

Information Sheet on EAA Flyway Network Sites

(SIS) – 2017 version

Available for download from <http://www.eaaflyway.net/nominating-a-site.php#network>

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network. When there is a new nomination or an SIS update, the following sections with an asterisk (*), from Questions 1-14 and Question 30, must be filled or updated at least so that it can justify the international importance of the habitat for migratory waterbirds.
2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.
3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

1. Name and contact details of the compiler of this form*:

Full name: Roger Jaensch and Paul Richardson

EAAF SITE CODE FOR OFFICE USE ONLY:

Institution/agency: c/- Carpentaria Land Council Aboriginal Corporation

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South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

2. Date this sheet was completed*:

23 May 2014

3. Country*:

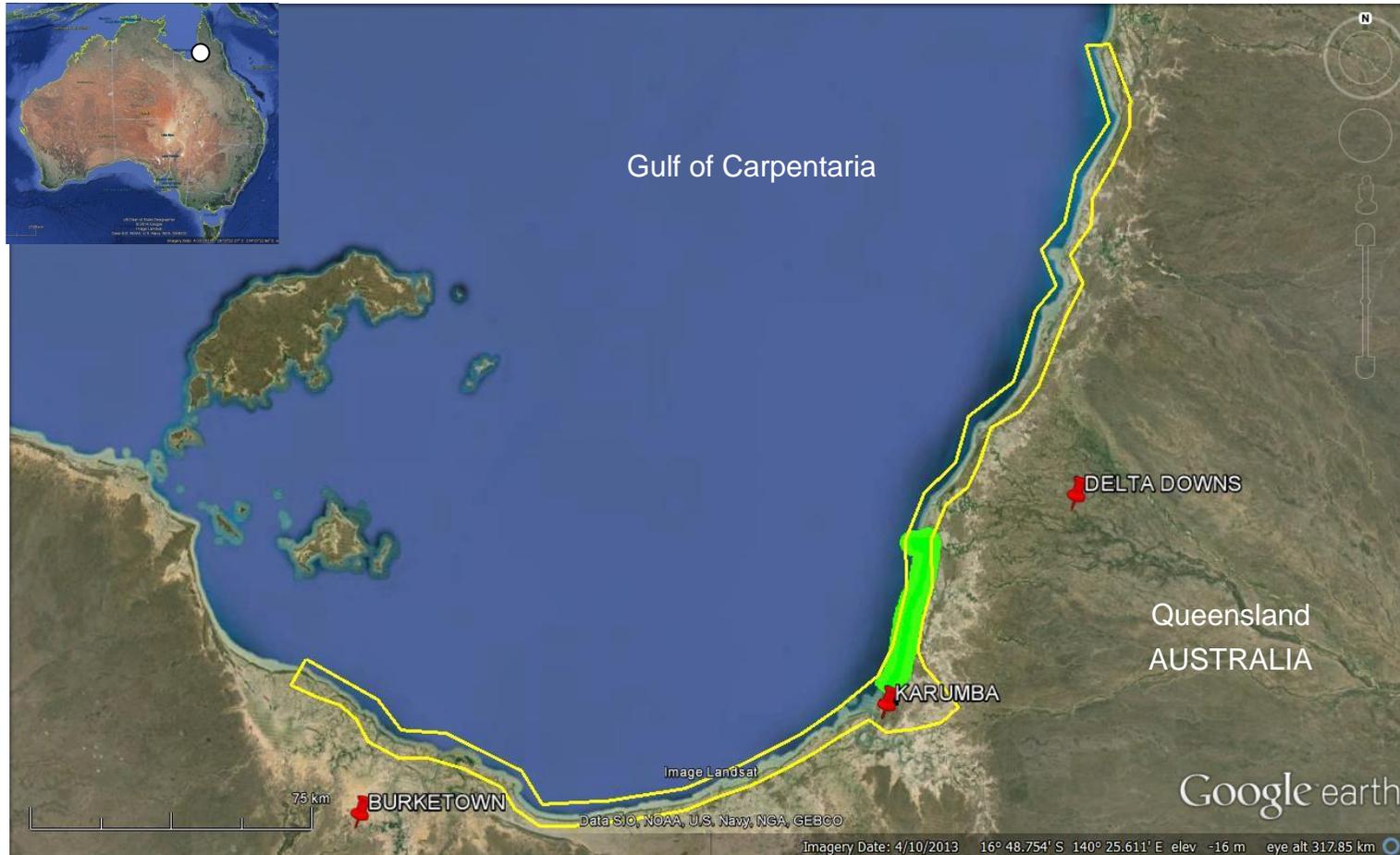
Australia

4. Name of the Flyway Network site*:

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs)

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

5. Maps of site:



Map 1: Location of site. Green area = the site for this nomination, the Karumba-Smithburne (Delta Downs) section. The yellow boundary shows the location of the nominated site within the entire AWSG shorebird area 'South-East Gulf of Carpentaria'.

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section



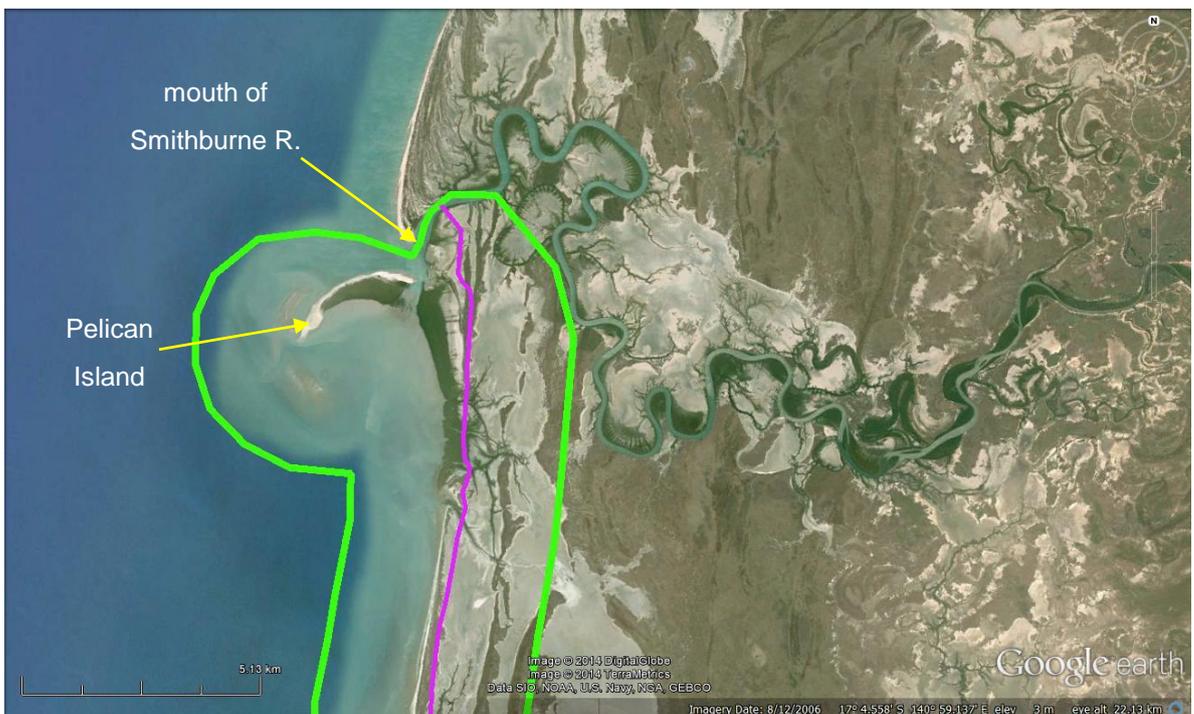
Map 2: Boundary of site. Green boundary = the site for this nomination, the Karumba-Smithburne (Delta Downs) section.

Purple line = boundary of part of the Delta Downs pastoral lease.

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section



Map 3: Detail at southern end of nominated FSN site. Green boundary = the site for this nomination, the Karumba-Smithburne (Delta Downs) section. Purple line = boundary of part of the Delta Downs pastoral lease. Black lines = reference paddock fences. White line = highway from Karumba to Normanton.



Map 4: Detail at northern end of nominated FSN site. Features include Pelican Island and lower reaches of the Smithburne River.

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

Description of site boundary: The site comprises intertidal wetland along the boundary of Delta Downs pastoral lease (196CP857103), from the south-western corner of the lease boundary near the northern edge of Karumba Point township, northwards 43 km to the mouth of the Smithburne River near Pelican Island, and including all areas 2.6 km seaward and 2.0 km landward of the lease boundary; marine areas in a radius 2.0 km seaward of the western tip of Pelican Island are included.

The larger South-East Gulf of Carpentaria area is a near-continuous area of waterbird habitat extending for about 350 km along the Gulf coast. The Karumba-Smithburne (Delta Downs) section is near the centre of this larger area. See Map 1. The site as defined above and in the maps is highly representative of the larger area.

6. Geographical coordinates (latitude/longitude, in decimal degrees)*:

Approximate centre of site: -17.2388° S, 140.9137° E.

Southern limit: -17.4148°S, 140.8574° E.

Northern limit: -17.0532° S, 140.9493° E.

Location: The site is immediately north of the township of Karumba, which is 33 km north-west of the regional centre, Normanton.

7. Elevation*:

At, or near, sea-level.

8. Area*:

Width = 4.6 km, Length = 43 km, plus Pelican Island; thus total **Area** = approx. 20,000 ha (200 sq. km).

9. General overview of the site*:

The site comprises one of the most important sections of the larger South-East Gulf of Carpentaria shorebird area, with highest densities of migratory shorebirds, and includes extensive intertidal mud and sand flats backed by mangroves, bare salt flats and some shelly beaches. Over 20,000 Asian-breeding, migratory shorebirds of at least 20 species feed and roost in the site, and some travel on to south-eastern Australia and also to New Zealand. The site supports internationally important numbers of Great Knot, Red Knot, Black-tailed Godwit and Greater Sand Plover; it also supports substantial numbers of two globally threatened species: the Far Eastern Curlew (IUCN: Vulnerable) and Great Knot (IUCN: Vulnerable) (see Annex 2 for Scientific names). Additionally, the site supports many other waterbirds such as terns and herons, some known or suspected to be migratory. However, count data specific to the site boundary are limited; future work may enable broader inclusion of waterbird species in updated documentation for this site.

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

10. Justification of Flyway Site Network criteria*:

The site clearly meets three of the Criteria for the Flyway Site Network (see Annex 1).

Count data in this section refer **only to the nominated site**, which is the Karumba-Smithburne (Delta Downs) section of the larger South-East Gulf of Carpentaria shorebird area.

Notes on the available data:

The data base for the justification is relatively small because the South-East Gulf of Carpentaria shorebird area is logistically difficult to survey. It is vast in length (350 km), there are only two small towns nearby, it is mostly inaccessible by land, and near-shore sea is very shallow.

Some broad preliminary assessments of shorebird numbers were conducted by aircraft in the 1980s to 1990s (e.g. Garnett 1983, Lane & Davies 1987). But most of the systematic survey data are from two major expeditions conducted by the Queensland Wader Study Group (Driscoll 2001, for QWSG 1st Expedition; Driscoll in prep., for the QWSG 2nd Expedition), which provided counts by roost and by section over the entire site, in 1998 and 1999, then at a smaller scale in 2013. These are the two 'survey periods' referred to below. Both expeditions used light aircraft to assess numbers over the whole South-East Gulf as well as ground/boat surveys to determine species composition, roost by roost. Some surveys were conducted over the shorebird area in other months and years, giving a total of 15 survey dates; 11 of these surveys included the nominated site.

The data must be interpreted carefully, especially when comparing between years. Despite sophisticated planning, rarely was it possible to visit all roosts in every survey. Also, with substantial passage migration through the area from south-eastern Australia and New Zealand, the passage of these migrants and survey date may not have always coincided.

Regardless of limitations, the compilers of this site nomination are confident the data are sufficient for establishing the international importance of the area and, given the stability of the habitat, for inferring similar use to that documented in the intervening years.

Note on 'regular use':

Regular use: Given the limited scope of available count data (see below), it is not possible to illustrate 'regular use' in the context of 'every year' or a minimum number of 'seasons'. In this situation, guidance provided by the Ramsar Convention on Wetlands allows information from a small number of surveys to demonstrate international importance (see Glossary definition for 'regularly' on page 88 at <http://www.ramsar.org/pdf/guide/guide-list2009-e.pdf>).

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section**Criterion a/2:**

The site meets FSN Criterion a/2 regarding threatened species, because it supports large numbers of Great Knot *Calidris tenuirostris* (over 1% of its Flyway population) and Far Eastern Curlew *Numerius madagascariensis* (commonly present in the site, e.g. 92 in March 2013), both of which are listed as globally Vulnerable (IUCN Red List; and Appendix I of the Convention on Migratory Species).

Criterion a/5:

The site meets FSN Criterion a/5 because the total number of migratory shorebirds counted in the site has exceeded 20,000 on several occasions within the last 20 years:

Relevant count data:

<i>record</i>	<i>Maximum count</i>	<i>date</i>	<i>QWSG expedition</i>
1	25,756	14 March 1999	1 st
2	20,300	25 March 1999	1 st
3	38,903	12 April 1999	1 st

Comments:

- There is an earlier count (10 February 1983) of a minimum of 20,842 shorebirds from within this site (Garnett 1983).
- The largest totals in the 2nd expedition were 17,649 on 22 March 2013 and 18,186 on 3 April 2013. It is unknown if these lower totals since the 1st expedition reflect inability of counters to survey all roosts, declining numbers in the Flyway, and/or other factors. The site is part of a vast and complex system of wetlands in the Gulf Plains region, which vary within seasons and across years in terms of inundation. There are insufficient data from this site and adjacent areas to ascertain if the very recent numbers (below 20,000) reflect long term change, or are short term perturbations linked to habitat and/or external factors.

Criterion a/6:

The site meets FSN Criterion a/6 because it supports at least 1% of the Flyway population of at least one species (in total, 4 species) of migratory waterbird.

In the following species accounts, 'WPE4' and 'WPE5' refer to the 4th and 5th editions of Waterbird Population Estimates (wpe.wetlands.org), a global database of waterbird populations managed by Wetlands International. The database is maintained to assist in the identification of wetlands of international importance using waterbirds by providing the basis for the 1% criterion, whereby any site which regularly holds at least 1% of a waterbird population qualifies as being internationally important

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under the Ramsar Convention. The EAAFP uses the same criterion as a basis for identifying sites for its Flyway Site Network.

Black-tailed Godwit *Limosa limosa melanuroides*

Relevant count data:

<i>record</i>	<i>Maximum count</i>	<i>date</i>	<i>QWSG expedition</i>
1	5727	24 March 1998	1 st
2	1725	14 March 1999	1 st
3	1730	12 April 1999	1 st
4	3572	22 March 2013	2 nd
5	3725	3 April 2013	2 nd

Comments:

- The latest 1% threshold is 1400 birds (WPE5: wpe.wetlands.org) and the previous threshold was 1600 (WPE4).
- All five records meet the 1% thresholds of both WPE5 and WPE4.
- The records are from two periods (QWSG expeditions one year ago; and 15 years ago) and all are in the northward phase of migration.

Great Knot (*Calidris tenuirostris*)

Relevant count data:

<i>record</i>	<i>Maximum count</i>	<i>date</i>	<i>QWSG expedition</i>
1	10,933	24 March 1998	1 st
2	18,140	14 March 1999	1 st
3	12,848	25 March 1999	1 st
4	22,309	12 April 1999	1 st
5	7447	22 March 2013	2 nd
6	10,922	3 April 2013	2 nd

Comments:

- The latest 1% threshold has been reduced to 2900 birds (WPE5: wpe.wetlands.org); the previous threshold was 3800 (WPE4).
- All six records meet the 1% thresholds of both WPE5 and WPE4.
- The records are from two periods (expeditions one year ago; and 15 years ago) and all are in the northward phase of migration.

Red Knot *Calidris canutus* (combined populations of both subspecies *rogersi* and *piersma*)

Relevant count data:

<i>record</i>	<i>Maximum count</i>	<i>date</i>	<i>QWSG expedition</i>
1	1840	6 June 1998	1 st
2	5032	14 March 1999	1 st
3	4306	25 March 1999	1 st
4	14,180	12 April 1999	1 st
5	2030	22 March 2013	2 nd
6	1598	3 April 2013	2 nd

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Comments:

- Preliminary indications are that both subspecies of Red Knot occur in the SE Gulf of Carpentaria shorebird area (RJ & PR pers. obs., supported by photographs).
- The combined latest 1% threshold for the two subspecies is 1100 birds (WPE5: wpe.wetlands.org); separate thresholds for the two subspecies were not available earlier and the previous single threshold (for the species as a whole) for the Flyway was 2200 (WPE4).
- All six records meet the latest 1% threshold (WPE5). Records 2, 3, and also meet the 1% threshold of WPE4.
- The records are from two periods (expeditions one year ago; and 15 years ago); five are from the northward phase of migration; record 1 is from the Arctic breeding phase.
- The wide variation in counts reflects the situation that many of the Red Knot using the site probably occurs as passage migrants to SE Australia and New Zealand; this means that surveys not conducted on dates of passage through the site may miss many of the Red Knots.

Greater Sand Plover (*Charadrius leschenaultii*)

Relevant count data:

<i>record</i>	<i>Maximum count</i>	<i>date</i>	<i>QWSG expedition</i>
1	1465	22 March 2013	2 nd

Comments:

- The latest 1% threshold is 790 birds (WPE5: wpe.wetlands.org) and the previous threshold was 1000 (WPE4).
- The record meets the 1% thresholds of both WPE5 and WPE4.
- The record is from the most recent survey period (expedition one year ago) and is for the northward phase of migration. The species was also recorded in the 1st QWSG expedition.

Note regarding Criterion b/i and b/ii:

Although data are presently insufficient to enable these criteria to be applied, it seems that many, if not most of the Red Knot that use this site may pass on to eastern Australia and/or New Zealand (Lane & Davies 1987). Some of the Bar-tailed Godwits *Limosa lapponica* of subspecies *baueri* follow a similar strategy. These outcomes are supported by sightings of leg flags during QWSG expeditions (Driscoll 2001; Driscoll in prep.) and our own observations in the SE Gulf (RJ & PR pers. obs.). Further investigation from a larger data set may enable these additional criteria to be tested in the future.

11. Wetland Types*:

Dominant: Type G (intertidal mud, sand and salt flats) and Type I (mangrove swamps). Also present: Type H (salt marshes), Type F (estuarine waters, tidal creeks) and Type E (sand shores).

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12. Jurisdiction*:

Within the State of Queensland the Department of Natural Resources and Mines has administrative jurisdiction over land tenure in Queensland, including Unallocated State Land and State Waters. The tenure of the lands within the Delta Downs section of the site is State Government land administered by the Department of Natural Resources and Mines under long term lease for pastoral/grazing purposes. Traditional Owners are the current lesee of the land, which is subject to a native title determination.

13. Management authority*:

Please first read item 22. Land tenure/ownership.

Wetland within the pastoral lease is managed by Delta Downs, which is governed by the Board of Directors of Morr Morr Pastoral Company. The Kurtijar Aboriginal Corporation represents the traditional owners who are connected with Morr Morr Pastoral Company.

Contact: Mr Alfred Pascoe, Chairman, Morr Morr Pastoral Company, Normanton QLD.
c/- Carpentaria Land Council Aboriginal Corporation
PO Box 6662, Cairns QLD 4870, Australia. (Tel: +61 7 4041 3833)

Wetland in coastal Unallocated State Land and to seaward is marine country in a remote area with no human population. It is not actively managed but is under the jurisdiction of the Department of Natural Resources and Mines.

Contact: Department of Natural Resources and Mines
61 Mary Street, Brisbane, Queensland 4000
PO Box 15216
CITY EAST QLD 4002
13 QGOV (13 74 68) business hours

14. Bibliographical references*:

- Bamford, M.J., Watkins, D.G., Bancroft, W., Tischler, G. & Wahl, J. 2008. Migratory Shorebirds of the East Asian-Australasian Flyway; Population Estimates and Important Sites. Wetlands International – Oceania.
- Driscoll, P.V. 2001. Gulf of Carpentaria wader surveys 1998-9. Report by Queensland Wader Study Group and Australasian Wader Studies Group to Queensland Environmental Protection Agency, 84 pp. & appendices.
- Driscoll, P. in prep. Shorebird Surveys in the South East Gulf of Carpentaria. Report on 2013 surveys, in preparation for the Australasian and Queensland Wader Study Groups.

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- Garnett, S. 1983. Report on the fifth aerial survey of migrating wading birds between Weipa and Milingimbi, 9-13 February 1983. *Stilt* 4: 15-17.
- Jaensch, R. 2013. New tools for development of the Flyway Site Network: An integrated and updated list of candidate sites and guidance on prioritisation. Report to Partnership for the East Asian – Australasian Flyway, 96 pp.
- Jaensch, R. & Richardson, P. 2013. Waterbird breeding colonies in the Gulf Plains, 2009-2013. *Sunbird*. 43 (2): 45–64.
- Lane, B.A. & Davies, J. 1987. Shorebirds in Australia. Nelson, Melbourne.
- Sattler, P.S. & Williams, R.D. 1999. The conservation status of Queensland's bioregion ecosystems. Environmental Protection Agency, Brisbane.
- Wetlands International, 2012. Waterbird Population Estimates, Fifth Edition. Summary Report. Wetlands International, Wageningen, The Netherlands

Summary statements in the following sections are drawn from a range of sources including:

- Blackman, JG, Perry, TW, Ford, GI, Craven, SA, Gardiner, SJ & De Lai, RJ 1999. Characteristics of Important wetlands in Queensland. Environmental Protection Agency, Queensland. pp. 282-284.

15. Physical features of the site:

The site is in the south-east corner of the Gulf of Carpentaria and is part of the Gulf Plains biogeographic region (Sattler & Williams 1999). It is a flat landscape on marine and alluvial sediments, with micro-relief formed by shelly beach ridges (active; or stranded inland) just a few metres in height.

The following description refers to the section from Karumba to the Smithburne Estuary.

The marine area is shallow with extensive areas, often 1 to 2 km wide, of mud and sand exposed at lowest tides. Typically, there is just one high tide each day although double tides of low amplitude occur one or two days per month. Maximum tidal range is about 3.7 metres.

The coastline, defined by mangroves and beach structures, is backed by extensive, mostly bare, hyper-saline flats that often extend many kilometres inland and that may be partly inundated by spring tides and during storms, or fully inundated by monsoonal or cyclonic rainfall. The flats are traversed by many creeks and several rivers; some creeks are purely tidal but others originate far inland and bring fresh water to the coast – in large quantities in the case of rivers such as the Smithburne.

The climate is hot (often over 30° C) and humid with high rainfall in summer-autumn (December – April) but with little or no rain in other seasons and slightly cooler temperatures (see Bureau of Meteorology online climate data, Karumba). The area is subject to cyclones (on average about one or two per year);

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wind and storm surges with the cyclones may cause significant but small-scale changes to coastal landforms.

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16. Physical features of the catchment area:

The catchment area is part of the Gulf Plains bioregion, is flat to gently-sloped and is traversed by numerous creeks and rivers, many of which split into diverging channels as they pass through broad alluvial fans before reaching the coast.

17. Hydrological values:

Large quantities of sediment sourced inland are deposited in and near the site by Gulf Plains rivers. Mangroves help stabilise the sediment and protect the coast from impacts of storms and cyclones.

18. General ecological features:

Intertidal flats are presumably rich in marine invertebrates upon which the site's migratory shorebirds depend for food, but invertebrate diversity and abundance have not been systematically documented in this context.

Mangrove forests vary in width, structure and species. Major stands, notably on broad bends of inflowing estuaries, show zonation from seaward *Avicennia*, to interior tall *Rhizophora* and/or *Bruguiera* species, and with low thickets of *Cerriops* typical of the landward and most saline zones.

Beach ridges may support diverse communities of grasses, vines, shrubs and low trees.

Salt flats are extensively bare, apart from algal mats, but in some areas support dense swards of marine couch *Sporobolus virginicus* and short samphire plants.

Ecosystem services provided by the site to humans include:

- Fish, crab and prawn resources (for commercial fisheries and recreational fishers)
- Livestock fodder (cattle may graze the marine couch)
- Coastline protection (mangroves)
- Carbon sink (mangrove forest).

19. Noteworthy flora:

See item 18.

20. Noteworthy fauna:

At least 20 species of migratory shorebirds have been recorded using the site (Annex 2) and additional species are likely to occur less regularly or as vagrants. Across the entire South-East Gulf of Carpentaria, 16 migratory waterbird species have been recorded in internationally important numbers (Bamford *et al.* 2008; Jaensch 2013); for most of these species, numbers reach the 1% level only when tallied across the

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whole South-East Gulf shorebird area. Total numbers of migratory shorebirds can exceed 20,000 in two or three survey sections (Garnett 1983; Driscoll 2001; Driscoll in prep.).

The site is adjacent to marine plains east of Karumba with complex grassland and wetland ecosystems that support internationally important numbers of Little Curlew *Numenius minutus* and probably also White-winged Black Tern *Chlidonias leucoptera* (Driscoll 2001; Driscoll in prep.; RJ & PR pers. obs.). The plains are not included in this present FSN nomination but some birds of these species have been recorded in the nominated area.

Also recorded in the site is a suite of other waterbirds (e.g. other shorebirds, terns, herons) that breed in Australia and undertake only regional movements within Australasia (some as far as New Guinea), e.g. Black-winged (White-headed) Stilt *Himantopus himantopus (leucocephalus)*. The nominated site includes only a narrow strip of coast (and few if any freshwater wetlands) and thus, there is insufficient habitat for many such species to occur in high numbers. Survey work has focussed primarily on shorebirds and much additional work would be required to extract and review incidental count data for non-shorebirds, or to undertake extra surveys. Furthermore, there is limited evidence of the migration of most such species beyond Australia, including what proportion of each population actually migrates and how regularly.

Numbers of non-migratory Australian Pied Oystercatcher *Haematopus longirostris* are internationally important at the 1% level in the site (in at least 8 surveys: Driscoll 2001; Driscoll 2013; RJ pers. obs.). The largest non-migratory shorebird in the site is the Beach Stone-curlew (thick-knee) *Esacus magnirostris*.

Other non-migratory birds in the site include herons (e.g. Striated Heron *Butorides striatus*), Pied Cormorant *Phalacrocorax varius*, Black-necked Stork *Ephippiorhynchus asiaticus* and White-bellied Sea-Eagle *Haliaeetus leucogaster*. A small breeding colony of Australian Pelican *Pelecanus conspicillatus* is on the sand bar of Pelican Island (over 500 nests, April 2014: RJ & PR pers. obs.) and a small breeding colony of several hundred egrets and other waterbirds is in mangrove forest on the island (Jaensch & Richardson 2013). A distinct forest bird community of several species including White-breasted Whistler *Pachycephala lanioides*, occurs in the mangroves.

Estuarine crocodiles *Crocodylus porosus*, marine turtles and other marine fauna typical of tropical Australian waters inhabit the site and surrounding region.

21. Social, economic and cultural values:

The Kurtjar Aboriginal (indigenous) people maintain connections to the site through their cultural traditions, operation of a cattle-raising enterprise on Delta Downs and other visitations. No humans live permanently in the site. The Kurtjar and other Aboriginal people of the region have strong spiritual associations with the Gulf coastal country and continue to harvest some of its plant and animal resources. These values are

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reinforced through activities of the Normanton Land and Sea Rangers, a program of the Carpentaria Land Council Aboriginal Corporation (CLCAC), and through educational programs in local schools.

European association with the site has been limited, partly because there is no road access to the site. Nearby, a commercial prawning fleet is based in the Norman River estuary at Karumba Port and the port serves as an export point for mining products and live cattle. Fishing activities in the site occur seasonally, including recreational and small-scale commercial fishing but these do not seem to pose a significant threat to the migratory shorebirds.

Owing to the remoteness of the site, harsh climate and weather conditions, lack of permanent human residents, and low levels of harvest of natural resources, the ecological character of the site is not significantly linked to human interactions.

22. Land tenure/ownership:

a) Within the Flyway Network site:

The Delta Downs pastoral lease is owned by Morr Morr Pastoral Company; the company is controlled by traditional (indigenous) owners of land and sea country, who are represented by the Kurtijar Aboriginal Corporation. A zone 600 m seaward of the lease boundary is 'Unallocated State Land' (USL) and the area beyond USL is State Waters.

b) In the surrounding area:

To landward: entirely within the Delta Downs Pastoral lease (see above) except for the Karumba township which lies near the southern edge of the site.

23. Current land (including water) use:

a) Within the Flyway Network site:

Low levels of cattle grazing, commercial fishing and recreational fishing.

Much of the narrow dryland part of the site is bare salt flat and the roosts are on bare beaches or bare salt flat; both habitats are unattractive to cattle and thus there is no conflict between cattle and shorebirds.

b) In the surroundings/catchment:

As for (a); there is also a port facility and small townships at Karumba and Karumba Point.

A small airstrip at Karumba Point handles infrequent commercial flights.

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

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a) Within the Flyway Network site:

There are no factors presently operating within the site that have been identified as affecting the site's ecological character. Rubber vine (*Cryptostegia grandiflora*) infestations in the strand-beach country and associated wetlands may reduce or degrade habitat for some waterbirds, but are being addressed broadly in property-wide management of weeds and do not directly impact the main intertidal and beach-roost habitats of the migratory shorebirds that are the foundation of this nomination.

b) In the surrounding area:

No major factors other than in (a); but also see item 30.

25. Conservation measures taken:

No direct conservation measures such as protected area designations have been taken for the site. There is no management plan for the site as defined (items 4 & 5 above), but with long-term assistance from the Normanton Land and Sea Rangers, the Delta Downs cattle enterprise is endeavouring to implement sustainable grazing practices.

26. Conservation measures proposed but not yet implemented:

Control of invasive plants and feral animals, notably pigs and cats that could possibly predate roosting shorebirds are long-term, ongoing responsibilities for all landholders in the region.

27. Current scientific research and facilities:

There have been two expeditions to survey migratory waterbirds along the South-East Gulf coast (Driscoll 2001; Driscoll in prep.) but apart from several earlier aerial surveys (e.g. Garnett 1983; Lane & Davies 1987) there have been no other systematic investigations. No professional ornithologists and few amateurs live in the site or landward catchments.

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

Through the activities of two regional (catchment-based) organisations for natural resource management, Northern Gulf Resource Management Group and Southern Gulf Catchments, some awareness of migratory shorebirds in the South-East Gulf of Carpentaria has been raised. Presently, this is being extended by CLCAC to indigenous communities through the Land and Sea Ranger program. Birds Queensland, through the Queensland Wader Study Group, and BirdLife Australia, through the Australasian Wader Studies Group and Shorebirds 2020 project, continue to promote the international importance of the South-East Gulf of Carpentaria.

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29. Current recreation and tourism:

Small-scale seasonal visitations to the site occur for recreational fishing.

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30. Threats*:

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
commercial and industrial areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tourism and recreation areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agriculture and aquaculture			
annual and perennial non-timber crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wood and pulp plantations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
livestock farming and ranching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
marine and freshwater aquaculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy production and mining			
oil and gas drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mining and quarrying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
renewable energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation and service corridors			
roads and railroads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
utility and service lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
shipping lanes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
flight paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biological resource use			
hunting and collecting terrestrial animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
gathering terrestrial plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
logging and wood harvesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing and harvesting aquatic resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human intrusions and disturbance			
recreational activities	at small scale	at small scale	at small scale

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

war, civil unrest and military exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
work and other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural system modifications			
fire and fire suppression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dams and water management/use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other ecosystem modifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive and other problematic species and genes			
invasive non-native/alien species	rubber vine on coastal ridges	rubber vine on coastal ridges	rubber vine on coastal ridges; feral pigs and cats
problematic native species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
introduced genetic material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution			
household sewage and urban waste water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
industrial and military effluents	<input type="checkbox"/>	<input type="checkbox"/>	spill of minerals near Karumba Port
agricultural and forestry effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
garbage and solid waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
air-borne pollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
excess energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geological events			
volcanoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
earthquakes/tsunamis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
avalanches/landslides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change and severe weather			
habitat shifting and alteration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
droughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
temperature extremes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
storms and flooding	tropical cyclones sometimes alter coastal landforms	<input type="checkbox"/>	tropical cyclones may alter coastal landforms

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Please write here any additional threats and comments/queries you have on the threats.

The site is remote from human settlements other than Karumba Point and Karumba Port, which lie outside the southern boundary. There are no roads or formed vehicle tracks into the site and there is no land-use in the site other than small-scale, recreational and commercial fishing (seasonal, and minimal during the closed season, October-February, and for most of the Wet season, December to March) and cattle grazing.

Increased recreational boating in the site could possibly disturb shorebirds at some of the high tide roosts, particularly if people often land on major beaches and Pelican Island. Disturbance caused by these activities during March-April could cause depletion of shorebirds' fat reserves and thereby reduce the capacity of shorebirds to successfully complete their upcoming migration to NE Asia. If disturbance was ever documented as being a concern, an awareness program and signage could address the issue.

Livestock (cattle) may occasionally enter the site but the area is highly saline and apart from some patches of marine couch grass there is little suitable grazing pasture in the site.

Mining products (silver-lead-zinc) are shipped from Karumba Port and a major spill could result in metal pollution on nearby coast, likely impacting invertebrate food consumed by shorebirds.

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

- a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:
 - Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
 - Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
 - Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.
- b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:
 - i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.
 - ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.
- c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section

Annex 2: List of shorebirds counted in the site by QWSG

The table lists species counted in the site, from two expeditions to the South-East Gulf of Carpentaria by Queensland Wader Study Group (QWSG) and some additional surveys, as documented by Driscoll (2001; in prep.) or supplied to the compilers by Peter Driscoll. The data refer only to 'Section F' from QWSG surveys, which closely aligns with the nominated Network Site boundary for 'South-East Gulf of Carpentaria: Karumba-Smithburne (Delta Downs) section'.

The maximum number counted from 11 surveys is shown, as well as the date of the survey.

species	scientific name	max. count	date
Bar-tailed Godwit	<i>Limosa lapponica</i>	463	24/03/1998
Black-tailed Godwit	<i>Limosa limosa</i>	5727	24/03/1998
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	55	28/09/2012
Common Greenshank	<i>Actitis hypoleucos</i>	70	25/03/1999
Curlew Sandpiper	<i>Calidris ferruginea</i>	81	16/09/1998
(Far) Eastern Curlew	<i>Numenius madagascariensis</i>	266	24/03/1998
Great Knot	<i>Calidris tenuirostris</i>	22,309	12/04/1999
Greater Sand Plover	<i>Charadrius leschenaultii</i>	1465	22/03/2013
Grey Plover	<i>Pluvialis squatarola</i>	120	1/08/1999
Grey-tailed Tattler	<i>Tringa brevipes</i>	23	24/03/1998
Lesser Sand Plover	<i>Charadrius mongolus</i>	130	25/03/1999
Marsh Sandpiper	<i>Tringa stagnatilis</i>	37	25/03/1999
Pacific Golden Plover	<i>Pluvialis fulva</i>	13	22/03/2013
Red Knot	<i>Calidris canutus</i>	14,180	12/04/1999
Red-necked Stint	<i>Calidris ruficollis</i>	2399	22/03/2013
Ruddy Turnstone	<i>Arenaria interpres</i>	3	12/04/1999
Sanderling	<i>Calidris alba</i>	120	24/03/1998
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	315	28/09/2012
Terek Sandpiper	<i>Xenus cinereus</i>	27	12/04/1999
Whimbrel	<i>Numenius phaeopus</i>	135	24/03/1998

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

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VI Protected area with sustainable use of natural resources

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.