

# 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 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).*

## 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.

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

Department of Primary Industries, Parks, Water and  
Environment (DPIPWE)  
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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 2014

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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.

Lavinia Nature Reserve

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### 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

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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\*\*

**\*\* 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.

The boundary of the site follows low water mark but the digital coverage used in 1996 was high water mark as low water mark was not available. In 2001, the boundary of the Lavinia Nature Reserve Ramsar site was mapped more accurately using an updated coverage of the low water mark. The area was recalculated to 7034 ha. 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:**

As a result of fires (fuel reduction, wildfires and 1 deliberately lit) at the site, 25 percent of the wetland (swamp paperbark forest) and peatland components of the site have been destroyed and another 60 percent damaged (Table 1). A determination will require time (possibly many decades) to assess whether regrowth of these components (within the Nook Swamps) results in regeneration of these wetland communities.

Table 1: Fire damage classes from the 2007 fire for the *Melaleuca ericifolia* swamp forests within Nook Swamps (Source: RMCD 2007)

Level of Fire Damage	Area (ha)*	% of total
Unburnt	90	15
Trees standing, canopy and most fine fuels burnt: partial loss of peat (5–20 cm).	360	60
Trees prostrate, canopy and all fine fuels burnt: complete loss of peat (up to 40 cm deep).	150	25
Total	600	100

(\* Area figures are approximate only)

It cannot currently be determined whether there has been a change in hydrology and fire regime components of the site. The fires have not altered the listing criteria for the site, as areas of peatland and swamp paperbark forest remain, despite these large reductions in area.

The 2005 RIS for the site listed eleven Ramsar wetland types at the site – six inland (types M, O, Tp, Ts, W and Xf) and five marine/coastal wetland types (E, F, G, H and K). Through site inspections and discussions of the Steering Committee established to progress the ecological character description, two inland wetland types and two marine/coastal wetland types were added to this list, resulting in a total of 15 Ramsar wetland types at the site. See section 19 and the ecological character description (Newall and Lloyd 2012) for updated wetland types.

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### 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 Ramsar site is part of the Lavinia State Reserve which is reserved under the Tasmanian *Nature Conservation Act 2002*.

The boundary of Lavinia Nature Reserve Ramsar site is shown as Lot 1 on Central Plan Register (CPR) 5651 from the Tasmanian Information and Land Services, Department of Primary Industries, Water and Environment. CPR 5651 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>  
Section 24 provides more information about the history of the boundary.

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### 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.

Approximate middle of site: 39° 42' 26.97"S; 144° 02' 13.74"E

Boulder Point: (northern end of site): 39° 38.415'S; 144° 03.700'E

Cowper Point: (southern end of site): 39°49.308'S; 144°07.511'E

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### 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.

Lavinia Nature Reserve Ramsar site is situated on the north-east coast of King Island, Bass Strait Tasmania, approximately 36 km north-east of the town Currie. The site lies between Boulder Point in the north and Cowper Point in the south, with the northern section extending approximately 8km inland. The site is located within the King Island municipality, which has a population of approximately 1800 residents (King Island Council, 2008).

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

The site is mostly below 20m ASL

### 11. Area: (in hectares)

7034ha

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### 12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland. This site is comprised of part of the Lavinia Nature Reserve (State Reserve). The site contains a highly significant and diverse set of ecosystems, including a significant lagoon and wetland system, coastal and

bush landscapes and a rich cultural heritage. The site's estuary and associated samphire mud flats, coastal swamps and lagoons are important habitat for a range of state and nationally threatened species. Following site inspections and discussions with the Steering Committee, the wetland types have been revised to include two inland wetland types and two marine/coastal wetland types were added to this list, resulting in a total of 15 Ramsar wetland types at the site (see question 19).

**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

**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.**

The site is located in the Tasmanian Drainage Division (Commonwealth of Australia 2009), which consists of the whole of Tasmania. The site is one of the few largely unaltered areas of native vegetation remaining on King Island, containing wetland types that are representative and/or rare to the bioregion, including *Melaleuca ericifolia* swamp forest, freshwater aquatic wetlands, herbfields and grasslands marginal to wetland and sedge/rush wetland.

The wetland vegetation associated with wetland types Xf (Freshwater, tree dominated wetlands) and Xp (Forested Peatlands) are listed as rare and endangered in Tasmania under schedule 3A of the *Nature Conservation Act 2002*. The wetland vegetation associated with wetland types H (Intertidal marshes), Ts (Seasonal/intermittent freshwater marshes & pools) and Tp (Permanent freshwater marshes & pools) are listed as vulnerable in Tasmania under schedule 3A of the *Nature Conservation Act 2002* (Duncan 1986, Barnes et al. 2002; DPIW; 2007). These include the wetlands at Pennys Lagoon, Lake Martha Lavinia, large parts of the Nook Swamp (including the *Melaleuca ericifolia* swamp forest) and the Sea Elephant Estuary.

The saltmarsh vegetation of the Sea Elephant Estuary (Wetland Type H) is also a good representative of this vegetation type for the bioregion, containing most saltmarsh formations and species found in Tasmania (Duncan 1986). Within the 'Saltmarsh' category graminoid saltmarsh and succulent saltmarsh have both been recorded within the Sea Elephant Estuary (Barnes et al. 2002).

Sea Elephant Lagoon is very unusual, being formed within a dune swale between parallel dunes that are probably the longest and best-developed in Tasmania extending north from the Sea Elephant River mouth to Lavinia Point (Parks and Wildlife Service 2000). The sand dunes in this system have been classed as "outstanding" at a State level from a geoconservation perspective (Dixon 1996). The dunefield peatlands of the site and the Sea Elephant Estuary have been listed as sites of significance on the Tasmanian Geoconservation Database (TGD), (DPIPWE 2009).

**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	CITES	CMS	National Status*
<b>Frogs</b>					
Green and gold frog	<i>Litoria raniformis</i>	Endangered	n/a	n/a	Vulnerable (EPBC Act, 1999)
<b>Birds</b>					
Orange-bellied parrot	<i>Neophema</i>	Critically	n/a	n/a	Critically Endangered

	<i>chrysogaster</i>	Endangered			(EPBC Act, 1999)
Fairy tern	<i>Sterna nereis</i>	Vulnerable	n/a	n/a	Vulnerable (EPBC Act, 1999). Sub species <i>Sternula nereis nereis</i> listed
Eastern Curlew	<i>Numenius madagascariensis</i>	Vulnerable	n/a	n/a	

\*Environment, Protection and Biodiversity Conservation Act 1999 (EPBC Act)

**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.**

This site is a hotspot of biodiversity at a regional scale partly due to the mix of habitat and wetland types supported by the site but also because the ecological communities on King Island represent a transitional zone between the Australian mainland and north-west Tasmania, supporting species from both the north and south (Barnes et al. 2002).

There are nine wetland dependent species listed at the State level under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) that are supported by the site: White-bellied sea eagle (*Haliaeetus leucogaster*, vulnerable, TSPA); Eastern curlew (*Numenius madagascariensis*, endangered, TSPA, vulnerable IUCN red list); the Striped marsh frog (*Limnodynastes peroni*, endangered, TSPA), one of six frog species found within the reserve (there being only 11 Tasmanian frog species); Showy willowherb (*Epilobium pallidiflorum*, rare, TSPA); Hairy brooklime (*Gratiola pubescens*, vulnerable, TSPA; found in wet herbfields in the Dunes – near Nook Swamp); Fan triggerplant (*Stylidium beaangleholei*; rare TSPA; found in damp heath and lagoon margins, e.g. around Lake Martha Lavinia and Sandsheet Ecosystem); Pink bladderwort (*Utricularia tenella*, rare TSPA; found in damp heath and lagoon margins, e.g. around Lake Martha Lavinia and Sandsheet Ecosystem); Small triggerplant (*Stylidium despectum*, rare TSPA; wet heath); Submerged watertuft (*Tritburia submersa*); damp heath (Sandsheet Ecosystem).

The White-bellied sea eagle hunts for prey from a range of terrestrial habitats and water bodies, including estuaries (DEWHA 2009b). Its use of the Lavinia Ramsar site means it may hunt for fish from the Sea Elephant Estuary. The eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats. It mainly forages on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with seagrass, often near saltmarsh, and on ocean beaches near the tideline (DEWHA 2009b). The frogs require permanent water, aquatic vegetation and good invertebrate populations found in the swamp habitats in the dunes and other ecosystem types.

The diversity of the vegetation communities is significant aspect of the site (DPIW 2007). In a bioregional context, this site is significant also because it contains the largest reserved patch of *Melaleuca ericifolia* swamp forest in Tasmania (Barnes et al. 2002; Barrow 2008). There are also significant vegetation communities associated with seabird rookeries within the site as well as the large variety of wetland types at the site including: freshwater aquatic wetlands, herbfields and grasslands marginal to wetland, and sedge/rush wetland all present and protected within the site (Barnes et al. 2002).

**Criterion 4- supporting species at critical stages or provides refuge in adverse conditions**

The site in general, and the Sea Elephant Estuary in particular, provide a critical feeding and resting site for the endangered Orange-bellied parrot (*Neophema chrysogaster*) during its annual migration between south-eastern Australia and Tasmania (OBPRT 1999). This species is recognised as endangered in the Japan - Australia Migratory Bird Agreement (JAMBA).

The extensive beaches of the site support many beach nesting shorebirds including the fairy tern (*Sterna nereis*), Australian pied oystercatcher (*Haematopus longirostris*), and Hooded plover (*Thinornis rubricollis*); and Cowper Point is recognised as a priority site for the Little tern (*Sterna albifrons*, rare, TSPA) (Bryant 2002). The site also supports breeding populations of the Little penguin (*Eudyptula minor*) (Donaghey 2003).

Three rookeries of the JAMBA listed Short-tailed shearwater (*Puffinus tenuirostris*) are located within the reserve, including one at Lavinia Point, one at Cowper Point and a third, reported to be just south of Nook Swamp (PWS 2000). The Short-tailed Shearwater breeds in burrows under the grass tussocks of the

Coastal Grasslands in this ecosystem.

Overall, the site supports ten migratory birds listed on the China - Australia Migratory Bird Agreement (CAMBA) and JAMBA, as well as five which are also listed on the Republic of Korea - Australia Migratory Bird Agreement (ROKAMBA). These species are: Short-tailed shearwater (*Puffinus tenuirostris*), Cattle egret (*Ardea ibis*), Great egret (*Ardea modesta*), Ruddy turnstone (*Arenaria interpres*), Sharp-tailed sandpiper (*Calidris acuminata*), Red-necked stint (*Calidris ruficollis*), White-throated needletail (*Hirundapus caudacutus*), Caspian tern (*Hydroprogne caspia*), Little tern (*Sterna albifrons*) and Greenshank (*Tringa nebularia*). The White-bellied Sea-Eagle (*Haliaeetus leucogaster*) is listed under CAMBA.

**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 Basin, Australian Drainage Divisions.

The marine and estuarine parts of the site also fall under the Bass Strait Province, 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.

Commonwealth of Australia. (2006). The Integrated Marine and Coastal Regionalisation of Australia - version 4.0 June 2006 (IMCRA v4.0).

**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 experiences a temperate maritime climate (also known as a marine west coast climate), which is typified by mild, moist conditions with warm summers and cool winters, relatively high rainfall and consistency of rainfall. Sandy deposits dominate the site, which primarily consist of Quaternary sediments and emerged marine surfaces forming dune systems, dune barrage lagoons and inland sand sheets. Landforms of the site are largely the result of several distinct episodes of coastal dune formation and time. The dune-forming episodes have been grouped into two key phases - the first during the late Pleistocene, creating the Old Dune system and the second during the Holocene creating the New Dune system. The coastal strip of the area is based on Quaternary coastal calcareous sands, forming sand dunes and beaches. Further inland are Quaternary sand plains with mostly deep organic sandy soils. Nook Swamps and the surrounding wetlands contain extensive peatlands developed in two contexts. Firstly, fibrous peats of up to one metre in depth are found associated with *Melaleuca* forests and likely to be many thousands of years old. Secondly, shallower humic peats have developed in surrounding wetlands in depressions on the plains.

The major groundwater systems influencing the Lavinia site fall into two general types: (i) local groundwater systems within unconsolidated sands present within the sedimentary basin and (ii) local perched groundwater systems occurring within the coastal dunes. The first controls the hydrology of much of the site, with water running through and across the unconsolidated sands, after falling on impermeable granite outcrops to the west and sinking into the adjacent permeable sands. The second has led to many smaller lagoons with independent hydrological systems. Local catchments provide inflows, whilst slow seepage and evaporation control losses. As a result, wetlands form, perched on these impermeable beds.

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

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

King Island is the largest island in western Bass Strait, being approximately 65 km long, 25 km wide and 110,160 ha in area (Finzel 2004). The Island has subdued topography and low relief with its highest point being Gentle Annie, at 168 m ASL (Environment Australia 2000). King Island is mainly formed on Precambrian rock and Quaternary sediments. The areas of Quaternary sediments are mostly below 60 m ASL, with the sediments burying the Precambrian bedrock in the northern and northeastern parts of the island (Orr, 2003).

The water catchment draining into the reserve has an area of approximately 280 square kilometres and covers nearly a third of King Island. The area experiences a temperate maritime climate, exemplified by mild, moist conditions with warm summers and cool winters. King Island receives the highest rainfall of all the Bass Strait islands with an average annual rainfall ranging from 750-1000mm. These climates do not typically have a dry season, although there is often a clear winter peak in rainfall.

### 18. Hydrological values:

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

As previously mentioned, the major groundwater systems influencing the Lavinia site fall into two general types, with local groundwater systems in unconsolidated sands controlling much of the site's hydrology. The groundwater flows are augmented by direct infiltration of rainfall on the sandy (and hence porous) catchment, providing water to the site in the form of surface flows (streams) and through the groundwater. Within the site, the main surface flows dependent on this type of system are the lower end of the Sea Elephant River and its northern tributaries through Saltwater Creek and the Nook Swamp.

Upstream of the Nook Swamp (and the site), artificial drains have been constructed to 'reclaim' wetland areas of Egg Lagoon. The effects of such drainage include changing the flow of groundwater and surface streams. During rainfall events, water is delivered more efficiently and rapidly to the receiving stream channel, leading to faster and deeper floods with associated erosion. Artificially high pulses of nutrients and sediments to the wetlands may also be expected in the Nook Swamp from the upstream drains during storm events. The Nook Swamp itself is therefore likely to be acting as a nutrient and sediment filter for runoff waters before they enter the Sea Elephant Estuary.

The second major type of groundwater system found within the site - local perched groundwater systems - has led to many smaller lagoons with independent hydrological systems. The perching occurs as a result of impermeable organic horizons forming in the sand. Local catchments provide inflows, whilst slow seepage and evaporation control losses. As a result, wetlands form, perched on these impermeable beds. Being independent of regional groundwater systems these small wetlands are vulnerable to mechanical activity which may disrupt the organic 'plugs', allowing increased seepage rates.

### 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.

W, U, Ts, Xf, Xp, F, J, H, Tp, O, K, M, E, G, D (Figure 3)

### 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.

Vegetation of the Lavinia Ramsar site reflects a suite of influences, including soil type and fertility, landform, distance from the coast, climate and hydrology. Superimposed upon the mosaic is the powerful influence of fire. Barnes *et al.* (2002) identified 25 native plant communities on King Island, thirteen of which are recorded within the site. These communities include King Island sedge/heath/scrub complex, bracken, *Melaleuca ericifolia* swamp forest, short paperbark swamp, coastal grasslands and herbfields, tall or dense and wind-pruned coastal scrub, King Island *Eucalyptus globulus* ssp *globulus* heathy woodland, graminoid saltmarsh, succulent saltmarsh, lacustrine herbfields, freshwater aquatic sedgeland and rushland, sand dune vegetation and Muttonbird rookery.

A comprehensive fauna survey has yet to be undertaken in the Lavinia State Reserve (Parks and Wildlife Service 2000). However the majority of species recorded for King Island are likely to be found within the site, apart from species recorded exclusively in remnant wet forest of the island (which is not well represented in the Lavinia State Reserve). From 35 native mammal species in Tasmania, 14 terrestrial species (including 2 species of bat) and two marine species have been found on King Island and all are found in the Lavinia Ramsar site.

King Island has 86 species of land and freshwater birds recorded breeding on the island or as regular visitors and 12 species of resident or breeding marine birds or waders (Donaghey 2003). Seven native and one introduced freshwater fish species occur on King Island, none of which are considered threatened. All of the native species occur in the Sea Elephant River (Parks and Wildlife Service 2000). Six frogs are in Lavinia Ramsar site and one hundred and seventy invertebrates have been recorded for King Island or in the waters surrounding King Island (Parks and Wildlife Service 2000).

Ecosystem services include: *Wetland products* (water supply, aquaculture); *Cultural services* (aesthetic values, cultural heritage, educational values, tourism and recreational values); and *Supporting services* (maintaining bioregional biodiversity, being representative of a bioregion, supporting species at a critical stage in their life cycles and supporting threatened species).

Additional information is included in the ecological character description for the site (Newall and Lloyd, 2012).

## 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.*

A total of thirteen plant species found at Lavinia Ramsar site are listed under TSPA (1995); eleven as rare and one as vulnerable and one as endangered (Scrambling groundfern, *Hypolepis distans*). Within the Lavinia Ramsar site, scrambling groundfern occurs at the northern end of the Nook Swamp, with the Ramsar site being the only reserved site for this species in Tasmania (DEWHA 2009b).

The scrambling groundfern is not considered to be wetland dependent; however six of the regionally rare plant species are wetland dependent. These are: showy willowherb (*Epilobium pallidiflorum*, rare); hairy brooklime (*Gratiola pubescens*, vulnerable); fan triggerplant (*Stylidium beaulebolei*, rare); pink bladderwort (*Utricularia tenella*, rare); small triggerplant (*Stylidium despectum*, rare); and submerged watertuft (*Tritburia submersa*, rare).

There are six weeds of national significance on King Island and 21 weeds recorded on the Island are listed as declared weeds in the *Tasmanian Weed Management Act 1999*. Weeds that pose a threat to the wetlands of the site include: bulrush (*Typha* spp.); thistles (*Carduus* sp. and *Cirsium vulgare*); horehound (*Marrubium vulgare*); ragwort (*Senecio jacobaea*); sea spurge (*Euphorbia paralias*); asparagus fern (*Asparagus scandens*); and several pasture species.



## 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.*

The breeding area of the orange-bellied parrot (*Neophema chrysogaster*) is restricted to south-western Tasmania and during the northward migration birds have regularly been recorded on King Island and most, if not all, of the population is believed to pass through this location. Within Lavinia Ramsar site, their primary feeding grounds and roosting areas are within the Sea Elephant Estuary saltmarsh and surrounds and the Nook Swamp.

The Green and gold frog's (*Litoria raniformis*) combined habitat requirements of permanent waters with still to slow-flowing areas with nearby forests and grasslands are provided by the Lavinia Ramsar site. Among the threats to the green and gold frog, habitat loss through stock grazing and irrigation are considered major (DEWHA 2009b). The site provides some sanctuary from these impacts, making it a key refuge for this species.

The Fairy tern (*Sterna nereis*) is a marine listed species under the EPBC Act (Sub species *Sternula nereis nereis* listed) and the IUCN Redlist. In Australia, there are approximately 5000 to 6000 mature birds at around 170 sites, with estimates of 100 to a few hundred pairs in Tasmania (Birdlife International 2009). Disturbance by humans, dogs and vehicles, either causing the direct destruction of eggs or desertion of nests are key threats to the species, and the site offers refuge from these. The fairy tern has been recorded breeding at the site (RIS 2005).

PWS (2000) notes that feral cats have been observed throughout the Lavinia Nature Reserve and that they are considered a major threat to the orange-bellied parrot because the birds' habit of feeding on low saltmarsh makes them susceptible to predation.

## 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:  
Recreational activities and values at the site include boating, fishing, bird watching, surfing, camping and off-road vehicle use.

Social/economical values of the area include the aquaculture operation (oyster farm) operating within the Sea Elephant Estuary.

Cultural values: It is thought there may be archaeological sites connected with colonial whaling and sealing operations in the area around Cowper's Point. Two sites of Aboriginal significance are located within Lavinia; one near Martha Lavinia and the other at Pennys Lagoon.

Educational values: The largely unspoiled nature of this reserve and its variety of interesting features make it an important area for scientific study and education.

**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:

Crown Land reserved as part of a State Reserve (Lavinia State Reserve).

The Ramsar site was initially listed in 1982 as the Sea Elephant Conservation Area and its boundary corresponded with the Sea Elephant River Wildlife Sanctuary. In 1988 the Sanctuary was incorporated into the adjoining Lavinia Nature Reserve. The Ramsar site boundary was redefined in 1994 to correspond with the Lavinia Nature Reserve boundary. The status of the reserve was again changed in 2001 to a State Reserve under the *National Parks and Reserves Management Act 2002* (Department of Primary Industries, Parks, Water and Environment, 2008). The State Reserve was extended in 2011 so the boundaries of the Ramsar site and the State Reserve are no longer the same.

b) in the surrounding area:

The majority of surrounding land consists of private freehold, Conservation Areas, a Nature Reserve and State Reserve.

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

a) within the Ramsar site:

Land use within the site includes native species (flora and fauna) monitoring and surveys, nature observation, boating, fishing, surfing, camping and off-road vehicle use.

b) in the surroundings/catchment:

Land use within the catchment includes livestock grazing, mineral exploitation and mining.

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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:

Past/present: The site has been subject to fires that have been deliberately lit and from lightning strike. An inappropriate fire regime is one of the main threats to vegetation, as fires pose a threat to the saltmarsh community and the oldest swamp paperbark forest. Frequent or intense fires pose a threat to the regenerating swamp paperbark forest, the peatlands and wet/moist scrub vegetation of the site. Frequent or intense fires also threaten the site's non-wetland vegetation, with the potential to alter species and habitat structure.

There is a high likelihood of potential acid sulphate soils (PASS) at the site, particularly at Nook Swamp, the interdunal peats, and the Sea Elephant Estuary. Disturbance of potential or actual acid sulfate soils may impact the critical components and services of the site.

The root rot fungus, *Phytophthora cinnamomi*, is present along access tracks in the reserve and also threatens components of some vegetation communities.

Chytrid fungus, *Batrachochytrium dendrobatidis*, is present at the site and may threaten the amphibian populations at the site.

Off-road vehicles and motorbikes have caused considerable damage to the saltmarsh community along the Sea Elephant River estuary. Beach driving also poses a threat to the nesting shorebirds and their nests along the coastal strip.

Feral cats have been identified as a threat to the Orange-bellied parrot and nesting shorebirds in the past and possibly at present, although there are little data to determine the extent of any threat.

An oyster farm is located within the site toward the mouth of the Sea Elephant River. On rare occasions (possibly three or four times in the last fifteen years) the lessee has been granted permission to excavate a channel through the beach to facilitate tidal flushing and maintain oyster health, as the mouth of the river naturally opens and closes. The oyster farm, its associated infrastructure, vehicular access over saltmarsh community and especially the requirement to maintain tidal flow, interfere with the natural processes of the river, upstream catchment, surrounding vegetation and many species the site supports.

Climate change threatens the site's hydrology (via reduced rainfall), fire regime (via reduced rainfall and increased temperatures) and geomorphology (via sea level rise).

b) in the surrounding area:

Threats to the ecological values of the site are draining or altering the drainage of surrounding land, subsequent runoff of fertilisers, herbicides and chemicals from land within the catchment and large scale clearing or other ground disturbance increasing the sediment and nutrient load, particularly to the Sea Elephant Estuary. Sand mining on land to the south of the reserve could result in large-scale disturbance in that area, potentially impacting upon the reserve. The mining lease for the area does not expire until 2018.

Offshore gas and petroleum activities may result in impacts to environments that are a significant distance from the location of the activities (e.g. chemical pollution/contaminants, oil pollution, nutrient pollution, marine debris, noise pollution). These types of impacts could potentially impact the ecological character of Lavinia Ramsar site.

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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 Lavinia Nature Reserve is listed as a State Reserve under the *National Parks and Reserves Management Act 2002*.

The site was also listed on the Register of National Estate in March 1978 (DEWHA, 2009a). The site is recognised as very important in maintaining ecosystem processes on King Island, as it is the only substantial largely unmodified area of native vegetation remaining on the Island. It is also identified as being particularly rich in wetland communities and reserving rare, threatened or vulnerable species (DEWHA, 2009a).

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?:

The *Lavinia State Reserve Draft Management Plan* (PWS 2004) is being reviewed and revised. The draft includes management objectives and prescriptions for natural and cultural values within the Reserve. It is expected that the draft plan will be released for public exhibition during 2014.

The *King Island Biodiversity Management Plan 2010-2020* has been developed to cover the whole of King Island.

d) Describe any other current management practices:

- Regular monitoring of vegetation communities.
- Photo point sites have been established as a basis for monitoring.
- Encourage and educate recreational users to minimise spread of *Phytophthora*, and Chytrid.
- Implement fire management procedures. Maintain current fire breaks, access trails.
- Feral animal control- monitor deer, feral cat trapping.
- Regular patrols to enforce 'no driving' on beaches within the reserve during spring/summer to protect shorebird breeding sites.
- Monitoring of orange-bellied parrots during season.
- Information and education is provided to visitors re minimising impact on shorebirds (signage/brochures).
- Management Zones implemented to provide for visitors and to minimise impacts on more sensitive areas.
- Weeds are monitored, eradicated and/or controlled.

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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.

The management plan is currently being reviewed and is expected to be released for public exhibition in 2014.

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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.

Ongoing monitoring of Orange-bellied parrots and their habitat availability is undertaken by staff of the Nature Conservation Branch of the Department of Primary Industries, Water and Environment (DPIPWE) and Parks and Wildlife Service. The site has also had several flora surveys, including searches for rare or threatened species undertaken by the Threatened Species Unit of DPIPWE.

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### **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.

Basic visitor facilities are provided such as information signs, picnic area and toilet facilities.

The key communications and public education messages for the site (Newall and Lloyd 2012) are;

- *Lavinia* contains the majority of the remaining native vegetation of King Island, with several rare and/or poorly reserved Tasmanian vegetation communities found onsite.
- The site contains two bird species that are threatened globally and one nationally threatened frog.
- It contains important habitat for nesting shorebirds, which are vulnerable to vehicles and predators (including pets and feral animals) during the nesting season.
- there are several rare and/or poorly reserved Tasmanian vegetation communities within the site, including *Melaleuca ericifolia* swamp forest, saltmarsh, and three wetland types (freshwater aquatic wetlands, herbfields and grasslands marginal to wetlands, and sedge/rush wetland).
- The saltmarsh of the Sea Elephant Estuary is a key habitat for the migration of orange-bellied parrots. This habitat is particularly susceptible to the impacts of vehicles being driven through the saltmarsh.
- Fire is an important component of the site, with different vegetation communities requiring different burning regimes. Misuse of burning can have major consequences on the vegetation diversity of the site.

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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.

Recreational activities conducted onsite include boating, fishing, surfing, camping and off-road vehicle use. There is no information on visitor numbers to the site.

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### 32. Jurisdiction:

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

Territorial:

King Island Municipal Council.

PO Box 147,

Currie

King Island 7256

Tasmania

Australia

Ph: 61+ 3 6462 9000

[kicouncil@kingisland.tas.gov.au](mailto:kicouncil@kingisland.tas.gov.au)

Functional:

Director

Parks and Wildlife Service

GPO Box 1751

HOBART 7001

Tasmania.

Australia

Ph: +61 3 6165 4396

[Information@dpipwe.tas.gov.au](mailto:Information@dpipwe.tas.gov.au)

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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.

Director

Parks and Wildlife Service

GPO Box 1751

HOBART 7001

Tasmania.

Australia

Ph: +61 3 6165 4396

[Information@dpipwe.tas.gov.au](mailto:Information@dpipwe.tas.gov.au)

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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.

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- Threatened Species Section (2010). *King Island Biodiversity Management Plan*. Department of Primary Industries, Parks, Water and Environment, Hobart.

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Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: [ramsar@ramsar.org](mailto:ramsar@ramsar.org)



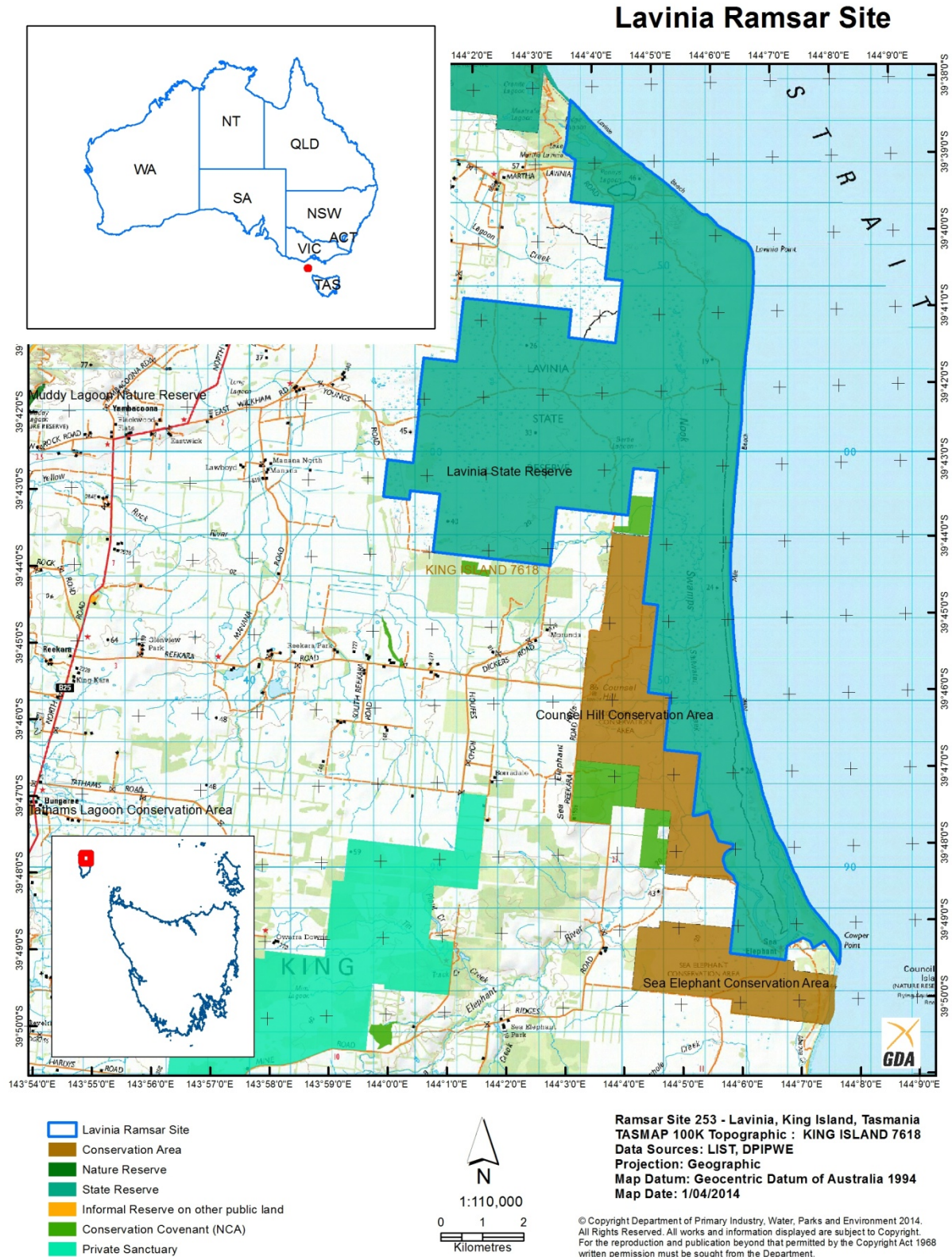


Figure 1. Map of Lavinia Nature Reserve Ramsar site

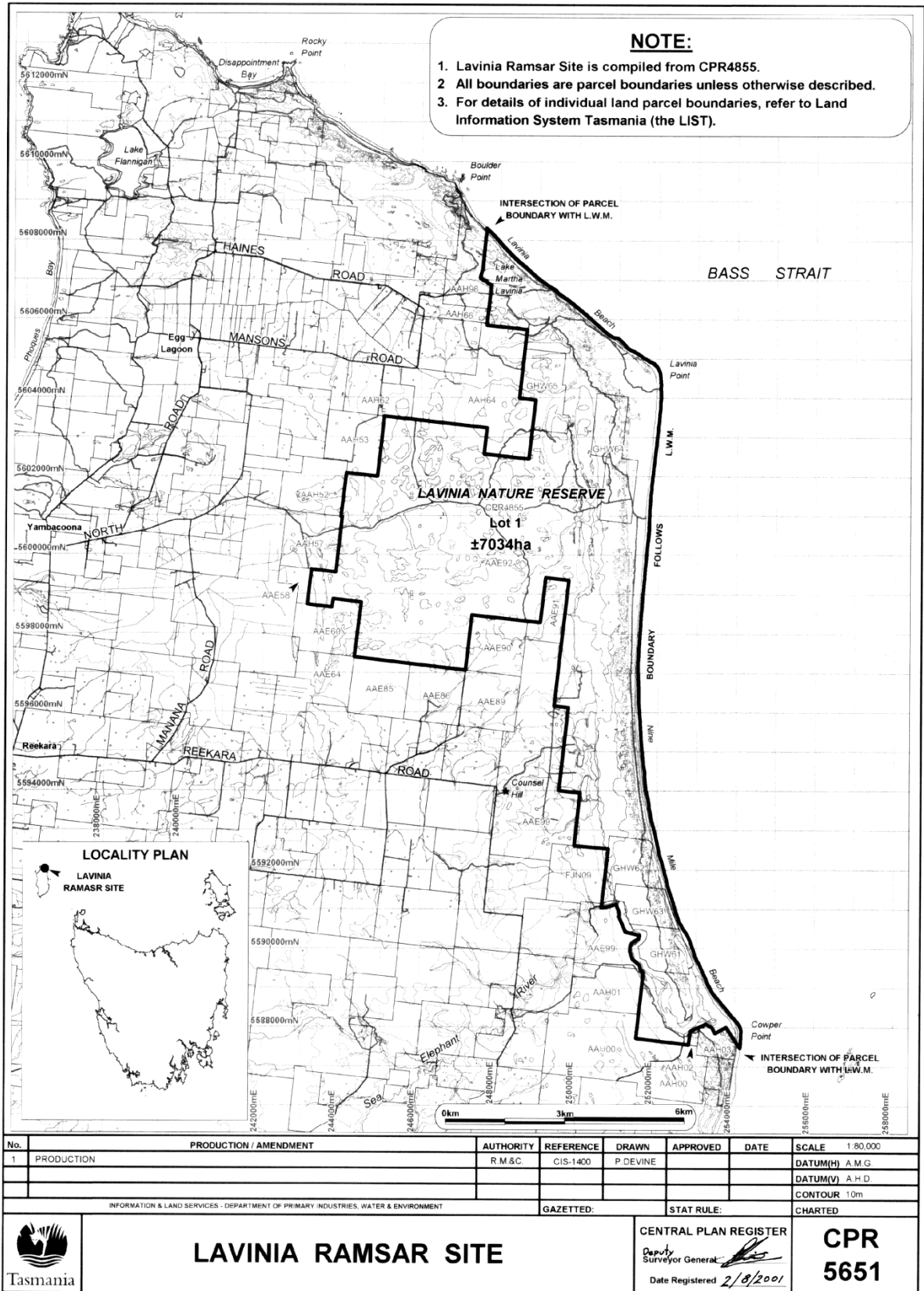


Figure 2. Central Plan Register Plan of the boundaries of Lavinia Nature Reserve Ramsar site



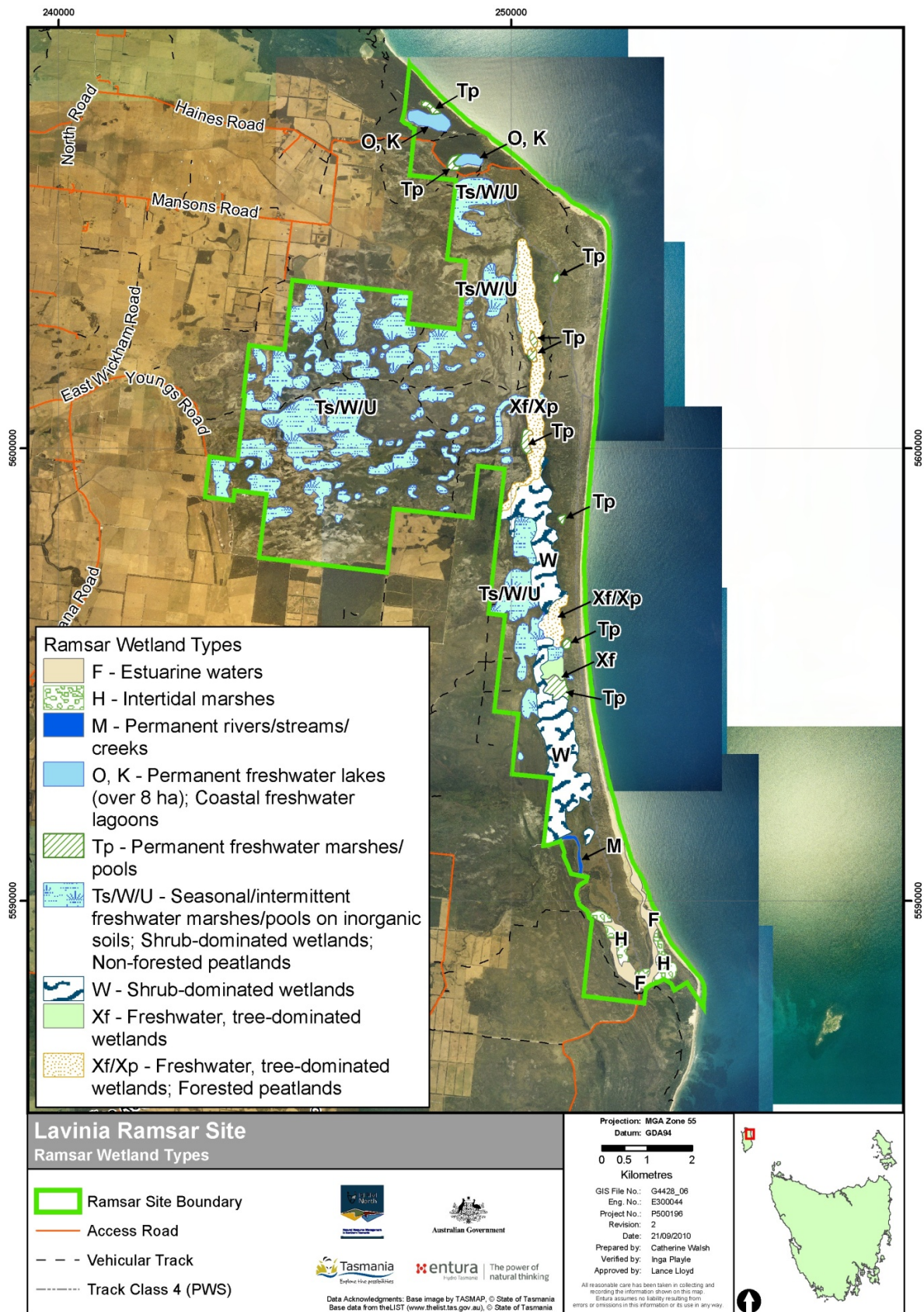


Figure 3. Ramsar Wetland Types at Lavinia Nature Reserve Ramsar Site. Wetlands types J, E, G, and D were generally too small to show on the map.