

Information Sheet on Ramsar Wetlands (RIS) – 2009-2014 version

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

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 17, 4th edition).
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

May 2014

3. Country:

Australia

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.

Pitt Water-Orielton Lagoon

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

This RIS is for (tick one box only):

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

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**

**** 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.

In 2001, the boundary of the Pitt Water-Orielton Lagoon Ramsar site was mapped more accurately using an updated coverage of the high water mark. The area was recalculated to 3334ha. The boundary of the site remains the same. The revised area was provided in the 2005 RIS update for this site.

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:

No major changes noted since previous RIS. However, changes are noted since the original listing of the site in 1982. Recent studies have shown that changes have occurred in the flow regime of the Coal River, the principal source of freshwater input, as a consequence of dam construction. Flows are now lower overall, peak seasons reversed from winter to summer and flushing flows have ceased. Seagrass beds in the estuary appear to have declined considerably in extent and fish populations are reported to have also declined. The extent of saltmarshes has declined and floristics of some saltmarshes has altered. The Rolling Review (2011) indicated that there was insufficient monitoring of indicators to determine whether there was a change in ecological character at the site.

There have also been some improvements at the site. The construction of box culverts with sills at mid-tide level and additional drains has improved tidal exchange and circulation through the lagoon.

A 2012 shorebird and seabird survey recorded 62 breeding pairs of Australian Pied Oystercatchers *Haematopus longirostris* (Woehler 2013) which is in the range of 1% of the global population estimates (11,000 – 14,000 birds, Wetlands International 2006). It is possible that the site may also meet Criterion 6. However, ongoing monitoring is required to demonstrate that the site regularly supports 1% of the population in order to meet Criterion 6. Birds that utilise the site are listed at Appendix 1.

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) (Figure 1);
- 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.

The boundary of Pitt Water-Orielton Lagoon Ramsar site includes all of allotment 1 on Central Plan Register (CPR) 5776 from the Tasmanian Information and Land Services, Department of Primary Industries, Water and Environment. CPR 5776 horizontal datum is Australian Geodetic Datum (AGD66) Universal Transverse Mercator Projection Australian Map Grid (UTM AMG66) and Australian Height Datum (Tasmania) for vertical datum (Figure 2).

Cadastral information about surrounding land parcels can be obtained from the Land Information System Tasmania (LIST) mapping site <http://maps.thelist.tas.gov.au/listmap/app/list/map>

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.

42° 47' 56.53"S, 147° 30' 37.95"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.

The wetland is located on the south-east coast of Tasmania, approximately 20 kilometres east of the city of Hobart, between the towns of Cambridge, Richmond and Sorell. The eastern area of the site lies within the Sorell Municipality (approximately 12,500 residents), and the western area in the Clarence Municipality (approximately 50,500 residents). The boundary for the most part follows high water mark and property boundaries but also includes several areas comprising the Pitt Water Nature Reserve while the southern boundary follows a direct line across the open basin of Pitt Water.

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

The whole site is less than 20m ASL

11. Area: (in hectares)

3,334 ha

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 Pitt Water-Orielton Lagoon (PWOL) Ramsar site comprises the uppermost parts of a wave-dominated barred estuary. The principal features are the channel and mouth of the Coal River estuary, Orielton Lagoon, a large embayment now almost closed by a causeway, and an extensive area of open marine waters. PWOL supports a diversity of coastal, intertidal and marine habitats and communities, and is therefore a species-rich environment. Orielton Lagoon is the most southerly site included on the Flyway Site Network of the East-Asian – Australasian Partnership. The area includes most of the saltmarsh vegetation communities found in Tasmania.

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
<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

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 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Common Name	Scientific Name	IUCN Status	CITES Status	CMS	National Status (EPBC Act*)
Tasmanian Live-bearing Seastar	<i>Patiriella</i> (= <i>Parvulastra</i>) <i>vivipara</i>				Vulnerable
Swift Parrot	<i>Lathamus discolor</i>	Vulnerable			Endangered
Wedge-tailed eagle (Tasmanian)	<i>Aquila audax fleayi</i>	Vulnerable			Vulnerable
Fairy Tern	<i>Sterna nereis</i>	Vulnerable			Endangered Sub Species <i>Sternula nereis nereis</i>
Eastern Curlew	<i>Numenius madagascariensis</i>	Endangered			
Subtropical and Temperate Coastal Salt marsh					Vulnerable (listed 2013)

*Environment Protection and Biodiversity Conservation Act 1999.

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.

PWOL is an important area for maintaining biodiversity of saltmarshes, birds and fish. The estuary is fringed with saltmarshes hosting different facies of vegetation communities and species. Although the area of saltmarsh within the Ramsar boundary encompasses only about 3.5 per cent of the estimated total area of saltmarsh in Tasmania, the floristic communities include 12 of the 15 identified by Kirkpatrick and Glasby (1981). More extensive areas of saltmarsh lie adjacent to PWOL and are integral to the ecological character of the entire estuary.

Saltmarsh, wetland and coastal plant and invertebrate species considered rare in the Tasmanian Drainage Division occur in within the site. These species include *Calocephalus citreus* and *Wilsonia humilis*, *Limonium australe*, *Lepilaena preissi*, *Stuckenia pectinata* (syn. *Potamogeton pectinatus*) and the saltbush blue butterfly *Theclinessthes serpentata lavara*, all listed as rare under the Tasmanian *Threatened Species Protection Act 1995* (TSPA).

The distribution of the Tasmanian endemic viviparous seastar *Patiriella* (= *Parvulastra*) *vivipara* is limited to sheltered waters of the Bruny Bioregion (http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66767). The seastar occurs commonly in PWOL and has greatest productivity in this habitat (Byrne 1996).

The birdlife of PWOL includes migratory and resident shorebirds, waterbirds and seabirds. Rocky and sandy shorelines and islands provide roosting and nesting sites and the waters of the estuary are a rich food source. The extensive intertidal flats provide feeding areas for migratory and resident shorebirds and seabirds. The saltmarshes provide roosting and foraging areas. Transient visitors to the area include the great crested grebe *Podiceps cristatus* (listed as rare under the TSPA) and the swift parrot *Lathamus discolor* (listed as endangered under both the EPBC Act and TSPA).

Estuarine and marine fish species inhabit PWOL some continuously, others on a seasonal basis (Edgar *et al* 1999, Aquenal 2000). Diverse habitats including sandy shoals and bays, seagrass beds and open water are used by different fish species.

These components of PWOL were evident at the time of listing and the species diversity exists today, albeit with changes in some communities and species abundance.

Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

The site provides important habitat for non-breeding migratory shorebirds. Thirty-two migratory species have been recorded in the PWOL reserve and surrounding area, some of which are very rare (Parks and Wildlife Service 2013).

Thirty-two bird species (mostly shorebirds) that occur in and around the reserve are listed on one or more migratory bird agreements, JAMBA, CAMBA or ROKAMBA (see Appendix 1). Orielton Lagoon is one of only two sites in Tasmania that are included in the Flyway Site Network of the East-Asian – Australasian Partnership <http://www.eaaflyway.net/network.php>. Migratory species use the reserve to rest and feed intensively to build up fat and protein reserves to fuel their northern migration. The site is the southern-most area in Australia where relatively high numbers of migratory shorebirds occur including eastern curlew (*Numenius madagascariensis*), bar-tailed godwit (*Limosa lapponica*), common greenshank (*Tringa nebularia*), curlew sandpiper (*Calidris ferruginea*), whimbrel (*Numenius phaeopus*) and red-necked stint (*Calidris ruficollis*).

At the time of listing, PWOL was considered one of the most important wader habitats in Tasmania, particularly for the endangered Eastern Curlew and the Lesser Golden Plover (Reid and Park 2002). It remains an important area for waders despite lower numbers being recorded and severe decline in some species (Birds Tasmania unpublished data 2009). The reasons for the fall in numbers are complex and common to some other migratory bird sites.

The double-banded plover (*Charadrius bicinctus*) breeds in New Zealand and migrates to Australia in February or March for winter, returning to New Zealand around August. The samphire area on the northern foreshore of Orielton Lagoon and along the eastern shore adjacent to Sorell is particularly important habitat for double-banded plover.

Woody Island provides nesting and roosting habitat for White Breasted Sea Eagle *Haliaeetus leucogaster* (listed as vulnerable under TSPA)

Pitt Water has fish species diversity typical of estuarine systems with both estuarine and marine species (Edgar *et al* 1999, Aquenal 2000). Several species of commercial shark use the area as breeding grounds (CSIRO 1993, Healey 1996, Aquenal 2000). Fish diversity and breeding has been consistent from the time of listing and at present, although abundance appears to have declined (Aquenal 2000).

Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

PWOL has been identified as the most important breeding ground in the Bruny Marine Bioregion for several species of commercially harvested shark species (CSIRO 1993, Healey 1996, Aquenal 2000). The most significant numbers of juvenile school sharks were found in Pitt Water (Aquenal 2000). Pittwater is declared Shark Refuge Area under the *Living Marine Resources Management Act 1995* Tasmania.

Criterion 9: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland-dependent non-avian animal species.

PWOL is the stronghold for the endemic seastar *Patiriella* (= *Parvulastra*) *vivipara*. The total population of this species is estimated at about 350,000. The species is limited to about 13 sites, of which PWOL hosts the greatest numbers (Prestedge 1998). Estimates of the percentage of the total population suggest some 92% of the population occurs in the Pitt Water area, of which around half (or around 45 %) would fall

within the PWOL boundary. (http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66767).

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:

Tasmanian Drainage Division, Australian Drainage Divisions
Bruny Marine Bioregion, Integrated Marine and Coastal Regionalisation of Australia (IMCRA)

b) biogeographic regionalisation scheme (include reference citation):

Australian Drainage Divisions
Commonwealth of Australia (Bureau of Meteorology), 2011, Australian Hydrological Geospatial Fabric.

Integrated Marine and Coastal Regionalisation of Australia

Department of the Environment (2006). Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 - Provincial Bioregions

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.

The site lies in the driest region of Tasmania with a mean annual rainfall of 497mm, varying between 297-735mm per year. It has a cool temperate climate and is generally exposed to north-westerly winds with southerly afternoon sea breezes in summer.

Pitt Water is a wave-dominated estuary with typical shallow open central basin, extensive intertidal flats and fringing saltmarshes and sandy shorelines. The area includes estuaries of four watercourses: Coal River and Sorell Rivulet into Pitt Water, Orielson Rivulet into Orielson Lagoon and Iron Creek into Iron Creek Bay. Pitt Water was formed by an extensive mid-bay spit, developed during a period of recent sea level rise, flooding low-lying areas of the Coal River. The site is essentially marine in character.

The main basin is separated from the upper reaches of the estuary by two causeways constructed in 1874. The causeway across the main channel of the Coal River has a wide bridge through which the waters flow freely. The second causeway closes off the once open bay at Orielson Rivulet to form a lagoon. Over the years, different methods were used to manage tidal movements, causing adverse effects to the ecosystem function. Five box culverts with sills at mid-tide level and additional drains have improved tidal exchange and circulation though the lagoon remains a highly modified system.

The central basin of Pitt Water has an average depth of about 5m with tidal channels up to 8m. The waters are essentially marine in character throughout most of the site. The tidal range is 1.4m, modified by the causeways and culverts in the upper estuary. Pitt Water has a massive tidal flow with a tidal prism of ~ 23.4 gegalitres with flushing time of approximately 4.36 tidal cycles. Further information can be found in the ecological character description (Dunn 2010).

Water quality monitoring by the Department of Primary Industries, Water and Environment (DPIPWE) shows that the Coal River frequently has high nitrogen and salinity levels and occasionally elevated phosphorus and turbidity levels (NRM South 2011). Water in the estuary generally has a marine salinity, tending hypersaline due to evaporation in the large shallow water body. Salinity can decrease substantially after rainfall in the upper areas (NRM South 2011). Dissolved oxygen, nitrate and chlorophyll levels are low. Turbidity in the estuary is low, but occasional peaks occur after rainfall and there is evidence of sediment accumulation in the estuary (NRM South 2011).

Acid sulfate soils (ASS) probability mapping of the area has shown that the reserve and some of the surrounding area contain potential acid sulfate soils (PASS) that are currently in an undisturbed state

(Parks and Wildlife Service 2013). Two sites sampled in 2009 as part of the Tasmanian Acid Sulfate Soils Information Project were found to have actual ASS (Parks and Wildlife Service 2013).

17. Physical features of the catchment area:

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

The total catchment area of the site is 890 km², of which approximately 620 km² is the catchment of the Coal River. The rivers rise in hills at about 550m altitude flowing through dolerite and sandstone valleys for some 70 km to the tidal limit at the town of Richmond. Groundwater is thought to be of considerable significance to the total flow.

The geology of the site is complex, the immediate surrounding area being dominated by Holocene river alluvium, silt, fine sand, dune and windblown sand with pockets of Triassic sandstone and shale. Sediment is transported by the watercourses into Pitt Water, where there is evidence of an increase in deposition as a result of early landclearing and present day agricultural practices. Sediment transport, erosion and deposition have led to the variety and condition of the habitat components such as tidal flats, saltmarshes and seagrass beds.

Freshwater flows have varied according to variability in rainfall. The streams frequently cease flowing in summer months. Periods of intense rainfall can occur at any time of year bringing flushing flows or even floods.

Two factors have altered this pattern in recent years: a period of annual droughts and the construction of a major dam on the Coal River which reduces base flows, removes flushes and floods and reverses the seasons for low or no flows.

18. Hydrological values:

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

The tidal exchange within Pitt Water ensures water of marine quality. It allows for dispersal and dilution of treated outputs from sewage treatment plants and some stormwater outlets. The saline waters support a diversity of fish species and breeding grounds for some species of commercial and recreational value. The good water quality and associated biota support a significant oyster farming industry. The hydrology of adjacent saltmarsh areas plays a significant role in reducing nutrient input from surrounding land.

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.

F (54%), G (37%), H (4%), B (3%), D (1%), E (1%)

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.

Most of the site is open estuarine water with underwater vegetation (seagrass) in localized areas. Seagrass distribution has declined in the past 60 years. Once dominant throughout the estuary, it is now limited to only very small patches in the mid estuary (LIST, 2010 cited in NRM South 2011). At the time of listing, seagrass was still an important component of the PWOL ecosystem, albeit less extensive than in earlier decades. Losses of seagrass have been attributed to increases in turbidity and nutrient levels, and sedimentation (Aqueal 2000).

The open waters provide habitat for typical fish, phytoplankton and invertebrate communities. Extensive mudflats are exposed at low tide and form important feeding areas for waders and other birdlife. The shoreline of Pitt Water is fringed by saltmarshes and sandy and rocky shores. Rocky sandstone shores are important habitat for seastars. The saltmarshes, rocky and sandy shores provide food sources, roosting areas and breeding sites for particular birds. Aspect, vegetation and wind direction are important determinants of how different areas within the site are used through the seasons.

A report on abundance and diversity benthic macro-invertebrates in Orielton Lagoon indicated the diversity of macro-invertebrates had significantly increased between 1999 and 2005 (Davies *et. al.*, 2006 cited in NRM South 2011). The report concluded that changes in salinity and nutrient status as a result of increased tidal exchange between Orielton Lagoon and Pitt Water (modification to the causeway) and diversion of suburban wastewater from the Lagoon were the likely causes of the improvement (Davies *et. al.*, 2006 cited in NRM South 2011).

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.*

Five plant species in this area are considered of particular significance because of their threatened status in Tasmania. PWOL is a key site for their conservation. The daisy, lemon beauty-head (*Calocephalus citreus*) is listed as rare under the Tasmanian *Threatened Species Protection Act 1995* (TSP Act). Four other species, slender water-mat (*Lepilaena preissii*), silky wilsonia (*Wilsonia humilis*), fennel pondweed (*Stuckenia pectinata* (syn. *Potamogeton pectinatus*)), and sea lavender (*Limonium australe*) are also listed under the TSP Act as rare.

The principal species of seagrass occurring in PWOL is *Zostera muelleri* which colonizes the intertidal flats and shallower bays. *Ruppia* sp is a perennial grass which may be found in areas with more freshwater influence such as the head of the estuary and Orielton Lagoon.

The site supports Subtropical and Temperate Coastal Salt Marsh ecological community listed under Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A number of highly invasive Weeds of National Significance occur within the site: boneseed *Chrysanthemoides monilifera* ssp *monilifera*, gorse *Ulex europaeus*, blackberry, *Rubus fruticosus* and African boxthorn *Lycium ferocissimum*.

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.*

An endemic viviparous starfish *Parvulastra* (= *Patriella*) *vivipara*, listed as vulnerable under the EPBC Act and the State *Threatened Species Protection Act 1995* (TSPA) has its stronghold in PWOL. It only occurs in the Bruny Bioregion (IMCRA).

Resident and migratory shorebirds use several areas within PWOL, depending on tidal movements and weather conditions (Dunn, 2010). The two most important sites within PWOL are Orielton Lagoon and Barilla Bay (NRM South 2011). Migratory shorebirds protected under the CAMBA, JAMBA and ROKAMBA migratory bird agreements that visit the area include the eastern curlew *Numenius madagascariensis* (endangered under TSPA), bar-tailed godwit *Limosa lapponica*, common greenshank *Tringa nebularia*, curlew sandpiper *Calidris ferruginea*. The double-banded plover *Charadrius bicinctus*, and red-necked stint *C. ruficollis* also utilise the site. Orielton Lagoon is included in the Flyway Site Network of the East-Asian – Australasian Partnership and is the most southerly site for migration. More than 170 Red-necked Stints, one Common Greenshank and 30 Pacific Golden Plover were observed during a 2012 survey (Woehler 2013).

Pied oyster-catchers *Haematopus longirostris* are abundant around the site and form a component of the nationally significant population of this species in the wider Derwent Estuary area. A 2012 survey observed 62 breeding pairs of Pied oyster-catchers which is within the 1% threshold for Criterion 6 (Woehler 2013). Further surveys are required to demonstrate the site regularly supports the 1% population threshold.

PWOL is considered important for conservation of coastal birdlife of the Tasmanian South-East Bioregion (IBRA) and Bruny Marine Bioregion (IMCRA). Orielton Lagoon is one of the few spots where great crested grebes *Podiceps cristatus* (rare under TSPA 1995) can be seen regularly.

Other rare or threatened birds that have been sighted within Pitt Water – Orielton Lagoon include the fairy tern *Sternula nereis nereis* (vulnerable under the TSPA and EPBC Act); little tern *Sterna albifrons sinensis* endangered under TSPA and migratory under the EPBC Act; wedge-tailed eagle *Aquila audax fleayii* (endangered under EPBC Act & TSPA), and swift parrot *Lathamus discolor* (endangered under EPBC Act & TSPA).

The saltmarshes around Barilla Bay are one of the few recorded localities of the Tasmanian endemic chequered blue butterfly *Theclinesthes serpentata lavara* listed as rare under the TSPA.

Pitt Water is thought to be currently relatively free of major marine pests although feral Pacific oysters *Crassostrea gigas*, introduced several decades ago, are established. The waters are exposed to invasion by marine pest species (including several listed on National Control Plans) infesting the nearby Derwent estuary and other southern coastal waters. Dogs, cats, rats and rabbits are present in parts of the site.

A list of birds that utilize the site is at Appendix 1. More information about fauna at the site can be found in the Pitt Water-Orielton Lagoon Ecological character description (Dunn 2010) and the Pitt Water-Orielton Lagoon Management Plan 2013 (Parks and Wildlife Service 2013).

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:

At the time of European arrival, Pitt Water was part of the territory occupied by the Oyster Bay Tribe. Twenty-one sites within close proximity to the Ramsar site have been registered on the Tasmanian Aboriginal site index. The area continues to be important for the local Aboriginal community.

The local communities have significant affiliation with the area through ongoing recreational and commercial activities. Pitt Water-Orielton Lagoon provides the context for the townships and settlements and defines the sense of place for the area.

The location close to urban centres makes oyster farming an important use of the site. A lease area within the Upper Pitt Water is fully developed, producing about half a million dozen oysters annually.

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:

24. Land tenure/ownership:

a) within the Ramsar site:

All types of Crown Land, including submerged Crown land, within the site are under the management of Crown Land Services and the Parks and Wildlife Service under the *Crown Lands Act 1976*. The site incorporates an area gazetted under the *Nature Conservation Act 2002*, as the Pitt Water Nature Reserve. A small area (46 ha) is private land (parts of PIDs 2665364, 5176929, 5890305). Private land components lie in the Duckhole Rivulet area.

b) in the surrounding area:

Private freehold

25. Current land (including water) use:

a) within the Ramsar site:

Extensive oyster farming operations lie within the site where 425 ha is zoned for marine farming with a maximum leasable area within these zones of 43.19 ha. Fishing is a popular recreational pursuit although commercial fishing has all but ceased in the area. Other recreational activities include boating and other water-based activities, bird watching and pursuit of conservation activities. Pitt Water and Orielton Lagoon have been locations for post-graduate and other research projects in fields including geomorphology, zoology, biogeography, human impacts on wetlands and climate change.

b) in the surroundings/catchment:

The surrounding area is used for livestock grazing, with water use for agricultural purposes. The area has been used for agricultural purposes for almost two hundred years, in the early years for cereal crops and mixed farming, more recently for grazing of sheep and cattle. Some land is now used for viticulture and a variety of horticultural crops including fruit and salads. There has been growth in residential use as the towns have become popular commuter settlements. Associated light industrial and commercial uses have also expanded. Other land uses provide facilities and infrastructure for the residents of the area. Recreational uses include six golf courses.

The area has important historic assets and Richmond in particular attracts large numbers of tourists.

Hobart International Airport is located near the southern boundary of the site. The facility provides for around 1.8 million passenger movements and 14 000 aircraft movements annually. Nearby Cambridge airport serves light planes including flight training and scenic flights.

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:

Construction of causeways has limited the tidal exchange, notably in Orielton Lagoon although the addition of culverts and drains has improved tidal exchange in the lagoon. Changes in sediment transport within the site have resulted from factors outside the site as well as possible evidence of climate change and sea level rise.

Unrestricted stock access may cause damage to saltmarsh structure, condition and floristics. Overfishing may be contributing to loss in abundance and diversity of fish stocks. Stormwater and groundwater seepage contribute to changes in nutrient balance and water quality, especially in the almost enclosed Orielton Lagoon.

Phytophthora cinnamomi may be detrimental to some vegetation in the reserve, while chytrid fungus has the potential to affect amphibian populations that may be present in the reserve, such as the threatened green and gold frog.

Dogs and cats can chase and catch shorebirds or to force breeding birds from their nests. Many birds are especially vulnerable at high tide when roosting. In the past, horses have caused damage by compacting and trampling saltmarsh vegetation, mudflats and nests (Parr 1988). Grazing by rabbits also presents a threat to vegetation, particularly saltmarsh regrowth. Rabbits were successfully eradicated from Woody Island in March 1990 using 1080 poison baits (Fisher 2001).

Based on the current distribution of introduced invertebrate aquatic species in Tasmanian waters, several species are potential threats to the reserve. They include the toxic dinoflagellate (*Gymnodinium catanatum*), the North Pacific seastar (*Asterias amurensis*), and European shore crab (*Carcinus maenas*).

Domestic ducks, primarily those derived from mallards, are increasingly being observed in the reserve. Mallards are known to interbreed with the Pacific black duck (*A. superciliosa*). Kelp gulls, self-introduced in the late 1950s from New Zealand, pose a threat by disturbing habitat of migratory species and resident shorebirds, such as the samphire flats to the north of Orielton Lagoon.

b) in the surrounding area:

Construction of the Craighourne Dam on the Coal River in 1985 has resulted in altered flow regimes and lower freshwater input to the estuary. Summer outflows from the Coal River into Pitt Water are now generally above those which would have occurred naturally (Fuller 1996, Gallagher 1998). Before being dammed, the Coal River often ceased to flow during the summer months (Gallagher 1998). The outlet of Craighourne Dam does not have flood control gates or other means of simulating flood conditions downstream when they occur upstream. It is important that the ecological requirements of Pitt Water are assessed and prioritised in all future water allocations, including the setting of environmental flows for the Coal River, or the approval of any future irrigation development (Parks and Wildlife Service 2013).

Use of potentially nutrient-rich grey water for irrigation may affect water quality in groundwater.

Increasing numbers of subdivisions on the shores of Orielton Lagoon and Midway Point may contribute to increased run-off and sediments. Subdivisions can result in additional stormwater outlets, potential for dumping and spread of weed species, and general disturbance from noise, pets, and human activity. Some of the stormwater is partially treated. Some treatments allow only for the removal of solid pollutants such

as litter, while others also reduce sediment and nutrient loads. Stormwater remains an increasing source of nutrients and a significant threat to the environmental quality of Orielton Lagoon.

During 2013/14 leakage from old or damaged sewage infrastructure caused the temporary closure of Oyster farms in Pitt Water area to limit potential public health risk.

Irrigation practices, stock management and ground water manipulation on adjacent agricultural land impact on saltmarshes, seagrass, hydrology, sediment and water quality. Gully erosion, prevalent around Orielton Lagoon, can contribute sediment straight into the wetland. In addition to sedimentation, runoff from planted croplands, pastures and other agricultural areas with high fertiliser use may also contribute to increased nutrient loads in wetland. Nutrient (nitrogen, nitrate and phosphorus) levels in the Coal River are generally at low levels, however, a few high flow events can carry the majority of annual nutrient load (Gallagher 1998).

New developments such as the construction of the South East Irrigation Scheme will increase the amount and type of agricultural cropping in the catchment.

The modification of the runways at Cambridge Airport in 2013 has the potential for increased storm water and industrial runoff to the site

There are a number of proposed developments near the site (e.g. runway extension for Hobart International Airport; New Golf Course and large residential development at Seven Mile Beach, industrial complex at Barilla Bay) have the potential for increased storm water, industrial runoff, nutrient load and disturbance to bird values of site.

One of the biggest threats to the Pitt Water estuary is likely to be climate change through rising sea level and altered water balance in the catchment area. Inundation of low-lying areas may occur, with erosion and recession of sandy beaches (causing narrowing of the spit), and landward growth and translation of the marine tidal delta.

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.

Orielton Lagoon is listed in the Flyway Site Network of the East-Asian – Australasian Partnership. Three important areas of the site are scheduled as Nature Reserve under the *Nature Conservation Act 2002* Tasmania.

Upper Pitt Water is a Shark Refuge Area under the *Living Marine Resources Management Act 1995*, Tasmania. Hunting or disturbing wildlife is prohibited in the Nature Reserves under the Tasmanian wildlife regulations.

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?:

Pitt Water Nature Reserve Management Plan 2013. <http://www.parks.tas.gov.au/?base=20368>

This plan guides the management of the reserve and aims to ensure the long term viability and protection of the natural values, including habitat for migratory birds from the Northern Hemisphere. The reserve forms part of the Pitt Water - Orielton Lagoon Ramsar site. The plan not only provides policies and actions for Parks and Wildlife Service to undertake, but also proposes developing closer liaison with local

Councils, including Sorell and Clarence, and community members to promote better environmental management of these natural areas.

Relevant nationally endorsed recovery plans include the Threatened Tasmanian Eagles Recovery Plan and the Swift Parrot Recovery Plan.

Parks and Wildlife Service (PWS) chair the PWOL working group to coordinate environmental projects and actions compatible with the objectives of the Management Plan. The main stakeholders of the working group include PWS, Sorell Council, Birdlife Tasmania and NRM South. The group has commissioned a number of reports including the Pitt Water Orielton Lagoon Foreshore Strategic Action Plan 2011 (North Barker 2011); Southern Tasmanian Coastal Salt Marsh Futures Report 2013 (Vishnu Prahallad and Jill Pearson 2013); Resident Shorebirds and Seabirds of Pitt Water Orielton Lagoon 2013 (Dr Eric Woehler 2013);

d) Describe any other current management practices:

Over the past 8 years, PWS and contractors have undertaken a coordinated weed control program as part of the Southern Tasmanian Weed Strategy developed by the Southern Tasmanian Councils Authority. This program has targeted primary control of weeds of national significance. Since 2009, PWS has conducted annual weed control works on Woody Island to control boneseed, boxthorn, radiata pine, Cape Leuwin wattle and blackberry.

Birdlife Tasmania and PWS staff conduct annual shore bird surveys in the upper Coal River and Iron Creek areas (Woehler 2013).

Some areas of shoreline of Orielton Lagoon have been fenced to protect areas important for shorebirds from dogs, cycles, horse riding and other human activity.

The Friends of Pitt Water Orielton Lagoon Wildcare group (FoPWOL) was formed in 2013 in cooperation with PWS. This group has over 20 active members and conducts annual weed control and revegetation working bees with a current focus on Boneseed. The group is currently implementing a NRM funded project – Improving the ecological condition of PWOL Ramsar site to continue weed and revegetation works.

The Sorell Primary School has been working with Sorell Council on weeds and revegetation at Water View Sanctuary since 2000.

28. Conservation measures proposed but not yet implemented:

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

Sorell Council has developed the Miena Bay Wetland Stormwater Management Strategy 2008 and Sorell Stormwater Management Plan 2013. The Stormwater Management Plan steering committee included Council, PWS, NRM South and Derwent Estuary Program. The Plan has not been ratified by Council and is used as a guidance document only.

29. Current scientific research and facilities:

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

Shorebird and Seabird surveys, Saltmarsh surveys, ongoing water monitoring by Sorell Council

30. Current communications, education and public 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.

Friends of PWOL conducts salt marsh and bird identification training sessions open to the public and provide media articles to increase public awareness of PWOL values.

The Sorell Primary school and local Sorell Public Library have regular displays, competitions and awareness activities. An information brochure was distributed to households by Parks and Wildlife Service (December 2008) Interpretation signs have been installed at key points around Orielson Lagoon and Sorell Rivulet.

The PWS Reserve regulatory signs were replaced in 2013.

The Pitt Water Orielson Lagoon – Community Report Card 2011 (an estuary under pressure) funded by NRM South and distributed locally.

31. Current recreation and tourism:

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

Recreational fishing is popular especially from the bridge in the first causeway. The new bridge constructed in 2002 provided safe access for fishers along walkways outside the road carriageway. The intensity of recreational fishing off the causeway is increasing every year and must ultimately impact on fish stocks in the reserve and the available food for birds and shark nursery. The open waters are used for water-based activities such as wind-surfing, kayaking and swimming. Adjacent shorelines are popular for walking and bird-watching. Close to the township of Sorell, some areas of shoreline have been fenced to protect bird habitat, with alternative provisions for dog-walking nearby. PWS is assessing tourism proposals within the Nature Reserve and Ramsar site at this stage all proposals have been found to be incompatible with the values of the reserve.

32. Jurisdiction:

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

Director
Parks and Wildlife Service
GPO Box 1751
HOBART 7001
Tasmania.
Australia
Ph +61 1300 827 727
Information@dpipwe.tas.gov.au
<http://www.parks.tas.gov.au/>

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.

Functional jurisdiction:
Parks and Wildlife Service (Southern Region)
GPO Box 1751
HOBART 7001
Tasmania.
Australia
Ph +61 1300 827 727
Information@dpipwe.tas.gov.au
<http://www.parks.tas.gov.au/>

Territorial jurisdiction: Municipality of Sorell,
PO Box 126
Sorell TAS 7172

Ph: + 61 3 6269 0000
E-mail: sorell.council@sorell.tas.gov.au

Municipality of Clarence
PO Box 96
Rosny Park TAS 7018
Australia
Telephone: (03) 6245 8600
Facsimile: (03) 6245 8700
E-mail: clarence@ccc.tas.gov.au

34. Bibliographical references:

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

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Pitt Water - Orielton Lagoon Ramsar Site

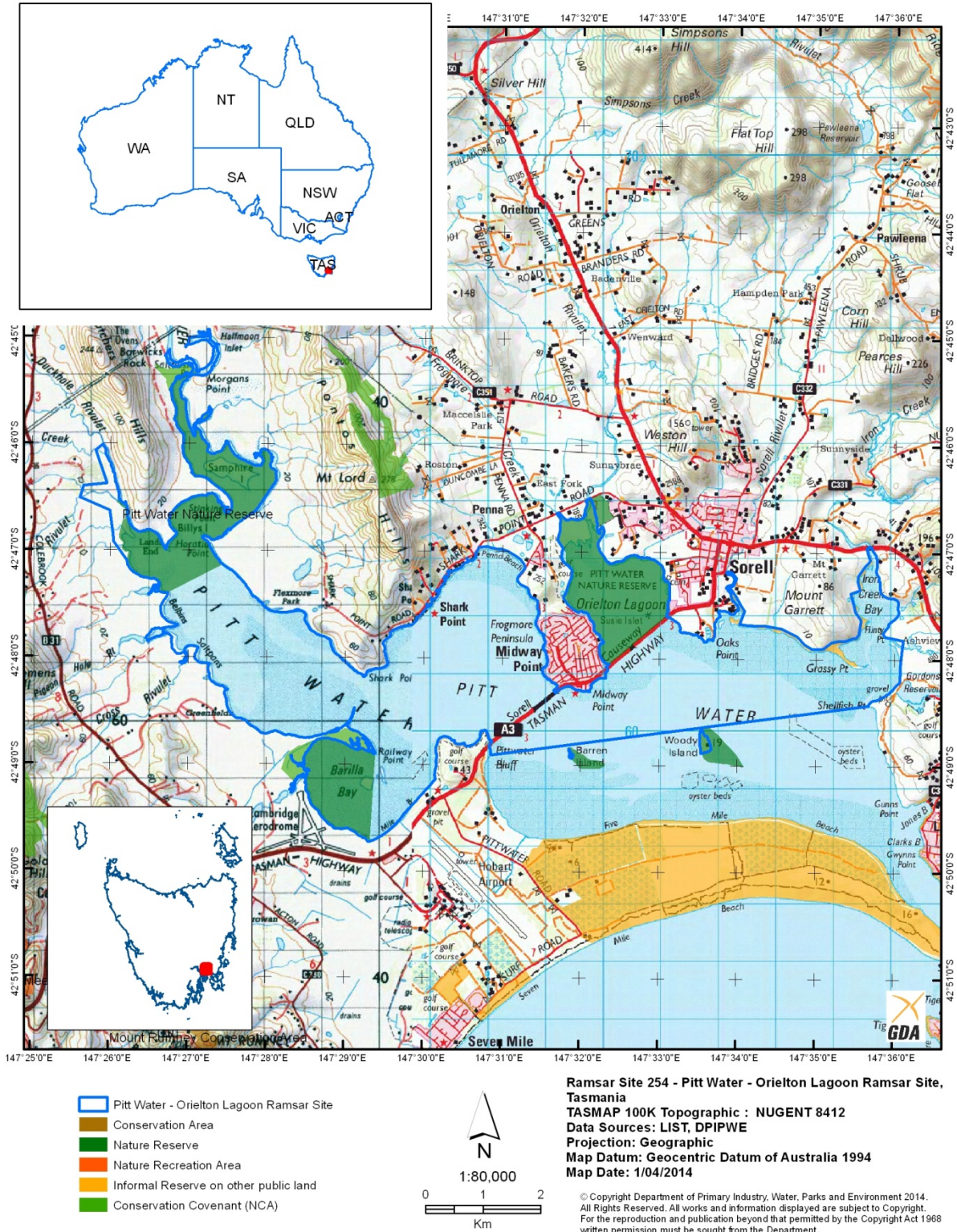


Figure 1. Pitt Water-Orielton Lagoon Ramsar site

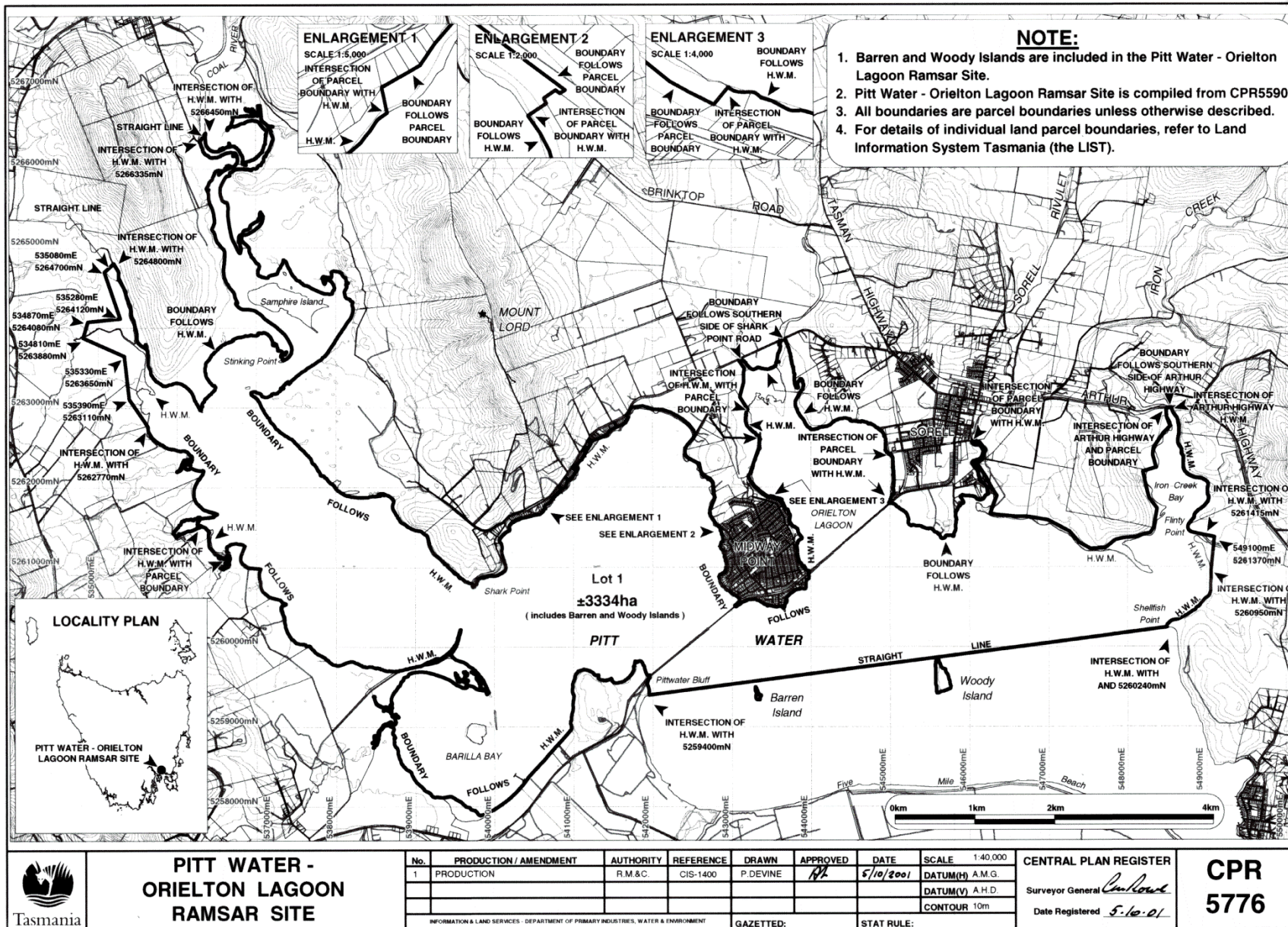


Figure 2. Central Plan Register Plan of the boundaries of Pitt Water-Orielton Lagoon Ramsar site

Appendix 1:

Birds recorded in the Ramsar Site (adapted from the *Pitt Water Nature Reserve Management Plan 2013*.)

Scientific name	Common name	Status / Listing
<i>Coturnix ypsilophora</i>	brown quail	
<i>Oxyura australis</i>	blue-billed duck	
<i>Biziura lobata</i>	musk duck	
<i>Cygnus atratus</i>	black swan	
<i>Cereopsis novaehollandiae</i>	Cape Barren goose	
<i>Tadorna tadornoides</i>	Australian shelduck	
<i>Anas superciliosa</i>	Pacific black duck	
<i>Anas rhynchotis</i>	Australasian shoveler	
<i>Anas gracilis</i>	grey teal	
<i>Anas castanea</i>	chestnut teal	
<i>Aythya australis</i>	hardhead	
<i>Poliocephalus poliocephalus</i>	hoary-headed grebe	
<i>Podiceps cristatus</i>	great crested grebe	State (Vulnerable)
<i>Pachyptila turtur</i> *	fairy prion	
<i>Phalacrocorax melanoleucos</i>	little pied cormorant	
<i>Phalacrocorax fuscescens</i>	black-faced cormorant	
<i>Phalacrocorax varius</i>	pied cormorant	
<i>Phalacrocorax sulcirostris</i>	little black cormorant	
<i>Phalacrocorax carbo</i>	great cormorant	
<i>Pelecanus conspicillatus</i>	Australian pelican	
<i>Egretta novaehollandiae</i>	white-faced heron	
<i>Egretta garzetta</i>	little egret	
<i>Ardea alba</i>	great egret	National (EPBC Marine; Migratory), CAMBA, JAMBA)
<i>Ardea ibis</i>	cattle egret	National (EPBC Marine; Migratory), CAMBA, JAMBA)
<i>Threskiornis molucca</i>	Australian white ibis	
<i>Platalea regia</i>	royal spoonbill	
<i>Haliaeetus leucogaster</i>	white-bellied sea eagle	State (vulnerable), CAMBA
<i>Circus approximans</i>	swamp harrier	
<i>Accipiter fasciatus</i>	brown goshawk	
<i>Accipiter cirrhocephalus</i>	collared sparrow hawk	
<i>Aquila audax</i>	wedge-tailed eagle	State (Endangered)
<i>Falco berigora</i>	brown falcon	
<i>Falco longipennis</i>	Australian hobby	
<i>Falco peregrinus</i>	peregrine falcon	
<i>Falco cenchroides</i>	nankeen kestrel	
<i>Gallinula mortierii</i>	Tasmanian native-hen	
<i>Fulica atra</i>	Eurasian coot	
<i>Gallinago hardwickii</i>	Latham's snipe	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Limosa limosa</i>	black-tailed godwit	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Limosa haemastica</i>	Hudsonian godwit	
<i>Limosa lapponica</i>	bar-tailed godwit	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Numenius phaeopus</i>	whimbrel	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)

Scientific name	Common name	Status / Listing
<i>Numenius madagascariensis</i>	eastern curlew	State (Endangered), National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Tringa stagnatilis</i>	marsh sandpiper	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Tringa nebularia</i>	common greenshank	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Actitis hypoleucos</i>	common sandpiper	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Heteroscelus brevipes</i>	grey-tailed tattler	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Arenaria interpres</i>	ruddy turnstone	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Calidris tenuirostris</i>	great knot	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Calidris canutus</i>	red knot	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Calidris minuta</i>	little stint	National (EPBC-Marine, Migratory), ROKAMBA.
<i>Calidris ruficollis</i>	red-necked stint	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Calidris melanotos</i>	pectoral sandpiper	National (EPBC-Marine, Migratory) JAMBA, ROKAMBA.
<i>Calidris acuminata</i>	sharp-tailed sandpiper	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Calidris ferruginea</i>	curlew sandpiper	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Tryngites subruficollis</i>	buff-breasted sandpiper	National (EPBC-Marine, Migratory) JAMBA, ROKAMBA.
<i>Philomachus pugnax</i>	ruff	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Haematopus longirostris</i>	pieb oystercatcher	
<i>Haematopus fuliginosus</i>	sooty oystercatcher	
<i>Himantopus himantopus</i>	black-winged stilt	National (EPBC-Marine)
<i>Cladorhynchus leucophalus</i>	banded stilt	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Pluvialis fulva</i>	Pacific golden plover	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Pluvialis squatarola</i>	grey plover	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Charadrius ruficapillus</i>	red-capped plover	
<i>Charadrius bicinctus</i>	double-banded plover	
<i>Charadrius Mongolus</i>	lesser sand plover	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Charadrius leschenaultii</i>	greater sand plover	National (EPBC Marine; Migratory), Bonn, CAMBA, JAMBA, ROKAMBA)
<i>Charadrius veredus</i>	oriental plover	National (EPBC-Marine, Migratory) JAMBA, ROKAMBA.
<i>Euseyonis melanops</i>	black-fronted dotterel	
<i>Vanellus tricolor</i>	banded lapwing	
<i>Vanellus miles</i>	masked lapwing	
<i>Larus pacificus</i>	Pacific gull	National (EPBC-Marine)
<i>Larus dominicanus</i>	kelp gull	National (EPBC-Marine)
<i>Larus novaehollandiae</i>	silver gull	National (EPBC-Marine)
<i>Sterna caspia</i>	Caspian tern	(EPBC-Marine; Migratory) CAMBA, JAMBA.
<i>Sterna bergii</i>	crested tern	EPBC (Marine)
<i>Sterna albifrons sinensis</i>	little tern	National (EPBC-Marine, Migratory) JAMBA CAMBA

Scientific name	Common name	Status / Listing
		ROKAMBA
<i>Sterna nereis nereis</i>	fairy tern	National (EPBC-Vulnerable)
<i>Chlidonias leucopterus</i>	White-winged black tern	National (EPBC-Marine, Migratory) JAMBA CAMBA ROKAMBA
<i>Phaps chalcoptera</i>	Common bronzewing	
<i>Calyptorhynchus funereus</i>	Yellow-tailed black-cockatoo	
<i>Cacatua roseicapilla</i>	Galah	
<i>Cacatua galerita</i>	Sulphur-crested cockatoo	
<i>Glossopsitta concinna</i>	Musk lorikeet	
<i>Platycercus caledonicus</i>	Green rosella	
<i>Platycercus eximius</i>	Eastern rosella	
<i>Lathamus discolor</i>	Swift parrot	National (EPBC- Endangered)
<i>Neophema chrysostoma</i>	Blue-winged parrot	
<i>Cuculus pallidus</i>	Pallid cuckoo	
<i>Cacomantis flabelliformis</i>	Fan-tailed cuckoo	
<i>Chrysococcyx basalis</i>	Horsfield's bronze cuckoo	
<i>Ninox novaeseelandiae</i>	Southern boobook	
<i>Tyto novaehollandiae</i>	Masked owl	National (EPBC-Vulnerable)
<i>Podargus strigoides</i>	Tawny frogmouth	
<i>Hirundapus caudacutus</i>	White-throated needletail	National (Marine; Migratory) JAMBA CAMBA ROKAMBA
<i>Dacelo novaeguineae</i>	Laughing kookaburra	
<i>Malurus cyaneus</i>	Superb fairy-wren	
<i>Pardolotus punctatus</i>	Spotted pardolate	
<i>Pardolotus striatus</i>	Striated pardolate	
<i>Calamanthus fuliginosus</i>	Striated fieldwren	
<i>Acanthiza pusilla</i>	Brown thornbill	
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped thornbill	
<i>Anthocaera paradoxa</i>	Yellow wattlebird	
<i>Anthocaera chrysoptera</i>	Little wattlebird	
<i>Manorina melanocephala</i>	Noisy miner	
<i>Lichenostomus flavicollis</i>	Yellow-throated honeyeater	
<i>Phylidonyris pyrrhoptera</i>	Crescent honeyeater	
<i>Phylidonyris novaehollandiae</i>	New Holland honeyeater	
<i>Melithreptus affinis</i>	Black-headed honeyeater	
<i>Acanthorhynchus tenuirostris</i>	Eastern spinebill	
<i>Epthianura albifrons</i>	White-fronted chat	
<i>Petroica multicolor</i>	Scarlet robin	
<i>Petroica phoenicea</i>	Flame robin	
<i>Melanodryas vittata</i>	Dusky robin	
<i>Colluricincla harmonica</i>	Grey shrike-thrush	
<i>Rhipidura fuliginosa</i>	Grey fantail	
<i>Coracina novaehollandiae</i>	Black-faced cuckoo-shrike	
<i>Artamus cyanopterus</i>	Dusky woodswallow	
<i>Cracticus torquatus</i>	Grey butcherbird	
<i>Gymnorhina tibicen</i>	Australian magpie	
<i>Strepera versicolor</i>	Grey currawong	
<i>Corvus tasmanicus</i>	Forest raven	

Scientific name	Common name	Status / Listing
<i>Alauda arvensis</i>	Skylark (introduced)	
<i>Anthus novaeseelandiae</i>	Richard's pipit	
<i>Passer domesticus</i>	House sparrow (introduced)	
<i>Carduelis chloris</i>	European greenfinch (introduced)	
<i>Carduelis carduelis</i>	European goldfinch (introduced)	
<i>Hirundo neoxena</i>	Welcome swallow	
<i>Hirundo nigricans</i>	Tree martin	
<i>Megalurus gramineus</i>	Little grassbird	
<i>Zosterops lateralis</i>	Silveryeye	
<i>Turdus merula</i>	Common blackbird (introduced)	
<i>Sturnus vulgaris</i>	Common starling (introduced)	

* NB. It is unknown which subspecies this record relates to. The taxonomic distinction of the subspecies *Pachyptila turtur turtur* and *Pachyptila turtur subantarctica* is currently uncertain.