Ramsar Information Sheet

Published on 3 August 2022

India

Nanda Lake

Designation date	8 June 2022
Site number	2471
Coordinates	15°14'12"N 74°06'26"E
Area	42,01 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

Nanda Lake is located in the village Cacora of Quepem Taluka, South Goa District, State of Goa. It is notified as a wetland under Wetland (Conservation & Management) Rules 2017. It is considered to be critically significant for its ecosystem services and biodiversity values for the local communities and society at large. The majority of the area is intermittent freshwater marshes that lie adjacent to one of the major rivulets of the Zuari River. It is filled with water by intervention within the river channel that is adjacent to the marsh, called a sluice gate, which when closed fills the entire marsh with water. This enables the locals to store the water during the off-monsoon season. The stored water is also utilized to cultivate paddy downstream of the lake and supports fishing and recreation. While during the monsoons the sluice gate is opened and the water is released which changes the character of the lake into a marshland. During this time the marshland is also utilized to grow paddy. This lake is also responsible for taking up large amounts of monsoon rains that protect the surrounding catchment and downstream low-lying areas from floods. The coconut plantations on traditional bunds create a scenic lining to the entire lake-supported landscape. Notable faunal species include Threskiornis melanocephalus (Black-headed ibis), Alcedoatthis (Common kingfisher), Hirundo smithii (Wire-tailed swallow), Metopidius indicus (Bronze-winged jacana), Haliastur indus (Brahminykite), Ardea intermedia (Intermediate egret), Vanellus indicus (Red-wattled lapwing), Microcarbo niger (Little cormorant) and Dendrocygna javanica (Lesser whistling duck).

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency: Goa State Wetland Authority

Postal address:
O/o Goa State Biodiversity Board (GSBB),
1st Floor, Dept. of Science, Technology & Environment,
Opp. Saligao Seminary, Saligao, Bardez- Goa.

National Ramsar Administrative Authority

Institution/agency: Ministry of Environment, Forest and Climate Change, Government of India

Postal address:
Office of the Secretary
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhawan
Jorbagh Road
New Delhi - 110 003 - INDIA

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

From year: 2020

To year: 2022

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish): Nanda Lake

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image
<1 file(s) uploaded>

Former maps: 0

Boundaries description

The boundaries of Nanda Lake represent the buffer zone of the lake, delimited by human settlements on all sides. Therefore, proposed boundaries here are justified by human colonies viz., East: Betumaddi locality on the East, Margaon Sanvordem Road on the west, Xeldem locality to the south and Ghotomorod villageto the north respectively.

2.2.2 - General location

a) In which large administrative region does the site lie? Quepem municipality, Village Quepem, Quepem Taluka, South Goa, Goa, India

b) What is the nearest town or population centre? Village Quepem

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): 42.01

Area, in hectares (ha) as calculated from GIS boundaries: 42.036

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
WWF Terrestrial Ecoregions	Malabar Coast moist forests
Marine Ecoregions of the World (MEOW)	Western Ghats

Other biogeographic regionalisation scheme

It falls under the Western Ghats of the Indian Biogeographic regions.

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 wetland is rare and is highly representative of the biodiversity of the Western Ghats. It is a part of the Central Asian Flyway and caters to a large number of ecosystem services and hydrological functions. Some of the major functions of Nanda Lake include: 1. Source of water for agriculture 2. Water for Domestic use 3. Buffering communities from extreme events such as floods and storms 4. Groundwater recharge 5. Water purification 6. Acts as a sink for sediments
Other ecosystem services provided	1. Source of water for extant flora and downstream aquatic ecosystems. 2. The stored water is also utilized to cultivate paddy downstream of the lake. 2. For buffalo wallowing and the use of water by other domesticated animals. 3. Has significant cultural and religious values 4. Supports noteworthy Bird species (Threskiornis melanocephalus (Black-headed ibis) and other species)
Other reasons	This is unique lake with relatively shallow depth but has significantly large extent of area coverage under water which supports in maintaining local climate resiliency, over 70 bird species, local flora and terrestrial fauna. This wetland enables enhancement of the landscape aesthetics. This lake is basis of agricultural practices in this area which is participatory and being near to urban sprawl has significantly encouraged locals to continue community agriculture which is unique reason for need for the preservation of this lake as wetland.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification	Nanda Lake sustains a spectacular congregation of waterbirds and waders within the Western Ghats Biological Diversity Hotspot. The wetlands supports significant populations of species like Threskiornis melanocephalus, Alcedo atthis, Hirundo smithii, Metopidius indicus, Haliastur indus, Ardea intermedia, Vanellus indicus, Microcarbo niger, Dendrocygna javanica, Acridotheres fuscus, Acrocephalus stentoreus, Actitis hypoleucos, Aegithina tiphia, Ardea purpurea, Ardeotis nigriceps, and Centropus sinensis, which is representative and significantly helps in maintaining the biodiversity of the region owing to the broad range of ecological functions performed by the above-mentioned diverse range of species.

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	*Aporosa cardiosperma*	☑	☐	☐	VU	☐		Vulnerable species
TRACHEOPHYTA / MAGNOLIOPSIDA	*Garcinia indica*	☑	☐	☐	VU	☐		Vulnerable species
TRACHEOPHYTA / MAGNOLIOPSIDA	*Syzygium caryophyllatum*	☑	☐	☐	EN	☐		Endangered species

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 / MAMMALIA	*Lutrogale perspicillata*	☑	☐	☐	☐	☐	☐	☐	☐				VU	☑	☐		Vulnerable species
Birds																	
CHORDATA / AVES	*Acridotheres fuscus*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Acrocephalus stentoreus*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Actitis hypoleucos*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Aegithina tiphia*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Alcedo atthis*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Ardea purpurea*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Ardeotis nigriceps*	☑	☐	☐	☐	☐	☐	☐	☐				CR	☑	☑		CR species, qualifies for Criteria 2.
CHORDATA / AVES	*Centropus sinensis*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Dendrocygna javanica*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Egretta intermedia*	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Haliastur indus*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Hirundo smithii*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Leptoptilos javanicus*	☑	☐	☐	☐	☐	☐	☐	☐				VU	☐	☐		Vulnerable 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 / AVES	*Metopidius indicus*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Microcarbo niger*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Sterna aurantia*	☑	☐	☐	☐	☐	☐	☐	☐				VU	☐	☐		Vulnerable species
CHORDATA / AVES	*Threskiornis melanocephalus*	☐	☐	☐	☐	☑	☐	☐	☐				NT	☐	☐		The wetland is representative of the biodiversity of the western ghats.
CHORDATA / AVES	*Vanellus indicus*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		The wetland is representative of the biodiversity of the western ghats.

1) Percentage of the total biogeographic population at the site

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

<no data available>

Optional text box to provide further information

The locals involved in farming (paddy cultivation), cattle rearing and fishing are dependent on this waterbody.

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

4.1 - Ecological character

River floodplain leading to seasonal/intermittent lake due to the closure of sluice gate. A sluice gate is traditionally a wood or metal barrier sliding in grooves that are set on the sides of the waterway or a river channel. The local artisans who were involved in preparation of this structure are also dependent on this wetland for their livelihood to some extent. Nanda Lake is a natural marshland wherein its inherent character is utilised for growing paddy. The application of the sluice gate allows two growing seasons of paddy, downstream of the lake, i.e. the Kharif or sorod (known locally) and the rabi or vaingan (known locally). The paddy cultivation is taken up within the wetland during the Kharif season, as the wetland exhibits inherent marshland characteristics due to river flood plain and rain-fed water. While, during the Rabi season, the sluices gates are shut and the water from the rivers floods the entire wetland exhibiting lake characteristics. Hence the Nanda wetland exhibits variable ecological character between a natural marshland and a man-made lake - a perennial wetland, which resembles a unique method of wetland management predominately utilized in the State of Goa for paddy cultivation. This wetland also supports wide variety of avifauna that also included migratory birds.

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 > Lakes and pools >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils	Nanda Lake	1	42.01	Unique

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Nil	0

(ECD) Habitat connectivity	This wetland supports terrestrial fauna due to the perennial nature. The natural corridors of burrowing species around wetland are also witnessed.

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	*Anacardium occidentale*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Artocarpus heterophyllus*	
TRACHEOPHYTA/LILIOPSIDA	*Axonopus fissifolius*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Barringtonia acutangula*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Blumea lacera*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Bombax ceiba*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Breynia retusa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Bridelia stipularis*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Calotropis gigantea*	
TRACHEOPHYTA/LILIOPSIDA	*Carex deasyi*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Careya arborea*	
TRACHEOPHYTA/LILIOPSIDA	*Caryota urens*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Cassia fistula*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Catunaregam spinosa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Chromolaena odorata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Clerodendrum inerme*	
TRACHEOPHYTA/LILIOPSIDA	*Cocos nucifera*	
TRACHEOPHYTA/POLYPODIOPSIDA	*Cyclosorus interruptus*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Derris trifoliata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Desmodium triflorum*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Diospyros malabarica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Duranta erecta*	
TRACHEOPHYTA/LILIOPSIDA	*Elaeis guineensis*	
TRACHEOPHYTA/LILIOPSIDA	*Eleusine indica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Erythrina stricta*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ficus racemosa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Gliricidia sepium*	
TRACHEOPHYTA/LILIOPSIDA	*Gloriosa superba*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Holigarna arnottiana*	
TRACHEOPHYTA/LILIOPSIDA	*Ischaemum ciliare*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ixora coccinea*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Jasminum malabaricum*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Lannea coromandelica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Lantana camara*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Leea macrophylla*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Leucas aspera*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Macaranga peltata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Mimosa pudica*	
TRACHEOPHYTA/LILIOPSIDA	*Monochoria vaginalis*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Mussaenda frondosa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Nymphaea lotus*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Nymphaea rubra*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Nymphoides indica*	
TRACHEOPHYTA/LILIOPSIDA	*Pandanus tectorius*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Passiflora foetida*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Peltophorum pterocarpum*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Samanea saman*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Senna tora*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Sphagneticola trilobata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Tamilnadia uliginosa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Teucrium scordium*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Urena lobata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ziziphus mauritiana*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ziziphus rugosa*	

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/LILIOPSIDA	*Pistia stratiotes*	Actual (minor impacts)

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
ARTHROPODA/INSECTA	*Brachythemis contaminata*				
ARTHROPODA/INSECTA	*Bradinopyga geminata*				
ARTHROPODA/INSECTA	*Brumoides suturalis*				
CHORDATA/MAMMALIA	*Bubalus bubalis*				
ARTHROPODA/INSECTA	*Camponotus compressus*				
ARTHROPODA/INSECTA	*Castalius rosimon*				
ARTHROPODA/INSECTA	*Ceriagrion cerinorubellum*				
ARTHROPODA/INSECTA	*Chilocorus nigritus*				
ARTHROPODA/INSECTA	*Coccinella transversalis*				
ARTHROPODA/INSECTA	*Crocothemis servilia*				
ARTHROPODA/INSECTA	*Danaus genutia*				
ARTHROPODA/INSECTA	*Delias eucharis*				
CHORDATA/AVES	*Dicaeum concolor*				
CHORDATA/AVES	*Dicrurus macrocercus*				
CHORDATA/AVES	*Dinopium benghalense*				
ARTHROPODA/INSECTA	*Dolichopus nigricornis*				
ARTHROPODA/INSECTA	*Drosophila melanogaster*				
CHORDATA/AVES	*Egretta garzetta*				
ARTHROPODA/INSECTA	*Euchrysops cnejus*				
CHORDATA/AVES	*Eudynamys scolopaceus*				
ARTHROPODA/INSECTA	*Euploea core*				
ARTHROPODA/INSECTA	*Eurema hecabe*				
ARTHROPODA/INSECTA	*Freyeria putli*				
CHORDATA/AVES	*Gallinago gallinago*				
CHORDATA/AVES	*Glareola lactea*				
ARTHROPODA/INSECTA	*Gryllodes sigillatus*				
CHORDATA/AVES	*Halcyon smyrnensis*				
CHORDATA/AVES	*Hirundo rustica*				
ARTHROPODA/INSECTA	*Idea jasonia*				
CHORDATA/AVES	*Ixobrychus cinnamomeus*				
ARTHROPODA/INSECTA	*Junonia almana*				
ARTHROPODA/INSECTA	*Junonia atlites*				
ARTHROPODA/INSECTA	*Lasius niger*				
CHORDATA/ACTINOPTERYGII	*Lepidocephalichthys thermalis*				
ARTHROPODA/INSECTA	*Lepisma saccharina*				
CHORDATA/AVES	*Leptocoma zeylonica*				
ARTHROPODA/INSECTA	*Leptosia nina*				
ARTHROPODA/INSECTA	*Libellula needhami*				

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/AVES	*Lonchura malacca*				
CHORDATA/AVES	*Megalaima viridis*				
ARTHROPODA/INSECTA	*Melanitis leda*				
CHORDATA/AVES	*Merops orientalis*				
CHORDATA/AVES	*Merops philippinus*				
ARTHROPODA/INSECTA	*Micronia aculeata*				
CHORDATA/AVES	*Milvus migrans*				
CHORDATA/AVES	*Motacilla flava*				
CHORDATA/AVES	*Motacilla maderaspatensis*				
ARTHROPODA/INSECTA	*Neptis hylas*				
CHORDATA/AVES	*Nettapus coromandelianus*				
ARTHROPODA/INSECTA	*Neurothemis fulvia*				
ARTHROPODA/INSECTA	*Neurothemis tullia*				
CHORDATA/AVES	*Nycticorax nycticorax*				
ARTHROPODA/INSECTA	*Oecophylla smaragdina*				
CHORDATA/AVES	*Oriolus kundoo*				
ARTHROPODA/INSECTA	*Orphulella pelidna*				
CHORDATA/AVES	*Orthotomus sutorius*				
ARTHROPODA/	*Oxyopes shweta*				
ARTHROPODA/INSECTA	*Paratrechina longicornis*				
ARTHROPODA/INSECTA	*Pardaleodes edipus*				
ARTHROPODA/	*Peucetia viridans*				
CHORDATA/AVES	*Phalacrocorax fuscicollis*				
CHORDATA/AVES	*Phylloscopus trochiloides*				
CHORDATA/AVES	*Plegadis falcinellus*				
CHORDATA/AVES	*Ploceus manyar*				
CHORDATA/AVES	*Pluvialis fulva*				
ARTHROPODA/INSECTA	*Polyrhachis dives*				
CHORDATA/AVES	*Porphyrio porphyrio poliocephalus*				
CHORDATA/AVES	*Prinia socialis*				
CHORDATA/AVES	*Prinia sylvatica*				
ARTHROPODA/INSECTA	*Pseudagrion microcephalum*				
CHORDATA/AVES	*Pseudibis papillosa*				
CHORDATA/AVES	*Pycnonotus cafer*				
CHORDATA/AVES	*Pycnonotus jocosus*				
CHORDATA/AVES	*Pycnonotus luteolus*				
CHORDATA/AVES	*Rhipidura albogularis*				
ARTHROPODA/INSECTA	*Rhyothemis variegata*				

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
ARTHROPODA/INSECTA	*Sarangesa dasahara*				
CHORDATA/AVES	*Saxicoloides fulicatus*				
ARTHROPODA/INSECTA	*Spialia galba*				
CHORDATA/AVES	*Spilopelia chinensis*				
ARTHROPODA/INSECTA	*Tanaecia lepidea*				
ARTHROPODA/INSECTA	*Taractrocera maevius*				
ARTHROPODA/INSECTA	*Tetraponera rufonigra*				
ARTHROPODA/INSECTA	*Ypthima huebneri*				

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Am: Tropical monsoonal (Short dry season; heavy monsoonal rains in other months)

4.4.2 - Geomorphic setting

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 ☐

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 ◉

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 precipitation	☐	No change
Water inputs from surface water	☐	No change

Water destination

Presence?	
Feeds groundwater	No change
To downstream catchment	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:

The use of a Sluice gate enables the storage of water in non-monsoon periods. The wetland remains as a marsh during monsoons and after the closing of the sluice gates in mid-November, it exhibits lake characteristics.

4.4.5 - Sediment regime

- [ ] Significant erosion of sediments occurs on the site
- [x] 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
- [x] Sediment regime unknown

4.4.6 - Water pH

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

4.4.7 - Water salinity

- [x] 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

4.4.8 - Dissolved or suspended nutrients in water

- [ ] Eutrophic
- [x] Mesotrophic
- [ ] Oligotrophic
- [ ] Dystrophic
- [ ] Unknown

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 ◉

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

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)	Low
Fresh water	Water for irrigated agriculture	High
Fresh water	Drinking water for humans and/or livestock	Medium
Wetland non-food products	Livestock fodder	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High
Maintenance of hydrological regimes	Storage and delivery of water as part of water supply systems for agriculture and industry	High
Erosion protection	Soil, sediment and nutrient retention	Medium
Climate regulation	Local climate regulation/buffering of change	High
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climactic processes	Medium
Biological control of pests and disease	Support of predators of agricultural pests (e.g., birds feeding on locusts)	Medium
Hazard reduction	Flood control, flood storage	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Spiritual and inspirational	Spiritual and religious values	Medium

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	Medium

Within the site: 100

Outside the site: 100

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 ☑

Description if applicable

The Locals also pray to the gods and have very strong connectivity with the operation of the sluice gate using traditional methods.
The site within close proximity of the water is also utilised as a crematorium.

4.6 - Ecological processes

<no data available>

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
Other public ownership	☑	☑

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	☑	☑

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

Predominantly private ownership

5.1.2 - Management authority

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

Provide the name and/or title of the person or people with responsibility for the wetland: Dr. Shaiesh Morajkar

Postal address: GSWA, 1st Floor, Department of Science, Technology, and Environment.
Goa.

E-mail address: goawetland@gmail.com

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
Housing and urban areas	Low impact	Medium impact	☐	☑

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Canalisation and river regulation	Low impact	Medium impact	☑	☑

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources	Low impact	Low impact	☑	☐

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Dams and water management/use	Low impact	Low impact	☑	☐

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Problematic native species	Medium impact	Medium impact	☑	☐
Invasive non-native/ alien species	Medium impact	Medium impact	☑	☐

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Household sewage, urban waste water	Low impact	Medium impact	☑	☐
Garbage and solid waste	Low impact	Medium impact	☑	☐

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Storms and flooding	Low impact	Medium impact	☑	☐

Please describe any other threats (optional):

The wetland area and surroundings are presently cleaner and there is no direct discharge / disposal of waste water or solid waste. But in future needs to ensue the better management.

5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Wetland under Wetland Conservation & Management Rules 2017	Nanda Lake	https://gswa.goa.gov.in/	whole

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 ☐

<no data available>

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Partially implemented

Habitat

Measures	Status
Catchment management initiatives/controls	Proposed
Improvement of water quality	Proposed
Hydrology management/restoration	Proposed
Habitat manipulation/enhancement	Proposed

Species

Measures	Status
Threatened/rare species management programmes	Proposed

Human Activities

Measures	Status
Regulation/management of recreational activities	Proposed
Communication, education, and participation and awareness activities	Proposed
Research	Proposed

Other:

If the linkages of livelihood in this wetland and surrounding area are strengthened then this could bring about exemplary model of participatory wetland management.

5.2.5 - Management planning

Is there a site-specific management plan for the site? No

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 ◉

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
Birds	Proposed
Water quality	Implemented
Water regime monitoring	Proposed

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

<no data available>

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<2 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

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
<no file available>

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:

Nanda Lake (*Dr Shaiesh Morajkar, 07-04-2022*)

Nanda Lake (*Dr Shaiesh Morajkar, 07-04-2022*)

Nanda Lake (*Dr Shaiesh Morajkar, 22-04-2022*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 2022-06-08