in a region:

- Intertidal rocky shores and subtidal rocky reefs with different substrates
 - basalt
 - granite
 - limestone
 - calcareenite
 - sandstone.
- Seagrass beds
- Mangroves
- Intertidal sandy beaches
- Sheltered intertidal flats
- Subtidal soft substrate
- Pelagic (open waters).

Note: Not all of these habitat types occur in each biophysical region. The type of rock substrate, both subtidal and intertidal, is probably an important ecological determinant; however, Council is currently undertaking further research on this issue.

3. Breeding grounds for fish, birds and marine mammals.
4. Heritage sites representing indigenous and other cultures.

Zones with sanctuary status will be identified within parks.

The zones with sanctuary status are established to provide the highest level of protection for biodiversity and to maintain representative examples of natural ecosystems as benchmarks for scientific reference.

1. All biophysical regions and habitat types should be represented in sanctuaries.
2. Human interference should be minimised in these areas:
 - Boating and other forms of low impact recreation will generally be allowed.

- Anchoring will be restricted in some areas.
 - Fishing and other harvesting activities will not be permitted.
3. Monitoring of sanctuary zones should be carried out through data collection and ongoing research.

Special nature sites may be identified inside or outside marine parks.

Special nature sites are areas with high natural values which require careful management to protect those values.

They may be extensive areas such as Ramsar sites or may be quite small; they could be completely natural areas or be based on artificial structures. The special values to be protected may include:

- areas with good representation of particular ecosystems (e.g. sponge and kelp beds);
- areas that provide particular attractions for scuba diving or snorkelling. These attractions may include very rich or diverse marine life or spectacular underwater scenery;
- nursery or haul out areas for marine mammals;
- areas of special value for recreational or commercial fisheries, such as spawning, hatchery or nursery areas;
- areas of special value for education;
- roosting or feeding localities for wading birds.

Management of Special Nature Sites may vary, depending on the values to be protected.

Marine parks must be sufficiently large to achieve the desired objectives.

1. Parks must be of sufficient area to ensure:
- ecological, physical and biological processes are maintained in a natural state;
 - activities adjacent to the park do not have appreciable impact;
 - there is sufficient area within the park for buffer zones to surround the sanctuaries;
 - Sanctuary zones are of sufficient size to protect the ecological processes in a natural state; and

- buffer areas should not be required outside the park.

2. Marine parks should extend 200 metres below the sea floor.

3. Boundaries should be as clearly defined and identifiable as practicable.

Parks should provide for a range of uses which are compatible with the primary objective of conserving biodiversity and ecological processes.

1. Activities that are not compatible with the objectives of Parks will not be permitted, including:
- dredging and mineral extraction;
 - marine aquaculture.

The only exception to this principle is where an existing activity, which would be otherwise considered incompatible, must continue within an area and that area is important for the integrity and management of the Park, e.g. the shipping zone in Port Phillip Heads Marine Park (see Section 4 of this chapter).

2. Exploitative uses such as some commercial and recreational activities will be allowed only where these are compatible with the objectives for a particular park. Consistent with the *Environment Conservation Council Act 1997*, current uses and the economic effects of curtailment will be considered.

3. Consultation will be undertaken with Aboriginal communities in regard to traditional uses.

Parks should generally be located to minimise threats.

1. Locate parks in areas where ecosystems are relatively undisturbed. Where possible, locate parks to reduce the potential for theft of fish stocks.
2. Take advantage of existing land infrastructure by locating parks adjacent to terrestrial parks, thereby facilitating:
- access;

- management;
 - interpretation; and
 - compliance.
3. This principle notwithstanding, there will be some parks in high use or threatened areas where education may be a primary focus for the park

A system of parks should include some spectacular areas and provide opportunities for recreation, tourism, education and enjoyment of the natural environment.

1. Recreational uses will vary depending on the accessibility and particular values of the park.
2. Activities which do not impact adversely on the park's objectives will continue, including:
 - recreational fishing, including breath-hold spearfishing (except in sanctuary zones and special nature zones);
 - diving;
 - sailing and boating.
3. Activities which disturb the amenity of the area will be discouraged, including:
 - personal water craft (jet-skis);
 - high-speed boating.

Planning for Victoria's marine parks will take a long-term view and will provide protection of the resource and certainty and security for users.

1. Protected areas will be permanently reserved under appropriate legislation.
2. The management of parks will be underpinned by strategic long-term plans for each area and the identification of permitted and non-permitted uses.
3. Local, regional, State and Commonwealth resources will be coordinated towards priorities as determined by management planning.

4. Priorities for resourcing will be established in consultation with stakeholders on a basis of analysis of environmental, economic and social costs and benefits.

Community education and involvement are vital factors in successful management of marine parks.

1. Aim to achieve cooperation and self regulation rather than enforced compliance:
 - develop education programs which are entertaining and informative;
 - facilitate local involvement in decision making and implementation.
2. Good communication between users and managers is a high priority:
 - management plans should include a communications strategy;
 - community assistance will be sought in developing management plans and achieving compliance.

Management of parks must be effective, efficient and accountable.

1. The management authority will be clearly identified.
2. Management plans will be developed for each park.
3. Managers will recognise linkages between land and water and the potential for management of one aspect of the environment to impact on another:
 - mechanisms for cooperative arrangements of all agencies and private managers whose responsibilities impact on the park will be established;
 - the nature and extent of land access to parks (e.g. car parks, boat ramps, walking paths, lookouts) will be determined in cooperation with relevant land managers (e.g. councils, NRE, Parks Victoria).

4. Management will give high priority to maintaining water quality through:
 - monitoring water quality and working with Catchment Management Authorities to improve catchment run-off;
 - working with appropriate authorities to address issues related to sewerage and stormwater outlets, dredging and spoil grounds;
 - implementing compliance arrangements in regard to shipping effluent.
5. A strategy will be developed to manage increasing visitor numbers.

PART 2 — PORT PHILLIP HEADS MARINE PARK

1. THE PARK

1.1 Accessibility and Popularity

Port Phillip Heads Marine Park (Map 2) was considered a priority choice for marine parks for Victoria because of the wide range of natural and recreational values it offers and its accessibility to a large number of people.

The proposed park is readily accessible to millions of people from both sides of the bay, from Geelong and the Bellarine Peninsula to Melbourne and the Mornington Peninsula. Port Phillip Bay is Melbourne's most important recreational area with more than 30 million visits recorded each year.

With time, due to its value and popularity, it is envisaged that the park will attract greater numbers of people from further afield, including interstate and international visitors. Creating an internationally renowned park would facilitate its management and strong community support would make one of the most serious management challenges — ensuring compliance with regulations — a lesser problem.

Significant biological resources are contained within the proposed park. It is one of the State's most important marine nature conservation areas and is recognised internationally for its diverse and abundant marine life. The temperate marine environments of Victoria are special, containing a rich flora and fauna with a high level of endemism (meaning they are restricted to this region and found nowhere else). The creation of the park will encourage public awareness about these precious resources and provide an excellent opportunity to learn about and enjoy the marine environment.

A growing number of snorkellers and scuba divers are discovering the beauty, colour and diversity in the Heads area of Port Phillip Bay and 80 per cent of Victorian charter boat diving takes place here. The estimated value of the dive industry in southern Port Phillip Bay, including recreational and commercial dive operations, is \$46 million per annum and this is expected to increase.

The findings of the 1996 CSIRO Port Phillip Bay Environmental Study are encouraging: the health of the Bay is generally good. The future of the Bay is dependent on maintaining and protecting the Bay's ecosystems and biodiversity along its shores and in its waters, including the benthic (bottom dwelling) organisms which play a vital role in regulating nitrogen levels in the Bay.

In addition to conserving native flora and fauna and natural features for their own sake, there are numerous benefits in reserving examples of natural, unspoiled environments: for the public's enjoyment and understanding of marine and coastal ecosystems, now and in the future; as a reference for scientific research; and as a safeguard to ensure that the health of the Bay is maintained and natural ecological processes can continue.

1.2 Habitats and Biological Values

The proposed park includes examples of two biophysical regions. These are the Bays, Inlets and Estuaries region and a small section of the Central Biophysical region on the open coast. Habitat types found within the park include seagrass beds, sheltered intertidal mudflats, intertidal sandy beaches and rocky

shores, subtidal soft substrata and rocky reefs, and the pelagic (open water) environment. The diversity and abundance of marine flora and fauna in this region are greater than many comparable habitats elsewhere in the world. The park includes a number of interesting and biologically significant sites and offers excellent opportunities to study these aquatic communities. The park is located in an area renowned for its diversity of migratory waders and includes a number of sites listed under the International Convention on Wetlands of International Importance (the Ramsar Convention).

Areas within the park are subject to varying physical conditions such as exposure to ocean swell, current strength and water depth. The Heads region north of Nepean Bar, for example, is flushed at each tide while Swan Bay has a much slower tidal exchange.

Intertidal rocky reefs occur in various locations within the proposed park, most notably the Cheviot area and Point Lonsdale. Many sections of these reefs have a dense covering of algae such as Neptune's necklace (*Hormosira banksii*) in addition to numerous species of snails, limpets, tube worms, mussels and seasquirts.

Sheltered shallow reefs can be found at Queenscliff and Point Nepean, while moderately deep reefs include areas in Lonsdale Bight, the Lonsdale and Nepean 'walls', Portsea Hole, and Popes Eye. Shallow reefs in this region are dominated by several species of large kelp, which form extensive beds, often with a rich understorey of brown, green and red algae and associated fauna. The southern giant kelp (*Macrocystis angustifolia*) grows on the Point Lonsdale side of the Rip, its fronds forming a dense upper canopy which provides habitat for a range of fish and invertebrate species. Deeper reefs are usually covered by sedentary animals such as sponges, lace corals (bryozoans), sea squirts (ascidians), sea urchins and anemones.

Subtidal reefs occur extensively in the Heads sector of the proposed park, from the intertidal zone to a depth of 70–80 metres. The reefs range from horizontal expanses to sheer faces and ledges and are an important habitat for a wide range of fish including blue-throated wrasse, blue devils, old wives, leather-jackets and scalyfin. Other inhabitants include mobile animals such as marine snails, crabs, colourful nudibranchs, abalone, octopuses and the southern rock

lobster. A high proportion of Victorian species of marine flora and fauna are represented in the Port Phillip Heads region, including about 10 per cent of all known Australian hydroids.

Seagrass beds are important breeding, foraging and nursery areas for many fish and other species and occur throughout the park with the greatest densities prevalent in Swan Bay and near Mud Islands. Other areas of seagrass (*Amphibolis antarctica*) are on Victory Shoal in the north of Lonsdale Bight and on the eastern side of the Heads near the entrance. Seagrass also plays an important role in stabilising sediments, thus preventing erosion and controlling excessive turbidity of water within the Bay.

Towards the centre of the Bay, the predominantly soft sediment habitats are punctuated by a number of artificial bluestone structures and historic shipwrecks. Many animals live on and in these soft sediments and this infauna of Port Phillip Bay is among the richest in species known in the world. These artificial 'reefs' support highly diverse marine life consisting of animals and algae which colonise hard surfaces and provide shelter for many species of reef fish.

Patches of significant remnant vegetation are scattered along the coastal strip surrounding the park including the Mornington Peninsula National Park and Point Lonsdale. A number of sites of geological and geomorphological significance fall within the park boundaries. These include the incised entrance to the Bay and the Point Nepean rock platform, which are both of State significance.

Bottlenose dolphins are often seen in the southern Port Phillip Bay region, and there is some evidence that the stretch of water close to the shore, between Point Nepean and Police Point, is an important nursery area for the dolphins. At this stage the evidence for this is based on observational information and requires further investigation. The rapidly expanding dolphin-based tourism industry, combined with private boating activity, is thought to exert significant pressure on dolphin populations in the area.

1.3 Recreation, Education and Tourism

The waters around Port Phillip Heads are popular with scuba divers, snorkellers, marine photographers

and naturalists because of the extraordinarily high diversity of habitats and marine life. The area is also used for educational and scientific purposes by a number of Government and private organisations and the potential value of the park for marine and fisheries research is high.

Charter boats undertake 'seal tours' to 'Chinaman's Hat' and South Channel Fort and 'swim with the dolphins' and dolphin observation tours, which are becoming increasingly popular activities.

Diving

A significant dive charter industry operates from Portsea, Sorrento and Queenscliff, with more than 20 boats working the dive sites in summer. The majority of popular dive sites in Port Phillip Bay are within the park. This activity has seen rapid growth in recent years with an estimated increase of 25 per cent per annum. A number of sites are favoured by divers. These include natural features such as Lonsdale Wall and Portsea Hole, in addition to artificial structures such as Popes Eye, South Channel Fort and the wrecks of numerous ships and a submarine. Many of these shipwrecks are of historical interest in addition to being popular dive sites. They include the *William Salthouse*, *Mountain Maid* and *Empress of the Seas*. Underwater reef features such as bommies (rock outcrops), ledges, caves and overhangs, as well as kelp forests, sponge gardens and an array of reef fish all contribute to the attraction of the area, as do the intertidal rock pools.

Beaches and intertidal areas

There are a number of beaches along the coast that are easily accessed and shore-based recreation is very popular. Sandy beaches along the Mornington Peninsula and around Point Lonsdale provide for swimming while many people enjoy exploring rock pools on intertidal platforms in the Heads sector. These rock platforms provide excellent study sites of intertidal marine communities for scientists, educational groups and naturalists.

Recreational fishing

Recreational fishing from boats and the shore occurs throughout the park. Anglers commonly target sand flathead, King George whiting, garfish

and snapper. Recreational taking of abalone and rock lobster is also popular, however there is a major problem with theft of abalone. Boats can be launched from a large facility at Queenscliff and from smaller local launching sites at Swan Bay, Sorrento and other sites on the Mornington and Bellarine Peninsulas.

Council recognises that recreational fishing is a popular activity in the proposed marine park and has recommended that recreational line-fishing and the taking of abalone, rock lobster and crabs be permitted in the park in areas outside the sanctuary zones and special nature sites. To increase protection levels in the Park the daily bag limit for abalone should be reduced to five of which one can be greenlip (limits in other waters are respectively ten and one). The limit for rock lobster should be reduced to one, which is consistent with South Gippsland Marine Reserves and Parks (limit in other waters is four). The limit for crabs should be fifteen (currently there is no limit/in other waters although this is under review).

High-speed boating

Personal water craft, commonly called jet-skis or power skis, are a popular form of craft used mainly, but not exclusively, for recreation.

These craft have a shallow draught, form little wake and, when well maintained, operate at a similar noise level to many outboard and inboard motor craft. When used for recreation, however, they are commonly operated at comparatively high speeds and close to the shore, and their use conflicts with those seeking to enjoy the natural values of the coastal environment. They can reach areas that are inaccessible to other motor craft and adversely affect fauna sensitive to disturbance, such as wader birds.

Their use is not appropriate and is not supported in areas such as intertidal mudflats, sheltered inlets and other inshore areas, in sectors popular for passive recreation, near fish nursery areas, wader bird feeding grounds and roost sites, or in other areas of special sensitivity. Council however acknowledges that they are commonly used for cross-bay trips and does not believe that it is appropriate to ban their use within the Park.

Similar restrictions should apply to other forms of high-speed boating such as water skiing. Areas where high-speed boating may be appropriate should be identified in management plans.

Artificial structures

Some of the artificial structures in the proposed park are used by seals as haul-out sites, for example a structure known as a 'Chinaman's Hat' and old navigation structures adjacent to South Channel. These structures are popular tourist attractions allowing people to observe the seals and snorkel or dive with them. The 'Chinaman's Hat' in particular is deteriorating and will soon be unable to support seals. There is a proposal to establish new platforms for seals within the Marine Park. Council has concerns about encouraging more seals into the Bay without having more knowledge of the impact of such action and, for that reason, recommends that a new structure for seals could be provided to replace the 'Chinaman's Hat' structure, but there should be no expansion of structures for seals beyond that. Any replacement structure should be approved by the Park Manager (NRE/Parks Victoria) after approval by the Victorian Channels Authority regarding navigation issues.

The lighthouses at the Heads are also important historical and cultural features.

1.4 Commercial Fishing

Abalone and rock lobster are harvested commercially from submerged reefs. These fishing activities are important economically and will continue within the park other than in the sanctuary zones and special nature sites.

Trolling occurs in the Heads region for pelagic (open water) species such as pike and barracouta. Occasional long lining is undertaken west of Mud Islands along with some squid jigging. Limited beach seining takes place near Swan Bay and Mud Islands, and some beaches off Mornington Peninsula, and haul-seining has also been used.

Recent findings of the Bays and Inlets Scalefish Review, prepared by the Fisheries Co-Management Council (October 1997), indicate that over recent years there have been significant decreases in catches of most commercially fished species, and that fish populations

within the Bay have altered significantly since the late 1970s. Likely causes include increasing fishing pressure, habitat changes and long term natural fluctuations. The southern end of Port Phillip Bay is also extremely popular with recreational fishers who probably catch as much as, or more than, commercial fishers.

Given the proposed no-take areas in the marine park, and the desirability of reducing the overall fishing pressure on the Park, Council is recommending that commercial harvesting of scalefish by netting, long lining and trapping not be permitted in the Park. The value of these fisheries in the Park, while significant (refer to Appendix II), is relatively low compared with the remainder of the Bay. Obviously many commercially targeted fish species will move in and out of the park and it is acknowledged that there may be an increased commercial fishing effort in other parts of the Bay. Other types of commercial fishing techniques such as line fishing (other than long lining), squid jigging, potting for crabs and crays and abalone diving will continue in the park outside the no-take zones.

Scallop-dredging, which can disturb the sea-bed, has previously been undertaken in the area, but ceased in the whole of the Bay on 1 April 1997 as a result of a decision made by the State Government in March 1996.

1.5 Oil and Gas Exploration

Oil and gas are currently considered to be the most prospective of the potential earth resources in Victoria's marine, estuarine and coastal areas. Until recently, production has been carried out almost exclusively in Commonwealth waters, beyond the 5.5 km State limit. Much of the inshore area, however, is now considered highly prospective in light of recent discoveries. Exploration by drilling is a transient and localised activity while production involves larger and more permanent platforms and submerged seabed facilities, producing large volumes of drilling muds and cuttings.

Oil and gas production and exploratory drilling within the proposed park that cause disturbance to the sea floor and biota are considered incompatible with the park objectives. Where exploratory drilling within a marine park is unavoidable in the assessment of a

prospect, Council recommends that such drilling should be subject to Government approval under strict conditions which are to be made available for public comment. The transient nature of exploration and the localised area of direct impact, will ensure that impacts on park values are minimised and therefore Council does not consider that EES procedures are essential in this instance. Most exploration of oil and gas prospects under marine parks should be possible using non-disturbing techniques or exploratory drilling from adjoining areas.

Production drilling is possible below the 200 metres seafloor marine park boundary by diagonal drilling from outside a park. Any proposal for the extraction of oil or gas from beneath a park should be subject to an appropriate environmental study which should be made available for public comment.

Park managers should ensure that all operators have an approved environmental management plan in place to cover waste management, to monitor discharges and key environmental indicators, to assess and minimise environmental impacts and risks, and to provide response mechanisms. Exploratory and production drilling should be conducted in such a manner as to ensure minimal discharge of only non-hazardous, non-toxic drilling cuttings and muds to the marine environment and no discharge in marine parks.

1.6 Port Phillip Heads Marine Park — General Recommendations

Each park in the marine reserve system will have its individual characteristics, and should be managed accordingly. All parks will provide for a range of uses as long as they are compatible with the primary objective of conserving biodiversity and ecological processes. These uses will vary from park to park depending on the park's characteristics and current uses. The recommendations below are therefore specific to the proposed Port Phillip Heads Marine Park.

Council has made recommendations about a number of key uses that it believes should and should not be permitted. However, it has not attempted to make recommendations for all possible activities:

this detail is the responsibility of the park manager. The manager should ensure that the activities taking place in the park contribute to the achievement of the park objectives and principles. The locations and levels of use for the various activities must be addressed and determined in the management plan for the park. It is also important to recognise that the Port Phillip Heads Marine Park will be significantly different from any other marine park in Victoria, with its combination of a very high level of recreational use, major shipping activity and outstanding natural values. The proposed restrictions on commercial netting and long lining, and acceptance of dredging in shipping channels within the park should not apply generally to marine parks across the rest of the state. In this instance, shipping channels have been included in the park to avoid potential enforcement problems due to the complexity and difficulty of identifying park boundaries, particularly for recreational fishers. This has been done in the knowledge that parts of the channels must be routinely modified in order to maintain safe navigable water.

1.7 Legislation

The creation of marine parks would be assisted by a new Act. This Act would facilitate the creation of future marine parks, and provide a more effective legislative framework for those already existing. Currently marine parks can be established under the *National Parks Act 1975*. The *Fisheries Act 1995* has as its primary objective the sustainable management of fish resources but does have provision for the creation of Fisheries Reserves. It has few provisions regarding conservation of the marine environment for its own sake, as opposed to its role in supporting fish stocks. The *National Parks Act 1975* is primarily concerned with the conservation of terrestrial ecosystems. The creation of marine reserves falls somewhat uneasily under either piece of legislation. The creation of a new Act would bring an increased focus to marine parks and provide for their special characteristics compared to terrestrial systems; for example the mobility of many marine flora and fauna, the generally poorer level of knowledge of marine ecosystems, the different uses of the marine environment (e.g. shipping, fishing, oil exploration), and different ownership patterns.

Table 3.1: Summary of Recommendations for the Uses Within Port Phillip Heads Marine Park

This table is a summary only — see the recommendations for details

Use or activity	Outside specific zones & sites	Within shipping zone	Within sanctuary zones	Within special nature sites
Nature observation	✓	✓	✓	✓
Snorkelling, scuba diving	✓	✓	✓	✓
Swimming, surfing	✓	✓	✓	✓
Wind surfing, sailing or other non-motorised boating	✓	✓	✓	✓
Boating using motorised craft	✓	✓	✓	✓
Use of personal water craft (PWC) (e.g. jet-skis)	✓	✓	✗ R3.3	✗ R3.6
High-speed boating	✓	✓	✗	✗
Recreational shore-based and boat-based line-fishing	✓	✓	✗	✗
Recreational and commercial abalone rock lobster and crab fishing	✓ R3.1(i)(d)	✓ R3.1(i)(d)	✗	✗
Spearfishing by breath-hold	✓	✓	✗	✗
Squid jigging	✓	✓	✗	✗
Haul-seining, purse-seining mesh-netting and long lining	✗	✗	✗	✗
Fish trapping	✗	✗	✗	✗
Recreational bait gathering by hand or pump	✓	✓	✗	✗
Defined types of bait gathering by commercial fishers	✗	✗	✗	✗
Seaweed harvesting	✗	✗	✗	✗
Marine aquaculture	✗	✗	✗	✗
Use of biota for restocking	✓	✓	✗	✗
Traditional fishing, hunting and gathering	✓	✓	✗	✗
Manipulative research	✓	✓	✗	✗
Non-manipulative research	✓	✓	✓	✓
Oil and gas exploration that does not cause disturbance to the sea floor or biota	✓ R3.1(viii)	✓ R3.1(viii)	✗	✗
Exploratory drilling for oil and gas	✓ R3.1(ix)	✓ R3.1(ix)	✗	✗
Oil and gas extraction	✗	✗	✗	✗
Exploration and extraction of minerals and stone	✗	✗	✗	✗
Dredging, spoil disposal and blasting	✗	✓	✗	✗
New sea-floor cables and pipelines	✓ R3.1(xiii)	✓ R3.1(xiii)	✗	✗
New point source waste discharges	✗	✗	✗	✗
Other uses that cause disturbance to the sea-floor	✗ R3.1(xiii)	✗ R3.1(xiii)	✗	✗ R3.6(v)

Notes:

1. All uses to be at sustainable levels and carried out in accordance with the Principles for the selection and management of marine parks.
2. For those uses and activities not specified in the recommendations, managers and users should be guided by Council's objectives for marine parks, sanctuary zones and special nature sites.
3. Some of the permitted uses and activities are subject to conditions — see corresponding recommendations for details.
4. Additional restrictions may be required in shipping channels and this matter should be addressed by the Victorian Channels Authority (VCA) and incorporated in the park management plan.

PORT PHILLIP HEADS MARINE PARK

Recommendations

R3.1 The area shown on Map 2 (detailed in Appendix IV) to a depth of 200 metres below the seabed, be used primarily to provide protection for the habitats and associated biota represented in the park, and in accordance with the principles for the protection and management of marine parks outlined in Chapter 3, including the following uses:

Recommendations (i) to (xv) apply to the park as a whole but outside sanctuary zones and special nature sites.

- (i) the following forms of recreational and commercial fishing be the only forms permitted:
 - (a) shore-based line-fishing;
 - (b) boat-based line-fishing;
 - (c) spearfishing by breath-hold techniques in areas defined by the manager; spearfishing competitions not permitted;
 - (d) abalone, rock lobster and crab fishing: daily recreational bag limits for these species to be
 - abalone — five including maximum one green lip
 - rock lobster — one
 - crabs — fifteen
 - (e) squid jigging: amateurs allowed 2 jigs or hooks, commercial fishers no more than 6 lines with 3 jigs per line, in accordance with restrictions on long lining in the park.

and (a) to (e) be permitted subject to other conditions (such as the length of the season, size and bag limits, and closure restrictions on particular species such as sedentary reef fish species) to be determined for the park by the manager (the Department of Natural Resources and Environment);

- (ii) bait harvesting not be permitted other than recreational bait gathering by hand or pump in areas designated by the manager;
- (iii) the area be available, if necessary and where approved by the manager, as a source of biota for restocking depleted areas;
- (iv) manipulative and non-manipulative research be permitted subject to approval by the park manager;
- (v) the park manager consider appropriate restrictions on boating in the area or part of the area between Point Nepean and Police Point subject to additional documentation of the importance of this area to Port Phillip Bay's population of bottlenose dolphins;
- (vi) a new structure for seals be provided to replace the 'Chinaman's Hat' structure, but there should be no expansion of structures for seals beyond that;
- (vii) high speed boating including personal water craft (e.g. jet-skis) not be permitted within 200 metres of the shore or any of the islands or artificial structures other than for transit purposes. Appropriate speed limits within the park and zones to be determined by the park manager;
- (viii) oil and gas exploration (including hydrophone surveys) that does not cause disturbance to the sea floor or biota and is essential for the completion of wider exploration programs be permitted;
- (ix) exploratory drilling for oil and gas be permitted subject to strict conditions which are to be made available for public comment and subsequent Government approval;
- (x) oil and gas extraction not be permitted from within the park; oil and gas greater than 200 metres below the sea floor (i.e. outside the park) may be extracted by angle drilling from outside the park;
- (xi) exploration and extraction of minerals and stone not be permitted;
- (xii) other uses that cause disturbance to the sea-floor or biota such as dredging and spoil disposal (other than in shipping zones), seaweed harvesting, marine aquaculture and new point source waste discharges, not be permitted;
- (xiii) prior to any approval, proposed works such as: beach nourishment, new sea-floor cables and pipelines, significant new or replacement structures and significant improvements to any existing installations should be subject to:

(continued)

Port Phillip Heads Marine Park — Recommendation R3.1 (continued)

- (a) an appropriate environmental study involving public input;
 - (b) the consent of the Minister responsible for the management of the park, and only after alternatives outside the park have been considered and the Minister is satisfied that no reasonable alternative is available;
 - (xiv) minor new works (e.g. additional mooring), minor improvements to, or replacement of an existing structure with a similar structure should be subject to approval of the park manager;
- Note: (xiii) and (xiv) above should not constrain normal maintenance of existing structures.*
- (xv) a management plan be prepared for the Park by the manager, after public consultation, outlining the strategies to be taken to achieve the objectives of the park, and be in place within two years of the Government's acceptance of these recommendations;
 - (xvi) the levels of use for the various activities appropriate to the park are to be determined through a management planning process, and kept under regular review, in consultation with user groups and other interested parties and, in particular, address activities which potentially conflict with the protection of the park ecosystems, the enjoyment of the park and the appreciation of the natural environment;

Note:

1 Where a marine park adjoins an existing terrestrial national park (including islands) which extends offshore to the mean low-water mark, the terrestrial park boundary will be the boundary of the marine park. However, the descriptions of the marine park refer to the intertidal area as if it were part of the marine park. Generally the uses which are shown for the marine park should also apply to the intertidal area within the National Park.

2 The reservation of an area as a marine park does not affect the powers of the Victorian Channels Authority with respect to navigational matters, particularly those associated with the provision and maintenance of navigational aids, in accordance with its responsibilities under the provisions of the Marine Act 1958.

- (xvii) the ban on fishing from the east and west sides of the Portsea Pier (but not the end section) should remain and the management plan for the marine park should ensure that the area between the Pier and Police Point is managed to protect its natural values and its important use for diving and diver training.

R3.2 The Marine Park be permanently reserved under new legislation. This legislation could be an amendment to the National Parks Act or be new stand-alone legislation which provides for the management of the whole of the State's marine environment, including marine parks.

2. SANCTUARY ZONES

Sanctuary Zones are areas within the Marine Park that are afforded the highest level of protection as part of the conservation of biodiversity. It is anticipated that the location of these highly protected areas within the larger marine park will facilitate their management and provide a buffer zone against

damaging processes. Sanctuary Zones are complete 'no-take' areas that should provide benchmarks for scientific reference, enable the study of unmodified natural features and processes and act as reference points for assessing the impacts of change in other areas.

2.1 General Recommendations for Sanctuary Zones

Recommendation

R3.3 The areas listed and described below and indicated on Map 2 (detailed in Appendix IV) be used to:

- (i) conserve and protect biodiversity and natural processes;
- (ii) maintain natural ecosystems as a reference to which those concerned with studying the marine environment for particular comparative purposes may refer, especially when attempting to solve problems arising from the use of the marine environment.

The following activities be permitted:

- (iii) nature observation, scuba-diving, snorkelling, surfing, swimming, boats using sail and other non-motorised craft;

(continued)

Sanctuary Zones — Recommendation R3.3 (continued)

- (iv) boating using motorised craft, subject to the timing and season, speed and mooring restrictions (including anchors) and other conditions to be determined by the manager;
 - (v) non-manipulative research, subject to permit;
 - (vi) maintenance and replacement of existing structures such as navigation markers;
- the following activities not be permitted (note these restrictions are in addition to those applying to the Park as a whole):
- (vii) the removal or disturbance of marine biota and other uses and activities;
 - (viii) high-speed boating;
 - (ix) use of PWCs except for access purposes;
 - (x) oil, gas or mineral exploration or extraction.

2.2 Great Sands (Including Mud Islands)

The fine sand and muddy sediments exposed between tides on Mud Islands provide excellent habitat for many birds, including endangered and long-distance migratory species. Mud Islands are an exposed section of the Great Sands, the most extensive sand bank in Port Phillip Bay, which is continually changing in shape due to storms and sand movement. The Mud Islands are listed as part of a larger Ramsar site (Port Phillip Bay, Western Shoreline) and listed on the Register of the National Estate. They are an important feeding and roosting habitat for large numbers of waders including the bar-tailed godwit, grey plover and great knot. Many seabirds and waterbirds such as the little penguin, Australian pelican, silver gull, white-faced storm-petrel and crested tern also nest on the islands. In recent

years up to 10 000 straw-necked ibis have also nested there.

Vegetation on the low lying islands consists of saltmarsh and dune shrubland surrounding a sheltered lagoon. The seagrass *Zostera muelleri* grows in the lagoon while another seagrass species, *Heterozostera tasmanica*, grows in dense beds in the Mud Islands area. These seagrass beds provide vital breeding, foraging and nursery areas for many fish such as King George whiting and a habitat for numerous invertebrate species.

An abundance of invertebrates including small crustaceans and segmented worms can be found in the sediments around Mud Islands, and are an important source of food for many fish and birds associated with Port Phillip Bay. Fish such as flounder thrive in the shallow sandy habitats, which also act as a basking area for a number of shark species.

Recommendation

R3.4 The area indicated on Map 2 (detailed in Appendix IV) be reserved as the Great Sands Sanctuary Zone.

2.3 Swan Bay

Swan Bay is an area of national and international significance and its expanse of subtidal seagrass beds, intertidal mud flats and surrounding fringe of salt-marsh support a rich and abundant community of waders, waterbirds, fish and other fauna. This shallow bay is considered second only to Corner Inlet (in Victoria) in terms of its importance for numerous waders including curlew sandpiper, and the less

numerous red and great knots, bar-tailed godwit and grey plover. It is also listed under the International Ramsar convention and used by species subject to international agreements: the Japan-Australia Migratory Birds Agreement (JAMBA) and the China-Australia Migratory Birds Agreement (CAMBA) for the protection of migratory birds. The saltmarsh fringe around Swan Bay provides an important habitat for bird species such as the endangered orange-bellied parrot.

Seagrass meadows in the park are best represented in Swan Bay, where three species (*Heterozostera tasmanica*, *Zostera muelleri* and *Halophila australis*) occur in high densities. The distributions of these species depend on water depth and turbidity. *Heterozostera tasmanica* is the dominant species in the deeper, lowest-energy regions, but is replaced by *Zostera muelleri* in shallower water. The seagrass habitat of Swan Bay is important for black swans, which feed on the seagrass, as well as providing a resting and breeding ground for spoonbills, cormorants and egrets. The seagrass habitat acts as an important feeding area and nursery ground for numerous fish species including leather jackets, flounder, King George whiting, garfish and flatheads. Forty-four fish species have been recorded in Swan Bay.

The importance of Swan Bay as a fish nursery area has long been recognised and it was first closed to net

fishers in 1970. Managing the entire area of Swan Bay as a Sanctuary Zone will provide an even greater level of protection for the unique biological community within the bay, and will potentially benefit recreational and commercial fishers by enabling more fish to mature and disperse to other areas outside of the sanctuary zone. Swan Bay provides many opportunities for education and recreation that are compatible with its conservation and has been the centre of a number of innovative Catchment Awareness projects.

Sand Island is a man-made feature composed of dredge spoils which lies in the channel between Queenscliff and Swan Island. While it is recognised that many bird species found in Swan Bay also use this island, its primary function as a spoil ground makes it unsuitable for inclusion in the park at this stage.

Recommendation

- R3.5** The area indicated on Map 2 (detailed in Appendix IV) excluding the jetty and a 50 metre area around it, be reserved as the Swan Bay Sanctuary Zone.

3. SPECIAL NATURE SITES

There are numerous sites within the proposed park with high conservation value. Sites which were considered to be the most spectacular, popular and reasonably accessible have been afforded the status of special nature sites. Special nature sites will be managed in a similar manner to sanctuary zones in which human impacts are minimised (designated 'no-take' areas). They are designed to protect relatively small

areas of high value which require an extra level of protection. The following sites are proposed as special nature sites:

- Lonsdale
- Point Nepean
- Cheviot
- Portsea Hole
- Popes Eye

3.1 General Recommendations for the Special Nature Sites in Port Phillip Heads Marine Park

Recommendation

- R3.6** The following activities be permitted:

- (i) nature observation, scuba-diving, snorkelling, surfing, swimming, boats using sail and other non-motorised craft;
- (ii) boating using motorised craft, subject to the timing and season, speed and mooring restrictions (including anchors), and other conditions to be determined by the manager;
- (iii) non-manipulative research, subject to permit;
- (iv) maintenance and replacement of existing structures such as navigation markers.
- (v) where any proposed new works are considered by the park manager to be in the public interest and compatible with the management objectives for the particular special nature site, approval should be subject to the same process as outlined in R3.1(xiii).

(continued)

Special Nature Sites — Recommendation R3.6 (continued)

The following activities not be permitted (note these restrictions are in addition to those applying to the Park as a whole):

- (vi) the removal or disturbance of marine biota;
- (vii) high-speed boating;
- (viii) use of PWCs except for access purposes;
- (ix) oil, gas or mineral exploration or extraction.

Note: Popes Eye, Portsea Hole, and parts of Point Nepean and Lonsdale Special Nature Sites are located within the Shipping Zone. Agreement will need to be negotiated with the VCA that those portions of the shipping zone will be managed as Special Nature Sites.

3.2 Lonsdale

The Rip side of Point Lonsdale is a spectacular and biologically important area. It contains extensive intertidal rocky platforms covered with various algae including Neptune's necklace and has a number of large rockpools suitable for snorkelling. The Point Lonsdale intertidal platform has the highest recorded invertebrate diversity of any calcarenite reef in Victoria.

The gutter between the main rock platform and the offshore Mushroom reef is 20 metres wide and 8 metres deep and contains a forest of the giant kelp (*Macrocystis angustifolia*), a species which is showing signs of decline along the south-east coast of Australia. This kelp occurs only sporadically on the Victorian coast and is of interest due to its large size and rapid growth. It grows to over 10 metres in height, and its upper canopy provides habitat for a range of fish and invertebrate species.

The reefs offshore from Point Lonsdale, including Mushroom Rock, provide spectacular underwater terrain with ledges, rock outcrops and bommies, and beds of bull kelp (*Durvillaea potatorum*).

Located between Queenscliff and the Port Phillip Bay entrance, the Lonsdale Special Nature Site includes very good examples of the diverse physical and biological features of Port Phillip Heads and Lonsdale Bay, such as spectacular deep water scenery with cliffs, caverns and rocky reef walls, sponge gardens and kelp beds. Specifically it includes:

- The Lonsdale Wall — an underwater reef which formed part of the primeval course of the Yarra River. The wall drops down in a series of steps from 15 to 90 metres depth, extending horizontally for about 2 km. The vertical walls, caves and overhangs and their associated communities of sponges, fish and encrusting algae provide spectacular scenery.
Kelps such as leather kelp (*Ecklonia radiata*) cover the wall to depths of 15 to 20 metres, with animal communities dominating at greater depths. Species include an array of sponges, soft corals, gorgonians, hydroids, jewel anemones and sea whips. The species diversity in this area is very high, including 43 species of fish.
- Kelp Bed area — reefs that previously supported giant kelp (*Macrocystis angustifolia*) forests, are now dominated by leather kelp (*Ecklonia radiata*). These kelps grow attached to shallow rocky reefs where they form dense beds that support rich communities of algae, fish, encrusting sponges, seahorses and sea urchins.
- The Sponge Garden area — this contains a high diversity of sponges and other invertebrates in a variety of colours, shapes and forms. The area derives its name from the spectacular and diverse sponges, branching soft corals, stalked ascidians and carpets of colourful anemones which flourish and are reminiscent of beautiful gardens on land.
- Intertidal platforms, especially around Point Lonsdale.

Recommendation

R3.7 The area indicated on Map 2 (detailed in Appendix IV) be reserved as the Lonsdale Special Nature Site.

3.3 Point Nepean

Nepean Bay, part of which is included in this Special Nature Site, contains extensive shallow reefs up to 7 metres in depth covered in kelp and supporting a variety of marine life including weedy sea dragons, seahorses, large cuttlefish and numerous algal and invertebrate species. The area offshore from Nepean Bay is popular with salmon fishers and is frequently visited by commercial charter boats. It is considered the only area sheltered from strong south-east winds for fishers in this part of the Bay. The creation of a 250 metre wide Special Nature Site will protect most of these values while still allowing access to safe fishing areas.

Police Point to the Portsea Pier is also popular for snorkelling and the pier itself is also the most frequently dived site in Victoria. The pier is also used extensively as a site for marine environmental education, particularly by school groups. Many colourful

species of fish, including delicate seahorses and seadragons, crustaceans, sponges and algae inhabit the scattered seagrass meadows and reefs to the west of the Pier. However, this area also contains many permanent boat moorings and water craft regularly access the beach here; because of this, it was considered inappropriate to designate it as a special nature site.

Portsea Pier is also a popular location for recreational fishing. Continued fishing pressure in the area between the Pier and Police Point, however, is likely to detract from the outstanding biological values that this site offers and may conflict with the intensive diving activity in the area. For this reason, Council recommends the ban on fishing from the east and west sides of Portsea Pier (but not the end section) be maintained and the area between the Portsea Pier and Police Point be included in the management plan to protect its natural values and use as a site for diving and diver training.

Recommendation

- R3.8** The area indicated on Map 2 (detailed in Appendix IV) extending 250 metres from the shore, and from Nepean Rock to Police Point be reserved as the Point Nepean Special Nature Site.

3.4 Cheviot

Cheviot Special Nature Site is an area on the ocean side of Point Nepean extending from the high water mark to 2 metre depth below the low water mark. The intertidal areas within this Special Nature Site have been effectively protected from significant human access since the turn of the century. Cheviot Beach

has become a classic reference site for studies related to human-induced change to intertidal communities and has contributed significantly to our understanding of the marine environment. Through the management plan for Mornington Peninsula National Park, foot access to this Special Nature Site should be restricted to protect its natural and scientific values.

Recommendation

- R3.9** The area indicated on Map 2 (detailed in Appendix IV), extending offshore from high water mark to 2 metres depth below low water mark and from Nepean Rock up to and including London Bridge, be reserved as the Cheviot Special Nature Site.

3.5 Portsea Hole

Portsea Hole is a submerged wall approximately 100 to 200 metres long shaped like an amphitheatre, with an opening to the north. Its shape and size have been compared to that of the Melbourne Cricket Ground. It is located about 1 km north of Portsea Pier and reaches depths of up to 100 metres. The Hole acts

as a shelter for a wide variety of fish and other reef species and the stratification of marine life on the wall provides special qualities as a dive site. It is one of the most popular recreational dive sites in the bay. It may be necessary to identify the boundaries of this site (and other boundaries in the park) through the use of durable plastic buoys.

Recommendation:

- R3.10** The area indicated on Map 2 (detailed in Appendix IV), 200 metres square, be reserved as the Portsea Hole Special Nature Site

3.6 Popes Eye

Popes Eye is a semi-circular ring of bluestone covering 3 ha and rising approximately 2.5 metres above the surface at low tide. Originally constructed as a fortification, this structure provides a safe anchorage for pleasure craft and the substrate for a rich benthic

community and associated fish fauna. It is in some respects an artificial microcosm of the Heads reef environment. Bull kelp (*Macrocystis*) occurs at Popes Eye, and seals are often seen in the area. Popes Eye is also an important breeding site for Australasian gannets. It is one of the most accessible and visually spectacular dive sites in the bay.

Recommendation:

- R3.11** The area indicated on Map 2 (detailed in Appendix IV) be reserved as the Popes Eye Special Nature Site.

4. SHIPPING ZONE

The shipping routes to the Ports of Melbourne and Geelong, and associated channels are included in the park. These areas are under the jurisdiction of the Victorian Channels Authority (VCA). Parts of the channels must be routinely modified in order to maintain safe navigable water and therefore have different priorities for management from the remainder of the park. South Channel, for example, requires regular maintenance dredging, and the associated dredging spoil sites are necessary for channel maintenance. In addition to regular maintenance, enhancement of shipping channels in the future may be required. This may include deepening or blasting in some areas.

The waters and channel adjacent to the Queenscliff ferry terminal, including a section of open water off Shortlands Bluff, Queenscliff, are under the jurisdiction of Parks Victoria. The Queenscliff-Sorrento ferry and other medium-sized vessels frequently use this channel

which must be routinely dredged in order to maintain safe navigable water. This area is included in the shipping zone of the proposed park in addition to Victorian Channels Authority areas.

The shipping channels have been included in the park to avoid potential enforcement problems due to the complexity and difficulty of identifying park boundaries, particularly for fishing.

Inclusion of the channels in the park will also facilitate management of the park. While allowing normal shipping activities in the shipping channel zone, the park's ecological values will be protected through formal arrangements negotiated between the manager of the park and the Victorian Channels Authority. The outcome of such agreement will be a continuation of necessary shipping activities and minimisation of other impacts on the values of the marine park.

Recommendation

- R3.12** (i) The shipping areas as indicated on Map 2 (detailed in Appendix IV) be included in the park as a shipping zone with clearly delineated dredge and disposal areas.
- (ii) A formal agreement be drawn between the Victorian Channels Authority and the manager of the park to provide for existing activities associated with shipping and to recognise the possibility of future need to enhance shipping potential. Where the Shipping Zone overlaps with Special Nature Sites the agreement should specify that these areas will be managed as Special Nature Sites.

4. MARINE AQUACULTURE

4.1 INTRODUCTION

It is clear that marine aquaculture has great potential for growth within Victoria, and the industry and Government are keen to facilitate its development.

Council supports the establishment of a strong and healthy aquaculture industry in this State and has looked closely at the potential for the various forms of aquaculture in Port Phillip Bay.

Each of the three types of aquaculture being considered for the Bay area has specialised requirements and different impacts.

1. Land-based aquaculture of marine species

This appears to have the most immediate potential for growth without many of the problems associated with operations in the actual marine environment.

2. Extensive marine-based (generally shellfish)

While this usually requires reasonable sized areas for leases it is a relatively non-intensive use and if sited so as not to interfere with other water users, most issues can be resolved. Generally supplementary feeding is not required.

3. Intensive marine-based (usually finfish)

While the areas required for finfish are not large there are high local effects with more extensive effects related to nutrient input particularly in semi-enclosed waters such as Port Phillip Bay. The issue of nutrient input is discussed below. Generally finfish require supplementary feeding.

The 1996 CSIRO study of Port Phillip Bay clearly spells out the risks to the Bay of increased nutrient levels. Government policy is to reduce nitrogen inputs to the Bay by 1000 tonnes (approximately 15 per cent) per annum by 2006.

There are currently uncertainties regarding the impact of finfish culture in the Bay. Finfish farming would require supplementary feeding which is known to add to the nutrient load. It is estimated that production of 1000 tonnes per annum of salmon would add 60 tonnes or approximately 1 per cent to current nitrogen inputs. The ECC therefore considers that major finfish aquaculture projects in Port Phillip Bay are not appropriate unless the offsetting reduction in nitrogen can be achieved.

If this can be achieved, a carefully controlled and monitored trial would be required before permitting a commercial finfish operation. Further investigation of the possibility and implications of a trial will be conducted before Council's final report.

Other issues requiring further investigation include the effects of escaping fish, the effects on marine mammals and the effects of using other fish (e.g. pilchards) for feed stock.

Council has developed criteria for selection and management of both marine and land-based aquaculture sites. **These criteria have been used in developing the recommendations in the report; comments are welcome.**

4.2 PRINCIPLES AND CRITERIA FOR SELECTION AND MANAGEMENT OF MARINE AQUACULTURE AREAS

Principles

1. Aquaculture at each of the chosen sites must be able to demonstrate and deliver a significant socio-economic gain to the Victorian community.
2. Aquaculture should not be practised on or immediately adjacent to sites with significant environmental values. This means:
 - no aquaculture in marine parks;
 - an assessment of environmental values of each proposed site for aquaculture is required before leases/licences are issued;
 - the potential impact on flora and fauna, including marine mammals, birds and fish, either through attracting, displacing or accidental harm, should be measured against the potential benefits of the industry.
3. Aquaculture should not impose permanent ecological change to the site where it is located or to the ecosystem of which it is a part;
 - assessment of the effects of increased or decreased nutrients and the recovery potential of the site must be undertaken by the proponents before work begins;
 - the environmental impact of aquaculture sites must be monitored by a process that is scientifically valid. Responsibility for monitoring must be clearly established;
 - in bays and inlets, the water exchange rate is an important factor for aquaculture health and dispersal of contaminants;
 - introduction or translocation of marine pests, diseases or pathogens must be avoided;
 - priority should be given to the culture of species indigenous to that area; where non-indigenous species are permitted there must be negligible risk of the establishment of feral populations through the escape of eggs, larvae, juveniles or adults;
- the impact of using fish stocks (e.g. pilchards) for provision of food for aquaculture should be assessed.
4. Conflict with other uses or values should be avoided wherever possible. Such uses include:
 - boating and shipping;
 - commercial and recreational fishing;
 - recreational diving sites;
 - shipwrecks;
 - aquatic sports;
 - scenic views (although aquaculture infrastructure may add an element of interest in some landscapes).

Criteria

The main criteria to be considered for marine aquaculture sites are outlined below. These criteria have been identified through consultation with Fisheries Victoria Aquaculture Branch and are the basis for determining where aquaculture may be viable.

Where appropriate, criteria are separated for filter feeding shellfish and finfish aquaculture areas. Even within these broad categories it is important to note that of the range of species which may be considered for aquaculture, many have quite different site requirements.

Criteria are still being developed for non-filter feeding shellfish (e.g. abalone) and crustaceans (e.g. rock lobster).

It should be noted that for many sites, baseline data for assessing against the criteria will be unavailable or of poor quality. There are advantages in using sites with good baseline data as this will help in site selection as well as ongoing monitoring. Detailed environmental baseline studies in aquaculture zones should be conducted in preparation for management plans that will ensure environmental control measures, performance standards and a regulatory framework are in place. Where sites with poor baseline data are used there is a greater possibility of failure due to unforeseen factors.

Criteria for Marine Aquaculture Sites

	Shellfish	Finfish
Water depth	For subtidal species minimum depth of 10 m with more than 12 m generally preferred.	Minimum depth of 12 m with more than 20 m preferred.
Waves	Generally maximum wave heights less than 2 m. Wave period (which defines wave steepness) should be more than 5 seconds.	Generally maximum wave height of 2-3 m. Costs increase significantly with waves greater than 3 m.
Salinity	Salinity levels need to be considered for individual species.	
Water temperatures	Of less significance than for finfish, however, increased growth rates may be achieved where temperatures are at the higher end of the natural range for the species.	Water temperatures directly influence physiological processes including growth. Higher end of natural temperature range is advantageous for growth, dependent on the species. Cold water species (e.g. Atlantic Salmon) will require production strategies that minimise the impact of high summer water temperatures in Victoria.
Contamination	Sites should not be in downstream proximity to effluent outfalls and heavy metal contamination and faecal coliform counts should be within set limits.	
Nutrient status of water	Prefer higher level algal biomass, often indicated by the presence of chlorophyll A. This generally occurs where catchment runoff has enriched the water or where upwelling of ocean water has carried nutrients from bottom sediments.	Not directly significant, however, nutrients may influence the extent of marine biofouling on sea pen nets.
Algal blooms	Areas with no known history of algal blooms preferred. Known algal bloom areas may be acceptable where there are other benefits (e.g. high nutrient water) and where blooms are either rare or predictable so that stock can be moved. In the latter case alternative sites would also be required.	
Currents and flushing	Within range of 5-50 cm per second av. current. Greater current speeds will require additional mooring design consideration.	Within range of 5-50 cm per second av. current. Problems in managing equipment at speeds greater than 50 cm per second.
	Flushing (or water exchange) may be less significant for shellfish compared with intensive finfish farming. Well flushed sites enable adequate oxygen exchange, dispersal of organic sediment outputs and reduce competition for nutrients (e.g. filter-feeding shellfish). Shellfish are liable to remove nutrients from the water while finfish are liable to add matter to the water over a localised area. For these reasons aquaculture sites should operate well within defined boundaries with adequate separation from high conservation value sites, e.g. marine protected areas.	
Wind	Areas with some protection from prevailing winds are preferred. Boat access and serviceability is limited where winds (greater than 20-30 knots) over an extended fetch generate unsuitable wave climate.	
Sea floor	Generally prefer sandy sea floors while avoiding areas such as reefs and seagrass beds with high environmental and other values. Areas where benthos recovery time from any effects are likely to be slow should also be avoided.	
Area available	Designated areas should be large enough to meet the following criteria: of sufficient size for a viable industry with reasonable economies of scale; room for a number of separate licence areas; sufficient space between sites to reduce the risk of spread of disease and to enable general access between farmed areas; the total area needs to be of sufficient size to allow regular fallowing of actually utilised sites. The figures below are indicative of intensity of use within lease areas.	
	At any one time ~ 33% of lease area in actual use. Within this area intensity of use would be low with normally 10-20 m between surface long lines.	At any one time around 5% of actual lease area would be in use to allow for rotation of pens. Pens are usually about 25 m in diameter.
Access	Areas should be in reasonable proximity to land-based infrastructure. Access is more important for finfish where generally daily access will be required. Remote stations on aquaculture sites (houseboats etc.) have been established overseas, however this will increase production costs.	
Land-based infrastructure	For some species (e.g. mussels) grading and cleaning generally done at sea. Require port or jetty with loading and unloading facilities, vehicle access and vessel mooring.	Generally more land-based infrastructure required than for shellfish. Harvest, grading and processing facilities generally required close to port with cool store and feed storage.
Visual impact	Areas should preferably be where visual impact will be minimised.	

4.3 PRINCIPLES AND CRITERIA FOR SELECTION AND MANAGEMENT OF MARINE AQUACULTURE AREAS ON LAND

Council believes that in many cases, land-based aquaculture is a better long-term option. The advantages include:

- the ability to monitor and modify both inputs to and outputs from the process, thereby reducing the hazards to the industry and the environment;
- less likelihood of exotic species escaping to the wild;
- less likelihood of losses to the industry through natural events such as storms and algal blooms;
- no disruption to existing water-based uses;
- significantly less area required on land than would be required in the water.

Disadvantages of land-based aquaculture may include higher establishment costs and possible interruption of power supply leading to lack of fresh water or loss of temperature control. There are also different ranges of species suitable for land-based and sea-based aquaculture.

Principles

1. Aquaculture on public land sites must be able to demonstrate and deliver a significant socio-economic gain to the Victorian community.
2. Public land sites should only be used where the current use is compatible with aquaculture (e.g. salt production) and the site does not have significant environmental or heritage values.
3. The effects of any discharges from the site must be fully assessed and subject to appropriate EPA works approval. Where possible zero discharge would be preferred.
4. The chances of escape of any species which may pose a threat to the environment (especially species such as Pacific oyster) must be negligible.

Criteria

Compared with the criteria for marine-based aquaculture, the criteria for land-based proposals are much simpler. The key criteria are detailed below:

Criteria for Land-based Aquaculture

Salinity of water source	Salinity levels need to be considered for individual species.
Water temperature	This will often be controlled on site.
Contamination	Water intake site should not be in a downstream proximity to effluent outfalls and heavy metal contamination and faecal coliform counts should be within set limits.
Nutrient status of water	For shellfish a higher level of algal biomass is preferred. Not a significant factor for finfish.
Turbidity	Low turbidity water is preferred.
Algal blooms	Areas with no (or very low) history of algal blooms are preferred.
Water intake site	Site should be where environmental effects of the intake and pipeline are acceptable and where pumping requirements are minimised.
Waste discharge	Ideally land-based aquaculture should aim for zero discharge, but this will not always be practicable. Any discharge should be subject to EPA works approval and should be adequately separated from high conservation value sites (e.g. marine protected areas) and possibly high recreation use areas.
Area available	Visible impact should be able to be minimised. Where private land is utilised, the proposal will need to meet the required planning provisions. Where public land is utilised, it must be demonstrated that the proposal is the most appropriate use for the land from a whole-of-community perspective.

4.4 PROPOSED MARINE AQUACULTURE SITE – PINNACE CHANNEL (EAST OF THE GREAT SANDS)

Council believes that in addition to land-based aquaculture initiatives, efforts at this time should concentrate on developing a strong and viable shellfish industry in Port Phillip Bay and further research should be undertaken with respect to diminution of nitrogen in the Bay.

Information regarding the site was supplied by the Aquaculture Unit of Fisheries Victoria and was compiled from a range of published sources from the Marine and Freshwater Resources Institute (MAFRI), Fisheries Victoria, Victorian Channels Authority and the Bureau of Meteorology. Unpublished material from other sources was used where appropriate. Subjective evaluation based on site visits and accounts by experienced local mariners were also considered when assessing the actual site conditions.

This is a preliminary technical evaluation of important site attributes that will influence aquaculture. Limitations on the availability of relevant and quantifiable data has meant that, where necessary, general assumptions on physical site conditions have been made. It is apparent that prior to any further assessment on the potential of the described sites, a detailed baseline study will be necessary.

Physical site details

The described area is divided into two blocks on either side of the Pinnacle Channel where it flows through the Great Sands area. The sites are referred to as Block A (North) and Block B (South). Both sites are approximately rectangular and each is around 500 ha in size. The site location is based on:

- adequate separation from major shipping activity;
- adequate separation from excessive current speeds (outflows from nearby channels);
- adequate separation from areas of unsuitable local wave climate (northern edge of Great Sands);
- adequate separation from the proposed Port Phillip Heads Marine Park. At the closest point the separation is approximately 3.1 km;

- an adequate water exchange rate.

Bathymetry

Both blocks have water that ranges from 15 metres to more than 20 metres in depth. Block A comprises around 80 per cent of water at depths greater than 20 metres. Block B comprises around 20 per cent of water at depths greater than 20 metres. Based on available marine charts, the deepest area within either site is probably around 24 metres.

Sediment characteristics

Generally within both blocks sand sediment size becomes finer as water depth increases away from the Great Sands Area. Both blocks coincide with known productive scallop grounds and in the general vicinity of Symonds Channel, flat oyster beds have been located.

Water movement/exchange

Current speed

There is limited recorded current speed data in the areas described. Computer generated models on current speed and direction have indicated that currents in the range of 0.2 to 0.45 metres/second may occur under normal tide conditions. It has also been observed that current speed increases with proximity to channel outflows, in particular near Symonds Channel where current meter readings of 1.2–1.3 metres/second have been recorded.

Current direction

The predominant water currents are generated by tidal flushes that peak during ebb and flood tides. Current direction is likely from the NNE (flood tide) and SSW (ebb tide). The area closer to the Great Sands northern bank may produce local current disturbances that are more variable in direction and speed.

Flushing

The southern part of Port Phillip Bay is considered to be well flushed. Both blocks are subject to daily

tidal flushing. This is likely to generate considerable mixing and exchange with water flowing in from Bass Strait at flood tide. The flushing influence may produce variability in current speeds and directions within a relatively small area.

Access and serviceability — Port facilities

Servicing port	Distance (direct)	Vehicle access	Mooring	Loading infrastructure
Rye Jetty	8.3	Parks Victoria only	No	No
Sorrento	11.1	Restricted parking	Yes	Yes
Portsea	12.1	Parks Victoria only	Yes	No
Rosebud	7.4	Parks Victoria only	Yes	No
St Leonards	12.9	Yes, vehicle access	Yes	Yes
Queenscliff	14.1	Yes, unloading bay	Yes	Yes

Wave climate and serviceability

The site is located in an area that is among the most exposed to wind-generated waves in Port Phillip Bay with a longest fetch of around 30 km. No wave-rider wave monitoring data has been recorded for the described areas, however wave climate data from a study compiled by the Victorian Channels Authority in 1974/75 from the Rosebud area may generally be considered relevant. For comparison purposes the Rosebud site has a longest fetch of 37km. These data showed a worst case scenario in that year of a maximum wave height of 1.6 metres with a wave period of 4.5 seconds. It is worth noting, however, that waves in excess of 1 metre were recorded for less than 5 per cent of the time.

Water quality

Faecal coliforms

There has been very little bacterial sampling in the vicinity of the areas described. Based on strong daily tidal exchanges and other findings in the south of Port Phillip Bay, e.g. Capel Sound, the risks of contamination by faecal coliforms in this area is considered to be low.

Algal blooms

There are no data available for the area north of Symonds Channel or Pinnacle Channel, however in general the southern part of the Bay is considered to have a lower risk of algal blooms than areas in the north of the Bay.

Access and serviceability

Port facilities

The following ports, service infrastructure and provisions are considered relevant:

The risk of a bitter taste algal bloom, *Rhizosalinia* sp., in the area is considered low due to the high flushing rates and high exchange with Bass Strait water.

Heavy metal

There are no data available for the specified area, however heavy metal contamination in this area of the Bay is considered extremely unlikely.

Temperature

Temperatures were recorded at the West Channel marker at a depth of three metres and the data showed that on average the water temperature is above 18°C for four months of the year.

Over the last seven years the maximum temperature was 24.2°C and the minimum temperature was 9.0°C.

Salinity

The salinity at the West Channel marker (near Symonds Channel) at a depth of three metres over the last eight years varied between a minimum of 30.4 ppt and a maximum of 35.5 parts per thousand.

Turbidity

No data are available for turbidity but this is unlikely to be a problem.

Species opportunities

On preliminary evaluation, both blocks appear to have similar attributes offering good deep water aquaculture prospects.

The site is influenced by oceanic water exchange and as a result may be lower in phytoplankton concentrations, considered important for filter-feeding shellfish. The southern end of the Bay generally has lower levels of chlorophyll A that may reduce the productivity of the area. However, strong currents in

the region may assist available nutrient uptake by shellfish. The area is also considered to be a low risk site with regard to algal blooms and in particular the 'bitter taste' blooms that have had serious impacts on mussel farmers in other areas of Port Phillip Bay.

Recommendation

R4.1 The two blocks A and B totalling 1000 ha, adjacent to the Pinnacle Channel as indicated on Map 3 (detailed in Appendix IV) be made available for shellfish aquaculture subject to:

- a comprehensive baseline study;
- an environmental study with opportunity for public input;
- a management plan approved by Fisheries Victoria;
- on-going monitoring of the impact of aquaculture at this site;
- there being no supplementary feeding of the shellfish.

4.5 PROPOSED LAND-BASED AQUACULTURE SITE – AVALON

Cheetham Salt Pty Ltd has been conducting aquaculture trials and some limited production of fish for some time in conjunction with industrial salt production at Avalon (south of Lara). Species being raised are abalone, Pacific oysters and flounder.

The parent company of Cheetham has decided to concentrate on salt production at Avalon and tenders have been called for the aquaculture business as a going concern. Included in the tender was an understanding that Cheetham was prepared to make available 17 ha of Crown land currently leased until 2009. This area is indicated on Map 4.

Council strongly supports development of intensive land-based aquaculture in this general location and recommends that further Crown land adjoining the 17 ha site be made available for this purpose; the adjoining land being currently held on an annual grazing licence. At least 30 ha of this adjoining land is likely to be suitable for aquaculture. This area is also indicated on Map 4.

The locality has the following attributes which make it suitable for land-based aquaculture.

- High quality water is available with minimal pumping costs.

- The site is close to the markets of Melbourne and Geelong, but also to Avalon airport which is planned to become a centre for fresh food export.
- Aquaculture is compatible with the present use for salt production.
- There is the possibility of feeding waste water from aquaculture into Cheetham salt production resulting in no effective discharge from the site. Note that production on the site is for industrial salt and therefore contamination is not an issue.

As a result of its proximity to Point Lillias (previously the preferred relocation site for the Coode Island chemical storage complex), extensive work has been done on natural values of the area. In particular, NRE commissioned the Appleby report: 'Waterbird habitat values of the Werribee-Avalon Area, including Ramsar sites', which indicated the proposed site as not having values at regional or higher level. Council is aware that a study carried out by Maunsell Pty Ltd for the Point Lillias Project Unit rated the 17 ha site as of Regional significance. The site consists of dry ponds constructed for salt production. The ponds and embankments have been colonised by saltmarsh plants such as austral seablite (*Suaeda australis*), beaded glasswort (*Sarcocornia quinqueflora*) and black-seeded

glasswort (*Halosarcia pergranulata*). Although this vegetation is potential habitat for the endangered orange-bellied parrot, the same potential is shown over large adjoining areas. Nearby areas (to the east and west) were rated as being of international significance for waterbirds.

The additional area for possible extension to the north is mainly introduced grass with small areas of brackish/saline herbfields. This area was also rated, by both studies referred to above, as not having values at regional or higher level.

Recommendation

R4.2

- The 17 ha of Cheetham leasehold Crown land indicated on Map 4 (detailed in Appendix IV) be a priority area for development of land-based marine aquaculture.
- An adjoining area of Crown land to the north (currently on annual grazing licence) also be made available for land-based aquaculture if required.

Note: Preliminary advice has been received that at least 30 ha of this land (which totals 210 ha) would be suitable for aquaculture without major works or excessive water pumping costs.

- A management plan for the area be prepared to ensure that development of the sites for aquaculture is compatible with the high natural values of nearby areas.

Appendix I

RESPONSES TO PROPOSALS IN SUBMISSIONS RELEVANT TO THIS INTERIM REPORT

All submissions and the views expressed by interest groups and individuals during consultations have been carefully considered by the Council. The following is a summary of the main issues raised in submissions and Council's response to these issues. Note that responses are indicated by italics.

MARINE PARKS AND SANCTUARY ZONES

General Issues

Many submissions supported the establishment of marine parks and sanctuary zones, while some respondents could not see the need for formally protected areas in the marine environment as long as the environment as a whole was managed sustainably.

A comprehensive, adequate and representative system of protected areas is now widely accepted internationally and within Australia as central to the conservation of biodiversity, and hence ecologically sustainable development. Under the Environment Conservation Council Act 1997, Council must have regard to the need for the creation and preservation of a comprehensive, adequate and representative system of parks and reserves in the State.

Selection criteria and objectives

Comments were made on the need to clarify the objectives of sanctuary zones and marine parks, their selection criteria, and the criteria for determining their size. Many considered that the size of the zones was too small in terms of their buffering capacity from the activities allowed in marine parks. Some believed that the zones were too small to provide undisturbed examples of ecosystems and that they should represent 10 per cent of Victoria's marine environment. There were also those who proposed that smaller sanctuary

zones would be adequate or that they were unnecessary.

Council believes it is important that some areas within marine parks be given the highest level of protection as part of the conservation of biodiversity. Some of these should act as benchmarks for scientific reference, enable the study of unmodified natural features and processes and act as reference points for assessing the impacts of change in other areas arising from discharges to the marine environment, harvesting or recreational use. Council has recommended sanctuary zones and Special nature sites as 'no take' areas in the proposed Port Phillip Heads Marine Park.

It has also recommended that sanctuary zones should include typical examples of the range of marine environments and that they remain undisturbed to allow natural processes to continue. Special nature sites are designed to protect relatively small areas of high value and they will be managed in a similar manner to sanctuary zones so that human impacts are minimised. These highly protected areas are located within the larger marine park, essentially providing a buffer from damaging processes.

The objectives and selection criteria for marine parks and sanctuary zones are documented at length in Chapter 3 of the present report.

Terminology

Some respondents supported the proposal to rename sanctuary zones as 'Marine National Parks', equivalent to National Parks on land, and marine parks as 'Marine Protected Areas' to act as buffer zones around them.

The support for the proposal to name areas as Marine National Parks and Marine Protected Areas is acknowledged and Council has considered this matter at length.

While terminology is viewed as integral in ensuring that the community understands and accepts the role of marine parks and permitted and non-permitted uses and activities, Council believes that the nomenclature for zones within marine parks is appropriate as it stands. Council believes it is more cohesive to have various zones within a single marine park rather than fragmented Marine National Parks in the same area. Unfortunately there is no national or international consistency for nomenclature related to marine protected areas; however the terms 'marine park' and 'sanctuary zone' as used in this report are used by several other States and the Commonwealth. Possibly some consensus may be developed as part of the Australian Oceans Policy in which case the naming of parks could be reviewed.

Management

Management of the parks by the National Parks Service (now the Parks, Flora and Fauna Division of NRE, and Parks Victoria) was strongly supported. However, some fishing groups and individual fishers wanted marine parks to be managed by the Fisheries Branch of NRE or the Fisheries Co-Management Council. Another view was that the manager of parks should not be a single Government department but a more diverse body similar in nature to the Catchment Management Authorities or the Coastal Management Boards.

Parks, Flora and Fauna, Parks Victoria, and Fisheries Branch of NRE have sufficient expertise for the management of marine parks. Given that the expertise of these bodies is complementary, integrated management under the auspices of the NRE Parks Program would seem the most efficient and beneficial approach. Fisheries and Wildlife Officers could have prime responsibility for compliance programs.

The Fisheries Co-Management Council, Catchment Management Authorities, and Coastal Management Boards have responsibilities and experience in coordinating and advising on management of marine and coastal areas, but not in implementation of management strategies.

Catchment

Catchment planning leading to poor water quality was viewed by some as a major problem in bays, inlets and estuaries. Some recommended that marine parks

should be managed in an integrated fashion with their catchments. Others suggested catchment education to improve the quality of water arriving at the coast, for example the Swan Bay Catchment Awareness Project. The need to reduce nutrient input into Port Phillip Bay, as recommended in the CSIRO's Port Phillip Bay Environmental Study, was used as an argument for improved catchment planning. Catchment planning was seen by some as integral to the long-term sustainability of many coastal marine communities, especially in bays and inlets.

Clearly catchment planning is essential in the effective management of water quality in bays, inlets and estuaries. Council supports the actions being carried out by the Victorian Coastal Council, Regional Coastal Boards, Catchment Management Authorities and community education programs such as CoastCare/Coast Action in coordinating catchment planning and raising community awareness of the need to improve water quality. In particular the Victorian Coastal Strategy makes recommendations relating to catchment planning. Council's terms of reference confine it to making recommendations regarding public land use and hence somewhat limit its ability to make recommendations regarding catchment management.

Socio-economic implications

While there was a recognition in submissions of the lack of accurate data and of the necessity to often rely on approximation and estimates, both the *Social and Economic Assessment of Draft Final Recommendations (LCC)* and the *Socio-economic Study of Coastal Towns* reports were criticised for the inaccuracy of data. Many submissions thought that marine parks and aquaculture zones would have adverse effects on commercial and recreational fishers, and related industries. There were those who thought that direct job gains associated with the establishment of marine parks would be far greater than those suggested by the socio-economic assessment undertaken by the LCC.

The expansion of tourism opportunities by the creation of marine parks and sanctuary zones was cited in many submissions as a potential economic benefit. Port Phillip Heads was considered an area of high tourism value, with bottle nose dolphins, seals and world class opportunities for diving and snorkelling. Local businesses such as dive operators and charter

boats were identified as potentially benefiting from increased tourism opportunities.

Council recognises the concern regarding the social and economic implications of establishing marine parks and aquaculture areas, particularly in regards to commercial fishing, and the possible loss of revenue to coastal communities. The economic potential of aquaculture operations is significant and likely to provide employment opportunities. The proposed aquaculture sites are unlikely to displace commercial fishers.

While sanctuary zones and special nature sites exclude all forms of harvesting they will also provide refuge and nursery areas for fish and other target species, some of which will disperse to areas outside the zones and park. The benefits of giving a high level of protection to limited areas of Victoria's coastal environment will incur some costs but it is anticipated that an overall positive flow on of effects will be seen in State and local based ventures such as tourism, charter boat operations, diving, aquaculture, education and research.

Commercial fishing

The commercial fishers generally disagreed with the catch figures provided in the LCC's *Draft Final Recommendations* which they claimed were significantly below the real values and did not account for potential losses in the fish processing industry or tourism, and did not contain a provision for buying out boats or equipment from potentially redundant fishers. The economic importance of boating and recreational fishing for coastal towns (including boat charters) was, according to some, not adequately recognised. Some called for compensation for abalone license holders and other commercial fishers who would be disadvantaged by the formation of marine parks and aquaculture zones. Several submissions opposed the establishment of aquaculture areas unless it could be proven that there would be no negative impact on current commercial fishers. Some saw the creation of 'no take' areas as economically beneficial because they have the potential to improve recreational and commercial fishing prospects in adjacent areas by boosting fish stocks.

The submissions received regarding recreational and commercial fishing were given very careful consideration

and the outcomes of deliberations are in the body of this report. The decline in fish numbers was brought up many times and Council is mindful of the need for vigorous and sustainable fisheries for both commercial and recreational fishers.

The issue was raised of possible compensation where license holders (particularly commercial fishers) lose access to previously available areas or resources through the creation of no-take areas in marine parks.

This issue has been addressed by Council in Chapter 1 under 'Economic and Social Impact of Council's Recommendations'.

Permitted uses and activities

Activities such as commercial and recreational fishing and oil and gas exploration (particularly exploratory drilling) were considered by some as not compatible with the objectives of the marine parks, as they were likely to disturb or damage the marine environment. Others submitted that if all uses permitted in marine parks were carried out with care and subject to environmental assessment, it was inappropriate to otherwise restrict such uses. These views were expressed particularly strongly by those involved in the abalone industry.

In deciding which uses are appropriate in marine parks, the key criteria used by Council were the probability and degree of potential adverse impacts on natural and recreational values. Activities which involve physical disturbance of the sea bed with consequent adverse ecological impacts are generally inappropriate in marine parks. The effects of activities that impact upon the environment may not be immediate or readily detected, therefore it is important that there be areas of significant size where the effects of external activities are minimised. The potential impact of activities within and outside proposed parks must be taken into consideration when selecting areas for inclusion in a system of marine protected areas.

In addition to recommending the main objectives for the uses of Marine Parks, Council has made recommendations about a number of key issues that it believes should and should not be permitted. It has not, however, attempted to make recommendations for all

possible activities: this detail is the responsibility of the park manager. In considering the appropriateness of various activities, the manager will need to ensure that they contribute to the achievement of the parks objectives as recommended by the Council.

Many believed that exploratory drilling should not be allowed in parks, or if allowed it should be subject to an Environmental Effects Statement. The reason for allowing exploratory drilling while not permitting extraction was questioned.

Most exploration of oil and gas prospects under marine parks should be possible using non-disturbing techniques or exploratory drilling from adjoining areas. Where exploratory drilling within a marine park is unavoidable in the assessment of a prospect, Council recommends that such drilling should be subject to Government approval and strict conditions which are to be made available for public comment. The transient nature of exploration and the localised area of direct impact will ensure that impacts on park values are minimised and Council does not consider that formal Environment Effects Statement procedures are necessary. Production drilling beneath the park should always be possible (albeit more expensive) by diagonal drilling from adjoining areas.

Spearfishing and kelp harvesting

The apparent inconsistency in the LCC recommendations of allowing some commercial fishing while prohibiting uses such as spearfishing, use of power skis and seaweed harvesting was also commented on.

After consideration of submissions, Council considers that spearfishing is acceptable in marine parks (see below). Some restrictions on power skis are considered appropriate in that their adverse effects on recreational values are likely to be significant. Harvesting of seaweed affects not only the seaweed species targeted, but the entire ecological communities which rely on the habitat provided by seaweed. The harvesting has a more profound, albeit localised, impact on the ecology of harvesting sites than the types of commercial fishing that are proposed to be permitted in marine parks. Currently, seaweed harvesting is a relatively small industry (with little or none in Port Phillip Bay), but an expanded industry is likely to be less localised and may also impact upon the recreational values

of marine parks. Consequently, Council believes that it should be excluded from marine parks.

Note also that the present Council has proposed significantly greater restrictions on commercial fishing than were recommended by the LCC.

Spearfishers provided data to support their belief that spearfishing has less impact than line-fishing and that exclusion from parks would have a big impact on the sport.

Spearfishing can be more selective than line-fishing and currently is a relatively uncommon activity, except where reefs are particularly accessible or productive. It is generally more efficient than line-fishing, and where sedentary reef fish species are targeted and there is heavy pressure, spearfishing can affect the species structure of reef communities. The use of an area by spearfishers can also conflict with the enjoyment of other values due to either real or perceived safety hazards. Council believes, however, that opportunities for spearfishing using breath-hold techniques can be provided for within the parks system and regulated through the park management plan. Spearfishing competitors will not be permitted within marine parks.

PORT PHILLIP HEADS MARINE PARK

The ECC and the LCC received many detailed submissions regarding the Harold Holt and Port Phillip Heads Marine Parks. The majority of respondents highlighted the fact that the area contains diverse and important marine habitats and biological communities making it an appropriate site for inclusion into a system of marine parks for Victoria. The area's accessibility, its abundance of natural features and visual and recreational assets were cited as important criteria for the development of a marine park. Others questioned whether it was appropriate to establish a marine park in such a high use area when conflicts of interest may arise.

Tension between the recreation and nature conservation objectives of parks is a frequent problem. Council believes that, with appropriate management, this

problem can be overcome with the current proposal for Port Phillip Heads Marine Park.

It was suggested that the area from the Heads to the boundary of the existing terrestrial National Park be included in the proposed Sanctuary Zone as this area had been closed to recreational activities for some 100 years and had great value as a reference site. A view was put that the LCC's proposed Harold Holt and Port Phillip Heads Marine Parks should be joined to form one park, including the shipping channels and a number of sanctuary zones.

The output of Council deliberations on this matter is covered in the report.

Sanctuary Zones

The Sanctuary Zones within Port Phillip Heads Marine Park were thought too small, not sufficiently representative of all habitat types in the area, and not large enough to be effective in properly protecting these ecosystems, especially compared with the outer coast Sanctuary Zones, and their extension was sought. For example, Swan Bay extension was suggested to increase its value as a seagrass and nursery area. Mud Islands and surrounding waters, Lonsdale Bight, Popes Eye, the Point Nepean shoreline to Point Franklin, Portsea Hole, South Channel Fort, Sand Island and its lagoons, and the Hurricane wreck areas were proposed as new sanctuaries.

Council has greatly increased the Swan Bay Sanctuary Zone to encompass all of that bay, and a Great Sands Sanctuary Zone is now also proposed. Council also proposes Popes Eye, Portsea Hole, the Lonsdale area, Cheviot shoreline and the Point Nepean shoreline to Police Point as Special Nature Sites. The natural values of the Hurricane wreck do not distinguish it particularly from many other sites in the Park and Sand Island is an artificial, high use area, and so neither of these two sites warrant recognition as a Sanctuary Zone or Special Nature Site.

Restrictions on boating in Ticonderoga Sanctuary Zone for dolphin protection generated mixed reactions: some believed boating should be restricted even further, others believed such constraints were unnecessary as recreational fishers never disturbed

dolphins. Some objected to the size of the proposed marine protected area in Nepean Bay and recommended that it be reduced to allow fishing charters to continue operating and for the safe shelter of other vessels.

Council's proposed Special Nature Site along the shoreline of Point Nepean has been reduced (compared to the previously proposed Ticonderoga Sanctuary Zone) to within 250 metres of the shoreline. More research is required to assess the level and significance of any disturbance to dolphins from motorised craft in this area, and to then develop an appropriate management response. In the interim, Council has recommended that restrictions on the use of motorised craft in this and other special nature sites be determined by the manager, thereby allowing for finely tuned management in response to particular conditions.

There was concern that there was a lack of sufficient funding and management expertise for proposed and current marine parks, including Harold Holt Marine Reserve.

Resourcing of park management is an important issue, and is addressed in the body of the present report and in Appendix II.

Permitted Uses in Port Phillip Heads Marine Park

It was proposed that commercial fishing for pilchards, a keystone species on which many species in the Bay depend, should not be allowed within the Marine Park. Complete protection of native seaweeds was recommended in marine protected areas, with commercial harvesting and removal for research prohibited.

Council is recommending that netting (including netting for pilchards) and long-lining not be permitted in the Park. Exclusion of commercial harvesting of seaweed is proposed and removal for research allowed only with approval.

Shipping Zones

There were several proposals for the inclusion of shipping channels in the Port Phillip Heads Marine Park, while others considered the incorporation of

areas to the side of channels to be adequate. It was proposed that the area allocated to shipping channels should be reduced to a more realistic zone which is the actual area of ship movement. Some recommended that Port Access Zones should be incorporated into the boundaries of the marine protected area and treated as an overlay provision in order to facilitate integrated management. The Victorian Channels Authority objected to the inclusion of shipping channels in marine parks, citing conflict between conservation principles and channel activity.

The shipping channels were included in the Park to reduce potential enforcement problems due to the complexity and difficulty of identifying park boundaries, particularly for recreational fishers. The area allocated to shipping channels should not be reduced to the actual area of ship movement as this would restrict essential maintenance and enhancement operations. This is addressed more fully in Section 4 of Chapter 3, 'Shipping Zone'.

MARINE AQUACULTURE

Marine aquaculture was addressed in a number of submissions. The concept of creating Marine Aquaculture Areas was questioned, as were the selection criteria used to identify these areas. Some considered that the economic potential of marine aquaculture was underestimated, and others perceived aquaculture as a potential threat to existing economic operations such as recreational fishing and boating, and other tourist activities.

Careful planning and management will be essential in the development of the marine aquaculture industry in Victoria to ensure that the potential major economic benefits of the industry are delivered without significantly compromising other uses and values. The development of criteria and identification of marine aquaculture sites in Chapter 4 reflect this need. Similarly, the Terms of Reference for the Marine, Coastal and Estuarine Investigation require Council to recommend options for the early establishment of at least one area suitable for the priority development of marine aquaculture. Council believes that land-based aquaculture of marine species has

considerable potential without many of the problems of marine-based operations.

The possible cultivation of Pacific oysters raised a vigorous response, with many providing detailed comments on the benefits and disadvantages of culturing this species in Victoria. Many objected to allowing any risk, even a 'negligible risk', associated with the establishment of feral populations of non-indigenous species. Others took a contrary view.

Farming of Pacific oysters in open water has been banned in Victoria since 1996, when the State Government accepted the key recommendation of the Davis investigation into the farming of this species in Victorian coastal waters. For other species, Council's criteria specify that priority be given to culture of locally-indigenous species, and that non-indigenous species only be permitted when there is negligible risk of feral populations becoming established.

Pollution from marine aquaculture was also raised as an issue. The location of marine aquaculture areas near marine parks, and the environmental impacts of marine aquaculture also raised many comments. Many believed that marine aquaculture was incompatible with marine parks and that a buffer was needed between aquaculture sites and high conservation areas to avoid the potential impacts of aquaculture. Others pointed out the benefits of aquaculture as supplying high value produce and relieving pressure on wild fisheries. Some stated that aquaculture was not only compatible with marine parks, but in fact would enhance the parks by maintaining high water quality and attracting fish.

Although, aquaculture is unlikely to directly enhance environmental values, the effects of aquaculture on environmental and other values are likely to vary greatly according to the characteristics of the particular aquaculture enterprise, the values present and the physical environment of the area. To minimise the risk of adverse effects of aquaculture at sites with significant environmental values, Council's criteria specify that aquaculture not be practiced on or immediately adjacent to such sites (including marine parks) and that, at all sites proposed for aquaculture, environmental values be assessed and potential impacts on flora and fauna be measured.

Appendix II

SUMMARY OF IMPLICATIONS OF RECOMMENDATIONS IN THE INTERIM REPORT

The following is a brief summary of the likely social and economic implications of the recommendations in the Interim Report. The LCC's *Draft Final Recommendations* for the Marine and Coastal Special Investigation provided a detailed summary of implications based on a report prepared by McLennan Magasanik Associates Pty Ltd entitled *Socio-economic Assessment of Draft Final Recommendations covering Marine, Estuarine and Coastal Areas in Victoria*. The summary below is based on the information of costs and benefits in the previous LCC report and on detailed information provided by Fisheries Victoria, and other sections of the Department of Natural Resources and Environment.

It should be noted that the socio-economic information has been obtained from a wide variety of sources, and is of varying reliability and coverage. Quantitative estimates should therefore be regarded as indicative rather than absolute.

BENEFITS

It is not easy to provide quantitative estimates of the social and economic benefits of establishing a marine park at the southern end of the Bay. The principal benefit from implementing the recommendations is to provide for the long-term conservation and sustainable use of the marine environment.

There will be positive spin-offs due to employment as a result of increased tourism and recreation. Those beneficial impacts will occur locally and offset adverse local impacts from the curtailment of other commercial activity, mainly commercial fishing. Benefits from marine aquaculture are potentially large. In brief, benefits can be identified as:

1. Conservation and enhancement of the marine environment and resource sustainability

While it is difficult to put a dollar value on this, surveys of the general public have repeatedly shown a 'willingness to pay' to enhance environmental amenity.

2. Stimulus to tourism and recreation

An increase in activity over and above what otherwise would occur is expected. Experience in the past has shown that designating an area as a park almost invariably leads to increased visitation. That increase will flow from 'signposting' provided by designation of the marine park and associated promotion of the park as a world class marine reserve and also from enhancement of access and facilities.

3. Stimulus to marine aquaculture

Designation of the Pinnacle Channel site (for filter-feeding shellfish) and the land-based Avalon Aquaculture Site (for shell fish and finfish) will provide security of access to the industry and opportunities for significant employment growth. When managed and situated appropriately, aquaculture can have minimal environmental impact. The development of aquaculture is also viewed as beneficial because it has the potential to decrease fishing pressure on wild fish stocks.

4. Conservation of Aboriginal and heritage values

As with item (i) this is difficult to value but there appears to be a community 'willingness to pay'.

5. Community Education

Application of resources to community education will lead to a greater knowledge and capacity to enjoy the marine and coastal environment. This will lead to a greater visitation and a greater value being attached to overall environmental quality. Community awareness often has the added benefit of reducing the requirement for compliance work.

COSTS

The costs of implementation of the Port Phillip Heads Marine Park are associated with its establishment and management and with the constraints on some existing activities. These costs are detailed below:

1. Commercial Fishing

(a) *Entire Port Phillip Heads Marine Park - exclusion of commercial netting, long-lining, and fish trapping*

The total value of commercial scale fish catches in the proposed Port Phillip Heads Marine Park is estimated to be up to \$118,000 per year which is 4 per cent of the total catch taken in Port Phillip Bay.

Data for the 1996/97 annual catch within the proposed Park were provided by Fisheries Victoria. Calculation of overall trends in commercial fisheries based on a single years data is generally not appropriate because it may not be representative of longer term catch and catch value trends. In this instance, however, for most species the 1996/97 data was not substantially different from the average for the previous 5 years. The two notable exceptions were King George whiting (which was significantly higher) and pilchards (1996/97 catch much lower than in previous years). The discrepancy for pilchards has little relevance as virtually no commercial catches of this species are taken in the area of the proposed Park. Substantial catches of whiting are taken using seine nets and hand lines, and whiting is the second most valuable commercial scale fish species taken in the Bay.

It is estimated that up to a dozen of the 117 Port Phillip Bay licence-holders may rely on fishing in the proposed park area for a portion of their annual income. As most fin fish are highly mobile, the

creation of the proposed marine park will not deny commercial fishers access to this resource, but may lead to increased fishing effort in areas outside the park. Excluding commercial long-lining, netting and fish trapping from the park, and the creation of total 'no-take' areas, is therefore unlikely to not have a major impact on commercial fishers in the Bay.

The costs to commercial fishing may also be offset to some extent by providing recruitment for fish stocks harvested in adjacent areas.

(b) *Great Sands/Mud Island Sanctuary Zone - exclusion of all harvesting*

Netting — Small impact through loss of haul seine grounds and flounder mesh netting in the north-eastern corner of the zone.

Long-lining — Minimal impact on snapper long-lining in the north-eastern corner of the zone.

Abalone diving — No impact.

Rock lobster potting — No impact

(c) *Lonsdale Special Nature Site - exclusion of all harvesting*

Netting — Little or no impact (waters unsuitable for netting due to depth and strong tidal flows, and netting is already banned in the existing Point Lonsdale Marine Reserve).

Long-lining — Little or no impact (waters unsuitable due to strong tidal flow).

Abalone diving — An estimated annual catch of 14 tonnes with a wholesale market value of \$350,000 comes from this area, particularly from reefs in the vicinity of Point Lonsdale.

Rock lobster potting — Maximum catch from this area is estimated at less than one tonne, with a value of \$30,000.

(d) *Point Nepean Special Nature Site - exclusion of all harvesting*

Netting — Minor impact (some haul seine grounds excluded). Netting already banned in part of the Point Nepean Marine Reserve.

Long-lining — Little or no impact (waters unsuitable due to strong tidal flow).

Abalone diving — An estimated annual catch of about 4000 kg with a wholesale market value of about \$100 000 comes from this area, although some of the abalone reefs are outside the 250 metre zone.

Rock lobster potting — Minor impact. Catch and catch value cannot be quantified

- (e) *Cheviot Special Nature Site - exclusion of all harvesting*

Netting — Little or no impact (possibly some haul seine grounds excluded). Netting already banned in the Point Nepean Marine Reserve.

Long-lining — No impact (too shallow).

Abalone diving — The creation of a 'no-take' zone from high water mark to two metres below low water mark is likely to have some impact on abalone take. While it is difficult to quantify this effect, it is not likely to be of major significance. Any effect is likely to be at least partly offset by the fact that this exclusion zone will assist with compliance work to reduce the illegal take of abalone.

Rock lobster potting — Little or no impact.

- (f) *Portsea Hole Special Nature Site - exclusion of all harvesting*

All forms of commercial fishing — Little or no impact. Most forms of commercial fishing are already effectively excluded from this site because of the heavy usage for recreational diving.

- (g) *Swan Bay Sanctuary Zone — exclusion of all harvesting*

All forms of commercial fishing — No impact. Commercial fishing is already banned in Swan Bay.

- (h) *Popes Eye Special Nature Site — exclusion of all harvesting*

All forms of commercial fishing — No impact. All forms of harvesting of marine biota are already banned in the Popes Eye Marine Reserve.

2. Recreational Fishing

There is heavy usage of the proposed marine park by recreational fishers and there will be some impact on recreational fishing which is to be excluded from sanctuary zones and special nature sites comprising approximately 20 per cent of the total park area. Recreational fishing encompasses a range of values, of which catching fish is only one. Access to natural environments and fish are not subject to any market and therefore are termed 'non-market values'. Because there is no market operating, the monetary value of the recreational fishing is not able to be directly observed.

Evidence has been presented that the creation of 'no-take' zones, particularly where these include nursery areas, has an overall positive impact on fish stocks. This factor combined with the reduction in commercial take should ensure that there is a net benefit to recreational fishing in the long-term.

3. Oil and Gas

Exploration is permitted under certain conditions in marine parks, but not in sanctuary zones or special nature sites. Production drilling is not permitted in the entire park. The impact in the case of Port Phillip Heads Marine Park is expected to be negligible.

4. Tourism and Recreation

Constraints on certain commercial tourism and recreation activities are imposed in some zones, particularly 'no-take' sanctuary zones and special nature sites. Constrained activities include high speed boating and the use of personal water craft (e.g. jet-skis), spear fishing and recreational line-fishing, some of which may involve charter operators and equipment hirers. In most cases, the particular activity is allowed elsewhere in the marine park, although Council recognises that there may be a particular problem associated with hire of equipment for fishing in Swan Bay.

5. Implementation of the Marine Park

The following estimates have been provided by the Department of Natural Resources and Environment. Costs as estimated below include salaries for three staff rangers plus operating costs. These include the cost of

equipment (including servicing), enforcement, visitor use analysis, development of a park management plan, monitoring and habitat mapping, promotion, education and interpretation, and other operating costs.

Costs — year one — \$777 000
Costs — year two — \$465 000
Costs — year three — \$350 000
Costs — year four — \$367 000
Costs — year five — \$338 000

Appendix III

VICTORIAN COASTAL STRATEGY

— Executive Summary —

The Victorian Coastal strategy has been an important document in the development of the Environment Conservation Council's Marine, Coastal and Estuarine Interim Report.

The Victorian Coastal Council (VCC) was appointed under the *Coastal Management Act 1995* as the peak body for the strategic planning and management of the Victorian coast and to provide advice on coastal issues to the Minister for Conservation and Land Management.

One of the VCC's major tasks was to prepare a Strategy for the whole of the Victorian coast. The Victorian Coastal Strategy was developed in consultation with the Victorian community and other major stakeholders and was released in November 1997. Under the *Coastal Management Act 1995*, land managers must take all reasonable steps to give effect to the Strategy.

The following summary is taken from the Vision Statement.

The coast of Victoria will be a pleasure to experience by both present and future generations, respected by all and recognised as one of the nation's icons.

The Victorian Coastal Strategy provides the framework to realise the vision for the coast. With community support and involvement, the Strategy will ensure that in the long term, the outcomes for Victoria's coast will:

- Ensure the sustainable use of natural resources, so that the coast and marine environment will be in better health in 20, 50 and 100 years time, and:
- is managed to preserve a diversity of marine and land-based ecosystems so that natural systems and

species can flourish and maintain productivity in the wild;

- has improved standards of marine and estuarine water quality;
- is managed for the long term with care, efficiency and skill;
- is internationally recognised as one of the best coastlines in the world.

Ensure the protection of significant environmental features of the coast through establishing:

- a comprehensive system of well managed national marine and coastal parks and reserves which ensure long-term conservation and public benefit;
- other forms of open space which provide for the conservation and protection of significant natural areas;
- effective mechanisms and actions to ensure the conservation and management of indigenous coast and marine flora and fauna on public and private land.

Provide clear direction for the future use of the coast including the marine environment, and which:

- integrates the planning and management of coastal land and sea;
- provides a diversity of experiences for Victorians and visitors;
- effectively and clearly defines areas for the location of appropriate activities;
- is characterised by world class quality of design, construction and maintenance.

Identify suitable development areas and development opportunities on the coast, which:

- are recognised for the significant role they play in contributing to the economic prosperity of Victoria;
- continue to contribute to the health and well being of the millions of people who visit and use the coast;
- support an ecologically sustainable range of new and improved commercial, recreational and tourism activities of world class standard;
- have developments which are of a scale and character sympathetic to the surrounding coastal landscape or built environment.

Appendix IV

TECHNICAL DESCRIPTION OF PROPOSED SITES

PORT PHILLIP HEADS MARINE PARK (Map 2)

Commencing at the high water mark due south of London Bridge then by a line bearing 225 degrees for a distance of 200 metres;

then by a line bearing 296 degrees for a distance of 1200 metres;

then by a line bearing 309 degrees for a distance of 1100 metres;

then by a line bearing 314 degrees for a distance of 1800 metres;

then by a line bearing 321 degrees for approximately 1100 metres to a point coincident with a line between the SE corner of the Lonsdale Special Nature Site (see below) and the Beacon at Nepean Rock;

then West along this line to the SE corner of the Lonsdale Special Nature Site (SNS);

then in a westerly and northerly direction around the Lonsdale SNS to the high water mark, south of Fellows road;

then by the high water line to the flashing red light at The Cur, Queenscliff;

then by a line in a northerly direction towards the beacon with triangular topmark on Swan Island, excluding that part of the sand island protruding over the line;

then by high water mark in an anti-clockwise direction around Swan Island to the most westerly point of Swan Island;

then by a line to the high water mark on the northern extension of the eastern side of Steven Street, Queenscliff;

then by the high water mark clockwise around Swan Bay and then adjacent to Coles Channel to a point bearing 270 degrees from the West Channel Pile;

then from this point to the West Channel Pile;

then along a line which joins the West Channel Pile and the South Channel Fort to a point 100 metres from the centre of the South Channel Fort;

then by an arc of radius 100 metres centred on the South Channel Fort to a point on a line between the centre of the Fort and No 10 beacon, Sorrento channel;

then along this line through the Beacon to the high water mark west of the Tyrone boat ramp;

then by high water mark, to the eastern side of the jetty currently under construction and located 25 metres east of the Sorrento Yacht Club;

then by a projected line along the jetty, 250 metres offshore from the high water mark;

then by a line 250 metres offshore and parallel to the shore to a point in line with the steps at the end of Lentell Avenue, Sorrento;

then to the high water mark adjacent to the steps at the end of Lentell Avenue, Sorrento;

then by high water line to the commencement point.

Area (ha) — 17 453

GREAT SANDS SANCTUARY ZONE (Map 2)

All that area enclosed within a square commencing at a point bearing 115 degrees and 3300 metres distant from No 5 light on the West Channel in Port Phillip Bay; then by a line bearing 90 degrees for a distance of 2500 metres; then by a line bearing 180 degrees for a distance of 2500 metres; then by a line bearing 270 degrees for a distance of 2500 metres; then by a line bearing 0 degrees 0 minutes for a distance of 2500 metres to the commencement point.

Area (ha) — 625

SWAN BAY SANCTUARY ZONE (Map 2)

Commencing at a point on the south eastern extremity of the peninsula separating Swan Bay from Coles Channel; then by a line to the Number 1 Flashing Green light on Coles Channel, Port Phillip Bay; then by a line to high water mark at the most northerly part of Point Norgate on Swan Island; then along the high water mark on the western side of Swan Island, to the most westerly point; then by a line to the high water mark on the northern extension of the eastern side of Steven Street, Queenscliff; then around Swan Bay to a point 50 metres SW of the Swan Bay Jetty; then around the jetty, maintaining a distance of 50 metres from the jetty to the high water mark on the NE side of the jetty; then by high water mark to the commencement point.

Area (ha) — 2292

POINT NEPEAN AND CHEVIOT SPECIAL NATURE SITES (Map 2)

Commencing at the high water mark on the Commonwealth land boundary at the western end of the Public Purposes Reserve, Weeroona Bay, Parish of Nepean; then by a projected line extending 250 metres offshore; then by a line 250 metres parallel to the shore to the beacon at Nepean rock, Point Nepean; then by a line bearing 120 degrees until the 2 metre depth contour from the low water mark; then by a line at this depth to the boundary of the Marine Park at London Bridge; then by the boundary to the high water mark; then by high water mark to the commencement point.

Area (ha) Point Nepean — 164

Area (ha) Cheviot — 54 (note - this is approximate only as area is defined by 2 m water depth from low water mark)

PORTSEA HOLE SPECIAL NATURE SITE (Map 2)

A square whose sides are 200 metres in length which entirely surrounds the site known as Portsea Hole. Exact coordinates to be determined.

Area (ha) — 4

POPES EYE SPECIAL NATURE SITE (Map 2)

All that area contained within a circle of 100 metres radius, centred on a point bearing 115 degrees 30 minutes, 41 metres distant from the Number 2 light West Channel, in Port Phillip Bay.

Area (ha) — 3.1

LONSDALE SPECIAL NATURE SITE (Map 2)

Commencing at the high water mark on the southern extension of the eastern side of Fellows road, Point Lonsdale; then by a line bearing 213 degrees for a distance of 500 metres; then by a line bearing 115 degrees until it coincides with the leading light line on the western edge of the 11.6 metre channel (bearing 46°00' to the High light). Hume tower light is in line with the High light, Queenscliff; then by this leading light line to a point 250 metres from the high water mark, near Shortlands Bluff, Queenscliff; then by a line parallel to the high water line to a point coincident with a line joining the High Light at Queenscliff and the Lighthouse at Point Lonsdale; then in a south westerly direction along this line to a point coincident with a line running parallel and 50 metres north of the Point Lonsdale Jetty; then in an easterly, southerly, and westerly direction around the jetty in a rectangular shape, remaining 50 metres from the jetty, to the high water mark on the southern side of the jetty; then by the high water mark to the commencement point.

Area (ha) — 383

SHIPPING ZONES (Map 2)

Shipping zones are defined by map LEGL./95-132 held in the Central Plan Office and as detailed in the *Government Gazette* dated 29 February 1996; and the Queenscliff shipping zone as defined below.

Queenscliff shipping zone: Commencing at a point on the high water mark, 200 metres south of the South Pier, Queenscliff, then by a line parallel to the pier and 200 metres from it to the edge of the VCA shipping zone; then in a north-easterly direction along the boundary of the VCA shipping zone to the Number 2 light, then along a line bearing approximately 275 degrees, being the southern extremity of the Naval Waters, to the edge of the Marine Park, then southerly by the Marine Park boundary to the commencement point.

Area (ha) — 4525

PINNACE CHANNEL AQUACULTURE AREA (Map 3)

The area contains two blocks within the one larger rectangle as indicated in map 3. The whole area is defined by points 1, 6, 7 and 4. Block 1 and 2 are defined respectively by points 1, 2, 3 and 4 and 5, 6, 7 and 8.

Coordinates

	1	2	3	4	5	6	7	8
Lat	38°14'21"	38°15'42"	38°15'24"	38°14'00"	38°16'42"	38°18'06"	38°17'42"	38°16'18"
Long	144°48'42"	144°49'30"	144°50'36"	144°49'54"	144°50'00"	144°50'42"	144°51'48"	144°51'06"

Area (ha) Whole area — 1350

Area (ha) Block 1 — 500

Area (ha) Block 2 — 500

AVALON AQUACULTURE AREA (Map 4)

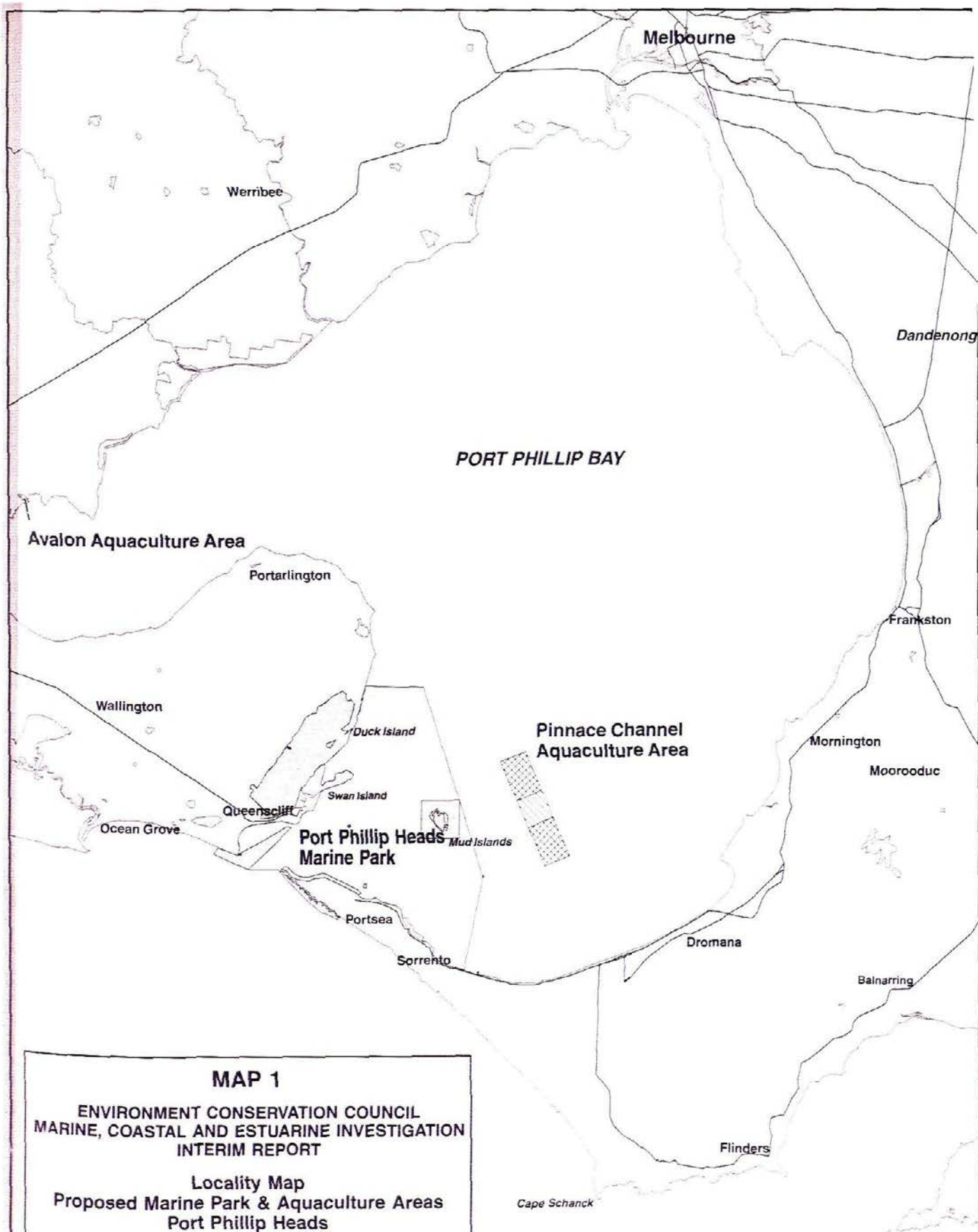
The Avalon aquaculture area is shown on Map 4. This area is defined by a combination of cadastral boundaries and boundaries defined in lease arrangements with the Crown.

Area (ha) — 47 (note this is made up of 17 ha initially proposed plus approximately 30 ha of additional land if required.)

Appendix V

ABBREVIATIONS AND ACRONYMS

APEA	Australian Petroleum Exploration Association
CAMBA	China Australia Migratory Birds Agreement
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ECC	Environment Conservation Council
EES	Environment Effects Statement
EPA	Environment Protection Authority
FCC	Fisheries Co-Management Council
GPS	Geographical Positioning System
ICESD	Intergovernmental Committee on Ecologically Sustainable Development
IMCRA	Interim Marine and Coastal Regionalisation for Australia
JAMBA	Japan Australia Migratory Birds Agreement
LCC	Land Conservation Council
MAFRI	Marine and Freshwater Resources Institute
NRE	Department of Natural Resources and Environment
PWC	Personal Water Craft (Jet-skis or Power-skis)
Ramsar Convention	Convention on Wetlands of International Importance especially as Waterfowl Habitat (named after the town Ramsar in Iran where the Convention was first formed)
ROS	Recreational Opportunity Settings
SEPP	State Environment Protection Policy
VCA	Victorian Channels Authority
VCC	Victorian Coastal Council
VCS	Victorian Coastal Strategy









MAP 1

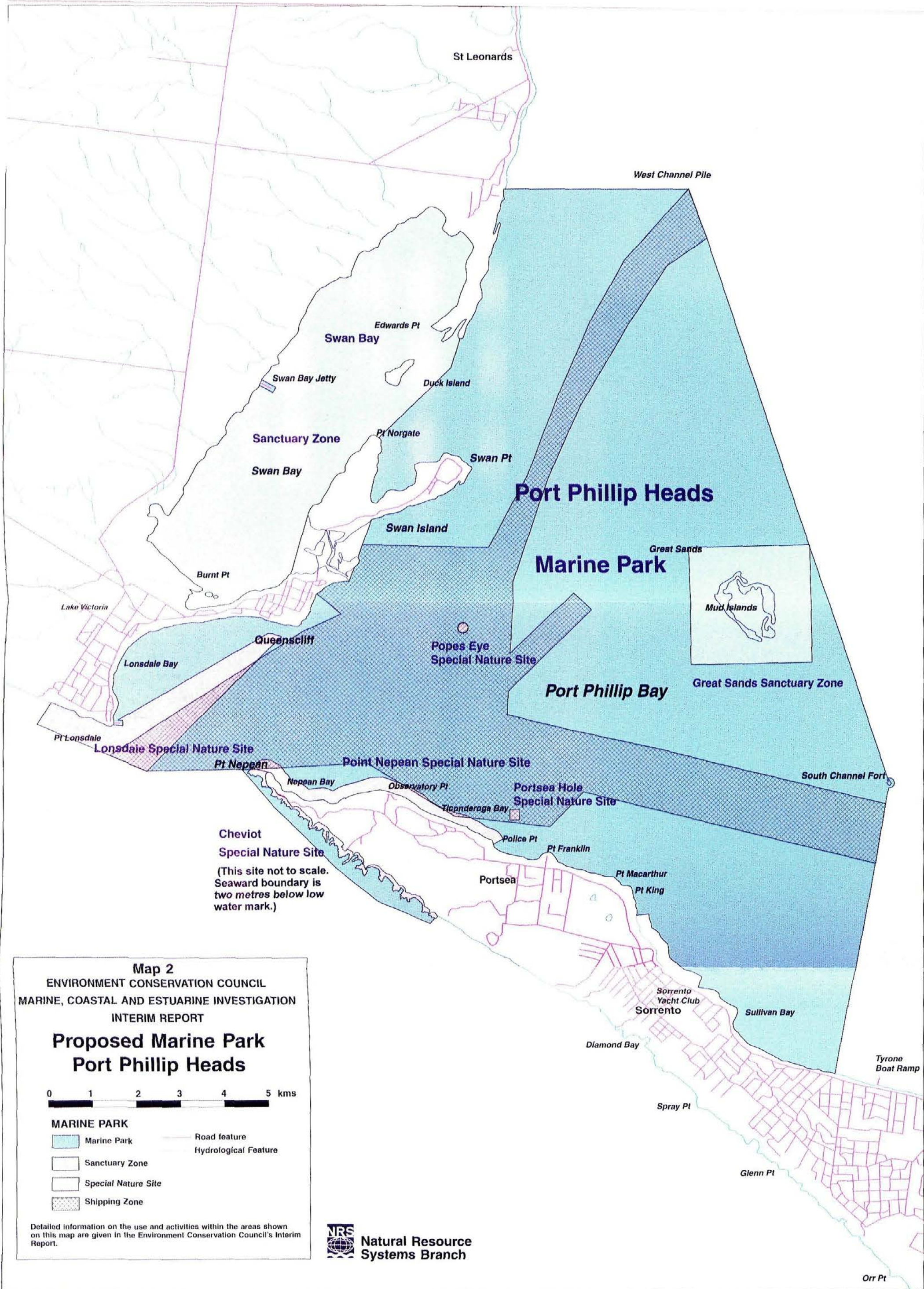
ENVIRONMENT CONSERVATION COUNCIL
MARINE, COASTAL AND ESTUARINE INVESTIGATION
INTERIM REPORT

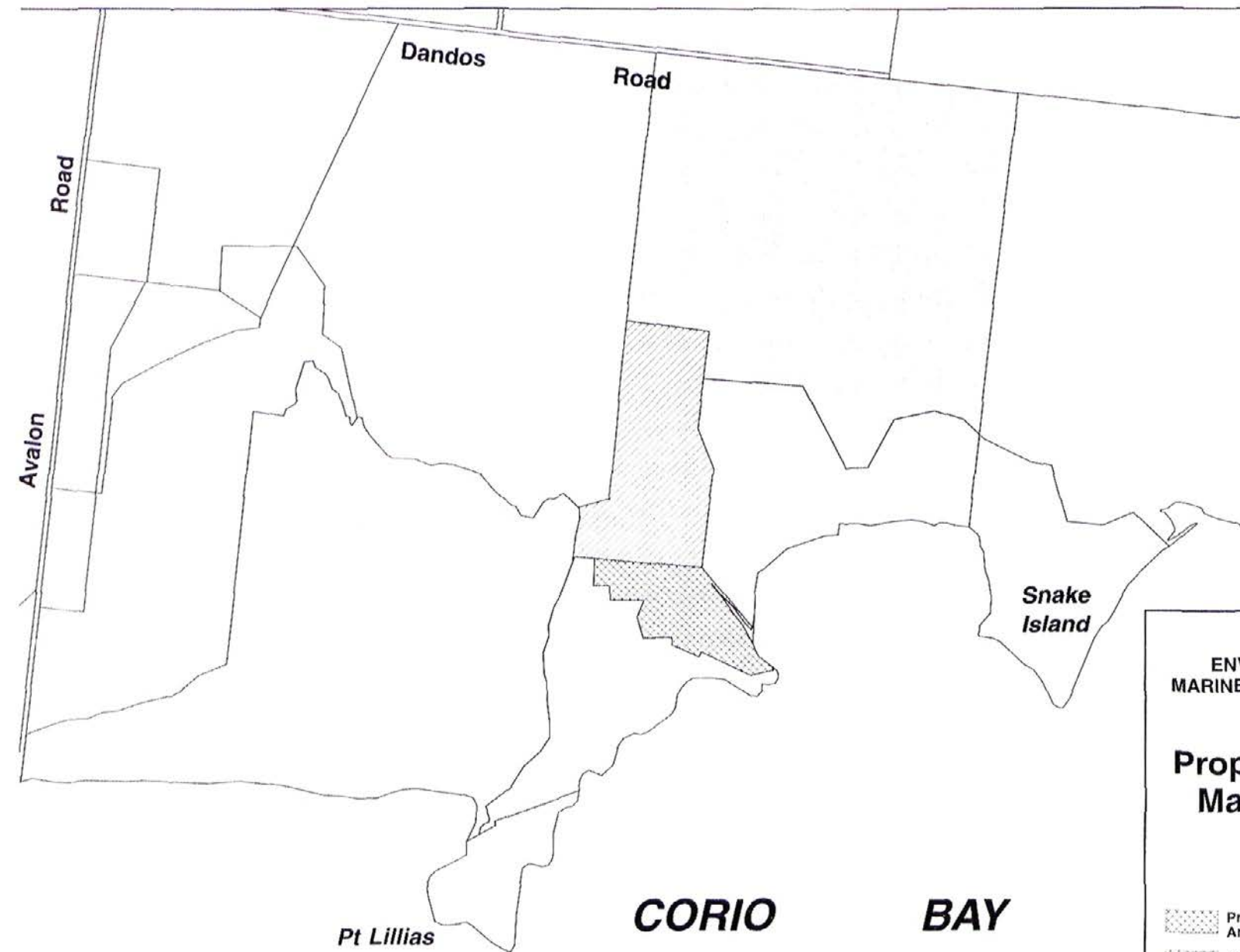
Locality Map
Proposed Marine Park & Aquaculture Areas
Port Phillip Heads

0 3 6 9 kms

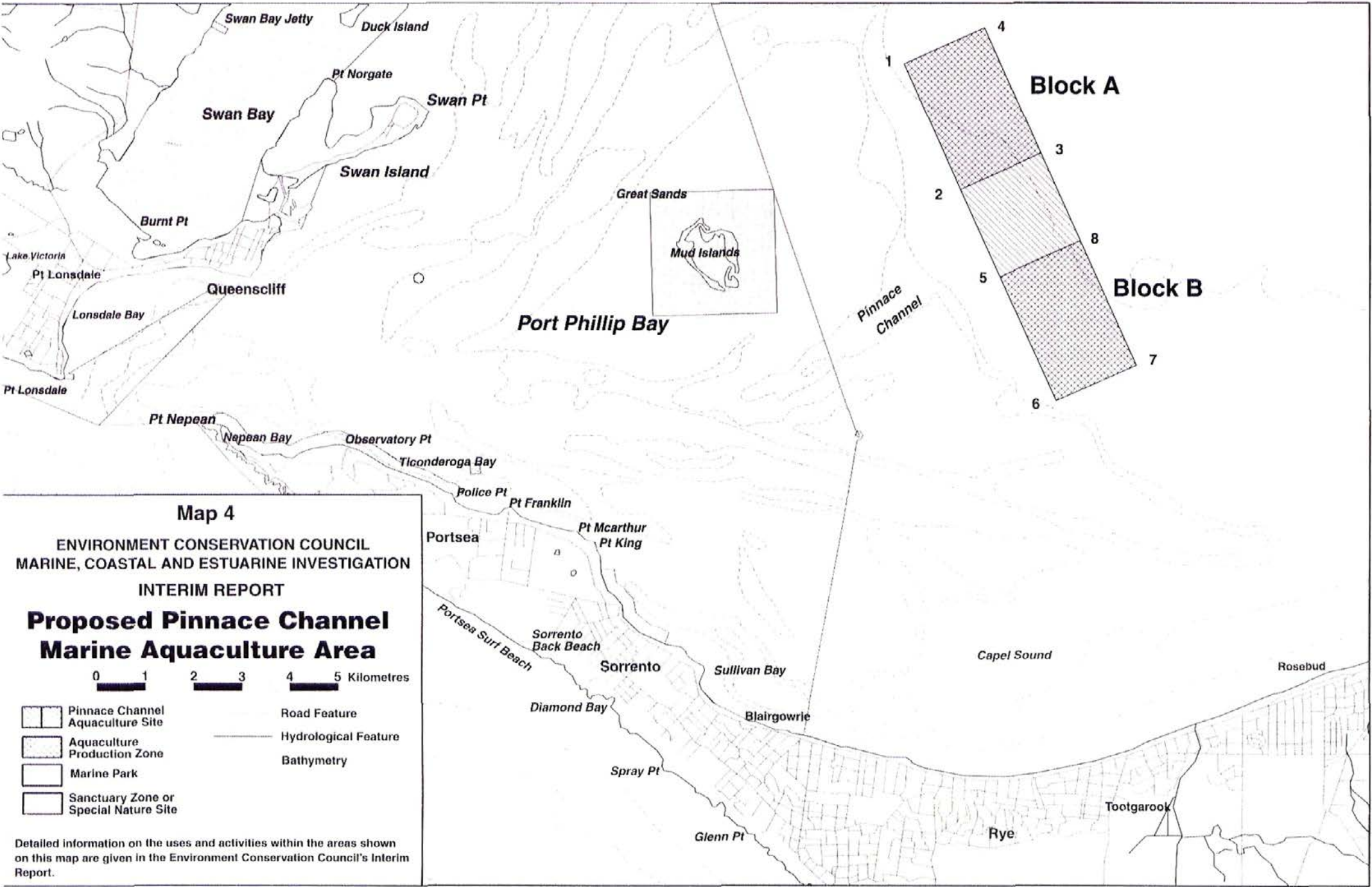
- | | | | |
|---|--|---|----------------------|
|  | Pinnacle Channel
Aquaculture Site |  | Road feature |
|  | Aquaculture
Production Zone |  | Hydrological Feature |
|  | Marine Park | | |
|  | Sanctuary Zone or
Special Nature Site | | |

Detailed information on the use and activities within the areas shown on this map are given in the Environment Conservation Council's Interim Report.





Detailed information on the uses and activities within the areas shown on this map are given in the Environment Conservation Council's Interim Report.



Map 4

ENVIRONMENT CONSERVATION COUNCIL
MARINE, COASTAL AND ESTUARINE INVESTIGATION
INTERIM REPORT

**Proposed Pinnacle Channel
Marine Aquaculture Area**

0 1 2 3 4 5 Kilometres

- | | | | |
|--|---------------------------------------|--|----------------------|
| | Pinnacle Channel Aquaculture Site | | Road Feature |
| | Aquaculture Production Zone | | Hydrological Feature |
| | Marine Park | | Bathymetry |
| | Sanctuary Zone or Special Nature Site | | |

Detailed information on the uses and activities within the areas shown on this map are given in the Environment Conservation Council's Interim Report.

