



Ramsar Information Sheet

Published on 14 April 2023

Australia

Caryapundy Swamp



Designation date	17 December 2021
Site number	2520
Coordinates	29°15'29"S 142°31'39"E
Area	70 176,24 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

The Caryapundy Swamp is within the Narriearra Caryapundy Swamp National Park. Narriearra Caryapundy Swamp National Park is located in the remote channel country of the Bulloo Overflow in far north-western NSW, known as 'corner country'. The park is 46 km east of Tibooburra, 170 km north of White Cliffs and 320 km west of Bourke. The Dog Fence (or Dingo Fence) forms the northern boundary of the park on the NSW/Queensland border. The National Park lies approximately 10 km east of Sturt National Park and shares part of its southern boundary with Pindera Downs Aboriginal Area. Land to the east of the park is used for broad-acre sheep and cattle grazing.

It is in arid zone of Australia, and includes a large area of the terminal basin of the endorheic Bulloo River. There are extensive large and diverse temporary wetlands, floodplains, and creeks. The wetlands are ephemeral and dry most of the time with rare and very irregular wet phases in an endorheic, terminal drainage basin.

Caryapundy Swamp meets Ramsar listing criteria 1, 2, 3 and 4:

1: the Site forms a substantial part of the large terminal basin in the Bulloo River which is a highly representative and relatively natural wetland area, supplied by a free-flowing river.

2: The Site provides habitat for threatened species listed nationally (under the EPBC Act) and/ or internationally (under the IUCN Redlist), including the grey falcon (*Falco hypoleucos*) and plains-wanderer (*Pedionomus torquatus*). It includes almost 90% of the available habitat for the nationally threatened Bulloo grey grasswren (*Amytornis barbatus barbatus*).

3: The Site supports an abundance and diversity waterbirds when there is flooding, with up to 52 different species recorded from the site.

4: the Site supports migratory shorebirds listed under the Environment Protection and Biodiversity Conservation Act 1999 and international treaties (JAMBA, CAMBA, ROKAMBA, and the Convention on Migratory Species). It provides a refuge for waterbirds and other fauna during dry periods and/or as other wetlands dry; and supports waterbird breeding.

The Site may also qualify under criteria 5 and 7, but more data is required to support this. The site will be reassessed against these criteria when additional information is available.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency	NSW Department of Planning, Industry and Environment
Postal address	Department of Planning, Industry and Environment Locked Bag 5022 Parramatta NSW 2124 Australia

National Ramsar Administrative Authority

Institution/agency	Department of Climate Change, Energy, the Environment and Water (DCCEEW)
Postal address	GPO Box 3090 Canberra ACT 2601 Australia

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

From year	2010
To year	2021

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Caryapundy Swamp
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2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps	0
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Boundaries description

Caryapundy Swamp is approximately 50 km east-north-east of Tibooburra in far north-western New South Wales, Australia. The wetland and waterways of Caryapundy Swamp and the Bulloo Overflow that are within the Narriearra Caryapundy Swamp National Park boundary form the Ramsar site. This does not include the entire area of the national park. The area of the wetland is 70,176.24 ha, measuring a maximum length of 47.26 km from north to south, and a maximum width of 37.4 km east to west.

The Site is restricted in extent by the boundaries of the Narriearra Caryapundy Swamp National Park, which borders Queensland to the north (delineated by the dingo fence), pastoral stations to the east, west, and south, except for Pindera Downs Aboriginal Area which borders a section of the park to the south. The Site map provides details of the spatial boundaries, which is irregularly shaped, following flood extent boundaries (derived from Crossman and Li 2015). The drier, arid areas of the National Park are excluded from the Site boundary. The blue areas of the attached map show the Site boundary, whilst the green lines represent the boundary of the National Park. Areas of private land are excluded from from the National Park and the Site boundary.

A detailed boundary description is included as additional information under section 6.1.2.

2.2.2 - General location

a) In which large administrative region does the site lie?	The Site lies within the Unincorporated Far West region of New South Wales
b) What is the nearest town or population centre?	Tibooburra (population 134 in 2016), is located 50 km WSW of Narriearra Caryapundy Swamp National Park

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):

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

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Other scheme (provide name below)	Lake Eyre Basin, Cooper Creek- Bulloo River
Freshwater Ecoregions of the World (FEOW)	Lake Eyre Basin

Other biogeographic regionalisation scheme

Other scheme used:
 Bureau of Meteorology (2012). Australian Hydrological Geospatial Fabric (Geofabric): Topographic Drainage Divisions and River Regions – Lake Eyre Basin Drainage Division, Cooper Creek- Bulloo River Region (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.

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

Beyond broad trends of highly pulsed and erratic water availability in the site, the hydrology of Caryapundy Swamp is relatively poorly understood. Volumes, timing, duration, and extent of flows, and the interactions between these factors have yet to be quantified, but are likely to underpin the ecological character of the site.

Other reasons

The entire Site sits within Narriearra Caryapundy National Park. Narriearra Caryapundy National Park sits within the representative large terminal drainage basin of the ephemeral and endorheic Bulloo River Catchment, which is in relatively natural condition, supplied by the free-flowing Bulloo River. Caryapundy Swamp fills from flows (and overflows) of the Bulloo River, while the southern swamps within the nominated area can also be intermittently filled from flows down Thompson and Mt Wood Creek (which branches off Thompson) and Twelve Mile Creek from the west, driven by local rainfall, all of which join within the Narriearra Caryapundy Swamp National Park.

The wetland includes seasonal/intermittent alkaline/brackish lakes, flats, and swamps, which become increasingly saline with evaporation, as well as some temporary creeks. As the terminal basin of an entire inland wetland system, Caryapundy Swamp is the characteristic hydrological feature of the catchment.

The Bulloo River Catchment sits within the Lake Eyre Basin Drainage Division (biogeographic region) and remains in a relatively natural state compared to most other inland river catchments in eastern Australia, due to limited development and diversion of highly pulsed and ephemeral water flows in the catchment. Maintenance of natural flows in the Bulloo River is critical for the conservation of the ecological character of the Site, due to the connectedness between the river, floodplains and wetlands of the Site. As such, upstream development of water infrastructure, increased water extraction and diversion present a substantial risk to the ecological character of the Site.

Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information

Caryapundy Swamp provides valuable habitat particularly for threatened wetland species, but also species which use inland wetlands intermittently. The size and diversity of the wetlands play a crucial role in supporting many species of plants and animals in the immediate and surrounding areas.

Since 2010, the Site has provided habitat for three fauna species that are listed as threatened nationally under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) or internationally under the IUCN Red List, including:

- Bulloo grey grasswren (*Amytornis barbatus barbatus*) (EPBC – endangered, IUCN – near threatened)
- curlew sandpiper (*Calidris ferruginea*) (EPBC – critically endangered, IUCN – near threatened)
- red knot (*Calidris canutus*) (EPBC – endangered, IUCN – near threatened)

There are records of two threatened species from the National Park that are likely to occur within the Site. These include:

- grey falcon (*Falco hypoleucos*) (EPBC – vulnerable, IUCN – vulnerable)
- plains-wanderer (*Pedionomus torquatus*) (EPBC – critically endangered, IUCN – critically endangered).

Criterion 3 : Biological diversity

Justification

Caryapundy Swamp contains a diversity of landforms and ecosystems, including temporary freshwater and saline wetlands, floodplains, coolabah-lined channels and creeks. These support a high level of biodiversity including species listed as threatened nationally and internationally.

Between January 2010 and November 2021, 133 native plant species and 118 native animal species were recorded within the Site, including: 100 birds (38 waterbirds), 4 mammals, and 11 reptiles. There is a lack of records for fish, frogs and invertebrates at the site. This is due to a lack of survey effort. It is likely the Site supports more species from these taxa than have been recorded to date, which will be tracked through future survey effort and updates to this document.

When inundated, the Bulloo Overflow supports large numbers of waterbirds, and is important for the breeding and conservation of waterbirds in arid Australia. Aerial surveys of the adjacent and connected Bulloo Overflow in 1990 recorded more than 100,000 waterbirds, including over 38,000 grey teal, over 29,000 pink-eared duck, and over 1,000 freckled duck (Kingsford et al. 1994). The site provides breeding and nonbreeding habitat for a number of waterbird species including: pink-eared duck, grey teal, black-tailed native-hen and brolga.

Internationally migratory species that traverse the East Asian-Australasian flyway use the site. Species recently observed in the Site include Caspian tern, curlew sandpiper, gull-billed tern, marsh sandpiper, red knot, ruddy turnstone, and sharp-tailed sandpiper. The common greenshank has been recorded at the site historically and is likely to still occur.

Under the NSW Biodiversity Conservation Act 2016, 12 bird species, 1 reptile, and 1 plant species which were recently recorded in Caryapundy Swamp are listed as threatened at the state level. These species include the black falcon (*Falco subniger*), flock bronzewing (*Phaps histrionica*), redthroat (*Pyrrholaemus brunneus*), blacksoil whipsnake (*Demansia rimicola*), a saltbush (*Atriplex sturtii*) and others. These species contribute to the biodiversity of the site in the regional context.

While not recorded within the Site, it is likely 5 frog species recorded in the National Park may occur in the Site, including the crucifix frog (*Notaden bennettii*), Suddell's frog (*Neobatrachus sudellae*), wrinkled toadlet (*Uperoleia rugosa*), knife-footed frog (*Cyclorana cultripes*), and water-holding frog (*Cyclorana platycephala*). Further surveys are required to confirm this.

State-listed floodplain plants including cow vine (*Ipomea polymorpha*) and bindweed (*Convolvulus tedmoorei*) have been recorded in the National Park, and may occur within the Site. Lignum (*Duma florulenta*), swamp canegrass (*Eragrostis australasica*), nitre goosefoot (*Chenopodium nitrariaceum*), and golden goosefoot (*Chenopodium auricomum*) provide important swamp habitat for wetland fauna.

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

Caryapundy Swamp plays a crucial role for the survival of many species of plants and animals in the immediate and surrounding areas. Nomadic waterbird species known to move long distances, such as the grey teal and pink-eared duck, have been recorded at the site, likely using it to survive periods of drought and to breed. Narriearra Caryapundy Swamp National Park supports up to 52 waterbird species including the brolga, freckled duck and curlew sandpiper.

Several waterbird species have been recorded breeding in the connected wetlands of the Bulloo Overflow, including the black swan, black-tailed native-hen, Eurasian coot, Australasian swamphen, red-kneed dotterel, and red-necked avocet (Kingsford et al. 1994). These species and others are likely to breed within the Site.

Caryapundy Swamp acts as an important 'stop-over' Site, particularly for migratory shorebirds including: curlew sandpiper, marsh sandpiper, red knot, ruddy turnstone, and sharp-tailed sandpiper. These species are listed as migratory under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and international migratory bird agreements. In general, inland wetlands in Australia provide suitable habitat for brief periods every few years, depending on flooding and rainfall cycles. However, they are still of major importance to migratory shorebirds, which need to refuel at these sites along their migratory route. It is understood that recruitment to populations is enhanced during years when inland wetland habitats are available to support feeding opportunities for internationally migratory waterbirds.

Caryapundy Swamp acts as a refuge for waterbirds and other fauna during dry periods and as other wetlands dry. Waterbirds tend to congregate at inland wetlands, often in response to flooding conditions. As these areas dry out, waterbirds and other wetland dependent species will move to areas which hold water for the longest period of time. As the site is in the terminal basin of the Bulloo River Catchment, it acts as a drought refuge for wetland species – when water is present the broader area can support over 100,000 waterbirds (Kingsford et al. 1994). The wetlands within the site fill primarily from flows down the Bulloo River which can fill Caryapundy Swamp, and intermittently the southern wetlands can also fill from flows in the creeks from the west. After large floods and/or rainfall, water can remain in the site for over a year.

Many waterbirds in western NSW, breed on temporary waters and then move to more permanent waters during dry periods. The wetlands of Caryapundy Swamp are an important source of water for other species such as arid desert birds. An estimated 40% of Australian desert land birds are thought to be water dependent. The letter-winged kite (*Elanus scriptus*) is near threatened (IUCN) and may use the Site. Significant rainfall in the arid zone leads to surges in rodent numbers, which leads to irruptions of letter-winged kites.

Optional text box to provide further information

End year 1990

Only one comprehensive waterbird survey has been undertaken in the area of Narriearra Caryapundy Swamp National Park in 1990. This waterbird survey (Kingsford et al. 1994) was conducted over the Bulloo Overflow immediately south-east of the Narriearra Caryapundy Swamp National Park, and provided an indicative estimate of waterbird numbers in the area of over 100,000 across 18 species (in June 1990).

It is likely that this site meets criterion 5. However, this is a knowledge gap, as data is not currently available to demonstrate the site "regularly" supports more than 20,000 waterbirds. This should be investigated for future RIS updates.

Optional text box to provide further information

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>Atriplex sturtii</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	State listed (NSW BC Act) - endangered	State listed threatened species, that contributes to the biodiversity of the site.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Chenopodium auricomum</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Provides critical wetland habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Chenopodium nitrariaceum</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Provides critical wetland habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Convolvulus tedmoorei</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	State listed (NSW BC Act) - endangered	State listed threatened species, that contributes to the biodiversity of the site.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Duma florulenta</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Provides critical wetland habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA / LILIOPSIDA	<i>Eragrostis australasica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Provides critical wetland habitat that contributes to the biodiversity of the site.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Ipomoea polymorpha</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	State listed (NSW BC Act) - endangered	State listed threatened species, that contributes to the biodiversity of the site.

Plant species listed in table 3.2 include three species listed as threatened in NSW. These are found on floodplains and contribute to the biodiversity of the site (a saltbush, bindweed, and cow vine). Four highly important habitat-forming wetland plants (lignum, golden goosefoot and nitre goosefoot, and swamp canegrass) are found across the wetlands of the Ramsar 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																	
CHORDATA / REPTILIA	<i>Demansia rimicola</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species is listed as threatened at the state level. It contributes to the biodiversity of the site. In NSW the species is only known from the Sturt National Park and Tibooburra area (including the Ramsar site). It prefers open forests, woodlands or shrubland that have plenty of grass and shrubs to live amongst.
CHORDATA / AMPHIBIA	<i>Neobatrachus sudelli</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		This species is likely to occur within the Ramsar site and contributes to the biodiversity of the region. Further studies are required. Sudell's frog is an Australian species of burrowing frog. It is able to spend years underground to avoid drought conditions. It is found throughout the central Australian deserts in a band encompassing Western Australia, South Australia, New South Wales and Queensland.

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/ AMPHIBIA	<i>Notaden bennettii</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		This species is likely to occur within the Ramsar site and contributes to the biodiversity of the region. Further studies are required. The crucifix toad is a ground-dwelling frog which inhabits the arid areas of western New South Wales and Queensland. It is able to survive dry periods by burrowing and reducing activity. Upon very heavy rain, it will emerge from the ground, and begin breeding in temporary ponds. It is one of the few Australian frogs to display aposematism.
CHORDATA/ AMPHIBIA	<i>Ranoidea cultripes</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		This species is likely to occur within the Ramsar site and contributes to the biodiversity of the region. Further studies are required. The knife-footed frog is an Australian species of burrowing frog. It burrows underground and forms a cocoon while undergoing aestivation, a period of dormancy during dry periods. It emerges to the surface after heavy rain in large numbers to feed and breed in ponds, creeks, pools, roadside drainage ditches and temporary claypans.
CHORDATA/ AMPHIBIA	<i>Ranoidea platycephala</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		This species is likely to occur within the Ramsar site and contributes to the biodiversity of the region. Further studies are required. The water-holding frog is an Australian species of ground-dwelling frog with the ability to aestivate. It emerges after heavy rains to breed. It lays large amounts of spawn in still waters after floods.
CHORDATA/ AMPHIBIA	<i>Uperoleia rugosa</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		This species is likely to occur within the Ramsar site and contributes to the biodiversity of the region. Further studies are required. The wrinkled toadlet is an Australian species of small, ground-dwelling frog. It shelters in a burrow and emerges after heavy rains to breed in flooded grassland or in billabongs and slow-flowing streams.
Birds																	
CHORDATA/ AVES	<i>Amytornis barbatus barbatus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – endangered State listed (NSW BC Act) – endangered	Nationally listed threatened species (EPBC Act). This species contributes to the biodiversity of the site. The site provides core habitat (approximately 90% of the available habitat) for the Bulloo subspecies.
CHORDATA/ AVES	<i>Anas gracilis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species has been recorded in large numbers (>38,000) and contributes to the biodiversity of the site.
CHORDATA/ AVES	<i>Anas superciliosa</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site
CHORDATA/ AVES	<i>Ardea modesta</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/ AVES	<i>Ardea pacifica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site
CHORDATA/ AVES	<i>Arenaria interpres</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – migratory	This species uses the site for non-breeding habitat and as a stopover point during migration. It contributes to the biodiversity of the site.
CHORDATA/ AVES	<i>Cacatua leadbeateri</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species 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/AVES	<i>Calidris acuminata</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – migratory	This species uses the site for non-breeding habitat and as a stopover point during migration. It contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Calidris canutus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – endangered and migratory	This species uses the site for non-breeding habitat and as a stopover point during migration. It contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Calidris ferruginea</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – critically endangered and migratory State listed (NSW BC Act) – endangered	Nationally listed threatened species (EPBC Act). This species uses the site for non-breeding habitat and as a stopover point during migration. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Certhionyx variegatus</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species contributes to the biodiversity of the site
CHORDATA/AVES	<i>Charadrius ruficapillus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Chenonetta jubata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Chlidonias hybrida</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Circus assimilis</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Cygnus atratus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		This species likely breeds at the site. The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Egretta novaehollandiae</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Elanus scriptus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		This species breeds at the site. This species contributes to the biodiversity of the site
CHORDATA/AVES	<i>Euseyornis melanops</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Ephianura albifrons</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Erythrogonys cinctus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		This species breeds at the site. The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Falco hypoleucos</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – vulnerable State listed (NSW BC Act) – endangered	Nationally and internationally listed threatened species (EPBC Act and IUCN Red list). This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Falco subniger</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Gallinula ventralis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		This species breeds at the site. The site provides refuge for this species during drought. This species 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/AVES	<i>Gelochelidon nilotica</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – migratory	This species uses the site for non-breeding habitat and as a stopover point during migration. It contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Grus rubicunda</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Himantopus himantopus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Hydroprogne caspia</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – migratory	This species uses the site for non-breeding habitat and as a stopover point during migration. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Malacorhynchus membranaceus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species has been recorded in large numbers (>29,000). It contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Microcarbo melanoleucos</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Nycticorax caledonicus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Pedionomus torquatus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input type="checkbox"/>	<input type="checkbox"/>	Nationally listed (EPBC Act) – critically endangered State listed (NSW BC Act) – endangered	Nationally listed threatened species (EPBC). The site provides refuge for this species during drought.
CHORDATA/AVES	<i>Pelecanus conspicillatus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Phaps histrionica</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – endangered	This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Platalea flavipes</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Platalea regia</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Poliiocephalus poliocephalus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Porphyrio melanotus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		This species breeds at the site. The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Porzana fluminea</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Porzana pusilla</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Porzana tabuensis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Pyrrholaemus brunneus</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) – vulnerable	This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Recurvirostra novaehollandiae</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species 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/AVES	<i>Stictonetta naevosa</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	State listed (NSW BC Act) –vulnerable	The site provides refuge for this species during drought. This species has been recorded in large numbers (>1,000). It contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Stiltia isabella</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Tachybaptus novaehollandiae poliocephalus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Threskiornis molucca</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Threskiornis spinicollis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.
CHORDATA/AVES	<i>Vanellus miles</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		The site provides refuge for this species during drought. This species contributes to the biodiversity of the site.

1) Percentage of the total biogeographic population at the site

The Bulloo golden perch (*Macquaria* sp A ssp B) is endemic to the Bulloo River and proliferates in flood years. The Bulloo golden perch was recognised as being a separate species to Murray-Darling golden perch (*M. ambigua ambigua*) by Musyl & Keenan (1993), although it was not described. This species is restricted to the Bulloo River System. Bulloo golden perch are typically found in permanent and semi-permanent waterholes in the Bulloo River and its larger tributaries. Many aspects of their ecology are likely to be similar to Murray-Darling golden perch. Murray-Darling golden perch have been known to migrate up to 2,300km (1,400mi) (Reynolds 1983), one of the longest migrations recorded by any fully freshwater fish. It is likely that Bulloo golden perch make similar migrations, although of shorter distance because the rivers are shorter (Unmack 2003).

Caryapundy Swamp is likely to be a significant nursery habitat for the Bulloo golden perch, supporting recruitment in consecutive flood years.

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
Arid shrublands (chenopod sub-formation) - Riverine chenopod shrublands - chenopod low open shrubland: ephemeral partly	<input type="checkbox"/>	Arid/semi-arid shrublands dominated by chenopods across floodplains.	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
Semi-arid Floodplain Grasslands - Mitchell grass grassland: chenopod low open shrubland on floodplains in the semi-arid	<input type="checkbox"/>	Grasslands and low open chenopod shrublands on floodplains.	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
North-west Floodplain Woodlands: coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay	<input type="checkbox"/>	Wooded floodplain regions dominated by Coolabah canopy, with chenopod and grassy groundcover.	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	<input type="checkbox"/>	Structural and functional brackish/freshwater swamp vegetation	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
Golden goosefoot shrubland wetland in swamps of the arid and semi-arid (hot summer) zones	<input type="checkbox"/>	Structural and functional brackish/freshwater swamp vegetation	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
Nitre goosefoot shrubland wetland on clays of the inland floodplains	<input type="checkbox"/>	Structural and functional brackish/freshwater swamp vegetation	Provide critical habitat for wetland fauna on which the ecological character of the site is based.
Lignum shrubland wetland on floodplains and depressions of the Mulga Lands Bioregion and Channel Country Bioregion	<input type="checkbox"/>	Structural and functional brackish/freshwater swamp vegetation	Provide critical habitat for wetland fauna on which the ecological character of the site is based.

Optional text box to provide further information

Whilst not listed as threatened ecological communities under Australian legislation, the following communities contribute significantly to the ecological character of Caryapundy Swamp Ramsar site:

- Arid shrublands (chenopod sub-formation) - Riverine chenopod shrublands - chenopod low open shrubland: ephemeral partly derived forland saline wetland on occasionally flooded pale clay scalds in the NSW North Western Plains.
- Semi-arid Floodplain Grasslands - Mitchell grass grassland: chenopod low open shrubland on floodplains in the semi-arid (hot) and arid zones.
- North-west Floodplain Woodlands: coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains.

The following plant community types (NSW DPIE 2019) are considered critical components of the ecological character of the site in low-lying wetland areas, providing critical habitat for wetland fauna:

- Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- Golden goosefoot shrubland wetland in swamps of the arid and semi-arid (hot summer) zones
- Nitre goosefoot shrubland wetland on clays of the inland floodplains
- Lignum shrubland wetland on floodplains and depressions of the Mulga Lands Bioregion, Channel Country Bioregion in the arid and semi-arid (hot) climate zones
- Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion).

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

4.1 - Ecological character

The following ecosystem components, processes and services form the basis of the ecological character of the Caryapundy Swamp Ramsar Site:

- **Geomorphology and climate:** the site forms a substantial part of the large endorheic, terminal basin in the Bulloo River Catchment. The region features low topographic gradients and extreme climatic variability, including high evaporation, erratic floods, extended dry periods, and highly pulsed ecosystem dynamics.
- **Hydrological regime:** periodic inundation is required to maintain wetland habitats. The natural water regimes of drying and flooding are critical in these temporary wetlands as they determine the nature of species and community distribution. Biodiversity in the semi-arid area of Caryapundy Swamp is driven by unpredictable flooding and drying cycles, largely related to flows in the Bulloo River. This flooding and drying cycle affects water quality and the distribution and abundance of vegetation and fauna. The wetlands are shallow, with water retention subject to high evaporative loss (2,400 mm annually; BOM 2016) particularly in warmer months and is dependent on inflows and rainfall (typically <250 mm annually; BOM 2021).
- **Wetland type:** the wetlands of the Site are ephemeral and dry most of the time with rare and very irregular wet phases in an endorheic, terminal drainage basin. Vegetated swamps dominated by lignum (*Duma florulenta*), and nitre goosefoot (*Chenopodium nitriaceum*), and golden goosefoot (*Chenopodium auricomum*) provide critical foraging and breeding habitat for the Bulloo grey grasswren (*Amytornis barbatus barbatus*) and waterbirds.
- **Priority species:** The site supports globally and nationally threatened species including the Bulloo grey grasswren (*Amytornis barbatus barbatus*), curlew sandpiper (*Calidris ferruginea*), grey falcon (*Falco hypoleucos*), red knot (*Calidris canutus*), and plains-wanderer (*Pedionomus torquatus*). It provides non-breeding habitat for migratory shorebirds listed under the international treaties JAMBA, CAMBA, ROKAMBA, and the Convention on Migratory Species.
- **Waterbird abundance:** large numbers of waterbirds use the site (at least 38 species), with 52 different species recorded within the National Park to date.
- **Refugia:** the site provides refuge for waterbirds and other fauna when other wetlands in the region are dry, including wetlands and vegetated depressions historically subject to limited grazing activity.
- **Breeding:** the area supports waterbird breeding, for species such as the black swan (*Cygnus atratus*), black-tailed native-hen (*Tribonyx ventralis*), Eurasian coot (*Fulica atra*), Australasian swamphen (*Porphyrio melanotus*), red-kneed dotterel (*Erythrogonys cinctus*), and red-necked avocet (*Recurvirostra novaehollandiae*), and likely many more.

In 2020, the Site became listed as a national park under NSW state legislation, increasing the potential for monitoring and research in data deficient areas relating to the ecological character of the site. Recently developed satellite imaging capability may be employed in the future to address some of the hydrological and vegetation monitoring requirements.

Climate change is predicted to exacerbate existing threats to the natural and cultural values of the wetland (BOM 2018).

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

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 >> N: Seasonal/intermittent/irregular rivers/streams/creeks		2	830.1	
Fresh water > Lakes and pools >> P: Seasonal/intermittent freshwater lakes	Caryapundy Swamp (small sections)	3	185.7	
Saline, brackish or alkaline water > Lakes >> R: Seasonal/intermittent saline/brackish/alkaline lakes and flats	Caryapundy Swamp, Bulloo Overflow	1	68244.2	Representative

Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type
6: Water storage areas/Reservoirs	Some ground tanks remain	4	

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Arid native shrublands	639

(ECD) Habitat connectivity

Narriearra Caryapundy Swamp National Park represents a highly connected and functional wetland system. Flows transport nutrients and biota from upstream into Caryapundy Swamp and through to the Bulloo Overflow.

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Atriplex nummularia</i>	Distributed across the site, but exists in healthy condition having been spared heavy grazing pressure in many areas.

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Heliotropium supinum</i>	Potential
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Rumex vesicarius</i>	Potential

Optional text box to provide further information

Fundamental wetland habitat forming plant species and NSW threatened species have been listed in Table 3.2. However, areas of large Old man saltbush (*Atriplex nummularia*) persist across the site in healthy condition having been spared heavy grazing pressure in many areas (Marshall 2021), and likely provide important habitat for many fauna species.

Only two species of environmental weed are present on the proposed Ramsar site, while 21 weeds were found across the National Park (Marshall 2021). However, weeds tend to be highly localised and concentrated in disturbed areas (e.g., artificial waterpoints, homesteads), and local management should control these species within both the Ramsar site and the National Park more broadly (Marshall 2021).

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>Emydura macquarii</i>				

Invasive alien animal species

Phylum	Scientific name	Impacts
CHORDATA/MAMMALIA	<i>Oryctolagus cuniculus</i>	Actual (minor impacts)
CHORDATA/MAMMALIA	<i>Sus scrofa</i>	Actual (minor impacts)
CHORDATA/MAMMALIA	<i>Vulpes vulpes</i>	Actual (minor impacts)

Optional text box to provide further information

Noteworthy animal species have been listed in table 3.3 as they contributed to the ecological character of the Site. While there were no records of freshwater turtle *Emydura macquarii* from the site, the occurrence of this species is highly likely at the Site. All animal and plant species recorded at the site are listed in the ECD (attached under further information).

Invasive animals recorded on the Site include only three mammals: European fox (*Vulpes vulpes*), rabbit (*Oryctolagus cuniculus*), and feral pig (*Sus scrofa*). Under the EPBC Act and the Biodiversity Conservation Act 2016 all these species are listed to cause key threatening processes:

- Predation by European foxes;
- Predation, habitat degradation, competition and disease transmission by feral pigs;
- Competition and grazing by feral European rabbits.

Pigs and rabbits have been recorded in low densities within the National Park in recent times (Marshall 2021). However, further species likely to occur in the Site (though yet to be recorded) include: feral cats (*Felis catus*), feral goats (*Capra hircus*), and feral horses (*Equus ferus*), all of which are also listed to cause key threatening processes. Updates on the presence and impact of these species will be provided in future RIS updates.

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
B: Dry climate	BWh: Subtropical desert (Low-latitude desert)

Caryapundy Swamp is in one of the driest regions of NSW. Mean annual rainfall is 225 mm, with slightly higher averages in summer (22-29 mm/month) and lower in winter (11-16 mm/month). Average minimum monthly temperatures range from 6°C in winter to 21°C in summer. Average monthly maximum temperatures range from 19°C in winter to 35°C in summer (BoM 2021).

According to BOM and CSIRO (2020) projections for Australia's NRM Regions (Rangelands North), 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.

Reduced rainfall and higher than average temperature could be a major threat to Caryapundy Swamp, reducing the frequency and extent of inundation at the wetland. Broadscale trends of increased drying, and the increased severity, frequency, and duration of drought conditions could be a major threat.

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.

Caryapundy Swamp is situated in the terminal basin of the Bulloo River Catchment.

4.4.3 - Soil

- Mineral
- Organic
- 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)

The soils of Caryapundy Swamp are predominantly vertosols (cracking clays; 37,055 ha) and rudosols (33,663 ha), with relatively small areas of chromosols (1,028 ha), and sodosols (307 ha) limited to the west of the site. Plants growing across these substrates typically produce seed banks (reserves of reproductive propagules, including the oospores of charophyte algae) that can survive prolonged dry periods and respond quickly when water is present. The cracking clays are likely to have higher nutrient levels and greater soil moisture retention than the loam and sandy areas of the site. In dry conditions, large holes can form in cracking clay soils, which can accumulate seeds, affecting vegetation patterns in the landscape, and shelter fauna, providing a cool, moist microclimate away from the summer heat.

4.4.4 - Water regime

Water permanence

Presence?	
Usually seasonal, ephemeral or intermittent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	
Water inputs from surface water	<input checked="" type="checkbox"/>	No change
Water inputs from precipitation	<input type="checkbox"/>	No change

Water destination

Presence?	
To downstream catchment	No change
Feeds groundwater	No change

Stability of water regime

Presence?	
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.

Caryapundy Swamp is part of the terminal basin of the endorheic Bulloo River Catchment. As such, rainfall and flows from upstream in the Bulloo River Catchment, as well as rainfall within the site itself drive surface water hydrology. The Bulloo River is largely undeveloped upstream with limited water infrastructure to divert flows or abstraction, resulting in relatively natural, pulsed, hydrological patterns in the wetlands of Narriearra Caryapundy Swamp National Park. Importantly, the Bulloo River has a requirement under the Queensland Water Act 2000 that mean annual flow during the modelled (simulation) flow periods must be at least 99% of the pre-development flow (QLD Government 2017). The system is also connected to the Bulloo Lakes in Queensland, an important wetland ecosystem in its own right.

Situated in one of the driest regions of NSW, flows and rainfall which fill the wetlands at the site are infrequent. There has been no regular monitoring of water quality or depth at the site, and the best available data on flows into the wetlands can be derived from Autumnvale, QLD on the Bulloo River.

Data between 1968-2020 from Autumnvale on the Bulloo River (200 km upstream, but indicative of long-term trends in river flows) indicate larger flows predominantly occur in summer and autumn, compared to winter and spring (QLD Government 2021). Flow volume at Autumnvale varies, from no flow periods, to a maximum of 171.66 GL/day on 8th March 2010. Large flows in the Bulloo River can reach Narriearra Caryapundy Swamp National Park and lead to extensive inundation which can last for extended periods before eventually drying.

(ECD) Connectivity of surface waters and of groundwater	There is no information available on the extent of groundwater flow into or out of the wetlands of Caryapundy Swamp, however it is likely these two sources of environmental water are connected in the site.
(ECD) Stratification and mixing regime	No information available.

4.4.5 - Sediment regime

- Significant erosion of sediments occurs on the site
- Significant accretion or deposition of sediments occurs on the site
- Significant transportation of sediments occurs on or through the site
- Sediment regime is highly variable, either seasonally or inter-annually
- Sediment regime unknown

Please provide further information on sediment (optional):

Sediment from upstream in the Bulloo River and Thompsons, Mt Wood, and Twelve Mile Creeks are likely deposited in the wetlands of Narriearra Caryapundy Swamp National Park during high flow periods, and local rainfall likely drives transport and deposition of sediments from raised areas (e.g., dunes) into low-lying wetlands, interdunal swales, and claypans.

(ECD) Water turbidity and colour	No information available.
(ECD) Light - reaching wetland	The wetlands are highly exposed to sunlight. In places, vegetation provides some shade.
(ECD) Water temperature	No information available.

4.4.6 - Water pH

- Acid (pH<5.5)
- Circumneutral (pH: 5.5-7.4)
- Alkaline (pH>7.4)
- Unknown

Please provide further information on pH (optional):

No information available.

4.4.7 - Water salinity

- Fresh (<0.5 g/l)
- Mixohaline (brackish)/Mixosaline (0.5-30 g/l)
- Euhaline/Eusaline (30-40 g/l)
- Hyperhaline/Hypersaline (>40 g/l)
- Unknown

Please provide further information on salinity (optional):

Both saline and freshwater wetlands exist across the site which vary spatially and temporally. As flows enter the site from the Bulloo River and along the creeks to the west, they are predominantly fresh, but become increasingly saline as drying occurs. Salinity is also dependent on where the water settles (e.g., fresh water settled on saline claypans will become more saline than water settled in lignum swamps). No quantitative data is available.

(ECD) Dissolved gases in water	No information available.
--------------------------------	---------------------------

4.4.8 - Dissolved or suspended nutrients in water

- Eutrophic

- Mesotrophic
- Oligotrophic
- Dystrophic
- Unknown

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

No information available.

(ECD) Dissolved organic carbon	No information available.
(ECD) Redox potential of water and sediments	No information available.
(ECD) Water conductivity	No information available.

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 site itself:
 i) broadly similar ii) significantly different

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

The surrounding area includes the wetlands of the Bulloo Lakes to the north (in Queensland) and the Bulloo Overflow to the south-east, while the rest of the surrounding area consists largely of non-wetland dryland habitat types. Much of the Bulloo Lakes are on private land, managed for conservation within the Bulloo Downs Nature Refuge, while the Bulloo Overflow is on leasehold land.

The surrounding areas of non-wetland habitat largely feature arid shrublands. Flooding of the Bulloo River Catchment has a reduced influence on these landscapes compared to the wetlands, which pulse between dry and wet conditions. Where depressions in the landscape are present, water can settle, but tends to dry relatively fast and lacks the connectivity that Caryapundy Swamp has through its connection to the Bulloo River. The predominance of cracking clays at the site are likely to have higher nutrient levels and greater soil moisture retention than dryer, sandier sediment which is more dominant in the surrounding landscapes. These differences result in vastly different ecological conditions and communities.

Cracking clay soils store vast seedbanks particularly for aquatic plants, and provide critical shelter for diverse faunal communities. When flooded, the germination of aquatic plant seeds promotes a starkly different landscape to that of the surrounding non-wetland landscapes.

The presence of large lignum swamps in Caryapundy Swamp differs from the Bulloo Overflow in which lignum is largely absent. The variation in wetland vegetation, and scale of these wetlands, provides highly significant habitat in the region.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Fresh water	Drinking water for humans and/or livestock	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	Low
Biological control of pests and disease	Support of predators of agricultural pests (e.g., birds feeding on locusts)	Low
Hazard reduction	Flood control, flood storage	Low

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Picnics, outings, touring	Medium
Recreation and tourism	Nature observation and nature-based tourism	Medium
Spiritual and inspirational	Cultural heritage (historical and archaeological)	High
Spiritual and inspirational	Inspiration	High
Spiritual and inspirational	Contemporary cultural significance, including for arts and creative inspiration, and including existence values	High
Spiritual and inspirational	Spiritual and religious values	High
Spiritual and inspirational	Aesthetic and sense of place values	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High
Scientific and educational	Long-term monitoring site	Medium
Scientific and educational	Major scientific study site	Medium
Scientific and educational	Type location for a taxon	Low

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
Soil formation	Sediment retention	Medium
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	Medium

Optional text box to provide further information

Ecosystem services include:

- Fresh water: Provision and maintenance of clean drinking water for livestock downstream.
- Maintenance of hydrological regimes: in terms of the importance of pulsed ephemeral wetland dynamics for wetlands and aquatic fauna, and likely connectivity to groundwater which is a knowledge gap.
- Biological control of pests and diseases: the Site supports straw-necked ibis which are an important predator for locusts which can plague in this region.
- Hazard reduction: The large creeks, channels, depressions, and wetlands of the site control the distribution of water during large rainfall and flood events.
- Biodiversity: the site support a high biodiversity of wetland and wetland-dependent species, with likely many more to be recorded.
- Soil formation: sediments and organic matter retention in wetlands and deposition from upstream are likely to be important services contributing to the formation and ecology of wetland soils (e.g., cracking clays), thereby influencing the ecological character of the site.
- Nutrient cycling: transport, and nitrogen and carbon cycling in particular are likely to be critical ecosystem services especially during wet periods.
- Recreation and tourism: the site attracts, and will increasingly attract travellers, campers, and birdwatchers as its management transitions into a National Park.
- Spiritual and inspirational: There is significant historical evidence across the site of use by First Nations Australians.
- Scientific and educational: the site has been, and will continue to be an important research site, especially for the Bulloo grey grasswren, but also as an example of an arid/semi-arid terminal basin in relatively natural condition.
- Other: critical habitat and drought refuge for arid/semi-arid fauna.

Within the site:

Outside the site:

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

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
- ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland
- iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples
- 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

<no data available>

4.6 - Ecological processes

(ECD) Primary production	Erratic flux with flows and rainfall patterns.
(ECD) Nutrient cycling	Fluxed with flows and rainfall patterns.
(ECD) Carbon cycling	Fluxed with flows and rainfall patterns.
(ECD) Animal reproductive productivity	The site is important for aquatic fauna (e.g., waterbird) breeding.
(ECD) Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc.	Vegetation productivity fluxed with rainfall and flows.
(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	Moderate grazing pressure and predation by introduced mammals.
(ECD) Notable aspects concerning animal and plant dispersal	Nomadic birdlife and ephemeral arid/semi-arid fauna dispersal and concentration with conditions.
(ECD) Notable aspects concerning migration	The site provides important non-breeding habitat for migratory shorebirds.
(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity	Drying with climate change is likely to have a significant impact on the site.

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
Provincial/region/state government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

The land of Narriearra Caryapundy Swamp National Park is owned by the NSW state government and managed as a national park under state legislation. Narriearra Caryapundy Swamp National Park is the traditional country of the Karengappa Aboriginal People. The Wongkumara and Malyangapa People also share ties to this land. Native title claims are limited to the Malyangapa People with a proposed Native Title Claim. The Wongkumara and Barkandji people have Native Title Claims in the area, but not associated with the Site.

5.1.2 - Management authority

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

NSW National Parks and Wildlife Service (NPWS)

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

Jaymie Norris, Area Manager West Darling Area (NPWS) West Branch

Postal address:

183 Argent Street,
Broken Hill, NSW 2880
Australia

E-mail address:

jaymie.norris@environment.nsw.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	In the surrounding area
Tourism and recreation areas	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Water abstraction	Low impact	Medium impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Transportation and service corridors

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Roads and railroads	Low impact	Medium impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Recreational and tourism activities	Low impact	Medium impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Invasive non-native/ alien species	Medium impact	Medium impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Habitat shifting and alteration	High impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Droughts	High impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Temperature extremes	Medium impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Storms and flooding	Medium impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Please describe any other threats (optional):

Threats to the Site include:

- Human settlements (non agricultural): localised development of tourism infrastructure for the National Park may have localised disturbance impacts.
- Water regulation: upstream extraction and diversion of water is restricted under legislation in Queensland (QLD Government 2017), so while these practices represent high risk to the ecological character of the site, they are not currently affecting it.
- Agriculture and aquaculture: The site has been destocked, so livestock grazing is no longer affecting the site although residual impacts (albeit somewhat limited as per Marshall 2021) of grazing are still present.
- Transportation and service corridors: creation and maintenance of roads and tracks in the site may cause some limited, local habitat disturbance.
- Human intrusions and disturbance: increased visitation may have an impact on biodiversity through increased disturbance from visitors and vehicles.
- Invasive and other problematic species and genes: invasive animals present a significant threat for native biodiversity through competition, habitat degradation, and predation; while invasive plants are highly localised and at this stage do not present a significant threat. Both will be managed under National Park management.
- Climate change and severe weather: Under a changing climate, the site will likely be subject to increased drying, more severe and prolonged droughts, and higher temperatures. Storms and flooding, when they do occur, may be more severe. This will have a significant effect on the wetland habitats and the flora and fauna which rely on them.

5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
State protected area (National Park)	Narriearra Caryapundy Swamp National Park	https://www.nationalparks.nsw.gov.au/visit-a-park/parks/narriearra-caryapundy-swamp-national-park	whole

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Bulloo Floodplain	http://datazone.birdlife.org/sitefactsheet/bulloo-floodplain-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

Species

Measures	Status
Threatened/rare species management programmes	Partially implemented
Control of invasive alien plants	Proposed
Control of invasive alien animals	Proposed

Human Activities

Measures	Status
Regulation/management of wastes	Partially implemented
Livestock management/exclusion (excluding fisheries)	Implemented
Regulation/management of recreational activities	Partially implemented
Communication, education, and participation and awareness activities	Proposed
Research	Implemented

Other:

In Australia, the ecological character of a designated Site is protected as a Matter of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

5.2.5 - Management planning

Is there a site-specific management plan for the site? In preparation

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:

Narriearra Caryapundy Swamp National Park became a national park in 2020, changing from leasehold grazing land. As such, visitor and educational facilities and programmes are planned, but not yet complete.

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Proposed
Water quality	Proposed
Soil quality	Proposed
Plant community	Implemented
Plant species	Implemented
Animal species (please specify)	Implemented
Birds	Proposed

Monitoring for the Bulloo grey grasswren has been implemented.

For details of monitoring proposed and implemented, refer to Marshall (2021) and monitoring by Biodiversity and Wildlife Unit monitoring in 2020 (Peter Stathis/Tanya Cooper). As the site has recently been listed as a national park under NSW legislation, there is likely to be an increase of monitoring, research, and educational activities and opportunities at the Site over the coming years.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

This RIS has been prepared using information from the Ecological Character Description; Statement of Management Intent for the Narriearra Caryapundy Swamp National Park; and other key information sources.
A complete list of references are included in a separate bibliography, 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

<2 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Caryapundy Swamp (NSW Department of Planning and Environment, 13-04-2022)



Caryapundy Swamp (NSW Department of Planning and Environment, 13-04-2022)



Caryapundy Swamp (NSW Department of Planning and Environment, 13-04-2022)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation