

# Information Sheet on Ramsar Wetlands (RIS)

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

This Ramsar Information Sheet has been converted to meet the 2009 – 2012 format, but the RIS content has not been updated in this conversion. The new format seeks some additional information which could not yet be included. This information will be added when future updates of this Ramsar Information Sheet are completed. Until then, notes on any changes in the ecological character of Australian Ramsar sites may be obtained from the Ecological Character Descriptions (where these have been completed) and other relevant sources.

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Designation date

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Site Reference Number

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**2. Date this sheet was completed/updated:**

May 1999

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**3. Country:**

Australia

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**4. Name of the Ramsar site:**

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula

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**5. Designation of new Ramsar site or update of existing site:**

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula was designated on 15 December 1982. The previous RIS document was dated 1992.

**This RIS is for** (tick one box only):

- a) Designation of a new Ramsar site ☐; or  
b) Updated information on an existing Ramsar site ☒

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**6. For RIS updates only, changes to the site since its designation or earlier update:**

**a) Site boundary and area**

The Ramsar site boundary and site area are unchanged: ☐

or

**If the site boundary has changed:**

- i) the boundary has been delineated more accurately ☐; or  
ii) the boundary has been extended ☐; or

iii) the boundary has been restricted\*\* ☐

and/or

**If the site area has changed:**

i) the area has been measured more accurately ☒; or

ii) the area has been extended ☐; or

iii) the area has been reduced\*\* ☐

**Note:** The area figure (**Section 11**) was revised based on GIS Mapping (1995) and does not represent any change to the Ramsar Site boundary.

**\*\* Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

**7. Map of site:**

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

i) a hard copy (required for inclusion of site in the Ramsar List): ☐;

ii) an electronic format (e.g. a JPEG or ArcView image) ☐;

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables ☐.

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

**8. Geographical coordinates (latitude/longitude, in degrees and minutes):**

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

Latitude: (approx.) 37° 53' S to 38 ° 18' S; Longitude: (approx.) 144 ° 24' E to 144 ° 48' E

**9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

(a) Parts of the shoreline, intertidal zone and adjacent wetlands of western Port Phillip Bay extending from Altona south to Limeburners Bay.

(b) Parts of the shoreline, intertidal zone and adjacent wetlands of the Bellarine Peninsula extending from Point Henry to Barwon Heads.

**10. Elevation: (in metres: average and/or maximum & minimum)**

Less than 10 metres above sea level.

**11. Area: (in hectares)**

22, 897 hectares

## 12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The site includes a variety of wetland types ranging from shallow marine waters to seasonal freshwater swamps and extensive sewage ponds which support a large and diverse population of migratory waders, seabirds and waterfowl; and demonstrate a range of geomorphic processes. Over 3 million people (70% of the State's population) live around the Bay which is used intensively for recreation.

The opening of the Bay (Port Phillip heads) is very narrow, reducing tidal amplitude within the bay compared with in Bass Strait. The intertidal mudflats, seagrass beds and saltmarshes support a very large and diverse range of migratory wading birds, seabirds and wildfowl.

## 13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 •	2 •	3 •	4 •	5 •	6 •	7	8 •	9
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## 14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

***Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.***

[Justification against former **Criterion 1(a)** under the Pre-1999 Criteria]:

The Ramsar site includes a range of marine and inland wetlands characteristic of the South East Coastal Plain bioregion as well as artificial wetlands.

[Justification against former **Criterion 1(b)** under the Pre-1999 Criteria]:

The Ramsar site contains good examples of saltmarshes, estuarine wetlands and a shallow marine embayment and nearshore areas.

***Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.***

[Justification against former **Criterion 2(b)** under the Pre-1999 Criteria]:

Lake Connemara State Game Reserve is the largest area of native vegetation remaining on the Bellarine Peninsula and Reedy Lake is the largest freshwater lake in central Victoria.

The Ramsar site is one of the most important sites in Victoria for migratory shorebirds. The vegetation of Lake Connemara State Game Reserve is very diverse, with 137 native plants recorded. Forty-five (85%) of the 53 salt marsh species which occur in Victoria occur at Lake Connemara. Reedy lake also has outstanding significance due to its large size, floristic richness and structural diversity (Yugovic 1985). The range of habitats within the Reserve leads to a very diverse avifauna, with 135 species being recorded (Pescott 1983).

[Justification against former **Criterion 3(b)** under the Pre-1999 Criteria]:

The Avalon-Werribee Wetlands regularly support tens of thousands of Straw-necked Ibis. In 1983, 14% of the Australian population of Chestnut Teal were recorded at the Western Treatment Plant (part of these wetlands) (ANCA 1996).

***Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.***

[Justification against former **Criterion 3(a)** under the Pre-1999 Criteria]:

Wetlands in the Ramsar site regularly support more than 20,000 waterfowl, including large numbers of migratory waders, thousands of Black Swans, ducks, ibis and cormorants.

***Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.***

[Justification against former **Criterion 3(c)** under the Pre-1999 Criteria]:

Lake Connewarre has supported international significant numbers of Curlew Sandpipers and Sharp-tailed Sandpipers. Hospital Swamp has also supported international significant numbers of Sharp-tailed Sandpipers and nationally significant numbers of Curlew Sandpipers, Red-necked Stints and Marsh Sandpipers (ANCA 1996).

One percent of the known Australian population of 4 migratory wader species: Pacific Golden Plover, Grey Plover, Mongolian Plover and Ruddy Turnstone have been recorded at Mud Islands and the islands are used as a high tide roosting area by 5% of the Victorian populations of Red Knots, Great Knots, Eastern Curlews and Bar-tailed Godwits. Nearly one quarter of the White-faced Storm Petrels in Victoria breed on Mud Islands (ANCA 1996).

One percent of the known Australian population of 4 migratory wader species: Pacific Golden Plover, Grey Plover, Double-banded Plover and Eastern Curlew have been recorded at Swan Bay (ANCA 1996).

The Avalon Werribee Wetlands have supported more than 1% of the known Australian population of 8 species of migratory waders and the largest Victorian breeding colony of Pied Cormorants.

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**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

**b) biogeographic regionalisation scheme** (include reference citation):

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**16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Port Phillip Bay lies in a sunkland formed by faulting and movement of the earth's surface during past geological eras. This low-lying area is a natural discharge point for the rivers draining southern central Victoria. It was a swampy lake even when sea levels were lower and the Yarra entered Bass Strait near Queenscliff. As the sea rose, it filled the sunkland, and wetlands formed further north at the deltas of a number of rivers and creeks.

The area contains five sites of State geomorphological significance:

Mud Islands - Ridges and Lagoons

Significance: This is the only known locality in Port Phillip Bay where consolidated dune rock is exposed above high water mark. The outcrop of cemented beach rock is the only known occurrence in Port Phillip Bay and is unusual on Victorian coasts. Mud Islands is the most obvious surface

expression of the Port Phillip Sands, the shoal area overlying the Nepean Bay Bar. The islands are an unusual feature in Victoria and superficially resemble an atoll.

#### Hovells Creek - Mid-Holocene Sea Level Site

**Significance:** The site is one of a small number of dated marine shell beds on the Victorian coast that suggest a mid-Holocene sea level higher than the present level.

#### Limeburners Bay - Estuary

**Significance:** The site is an excellent example of a funnel-shaped, compound estuary. Many features typical of larger estuarine systems are here found in close proximity, such as active cliffs, marginal bluff, active and relict spits, mangrove and salt marsh zones, as well as terraces and other materials suggestive of higher sea level episodes. This is the best preserved estuary system in Port Phillip Bay and the most accessible one from Melbourne and Geelong. It is an outstanding site to demonstrate physiographical, hydrological, and ecological features of estuaries and coastal lagoons, and provides opportunity for studies into tidal circulation, salinity variation, sedimentation, shoreline evolution, and the dynamics of spit growth. It contains the most extensive stand of mangroves in Port Phillip Bay and probably the largest intact salt marsh complex. It is therefore a research and educational resource of considerable value.

#### Point Wilson - Shell Ridges

**Significance:** Adjacent to the Point Wilson jetty is an extensive belt of low, sparsely vegetated shelly ridges lying parallel to the coast and backed by a broad salt marsh. These ridges are an outstanding example of a shell-dominated coastal compartment and a rare example of actively prograding coastal ridges. The contrast in age, form and vegetation cover between the inner and outer ridges is of particular significance. The site has not been the subject of detailed geomorphological study and could form the basis of a major research project.

#### Sand Hummocks - Barrier Spits

**Significance:** The lagoon and barrier spits have no counterpart in Port Phillip Bay and are unusual features in the context of the Victorian coast. The scale of barrier development may be compared to that of the sand islands at Corner Inlet. It is an outstanding example of a tidal lagoon system not modified by land drainage but dominated by storm wave and tidal processes. The system constitutes a very significant site for the study of tidal and wave action in the formation and migration of barrier systems, and for sedimentation rates and processes in shallow lagoons. The marine and onshore components of the site include many features such as relict erosional and depositional landforms, sandy muddy and biogenic sediments, and vegetation sequences, that are relevant for the study of Holocene and contemporary sea levels in Port Phillip Bay.

The annual rainfall is about 750 mm. The range of mean temperatures is from a mean maximum of 24°C in January and February to a mean minimum of 7°C in July.

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#### **17. Physical features of the catchment area:**

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

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#### **18. Hydrological values:**

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

(none provided)

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#### **19. Wetland Types**

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •  
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

#### b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

### 20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Important wetland areas on the western shore of Port Phillip Bay and the Bellarine Peninsula include freshwater lakes, estuaries, some with White Mangrove (*Avicennia marina*), saltmarshes, intertidal mudflats and seagrass beds. The Melbourne Water Corporation Sewage Farm and Western Treatment Plant at Werribee supports many waterbirds on its retention ponds.

### 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Point Cook Metropolitan Park is a site of State botanical significance. This is the only Reserve in the western region of Melbourne that contains examples of four vegetation types in proximity (dune vegetation, salt marsh, swamp and grassland). The salt marsh is an important habitat for the rare Orange-bellied Parrot. Several sites around the bay contain Grey Glasswort (*Halosarcia halocnemoides*) which more commonly occurs in north-western Victoria.

Limeburners Bay contains a zone of *Halosarcia halocnemoides* broader than that which is commonly found in Victorian coastal marshes. Where spit deposits raise the level of the marsh an assemblage of halophytes forms a low sward or type of saltmarsh meadow not as yet noted elsewhere in Victoria. Unlike most Victorian saltmarshes there is no broad zone dominated by *Sarcocornia quinqueflora*, and members of the Cyperaceae are comparatively unimportant. White Mangrove (*Avicennia marina*) occur.

Lake Connemara contains the most extensive example of *Wilsonia* herblands and *Distichlis* grassland in Victoria. Grey Glasswort (*Halosarcia halocnemoides*) and Tangled Lignum (*Muehlenbeckia cunninghamii*) reach their southern limit within the Reserve. The White Mangrove (*Avicennia marina*) reaches its westernmost limit in Victoria in the Barwon River estuary. A total of 137 native and 78 exotic vascular plants were recorded for the Reserve, indicating a very high species richness for wetland vegetation.

#### Threatened Species

##### Rare in Victoria

*Juncus revolutus* (Creeping Rush)

*Triglochin minutissimum* (Tiny Arrow Grass)

*Acacia retinodes* (Coast Wirilda)

Vulnerable in Victoria  
*Glycine latrobeana* (Clover Glycine)  
*Lepilaena marina* (Sea Water-mat)

Endangered in Victoria  
*Cullen parvum* (Small Scurf-pea)  
*Adriana quadripartita* (Rare Bitter-bush)

## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Port Phillip Bay is home to a vast number of birds dependent on its coastal wetlands and sheltered waters. The area is of international significance due to the presence of large numbers of migratory wading birds, seabirds and because of its importance to waterfowl the endangered Orange-bellied Parrot. It is the sixth most important area in Australia for migratory waders and the most important in Victoria. It is also of national significance due to the large number of different bird species (many of them relatively rare) and the large concentration of cormorants, Pied Oystercatchers, Banded Stilts and Red-necked Avocets. The presence of large numbers of terns, crakes, rails, coots, Great Crested Grebes, Straw-necked Ibis and Royal Spoonbills also give it State significance.

### Seabirds

Seabirds are a prominent feature of the birdlife, particularly in southern waters where shearwaters, skuas, albatrosses, prions and petrels feed. About 5500 White-faced Storm-petrel, one-quarter of the Victorian population, breed on Mud Islands and nearby South Channel Fort Island.

Lake Borrie is the site of the largest breeding colony of Pied Cormorants in the State - at last count there were 320 active nests.

### Terns

Eleven species of tern have been recorded in the bay, including unusually large numbers of migratory Common Terns and lesser numbers of the rarer Arctic Tern. One of the largest breeding colonies (nearly a thousand) of Crested Terns in Victoria is situated on Mud Islands and a few Caspian Terns also nest there. Fairy Terns also breed at several locations including Mud Island, the Spit and Swan Bay.

### Gulls

Three species of gull occur in Port Phillip Bay, the Silver, Pacific and Kelp. The Silver Gull is the most conspicuous and breeds in the area, at Mud Islands. Its numbers have increased dramatically in the last thirty years, possible due to an increased availability of food associated with nearby urban areas and rubbish tips.

### Ibis, Herons, Spoonbills and Egrets

Tens of thousands of Sacred and Straw-necked Ibis roost at Lake Borrie. Yellow-billed and Royal Spoonbills occur regularly, particularly at the Spit, Avalon Saltworks and Swan Bay. Ibis and Spoonbill nest annually in Lake Connemara Reserve.

### Waders

Waders are the most numerous of the birds of Port Phillip. Most spend the spring, summer and early autumn in the bay, and banding has shown that the same individuals return to the same part of the bay every spring. Between 48000 and 65000 waders feed on the shores of the bay during summer, making it the sixth most important site for these birds in Australia.

The bay holds more than 1% of the known Australian population of fourteen species: Pied Oystercatcher; Grey, Lesser Golden, Mongolian and Double-banded Plovers; Banded Stilt; Red-necked Avocet; Ruddy Turnstone; Eastern Curlew; Greenshank; Marsh, Sharp-tailed and Curlew Sandpipers and Red-necked Stint. It holds more than 5% of the Victorian population of another dozen species: Sooty Oystercatcher; Large Sand and Red-capped Plovers; Whimbrel; Wood and Common Sandpipers; Grey-tailed Tattler; Latham's Snipe; Bar-tailed and Black-tailed Godwits; and Great and Red Knots.

Most waders occur on the sites along the western side of the bay, where five of the wetlands - Altona, Werribee-Avalon, Point Henry, Swan Bay and Mud Islands - can be considered of international importance on the basis of their wader populations alone.

#### Waterfowl (ducks and swans)

Waterfowl are another populous group. Swan Bay and the Altona and Werribee-Avalon wetlands hold particularly large populations.

In 1983 14% of the Australian total of Chestnut Teal were on the Werribee sewage farm. On Lake Borrie alone, 50,00 Pink-eared Duck have been seen and nearly 10,000 Black Swan. Freckled Duck are also recorded regularly.

#### Other waterbirds

Other waterbirds such as grebes, coots, crakes and rails also occur in large numbers around Port Phillip, but the lack of studies elsewhere prevents any assessment of the bay's importance for the survival of these groups. The same is true for many land birds that live in coastal scrubs and saltmarshes around the bay.

#### Orange-bellied Parrot

The bay is crucial to the survival of one of the world's rarest and most endangered birds - the Orange-bellied Parrot. The total number in existence is estimated at 150 individuals, and about ninety of these parrots overwinter on saltmarshes around Port Phillip including Swan Bay, Point Wilson and Lake Connemara. After breeding in south-west Tasmania during the summer, they migrate north across Bass Strait via King Island. Some then go north-west to the Coorong in South Australia, but the majority head east to Port Phillip Bay. Loss of saltmarsh, caused by construction of saltworks, port and industrial development and other activities, is thought to be one of the main reasons for the parrots' decline.

Swan Bay and Limeburners Lagoon are valuable fish breeding grounds for many of the commercial species caught in Port Phillip Bay.

#### Threatened Bird Species

Magpie Goose (*Anseranus semipalmata*) - was extinct in Victoria, but has been reintroduced.

#### Endangered in Victoria

Little Tern (*Sterna albifrons*)

Orange-bellied Parrot (*Neophema chrysogaster*)

Australian Bustard (*Ardeotis australis*)

#### Vulnerable in Victoria

Hooded Plover (*Charadrius rubricolis*)

Fairy Tern (*Sterna nereis*)

Plains-wanderer (*Pedionomus torquatus*) - also vulnerable nationally

#### Rare in Victoria

Little Bittern (*Ixobrychus minutus*)

Freckled Duck (*Stictonetta naevosa*)

Cape Barren Goose (*Cereopsis novaehollandiae*)



Blue-billed Duck (*Oxyura australis*)  
Grey Goshawk (*Accipiter novaehollandiae*)  
White-bellied Sea-Eagle (*Haliaeetus leucogaster*)  
Brolga (*Grus rubicundus*)  
Eastern Curlew (*Numenius madagascariensis*)  
Black Falcon (*Falco subniger*)  
Ground Parrot (*Pezoporus wallicus*)

Indeterminate (known to be Rare, Vulnerable or Endangered) in Victoria

Lewin's Rail (*Rallus pectoralis*)  
Painted Snipe (*Rostratula benghalensis*)

Insufficiently known (suspected Rare, Vulnerable or Endangered) in Victoria

Australasian Bittern (*Botaurus poiciloptilus*)  
Baillon's Crake (*Porzana pusilla*)  
Cox's Sandpiper (*Calidris paramelanotos*)  
Red-chested Button-quail (*Turnix pyrrhothorax*)  
Painted Snipe (*Rostratula benghalensis*)

Restricted colonial breeding or roosting sites in Victoria

White-faced Storm-petrel (*Pelagodroma marina*)  
Australian Pelican (*Pelecanus conspicillatus*)  
Pied Cormorant (*Phalacrocorax varius*)  
Caspian Tern (*Hydroprogne caspia*)  
Crested Tern (*Sterna bergii*)  
Glossy Ibis (*Plegadis falcinellus*)  
Royal Spoonbill (*Platalea regia*)  
Intermediate Egret (*Ardea intermedia*)  
Great Egret (*Ardea alba*)

Threatened fish species

Vulnerable in Victoria and nationally  
Australian Grayling (*Prototroctes maraena*)  
Yarra Pigmy Perch (*Edelia obscura*)

Rare in Victoria

Spotted Galaxias (*Galaxias truttaceus*)

Threatened mammals

Rare in Victoria  
Brush-tailed Phascogale (*Phascogale tapoatafa*)

Threatened reptiles

Rare in Victoria  
Swamp Skink (*Egernia coventryi*)

Vulnerable in Victoria and nationally

Sriped Legless Lizard (*Delma impar*)

Insufficiently known in Victoria and vulnerable nationally

Leathery Turtle (*Dermochelys coriacea*)

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23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box ☐ and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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**24. Land tenure/ownership:**

**a) within the Ramsar site:**

The Melbourne Water Corporation manages the Werribee Sewage Farm and Western Treatment Plant. The coastline from the Spit to Limeburners Bay is vested in the Port of Geelong Authority and some of this is leased for salt production.

The remainder of the area is public land managed under the Victorian Department of Conservation and Environment Parks Program by Parks Victoria. The Spit, Lake Connewarre and Mud Islands are State Wildlife Reserves while Swan Bay and an area of water surrounding Mud Islands are marine reserves, recently re-reserved as Fisheries Reserves under the *Fisheries Act 1995*.

**b) in the surrounding area:**

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**25. Current land (including water) use:**

**a) within the Ramsar site:**

Recreation, nature conservation, sewage treatment, aquaculture, fishing salt production.

**b) in the surroundings/catchment:**

Grazing, industry including oil refining, quarrying, salt production and Port facilities.

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

**a) within the Ramsar site:**

No significant ecological change has occurred at the Port Phillip Bay (Western Shoreline) and Bellarine Peninsular site since the Ramsar information sheet was last updated in 1992.

Werribee Sewage Farm and Western Treatment Plant

The Victorian EPA have proposed changes to the licence conditions in 2005 for discharge of waste water from the treatment plant to the Bay. The lower nutrient levels required under the new licence will benefit water quality in the Bay but, at a more localised level, may affect waterbird usage and

abundance in the vicinity of Lake Borrie. Melbourne Water Corporation will commission studies in 1998/99 to investigate the likely impact of the changed licence conditions on the habitat of shorebirds and waterbirds in the Lake Borrie treatment system and along the adjacent shoreline. Variations on the operational parameters for achieving the licence conditions will be examined.

Other factors affecting the ecological character of the site at selected locations include pest plants and animals, livestock grazing and visitor impacts.

**b) in the surrounding area:**

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**27. Conservation measures taken:**

**a)** List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The Spit, Lake Connemara and Mud Islands are State Wildlife Reserves while Swan Bay and an area of water surrounding Mud Islands are marine reserves, recently re-reserved as Fisheries Reserves under the *Fisheries Act 1995*.

Environment Conservation Council Marine, Coastal and Estuarine Interim Report:

The Environment Conservation Council of Victoria is carrying out an investigation of Victoria's marine, coastal and estuarine areas. In the Marine, Coastal and Estuarine Interim Report 1998 the Council recommended a Port Phillip Heads Marine Park with Mud Islands and Swan Bay (part of the Port Phillip Bay and Bellarine Peninsula Ramsar site) recommended as Sanctuary Zones. The recommendation is currently being considered by Government.

**b)** If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ☐; Ib ☐; II ☐; III ☐; IV ☐; V ☐; VI ☐

**c)** Does an officially approved management plan exist; and is it being implemented?:

Planning Provisions:

Some wetlands in the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site have recently been placed on an environmental significance overlay in the City of Greater Geelong local planning scheme.

Swan Bay Marine and Wildlife Reserve Proposed Management Plan 1991 outlines strategies for the protection of the natural values of Swan Bay.

The State Environmental Protection Policy (SEPP) (Waters of Port Phillip Bay) 1997 outlines measures to protect the water quality of Port Phillip Bay and has recommended the preparation of an environmental management plan for the Bay and its catchment.

Action Statements under the Flora and Fauna Guarantee Act 1988 have been produced for the following fauna species which occur at the site. The statements outline strategies for conserving the species.

- Orange-bellied Parrot (1993)
- Little Tern (1994)
- Hooded Plover (1996)
- Plains Wanderer (1995)
- White-bellied Sea-eagle (1994)
- Brush tailed Phascogale (1997)
- Striped Legless Lizard (1994)

d) Describe any other current management practices:

A fencing program has been undertaken to control livestock grazing of Lake Connemara Wildlife Reserve.

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**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

An Environmental Management Plan is being prepared for Port Phillip Bay to establish strategies for the protection of the environmental values of the Bay.

In an integrated approach to planning at Ramsar sites, management strategies are being prepared for all Ramsar sites in Victoria, including the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula site, to provide general strategic direction and site specific strategies. The strategies will be completed by June 1999.

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**29. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Marine Science Laboratories (Department of Conservation and Environment) are located at Queenscliff.

Marine Studies Centre, which is a joint Department of Conservation and Environment, University of Melbourne, Monash University and Royal Melbourne Institute of Technology research centre.

Studies of the impact of grazing on saltmarsh communities are being conducted at Point Wilson and Murtcaim.

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**30. Current communications, education, participation and awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The Victorian Institute of Marine Sciences centre at Queenscliff is used by school and public groups.

The whole of the Ramsar listed area has high potential for education because of its proximity to schools in Melbourne and Geelong.

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**31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The major recreation uses of Port Phillip Bay are swimming, power boating, sailing, fishing, picnicking, sightseeing and camping and caravanning.

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**32. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Government of Victoria.

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**33. Management authority:**

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Managed under the Department of Natural Resources and Environment Parks Program by Parks Victoria - 18,649 ha (81%)

Natural Resources and Environment - 27 ha (0.1%)

Private Freehold - 468 ha (2%)

Commonwealth - 1,575 ha (6.9%)

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### 34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Barson, M. M. and D. M. Calder. (1976). Sites of Special Scientific Interest in the Victorian coastal Region - Report on Botanical Aspects for the Town and Country Planning Board.

Department of Conservation and Environment. (1991). Swan Bay Marine and Wildlife Reserves - Proposed Management Plan. Department of Conservation and Environment, Victoria.

Garnett, D., B. Lane, M. Schulz and K. Wood. (1986). Birds of Port Phillip Bay. Ministry for Planning and Environment, Victoria.

McDougall, K. (1987). Sites of Significance in the Western Region of Melbourne. Prepared for the Department of Conservation, Forests and Lands. Arthur Rylah Institute - Ecological Inventory and Evaluation Section.

Yugovic, J. (1985). The vegetation at the Lake Connnewarre State Game Reserve. ARI Technical Report Series No. 18, March 1985.

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