

# Corner Inlet Ramsar Site

## Strategic Management Plan





National  
Wetlands  
Program

Parks Victoria developed the Strategic Management Plan in consultation with the Department of Natural Resources and Environment and key stakeholders, and coordinated the public comment process on the draft document.

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# 1 Introduction

The Strategic Management Plan for the Corner Inlet Ramsar site is an integral component of a program to develop a comprehensive management framework for Victoria's Wetlands of International Importance (or 'Ramsar sites') listed under the Convention on Wetlands (Ramsar, Iran, 1971). The primary goal of the management framework is to maintain the ecological character of Victoria's Ramsar sites through conservation and wise use.

## 1.1 Strategic Directions Statement

The Strategic Directions Statement establishes Management Objectives for Victoria's Ramsar sites and Statewide Management Strategies to achieve these objectives. The Strategic Management Plans for individual Victorian Ramsar sites apply the Management Objectives and Statewide Management Strategies, promoting a range of specific Site Management Strategies that will maintain, and in some cases restore, the ecological character of the sites. Individual plans cover 10 of Victoria's 11 Ramsar sites. Victoria's eleventh Ramsar site, the Edithvale-Seaford Wetlands, was listed in 2001 and is covered by a separate management plan. A diagram of the framework and related documents is shown below in Figure 1.1.

The Strategic Directions Statement provides the overarching policy framework for managing Ramsar sites in Victoria. It establishes Management Objectives for Ramsar site management across the State, which are then translated to the site-specific level by each of the Strategic Management Plans. The Management Objectives outlined by the Strategic Directions Statement are as follows:

1. Increase the scientific understanding of wetland ecosystems and their management requirements.
2. Maintain or seek to restore appropriate water regimes.
3. Address adverse processes and activities.
4. Manage Ramsar sites within an integrated catchment management framework.

5. Manage resource utilisation on a sustainable basis.
6. Protect, and where appropriate enhance, ecosystem processes, habitats and species.
7. Encourage strong partnerships between management agencies.
8. Promote community awareness and understanding and provide opportunities for involvement in management.
9. Ensure recreational use is consistent with the protection of natural and cultural values.
10. Develop ongoing consistent programs to monitor ecological character.

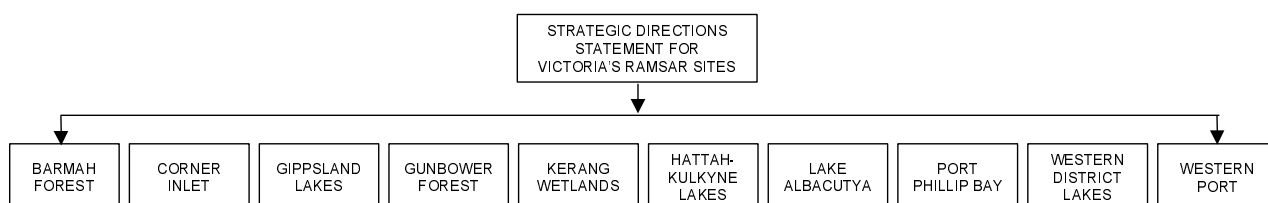
The Strategic Directions Statement also provides background information on the suite of relevant international conventions, as well as related Commonwealth and State policy and legislation which directs and supports the management of Ramsar sites. The Strategic Directions Statement and Strategic Management Plans are therefore intended to be read as complementary documents.

## 1.2 Purpose of the Strategic Management Plan

The primary purpose of the Strategic Management Plan (SMP) for the Corner Inlet Ramsar site is to facilitate conservation and wise use of the site so as to maintain, and where practical restore, the ecological values for which it is recognised as a Ramsar wetland. This will be achieved by implementing site-specific management strategies under each of the key objectives (derived from the Strategic Directions Statement).

The SMP for the Corner Inlet Ramsar site provides management agencies and stakeholders with an appropriate management framework and the necessary information to ensure that decisions regarding land use and development, and ongoing management are made with full regard for wetland values in environmental, social and economic terms.

**Figure 1.1 Framework for the strategic management of Victoria's Ramsar sites**



The SMP has been structured in order to:

- provide a comprehensive site description;
- examine the legislation, policy and any related management instruments which direct or otherwise influence management both within and adjacent to the site;
- clarify the roles and responsibilities of management agencies;
- identify the values for which the site is recognised as a Ramsar site;
- assess threats to these values through systematic analysis of both current and potential risks; and
- give priority to Site Management Strategies that minimise and, where possible, eliminate identified risks to values.

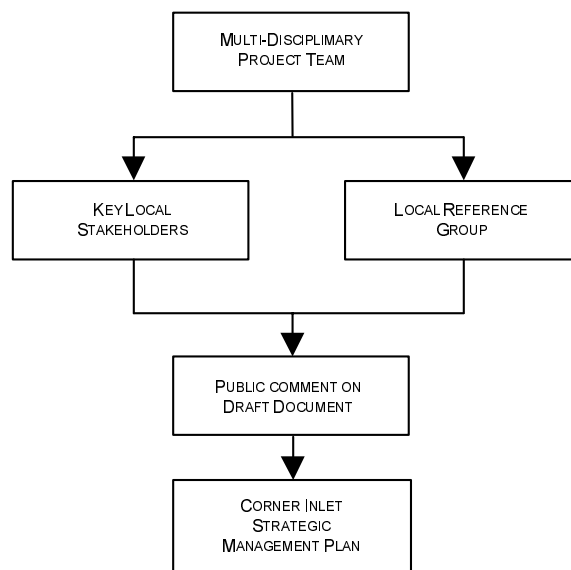
### 1.3 Consultative framework

The SMP has been developed collaboratively through a multi-disciplinary team comprised of Parks Victoria and Department of Natural Resources and Environment staff from regional and central offices. Throughout the process key local stakeholders have provided input (see Figure 1.2).

The SMP is a public document that has been formalised through a government approval process. As such, the SMP was subject to a public comment phase commensurate with State Government consultative processes. All comments received during the public consultation phase were considered in finalising the document.

The SMP is intended to operate over a six-year time frame and will be reviewed every three years to coincide with national reporting requirements under the Convention on Wetlands.

**Figure 1.2** Process for developing the SMP for the Corner Inlet Ramsar site



## 2 Ramsar Site Description

### 2.1 Location

Situated approximately 260 km south-east of Melbourne, the Corner Inlet Ramsar site covers 67,192 ha and represents the most southerly marine embayment and tidal mudflat system of mainland Australia. The Inlet is bounded to the west and north by the South Gippsland coastline, in the south-east by a series of barrier islands and sandy spits lying end to end and separated by narrow entrances, and to the south by the hills of Wilsons Promontory.

### 2.2 Wetland type

Within the Corner Inlet Ramsar site the four wetland types recognised under the classification system used by the Ramsar Convention are: permanent shallow marine waters, intertidal mud, sand or salt flats, intertidal marshes and intertidal forested wetlands.

In Victoria wetlands are classified into eight categories (Corrick and Norman 1980). The Corner Inlet Ramsar site includes areas of three wetland types under this system: permanent saline (14,151 ha), semi-permanent saline (666 ha), and deep freshwater marsh (162 ha). The remaining 52,213 ha of the Ramsar site is not categorised by the Victorian wetland classification system.

### 2.3 Criteria met for Ramsar listing

To be listed as Wetlands of International Importance or 'Ramsar sites', wetlands must meet one or more internationally accepted criteria in relation to their zoology, botany, ecology, hydrology or limnology and importance to waterfowl. The Ramsar Convention updated the criteria in 1999. The new criteria will be applied to Corner Inlet when the site Ramsar Information Sheet is next updated in 2005. The criteria met by the Corner Inlet Ramsar site when listed in 1982 were:

- 1(a) - a particularly good representative of a natural or near-natural wetland characteristic of one, or common to more than one, biogeographical region;
- 1(b) - representative of a wetland which plays an important role in the natural functioning of a major river basin or coastal system, especially where located in a trans-border position;
- 1(c) - a rare or unusual type of wetland in the biogeographical region;
- 2(b) - is of special value for maintaining the genetic and ecological diversity of the flora and fauna of the region;

- 3(a) - it regularly supports 20,000 waterfowl;
- 3(b) - it regularly supports substantial numbers of individuals from particular groups of waterfowl, indicative of wetland values, productivity or diversity; and,
- 3(c) - regularly supports 1% of the individuals of a population of one species or subspecies of waterfowl.

Information on how the Corner Inlet Ramsar site meets these criteria is detailed in Chapter 4.

### 2.4 Land tenure and management

The land in the Corner Inlet Ramsar site has a variety of tenures and is managed by a number of different agencies under the provisions of the relevant legislation.

The majority of the public land and waters that comprise the Corner Inlet Ramsar site is included in the Nooramunga and Corner Inlet Marine and Coastal Parks. Marine and Coastal Parks are set aside primarily to conserve and protect natural ecosystems and to provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments.

The 1986 Orders proclaiming Corner Inlet and Nooramunga Marine and Coastal Parks to be reserved and added to Schedule Four of the *National Parks Act 1975* (Vic.) included only previously unreserved Crown Land. They excluded 'any land reserved as National Park or declared or deemed to be reserved for any other purpose or under any other Act which reserves Crown land'. Consequently, a range of reservations exists for the public land included in the Corner Inlet Ramsar site.

Doughboy Island, Bennison Island, Granite Island, Long Island and Corner Island and the intertidal area in the southern section of Corner Inlet are part of Wilsons Promontory National Park. These areas are reserved and managed under the provisions of the *National Parks Act 1975*.

The remaining area of the Ramsar site is either freehold land, unreserved crown land or included in various public purpose or coastal reserves.

In May 2002, the Government introduced legislation into Parliament to establish a Marine National Park in Corner Inlet, adjacent to the Wilsons Promontory National Park (in the vicinity of Bennison Island and Granite Island). This area would include representative marine habitats.





Marine National Parks are highly protected areas which contribute to a system representing the range of marine environments in Victoria, and in which no fishing, extractive or damaging activities are permitted.

The Government accepted the recommendation of the Environment Conservation Council that the area of Corner Inlet Marine and Coastal Park not recommended for inclusion in the Corner Inlet Marine National Park, and the whole of the Nooramunga Marine and Coastal Park, be retained and managed for a variety of uses which do not impact on their values and objectives.

Parks Victoria manages almost all the public land and waters within the Corner Inlet Ramsar site. This includes Corner Inlet Marine and Coastal Park, Nooramunga Marine and Coastal Park, Wilsons Promontory National Park and part of the Port

Franklin - Port Welshpool Coastal Reserve. The foreshore with the Port Welshpool and Port Albert townships and the Red Bluff/Foley Road area are managed by Committee's of Management. The waters of the commercial ports of Port Welshpool and Port Albert are managed by Gippsland Ports. Sunday Island, Dog Island, Little Dog Island, Hunter Island and Bullock Island included within the Ramsar site are privately owned (Table 2.1).

In addition a range of agencies are responsible for ensuring that management of the site complies with a broad range of legislative requirements. The successful management of the Corner Inlet Ramsar site therefore relies on effective cooperation and partnership between the various management agencies. Lead management agencies and their key responsibilities are summarised in Table 2.2

**Table 2.1 Land tenure and management**

| Area   | Land tenure             | Legal status                          | Management                                      |
|--|-------------------------|---------------------------------------|---|
| Wilsons Promontory National Park                                 | National Park           | <i>National Parks Act 1975</i>        | Parks Victoria                                  |
| Corner Inlet Marine and Coastal Park                             | Marine and Coastal Park | <i>National Parks Act 1975</i>        | Parks Victoria                                  |
| Nooramunga Marine and Coastal Park                               | Marine and Coastal Park | <i>National Parks Act 1975</i>        | Parks Victoria                                  |
| Nooramunga Faunal Reserve  | Wildlife Reserve        | <i>Wildlife Act 1975</i>              | Parks Victoria                                  |
| Port Franklin - Port Welshpool Coastal Reserve                   | Coastal Reserve         | <i>Crown Land (Reserves) Act 1978</i> | Parks Victoria                                  |
| Yanakie (Red Bluff) Coastal Reserve                              | Coastal Reserve         | <i>Crown Land (Reserves) Act 1978</i> | Parks Victoria                                  |
| Foreshore within Port Welshpool township                         | Public Purposes Reserve | <i>Crown Land (Reserves) Act 1978</i> | Committee of Management (South Gippsland Shire) |
| Foreshore within Port Albert township                            | Public Purposes Reserve | <i>Crown Land (Reserves) Act 1978</i> | Committee of Management (Wellington Shire)      |
| Shipping Channels  | Unreserved Crown land   | <i>Land Act 1958</i>                  | NRE   |
| Land and waters within Port areas (Port Welshpool & Port Albert) | Reserved Crown land     | <i>Crown Land (Reserves) Act 1978</i> | Gippsland Ports                                 |
| Dog Island   | Freehold                | Private land                          | Private   |
| Little Dog Island  |                         |                                       |   |
| Bullock Island   |                         |                                       |   |
| Hunter Island  |                         |                                       |   |
| Sunday Island  |                         |                                       |   |

**Table 2.2 Lead management agencies and their key responsibilities**

| Agency  | Responsibility  | Local agency                                  | Responsibility   |
|---|---|---|--|
| Department of Natural Resources and Environment (NRE) | Provide strategic direction for: park and reserve management; management of flora and fauna; fisheries management and research; catchment management and agricultural services; coastal and port management; licence management; land use planning; and the implementation of the Ramsar Convention in Victoria.                              | NRE Yarram                                    | Provide policy advice for the management of the Corner Inlet Ramsar site. Responsible for land use planning, management of hunting, and commercial and recreational fishing at the Corner Inlet Ramsar site. |
|   | Provide statewide policy on, and funding for: establishing, managing, dredging and maintaining channels in local port waters; providing and maintaining navigation aids; and direction and control of vessel movement within local port waters.   | Gippsland Ports                               | Manage local port activity of Port Welshpool and Port Albert. Maintain navigational aids and channels and local port infrastructure.   |
| Parks Victoria  | Manage parks and reserves.  | Parks Victoria (Foster)                       | Manage the two Marine and Coastal Parks, Wilsons Promontory National Park, Nooramunga State Faunal Reserve and Port Franklin - Port Welshpool Foreshore Reserve (area not under Committee of Management).    |
| Local Government/Shires                               | Regulate local development through planning schemes, on-ground works and manage urban (and some rural) drainage.  | South Gippsland Shire                         | Administer the planning scheme.  |
|   |   | Wellington Shire                              |  |
| Committees of Management                              | Manage reserved Crown Land on behalf of the Minister. Committees are usually the local Shire or publicly elected.   | South Gippsland Shire                         | Manage foreshore within Port Welshpool township and Coastal Reserve within Red Bluff/Foley Road area.  |
|   |   | Wellington Shire                              | Manage foreshore within Port Albert township.  |
| Victorian Catchment Management Council                | Advise State Government on catchment management, and land and water resource issues and priorities. Encourage cooperation between land and water managers. Promote community awareness on catchment management issues.  | West Gippsland Catchment Management Authority | Implement the Regional Catchment Strategy. Prepare and implement Action Plans. Manage surrounding catchment and inflowing streams and drainage.  |
| Environment Protection Authority (EPA)                | Responsibility for and coordination of all activities relating to the discharge of waste into the environment and the generation, storage, treatment, transport and disposal of industrial waste and the emission of noise and for preventing or controlling pollution and noise and protecting and improving the quality of the environment. | EPA Traralgon                                 | License sewerage and other discharges. Monitor water quality.  |
| Non-Metropolitan Urban Water Authorities              | Provide urban water supplies and waste water disposal services.   | South Gippsland Water Authority               | Provide water and sewerage services to the townships neighbouring the Ramsar site. Manage water supply catchments and sewerage treatment plants.   |

| Agency                    | Responsibility   | Local agency            | Responsibility   |
|---------------------------|--|-------------------------|--|
| Victorian Coastal Council | Strategic statewide coastal planning; preparation of the Victorian Coastal Strategy; advise the Minister; monitor development of Coastal Action Plans; and coordinate the implementation of the Victorian Coastal Strategy and Coastal Action Plans. | Gippsland Coastal Board | Develop Coastal Action Plans and guidelines for coastal planning and management within the region; provide advice to Minister and Council on coastal development within the region; and implementation of, and facilitating public awareness of the Victorian Coastal Strategy, Coastal Action Plans and coastal guidelines. |
| Commercial Port           | Establish, manage and maintain port facilities under management agreement with the state government.   | Esso                    | Manage and maintain port facilities of the Barry Beach Marine Terminal.  |

## 2.5 Adjacent land use

The majority of the land adjacent to the Corner Inlet Ramsar site is privately owned and, over the last 140 years, has been cleared for agriculture, principally dairying and stock grazing. The coastal settlements of Manns Beach, Robertsons Beach and McLoughlins Beach neighbour the site.

Corner Inlet encompasses four ports, Port Albert, Port Franklin and Port Welshpool which service the commercial fishing industry, and Barrys Beach marine terminal which is the main construction and launch facility for the Bass Strait oil-field platforms.

South Gippsland and Wellington Shires plan for and regulate land use and development on public and private land in and Corner Inlet. Consents under the *Coastal Management Act 1995* (Vic.) are also required for development on public coastal land and in Victorian waters.

To the south of the Corner Inlet Ramsar site is the Wilsons Promontory National Park and the open waters of Bass Strait.

## 2.6 Catchment setting

The catchment of the Corner Inlet Ramsar site is approximately 2,300 square kilometres (NRE 1996). As mentioned above, the catchment surrounding the site has been largely cleared to allow for agricultural activities, mostly dairy farming and sheep and cattle grazing (DCNR 1995). Consequently, freshwater runoff has probably changed in quality and quantity, with runoff now likely to be carrying increased silt loads, dairy effluent, fertiliser, pesticides and herbicides (DCNR 1995). Dairy farming is particularly intensive and often causes significant nutrient runoff to waterways.

The numerous rivers, creeks and runoff points into the site carry pollutants from the catchment, including urban stormwater, nutrient-laden agricultural runoff, and sediment, which may reduce water quality in the site (NRE 1996). This will in turn affect seagrass and other bottom-dwelling biota, leading to significant ecological changes in the vicinity of creeks and drains.

Forestry activities have been prominent in the catchment since European settlement with many areas of native forest having now been logged. Increasingly, areas of plantation forestry involving both native (e.g. Tasmanian Blue Gum) and exotic (e.g. Radiata Pine) species are being developed.

The catchment of the Corner Inlet Ramsar site lies within the area managed by the West Gippsland Catchment Management Authority (CMA). The aim of the CMA is to manage the natural resources of the region using a whole of catchment approach.

## 2.7 Local Government

The Corner Inlet Ramsar site is located in two local government shires. The South Gippsland Shire covers the area to the west of Port Welshpool including the Corner Inlet basin. The Wellington Shire covers the area to the east of Port Welshpool including the waters and islands of Nooramunga Marine and Coastal Park.

## 3 Policy Framework

A suite of relevant international conventions, and the Commonwealth and Victorian legislation and policy that directs management and use of Ramsar sites, are outlined in the Strategic Directions Statement. This Chapter covers the local policy framework comprising plans, strategies and municipal planning provisions.

### 3.1 Strategies

There are a range of existing plans and strategies that provide for the protection and enhancement of the natural and cultural values of the Corner Inlet Ramsar site. Victoria has a strong planning framework and as a result these plans and strategies have a high level of integrated planning and address many aspects of wise and sustainable use. These plans include:

- Corner Inlet and Nooramunga Marine and Coastal Parks Draft Management Plan (1996);
- Corner Inlet Fisheries Draft Management Plan (1995);
- Draft Gippsland Coastal Waters Coastal Action Plan (1999);
- Draft Gippsland Boating Coastal Action Plan (2001);
- Draft West Gippsland Weed Action Plan (2000);
- Gippsland Fire Protection Plan (1999);
- Municipal Strategic Statements for the South Gippsland and Wellington Shires under the *Planning and Environment Act 1987* (Vic.);
- West Gippsland Regional Catchment Strategy (1997); and
- Wilsons Promontory National Park Management Plan (1997).

### 3.2 Municipal Strategic Statements, zoning and overlays

The South Gippsland and Wellington Shires have produced Municipal Strategic Statements that cover the Corner Inlet Ramsar site. Although these Statements address a number of important land management and environmental issues, the South Gippsland and Wellington Municipal Strategic Statements do not emphasise the environmental values of the Corner Inlet Ramsar Site and its catchment or the risks to its values.

Zoning pursuant to the *Planning and Environment Act 1987* has been applied to the Corner Inlet Ramsar site, as part of a review of the planning schemes, to control land use and development. The Public Conservation and Resource Zone (PCRZ) and Public Park Recreation Zones (PPRZ) apply to the Ramsar site.

The PCRZ aims to:

- protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values;
- provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes; and
- provide for appropriate resource-based uses.

The PPRZ aims to:

- recognise areas for public recreation and open space;
- protect and conserve areas of significance where appropriate; and
- provide for commercial uses where appropriate.

Furthermore, as part of the local planning scheme review, a number of Overlays have been applied to areas within and adjacent to the Ramsar site. Overlays operate in addition to zone requirements and generally concern environmental, landscape, heritage, built form, and land and site management issues. The Overlays applied to the Corner Inlet Ramsar Site are broad, and do not provide adequate protection to rare and threatened species and wetland, riparian and instream habitats. The Overlays are:

- ESO1 – Environmental Significance Overlay – Areas of Natural Significance
- ESO4 - Environmental Significance Overlay – Sewerage Treatment Plant and Environs
- ESO6 - Environmental Significance Overlay – Areas Susceptible to Flooding
- LSIO – Land Subject to Inundation

## 4 Values

The key environmental values of the Corner Inlet Ramsar site for which it was listed (i.e. representativeness, flora and fauna, and waterbirds) are summarised below. Other values described include natural function, cultural heritage, scenic, economic, education and interpretation, recreation and tourism, and scientific.

### 4.1 Wetland representativeness

The Corner Inlet Ramsar site includes areas of three wetland types under the Victorian wetland classification system including areas of the State's most depleted wetland habitats and wetlands least represented in Victoria's protected area network (Table 4.1). It should be noted that 52,213 ha of the Ramsar site are not categorised by the Victorian system. Of interest, the Corner Inlet Ramsar site represents approximately 10% of the remaining permanent saline wetlands in the State.

### 4.2 Flora and fauna

More than 390 species of indigenous flora and 160 species of indigenous fauna have been recorded at the Corner Inlet Ramsar site. Of these, one flora species and six fauna species are considered to be nationally threatened under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (see Appendices 2 and 3) (NRE 1999a; NRE 1999b).

A total of 14 flora species and 31 fauna species considered to be threatened in Victoria have been recorded at the Corner Inlet Ramsar site. Nine of the fauna species recorded are also listed under the *Victorian Flora and Fauna Guarantee Act 1988* (see Appendices 2 and 3) (NRE 1999a; NRE 1999b).

A total of 24 bird species listed under the Japan - Australia Migratory Birds Agreement (JAMBA) and 26 species under the China - Australia Migratory Birds Agreement (CAMBA) have been recorded at

the Corner Inlet Ramsar site. Twenty-two of these species are common to both agreements (see Appendix 4).

The Corner Inlet Ramsar site has records of 25 bird species listed under the Bonn Convention (see Appendix 4).

Fifteen vegetation communities, ranging from woodland to fringing saltmarsh and intertidal mangrove scrubland, occur at the Corner Inlet Ramsar site (NRE 1996). There are also at least 14 known sites of botanical interest in the area, as well as vegetation communities that are rare or have restricted distribution, due mainly to past clearing and other disturbance (NRE 1996). Few other areas in Victoria have such a large area of saltmarsh and mangroves with an extensive hinterland of undisturbed indigenous vegetation as the southern part of Corner Inlet (NRE 1996).

The islands of Corner Inlet are of national botanical significance (Frood 1986), particularly for their flora. The islands contain significant areas of saltmarsh and mangroves, both of which are communities of very limited distribution (Frood 1986).

Other communities of interest and value are the seagrass beds because of their large area, high faunal diversity and sensitivity to environmental change (NRE 1996). Corner Inlet contains the only extensive beds of the Broad-leafed Seagrass in Victoria (Frood 1986). Four species of seagrass occur in Corner Inlet and their distribution within the Inlet has been mapped as part of a detailed survey by the Marine and Freshwater Resources Institute (Roob et al. 1998).

In addition to seagrass beds numerous soft sediment habitats exist throughout Corner Inlet. These range from fine mud and silt deposits to sandy bottoms and occur in both intertidal and subtidal areas.

**Table 4.1 Representativeness of Victorian wetland types in the Corner Inlet Ramsar site**

| Wetland Type          | Pre-European area (ha) in Victoria | Area (ha) remaining in Victoria | Area (ha) in Victoria's protected area network <sup>1</sup> | Ramsar coverage in Victoria (ha) | Corner Inlet Ramsar site (ha) |
|-----------------------|------------------------------------|---------------------------------|---|----------------------------------|-------------------------------|
| Deep Freshwater Marsh | 176,601                            | 54,860                          | 21,877  | 9,041                            | 162                           |
| Permanent Saline      | 155,607                            | 154,191                         | 70,778  | 131,743                          | 14,151                        |
| Semi-permanent Saline | 67,403                             | 70,271                          | 40,409  | 12,867                           | 666                           |
| Unclassified          |                                    |                                 |   |                                  | 52,213                        |

<sup>1</sup> Includes areas of Ramsar sites.

Over 390 species of marine invertebrates have been recorded in Corner Inlet (Morgan 1986). The invertebrate fauna are dominated by polychaetes, amphipods, gastropod and bivalve molluscs and echinoderms (Morgan 1986). Three species of marine invertebrates, which appear to be restricted to Corner Inlet, have been recommended for listing as vulnerable species under the *Flora and Fauna Guarantee Act 1988* (O'Hara & Bamby 2000).

A variety of marine mammals have been recorded in the Corner Inlet Ramsar site. Bottlenose Dolphins and Australian Fur Seals are common visitors and occasional records exist for Common Dolphins, New Zealand Fur Seals and Leopard Seals. The Southern Right Whale, listed under the *Flora and Fauna Guarantee Act 1988*, is a winter visitor to the site as part of its seasonal migration to southern Australia. Various other species of whales have been recorded as strandings on the Inlet's beaches (NRE 1996).

### 4.3 Waterbirds

The Corner Inlet Ramsar site provides internationally important feeding, resting and breeding habitat for fifty-seven waterbird species including a range of waders; Pied Oystercatcher, Sooty Oystercatcher, Eastern Curlew, Bar-tailed Godwit, Red Knot, Grey Plover, Double-banded Plover, Curlew Sandpiper, Red-necked Stint, Sanderling, Pacific Golden Plover, Greenshank and Ruddy Turnstone (Watkins 1993).

During summer the Corner Inlet Ramsar site supports between 30,000 and 40,000 waders. This number represents 21.5% of the total known Victorian wader population and includes the majority of the State's population of less abundant wader species (see Appendix 5). Over winter Corner Inlet sustains nearly half of the juvenile population of Northern Hemisphere migrants in Victoria (Martindale 1982).

The Corner Inlet Ramsar site supports a high percentage of the Victorian populations of the following species (see also Appendix 5):

|                       |     |
|-----------------------|-----|
| • Grey Plover         | 95% |
| • Bar-tailed Godwit   | 89% |
| • Pied Oystercatcher  | 68% |
| • Red Knot            | 65% |
| • Lesser Sand Plover  | 65% |
| • Eastern Curlew      | 46% |
| • Sooty Oystercatcher | 44% |
| • Great Knot          | 26% |
| • Curlew Sandpiper    | 19% |
| • Red-necked Stint    | 17% |
| • Sanderling          | 11% |

Corner Inlet's extensive tidal flats, which are exposed at low tide, are important feeding areas for waders. When the tide covers the feeding areas the waders congregate at specific roosting sites (49 have been recorded). The roosting sites are located above the high water mark on the numerous islands and the extensive coastal strip around the Inlet (Watkins 1993). The area provides important breeding habitat for the threatened Fairy Tern (vulnerable in Victoria), and Crested Terns (400 to 500 pairs) and Caspian Terns (30 to 90 pairs) (NRE 1996).

The Corner Inlet Ramsar site is one of the most important breeding and non-breeding sites in Victoria for Pied Oystercatchers and regularly supports over 12% of the Australian population of this species (Watkins 1993). The Corner Inlet Ramsar site may also support 10% of the world's population of Eastern Curlew (Watkins 1993).

The proportions of waders utilising the Corner Inlet Ramsar site between summer and winter varies significantly with greater numbers of waders usually being present in the summer. The Red-necked Stint, Curlew Sandpiper, Red Knot, Bar-tailed Godwit and Pied Oystercatcher form the highest proportion of waders using the Inlet in both summer and winter.

The Corner Inlet Ramsar site provides important habitat for Chestnut Teal and Black Swan, as well as a drought refuge and shelter for a range of waterbirds when they are temporarily flightless during moulting (see Appendix 5).

The Corner Inlet Ramsar site is included in the East Asian-Australasian Shorebird Site Network in recognition of its high value as habitat for migratory waders and other shorebirds. The Corner Inlet Ramsar site is one of eleven sites within the Network that occur in Australia and is also listed on the Register of the National Estate in recognition of its importance for wading birds.

### 4.4 Natural function

The Corner Inlet Ramsar site provides a range of important functions that contribute to the maintenance of the wetland and surrounding ecosystems. The saltmarsh and mangrove communities filter pollutants, stabilise sediments, trap and process nutrients, and protect the shoreline from erosion. The site provides food, nesting, and nursery areas for many animals including a variety of reptile and amphibian species, mammal species, fish species and a number of endangered or threatened bird species.

The mudflat ecosystem provides an essential link in the food chain and supports a number of important marine species. This sensitive inter-tidal area

depends on the surrounding beaches and soil for the nutrients that sustain its invertebrate populations.

#### **4.5 Cultural heritage**

The Brataulolong Clan of the Gunai/Kurnai Tribe has strong cultural traditions and practices associated with the Corner Inlet area. Many Aboriginal sites including scarred trees, burial sites, artefact scatters, camps and shell middens have been recorded in the area. The cultural heritage responsibilities of Corner Inlet lie with the Aboriginal community of the Central Gippsland Aboriginal Cooperative in Morwell.

There are two current applications for a determination of Native Title by members of the Gunai/Kurnai Aboriginal Community and the Gunai/Kurnai/Boonerwung Aboriginal Community over the Ramsar site.

Europeans first settled the Port Albert area in the early 1840s (NRE 1996). The coastal port townships of Port Albert and Port Welshpool have historically been important for shipping cattle from Gippsland to Tasmania, serving as a means of opening up Gippsland for agriculture (ANCA 1993). Historic townships are thus one of the main European cultural features of the area (NRE 1996).

Thirty-one shipwrecks are present in the site, with 23 of these being in the Port Albert area (NRE 1996). Many of these ships were wrecked as a result of sudden changes to channel conditions around the entrance to Port Albert (NRE 1996). Shipwrecks are important cultural features as they illustrate aspects of European settlement, primarily the history of trade, ship building and propulsion (NRE 1996).

#### **4.6 Scenic**

Landscape features primarily contribute to the 'high' scenic values of the Corner Inlet Ramsar site (NRE 1996). Notable landscape features include the spectacular back-drop of granite peaks from Wilsons Promontory, extensive exposed mudflats at low tide, islands dotted throughout the Inlet, low marshy shorelines, and sandy beaches with long exposed sand bars on the outer barrier islands (NRE 1996). Cetaceans, such as the Southern Right Whale, may be appreciated in winter.

There are a number of significant geological and geomorphological features within the Corner Inlet Ramsar site, including sites of National and State significance described by Rosengren (1989) which are visual attractions (NRE 1996). The abundant and diverse bird life, distinctive communities of flora and fauna (both terrestrial and aquatic), and heritage sites are other scenic features.

#### **4.7 Economic**

The components, functions and attributes of the Corner Inlet Ramsar site provide a variety of direct and indirect economic values to the area. Direct economic values of the Corner Inlet Ramsar site include fisheries and recreation/tourism.

Commercial and recreational fishing is socio-economically significant to the local area and the broader fishing community. In catch terms Corner Inlet the third largest commercial bay and inlet fishery in Victoria after Port Phillip Bay and the Gippsland Lakes. The main species include King George Whiting, Flathead, Flounder, Sea Garfish, Silver Trevally, Southern Calamari, Gummy Shark, Pike and Yellow Eye Mullet. A number of other species are also caught and the catch composition varies on a seasonal basis, influenced both through marketing and stock recruitment forces. NRE annually publishes commercial fisheries statistics in the "Fisheries Victoria Catch and Effort Information Bulletin" (NRE 2000). A total of 20 fishing licenses are authorised to access the Corner Inlet fishery. The ten-year average annual catch from June 1990 to June 2000 was 308 tonnes, which represents an estimated average catch value of about \$1.5 million. Some of the catch is processed and sold locally and the rest sold into the Victorian Fish Markets.

Recreational fishing is popular in Corner Inlet and, as with commercial fishing, economic benefits flow through to the wider community contributing mainly to the retail and tourism sectors of the local economy.

Corner Inlet contains a number of shipping channels for commercial fishing, as well as shipping trade, and recreational boating (NRE 1996). The main ports of Corner Inlet - i.e. Barry Beach, Port Welshpool, Port Franklin and Port Albert - service the commercial fishing industry, minor coastal trade, offshore oil and natural gas production, and boating visitors (NRE 1996).

Current proposals to develop industrial port and recreational boating facilities within Corner Inlet have the potential to generate significant economic returns for the region. All proposals will require detailed investigation prior to approval to ensure they have minimal impact on the environmental values of the Corner Inlet Ramsar site.

#### **4.8 Education and interpretation**

The Corner Inlet Ramsar site offers a wide range of opportunities for education and interpretation of wildlife, marine ecosystems, geomorphological processes and various assemblages of aquatic and terrestrial vegetation (NRE 1996). For instance, outstanding opportunities exist for the public to view

large numbers of wading birds in their natural environment (NRE 1996). An interpretive sign is located at Port Albert as part of the Victorian Ramsar Wetland Interpretation Project which aims to promote understanding and community support for Ramsar sites and other wetlands.

Due to the diversity, complexity and productivity of wetlands, they are often used to teach and demonstrate many of the scientific principles of ecology, biology, hydrology, chemistry, geology and geomorphology. For example, Snake Island, which is part of the Corner Inlet Ramsar site, is used annually by the University of Melbourne to study floristic composition and fire ecology.

#### **4.9 Recreation and tourism**

Corner Inlet is a popular visitor destination attracting an estimated 150,000 visitor days per year. This popularity may be attributed to its proximity to Melbourne and to the LaTrobe Valley.

The main activities undertaken by visitors are recreational fishing, boating, swimming, sea kayaking, camping and horse riding (NRE 1996). Less popular activities include jet skiing, wind surfing, bushwalking, nature appreciation and hunting for duck and hog deer (NRE 1996). The opportunities for remote camping are a unique attraction for which there is a strong and increasing demand (NRE 1996). Similarly, the importance of the Inlet for recreational fishing with Victorian, and in particular Melbourne-based anglers is growing (DCNR 1995).

Nearly all fishing in Corner Inlet is boat-based, as shoreline access is very limited (DCNR 1995). In 1995, the recreational catch consisted primarily of King George Whiting, Flathead, Trevally and Australian Salmon (DCNR 1995).

Commercial tour operators offer a range of activities within the Ramsar site including fishing, horse riding, sea kayaking, and boat tours. The range of recreational activities undertaken at the site is likely to increase as tourism opportunities are promoted (NRE 1996).

#### **4.10 Scientific**

Various scientific investigations are currently being undertaken at Corner Inlet.

- The Arthur Rylah Institute uses the Inlet as a long-term monitoring site for Chestnut Teal (NRE 1996);
- Birds Australia (the Australasian Wader Studies Group and the Victorian Wader Study Group) use this site for long-term monitoring of waterbirds and waders (DCE 1993);

- Birds Australia also uses the site for the long-term monitoring of Orange-bellied Parrots.
- NRE has recently completed a project mapping and monitoring the extent of seagrass in the Corner Inlet; and
- The former National Parks Service established grazing exclusion plots in 1992 on Snake Island to assess the effects of grazing by stock on vegetation communities (NRE 1996).
- Parks Victoria is monitoring the recovery of Manna Gums on Snake Island in response to overbrowsing by koalas.
- The Museum of Victoria is undertaking seagrass monitoring and a macro benthic fauna survey in the southern section of Corner Inlet.

The Ramsar site provides opportunities for further scientific research in the fields of botany, zoology and marine biology.

#### **4.11 Condition**

##### **Vegetation**

Approximately 90% of the shorelines and islands of the Corner Inlet Ramsar site supports remnant native vegetation. This site supports extensive areas of Coastal Grassy Woodlands, Coastal Scrubs, Heath and Heathy Woodlands. Much of the coast is fringed by saltmarsh and mangroves.

The largest islands within the Corner Inlet Ramsar site (i.e. Snake Island and St Margaret Island) support large stands of Coastal Grassy Woodlands and extensive heaths.

Other smaller islands are dominated by Coastal Scrubs, saltmarsh and mangroves. The outer barrier islands such as Clonmel and Box Bank consist mainly of large bare sand bars and small areas of grass and scrub.

Native vegetation communities of the Corner Inlet Ramsar site are in relatively good condition and show little sign of disturbance. Woodlands on Snake Island have been depleted through over-browsing by Koalas, and grazing and trampling of the understorey by cattle and deer. Grazing by managed herds of Hog and Fallow Deer have depleted the understorey of remnant vegetation communities on Sunday Island.

The seagrass communities in Corner Inlet have been found to be extremely variable in their distribution and abundance. The condition of Narrow Leaf Seagrass has shown considerable variation over the last 30 years, progressing through successive periods of growth and decline. Currently Narrow Leaf Seagrass



communities appear to be expanding in many areas and are in good condition. Broad Leaf Seagrass is in medium condition with some areas exhibiting strong growth while others appear to be declining. Increased nutrient loads from the surrounding catchments pose a potential risk to all seagrass communities,

particularly broadleaf seagrass, by promoting the growth of epiphytic algae which can smother seagrass leading to dieback.

### **Water quality**

The condition of water quality in Corner Inlet and the major rivers flowing into the Inlet is greatly dependent on the surrounding land-based practices (DCNR 1995). The quality of water entering Corner Inlet via rivers, creeks and drains is monitored through the community-based Waterwatch Program. Past indiscriminate clearing and inappropriate agricultural and forestry practices have increased soil erosion and stream frontage degradation, increasing sediment, fertiliser and nutrient levels in the streams. In addition, treated wastewater is discharged directly into the Inlet (NRE 1996).

## 5 Management of Risks

The key risks to the environmental values at the Corner Inlet Ramsar site are discussed below. The risks include pollution, pest plants and animals, inappropriate resource utilisation, dredging, recreation, erosion and fire which were in some cases established prior to the listing of the site.

These risks result from activities in the wetland, on adjoining land and in the catchment. Protection of the site therefore requires an integrated approach. A wide variety of measures are being implemented at the Corner Inlet Ramsar site to deal with risks. They include planning, research, site works, catchment works and education. A brief summary of these measures relevant to each risk is provided.

### 5.1 Pollution

The main sources of point source pollutants to Corner Inlet are from the sewage discharge points at Toora, Foster and Welshpool, and from approximately 30 stormwater and agricultural drains.

Diffuse source pollution, carried in runoff from the catchment, is a major concern during high rainfall events, as septic systems become flooded causing raw sewage to discharge into Corner Inlet via the stormwater drains (NRE 1996). High quantities of agricultural runoff containing pollutants such as biocides, oils, sediments and nutrients and other diffuse source pollutants enter the Inlet via waterways or stormwater drains. Runoff from forest harvest areas within the catchment may contribute sediment and nutrients to waterways and the Ramsar wetland.

Spills of oil, fuels and lubricants (from offshore drilling, accidents or disposal of ships' wastes) could have

devastating implications on the natural values of the Corner Inlet Ramsar site. The spilt substance and/or the clean-up techniques used have the potential to cause damage or death to aquatic organisms, wildlife and essential habitat such as feeding and nursery areas (DCNR 1995). The large areas of habitat exposed during low tide, especially muddy intertidal areas, and mangrove and saltmarsh communities, are extremely vulnerable to oil or chemical spills (DCNR 1995). Proposals to develop industrial estate and port facilities at Barry Beach and Port Welshpool may increase the risk of chemical and oil spills within the site.

Litter is not only aesthetically unpleasing, but has the potential to kill wildlife (NRE 1996). Plastic litter is particularly problematic, as wildlife (including waterbirds) sometimes consume or become entangled in it (NRE 1996). Stormwater drains, particularly from urban areas, are a possible source of litter, as is inappropriate litter disposal by boat users in the inlet.

The risk of pollution is being addressed through a range of measures including the fencing and revegetation of waterways by local Landcare groups, the West Gippsland Catchment Management Authority's willow reduction program, implementation of the Code of Forest Practices for Timber Production, maintaining an effective Oil Spill Response Plan and ensuring that staff are appropriately trained and through the participation of management agencies in statutory planning processes.

**Table 5.1 Occurrence of introduced animals on the main islands of Nooramunga**

| Island      | Fox | Rabbit | Black Rat | Hog Deer | Fallow Deer | House Mouse |
|-------------|-----|--------|-----------|----------|-------------|-------------|
| St Margaret | ✓   | ✓      | ?         | ✓        | -           | ✓           |
| Dream       | ✓   | ✓      | ?         | -        | -           | ?           |
| Box Bank    | -   | ✓      | ✓         | -        | -           | ?           |
| Clonmel     | -   | ✓      | ✓         | -        | -           | ✓           |
| Snake       | ✓   | -      | ✓         | ✓        | ?           | ✓           |
| Sunday      | -   | ✓      | -         | #        | #           | ✓           |

Source: Williamson pers. comm.

Note: Distribution of feral cats and dogs on the islands is unknown.

✓ Present

# Managed population on private land and adjoining park areas

? Status unknown

## 5.2 Pest plants and animals

### Terrestrial

Introduced plant species occurring within the Corner Inlet Ramsar Site represent about 24% (93 species) of the flora of the area. Many of these species have the potential to become environmental weeds, therefore posing a serious threat to the site's values (NRE 1996). If not controlled, pest plants may dramatically alter the structure and composition of remaining native plant communities, leading to a loss of indigenous plant species and changes in habitat characteristics for indigenous fauna (NRE 1996).

'Environmental' weeds are non-indigenous plants that invade indigenous vegetation and adversely affect its survival (Carr et al. 1992). The most serious environmental weed species of coastal vegetation communities include African Box-thorn, Blackberry, Sea Spurge, English Broom, Ragwort, Spear Thistle, Californian Thistle and Spartina (NRE 1996).

Sea Spurge is widely distributed along the Victorian coastline and occurs on a number of islands and beaches within Corner Inlet. Sea Spurge is an invasive species and in some coastal areas it has become the dominant species on foredunes. There is concern that if Sea Spurge becomes established within Corner Inlet, the Hooded Plover may be forced to nest in the storm tide zones on the beach resulting in breeding failure. Sea Spurge infestations also have the potential to threaten coastal processes by altering dune morphology and to degrade recreational areas (Belbin 1999).

Introduced animals known to be present at the Corner Inlet Ramsar site are the Black Rat, House Mouse, Starling, Sparrow, Blackbird, Rabbit, Red Fox, feral cat and domestic dog (NRE 1996). Although the Hog Deer and Fallow Deer are introduced species, they are protected wildlife and declared game under the *Wildlife Act 1975* (Vic.). Table 5.1 provides a summary of the distribution of introduced animals on selected islands within the Ramsar site.

The inner islands (Sunday Island and St Margaret Island) are susceptible to land-based predators, such as cats, dogs, foxes and rats (Martindale 1982). These predators are widespread and are a major threat to shore-breeding birds and roosting waders (NRE 1996).

Sunday, Box Bank and Clonmel islands are fox-free and they support the highest breeding densities of Pied Oystercatcher and Hooded Plover in the entire site (Minton pers. comm.). A control program on other barrier islands is currently underway as a cooperative program between the Victorian Wader Study Group

and Parks Victoria. This program may have eliminated foxes from Dream Island, although more work is required to confirm this (Minton pers. comm.).

The Black Rat and House Mouse are most abundant in coastal dune scrub, particularly where refuse has been left by campers and other visitors, while rabbits are abundant along the entire coast (NRE 1996). The species compete with small native mammals for food and habitat space (NRE 1996). Rabbit burrows often initiate more extensive wind or water erosion, particularly in slightly steeper dune country.

The risk of terrestrial pest plants and animals is being addressed through a range of measures including: a fox baiting program on the barrier islands targeting important roosting and breeding site of shorebirds and migratory waders; rabbit poisoning program on McLoughlins Point; and spraying programs to contain and, as far as possible, eradicate environmental weeds.

### Intertidal and marine

The introduction of exotic organisms into Victorian marine waters threatens the biodiversity and ecological integrity of Victoria's marine ecosystems and is therefore listed as a potentially threatening process under the *Flora and Fauna Guarantee Act 1988* (Vic.).

There are populations of Northern Pacific Seastar in Port Phillip Bay and the Derwent River Estuary. Corner Inlet is vulnerable to secondary introductions from these sources.

Broccoli Weed is present in Corner Inlet and is a potentially serious problem. Management options for its control have recently been reviewed by Trowbridge (1999). This pest is spreading, particularly near the western entrance to Corner Inlet, although its full extent is unknown (Williamson pers. comm.). Broccoli Weed is highly invasive and has the potential to occupy substantial areas of sub-tidal habitat in Corner Inlet, posing significant risk to shellfish and native algal species.

The European Green Crab has been present in Corner Inlet for over 60 years. This species is common and widespread but little is known of its impact on indigenous crab populations or on the populations of other marine biota.

The introduced grass Spartina grows in marine intertidal areas. Introduction and spread of Spartina to Victorian estuarine environments is a listed threatening process under the *Flora and Fauna Guarantee Act 1988*. Spartina is also declared as a noxious aquatic species in Victoria under the *Fisheries Act 1995*. Infestations occur throughout Corner Inlet, particularly in the west, and these are

being successfully controlled. *Spartina* is known to seriously degrade habitats for waterbirds, particularly shorebirds, by occupying and rendering unsuitable both feeding and roosting areas (Lane 1991). The invasion of the Franklin Island roosting site and nearby feeding grounds appears to be the greatest current risk resulting from *Spartina*.

Marine Pests are a systemic risk to Victorian marine waters and actions on the risks to the Corner Inlet Ramsar site are assessed and managed in this context. Action on the systemic risk is outlined in the *Flora and Fauna Guarantee Act 1988* 'Action Statement – Introduction of Exotic Organisms into Victorian Marine Waters'. This approach gives priority to reducing the risk of further introductions of marine pests – key actions include the development of a Ballast Water Management System and an associated Industrial Waste Management Policy (Ships' Ballast Water and Hull Cleaning). The Action Statement also calls for a rapid response in the event of a marine pest introduction and this is detailed in Interim Victorian Protocol for Managing Marine Organism Incursions (NRE 1999).

### **5.3 Resource utilisation**

#### **Grazing**

Licensed grazing of stock occurs on 10% of the Corner Inlet Ramsar site. Cattle grazing on the eastern two thirds of Snake Island occurs under licence to the Snake Island Cattlemen's Association. Grazing also occurs on the freehold land included within the Ramsar site including Hunter Island, Bullock Island and Dog Island. Additional areas of Ramsar site are grazed by sheep and cattle from the adjacent freehold land due to the inadequate fencing and an ill-defined public land boundary.

Grazing and trampling by Hog Deer and domestic stock can destroy and hinder regeneration of indigenous flora, causing a reduction in plant density, diversity and structure, and may expose small mammals to increased rates of predation. Such conditions provide an ideal niche for invasion by weed species that may eventually replace indigenous vegetation.

Grazing close to waterways and wetlands reduces water quality, causes muddying and fouling of the water, increases nutrients and depletes oxygen levels. This results in an overall loss of freshwater biodiversity.

#### **Commercial and recreational fishing**

Commercial and Recreational fishing are undertaken within Corner Inlet. Main catch and target species include King George Whiting, Flathead, flounder, sea

garfish, silver trevally, southern calamari, gummy shark, pike and yellow eye mullet.

In the ten year period, June 1990 to June 2000, the annual commercial catch has ranged from 225 tonnes to 380 tonnes. The total catch in 1999/2000 was 315 tonnes. The stabilisation of commercial fishing catch has been assisted by the consolidation of fishing licences before transferability is permitted and the implementation of a voluntary fisheries buyback scheme. The later process reduced Corner Inlet Access fishery licensees from 30 in 1995 to the current 20 licensees.

Fishing practices, both by commercial and recreational fishers have potential to impact on native fish stocks by disturbing fish habitat and increasing under size, immature and by-catch species. This habitat disturbance and alteration in fish stock abundance may detrimentally affect fish-eating species of native fauna (NREC 1991). Fishing and associated activities may also disturb migratory waders and shorebirds particularly near feeding and roosting sites.

Fisheries habitat and catch care issues are improving with community awareness, by promotion of sustainable practices through information programs by NRE Fisheries, Parks Victoria and Natural Heritage Trust funded programs such as Fishcare and Coastcare.

### **5.4 Dredging**

Dredging to improve navigational channels has occurred at Corner Inlet since the 1960's. The major shipping channel in Corner Inlet is the Lewis Channel, which passes from Entrance Point to Port Welshpool and Barry Beach Marine Terminal (DCNR 1995). Dredge spoil from this area has been dumped immediately south of the marine terminal where it has been entrained by local wave action and moved in an easterly direction smothering a small area of saltmarsh and mangrove (Lane pers. comm.)

Other significant channels provide access to Port Franklin and Port Albert (DCNR 1995). Dredging in Corner Inlet is infrequent, with the main Lewis Channel probably requiring maintenance dredging once every five years (DCNR 1995). The volume of spoil generated through this activity has not been documented.

Dredging on the Victorian Coast requires the consent of the Minister for Environment and Conservation under the *Coastal Management Act 1995*. In evaluating proposals for dredging, the Department of Natural Resources and Environment consults with the Environment Protection Authority's Technical Advisory Committee. The Committee has regard to

draft best practice Environmental Guidelines for Dredging which encourage environmentally sound approaches to dredging to minimise impacts.

## 5.5 Recreation

Recreational activities have both positive and negative consequences for the values of the Corner Inlet Ramsar Site. Recreational enjoyment of the amenity and natural values of the area contributes to increased awareness of these values. In turn, this can lead to greater community support for effective programs to maintain the ecological character of the area.

Duck hunting is not a widespread activity in the Corner Inlet Ramsar site and it involves a comparatively small number of hunters. Contamination of wetlands from the accumulation of lead shot poses a significant environmental risk and is listed as a threatening process under the *Flora and Fauna Guarantee Act 1988*.

Fishing, hunting and other recreational activities (e.g. wind surfing, jet skiing and other boating activities) occur within the Ramsar site and may cause disturbance to fauna species, particularly roosting, feeding and breeding waterbirds (Martindale 1982). According to Martindale (1982) disturbance of roosts will displace populations elsewhere and have several undesirable consequences, including:

- removal of birds from their feeding grounds, which may result in mortality, especially among migrating species;
- inadequate roosts to accommodate larger populations at other locations, resulting in increased competition and mortality; and
- loss of species that are highly specialised and adapted to particular areas of the Inlet, which may be out-competed by generalist species.

Disturbance by visitors during the breeding season may pose additional threats to the survival of breeding species such as the Crested Tern, Caspian Tern and Pied Oystercatcher, and to breeding threatened species including the Fairy Tern and Hooded Plover. These species can change their breeding sites from year to year, requiring regular monitoring to manage disturbance.

Jet skis and windsurfers can access quite shallow water that has, until recently, been comparatively inaccessible. Hovercraft have the ability to travel across both land and water areas of the Ramsar site. The rapidity of these forms of transport enables often quite remote and undisturbed areas to be accessed. The disturbance associated with these activities and the associated noise has the potential, if it becomes widespread, to seriously limit secure habitat

availability for many waterbirds (Colins et al. 2000). This could, in turn, lead to significant population declines in sensitive species. This form of recreation will require intensive management to avoid conflict with other recreational users. This may include the provision of extensive sanctuary areas off-limits to jet skis, windsurfers and hovercraft.

Many visitors are unaware of the regulations and restrictions that apply to recreational activities undertaken within the Corner Inlet Ramsar site. This lack of awareness has resulted in minor conflicts between visitors and the protection of natural and cultural values.

The risks associated with recreation are being addressed through a range of measures including: introducing regulations restricting access to shallow water areas for hovercraft and jet skis; providing interpretative information to orientate visitors and foster an understanding and appreciation of the site values; introducing seasonal restrictions for entry to wading and shorebird breeding and roosting sites; encouraging use of recreational codes of conduct; and through the licensing of commercial tourism operations. In addition, the use of toxic shot (with some minor exemptions) for duck hunting is prohibited in Victoria.

## 5.6 Erosion

Erosion is a natural process in a dynamic environment such as the coast (NRE 1996). The tidal channels between the barrier islands in the Nooramunga Marine and Coastal Park are naturally dynamic environments where sandy spits form, erode and reform many times. The Corner Inlet Ramsar site is also affected by accelerated coastal erosion caused by human interference (NRE 1996).

Although seawalls are generally used to protect particular features such as buildings or pastures from inundation by the sea, particularly during storms, they may cause amplified erosion under certain conditions (e.g. at Robertsons Beach and Foster Beach) (NRE 1996). Tyre walls and sand bagging have been used on Sunday and Snake Islands with limited success to protect jetties and moorings.

## 5.7 Fire

Fire management on public land in Victoria is governed by the Code of Practice for Fire Management on Public Land (CNR 1995). The Gippsland Fire Protection Plan (NRE 1999) defines fire protection objectives, strategies and practices to be adopted in the management of wildfires and prescribed burning. Two Fuel Management zones apply to the Corner Inlet Ramsar Site. Zone 4 areas are managed specifically for flora and fauna or

vegetation communities that have critical fire regime requirements. Zone 5 areas provide for the exclusion of prescribed burning from areas where there would be potential for economic, ecological or cultural loss.

In the Corner Inlet Ramsar site, high fire danger conditions generally occur during the summer months. The most recent wildfire within the site occurred in January 2000 when 830 ha of coastal heathy woodlands and heathlands on Snake Island were burnt. In 1996 a wildfire burnt 1,800 ha of St Margaret Island (almost half the island). Most of the remainder of the Corner Inlet and Nooramunga Marine and Coastal Parks have not been burnt for a number of decades.

Recently Parks Victoria has commenced an ecological burning program to promote the recovery of heathy woodlands on Snake Island. To date three ecological burns have occurred (450 ha in April 2000, 45 ha in May 1998, and 150 ha in October 1997).

The risk of fire is being addressed through the implementation of the Code of Practice for Fire Management on Public Land (1995). The development of the Guidelines and Procedures for Ecological Burning on Public Land in Victoria which when finalised will provide a consistent framework and process for planning and implementing ecological burning programs by NRE and Parks Victoria.

## **5.8 Level of risk to Ramsar values**

The goal of the integrated management framework (incorporating the Strategic Directions Statement and corresponding Strategic Management Plans) is to facilitate the maintenance of ecological character at Victoria's Ramsar sites by minimising risks to values. This objective will be achieved through the implementation of strategically prioritised

management actions. The proposed management actions are prioritised according to their ability to address the identified threats or risks.

A *strategic risk assessment* process based on the broad concepts and principles of ecological risk assessment has been undertaken for the Strategic Directions Statement and Strategic Management Plans. This process relied on a clear understanding of the range of direct and indirect pressures facing the wetlands, as well as the legislative and policy context.

A systematic and strategic analysis of risk provides the necessary information to site managers; and facilitates priority setting, resource allocation and informed decision-making. It also provides a better understanding of management issues.

The strategic risk assessment process has established the basis for objectively assigning higher, medium and lower priority levels to risks at Ramsar sites and the management actions designed to address them. The strategic risk assessment approach also facilitates an understanding of the relationship between specific risks and values. The strategic risk assessment framework draws on two major relevant documents: the US Environment Protection Authority's Guidelines for Ecological Risk Assessment (1997), and the Ramsar Convention's Wetland Risk Assessment (1999).

To enable comparison of risks within sites and across sites the main risks to the environmental values and ecological character of the Corner Inlet Ramsar site are summarised below in Table 5.2. It should be noted that the level of risk has not been assessed against the effort currently being applied to mitigating the risk.

**Table 5.2 Level of risk at the Corner Inlet Ramsar site**

| Ramsar site  | Risks                |          |           |             |              |                      |          |            |      |         |  |  |
|--------------|----------------------|----------|-----------|-------------|--------------|----------------------|----------|------------|------|---------|--|--|
|              | Altered water regime | Salinity | Pollution | Pest plants | Pest animals | Resource utilisation | Dredging | Recreation | Fire | Erosion |  |  |
| Corner Inlet |                      |          | ◆◆        | ◆◆◆         | ◆◆◆          | ◆◆                   | ◆◆       | ◆◆         | ◆    | ◆       |  |  |

◆◆◆ **Higher priority risk** – risks that currently or may potentially result in the significant loss of the site's environmental values and ecological character.

◆◆ **Medium priority risk** – risks that currently or may potentially result in the moderate loss of the site's environmental values and ecological character.

◆ **Lower priority risk** – risks that currently or may potentially result in the minor loss of the site's environmental values and ecological character.

## 6 Site Management Strategies

Site Management Strategies have been developed in response to the analysis of risks to the values at the Corner Inlet Ramsar site. The Site Management Strategies are grouped under the relevant Management Objectives established by the Strategic Directions Statement.

The Site Management Strategies for the Corner Inlet Ramsar site promote a range of specific management actions that will maintain, and in some cases restore the ecological character of the site. The Site Management Strategies are designed to:

- address risks that are having an adverse impact, or are likely to have an adverse impact on ecological character; and
- highlight existing strategies and actions that are consistent with wise use principles.

The successful coordination and cooperation of the lead agencies, as well as the continued efforts of the many community and interest groups, is essential for the long-term conservation of the Corner Inlet Ramsar site. The Strategic Directions Statement, statutory mechanisms, management plans and management strategies will guide the implementation of this Strategic Management Plan.

The Department of Natural Resources and Environment will have overall responsibility for:

- facilitating the implementation of the Strategic Directions Statement and Strategic Management Plans for Ramsar sites by ensuring relevant agencies incorporate relevant strategies into their work programs;
- coordinating and reporting on the progress with implementation of the Strategic Directions Statement and Strategic Management Plans for Ramsar sites;
- ensuring monitoring programs are established in accordance with the Strategic Directions

Statement and Strategic Management Plans for Ramsar sites;

- ensuring the regular review of Strategic Management Plans for Ramsar sites;
- reporting triennially, in line with National Reporting commitments, to the Conference of the Contracting Parties to the Ramsar Convention; and
- the six yearly update of the Ramsar Information Sheets for each site.

In order to clarify accountabilities, the lead agency responsible for the implementation of each strategy is identified. Lead agencies will monitor implementation of the strategies for which they are responsible. Lead agencies are encouraged to record progress on their responsibilities and extent of implementation and provide information in the form of annual summary reports to the Department of Natural Resources and Environment (NRE). This information will be consistent with a format developed by NRE and will contribute to Victoria's chapter in the National Report to the Convention on Wetlands, prepared every three years.

A rating of relative priority accompanies each Site Management Strategy. Definitions of these priorities are as follows:

**Higher:** Strategies that, when implemented, will significantly contribute to the maintenance of ecological character.

**Medium:** Strategies that, when implemented in conjunction with Higher priority strategies, will support the maintenance and contribute to the restoration of ecological character.

**Lower:** Strategies that, when implemented in conjunction with Higher and Medium priority strategies, will result in enhancement of ecological character.

### Management Objective 1

**Increase the scientific understanding of wetland ecosystems and their management requirements**

|     | Site Management Strategy   | Lead agency    | Priority |
|-----|--|----------------|----------|
| 1.1 | Support research needed to determine the impact of adjacent land use on site values and measures for its management. | PV, NRE, WGCMA | Higher   |
| 1.2 | Assist and encourage surveys and research into natural and cultural values of the Ramsar site.                       | PV, NRE        | Medium   |



## Management Objective 2

### Maintain or seek to restore appropriate water regimes

|     | Site Management Strategy  | Lead agency | Priority |
|-----|---|-------------|----------|
| 2.1 | Map and investigate the flows and water quality of drainage schemes in the water catchments draining into the Ramsar site.                                  | SGSC, WSC   | Higher   |
| 2.2 | Ensure no new drains (surface or sub surface) are constructed in the water catchments surrounding Corner Inlet without a permit from the appropriate Shire. | SGSC, WSC   | Medium   |

## Management Objective 3

### Address adverse processes and activities

|      | Site Management Strategy  | Lead agency     | Priority |
|------|---|-----------------|----------|
| 3.1  | Implement a monitoring program to identify risks to breeding terns, Hooded Plovers and Oystercatchers on the islands of Corner Inlet at the beginning of the breeding season, and take necessary steps to protect colonies from disturbance.  | PV, NRE         | Higher   |
| 3.2  | Ensure that all dredging activities are in accordance with the Environment Protection Authority's draft Best Practice Environmental Guidelines for Dredging.  | GP, NRE, EPA    | Higher   |
| 3.3  | Ensure that the environmental values of Corner Inlet, including its Ramsar status, are recognised and included in the Wellington and South Gippsland Shire planning schemes. Ensure that strategic planning and development control provisions are based on best practice environmental management.                             | WSC, SGSC       | Higher   |
| 3.4  | Continue current Spartina control program with the objective of eradicating Spartina from the Ramsar site. Negotiate with adjoining landholders to control Spartina on private land adjoining the site.   | PV              | Higher   |
| 3.5  | Maintain strong contingency plans and capabilities for dealing with oil spills from mobile or fixed facilities, or from offshore oil production platforms.  | GP, AMSA        | Higher   |
| 3.6  | Ensure that Environmental Impact Assessments are prepared for all proposed coastal protection works (including the extension or upgrading of existing works). Maintain existing seawalls only where significant economic benefits can be demonstrated. Ensure that all new private seawalls are not constructed on public land. | NRE, SGSC, WSC  | Higher   |
| 3.7  | Seek to prevent the introduction of marine pest plant and animal species and implement the Victorian Protocol for Managing Marine Organism Incursions.  | EPA, NRE        | Higher   |
| 3.8  | Ensure all waste and sewage discharges within the water catchments surrounding the Corner Inlet Ramsar site are appropriately licensed.   | EPA             | Higher   |
| 3.9  | Ensure all applications for amending use of land adjacent to the Corner Inlet Ramsar site are referred to CMAs, NRE and Parks Victoria to ensure potential impacts are identified and appropriately addressed.  | SGSC, WSC       | Higher   |
| 3.10 | Provide for, or participate in, appropriate consents for use and development under the <i>Planning and Environment Act 1987</i> and during the Environment Effects Statement process, where impacts on the Corner Inlet Ramsar site are possible.   | WSC, SGSC, NRE  | Higher   |
| 3.11 | Manage fire in the site consistent with the Code of Practice for Fire Management on Public Land (1995) and the Gippsland Fire Protection Plan (1999).   | PV, NRE         | Higher   |
| 3.12 | Continue West Gippsland Catchment Management Authority's willow reduction and waterway management program for streams within the Corner Inlet catchment.  | WGCMA, NRE      | Higher   |
| 3.13 | Continue pest plant and animal control programs in conjunction with adjacent landholders.   | PV, NRE         | Higher   |
| 3.14 | Ensure all dairies manage waste so it is retained within the boundary of the property as required under the State Environment Protection Policy – Waters of Victoria (EPA 1988).  | NRE, EPA, WGCMA | Medium   |

### Management Objective 3 continued

|      | Site Management Strategy   | Lead agency | Priority |
|------|--|-------------|----------|
| 3.16 | Liaise with adjoining landowners to ensure adequate fencing to protect saltmarsh from grazing stock.   | NRE, PV     | Medium   |
| 3.15 | Liaise with SGW and the EPA to ensure that proposed changes to the discharge point of the Toora Sewage Treatment Plant will not have a negative impact on the environmental values of the site.  | PV, NRE     | Medium   |
| 3.17 | Ensure that all boating facilities, including jetties and moorings, are appropriately licensed. Assess proposals for new facilities to ensure that they do not impact on the environmental values of the Ramsar site.                                      | NRE, GP     | Medium   |
| 3.18 | Investigate extent of wastewater pollution of Corner Inlet from contaminated groundwater in small, unsewered towns (i.e. Port Franklin, Manns Beach, Robertson's Beach) and rectify if necessary.  | EPA, SGWA   | Lower    |
| 3.19 | Develop and implement an ecological fire management Plan for Corner Inlet and Nooramunga Marine and Coastal Parks consistent with operational policies and with NRE's Interim Guidelines and Procedures for Ecological Burning on Public Land in Victoria. | NRE, PV     | Lower    |

### Management Objective 4

#### Manage within an integrated catchment management framework

|     | Site Management Strategy   | Lead agency      | Priority |
|-----|--|------------------|----------|
| 4.1 | Complete and implement the South Gippsland Water Quality Management Strategy.  | WGCMA, SGWA, EPA | Higher   |
| 4.2 | Prepare an Environmental Action Plan for Corner Inlet and Nooramunga Marine and Coastal Parks.   | PV               | Medium   |
| 4.3 | Implement the actions of the West Gippsland Regional Catchment Strategy particularly in relation to pest plant and waterway management.  | WGCMA            | Medium   |
| 4.4 | Implement a rigorous water quality monitoring program for the site and for streams, drains and other discharge points entering it and ensure coordinated implementation across relevant agencies.                  | WGCMA, NRE, SGWA | Medium   |
| 4.5 | Ensure pest plant and animal control efforts are coordinated across land tenures.  | NRE, PV          | Medium   |
| 4.6 | Based on the outcome of the water quality monitoring program, identify areas where particular problems arise and take necessary remedial action (e.g. sewerage, waterway management, urban stormwater management). | WGCMA, EPA       | Lower    |

### Management Objective 5

#### Manage resource utilisation on a sustainable basis

|     | Site Management Strategy  | Lead agency | Priority |
|-----|---|-------------|----------|
| 5.1 | Ensure that any proposed aquaculture developments in or adjacent to Corner Inlet are consistent with the protection of the natural ecological values of the area.   | NRE, PV     | Higher   |
| 5.2 | Monitor the impacts of recreational and commercial fishing on the resources of the site; particularly juvenile fish, bait species, resident fish species and seagrass beds. If necessary use education programs and regulations to enforce sustainable fishing practices. | NRE         | Higher   |
| 5.3 | Assess the impacts of cattle grazing on Snake Island, and review the future of this practice based on this assessment.  | PV          | Higher   |
| 5.4 | Assess the impacts of duck hunting within the Corner Inlet Ramsar site in conjunction with relevant hunting organisations, and review the future management of this practice based on this assessment.  | NRE, PV     | Medium   |
| 5.5 | Continue to consolidate commercial fishing licences in Corner Inlet consistent with the Bay and Inlets review of commercial fishing.  | NRE         | Medium   |
| 5.6 | Manage deer hunting to ensure that there is no impact on Ramsar values.   | PV, NRE     | Medium   |

## Management Objective 6

Protect, and where appropriate enhance, ecosystem processes, habitats and species

|     | Site Management Strategy   | Lead agency | Priority |
|-----|--|-------------|----------|
| 6.1 | Implement relevant actions in action statements for threatened species and threatening processes under the <i>Flora and Fauna Guarantee Act 1988</i> including: <ul style="list-style-type: none"> <li>• White-bellied Sea-eagle</li> <li>• Hooded Plover</li> <li>• Orange-bellied Parrot</li> <li>• Little Tern</li> <li>• Southern Right Whale</li> <li>• Predation of native wildlife by introduced Red Fox</li> <li>• Introduction of exotic organisms into Victorian marine waters</li> <li>• The use of lead shot in cartridges for hunting waterfowl.</li> </ul> | NRE, PV     | Higher   |
| 6.2 | Continue intensive fox baiting and control programs on selected islands in Corner Inlet in cooperation with community groups, with the objective of maintaining Dream, Box Bank and Clonmel Islands fox-free and eradicating foxes on Snake and Little Snake Islands.  | PV          | Higher   |
| 6.3 | Encourage conservation and sound land management practices on private land within and adjoining the Ramsar site.   | WGCMA, NRE  | Medium   |
| 6.4 | Monitor the occurrence of human disturbance at principal high tide shorebird roosts and tern breeding colonies. Where necessary, introduce restrictions and visitor management methods at these sites.   | PV          | Medium   |
| 6.5 | Seek to consolidate and rationalise park/private land boundaries.  | NRE, PV     | Medium   |

## Management Objective 7

Encourage strong partnerships between management agencies

|     | Site Management Strategy   | Lead agency | Priority |
|-----|--|-------------|----------|
| 7.1 | Establish and maintain regular communication and links between all relevant management agencies at the Corner Inlet Ramsar site. | NRE, PV     | Higher   |

## Management Objective 8

Promote community awareness and understanding and provide opportunities for involvement in management

|     | Site Management Strategy   | Lead agency        | Priority |
|-----|--|--------------------|----------|
| 8.1 | Liase with local community groups and landowners and involve them in relevant aspects of planning and managing the Corner Inlet Ramsar site.   | NRE, PV, WSC, SGSC | Higher   |
| 8.2 | Promote greater understanding, awareness and protection of the Corner Inlet Ramsar site through the provision of educational and promotional material including information shelters at key access points. | NRE, PV, WGCMA     | Higher   |
| 8.3 | Identify opportunities and encourage community involvement in ecological monitoring activities (e.g. AWSG, VSWG, Coast Action, Waterwatch, etc).   | PV, NRE            | Medium   |
| 8.4 | Identify opportunities and encourage involvement in community based conservation programs (e.g. Coast Action, Land for Wildlife, Waterwatch and Landcare).   | PV, NRE, WGCMA     | Medium   |

## Management Objective 9

Ensure recreational use is consistent with the protection of natural and cultural values

|      | Site Management Strategy  | Lead agency        | Priority |
|------|---|--------------------|----------|
| 9.1  | Introduce seasonal closures of areas to prevent public access to the feeding, roosting and breeding sites of migratory waders and shorebirds within the Ramsar site. Publicise seasonal closures in newspapers, tourism brochures, information shelters at boat ramps and through local information outlets.  | PV                 | Higher   |
| 9.2  | Maintain and develop appropriate visitor facilities, including interpretation signs, consistent with the protection of natural and cultural values.   | PV, SGSC, WSC      | Higher   |
| 9.3  | Monitor the use of the Corner Inlet Ramsar site by recreational fishers and enforce regulations to control illegal fishing practices.   | NRE                | Higher   |
| 9.4  | Formalise a process for consulting with the local Aboriginal community on the traditional use and cultural significance of features within the Corner Inlet Ramsar site.  | NRE, PV            | Higher   |
| 9.5  | Liase with Aboriginal Affairs Victoria and cooperate with the local Aboriginal community in surveying and managing significant sites.   | AAV, NRE, PV       | Higher   |
| 9.6  | Through appropriate modifications to related regulations and increased patrolling, ensure that access to shallow water areas of Corner Inlet is restricted for wind surfers, jet skis and hovercraft.   | MBV, PV, NRE       | Medium   |
| 9.7  | Restrict dogs to designated mainland areas of the parks, ensuring they are restrained on a leash at all times. To protect shorebirds, do not permit dogs on any of the islands within the Corner Inlet Ramsar site.   | PV                 | Medium   |
| 9.8  | Develop a recreational boating guide for South Gippsland Marine and Coastal Parks.  | PV, GP, GCB        | Medium   |
| 9.9  | Ensure compliance with boating regulations and speed restrictions under the <i>Marine Act 1988</i> .  | GP, MBV            | Medium   |
| 9.10 | Establish appropriate maximum levels of camping in particular areas and seek measures to restrict or modify the activity if these levels are exceeded or the natural values of the site are compromised.  | PV                 | Medium   |
| 9.11 | Encourage visitors to practice minimal impact techniques and to adhere to codes of conduct.   | PV                 | Medium   |
| 9.12 | Protect and interpret, where appropriate sites of European historical interest and significance in consultation with local historical societies.  | NRE, PV            | Medium   |
| 9.13 | Develop and implement landscape and facility plans for areas of high visitor use including picnic areas, boat ramps, jetties and areas of foreshore reserve neighbouring townships.   | PV, NRE, WSC, SGSC | Medium   |
| 9.14 | Monitor the use of the Corner Inlet Ramsar site for game hunting. Enforce regulations as required.  | NRE, PV            | Lower    |
| 9.15 | Should aircraft intrusion become a problem negotiate a 'Fly Neighbourly' agreement with Air Services Australia.   | NRE, PV            | Lower    |
| 9.16 | Monitor the impacts of bushwalking and seek to exclude bushwalkers from or restrict access to areas as necessary to protect wildlife or other park values.  | PV                 | Lower    |
| 9.17 | Allow horse riding only on existing tracks within Gellions Run and on Snake and Little Snake Islands. Apply seasonal closures to prevent horse riding on all beaches (including Snake Island) to protect breeding Hooded Plovers and other shorebirds. Monitor levels of use and modify conditions as required to protect the natural values of the area. | PV                 | Lower    |
| 9.18 | Prevent vehicle access to beach areas of the parks except in areas designated for the launching and retrieving of boats.  | PV, NRE            | Lower    |
| 9.19 | Investigate all access tracks (including unused road reserves) and prepare a plan that identifies tracks to be closed and those to be retained for management and visitor purposes.   | PV, NRE            | Lower    |

## Management Objective 10

Develop ongoing consistent programs to monitor ecological character

|      | Site Management Strategy  | Lead agency    | Priority |
|------|---|----------------|----------|
| 10.1 | Develop an ongoing consistent program to monitor the ecological character of the Corner Inlet Ramsar site. Ecological indicators should be measured in a statistically sound way and recorded in appropriate databases. | NRE, PV        | Higher   |
| 10.2 | Design and implement a program to monitor condition and extent of sea-grass within Corner Inlet.  | NRE            | Higher   |
| 10.3 | Continue to record fauna species usage of the Corner Inlet Ramsar site and provide data to update the Atlas of Victorian Wildlife and the Wetlands database.  | NRE, PV        | Higher   |
| 10.4 | Monitor populations of shorebirds at Corner Inlet, consistent with nationally accepted methodologies and in coordination with relevant community groups.  | PV, AWSG, VWSG | Higher   |
| 10.5 | Continue to advocate for support of the volunteer-based Waterwatch program so that water quality monitoring of streams flowing into Corner Inlet continues.   | NRE, WGCMA     | Higher   |
| 10.6 | Monitor the effectiveness of rehabilitation, revegetation and habitat protection works.   | PV, NRE, WGCMA | Medium   |

### Lead agency key:

|      |   |       |   |
|------|---|-------|---|
| AAV  | Aboriginal Affairs Victoria                     | PV    | Parks Victoria                                |
| AWSG | Australian Wader Studies Group                  | SGSC  | South Gippsland Shire Council                 |
| EPA  | Environment Protection Authority                | SGWA  | South Gippsland Water Authority               |
| GCB  | Gippsland Coastal Board                         | VWSG  | Victorian Wader Study Group                   |
| GP   | Gippsland Ports                                 | WGCMA | West Gippsland Catchment Management Authority |
| MBV  | Marine Board of Victoria                        | WSC   | Wellington Shire Council                      |
| NRE  | Department of Natural Resources and Environment |       |   |

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|                 |   |                 |   |
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| Ross Williamson | Ranger In Charge, West<br>Gippsland District, Parks<br>Victoria                                     |                 |   |

### Public Submissions

|   |                                      |
|---|--------------------------------------|
| Australasian Wader Study Group                    | NRE (Gippsland Region)               |
| Australian Conservation Foundation                | Forests Service (NRE)                |
| Bird Observers Club of Australia                  | Fisheries Victoria (NRE)             |
| Birds Australia                                   | Prom Coast Tourism Inc.              |
| Chris Harty Planning and Environmental Management | Stuart, Peter                        |
| Environment Australia                             | Victorian National Parks Association |
| Field and Game Australia Inc.                     | Victorian Wader Study Group Inc.     |
| Gippsland Ports                                   |                                      |



## Appendix 2 Threatened Status of Flora

| Scientific name                                  | Common name              | FFG Listed | Threatened in Victoria | Nationally threatened |
|--|--------------------------|------------|------------------------|-----------------------|
| <i>Acacia verticillata</i> var. <i>latifolia</i> | Broad-leaf Prickly Moses |            | r                      |                       |
| <i>Atriplex australasica</i>                     | Native Orache            |            | k                      |                       |
| <i>Avicennia marina</i> ssp. <i>australasica</i> | White Mangrove           |            | r                      |                       |
| <i>Berula ? erecta</i>                           | Water Parsnip            |            | k                      |                       |
| <i>Caladenia aurantiaca</i>                      | Orange-tip Caladenia     |            | r                      |                       |
| <i>Correa reflexa</i> var. <i>speciosa</i>       | Eastern Correa           |            | r                      |                       |
| <i>Corybas fimbriatus</i>                        | Fringed Helmet-orchid    |            | r                      |                       |
| <i>Eucalyptus kitsoniana</i>                     | Bog Gum                  |            | r                      | R                     |
| <i>Exocarpos syrticola</i>                       | Coast Ballart            |            | r                      |                       |
| <i>Lepidium desvauxii</i>                        | Bushy Pepper-cress       |            | r                      |                       |
| <i>Limonium australe</i>                         | Yellow Sea-lavender      |            | r                      |                       |
| <i>Senecio diaschides</i>                        | Shingle Fireweed         |            | r                      |                       |
| <i>Stackhousia spathulata</i>                    | Coast Stackhousia        |            | k                      |                       |
| <i>Triglochin minutissimum</i>                   | Tiny Arrowgrass          |            | r                      |                       |

Source: Flora Information System (1998)

|   |   |   |  |
|---|---|---|--|
| e | Endangered in Victoria, i.e. rare and at risk of disappearing from the wild state if present land use and other causal factors continue to operate.   | E | Endangered species in serious risk of disappearing from the wild state within one or two years if present land use and other causal factors continue to operate.   |
| v | Vulnerable in Victoria, i.e. rare, not presently endangered but likely to become so soon due to continued depletion, or which largely occur on sites likely to experience changes in land use which would threaten the survival of the species in the wild. | V | Vulnerable species not presently endangered but at risk over a longer period through continued depletion, or which largely occur on sites likely to experience changes in land use which would threaten the survival of the species in the wild.   |
| r | Plants which are rare in Victoria but which are not considered otherwise threatened. This category does not necessarily imply that plants are substantially threatened, but merely that there are relatively few known stands.                              | R | Species that are rare in Australia but which are not currently considered endangered or vulnerable. Such species may be represented by a relatively large population in very restricted areas or by smaller populations spread over a wider range. |
| k | species poorly known, suspected of being in one of the above categories.  | L | Listed under the <i>Flora and Fauna Guarantee Act 1988</i> .   |

## Appendix 3 Threatened Status of Fauna

| Scientific name                  | Common name               | FFG Listed | Threatened in Victoria | Nationally threatened |
|----------------------------------|---------------------------|------------|------------------------|-----------------------|
| <b>Birds</b>                     |                           |            |                        |                       |
| <i>Ardea alba</i>                | Great Egret               | L          | End                    |                       |
| <i>Biziura lobata</i>            | Musk Duck                 |            | Vul                    |                       |
| <i>Cereopsis novaehollandiae</i> | Cape Barren Goose         |            | Vul                    |                       |
| <i>Coturnix australis</i>        | Brown Quail               |            | DD                     |                       |
| <i>Egretta garzetta</i>          | Little Egret              |            | CEn                    |                       |
| <i>Haliaeetus leucogaster</i>    | White-bellied Sea-Eagle   | L          | End                    |                       |
| <i>Hylacola pyrrhopygia</i>      | Chestnut-rumped Heathwren |            | DD                     |                       |
| <i>Larus dominicanus</i>         | Kelp Gull                 |            | CEn                    |                       |
| <i>Larus pacificus</i>           | Pacific Gull              |            | LR                     |                       |
| <i>Lathamus discolor</i>         | Swift Parrot              | L          | End                    | Vul                   |
| <i>Macronectes halli</i>         | Northern Giant-Petrel     |            | End                    |                       |
| <i>Morus serrator</i>            | Australasian Gannet       |            | Vul                    |                       |
| <i>Neophema chrysogaster</i>     | Orange-bellied Parrot     | L          | CEn                    | End                   |
| <i>Numenius madagascariensis</i> | Eastern Curlew            |            | LR                     |                       |
| <i>Pezoporus wallicus</i>        | Ground Parrot             | L          | Vul                    |                       |
| <i>Phalacrocorax fuscescens</i>  | Black-faced Cormorant     |            | Vul                    |                       |
| <i>Phalacrocorax varius</i>      | Pied Cormorant            |            | LR                     |                       |
| <i>Platalea regia</i>            | Royal Spoonbill           |            | Vul                    |                       |
| <i>Rallus pectoralis</i>         | Lewin's Rail              |            | End                    |                       |
| <i>Sterna albifrons</i>          | Little Tern               | L          | Vul                    | End                   |
| <i>Sterna bergii</i>             | Crested Tern              |            | LR                     |                       |
| <i>Sterna caspia</i>             | Caspian Tern              |            | Vul                    |                       |
| <i>Sterna nereis</i>             | Fairy Tern                | L          | Vul                    |                       |
| <i>Sterna nilotica</i>           | Gull-billed Tern          |            | End                    |                       |
| <i>Thinomis rubricollis</i>      | Hooded Plover             | L          | End                    | Vul                   |
| <b>Other</b>                     |                           |            |                        |                       |
| <i>Antechinus minimus</i>        | Swamp Antechinus          |            | LR                     |                       |
| <i>Dermochelys coriacea</i>      | Leathery Turtle           |            | End                    | Vul                   |
| <i>Egemia coventryi</i>          | Swamp Skink               |            | Vul                    |                       |
| <i>Eubalaena australis</i>       | Southern Right Whale      | L          | CEn                    | End                   |
| <i>Litoria raniformis</i>        | Warty Bell Frog           |            | Vul                    |                       |
| <i>Pseudemoia rawlinsoni</i>     | Glossy Grass Skink        |            | LR                     |                       |

CEn **Critically Endangered:** A taxon facing an extremely high risk of extinction in the wild in the immediate future.

End **Endangered:** A taxon that is not Critically Endangered but is facing a very high risk of extinction in the wild in the immediate future.

Vul **Vulnerable:** A taxon that is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

LR **Lower Risk - near threatened:** A taxon that does not satisfy criteria for any of the threatened categories, but

which is close to qualifying for Vulnerable. In practice, these species are likely to move into a threatened category should current declines continue or catastrophes befall the species.

DD **Data Deficient:** A taxon that has inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution or population status. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future investigations will show that a threatened classification is appropriate.

L Listed under the *Flora and Fauna Guarantee Act 1988*.

## Appendix 4 JAMBA, CAMBA and Bonn Species

| Scientific Name                  | Common name               | JAMBA | CAMBA | Bonn |
|----------------------------------|---------------------------|-------|-------|------|
| <i>Ardea alba</i>                | Great Egret               | ✓     | ✓     |      |
| <i>Ardea ibis</i>                | Cattle Egret              | ✓     | ✓     |      |
| <i>Arenaria interpres</i>        | Ruddy Turnstone           | ✓     | ✓     | ✓    |
| <i>Calidris acuminata</i>        | Sharp-tailed Sandpiper    | ✓     | ✓     | ✓    |
| <i>Calidris alba</i>             | Sanderling                | ✓     | ✓     | ✓    |
| <i>Calidris canutus</i>          | Red Knot                  | ✓     | ✓     | ✓    |
| <i>Calidris ferruginea</i>       | Curlew Sandpiper          | ✓     | ✓     | ✓    |
| <i>Calidris ruficollis</i>       | Red-necked Stint          | ✓     | ✓     | ✓    |
| <i>Calidris tenuirostris</i>     | Great Knot                | ✓     | ✓     | ✓    |
| <i>Charadrius leschenaultii</i>  | Greater Sand Plover       | ✓     | ✓     | ✓    |
| <i>Charadrius mongolus</i>       | Lesser Sand Plover        | ✓     | ✓     | ✓    |
| <i>Gallinago hardwickii</i>      | Latham's Snipe            | ✓     | ✓     | ✓    |
| <i>Haliaeetus leucogaster</i>    | White-bellied Sea-Eagle   |       | ✓     | ✓    |
| <i>Heteroscelus brevipes</i>     | Grey-tailed Tattler       | ✓     | ✓     | ✓    |
| <i>Hirundapus caudacutus</i>     | White-throated Needletail |       | ✓     |      |
| <i>Limosa lapponica</i>          | Bar-tailed Godwit         | ✓     | ✓     | ✓    |
| <i>Limosa limosa</i>             | Black-tailed Godwit       | ✓     | ✓     | ✓    |
| <i>Numenius madagascariensis</i> | Eastern Curlew            | ✓     | ✓     | ✓    |
| <i>Numenius phaeopus</i>         | Whimbrel                  | ✓     | ✓     | ✓    |
| <i>Pluvialis fulva</i>           | Pacific Golden Plover     |       |       | ✓    |
| <i>Pluvialis squatarola</i>      | Grey Plover               | ✓     | ✓     | ✓    |
| <i>Puffinus tenuirostris</i>     | Short-tailed Shearwater   | ✓     |       | ✓    |
| <i>Sterna albifrons</i>          | Little Tern               | ✓     | ✓     | ✓    |
| <i>Sterna caspia</i>             | Caspian Tern              |       | ✓     | ✓    |
| <i>Sterna hirundo</i>            | Common Tern               | ✓     | ✓     | ✓    |
| <i>Tringa nebularia</i>          | Common Greenshank         | ✓     | ✓     | ✓    |
| <i>Tringa stagnatilis</i>        | Marsh Sandpiper           | ✓     | ✓     | ✓    |
| <i>Xenus cinereus</i>            | Terek Sandpiper           | ✓     | ✓     | ✓    |

## Appendix 5 Corner Inlet Ramsar Information Sheet<sup>1</sup>

### Information Sheet on Ramsar Wetlands

*Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.*

#### 1. Date this sheet was completed/updated:

May 1999

#### 2. Country:

Australia

#### 3. Name of wetland:

Corner Inlet, Victoria

#### 4. Geographical coordinates:

Latitude: 38°36' to 38° 55'S

Longitude: 146° 11' to 146° 53'E

#### 5. Altitude:

Less than 20 metres

#### 6. Area:

67,186 ha

Note: This is a revised area figure based on GIS Mapping (1995) and does not represent any change to the Ramsar Site boundary.

#### 7. Overview:

The Corner Inlet Ramsar site is the most southerly marine embayment and tidal mudflat system of mainland Australia. The site is of international zoological significance as habitat for migratory wading birds. The barrier islands are of national botanical significance due to their biogeographic importance, and national geomorphological significance as an example of barrier island formation.

#### 8. Wetland Type:

Marine : A, G, H and I

#### 9. Ramsar Criteria:

1a, 1b, 1c, 2b, 3a, 3b and 3c

Please specify the most significant criterion applicable to the site:

#### 10. Map of site included?

Please tick yes ☒ -or- no ☐

#### 11. Name and address of the compiler of this form:

Parks Victoria  
378 Cotham Road  
Kew VIC 3101 Australia

#### 12. Justification of the criteria selected under point 9:

*1(a) The wetland is a particularly good representative example of a natural or near-natural wetland characteristic of the appropriate biogeographical region.*

Corner Inlet is the best example of a wetland enclosed by barrier islands in the South East Coastal Plain.

*1(b) The wetland is a particularly good representative example of a natural or near-natural wetland common to more than one biogeographical region.*

Corner Inlet is a very good example of a wetland enclosed by barrier islands in Victoria and contains the most extensive intertidal mudflats in Victoria.

*1(c) The wetland is a particularly good representative example of a natural or near-natural wetland common to more than one biogeographical region.*

Corner Inlet plays a substantial hydrological role in the natural functioning of a major coastal system.

*2(b) A wetland is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna.*

Corner Inlet contains the most southerly occurrence of White Mangrove (*Avicennia marina*) in the world (Flood 1986).

*3(a) Regularly supports 20,000 waterfowl*

and

*3(b) Regularly supports substantial numbers of waterfowl from particular groups*

and

*3(c) Regularly supports 1% on the individuals in a population of one species or subspecies*

Corner Inlet regularly supports over 20% of the total known Victorian wader population and an estimated 50% of the over-wintering Victorian population of migratory wader species (Martindale 1982).

<sup>1</sup> Ramsar Information Sheets are updated every six years. The last update was in 1999. New or revised information will be incorporated in the next update, due in 2005.

Corner Inlet supports more than 1% of the national wader population and may contain 15% of the world population of Eastern Curlew (*Numenius madagascariensis*) (Mansergh & Norris 1982).

Corner Inlet supports a high percentage of the Victorian populations of the following species:

- Pied Oystercatcher (*Haematopus ostralegus*) 68%
- Sooty Oystercatcher (*Haematopus fuliginosus*) 44%
- Grey Plover (*Pluvialis squatarola*) 95%
- Mongolian Plover (*Charadrius mongolus*) 65%
- Eastern Curlew 46%
- Bar-tailed Godwit (*Limosa lapponica*) 89%
- Red Knot (*Calidris canutus*) 65%
- Great Knot (*Calidris tenuirostris*) 26%
- Red-necked Stint (*Calidris ruficollis*) 17%
- Curlew Sandpiper (*Calidris ferruginea*) 17%
- Sandeling (*Calidris alba*) 11% (Mansergh and Norris 1982).

Corner Inlet supports at least 5% of the State's population of Chestnut Teal (*Anas castanea*) (Corrick pers. comm.).

Corner Inlet contains 10% of the State's breeding population of Little Tern (*Sterna albibrons*) (Corrick pers. comm.) and Pied Oystercatcher (*Haematopus ostralegus*) (Dann pers. comm.). The area is used by Black Swans (*Cygnus atracus*) as a feeding and moulting area after breeding. Up to 10,000 Swans occur in the inlet at these times. This is over 5% of the State population and over 10% of the regional population (Norman pers. comm., Hewish 1988, Peter 1989, Peter 1990, Peter 1991).

### 13. General location:

South eastern coast of Victoria, Australia, north east of Wilsons Promontory.

### 14. Physical features:

Corner Inlet is bounded to the west and north by the South Gippsland coastline, in the south-east by a series of barrier islands and sandy spits lying end to end and separated by narrow entrances and to the south by the hills of Wilsons Promontory.

The chain of barrier islands are a westward extension of the Ninety Mile Beach and are of complex form and origin. They provide an outstanding example of the processes involved in barrier island formation including the development of multiple beach ridges, lagoons and swamps, tidal creeks, tidal deltas, and tidal washovers. As well as providing localities for the monitoring of sediment dynamics associated with marine and aeolian processes, they are of critical importance in the analysis of the evolution of the entire coastal barrier system between Wilsons Promontory and Lakes Entrance.

The main channels of the Inlet are continuous with the Franklin, Albert and Tarra Rivers which drain the catchment area of some 2300 km<sup>2</sup> into the embayment and out into Bass Strait through the Main, Port Albert, Kate Kearney, Shoal and McLoughlins Beach Entrances.

### 15. Hydrological values:

Seven secondary treated effluents licensed by the Environmental Protection Agency are discharged into the embayment.

### 16. Ecological features:

The mainland coast and several sandy islands are covered with mangroves, saltmarshes, sandy beaches and very extensive intertidal mudflats. The area contains the only extensive bed of the broad-leaved seagrass *Posidonia australis* in Victoria. The fine-leaved seagrasses, *Zostera muelleri* and *Heterozostera tasmanica*, occur in shallow water throughout the whole of the embayment.

Organisms living on the sea floor and within the sediment of the mudflats and sand flats are typical of unpolluted, non-estuarine soft sediments. There is a wide variety of species of polychaetes and amphipods, and large numbers of several species of bivalve molluscs, crabs, and burrowing sea anemones.

### 17. Noteworthy flora:

The islands of Corner Inlet are of national botanical significance. Although not floristically rich, the islands are of high biogeographical significance as a result of their past submergences. The islands also contain significant areas of saltmarsh and mangroves, both of which are communities of very limited distribution. It is thought that the five main vegetation communities on Sunday and Clonmel Islands represent stages in primary plant succession on coastal islands.

#### Threatened Flora

- *Adriana quadripartita* s.s (*globulosa* form) (Rare Bitter-bush) - endangered in Victoria
- *Asplenium obtusatum* (Shore Spleenwort) - vulnerable in Victoria
- *Austrofestuca littoralis* (Coast Fescue) - vulnerable in Victoria
- *Cyathodes juniperinum* (Crimson Berry) - vulnerable in Victoria
- *Eucalyptus kitsoniana* (Bog Gum) - vulnerable in Australia, rare in Victoria
- *Exocarpus syrticola* (Coast Ballart) - rare in Victoria
- *Lepidium desvauxi* (Bushy Pepper-cress) - rare in Victoria
- *Prasophyllum parviflorum* (Slender Leek-orchid) - vulnerable in Victoria

- *Pterostylis aciculiformis* (Slender Ruddyhood) - insufficiently known in Victoria
- *Pterostylis grandiflora* (Cobra Greenhood) - rare in Victoria
- *Senecio diagchides* (Erect Groundsel) - rare in Victoria
- *Thelymitra epipactoides* (Metallic Sun-orchid) - endangered in Australia and Victoria
- *Triglochin minutissima* (Tiny Arrow-grass) - rare in Victoria
- *Helichrysum dealbatum* (Silver Everlasting) - rare in Victoria.

The most southerly occurrence of *Avicennia marina* (White Mangrove) is at Corner Inlet.

### 18. Noteworthy fauna:

Corner Inlet is of international zoological significance for its migratory wader population. Thirty-two wader species have been recorded. The area regularly supports an estimated 29000 waders (migratory and non-migratory) which represents 21.5% of the total known Victorian wader population and includes the majority of Victoria's population of less abundant wader species. It is estimated that nearly 50% of the overwintering migratory waders in Victoria occur in Corner Inlet. The overwintering birds are predominantly juveniles.

While in Australia these waders have two major habitat requirements - feeding and roosting sites. Corner Inlet provides extensive tidal flats that are exposed at low tide, which are important feeding areas for waders. When the tide covers the feeding areas the waders congregate at specific roosting sites, which are located above high-water mark on the numerous islands and the extensive coastal strip around the inlet. Over forty roosting sites have been located around here.

Corner Inlet supports more than 10% of the Victorian population of the following waders: Pied Oystercatcher (68%), Sooty Oystercatcher (44%), Grey Plover (95%), Mongolian Plover (65%), Eastern Curlew (46%), Bar-tailed Godwit (89%), Red Knot (65%), Great Knot (26%), Red-necked Stint (17%), Curlew Sandpiper (19%), Sanderling (11%).

The threatened species Little Tern (endangered in Victoria) and Fairy Tern (vulnerable in Victoria) breed at Corner Inlet.

The Inlet supports large numbers of waterfowl particularly Black Swan and is used by up to 20% of Victorian Populations of Chestnut Teal during summer and autumn. During drought numbers of other ducks e.g. Black Duck and Grey Teal are greatest.

It is thought that the area may contain over 15% of the world population of the Eastern Curlew.

### Threatened Species

#### Birds:

- Great Egret (*Ardea alba*) - restricted colonial breeding in Victoria
- Cape Barron Goose (*Cereopsis novaehollandiae*) - rare in Victoria
- Spot-tailed Quoll (*Dasyurus maculatus*) - vulnerable in Victoria
- Caspian Tern (*Hydroprogne caspia*) - restricted colonial breeding in Victoria (this species breeds at Corner Inlet)
- White-bellied Sea-Eagle (*Haliaeetus leucogaster*) - rare in Victoria
- Pacific Gull (*Larus pacificus*) - restricted colonial breeding in Victoria
- Swift Parrot (*Lathamus discolor*) - endangered in Victoria and vulnerable nationally
- Orange-bellied Parrot (*Neophema chrysogaster*) - endangered in Victoria and nationally
- Eastern Curlew (*Numenius madagascariensis*) - rare in Victoria
- Australian Pelican (*Pelecanus conspicillatus*) - restricted colonial breeding in Victoria
- Ground Parrot (*Pezoporus wallicus*) - rare in Victoria
- Black-faced Cormorant (*Phalacrocorax fuscescens*) - restricted colonial breeding in Victoria
- Lewin's Rail (*Rallus pectoralis*) - rare in Victoria
- Little Tern (*Sterna albifrons*) - endangered in Victoria and nationally
- Crested Tern (*Sterna bergii*) - restricted colonial breeding in Victoria
- Fairy Tern (*Sterna nereis*) - vulnerable in Victoria
- Hooded Plover (*Thinomis rubricollis*) - vulnerable in Victoria
- Tasmanian Pademelon (*Thylogale billardieri*) - presumed extinct

#### Mammals:

- Southern Right Whale (*Eubalaena australis*) - endangered in Victoria and nationally
- Glossy Grass Skink (*Pseudemoia rawlinsoni*) - insufficiently known
- New Holland Mouse (*Pseudomys novaehollandiae*) - endangered in Victoria
- Swamp Antechinus (*Antechinus minimus*) - rare in Victoria

The islands also support a major proportion of the Victorian Hog Deer population. The Victorian population is apparently the only wild population extant outside the native range of the species. Within its native range the species has declined, in India it is

largely confined to sanctuaries and in Ceylon it is perhaps extinct.

#### **19. Social and cultural values:**

There are numerous shipwreck sites in Corner Inlet and around the barrier islands.

#### **20. Land tenure/ownership:**

- 58,889 hectares - parks and reserves including Corner Inlet and Nooramunga Marine and Coastal Parks
- 6,473 hectares - other public land
- 1,824 hectares - freehold

#### **21. Current land use:**

**(a) the site:** Reserve for biological conservation; ports with servicing facilities for off-shore oil and natural gas exploration, licensed waste discharges, commercial fishing, recreational fishing, intertidal collecting (for bait), recreation.

**(b) the surroundings/catchment:** Forestry, grazing, dairying.

#### **22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:**

No significant ecological change has occurred since the last update of the Ramsar information sheet in 1992. Factors affecting the ecological character at selected areas within the site include:

- The potential for oil spillages from either offshore drilling, accident or disposal of ship's waste.
- Spread of introduced *Spartina* sp.
- Dieback of *Posidonia* beds (approximately 20-25% of *Posidonia* present in 1976 had disappeared by 1984).

In the late 1980s *Codium fragile* ssp *tomentosoides*, an introduced algal subspecies, was detected and the infested area is continuing to expand. The ecological impact of *Codium fragile* ssp *tomentosoides* is unknown and, other than physical removal, there is no known control method.

#### **23. Conservation measures taken:**

The Draft Corner Inlet and Nooramunga Marine and Coastal Parks Management Plan (1996) outlines strategies for protection of the natural values of the parks. It is due to be finalised by the end of 1998.

A cord grass (*Spartina* sp.) control program has been implemented which has resulted in a significant reduction of the weed since 1996 in the treated area. However, some areas still require treatment.

A fox control program on selected barrier islands to protect nesting shore birds such as terns and hooded plovers has been implemented.

A ongoing nesting shore birds monitoring program has been implemented.

Action Statements under the *Flora and Fauna Guarantee Act 1988* have been produced for the following fauna species which occur in the Ramsar site. They outline measures to conserve these species.

- White-bellied Sea-eagle (1994)
- Orange-bellied Parrot (1993)
- Little Tern (1994)
- Hooded Plover (1992)
- Tasmanian Pademelon (presumed extinct) (1997)
- New Holland Mouse (1996)

#### **24. Conservation measures proposed but not yet implemented:**

Seagrass in Corner Inlet has been mapped and a report is currently being finalised. The mapping provides a baseline for future seagrass monitoring.

A literature review of the ecological impacts of *Codium fragile* ssp *tomentosoides* and possible control techniques has been initiated and will be completed by 1 August 1998.

A fisheries habitat assessment report is being prepared.

In an integrated approach to planning at Ramsar sites, management strategies are being prepared for all Ramsar sites in Victoria, including Corner Inlet, to provide general strategic direction and site specific strategies. The strategies will be completed by June 1999.

#### **25. Current scientific research and facilities:**

Long term monitoring of Chestnut Teal numbers.

#### **26. Current conservation education:**

Snake Island is used annually as a field site to study floristic composition and fire ecology by Melbourne University.

#### **27. Current recreation and tourism:**

Recreational fishing, swimming, surfing, boating, sightseeing, yachting, canoeing, hunting.

#### **28. Jurisdiction:**

Government of Victoria.

#### **29. Management authority:**

Managed under the Department of Natural Resources and Environment Parks Program by Parks Victoria - 58,910 Ha (88%)

Private Freehold - 1,824 Ha (2.7%)

Victorian Channels Authority - 6,452 Ha (9.27%)

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#### **Personal Communications**

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Victoria The Place To Be