

Information Sheet on Ramsar Wetlands (RIS)

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).

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

Department of Land Resource Management
Parks and Wildlife Commission of the Northern Territory and
Cobourg Peninsula Sanctuary and Marine Park Board

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2. Date this sheet was completed/updated:

November 2013

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.

Cobourg Peninsula

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.

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 broad scale changes in ecological character were identified in the Ecological Character Description for the Ramsar site (see BMT WBM 2011).

The site was considered to meet all the criteria at the time of preparation of the previous RIS (1998), with the exception of Criterion 5. A reassessment of the available data pertaining to criterion 5 indicates there is presently insufficient information to support this criterion having ever been met. This does not necessarily indicate a change in ecological character. The criteria were revised in 2005 and now the Ramsar site is considered to meet two additional criteria (4 and 8) in that it supports species at a critical stage in their life cycles or provides refuge during adverse conditions, and is an important habitat for fish stocks.

7. Map of site:

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

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

- i) a hard copy (required for inclusion of site in the Ramsar List): ☐;
- ii) an electronic format (e.g. a JPEG or ArcView image) ☐;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables ☐.

b) Describe briefly the type of boundary delineation applied:

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

The boundary of the Ramsar site is the same as that of the former Gurig National Park (also known as the Cobourg Peninsula Sanctuary). The boundary is defined in the Schedule to the *Cobourg Peninsula Aboriginal Land, Sanctuary and Marine Park Act 1996*. The site includes all the area of the peninsula above the low-water mark, including associated islands: Sandy Island I, Sandy Island II, Allaru Island, Burford Island, Greenhill Island, Wangoindjung Island, Warldagawaji Island, Warla Island, Wunmiyi Island, Morse Island, Mogogout Island, two unnamed islands in Raffles Bay and Murnumurnu Rock.

Gurig National Park, which was established under the *Cobourg Peninsula Aboriginal Land, Sanctuary and Marine Park Act 1981*, has now been combined with the Cobourg Marine Park, through the *Cobourg Peninsula Aboriginal Land, Sanctuary and Marine Park Act 1996*, to form the Garig Gunak Barlu National Park.

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.

Figure 1 shows the boundaries of Cobourg Peninsula Ramsar site. The site is located within the following extents:

- (i) 11°07'S (North).
- (ii) 11°38'S (South).

- (iii) 132°39'E (East).
(iv) 131°45'E (West).

The approximate centre of this bounding box is 11°24'S, 132°11'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 Ramsar site is located within the Northern Territory in Australia, approximately 200 kilometres north-east of the Northern Territory's capital city Darwin. The closest township is Gunbalanya (Oenpelli), located within West Arnhem Land, with a population of about 1200 (2011 census).

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

At or near sea level. The interior rises gently to 30 – 50 metres elevation, with the exception of Mount Bedwell (143 m) and Mount Roe (160 m) along the southern coastline. The islands are generally at or near sea level.

11. Area: (in hectares)

Total site area: 220 700 hectares.

12. General overview of the site:

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

The Ramsar site is the first wetland of international importance to be declared in Australia and internationally and has a long history of natural conservation and protection. Cobourg Peninsula contains unique biodiversity and heritage assets, and encompasses a range of landforms, habitats and wildlife. Within the site are numerous and varied coastal and inland ecosystems including the following:

- Terrestrial ecosystems: this includes both extensive wetland areas and largely untouched tropical eucalypt open forests and woodland throughout the site, providing habitat for both wetland dependent and non-wetland dependent threatened species.
- Riverine ecosystems: based around the numerous perennial creeks and estuaries that span the coastline of the Peninsula, supporting a diversity of fauna and flora species within the waterways and the adjacent riparian vegetation.
- Permanent freshwater and brackish ecosystems: providing a refuge for aquatic and terrestrial fauna during the dry season.
- Intertidal and coastal/marine ecosystems: including dune communities, fringing coral, rocky reefs, sand, mudflats, mangroves and seagrass communities, supporting a wide variety of marine fish, sea turtles, dugong and invertebrates.

Wetland and terrestrial habitats of the Ramsar site are effectively undisturbed, supporting a range of threatened species. The site also contains an abundance of archaeological sites and items of Indigenous, Macassan and European origin, and an ongoing 'living culture' that is maintained by the Arrarrkbi (traditional Indigenous owners of Cobourg Peninsula). The climate of the Ramsar site is wet-dry tropical with a wet season duration of approximately four-and-a-half to seven months.

13. Ramsar Criteria:

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

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

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

Criterion 1: *Wetland contains representative, rare or unique examples of a natural or near-natural wetland type found within the appropriate biogeographic region.*

The wetland types occurring within the Ramsar site are representative of landscape and wetland types found in the bioregion. The coastline is represented by a variety of different wetlands: in broad terms the north contains rocky shores, sandy beaches, coral reef and seagrass beds while the south harbours large tracts of mangrove, saltflats and estuarine waters. The juxtaposition and diversity of wetlands across a relatively compact area is unique to the bioregion, and considered an important aspect of the site's ecological value.

One example from within the site demonstrating this aspect is the association of coral communities and mangroves within the tidal channel system known as Popham Creek. While there may be similar but less spectacular associations found on fringing reefs both locally and elsewhere, the occurrence of corals in mangrove channels beneath a dense canopy of *Rhizophora stylosa* is unusual and has been considered to be of Northern Territory and national significance (Billyard 1995).

Criterion 2: *Wetland supports vulnerable, endangered or critically endangered species or threatened ecological communities.*

The Ramsar site provides important habitat for the following species (BMT WBM 2011):

| Species | Common name | IUCN | CMS | CITES | National Status |
|--------------------------------------|----------------------------|------|--------|-------|-----------------|
| <i>Chelonia mydas</i> | green turtle | EN | App I | App I | Vulnerable |
| <i>Natator depressus</i> | flatback turtle | - | - | App I | Vulnerable |
| <i>Dermochelys coriacea</i> | leatherback turtle | CR | App I | App I | Endangered |
| <i>Lepidochelys olivacea</i> | olive ridley turtle | VU | App I | App I | Endangered |
| <i>Eretmochelys imbricata</i> | hawksbill turtle | CR | App I | App I | Vulnerable |
| <i>Caretta caretta</i> | loggerhead turtle | EN | App I | App I | Endangered |
| <i>Dugong dugon</i> | dugong | VU | App II | App I | - |
| <i>Dasyurus hallucatus</i> | northern quoll | EN | - | - | Endangered |
| <i>Conilurus pencillatus</i> | brush-tailed rabbit-rat | | | | Vulnerable |
| <i>Xeromys myoides</i> | water mouse | VU | | | Vulnerable |
| <i>Varanus metoni</i> | Merten's water monitor | | | | Vulnerable |
| <i>Erythrotiorchis radiata</i> | red goshawk | | | | Vulnerable |
| <i>Geophaps smithii smithii</i> | partridge pigeon (eastern) | | | | Vulnerable |
| <i>Tyto novaehollandiae kimberli</i> | masked owl (northern) | | | | Vulnerable |

Criterion 3: *Wetland supports populations of plants and/or animal species important for maintaining the biological diversity of a particular biogeographic region.*

The Ramsar site supports a diverse assemblage of flora and fauna species. Cobourge Peninsula is known to support over 800 plant species (Brocklehurst 2010), over 600 fish species (NRETAS 2007), 64 species of coral (Billyard 1995), 406 species of marine invertebrate from coral reef or the intertidal zone (Frith and Calaby 1974), 35 mammal species, 71 reptile species, 19 frog species, and 236 bird species (predominantly derived from NT Government Fauna Atlas unpublished records). Refer to Appendix E of the Ecological Character Description (BMT WBM 2011) for species lists.

The Ramsar site contains the range of tree and shrub mangrove species for the bioregion, including the mangrove palm *Nypa fruticans* that is rare in Australia but common in countries to the north.

The site supports almost all Ramsar wetland types known to occur within the bioregion. This includes ten (out of twelve) marine/coastal wetland types, noting that one of the absent wetland types (Type A – permanent shallow marine waters) occurs immediately adjacent the Ramsar site and is absent only through the positioning of the boundary. The remaining marine/coastal wetland type is not present anywhere within the bioregion (Type Zk(a) – Karst systems). The Ramsar site also supports ten (out of twenty) inland wetland types, noting that at least four of the inland wetland types absent from the site are not represented anywhere in the bioregion (Types U, Va, Vt and Zg).

Criterion 4: *Wetland supports plants and/or animal species at a critical stage in their life cycles or provides refuge during adverse conditions.*

The Ramsar site provides nesting habitat for significant populations of marine turtles, and supports a number of significant waterbird (seabird) breeding colonies. Five out of the six species of marine turtle that occur in Australian waters have been confirmed as having nested, or currently nest on Cobourge Peninsula. The green turtle (*Chelonia mydas*) and flatback turtle (*Natator depressus*) nest in nationally significant numbers, and the site contains the only confirmed nesting activity for the leatherback turtle (*Dermochelys coriacea*) in Australia since 2004 (Chatto and Baker 2008).

Significant seabird breeding colonies are found on the islands (notably Sandy Island No. 1, Sandy Island No. 2 and Warla Island) and some headlands supporting hundreds to thousands of crested terns (*Sterna bergii*), bridled terns (*Onychoprion anaethetus*), black-naped terns (*Sterna sumatrana*) and roseate terns (*Sterna dougalli*) (Chatto 2001).

There are several species of migratory shorebird for which the Cobourge Peninsula provides important feeding and resting areas as they travel along the East Asian-Australasian Flyway, which stretches over 20 countries from within the Arctic Circle in Siberia and western Alaska, through North and South-East Asia to Australia and New Zealand. These shorebirds include populations of sandpipers, plovers, terns and the great knot (*Calidris tenuirostris*). These migratory birds include 37 species listed under bilateral migratory bird agreements – the Japan-Australia Migratory Bird Agreement (31 species), the China Australia Migratory Bird Agreement (37 species) and the Republic of Korea Migratory Bird Agreement (26 species).

Several cetacean species (the Australian snubfin *Orcaella heinsobni*, Indo-Pacific humpback *Sousa chinensis*, the Indo-Pacific bottlenose *Tursiops aduncus* dolphins and the false killer whale *Pseudorca crassidens*) are regularly reported in the northern bays, feeding and breeding over intertidal seagrass beds and shallow waters. Additionally, the permanent wetlands within the site provide a dry season refuge for a variety of species including waterbirds, reptiles such as crocodiles and freshwater turtles, amphibians and freshwater fish.

Criterion 8: *Wetland is important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks depend.*

Cobourge Peninsula provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish species of direct and indirect fisheries significance. These fish have important fisheries resource values both within and external to the site. The site contains a substantial proportion of the mangrove and seagrass habitat within the bioregion that is subject to minimal anthropogenic impact. Positive relationships between these habitats and fisheries resources have been well documented (Manson et al. 2005, Nagelkerken et al. 2008).

Key fish species of significance include barramundi (*Lates calcarifer*), giant trevally (*Caranx ignobilis*), mangrove jack (*Lutjanus argentimaculatus*), black bream (*Acanthopagrus berda*), barracuda (*Sphyraena spp.*), whiting (*Sillago spp.*) and mud crabs (*Scylla serrata*).

Many of the fish and crustacean species listed above spend their juvenile stages in shallow nearshore waters of the site, particularly around mangroves and seagrass habitats. These species also spawn in inshore waters, particularly near the surf zone and in sandy channels within the boundaries of the Ramsar site.

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:

Terrestrial: Tanami-Timor Sea Coast Drainage Division

Marine: Northern IMCRA Province Bioregion

b) biogeographic regionalisation scheme (include reference citation):

Terrestrial: Commonwealth of Australia (Bureau of Meteorology), 2011, Australian Hydrological Geospatial Fabric

Marine: Commonwealth of Australia, 2006, Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, Department of Environment and Heritage, Canberra.

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.

Cobourge Peninsula Ramsar site is a coastal peninsula in the Northern Territory surrounded by the Arafura and Timor Seas, connected to the mainland by a narrow isthmus adjacent to Mountnorris Bay (approximately 11 kilometres wide). The coastline of the peninsula is deeply incised and amounts to a length of over 700 kilometres. This coastline is marked by isolated bays, rocky headlands and beaches. Inland areas of the peninsula consist of large undulating plains between 30 and 40 metres above sea level. Two minor peaks, Mount Roe (147 metres) and Mount Bedwell (160 metres), also occur within the site, located to the south-east.

There are a broad range of physical features and processes which together control wetland ecosystems within the site. The key processes and interactions between these processes are discussed in the Ecological Character Description (BMT WBM 2011). The following provides a brief summary of key physical features of the site.

Climate

The climate of Cobourg Peninsula is defined as a wet-dry tropical with a wet season duration of four-and-a-half to seven months (Saynor et al. 2000). The features of this climate relate to temperature and humidity, rainfall, winds and extreme events. Humidity is highest between January and March with a mean relative humidity greater than 80 per cent. Annual mean minimum and maximum temperatures are 24.0 degrees Celsius and 31.3 degrees Celsius (July and November, respectively). Annual rainfall reaches 1300 millimetres, with 90 per cent of this falling in the warm wet season between November and March with almost no rain falling in the cooler dry season of June and September. Potential evaporation of 2400 to 2700 millimetres exceeds rainfall in most years (Saynor et al. 2000). Winds are predominantly from the south-east to east between April and October, but are more variable with a strong westerly and northerly component from November to March. Winds in excess of 25 knots occur on average 13 days per year (CPSB 1987). Extreme weather events are frequent and derive from tropical cyclones in the Northern Region of Australia (on average occurring 7.7 days per year) and the Timor and Arafura Seas (one cyclone occurring per year on average).

Geomorphology

The predominantly flat interior contains springs, permanent creeks, ephemeral creeks, tidal embayments and wetlands with steep salinity gradients. The intertidal and coastal areas consist of extensive dunes, fringing coral and rocky reefs, sand and mudflats and some seagrass and mangrove communities. Mangrove communities and mudflats, in particular, are concentrated mainly along the southern coastline and are interspersed with rocky headlands with little in the way of sandy beaches. Earthy soils across the site include ironstone gravels, shallow block laterite, saline estuarine-clays along coastal plains, and dune sands. These soils are generally unstructured and highly erodible.

Geology

The Peninsula is located on the Bathurst Terrace. This terrace has remained relatively stable throughout geological time with very little tectonic activity or faulting occurring (Hughes and Senior 1973, Hughes 1978). The area consists of three geophysiological units: (1) southern sand plains with intermingled smooth, undulating lateric rises in western and central areas; (2) northern gently dissected plateaux; and (3) Bathurst Island Formation consisting of a thick Quarternary layer of sands, gravel and alluvium deposits over laterised Cretaceous siltstones, sandstones and mudstones (Geoscience 2008). Mineral and hydrocarbon deposits include bauxite along the Mountnorris Bay coastline, bauxite outcrops at Danger Point, Smith Point, Turtle Point, Vashon Head and Araru Point, linear bodies of limestone along the coastline, and uranium, phosphate and heavy mineral deposits (Hughes and Senior 1973, CPSB 1987). These deposits are generally unviable for commercial extraction (Hughes and Senior 1973, Hughes 1978).

Hydrology

The hydrology of Cobourg Peninsula relates to surface water, groundwater and tidal water systems.

Surface water patterns are dominated by seasonal monsoonal rainfall. Most waterbodies occur within close proximity to the coastline with numerous perennial creeks and freshwater springs inland. All but three creeks (Mawuwu Creek, Alaru Creek and an unnamed creek) are less than 10 kilometres long. A total of 48 permanent waterbodies have been identified, often fed by groundwater lenses and freshwater springs (AECOM 2011, Zaar 2003). The remainder of the waterbodies are seasonal and generally increase in salinity as the dry season progresses. Coastal lagoons located along the northern coastline may experience sporadic or regular coastal flushing. These systems may be both permanent and seasonal.

Saline and brackish groundwater likely occurs across the peninsula at a minimum depth of 10 metres (Britten and Chin 1989 in Geosciences 2008). Groundwater lenses also occur in coastal dune systems and laterised sediments. Aquifers are found in Quarternary sandstones, Cretaceous laterites and Marlingur, Darwin, Wangarlu, Mudstone and Moonkinu Members. Quarternary aquifers diminish during the dry season (Hughes 1977). The Marlingur Member is very high yielding (Prowse et al. 1999) and extends across the southern part of the Peninsula (Hughes 1978). A total of 67 bore holes are recorded across the site, 16 of which are production wells (Geoscience Australia 2008). Many of the wetlands are likely to be strongly

groundwater dependant especially for coastal dune communities, open forest communities, and stream and swamp communities.

Water Quality

Freshwater springs and seasonal creeks have very little variation in freshwater across the year and are slightly acidic. Total nitrogen increases for these systems in the mid dry season and late dry season. Turbidity is variable across wetlands but increases generally in the late dry season. Marine/coastal waters are generally of high quality with consistent concentrations of ammonia and nitrogen oxides and turbidity (Billyard 1995, ECOM 2011).

Habitat Types and Wetlands

Intertidal and coastal habitats consist of extensive dunes, fringing coral, rocky reefs, sand, mudflats and some seagrass and mangrove communities. Mangrove communities and mudflats, in particular, are concentrated mainly along the southern coastline and are interspersed with rocky headlands with little in the way of sandy beaches. Dryland areas are dominated by forests of tropical eucalypt open-forests and woodlands. Nearer to the coast and in seepage zones below rocky slopes are dry coastal monsoon vine-forests. The headwaters of creeks, natural springs and permanent streams also support evergreen monsoon forests (Brocklehurst 2010). Wetlands in the site are varied and include both coastal and inland wetland types. These include rocky marine shores, open coastline dune systems, sandy islands and inlets, intertidal forested wetlands and mudflats, seasonal freshwater marshes and creeks, permanent freshwater pools and springs, and brackish/saline and freshwater lagoons and lakes. Four coral reefs are located within the site including Popham Creek, Kuper Point, Sandy Island No. 1 and Sandy Island No. 2 (AECOM 2011).

17. Physical features of the catchment area:

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

Cobourgh Peninsula lies within the East Alligator River basin but contributes little to the catchment, with surface water flow restricted to shore drainage channels that flow directly into the Arafura Sea or Van Diemen Gulf. The catchments for all the wetlands of the Peninsula are contained wholly within the site boundary. The physical features of the relevant catchment area are therefore broadly similar to that described for the Ramsar site in Section 16 above.

18. Hydrological values:

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

Section 16 above provides a summary of important surface water and groundwater features within the site. The site supports a range of hydrological values associated with these features. Key hydrological values of waterways within the site catchment include (BMT WBM 2011):

- Provision of dry season refuge for aquatic fauna species by permanent brackish and freshwater lakes, lagoons, pools and springs.
- Groundwater contribution to maintenance of permanent brackish and freshwater lakes, lagoons, pools and springs.
- Flushing of wetlands by seasonal flooding and isolation of aquatic habitats during the dry season determining survival of aquatic and terrestrial wetland species.
- High dry season soil moisture derived from groundwater lenses for coastal dune and swamp communities.
- Tidal hydraulics through the (tidal) Popham Creek, connecting the north and south coastlines.
- Long-term cycles between freshwater and saline states for coastal lagoons along the northern coastline, with cyclones or extreme weather events triggering a shift to saline conditions and gradual recovery to freshwater conditions via rainfall and groundwater infiltration.

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.

Note that there are some uncertainties regarding the extent and distribution of some wetland types (most notably marine subtidal aquatic beds, coral reefs and coastal freshwater/saline lagoons). The following are thought to represent the largest and most frequent wetland types within the site:

1. Intertidal forested wetlands (mangrove forests) (I),
2. Seasonal creeks (N)
3. Estuarine waters (F)
4. Intertidal mud, sand or saltflats (G).

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.

A detailed description of the ecological features of the site is provided in the Ecological Character Description (BMT WBM 2011). The site contains a wide range of habitats that are in natural condition including at least 18 wetland types. Of particular importance are permanent brackish and freshwater wetlands, providing a refuge for aquatic and terrestrial fauna in the dry season, and coastal marine wetlands that provide habitat and nesting grounds for a wide variety of marine flora and fauna. Terrestrial and coastal wetlands are represented within the site, including extensive dunes, fringing coral, rocky reefs, sand, mudflat, mangroves and seagrass communities.

Critical ecosystem components, processes and services/benefits that characterise the wetlands (refer BMT WBM 2011) include: diversity and connectivity of wetlands, flatback and green turtle nesting, waterbird breeding colonies, contemporary living culture, and maintenance of global biodiversity.

In addition to these, there are a number of supporting components, processes and services/benefits: populations of migratory and resident waterbirds and seabirds, monsoon rainforests, terrestrial habitats, aquatic invertebrates, fish populations, climate, geology/geomorphology, hydrology (tidal, surface, groundwater), water quality, fire regimes, notable biological processes, fisheries resources values, recreation and tourism, scientific research and education, historical Indigenous and non-indigenous cultural heritage, and biological products.

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.*

The Ramsar site supports a large diversity of flora species as outlined for Criterion 3 above. Other noteworthy species include the following:

- A number of flora species are noteworthy in terms of their inclusion in the traditional Arrarrkbi diet, including *Livistonia humilis* (cabbage palm), *Dioscorea* spp. (yam species), *Terminalia ferdinandiana* (billy goat plum), *Syzygium* spp. (wild apple), *Buchanania obovata* (green plum) and *Tamrindus indica* (tamarind).
- Particular flora species are used by Arrarrkbi for traditional use as medicine, craft material and utensils. These include *L. humilis* used for basket material, *Eucalyptus* spp. used for spears and medicine, *Hibiscus* spp. used for spears, *Morinda citrifolia* (cheese fruit), *Erythrophloeum cholostachys* (iron wood) and *Planchonia careya* (cocky apple) used for medicine, and *Bombax ceiba* (capok) used as timber for dugout canoes.
- Mangrove communities are extensive across the site, including white mangrove *Sonneratia alba*, red mangrove *Rhizophora stylosa*, grey mangrove *Avicennia marina*, orange mangrove *Bruguiera exaristata* and club mangrove *Aegialitis annulata*. These are noteworthy due to high productivity, and provision of habitat for fauna species, protection against coastal erosion and buffers against extreme weather events.
- Wet monsoon forests occur around springs and seeps, and in riparian strips and are characteristic of Cobourg Peninsula and adjacent Croker Island (Brocklehurst 2010). The best occurrence of wet monsoon forest occurs on springs at the head of Mawuwu Creek where it forms closed forests dominated by canopy species such as *Fragaria racemosa*, *Syzygium angophoroides*, *Melicope elleryana* and *Gmelina dalrympleana*. The palm *Hydriastele wendlandiana* forms a dense secondary layer, and characterises the community.
- While there are low densities of introduced plants, ten declared weeds and one problematic environmental weed have been recorded from the site. Existing weeds with the potential to impact on the values of the site include rubbervine *Cryptostegia madagascariensis*, snakeweed *Stachytarpheta* spp, mission grass *Pennisetum* spp and hyptis *Hyptis suaveolens*.

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 Ramsar site supports an abundance of waterbirds, particularly in terms of the diversity of species though note that Criterion 5 and 6 are not met at Cobourg Peninsula. Important waterbirds include ducks (*Anas* spp.), plovers (*Charadrius* spp.), sandpipers (*Calidris* spp.), egrets (*Ardea* spp.), terns (*Sterna* spp.), godwits (*Limosa* spp.) and greenshanks (*Tringa* spp.)

Noteworthy fauna also include threatened species (refer Criterion 2 above), as well as the following:

- A large number of fauna species are noteworthy in terms of their inclusion in the traditional diet, including dugong, turtle, magpie goose, fish, crabs and oysters.
- Saltwater crocodile (*Crocodylus porosus*) in terms of its ecological role as a top predator within the site and as iconic and cultural values (e.g. totemic, dietary).
- Pearl producing oysters are particularly important for the commercial pearling ventures associated with the site as well as for traditional purposes.

Introduced fauna within the site include large exotic hard hoofed animals (such as banteng *Bos javanicus* and Asian swamp buffalo *Bubalus bubalis*, horses *Equus caballus* and sambar deer *Cervus unicolor*) as well as pigs *Sus scrofa*, dogs *Canis lupus familiaris* and cane toads *Bufo marinus*.

23. Social and cultural values:

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

The Ramsar site is the focus for a number of significant and important social and cultural values. Across the landscape is an assemblage of archaeological material of Indigenous, Maccassan and European descent. These include occupation sites, traditional art, middens and waste heaps, abandoned settlements and houses, and shipwrecks. An on-going, 'living culture' is maintained by the Arrarrkbi (traditional Indigenous owners of the Cobourg Peninsula) who uphold traditional land management practices, customary law and traditions.

In Dreamtime stories across the Top End of the Northern Territory, the male Creation Ancestor entered Australia and landed on the Cobourg Peninsula between Mount Bidwell and Mount Roe, and the female Creation Ancestor first entered Australia via Malay Bay just east of Cobourg Peninsula. Where they met, she created boy and girl spirit children and told them to speak Iwaidja, before travelling across the rest of the country creating people with different peoples and languages. This may reflect knowledge of the origin of the first humans to enter Australia (Chaloupka 1993, Spencer, 1914).

Social values include tourism and recreation, and are outlined in Section 31 below.

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:

In 1981 Gurig National Park became the first jointly managed national park in Australia. The management of the Ramsar site provides a model of wetland wise use, incorporating traditional knowledge in order to maintain the ecological character and provide a balance between wise-use and competing interests such as nature conservation and tourism. The site is managed under a joint arrangement between the traditional owners and the Northern Territory Government. Notable aspects demonstrating the application of traditional knowledge include:

- Land and sea management: Arrarrkbi undertake land and sea management practices such as burning, monitoring the populations of species and monitoring the environmental impacts of activities such as tourism on the land. The ranger staff of the Garig Gunak Barlu National Park include Arrarrkbi, and a community group, the Warramunburr rangers, was established in 2010 and provides complementary land and sea management practices employing local Arrarrkbi.
- Sustainable use: Arrarrkbi use their traditional knowledge of the rich variety of flora and fauna for food, medicine, timber, fibre, dye and tools.

- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

Traditional owners of the Ramsar site display exceptional cultural traditions. In particular, land management (as described above) is critical in maintaining cultural heritage as Traditional ecological knowledge is transferred (e.g. harvesting techniques, species' ecology), traditional languages are used, and other cultural practices are undertaken.

Cobourg Peninsula contains substantial evidence of historical Indigenous and non-Indigenous cultural heritage. Arrarrkbi have lived on Cobourg Peninsula for up to 60 000 years (Brockwell et al. 1995). Macassan trepang traders visited the Cobourg Peninsula from 1720 until 1907 (Mitchell 1996; Russell 2004). Europeans attempted to establish settlements on Cobourg Peninsula from 1827 until 1849 (Tacon 1988). For this reason, Cobourg Peninsula is sometimes known as the land of 'three cultures'. Archaeological material for all three cultures is evident throughout the Peninsula, particularly along the northern coastline.

- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

Traditional owners hold a substantial body of traditional ecological knowledge related to fire, species, ecosystems, ecological processes and seasons. A joint management arrangement enables traditional owners to be consulted, make decisions and implement this knowledge in the management of the Garig Gunak Barlu National Park, thereby influencing the ecological character of the wetlands.

Cobourg Peninsula has been described as a humanised landscape containing a pattern of ecosystems that has been created by thousands of years of calculated management (CPSB 1987). Fire management is one of the main drivers that has and continues to influence the ecological character of the Ramsar site. The present vegetation communities and suites of fauna are dependent on the traditional burning practices established by traditional owners over a long period of time (Russell-Smith 1995).

- 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:

A number of sacred sites are present within the Ramsar site. These sites primarily relate to the activities that took place during the creation era and the travels of the first people, and include significant rock art and occupation sites, burial sites, ceremonial sites, story places and dreaming places. Sites of particular cultural significance are referred to as dreaming tracks and places (*djang*). *Djang* can occur on land, or in and under the sea (NRETAS 2007), and they relate to the activities that took place during the creation era and the travels of the first people such as *Warramurra-ngundji*. *Djang* are associated with natural features such as plants, animals, landscape features, climate features and habitats.

24. Land tenure/ownership:

- a) within the Ramsar site:

Land within the Ramsar site is Aboriginal freehold land held in trust by the Cobourg Peninsula Sanctuary Board Land Trust for the Traditional Owners with the exception of two parcels of land. These are the land surrounding the Cape Don Lighthouse, and the special purpose lease on the eastern shore of Knocker Bay, Port Essington, held as a land base for pearl farming operations for Paspaley Pearling Company Pty Ltd. The Seven Spirit Bay Wilderness Lodge at coral Bay is established under a lease agreement with the Cobourg Peninsula Sanctuary Board.

- b) in the surrounding area:

The waters of the Van Diemen Gulf and the Timor and Arafura Seas, adjacent to the site, are considered Crown Land. Croker Island to the north-east and mainland areas to the south-east are Aboriginal freehold land held by the Arnhem Land Aboriginal Land Trust.

25. Current land (including water) use:

a) within the Ramsar site:

The majority of the Ramsar site is managed as a conservation reserve. Other land uses include tourism and education, commercial fishing, trophy safari hunting, and low-level Traditional Owner hunting and gathering.

b) in the surroundings/catchment:

Land uses in the Marine Park, adjacent to Cobourg Peninsula, include cultured pearl farming, commercial *trepang* harvesting, aquarium fish harvesting, net fishing for sharks and barramundi, long line fishing for sharks, drop lining and trapping of finfish, mud crabbing, mackerel trolling, and prawn trawling. Activities in Arnhem Land to the south of the site include trophy hunting safaris and mineral exploration.

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

BMT WBM (2011) identified a range of factors as having adverse effects on the ecological character of the site. It was also noted, however, that there has been no major diminishment in the overall ecological character of the site since it was listed in 1974. The following provides a summary of the relevant key impacting processes.

a) within the Ramsar site:

- Exotic fauna: Feral animal species, including pigs (*Sus scrofa*), banteng (*Bos javanicus*) and cane toads (*Bufo marinus*) have had a notable presence in the past and are subject to continuing intervention to combat both short and long term impacts. These species are capable of causing extensive habitat damage and killing native fauna.
- Climate change: Threats from climate change include increased incidence of coral bleaching, increased rate of saltwater inundation into freshwater coastal environments, changes in intertidal vegetation communities (mangrove expansion), changed fire regimes, and increased frequency of high intensity storms and cyclones.
- Tourism and recreation: Despite fairly restrictive provisions on tourism access to the park, inappropriate access to closed areas and non-compliance can lead to over-fishing, weed spread, damage to oysters, damage to coral reefs through boat anchoring, litter and noise. Tourist facilities also rely upon groundwater extraction from aquifers prone to salinisation.
- Marine debris: Marine debris is recognised as a threat to the six species of marine turtle that frequent the waters and beach of Cobourg Peninsula. This includes the loggerhead turtle (*Caretta caretta*), leatherback turtle (*Dermochelys coriacea*), olive ridley turtle (*Lepidochelys olivacea*), hawksbill turtle (*Eretmochelys imbricata*), flatback turtle (*Natator depressus*) and green turtle (*Chelonia mydas*). Other listed species at threat include the dugong (*Dugong dugon*) and the pelican (*Pelecanus conspicillatus*).
- Impacts on 'living culture': Contemporary Arrarrkbi culture is under threat of decline evidenced by the loss of two Arrarrkbi languages, Garig and Wurrugu, and the endangerment of the Iwaidja language. The principal cause of the decline in 'living culture' is perceived to be the removal of the Arrarrkbi from the Cobourg Peninsula between 1950 and 1970 and relocation of many Arrarrkbi to major centres such as Darwin.
- Damage to archaeological resources and sites of cultural significance: Physical damage to culturally significant sites is caused by development of roads and airstrips for tourism and other developments, as well as erosion, inclement weather, vandalism, theft and feral animal foraging.
- Living resource extraction: A decline in the potential stock of biological products may result from impacts caused by exotic fauna, climate change, tourism and recreation, and marine debris. Unsustainable hunting, gathering and fishing also cause decline in species numbers.

b) in the surrounding area:

- Exotic flora: Wetland weed species such as mimosa (*Mimosa pogra*), salvinia (*Salvinia molesta*), para grass (*Urochloa mutica*) and olive hymenachne (*Hymenachne amplexicaulis*) exist in the surrounding area and are likely to enter the site.

The above-described factors that potentially affect the ecological character within the site are also applicable to the surrounding areas.

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 Cobourg Peninsula Ramsar site is located wholly within the boundaries of the Garig Gunak Barlu National Park. This National Park boundary extends offshore to include the Cobourg Marine Park.

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 terrestrial area of the Garig Gunak Barlu National Park is managed by the *Gurig National Park Plan of Management*. This plan was prepared by and is implemented by the Cobourg Peninsula Sanctuary and Marine Park Board. The plan dates from 1987 and will be superseded by a new management plan currently in preparation.

d) Describe any other current management practices:

The Cobourg Peninsula Sanctuary and Marine Park Board has statutory power to prepare plans of management, protect and enforce occupation, determine rights access, and protect sacred sites. The most relevant management practices are encompassed in the above-mentioned management plan. The Board constitutes a joint management arrangement between the Northern Territory Government and the traditional owners of Cobourg Peninsula (the Arrarrkbi).

28. Conservation measures proposed but not yet implemented:

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

Release of a new management plan for Cobourg Peninsula to replace the *Gurig National Park Plan of Management*.

29. Current scientific research and facilities:

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

There are several scientific research facilities across the Peninsula designed for use by scientific expeditions and research exercises. These facilities are not permanently manned, however, but made available to researchers entering the site. Research activities undertaken include flora and fauna surveys, archaeological surveys, marine debris surveys and studies on existing habitats and values.

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

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

An interpretive visitor centre is located at Black Point. This centre provides visitors with information about the Cobourg Peninsula Ramsar site regarding ecological values, native fauna and flora patterns, historical and archaeological features, and cultural and social heritage.

31. Current recreation and tourism:

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

Recreation and tourism activities undertaken in the Cobourg Peninsula Ramsar site are discussed in Sections 23 and 25. These activities include: recreational boating and fishing, beach and bush walking, bird watching, photography, camping general sightseeing, wildlife observation, visiting historic ruins, seafaring hunting, cultural tours, and scuba diving.

The Seven Spirit Bay Lodge at Coral Bay is the only major tourist centre on the Peninsula. Camp grounds are located at Smith Point. Access to the site is limited to the main road leading from the entrance of the Garig Gunak Barlu National Park, though sea and air access is available. Entry into the site is strictly regulated and only allowed by permit.

32. Jurisdiction:

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

Territorial: The Northern Territory of Australia

Functional: Cobourg Peninsula Sanctuary and Marine Park Board/NT Department of Land Resource Management

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.

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

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