



Ramsar Information Sheet

Published on 20 July 2026

Update version, previously published on : 1 January 2011

Australia

Kakadu National Park



Designation date	12 June 1980
Site number	204
Coordinates	13°00'18"S 132°31'11"E
Area	1 911 122,00 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a ‘full’ Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

Kakadu Ramsar site is an iconic location within Australia, renowned for exceptional beauty and unique biodiversity, and a variety of landforms, habitats and wildlife. The site encompasses a diversity of coastal and inland wetland types, ranging from intertidal forested wetlands and mudflats to seasonal freshwater marshes and permanent freshwater pools. The site contains an abundance of archaeological sites and items, and an ongoing living culture is maintained by the Traditional Owners, the Bininj/Mungguy, who jointly manage the site. The spiritual connection of Kakadu’s aboriginal people with the land is globally recognised in Kakadu’s World Heritage listing, which honours one of the oldest living societies on earth. Kakadu meets all nine Ramsar listing criteria: 1: Wetlands found within the site are representative of the bioregion, with the floodplains and river systems outstanding examples of their type. Field island includes almost all of the coastal wetland types known to occur within the Ramsar site. 2: Kakadu supports a number of nationally and internationally listed threatened species, including a range of threatened invertebrates, fish, reptiles, birds and mammals. 3: The region is a biodiversity hot spot for fish, and the site supports high biodiversity. A number of endemic flora and fauna species occur at the site, including the Jabiru toadlet and Alligator Rivers yellow chat. 4: The site provides breeding habitat for large waterbird aggregations. The site also provides important habitats, feeding, spawning sites and migratory pathways for fish and crustacea. Additionally, the site provides nesting sites and feeding habitats for threatened marine turtles. 5: 390 000 magpie geese have been recorded at the site, and is likely to support in excess of 2.5 million birds of a variety of species during the late dry season. 6: Kakadu supports at least 1% of the total populations of 12 bird species, including at least 1% of the flyway population of 5 migratory shorebirds. 7: The site supports around 60 freshwater fish species, representing approximately 20% of the total freshwater fish species found in Australia. 8: Kakadu provides important habitats, feeding areas, spawning sites, and migratory pathways for numerous fish species. 9: The site supports globally significant populations of 2 species of river shark (possibly 30% of the Australian population), and over 1% of the population of pig-nosed turtles and saltwater crocodiles.
--

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency	Australian Government Department of Climate Change, Energy, the Environment and Water
Postal address	GPO Box 3090 Canberra City ACT 2601 Australia

National Ramsar Administrative Authority

Institution/agency	Australian Government Department of Climate Change, Energy, the Environment and Water
Postal address	GPO Box 3090 Canberra City ACT 2601 Australia

2.1.2 - Period of collection of data and information used to compile the RIS

From year	2010
To year	2020

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Kakadu National Park
---	----------------------

2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary	Yes ☒ No ☐
(Update) The boundary has been delineated more accurately	☐
(Update) The boundary has been extended	☒
(Update) The boundary has been restricted	☐
(Update) B. Changes to Site area	the area has decreased
(Update) The Site area has been calculated more accurately	☒
(Update) The Site has been delineated more accurately	☐
(Update) The Site area has increased because of a boundary extension	☐
(Update) The Site area has decreased because of a boundary restriction	☐
(Update) For secretariat only: This update is an extension	☐

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?	No
--	----

(Update) Optional text box to provide further information

The Kakadu Management Plan was developed in 2016. While it identified a number of threats to the site and required management actions, it did not identify major changes to the ecological character. The introduction of a comprehensive fire management program across the park in 2016 has helped to reduce the extent of sensitive native vegetation impacted by intense late season fires and helped to improve other fire metrics. However, large areas of coastal floodplains are being impacted by invasive plant species, and many aquatic environments across the park are being degraded by pigs and buffaloes. Highly invasive African pasture grasses are present in the lowland woodlands and can impact on fire intensity. A lack of data on invasive species creates difficulties in assessing changes to ecological condition and threat level. Overall the major landscapes remain largely intact and generally in good condition.

Whilst there has been no notifiable change in ecological character, the site has been subject to a changing climate. Australia has warmed by an average of 1.4 °C (higher than the global average of 1 °C) since national records began in 1910. Further increases in temperature are projected, with more extremely hot days and fewer extremely cool days under all emissions scenarios (BoM and CSIRO 2020). These conditions will affect the critical components, processes and services of the Ramsar site and will test the site's resilience.

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<2 file(s) uploaded>

Former maps 0

Boundaries description

The boundary of the Ramsar site is identical to that of Kakadu National Park as established by Proclamation made on 5 April 1979 and entered on the Federal Register of Legislative Instruments established under the Legislation Act 2003 as instrument F2008B00727, as amended by Proclamations made in 1985, 1987, 1989, 1991, 2007 and 2013 entered on the Register as instruments F2009B00244, F2009B00245, F2009B00246, F2009B00247, F2007L01463 and F2013L00189. Instrument F2014C00671 compiles the establishing Proclamation and amending Proclamations as in force on 15 February 2013.

This RIS update incorporates the former Koongarra Project Area (approximately 1,254 ha) into the Ramsar site. This area was added to the Kakadu National Park in 2013.

The current area of the Ramsar site (1 911 100 ha) has been calculated using GIS software. The previously cited area of the Ramsar site (1 979 766 ha) was based on the Kakadu National Park proclamation document. This proclamation document, which officially set out the area and boundaries of the Kakadu National Park, described each part of the park as having an area of "more or less" the figure quoted. This suggests a degree of approximation in the areas cited in the proclamation document. It now appears that Kakadu National Park (and therefore Kakadu Ramsar site) is approximately 70 000 ha smaller than was cited in the official documentation in the past. This is not the result of a change in the site's boundary, but rather improvements in mapping (GIS) technology.

2.2.2 - General location

a) In which large administrative region does the site lie? Northern Territory

b) What is the nearest town or population centre? Darwin (population of 132,045 in 2016), which is 150 km to the south west of the Ramsar site

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ☐ No ☒

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ☐ No ☒

2.2.4 - Area of the Site

Official area, in hectares (ha): 1911122

Area, in hectares (ha) as calculated from GIS boundaries 1911120.421

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Marine Ecoregions of the World (MEOW)	Bonaparte Coast
Other scheme (provide name below)	Tanami-Timor Sea Coast
Udvardy's Biogeographical Provinces	6.3.4 Northern Coastal
Udvardy's Biogeographical Provinces	6.11.10 Northern Savanna

Other biogeographic regionalisation scheme

Within Australia, the Australian Hydrological Geospatial Fabric (Geofabric), Integrated Marine Coastal Regionalisation of Australia (IMCRA) and/ or the Interim Biogeographic Regionalisation for Australia (IBRA) are the biogeographic regionalisation schemes typically used.

Bureau of Meteorology (2012). Australian Hydrological Geospatial Fabric (Geofabric): Topographic Drainage Divisions and River Regions – Tanami-Timor Sea Coast Drainage Division, which is relevant to freshwater and estuarine areas. (http://www.bom.gov.au/water/geofabric/documents/BOM002_Map_Poster_A3_Web.pdf).

The Australian Hydrological Geospatial Fabric (Geofabric) is a specialised Geographic Information System (GIS). It registers the spatial relationships between important hydrological features such as rivers, water bodies, aquifers and monitoring points. The National Topographic Drainage Divisions and River Regions are currently derived from Geofabric version 2. These provide a set of surface water reporting units based on drainage-enforced digital elevation models and are used to depict where water flows and drains across the landscape.

Commonwealth of Australia (2006). Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4 - Northern Provincial Bioregion, which is relevant to coastal and marine areas. (<https://parksaustralia.gov.au/marine/management/resources/scientific-publications/guide-integrated-marine-and-coastal-regionalisation-australia-version-40-june-2006-imcra/>).

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) is a spatial framework for classifying Australia's marine environment into bioregions that make sense ecologically and are at a scale useful for regional planning.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☒ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided

The site supports a range of hydrological values associated with fluvial flows experienced during the wet season. These flows are sufficient to flush the tidal channel to fresh water levels over almost the full length of the estuary. As flows recede, tidal processes tend to dominate, with the tidal component extending from the mouth in Van Diemen Gulf to just downstream of Yellow Water, a distance of about 105 km. Of particular note is that two river systems (South Alligator and Wildman Rivers) are contained almost entirely within the Ramsar site. The wetlands provide a range of functional hydrological values. For example, the floodplains function as a large retarding basin, storing the water during the wet season and gradually releasing it during the dry season. This process maintains a range of ecological functions, including provision of dry season aquatic refugia and the wetting and drying cycles of floodplain wetlands. A similar process takes place in the stone country and adjacent lowlands, where groundwater expressions create both perennial and ephemeral spring habitats. Some of these springs provide habitat for endemic invertebrate species (Bayliss et al. 1997), monsoon rainforest and riparian vegetation communities. Groundwater forms a potable water supply for the township of Jabiru, Ranger Uranium Mine and outlying settlements within the Park. Katherine River, which has its headwaters in the Park, provides a source of water for the township of Katherine (located outside the site) and surrounding irrigation areas.

Other reasons

The wetland types found within the Ramsar site are representative of wetland types found in the bioregion. In particular, the floodplains are outstanding examples of their types in the monsoon tropics, and the river systems are outstanding examples of the series of large rivers in the bioregion. Field Island is particularly notable in the context of this criterion, as it contains all of the coastal wetland types known to occur within the site, with the exception of coastal freshwater lagoons. This represents a remarkably high level of habitat diversity within a relatively small area. The site supports an extensive area of blue carbon ecosystems (seagrass, salt marsh and mangrove) which contribute to mitigation of and adaptation to climate change.

☒ Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information

The Ramsar site supports a significant number of nationally and/or internationally listed threatened species, including 3 mammal species, 6 turtle species, 8 fish species (3 sawfish, 3 sharks and 2 gobies), 3 shrimp species, 15 bird species and an invertebrate species. Note that some of these species may not be wetland dependent, but all use wetland habitat or feed on wetland species. A full list of wetland-dependent threatened species is included in table 3.3. A list of threatened species that are not wetland dependent but regularly occur at the site is included in table 4.3.2

One threatened ecological community (the Arnhem Plateau Sandstone Shrubland Complex) occurs at the site (Director of National Parks 2016).

☒ Criterion 3 : Biological diversity

Justification

The Ramsar site supports high biodiversity. Kakadu National Park is known to support nearly 2,000 plant species. More than one-third of Australia's bird fauna (271 species) and about one-quarter of Australia's land mammals (77 species) are found in the park, along with 132 species of reptiles and 27 species of frogs (Director of National Parks 2016). The region is a biodiversity hotspot for fishes, and there is likely well over 350 species in tidal and freshwater areas within the park (M. Hammer pers.comm 7/5/20). This includes a highly rich and taxonomically diverse estuarine fish assemblage, of at least 300 species ranging from threatened elasmobranchs, recreationally/culturally important large fishes like barramundi, threadfin salmon and catfish, through to two small gobies only recorded in Kakadu estuaries (Kakadu goby *Egglestonichthys ulbubunitj* and spotted calamiana *Eugnathogobius stictos*). The Ramsar site supports five regionally endemic wetland-dependent flora species: the Arnhem Land bamboo (*Bambusa arnhemica*), an aquatic grass (*Hygrochloa aquatica*), an annual herb (*Utricularia subulata*), and the aquatic flowering plants *Nymphoides spongiosa* and *Nymphoides subacuta*. The site supports the only known population of the Jabiru toadlet (*Uperoleia arenicola*), an NT endemic, which is known from a small area on the western edge of the Arnhem Land escarpment (IUCN Red List). The site supports one wetland-dependent threatened bird species, the yellow chat (*Alligator Rivers*), *Epthianura crocea tunneyi*, which is endemic to the Northern Territory and is restricted to a small geographic area encompassing the floodplains from the Adelaide River to the East Alligator River, between Oenpelli and Darwin. The Ramsar site contains the full range of tree and shrub mangrove species that are representative of the bioregion. Mangrove communities in the Kakadu National Park region are floristically diverse, with 38 mangrove tree and shrub species identified including the grey mangrove (*Avicennia marina*), spider mangrove (*Rhizophora stylosa*) and white mangrove (*Sonneratia alba*) (Wightman 1989).

☒ Criterion 4 : Support during critical life cycle stage or in adverse conditions

Optional text box to provide further information

The Ramsar site provides breeding habitat for significant waterbird aggregations, with the most significant breeding colonies located within mangrove communities of the major rivers as well as floodplain freshwater marshes. For example, a waterbird colony near the mouth of South Alligator River, estimated to be up to 5 000 waterbirds of varying species (Chatto 2000). Significant breeding aggregations of magpie geese (*Anseranas semipalmata*) occur throughout the floodplains of the site, with the South Alligator floodplains regarded as the third most important area of nesting habitat after the Mary-Adelaide and Daly River floodplains (Bayliss and Yeomans 1990). The Nourlangie floodplain is also known to be an important nesting habitat (Chatto and Baker 2008).

The site provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish and crustacea, with many species spending their juvenile stages in in shallow nearshore waters of the site, particularly around mangroves, saltmarsh and seagrass habitats. Field Island represents one of six major nesting sites for Flatback Turtle (*Natator depressus*) in Australia and has been identified as habitat critical to the survival of the species. Other marine turtle species (*Caretta caretta*, *Chelonia mydas*, *Eretmochelys imbricata*, and *Lepidochelys olivacea*) may use intertidal areas as feeding habitat within the site, but the site is unlikely to provide critical habitat for these species.

Additionally, the permanent wetlands within the site (particularly billabongs) provide an important dry season refuge for a variety of species including waterbirds, such as magpie geese (*Anseranas semipalmata*) and the wandering whistling duck (*Dendrocygna arcuata*) reptiles such as saltwater crocodiles (*Crocodylus porosus*), freshwater crocodiles (*Crocodylus johnstoni*) and freshwater turtles, freshwater fish (such as barramundi), and macrophytes.

☒ Criterion 5 : >20,000 waterbirds

Overall waterbird numbers 390 000

Start year 2018

End year **2018**

Source of data: **NT DENR 2018**

In April-May 2018, approximately 390 000 magpie geese were recorded in aerial surveys of the Kakadu NP floodplains (Wildman/West Alligator River, South Alligator River and East Alligator River) (NT DENR 2018). Numbers have been over 20 000 for a long period – for example estimated overall dry season abundance in Kakadu NP was: 2 970 000 in 1983; 3 870 000 in 1984; and 1 950 000 in 1995 (Parks and Wildlife Service of the NT 2009).

Optional text box to provide further information

Historically, the total waterbird population for the Alligator Rivers Region during the late dry season is likely to have been in excess of 2.5 million birds including geese, ducks, sandpipers and curlews (Morton et al. 1993). Notable records of waterbird abundance are presented by Chatto (2003a) who recorded large aggregations of shorebirds from Finke Bay (9 000 birds in 1993) and in coastal areas between the South Alligator River and Minimini Creek (12 500 birds in 1992). Furthermore, in excess of 172 000 waterbirds were counted within the upstream South Alligator River floodplains during October 2001 (Chatto 2006). Waterbirds may still be using the site in these numbers, but there are no recent survey reports to confirm this.

☒ **Criterion 6 : >1% waterbird population**

The Ramsar site supports at least 1% of the populations of 12 bird species. These birds use the Kakadu wetlands for feeding, roosting, breeding and dry-weather refuges.

The following waterbird species have been recorded within Kakadu National Park in numbers which exceed 1% of the estimated population size (Wetlands International 2006):

- magpie goose, *Anseranas semipalmata*
- wandering whistling-duck, *Dendrocygna arcuata*
- plumed whistling-duck, *Dendrocygna eytoni*
- radjah shelduck, *Tadorna radjah*
- pacific black duck, *Anas superciliosa*
- grey teal, *Anas gracilis*
- brolga, *Grus rubicunda*
- black-necked stork, *Ephippiorhynchus asiaticus*
- marsh sandpiper, *Tringa stagnatilis*
- little curlew, *Numenius minutus*
- Australian pratincole, *Stiltia isabella*
- sharp-tailed sandpiper, *Calidris acuminata*

Chatto (2003a) indicates that other species may occur in numbers which exceed the 1% threshold. These include:

- terek sandpiper, *Xenus cinereus*
- broad-billed sandpiper, *Limicola falcinellus*
- grey plover, *Pluvialis squatarola*
- lesser sand plover, *Charadrius mongolus*

There is currently insufficient data to confirm this.

Optional text box to provide further information

☒ **Criterion 7 : Significant and representative fish**

Justification

The Ramsar site includes freshwater catchments draining to Van Diemen Gulf between the Mary and East Alligator River (inclusive) plus the upper Katherine River, part of the Daly River catchment. It is one of the most species rich regions for freshwater fishes in Australia. Kakadu supports around 60 species of freshwater fish (Pusey et al. 2017; Shelley et al. 2019; MAGNT records and research), although it is somewhat subjective and difficult to fully characterise a list as the free flowing nature of the regions rivers allows ready movement and interchange of species between estuarine and freshwater habitats (or the biology is still unknown). This represents approximately 20% of the total number of fish species found in Australian freshwaters and is the highest species richness of any catchment in the Timor Sea Drainage Division. Some of the fish found in the site include: • Endemic freshwater fish that complete their lifecycle only in the Kakadu escarpment region with a large part of their range included within Kakadu National Park. Species include: Mariana's hardyhead (*Craterocephalus marianae*), exquisite rainbowfish (*Melanotaenia exquisita*), Midgley's grunter (*Pingalla midgleyi*), Barraway's Fish (*Hypseleotris barrawayi*), and spotted calamiana (*Eugnathogobius stictos*). • Obligate freshwater species that complete their lifecycle in freshwater like sooty grunter (*Hephaestus fuliginosus*), sharpnose grunter (*Syncomistes butleri*), spangled grunter (*Leiopotherapon unicolor*), rainbowfishes, several eel-tailed catfishes, and delicate blue-eye (*Pseudomugil tenellus*). • Eurhyaline species capable of maintaining populations in both fresh and estuarine marine, e.g. seven-spot archerfish (*Toxotes chatareus*). • Mostly estuarine or marine that are known to move into and live in freshwater, like elasmobranchs such as the freshwater sawfish (*Pristis pristis*), bull shark (*Carcharhinus leucas*); some forktail catfish (*Neoarius leptaspis*, *Netuma proxima*, and *Neoarius graeffei*); and vagrants like snub-nosed garfish (*Arrhamphus sclerolepis*), long-jawed river garfish (*Zenarchopterus caudovittatus*), sunset gudgeon (*Bostrychus zonatus*). • Other diadromous species that include large portion of their lifecycle in fresh and salt water with varying degrees of flexibility, e.g. Barramundi (*Lates calcarifer*), Tarpon (*Megalops cyprinoides*), Indonesian Shortfin Eel (*Anguilla bicolor*), soles.

☒ Criterion 8 : Fish spawning grounds, etc.

Justification

Kakadu National Park provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish species. Many fish, such as barramundi (*Lates calcarifer*), threadfin salmon (*Polydactylus macrochir*), mullet species; and crustaceans (mud crabs, prawns) species spend their juvenile stages in shallow nearshore waters of the site, particularly around mangroves, saltmarsh and seagrass habitats. Species such as barramundi also inhabit freshwater floodplain and billabongs. Species such as barramundi also inhabit freshwater floodplain habitat and billabongs. These species also spawn in inshore waters, though there is no information on specific spawning habitats within the site.

☒ Criterion 9 : >1% non-avian animal population

Recent research has shown that Kakadu National Park host globally significant populations of both species of river sharks occurring in Australian waters: northern river shark (*Glyphis garricki*) and speartooth shark (*G. glyphis*). These species have restricted distributions limited to turbid macrotidal rivers and estuaries of northern Australia and southern Papua New Guinea, with the Alligator Rivers of Kakadu National Park representing a major part of their range. The world population of each species is considered to be between 2 500 and 10 000 mature individuals.

A population size estimate for the northern river shark using close-kin mark-recapture provided point estimates of 582 – 1 116 adults in Van Diemen Gulf (Kakadu National Park and the Adelaide River) with point estimates of 447 – 953 for the Alligator Rivers (i.e. Kakadu National Park) (Bravington et al. 2019). Using just the conservative Alligator River point estimates, the site supports 4.47% of the world population. Van Diemen Gulf is a core part of the distribution and it is reasonable to infer that it possibly represents 30% or more of the Australian population.

Optional text box to provide further
information

The speartooth shark occurs only in the Wenlock River (Queensland), rivers of Van Diemen Gulf, the Daly River (Northern Territory), and the Ord River (Western Australia). Population size estimate for Van Diemen Gulf was approximately 2 000 adults, possibly representing 20% or more of the world population.

Georges and Kennett (1989) found pig-nosed turtles (*Carettochelys insculpta*) to be widespread between the tidal reaches and the head-waters of the South Alligator River, and that high densities may be present in the upper reaches during the dry season (33.8 ± 11.3 turtles per hectare in small discrete ponds on the main channel). One per cent is estimated to be 30 individuals (R. Sims pers. comm. to TSSC 2005).

It is estimated that Kakadu National Park contains approximately 10,000 saltwater crocodiles (*Crocodylus porosus*) (G. Lindner pers. comm. 2020). The total Australian population is currently estimated to be approximately 100,000. 1% is estimated to be 1,000 individuals (SPRAT accessed 2026).

3.2 - Plant species whose presence relates to the international importance of the site

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Plantae								
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Avicennia marina</i>	☐	☒	☐	LC	☐		The Ramsar site contains the full range of tree and shrub mangrove species that are representative of the bioregion. This species provides habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA/ LILIOPSIDA	<i>Bambusa arnhemica</i>	☐	☒	☐		☐		This species is a regionally endemic, wetland dependent species that contributes to the biodiversity of the site.
TRACHEOPHYTA/ LILIOPSIDA	<i>Hygrochloa aquatica</i>	☐	☒	☐		☐		This species is a regionally endemic, wetland dependent species that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Mackinlaya macrosciadea</i>	☐	☒	☐		☐		This is an endemic rainforest species that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Nymphoides spongiosa</i>	☐	☒	☐		☐		This species is a regionally endemic, wetland dependent species that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Nymphoides subacuta</i>	☐	☒	☐		☐		This species is a regionally endemic, wetland dependent species that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Rhizophora stylosa</i>	☐	☒	☐	LC	☐		The Ramsar site contains the full range of tree and shrub mangrove species that are representative of the bioregion. This species provides habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Sonneratia alba</i>	☐	☒	☐	LC	☐		The Ramsar site contains the full range of tree and shrub mangrove species that are representative of the bioregion. This species provides habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Utricularia subulata</i>	☐	☒	☐	LC	☐		This species is a regionally endemic, wetland dependent species that contributes to the biodiversity of the site.

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Others																	
ARTHROPODA / INSECTA	<i>Antipodogomphus dentosus</i>	☐	☒	☐	☐	☒	☐	☐	☐				DD	☐	☐		This species of dragonfly is endemic to Northern Territory, Australia, where it has been found in rivers. As an endemic species, it contributes to the biodiversity of the site.
CHORDATA / REPTILIA	<i>Caretta caretta</i>	☒	☒	☐	☐	☐	☐	☐	☐				VU	☒	☒	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed wetland dependent threatened species. This species may use intertidal areas within the site as feeding habitat.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA / REPTILIA	<i>Carettochelys insculpta</i>	☒	☐	☐	☒	☐	☐	☐	☐	34		1.1	EN	☐	☐	Nationally listed (EPBC Act) - vulnerable	Nationally and Internationally listed wetland dependent threatened species. The Australian population is estimated as approximately 3,000 individuals (R. Sims pers. comm. to TSSC 2005), with a 1% threshold of 30 individuals. Georges and Kennett (1989) found pig-nosed turtles to be widespread between the tidal reaches and the head-waters of the South Alligator River, with densities of 33.8 ± 11.3 turtles/ha in small discrete ponds on the main channel in the dry season. Note that the Australian population of pig-nosed turtle is completely isolated from the New Guinean population, so the 1% threshold for this species is based on the Australian population only.
CHORDATA / REPTILIA	<i>Chelonia mydas</i>	☒	☒	☐	☐	☐	☐	☐	☐				LC	☒	☒	Nationally listed (EPBC Act) - vulnerable	Nationally listed wetland dependent threatened species. This species may use intertidal areas within the site as feeding habitat.
CHORDATA / REPTILIA	<i>Crocodylus johnsoni</i>	☐	☒	☐	☐	☒	☐	☐	☐					☐	☐		The permanent billabongs and river channel environments provide dry season refugia for this species. This species contributes to the biodiversity of the site. Freshwater crocodiles are endemic to northern Australia (Western Australia, Northern Territory and Queensland). Considering their distribution and the proportion of suitable habitat within the Ramsar site, it is likely that the site supports >1%, however, this is currently a knowledge gap.
CHORDATA / REPTILIA	<i>Crocodylus porosus</i>	☐	☒	☐	☒	☒	☐	☐	☐	15000		25	LC	☒	☐	Nationally listed (EPBC Act) - migratory	The permanent billabongs and river channel environments provide dry season refugia for this species. This species contributes to the biodiversity of the site. The NT population is estimated at 60,000 individuals (NT Government). Kakadu is estimated to contain approximately 15,000 saltwater crocodiles (S. Ward pers. comm. 2009), which is greater than 1% of the population.
CHORDATA / MAMMALIA	<i>Dasyurus hallucatus</i>	☒	☐	☐	☐	☐	☐	☐	☐				EN	☐	☐	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed threatened species. Note this species is unlikely to be wetland dependent, but may use wetland habitats and/or feed on wetland species. In Kakadu, its preferred habitat includes riparian areas with flowing water.
CHORDATA / MAMMALIA	<i>Dugong dugon</i>	☒	☐	☐	☐	☐	☐	☐	☐				VU	☒	☐	Nationally listed (EPBC Act) - migratory	Internationally listed wetland dependent threatened species.
CHORDATA /	<i>Egglestonichthys ulbubuniti</i>	☒	☐	☐	☐	☐	☐	☐	☐				EN	☐	☐		Internationally listed wetland dependent threatened species. This species is only recorded in Kakadu estuaries, and contributes to the biodiversity of the site.
CHORDATA / REPTILIA	<i>Eretmochelys imbricata</i>	☒	☒	☐	☐	☐	☐	☐	☐				CR	☒	☒	Nationally listed (EPBC Act) - vulnerable	Nationally and internationally listed wetland dependent threatened species. This species may use intertidal areas within the site as feeding habitat.
ARTHROPODA / INSECTA	<i>Hemigomphus magela</i>	☐	☐	☐	☐	☒	☐	☐	☐				NT	☐	☐		This species of dragonfly is endemic to Northern Territory, Australia, where it inhabits streams.
CHORDATA / REPTILIA	<i>Lepidochelys olivacea</i>	☒	☒	☐	☐	☐	☐	☐	☐				VU	☒	☒	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed wetland dependent threatened species. This species may use intertidal areas within the site as feeding habitat.
ARTHROPODA / INSECTA	<i>Lithosticta macra</i>	☒	☐	☐	☐	☒	☐	☐	☐				VU	☐	☐		This species of damselfly is endemic to Arnhem Land in Northern Territory, where it inhabits streams and rivers. It contributes to the biodiversity of the site.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA / REPTILIA	<i>Natator depressus</i>	☒	☒	☐	☐	☐	☐	☐	☐				DD	☒	☐	Nationally listed (EPBC Act) - vulnerable	Nationally listed wetland dependent threatened species. Field Island provides critical nesting habitat for this species.
CHORDATA / AMPHIBIA	<i>Uperoleia arenicola</i>	☐	☐	☐	☐	☒	☐	☐	☐				LC	☐	☐		The site supports the only known population of this species, which is endemic to the Northern Territory.
CHORDATA / MAMMALIA	<i>Xeromys myoides</i>	☒	☐	☐	☐	☐	☐	☐	☐				VU	☒	☐	Nationally listed (EPBC Act) - vulnerable	Nationally and internationally listed wetland dependent threatened species. The water mouse appears to utilise both intertidal and freshwater habitats
Fish, Mollusc and Crustacea																	
CHORDATA / ACTINOPTERYGII	<i>Anguilla bicolor</i>	☐	☐	☐	☐	☐	☐	☒	☐				NT	☐	☐		Diadromous species that spends a large portion of its lifecycle in fresh and saltwater with varying degrees of flexibility. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ELASMOBRANCHII	<i>Anoxypristis cuspidata</i>	☒	☐	☐	☐	☐	☐	☐	☐				CR	☒	☒	Nationally listed (EPBC Act) - migratory	Internationally listed wetland dependent threatened species.
CHORDATA / ELASMOBRANCHII	<i>Carcharhinus leucas</i>	☒	☐	☐	☐	☐	☐	☒	☐				VU	☐	☐		Internationally listed wetland dependent threatened species. Mostly estuarine or marine species that is known to move into and live in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Craterocephalus marianae</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Endemic freshwater fish that completes its lifecycle within the Kakadu escarpment region. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Eugnathogobius stictos</i>	☒	☐	☐	☐	☒	☐	☒	☐				EN	☐	☐		Internationally listed wetland dependent threatened species. This species is endemic to the East Alligator River estuary, and contributes to the biodiversity of the site, including the diversity of fish fauna.
CHORDATA / ELASMOBRANCHII	<i>Glyphis garricki</i>	☒	☐	☐	☒	☐	☐	☐	☐	3		1	VU	☐	☐	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed wetland dependent threatened species. It is inferred that the total population size of this species is estimated to be 250 mature individuals (Ward & Larson 2006a). Based on this, the 1% threshold is 3 individuals. As this species is known from three localities within the Ramsar site, it is assumed this threshold is exceeded.
CHORDATA / ELASMOBRANCHII	<i>Glyphis glyphis</i>	☒	☐	☐	☒	☐	☐	☐	☐	3		1	VU	☐	☐	Nationally listed (EPBC Act) - critically endangered	Nationally and internationally listed wetland dependent threatened species. It is inferred that the total population size of this species is estimated to be 250 mature individuals (see Ward and Larson 2006b). Therefore, the 1% threshold is exceeded within the Ramsar site.
CHORDATA / ACTINOPTERYGII	<i>Hephaestus fuliginosus</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Obligate freshwater fish that completes its lifecycle in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Hypseleotris barrawayi</i>	☐	☐	☐	☐	☐	☐	☒	☐				NT	☐	☐		Endemic freshwater fish that completes its lifecycle within the Kakadu escarpment region. This species contributes to the diversity of fish fauna at the site.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA / ACTINOPTERYGII	<i>Lates calcarifer</i>	☐	☒	☐	☐	☐	☐	☒	☒				LC	☐	☐		This species is catadromous, migrating from freshwater habitats to coastal areas early in the wet season to breed, as barramundi eggs and larvae require saltwater. The site provides an important migratory pathway for this species. This species spawns in inshore waters, and spends its juvenile stage in shallow nearshore waters, particularly around mangroves, saltmarsh and seagrass habitats. Information on specific spawning habitats within the site is a knowledge gap. Barramundi represents a key traditional food species for the Traditional Owners of the site and has other cultural values.
CHORDATA / ACTINOPTERYGII	<i>Leiopotherapon unicolor</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Obligate freshwater fish that completes its lifecycle in freshwater. This species contributes to the diversity of fish fauna at the site.
ARTHROPODA / MALACOSTRACA	<i>Leptopalaemon gibbosus</i>	☒	☐	☐	☐	☒	☐	☐	☐				VU	☐	☐		Internationally listed wetland dependent threatened species. This species is endemic to Kakadu National Park and inhabits small headwater streams. It contributes to the biodiversity of the site.
ARTHROPODA / MALACOSTRACA	<i>Leptopalaemon glabrus</i>	☒	☐	☐	☐	☒	☐	☐	☐				CR	☐	☐		Internationally listed wetland dependent threatened species. This species is endemic and has only been recorded in a stretch (2 km) of a seasonally flowing stream (surviving in pools in the dry season). It contributes to the biodiversity of the site.
ARTHROPODA / MALACOSTRACA	<i>Leptopalaemon magelensis</i>	☒	☐	☐	☐	☒	☐	☐	☐				VU	☐	☐		Internationally listed wetland dependent threatened species. This species is endemic and is known from a single headwater stream. It contributes to the biodiversity of the site.
CHORDATA / ACTINOPTERYGII	<i>Megalops cyprinoides</i>	☐	☐	☐	☐	☐	☐	☒	☐				DD	☐	☐		Diadromous species that spends a large portion of its lifecycle in fresh and saltwater with varying degrees of flexibility. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Melanotaenia exquisita</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Endemic freshwater fish that completes its lifecycle within the Kakadu escarpment region. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Neoarius graeffei</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Mostly estuarine or marine species that is known to move into and live in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Neoarius leptaspis</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Mostly estuarine or marine species that is known to move into and live in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Netuma proxima</i>	☐	☐	☐	☐	☐	☐	☒	☐					☐	☐		Mostly estuarine or marine species that is known to move into and live in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Pingalla midgleyi</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Endemic freshwater fish that completes its lifecycle within the Kakadu escarpment region. This species contributes to the diversity of fish fauna at the site.
CHORDATA / ACTINOPTERYGII	<i>Polydactylus macrochir</i>	☐	☐	☐	☐	☐	☐	☐	☒					☐	☐		This species spawns in inshore waters, and spends its juvenile stage in shallow nearshore waters, particularly around mangroves, saltmarsh and seagrass habitats. Information on specific spawning habitats within the site is a knowledge gap.
CHORDATA / ELASMOBRANCHII	<i>Pristis clavata</i>	☒	☐	☐	☐	☐	☐	☐	☐				CR	☒	☒	Nationally listed (EPBC Act) - vulnerable	Nationally and internationally listed wetland dependent threatened species.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA/ ELASMOBRANCHII	<i>Pristis pristis</i>	☒	☐	☐	☐	☐	☐	☒	☐				CR	☒	☒	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed wetland dependent threatened species. Mostly estuarine or marine species that is known to move into and live in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA/ ACTINOPTERYGII	<i>Pseudomugil tenellus</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Obligate freshwater fish that completes its lifecycle in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA/ ACTINOPTERYGII	<i>Syncomistes butleri</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Obligate freshwater fish that completes its lifecycle in freshwater. This species contributes to the diversity of fish fauna at the site.
CHORDATA/ ACTINOPTERYGII	<i>Toxotes chatareus</i>	☐	☐	☐	☐	☐	☐	☒	☐				LC	☐	☐		Eurhyaline species capable of maintaining populations in both fresh and estuarine waters. This species contributes to the diversity of fish fauna at the site.
Birds																	
CHORDATA/ AVES	<i>Anas gracilis</i>	☐	☐	☒	☐	☐	☐	☐	☐	50000	2006	2.5	LC	☐	☐		The 1% threshold for this species is 20,000 birds (Wetlands International 2006). Peak abundance for the floodplains of the Alligator Rivers Region was estimated to be 50,000 birds (Morton et al 1990b).
CHORDATA/ AVES	<i>Anas superciliosa rogersi</i>	☐	☐	☒	☐	☐	☐	☐	☐	50000	2006	5		☐	☐		The 1% threshold for this species is 10,000 birds (Wetlands International 2006). Peak abundance for the flood plains of the Alligator Rivers Region was estimated to be 50,000 birds (Morton et al.1990b).
CHORDATA/ AVES	<i>Anseranas semipalmata</i>	☐	☒	☒	☐	☐	☒	☐	☐	300000	1991	15	LC	☐	☐		The site provides a dry season refuge, and supports breeding aggregations. The 1% threshold for this species is 20,000 birds (Wetlands International 2006). Annual population counts in have been recorded in excess of 300,000 birds (BMT WBM (2010a).
CHORDATA/ AVES	<i>Calidris acuminata</i>	☒	☐	☒	☐	☐	☐	☐	☐	4900	2008	5.76	VU	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory.	Nationally and internationally listed wetland dependent threatened species. The EAAFPCSR1 1% threshold for this species is 850 birds. There are site counts of 4,900 birds (Chatto 2003a) and 3,000 birds (Chatto 2003a).
CHORDATA/ AVES	<i>Calidris canutus</i>	☒	☒	☐	☐	☐	☐	☐	☐				NT	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory.	Nationally listed wetland dependent threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.
CHORDATA/ AVES	<i>Calidris ferruginea</i>	☒	☒	☐	☐	☐	☐	☐	☐				VU	☐	☐	Nationally listed (EPBC Act) - critically endangered, migratory.	Nationally listed wetland dependent threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.
CHORDATA/ AVES	<i>Calidris tenuirostris</i>	☒	☒	☐	☐	☐	☐	☐	☐				EN	☐	☒	Nationally listed (EPBC Act) - vulnerable, migratory.	Nationally listed wetland dependent threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.
CHORDATA/ AVES	<i>Charadrius leschenaultii</i>	☒	☒	☐	☐	☐	☐	☐	☐				LC	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory	Nationally listed threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA/AVES	<i>Charadrius mongolus</i>	☒	☒	☐	☐	☐	☐	☐	☐				EN	☐	☐	Nationally listed (EPBC Act) - endangered, migratory	Nationally and internationally listed threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season. The site may support 1% of the population of this species (Chatto 2003a). This is a knowledge gap.
CHORDATA/AVES	<i>Dendrocygna arcuata</i>	☐	☒	☒	☐	☐	☐	☐	☐	400000	2006	40	LC	☐	☐		The site provides a dry season refuge for this species. The 1% threshold for this species is 10,000 birds (Wetlands International 2006). Peak abundance (highest monthly mean for period 1981-1984) for the flood plains of the Alligator Rivers Region was estimated to be 400,000 birds (Morton et al. 1990b).
CHORDATA/AVES	<i>Dendrocygna eytoni</i>	☐	☐	☒	☐	☐	☐	☐	☐	70000		7	LC	☐	☐		The 1% threshold for this species is 10,000 birds (Wetlands International 2006). Peak abundance (highest monthly mean for period 1981-1984) for the flood plains of the Alligator Rivers Region was estimated to be 70,000 birds (Morton et al 1990b).
CHORDATA/AVES	<i>Ephippiorhynchus asiaticus</i>	☐	☐	☒	☐	☐	☐	☐	☐	1800	2006	6	LC	☐	☐		The 1% threshold for this species is 300 birds (Wetlands International 2006). Aerial counts and ground counts measured the maximum population at about 1,800 birds (Morton et al 1993).
CHORDATA/AVES	<i>Epthianura crocea tunneyi</i>	☒	☐	☐	☐	☒	☐	☐	☐					☐	☐	Nationally listed (EPBC Act) - endangered	Nationally listed threatened species. This species is likely to use habitats associated with wetlands such as floodplains, and aggregates around refugial waterholes. It is endemic to the Northern Territory and restricted to a small geographic area from the Adelaide River to East Alligator River.
CHORDATA/AVES	<i>Erythrotriorchis radiatus</i>	☒	☐	☐	☐	☐	☐	☐	☐				EN	☐	☐	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed threatened species. This species may not be wetland dependent, but prefers forest and woodland habitats with a mosaic of vegetation types, large prey populations (birds), and permanent water.
CHORDATA/AVES	<i>Erythrura gouldiae</i>	☒	☐	☐	☐	☐	☐	☐	☐					☐	☐	Nationally listed (EPBC Act) - endangered	Nationally listed threatened species. This species congregates in large flocks around waterholes when coming to drink.
CHORDATA/AVES	<i>Grus rubicunda</i>	☐	☐	☒	☐	☐	☐	☐	☐	24000	2006	24	LC	☐	☐		The 1% threshold for this species is 1000 birds (Wetlands International 2006). Peak abundance (highest monthly mean for period 1981-1984) for the flood plains of the Alligator Rivers Region was estimated to be 24,000 birds (Morton et al. 1993).
CHORDATA/AVES	<i>Limicola falcinellus</i>	☐	☒	☐	☐	☒	☐	☐	☐					☐	☐	Nationally listed (EPBC Act) - migratory	This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season. The site may support 1% of the population of this species (Chatto 2003a). This is a knowledge gap.
CHORDATA/AVES	<i>Limnodromus semipalmatus</i>	☐	☒	☐	☐	☐	☐	☐	☐				NT	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory	This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.
CHORDATA/AVES	<i>Limosa lapponica baueri</i>	☒	☐	☐	☐	☐	☐	☐	☐					☐	☐	Nationally listed (EPBC Act) - endangered, migratory	Nationally listed threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA/ AVES	<i>Numenius madagascariensis</i>	☒	☒	☐	☐	☐	☐	☐	☐				EN	☐	☒	Nationally listed (EPBC Act) - critically endangered, migratory.	Nationally and internationally listed wetland dependent threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season.
CHORDATA/ AVES	<i>Numenius minutus</i>	☐	☐	☒	☐	☐	☐	☐	☐	17380	1987	9.6	LC	☐	☐		This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season. The WPES 1% threshold for this species is 1800 birds. Approximately 300,000 little curlew were reported passing through the wetlands in Kakadu NP during October in the early 1980's (Morton et al 1991). 50,000 little curlew in Kakadu NP in the late dry seasons of 1987, 1988 and 1989 (Bamford 1990). This included a single day count of 17,380 birds from 6 roosts (on 11/11/1987); and 10,000 birds from a single roost on Boggy Plains (on 19/10/1987).
CHORDATA/ AVES	<i>Pluvialis squatarola</i>	☒	☒	☐	☐	☒	☐	☐	☐				VU	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory	Nationally and internationally listed threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season. The site may support 1% of the population of this species (Chatto 2003a). This is a knowledge gap.
CHORDATA/ AVES	<i>Rostratula australis</i>	☒	☐	☐	☐	☐	☐	☐	☐				EN	☐	☐	Nationally listed (EPBC Act) - endangered	Nationally and internationally listed wetland dependent threatened species.
CHORDATA/ AVES	<i>Stiltia isabella</i>	☐	☐	☒	☐	☐	☐	☐	☐	1391	1990	1.3	LC	☐	☐		The WPES 1% threshold for this species is 1,000. Site records include 30,000 birds (Morton et al. 1991) and 1,391 birds (Bamford 1990). The more conservative site records have been used for this estimate.
CHORDATA/ AVES	<i>Tadorna radjah</i>	☐	☐	☒	☐	☐	☐	☐	☐	30000	1990	20		☐	☐		A 1% population threshold has not been calculated for this species (Wetlands International 2006) though Gamett and Crowley (2000) estimate an Australian population of 100,000 breeding adults (150,000 individuals), though population may be smaller (Wetlands International 2006). Morton et al. (1990b) estimated peak abundance (highest monthly mean for period 1981-1984) for the flood plains of the Alligator Rivers Region to be 30,000 birds. Based on the information above, it is likely this site supports more than 1% of the population of this species.
CHORDATA/ AVES	<i>Tringa stagnatilis</i>	☐	☐	☒	☐	☐	☐	☐	☐	1600	2008	1.45	LC	☐	☐		EAAFP CSR 1 estimates that the 1% population threshold for the flyway is 1,300 birds. Site records include 1,600 birds (Chatto 2003a).
CHORDATA/ AVES	<i>Tyto novaehollandiae kimberli</i>	☒	☐	☐	☐	☐	☐	☐	☐					☐	☐	Nationally listed (EPBC Act) - vulnerable	Nationally listed threatened species. This species may not be wetland dependent, but has been recorded using wetland habitats such as Melaleuca swamps and along the margins of mangroves.
CHORDATA/ AVES	<i>Xenus cinereus</i>	☒	☒	☐	☐	☒	☐	☐	☐				LC	☐	☐	Nationally listed (EPBC Act) - vulnerable, migratory	Nationally listed threatened species. This species migrates internationally through the East Asian-Australasian Flyway, and depends on habitat within Australia for resting and feeding during its non-breeding season. The site may support 1% of the population of this species (Chatto 2003a). This is a knowledge gap.

1) Percentage of the total biogeographic population at the site

Population estimates for shorebird species in the table above are based on Hansen et al (2016) East Asian-Australasian flyway population estimates and/or Wetlands International population estimates.

Note that there have been little or no recent waterbird surveys. This is because the coastal areas of the site are not easily accessible. Data used here has relied on records from Chatto (2000s), Morton (1990s) and Bamford (1980s) and NT DENR (2018).

Northern quoll (*Dasyurus hallucatus*) is a threatened species that is not likely to be wetland dependent, but uses wetland habitat. In Kakadu National Park, northern quoll habitat includes open forest and woodlands on plains dominated by *Eucalyptus tetrodonta*, *E. minata* and *E. tectiflora*, open woodland on low rocky hills dominated by *E. setosa* and *E. bleeseri* and riparian areas with flowing water dominated by *Melaleuca viridiflora* and *Pandanus spiralis* (Oakwood 2000).

The Kakadu goby (*Egglestonichthys ulbubuniti*) is endemic to Kakadu estuaries and is unique in having a number of rays in the lower half of the pectoral fin free from connecting membranes. (This species is not currently listed in the GBIF). (Bray 2018)

3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Arnhem Plateau Sandstone Shrubland Complex	☒	Community in upper catchment of Kakadu wetlands	Nationally listed (EPBC Act) - endangered

Optional text box to provide further information

The Arnhem Plateau Sandstone Shrubland Complex ecological community is a type of shrubland that contains a naturally large proportion of obligate-seeder taxa (Russell-Smith et al., 2009). The tree canopy of the ecological community is naturally absent to sparse, comprising scattered emergent tree species of variable composition and with a canopy cover typically less than 5%. The mid layer of vegetation is the dominant and most diverse vegetation layer of the ecological community. It is dominated by a diversity of medium to tall evergreen (Gill and Groves, 1981) sclerophyllous shrubs, many of which are obligate seeders. The ground layer consists of a diverse range of low shrubs, herbs and graminoids. Perennial grasses such as hummock (e.g. *Triodia* spp.) and mat-forming (e.g. *Micraira* spp.) grasses may be interspersed amongst the ground layer vegetation or become dominant in patches.

The main identified threats to the Arnhem Plateau Sandstone Shrubland Complex are: inappropriate fire regimes and invasion by weeds and feral animals (TSSC, 2011). The main potential threat to the Arnhem Plateau Sandstone Shrubland Complex is climate change.

More information on this ecological community is available on the Australian Government website (<https://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=111>).

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The critical components of the Kakadu Ramsar site are:

- mangroves: are floristically diverse and provide nursery habitat for juvenile and spawning fish, as well as waterbird colonies. They extend along the coastline and into estuarine areas of the major rivers.
- Melaleuca forests: occur along the margins of floodplains, billabongs and rivers and offer roosting and nesting sites for waterbird colonies.
- palustrine wetlands and billabongs: provide areas of deep water habitat for aquatic flora and fauna, as well as dry season refuge for many of the aquatic fauna species that inhabit the floodplains. These include a diversity of freshwater fish, a large number of waterbirds, threatened species (e.g. pig-nosed turtles) and a number of traditional food species.
- waterfalls, seeps and waterholes: these habitats support endemic aquatic invertebrates.
- populations of migratory and resident waterbirds: feed on aquatic invertebrates, vertebrates such as fish and frogs, and plant material, and are important to ecosystem functioning, particularly for nutrient cycling processes. Waterbirds are important for plant recruitment, dispersing seeds through endozoochory (ingestion of seeds) or epizoochory (e.g. transportation of seeds in mud stuck to feet).
- populations of freshwater fish: abundance and diversity of freshwater fish at the site is high in an Australian context (Allen et al. 2002). Freshwater fish can be found in all aquatic habitats, including floodplain wetlands, billabongs, creeks, rivers and permanent pools at creek headwaters in the escarpment. Freshwater fish are a key dietary component for the top aquatic predators and contribute to controlling ecosystem processes and biological interactions.
- populations of freshwater and saltwater crocodiles: crocodiles are top order predators and are important to ecosystem functioning, e.g., nutrient cycling. The diet of juvenile saltwater crocodiles largely consists of crabs and prawns, as well as fish, amphibians and small reptiles. Larger adults also consume fauna such as birds, kangaroos, wild pigs and sharks (NTG undated). Freshwater crocodiles diet mainly comprises fish and crustaceans (e.g., crayfish and shrimp), but also includes amphibians, small reptiles, birds and insects (Cogger 2000).
- populations of threatened species including: sharks, pig-nosed turtle, yellow chat: maintenance of populations of threatened species is important in contributing to the maintenance of global biodiversity.
- locally endemic invertebrate species: the site supports an endemic family of shrimps (Kakaducarididae), a genus of isopod (Eophreatoicus; Family Phreatoicidea), and at least one species of mayfly from the family Leptophlebiidae.

Regional endemic species (including fish, aquatic plants and invertebrates) are considered as supporting components.

Critical processes within the site include:

- fluvial hydrology
- fire regimes
- waterbird breeding
- flatback turtle breeding

Hydrology and fire are considered key drivers of the ecosystems and species. Fire is an important management tool within the site and aims to mimic traditional cool season patch burning to promote regeneration and encourage biodiversity.

Waterbird breeding and flatback turtle nesting are essential to ensure long-term persistence of populations that help determine the ecological character of the site.

The Ramsar site contributes to a number of critical services including:

- the maintenance of global biodiversity: by supporting critical habitat for globally and nationally threatened wetland-dependent species and locally endemic species;
- the maintenance of fish habitat and fish abundance, which in turn provide traditional food sources and other cultural values;
- contemporary living culture through traditional owners continuing to occupy the site and undertake cultural and land management practices.

A detailed description of the ecological character of the site is provided in BMT WBM (2010a).

4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
B: Marine subtidal aquatic beds (Underwater vegetation)	Seagrass around Field Island	0		
D: Rocky marine shores	examples include West Alligator Head, Barron Island, Field Island	0		
E: Sand, shingle or pebble shores	examples include northern shores of Field Island, western shoreline of Barron Island, West Alligator Head	0		Representative
F: Estuarine waters	examples include estuaries of Wildman River, East Alligator River, West Alligator River, South Alligator River	0		Representative
G: Intertidal mud, sand or salt flats	intertidal mud flats extend along the coastline	3	15354	Representative
H: Intertidal marshes	saltmarsh/ samphire communities	0		Representative
I: Intertidal forested wetlands	examples include mangrove communities fringing Wildman, West Alligator and South Alligator Rivers	4	11127	Representative
J: Coastal brackish / saline lagoons		Representative		
K: Coastal freshwater lagoons				

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> L: Permanent inland deltas	inland delta at Yellow Water	0		Representative
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks	examples include Coirwong, Barramundi, Jim Jim and Nourlangie Creeks	0		Representative
Fresh water > Flowing water >> N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks	examples include Jim Jim falls, Twin falls	0		
Fresh water > Lakes and pools >> O: Permanent freshwater lakes	examples include Chirracarwoo Lagoon, Leichhart Billabong, Yellow Water	0		Representative
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools	examples include Couramoul waterhole	0		Representative
Fresh water > Marshes on inorganic soils >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils	sedge &/or grass dominated meadows such as Mamukala	1	159969	Representative
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands	examples include Melaleuca swamp forest at Marndoki, Big Swamp and Boggy Plain	2	85735	Representative
Fresh water > Flowing water >> Y: Permanent Freshwater springs; oases	examples include Benbunga Spring and Coonbanrora Spring	0		

(ECD) Habitat connectivity

Maintenance of the seasonal flooding regime is critical to habitat connectivity and the maintenance of aquatic foodwebs and wetland ecosystem functioning.

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Acacia equisetifolia</i>	This species is nationally listed as threatened but is unlikely to be wetland dependent.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Barringtonia acutangula</i>	This species is used by the Traditional Owners of the site.
TRACHEOPHYTA/CYCADOPSIDA	<i>Cycas armstrongii</i>	Internationally listed threatened species, but may not be wetland-dependent.
TRACHEOPHYTA/LILIOPSIDA	<i>Eleocharis dulcis</i>	This species is used by the Traditional Owners of the site.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Hibiscus brennani</i>	This species is an endemic, nationally listed threatened species, but may not be wetland-dependent.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Melaleuca cajuputi</i>	This is a dominant species in Melaleuca swamps
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Melaleuca leucadendra</i>	This is a dominant species in Melaleuca swamps
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Melaleuca viridiflora</i>	This is a dominant species in Melaleuca swamps
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Melochia corchorifolia</i>	This species is used by the Traditional Owners of the site.
TRACHEOPHYTA/LILIOPSIDA	<i>Monochoria hastata</i>	This species is listed as threatened in the Northern Territory
TRACHEOPHYTA/LILIOPSIDA	<i>Phragmites karka</i>	This species is used by the Traditional Owners of the site.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Ternstroemia cherryi</i>	This species is restricted to the Arnhem Plateau in the NT

Invasive alien plant species

Phylum	Scientific name	Impacts	Changes at RIS update
TRACHEOPHYTA/LILIOPSIDA	<i>Andropogon gayanus</i>	Actual (minor impacts)	No change
TRACHEOPHYTA/LILIOPSIDA	<i>Brachiaria mutica</i>	Actual (major impacts)	increase
TRACHEOPHYTA/LILIOPSIDA	<i>Cenchrus polystachios</i>	Actual (major impacts)	increase
TRACHEOPHYTA/LILIOPSIDA	<i>Hymenachne amplexicaulis</i>	Actual (major impacts)	increase
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Jatropha gossypifolia</i>	Actual (major impacts)	No change
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Mimosa pigra</i>	Actual (major impacts)	No change
TRACHEOPHYTA/POLYPODIOPSIDA	<i>Salvinia molesta</i>	Actual (major impacts)	increase

Optional text box to provide further information

The Ramsar site supports a large diversity of flora species, including endemic species. Other noteworthy flora species include:

- Mangrove communities: which are noteworthy in terms of their high productivity. They provide important habitat for fauna species (e.g. birds, fish), provide protection against coastal erosion, create a buffer against extreme weather events, and contribute to coastal water quality through sediment trapping.
- Melaleuca forests: are noteworthy in terms of the structural complexity that they add to the floodplain (e.g. for roosting and nesting), they provide seasonal food resources (e.g. nectar for birds during the wet season), and they are highly productive and contribute a large amount of material to the detrital/ debris turnover cycle on the floodplain (Finlayson et al. 1993). Dominant species in Melaleuca swamps include, but are not limited to, broad-leafed paperbark (*Melaleuca viridiflora*), cajuput paperbark (*Melaleuca cajuputi*) and white paperbark (*Melaleuca leucadendra*).
- Some flora species have a variety of customary uses such as medicine, craft, weapons and utensils. For example, common swamp reed (*Phragmites vallatoria*) is used for fighting specks or goose spears; Arnhem Land bamboo (*Bambusa arnhemica*) is used for spears, craft and didgeridoos; bark from chocolate weed (*Melochia corchorifolia*) is used for making string; and bark from freshwater mangrove (*Barringtonia acutangula*) is used for poisoning fish (Cowie et al. 2000).
- A number of flora species are noteworthy in terms of their inclusion in the traditional diet, with the most abundant sources of carbohydrate including waterlilies (e.g. *Nymphaea* spp.) and water chestnut (e.g. *Eleocharis dulcis*) (Cowie et al. 2000).

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/REPTILIA	<i>Acanthophis hawkei</i>				This is a nationally and internationally listed threatened species that occurs at the site but is unlikely to be wetland dependent.
CHORDATA/MAMMALIA	<i>Antechinus bellus</i>				This is a nationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/REPTILIA	<i>Bellatorias obiri</i>				This is a nationally and internationally listed threatened species that occurs at the site, but is unlikely to be wetland dependent.
CHORDATA/MAMMALIA	<i>Conilurus penicillatus</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Doryrhina stenotis</i>				This is an internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Hipposideros inornatus</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Isoodon auratus</i>				This is a nationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/REPTILIA	<i>Lucasium occultum</i>				This is a nationally and internationally listed threatened species that occurs at the site but is unlikely to be wetland dependent.
CHORDATA/MAMMALIA	<i>Macroderma gigas</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Notomys aquilo</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Petrogale concinna</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Phascogale pirata</i>				This is a nationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Pseudomys calabyi</i>				This is an internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/MAMMALIA	<i>Saccolaimus saccolaimus nudicluniat</i>				This is a nationally listed threatened species that occurs at the site, but not wetland dependent.

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/MAMMALIA	<i>Zyomys maini</i>				This is a nationally and internationally listed threatened species that occurs at the site, but not wetland dependent.
CHORDATA/AVES	<i>Amytornis woodwardi</i>				This is a nationally and internationally listed threatened species that occurs at the site but is unlikely to be wetland dependent.
CHORDATA/AVES	<i>Falco hypoleucos</i>				This is a nationally listed threatened species that occurs at the site, but is unlikely to be wetland dependent.
CHORDATA/AVES	<i>Falcunculus frontatus whitei</i>				This is a nationally listed threatened species that occurs at the site, but is unlikely to be wetland dependent.
CHORDATA/AVES	<i>Geophaps smithii</i>				The subspecies <i>Geophaps smithii blaaui</i> is listed nationally as threatened (vulnerable). Note this species may not be wetland dependent.

Invasive alien animal species

Phylum	Scientific name	Impacts	Changes at RIS update
CHORDATA/MAMMALIA	<i>Bubalus bubalis</i>	Actual (major impacts)	increase
CHORDATA/MAMMALIA	<i>Felis catus</i>	Actual (major impacts)	No change
CHORDATA/AMPHIBIA	<i>Rhinella marina</i>	Actual (major impacts)	No change
CHORDATA/MAMMALIA	<i>Sus scrofa</i>	Actual (major impacts)	increase

Optional text box to provide further information

Noteworthy fauna include:

- Waterbirds are noteworthy as the sites supports large numbers of waterbirds, as well as significant numbers of individual bird species. Waterbirds feed on aquatic invertebrates, vertebrates (for example, fish, frogs) and plant material, and are important to ecosystem functioning, particularly with respect to wetland nutrient cycling processes and intensive turning over of floodplain soils.
- Saltwater crocodile (*Crocodylus porosus*) and freshwater crocodile (*C. johnstoni*) are noteworthy in terms of their ecological roles as top predators within the site, as well as in terms of their iconic and cultural values (e.g. totemic, dietary).
- Barramundi (*Lates calcarifer*) is noteworthy in terms of recreational fishing within the site being based almost entirely on this species. It is a very important indigenous dietary item.
- A number of small mammals, which are declining across the country, can be found in Kakadu National Park, including the nationally listed northern quoll (*Dasyurus hallucatus*), brush-tailed rabbit-rat (*Conilurus penicillatus*), and Arnhem Rock-rat (*Zyomys maini*).
- Fauna species that are noteworthy in terms of their cultural values. Some species form a key part of the diet of the Traditional Owners of the site. In particular, magpie geese (*Anseranas semipalmata*) birds and eggs are regarded as one of the most important animal staples in the traditional diet (Lucas and Russell-Smith 1993). Other major sources of animal protein include freshwater mussels, fish, turtles, and crocodile eggs.

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Aw: Tropical savanna (Winter dry season)

Kakadu has 6 distinct seasons:

- Kudjewk – monsoon season (December to March, temperatures range from 24°C – 34°C)
 - Bangkereng – windy storm season (April, 23°C – 34°C)
 - Yekke – cooler (but still humid) season (May to mid-June, 21°C – 33°C)
 - Wurrkeng – cold weather season (mid-June to mid-August, 17°C – 32°C)
 - Kurrung – hot dry weather (mid-August to mid-October, 23°C – 37°C)
 - Kunumeleng – pre-monsoon storm season (mid-October to late December, 24°C – 37°C)
- (Parks Australia 2023)

According to BoM and CSIRO (2020a), projections for Australia's NRM regions (Monsoonal North West), average temperatures will continue to increase in all seasons, with more hot days and warm spells projected. Changes to rainfall are possible but unclear. There is likely to be increased intensity of extreme rainfall events. Fewer but more intense tropical cyclones are projected. Mean sea level will continue to rise and height of extreme sea-level events will also increase.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

Entire river basin ☒

Upper part of river basin ☐

Middle part of river basin ☐

Lower part of river basin ☐

More than one river basin ☐

Not in river basin ☐

Coastal ☐

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The site includes large parts of the catchments of the East Alligator, West Alligator and South Alligator Rivers and Wildman River, and parts of the Mary River and Daly River catchments.

4.4.3 - Soil

Mineral ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Organic ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

No available information ☐

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ☐ No ☒

Please provide further information on the soil (optional)

Erosion of younger rocks, including the sandstones forming the Arnhem Land escarpment, has resulted in a deep soil cover over much of the region, with soils that are strongly leached and relatively infertile (Press et al. 1995).

The extensive coastal and riverine alluvial plains are of recent origin, often dating back no more than a few thousand years (Press et al. 1995). Deeper saline sediments underlying the floodplains are overlain by brackish, organic-rich, acidic soils, which support the freshwater wetlands (Press et al. 1995).

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually seasonal, ephemeral or intermittent water present	
Usually permanent water present	

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from precipitation	☒	No change

Water destination

Presence?	Changes at RIS update
Feeds groundwater	No change
Marine	No change

Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

Tidal - The interplay between tidal hydrodynamics and seasonal patterns in hydrology influences the ecology of coastal lowland habitats within the site. In the South Alligator River (the largest river within the site), wet season flows are sufficient to flush the tidal channel over almost the full length of the estuary. As flows recede, tidal processes tend to dominate, with the tidal component extending from the mouth to just downstream of Yellow Water, a distance of about 105 km (Petty et al. 2005; BMT WBM 2010a). The maximum range in tide height at the mouth is 5.8 m, with only minor attenuation inland (BMT WBM 2010a).

Fluvial - The Ramsar site contains expansive floodplains, as well as estuarine channels with silty levee banks. It also contains the upper reaches of rivers on the plateau, which typically follow clefts in the sandstone escarpment, before broadening into braided alluvial channels in the low sandy plains, which distribute their water widely over the expansive floodplains. The estuary is typically a relatively narrow tidal channel cutting through the floodplains with silty levee banks.

Wet season flows may be a broad sheet of water, kilometres in width, flowing across the floodplains. By the end of the dry season, perennial creeks flow at a much reduced level and annual creeks are generally dry except for billabongs within the creek bed (Petty et al. 2008). High evaporation during the dry season quickly reduces water levels within isolated waterbodies, although permanent billabongs and the main channels of larger creeks and rivers provide dry season refugia for many wetland flora and fauna species.

Groundwater - Groundwater hydrology has a strong influence on some wetlands, particularly groundwater-dependent freshwater springs in the north-eastern of the Stone Country between the South and East Alligator Rivers, some of which contain endemic invertebrate species.

(ECD) Connectivity of surface waters and of groundwater

It is likely that the contribution of groundwater to surface water flows is minor for the mid and lower reaches of Kakadu's major river systems and/or is highly localised in relation to major billabongs.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Significant accretion or deposition of sediments occurs on the site ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Significant transportation of sediments occurs on or through the site ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Sediment regime is highly variable, either seasonally or inter-annually ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Sediment regime unknown ☐

Please provide further information on sediment (optional):

Because the flooding tide has higher peak velocities than the ebbing tide, a much higher sediment load can be transported during floods. This sediment is deposited along the tidal channels, gradually forming mud levees at the upper estuary. These levees contain the channel, prevent further saltwater penetration and impound freshwater in large wetlands (Petty et al. 2005). During the course of the dry season, the salinity of these wetlands increases, and in some areas becomes quite brackish.

Some notable morphological features formed in recent times (several thousand years) include palaeo-channels, dendritic channels and billabongs, which generally form in palaeo-channels. Palaeo-channels are remnant tidal channels that were active during the mid-Holocene, and have been partially or completely infilled by deposition of tidal sediments (Woodroffe and Mulrennan 1993). They are apparent as billabongs, freshwater swamps and wetlands.

(ECD) Water turbidity and colour

Turbidity ranges from 3-63 NTU across Kakadu gauging stations (BMT WBM 2010a)

(ECD) Water temperature

Water temperature ranges from 26-32 °C across Kakadu gauging stations (BMT WBM 2010a)

4.4.6 - Water pH

Acid (pH<5.5) ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Unknown ☒

Please provide further information on pH (optional):

Freshwater streams within the Ramsar site are fairly acidic, primarily due to the presence of acid sulfate soils. pH ranges from 5.1 to 7.4 across Kakadu gauging stations (BMT WBM 2010a).

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Mixohaline (brackish)/Mixosaline (0.5-30 g/l) ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Euhaline/Eusaline (30-40 g/l) ☒

(Update) Changes at RIS update No change ☒ Increase ☐ Decrease ☐ Unknown ☐

Unknown ☐

Please provide further information on salinity (optional):

There is little water quality data for estuarine reaches of the site, however it is known that turbidity, salinity and pH can show marked variations over time in response to seasonal changes in hydrology.

4.4.8 - Dissolved or suspended nutrients in water

Unknown ☒

Please provide further information on dissolved or suspended nutrients (optional):

Billabong waters generally have elevated conductivity, turbidity, nutrient and chlorophyll a concentrations at the end of the dry season, with a significant improvement in water quality at commencement of the wet season due to flushing of the billabongs (Hart and McGregor 1980).

(ECD) Water conductivity

Conductivity is highly variable, ranging from 14-246 $\mu\text{S cm}^{-1}$ across freshwater parts of the site (BMT WBM 2010a)

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological

characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar ☒ ii) significantly different ☐ site itself:

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium
Wetland non-food products	Reeds and fibre	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Hazard reduction	Flood control, flood storage	Medium
Hazard reduction	Coastal shoreline and river bank stabilization and storm protection	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High
Spiritual and inspirational	Spiritual and religious values	High
Spiritual and inspirational	Cultural heritage (historical and archaeological)	High
Scientific and educational	Major scientific study site	High
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	High

Optional text box to provide further information

The Ramsar site provides a number of critical services including:

- the maintenance of global biodiversity - the site supports a number of nationally and/or internationally listed threatened species.
- the maintenance of fish diversity and abundance - Kakadu provides a range of habitat types supporting different life-history functions of different fish species (and their prey, for example, bony bream, mullet, rainbowfish etc.). Hydraulic (flow regimes) and bio-physical habitat conditions control patterns in fish community structure across a range of spatial and temporal scales. Connectivity/ linkages between different habitat types and patches vary seasonally.
- contemporary living culture - the Traditional Owners undertake cultural and land management practices, follow customary law and uphold traditions established over thousands of years of continuous occupation. Maintenance of the living culture is dependent on factors such as land ownership, access to land and resources, transmission of cultural knowledge and practices to younger generations, protection of sites and documentation of cultural heritage.

Supporting services provided by the site include:

- recreation and tourism - Tourists are attracted to Kakadu National Park for its wildlife and magnificent landscapes, as well as for its ancient cultural heritage including impressive galleries of Aboriginal rock art.
- scientific research and education - Kakadu provides a wide range of habitats that present opportunities for scientific research activities. In particular, the near-natural nature of wetlands within the Ramsar site makes it an ideal 'reference' or 'benchmark' location for scientific research.
- historic cultural heritage - Kakadu National Park is home to the world's oldest living culture. Kakadu has exceptional cultural traditions as well as records of former civilizations that have influenced the ecological character of the wetlands.
- biological products - include traditional foods (termed 'bush tucker') as well as materials that are useful for various purposes. A large proportion of the bush tucker species originate from floodplains and billabongs. While the diet and customs of Aboriginal communities may have changed since European colonisation, many traditional biological products are still sourced from these ecosystems. Biological products also have a variety of customary uses such as medicine, craft, weapons and utensils.

Within the site: 100 000s

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ☒ No ☐ Unknown ☐

Where economic studies or assessments of economic valuation have been undertaken at the site, it would be helpful to provide information on where the results of such studies may be located (e.g. website links, citation of published literature):

Some studies have been undertaken, particularly related to tourism, e.g.:

CRC for Sustainable Tourism, 2007 – Economic Contribution of Kakadu National Park to Tourism in the Northern Territory -

https://sustain.pata.org/wp-content/uploads/2015/02/Tremblay_KakaduNP.pdf

Economic values of the Northern Territory marine and coastal environments, 2018 -

http://www.robertcostanza.com/wp-content/uploads/2019/07/2018_T_Crossman_etal_NT_marine_values.pdf

Kakadu Environmental Accounts are being prepared by the Department of Agriculture, Water and the Environment in 2020 under the National Environmental Accounting Strategy and Action Plan (2018)

<https://eea.environment.gov.au/about/national-strategy-and-action-plan>

4.5.2 - Social and cultural values

- i) the site provides 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 ☒

Description if applicable

Sustainable Use: Traditional owners have used the land within the National Park and its resources for many tens of thousands of years and continue traditional use of areas in the park for non-commercial hunting, fishing and food gathering in accordance with the relevant laws (DNP 2016). Plant and animal resources that are harvested are used for food, art and craft, medicine and other customs.

Threat Management: Traditional knowledge has assisted Parks Australia in monitoring and managing threats to the Ramsar site, thereby maintaining the ecological character. For example, traditional fire management created a mosaic of unburnt, early-burnt and late-burnt patches of vegetation and over many thousands of years supported traditional use of resources and helped to create the landscapes and diversity of native species found in the park today. However, following the arrival of non-Aboriginal people and the introduction of pastoralism, traditional patterns of burning country were severely disrupted and large, hot, destructive dry-season wildfires became more common. Since the proclamation of the park, fire management has attempted to mimic traditional burning practices and engage traditional owners to carry out burning, look after country and to protect people and park assets (DNP 2016).

- ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☒

Description if applicable

Traditional owners of the Ramsar site display exceptional cultural traditions. In particular, traditional land management is critical in maintaining cultural heritage as Traditional Ecological Knowledge is transferred (e.g. harvesting techniques, species' ecology), traditional languages are used, other cultural practices are undertaken. A large assemblage of archaeological material (e.g. rock art, shell mounds, stone tools, dugout canoes, fish traps) has provided detailed insight into the hunter-gatherer lifestyle over many thousands of years (Brockwell et al. 1995). The floodplain of the South Alligator River alone contains an assemblage of possibly 25 000 000 artefacts (Meehan et al. 1985).

- iii) the ecological character of the wetland depends on its interaction ☒
with local communities or indigenous peoples

Description if applicable

Traditional owners hold a substantial body of traditional ecological knowledge which includes topics such as fire, species, ecosystems, ecological processes and seasons. A joint management arrangement ensures traditional owners are consulted, and have the opportunity to participate in decision-making and implementing this knowledge in the management of Kakadu National Park, thereby continuing to influence the ecological character of the wetlands. In particular, fire management is an important interaction that influences the ecological character of the Ramsar site. The vegetation communities and suites of fauna present are dependent on the traditional burning practices established by traditional owners over a long period of time (Russell-Smith 1995), and traditional owners work with Parks Australia to develop fire management strategies and annual burning plans that replicate traditional burning (Director of National Parks 2016).

- iv) 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

Description if applicable

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 (Brockwell et al. 1995, Brockwell et al. 2001).

The Rainbow Serpent is a creation ancestor of the Indigenous people. She created waterholes and rock passages in the Kakadu landscape, helping form the habitat for all beings. She is also a part of the seasonal changes and the lifecycle of plants and animals. Many of the stories and sites associated with the Rainbow Serpent are linked to water and the places where she travelled across country creating features in the landscape. They believe she is still there today, resting, and should never be disturbed. See: <https://parksaustralia.gov.au/kakadu/discover/culture/stories/>

4.6 - Ecological processes

(ECD) Primary production	Seasonal variation in water levels drives major changes in habitat availability, primary productivity and the abundance and composition of consumer communities.
(ECD) Nutrient cycling	Information on nutrient cycling processes within Kakadu National Park is scarce. Annual burning may deplete nitrogen reserves in Kakadu National Park savannas.
(ECD) Carbon cycling	The seasonal hydrological cycle (a reliable flood-pulse) driving the supply of carbon and nutrients that support food webs.
(ECD) Animal reproductive productivity	The site is important for waterbird breeding (within the mangroves and on the floodplains), and flatback turtle nesting (e.g. on Field Island).
(ECD) Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc.	Fire generates new life, and by using it as a land management tool the Bininj / Mungguy support a diverse habitat, providing food and shelter for wildlife and reducing the chance of wildfires burning out of control during the hotter drier months.
(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	Freshwater fish are a key dietary component for the top aquatic predators at the site (e.g. crocodiles, barramundi, fish eating birds)
(ECD) Notable aspects concerning animal and plant dispersal	Within the site fish migrate seasonally, moving out of dry season refuges at the start of the wet season to colonise creeks, floodplains and billabongs.
(ECD) Notable aspects concerning migration	The site is used by birds migrating through the EAA flyway. Migratory bird numbers increase from July-September (linked to migration from northern breeding grounds), then disperse south over the wet season. Birds migrate north from May-July.
(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity	Climate change increases the importance of appropriate fire management. Low intensity fires during the wet and early dry season create a barrier for severe and large fires that can burn out of control in the late dry season.

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	☒	☐

Other

Category	Within the Ramsar Site	In the surrounding area
Commoners/customary rights	☒	☒

Provide further information on the land tenure / ownership regime (optional):

Kakadu is a living cultural landscape. It has been home to Aboriginal people for more than 65,000 years. The Bininj/Mungguy are the Traditional Owners of these lands and waters.

Since the late 1970s Kakadu's Traditional Owners have leased their land to the Director of National Parks (Parks Australia) to be jointly managed as a national park. More information about the ownership and management of Kakadu National Park is available on the Parks Australia website: <https://parksaustralia.gov.au/kakadu/>

Kakadu is also dual-listed on the UNESCO World Heritage List for its outstanding natural and cultural values.

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Director of National Parks
GPO Box 3090
Canberra, ACT 2601

Provide the name and/or title of the person or people with responsibility for the wetland:

Director of National Parks

Postal address:

Director of National Parks
GPO Box 3090
Canberra, ACT 2601

E-mail address:

KakaduNP@dcceew.gov.au

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Tourism and recreation areas		Low impact	☒	No change	☒	No change

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Mining and quarrying			☐		☒	

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Low impact	Low impact	☒	No change	☒	No change

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Low impact	Low impact	☒	No change	☒	No change

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fire and fire suppression	High impact	High impact	☒	No change	☒	No change

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Invasive non-native/ alien species	Medium impact	Medium impact	☒	No change	☒	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Industrial and military effluents			☒		☒	

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Habitat shifting and alteration	Low impact	Medium impact	☒	No change	☒	No change
Unspecified			☒		☒	

Please describe any other threats (optional):

Exotic flora: Weeds are problematic within the site and require ongoing-management, particularly within freshwater habitats. Species that are historically and/or currently notable include mimosa (*Mimosa pigra*), salvinia (*Salvinia molesta*), para grass (*Urochloa mutica*), olive hymenachne (*Hymenachne amplexicaulis*) and mission grass (*Pennisetum polystachion*).

Exotic fauna: Feral animal species have had a notable presence in the past, and require continued management intervention. Particularly notable species include Asian swamp buffalo (*Bubalus bubalis*), which cause excessive habitat damage and cane toads (*Rhinella marina*), which are toxic to most native fauna. Other non-native species include feral pigs and cats.

Damage to archaeological resources: Anthropogenic impacts include theft, vandalism and inappropriate development and tourism, while natural processes including vegetation growth, feral animals, fire damage, tidal inundation and storms.

Living resource extraction: Over-harvesting of traditional resources (e.g. magpie geese, turtles) by not following cultural protocols or practices can impact on the populations of these species and cause social tensions.

b) In the surrounding area: The above-described factors that potentially affect the ecological character within the site are also applicable to the surrounding area. In addition, mining activities directly adjacent to the site are also a potential threat. The main threat from mining activities is dispersion of mine waste waters to streams and shallow wetlands, including contamination with radioactive substances (Supervising Scientist 2002).

Climate change is likely to be a threat to the site in future. As the global climate continues to warm, the region (Monsoonal north west) is projected to experience further increases in air temperatures across all seasons, with more hot days. Natural climate variability will remain the major driver of rainfall changes (and drought) in the next few decades but increased intensity of extreme rainfall events is projected. Mean sea level will continue to rise and height of extreme sea-level events will also increase. Fewer but more intense tropical cyclones are projected with medium confidence. Changes the frequency of fire are not expected (Climate Change In Australia, Monsoonal north west Projection Summaries).

5.2.2 - Legal conservation status

Global legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
World Heritage site	Kakadu National Park	https://www.dcceew.gov.au/parks-heritage/heritage/places/world/kakadu#resources	whole

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
National Park	Kakadu National Park	https://parksaustralia.gov.au/kakadu/	whole

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Kakadu savannah	https://datazone.birdlife.org/site/factsheet/kakadu-savanna-iba-australia	partly

5.2.3 - IUCN protected areas categories (2008)

Ia Strict Nature Reserve ☐Ib Wilderness Area: protected area managed mainly for wilderness protection ☐II National Park: protected area managed mainly for ecosystem protection and recreation ☒III Natural Monument: protected area managed mainly for conservation of specific natural features ☐IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☐V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☐

VI Managed Resource Protected Area: protected area managed mainly ☐ for the sustainable use of natural ecosystems

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Improvement of water quality	Implemented
Habitat manipulation/enhancement	Implemented

Species

Measures	Status
Threatened/rare species management programmes	Implemented
Control of invasive alien plants	Implemented
Control of invasive alien animals	Implemented

Human Activities

Measures	Status
Regulation/management of wastes	Implemented
Livestock management/exclusion (excluding fisheries)	Implemented
Fisheries management/regulation	Implemented
Harvest controls/poaching enforcement	Implemented
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Implemented
Research	Implemented

Other:

The Ramsar site is wholly within the boundaries of Kakadu National Park, and the Ramsar site has also been listed as a World Heritage Site. The site is protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), for a number of matters of national environmental significance (including World Heritage, Ramsar, listed threatened species and ecological communities, and migratory species). Any activity likely to result in significant impacts to these protected matters must be referred and assessed in accordance with provisions of the EPBC Act.

The Park is managed in accordance with the Kakadu National Park Management Plan 2016-2026 (<https://www.dcceew.gov.au/parks-heritage/national-parks/kakadu-national-park/publications/kakadu-national-park-management-plan-2016-2026>)

Parks Australia is signatory to a Memorandum of Understanding with the Secretariat of the Pacific Regional Environment Programme (SPREP) to facilitate cooperative nature conservation programs in the South Pacific, which has particular ramifications for marine species that occur in the park.

Japan-Australia, China-Australia and Republic of Korea-Australia Migratory Bird Agreements are applicable to species that use the site (JAMBA, CAMBA, ROKAMBA), as is the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). Kakadu National Park is also a Flyway Network Site under the East Asian-Australasian Flyway Partnership.

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes ☐ No ☒

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ☐ No ☒

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

A variety of information and activities relating to communications, education and public awareness are available within the Ramsar site. These include visitor centres and information bays; an official visitor guide as well as other books and brochures; interpretative signage at locations such as observation hides and along walking tracks; and organised informative tours.

Of particular relevance, the Bowali Visitor Centre features displays, audio-visual presentations and information staff, the Marrawuddie Gallery of Aboriginal fine arts (located at the Bowali Visitor Centre), and the Warradjan Aboriginal Cultural Centre displays detailed information about local Aboriginal culture

URL of site-related webpage (if relevant): <https://parksaustralia.gov.au/kakadu/>

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Yes, there is a plan

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Plant community	Implemented
Plant species	Implemented
Animal species (please specify)	Implemented

- The Environmental Research Institute of the Supervising Scientist undertakes a range of scientific monitoring and research activities into the environmental impact of uranium mining in the Alligators Rivers Region of Kakadu National Park.
- Several universities have had a long-standing interest in the site, especially Charles Darwin University (CDU).
- The Cooperative Research Centre for Tropical Savannas Management (Tropical Savannas CRC) that was established and supported by the Australian Government.
- Tropical Rivers and Coastal Knowledge (TRaCK), a research consortium led by CDU, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Griffith University, Land and Water Australia, the North Australia Indigenous Land and Sea Management Alliance and the University of Western Australia.
- National Environmental Science Program (NESP) projects include:
 - investigating feral cats in small mammal decline
 - Kakadu National Park's Threatened Species
 - Indigenous NRM
 - fish movement and sensitivity to contaminated mine water
 - managing savanna riparian zones
 - prioritising threatened species in Northern Australia
 - rehabilitated mine sites and top end animals
 - tree water use and sensitivity to contaminated mine water

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

This RIS update has been prepared based on the Ecological Character Description for the Site, Kakadu National Park Management Plan 2016-2026, past Ramsar Information Sheets, and information provided by Parks Australia, See the bibliographic reference list (attached under Section 6.1.2 vi).

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<1 file(s) uploaded>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<1 file(s) uploaded>

vi. other published literature

<1 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Plumed whistling ducks at Yellow Water, Kakadu National Park ([Jenny Tonkins](#), 27-08-2017)



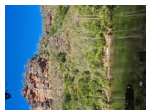
Water lilies at Yellow Water Billabong, Kakadu National Park ([Jim Mollison](#), 18-07-2012)



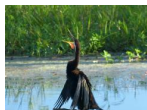
Yellow Water, Kakadu National Park ([Jenny Tonkins](#), 27-08-2017)



Yellow Water, Kakadu National Park ([Jenny Tonkins](#), 27-08-2017)



Kakadu National Park ([Correa Driscoll](#), 29-06-2022)



Yellow Waters, Kakadu National Park Ramsar Site ([Jim Mollison](#), 18-07-2012)

6.1.4 - Designation letter and related data

Designation letter

<3 file(s) uploaded>

Date of Designation 1980-06-12