



# Ramsar Information Sheet

Published on 6 August 2021

## India

### Wadhvana Wetland



Designation date	5 April 2021
Site number	2454
Coordinates	22°10'19"N 73°29'12"E
Area	630,00 ha

## Color codes

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

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

## 1 - Summary

### Summary

Wadhvana wetland (22°10'20" N, 73°29'15" E) is situated at a distance of 45 km from Vadodara city in Dabhoi Tehsil, Vadodara district, Gujarat State. The wetland is located in agricultural landscape and it is surrounded by wheat and paddy fields and villages. This wetland; whose main ecosystem services include irrigation, fisheries, ground water recharge, ecotourism and nature education; has an area of 5.79 sq. km and maximum depth of 5m. It is a century old man-made wetland that was created in 1909-10 by the erstwhile ruler (Shrimant Maharaja Sir Sayajirao Gaekwad III) of the then Baroda State (Currently in Gujarat State of India). The wetland is internationally important considering its heritage value (as it was created by the erstwhile ruler in pre-independence era), avifaunal richness (consisting of around 200 species, of which, over 140 being waterbirds) including over 80 migratory waterbird species that use Central Asian Flyway for migration, occurrence of some globally threatened waterbird species like Indian sarus crane (VU), black-bellied tern (EN), Indian river tern (VU), greater spotted eagle (VU) and common pochard (VU). Red-crested pochard can be considered a key migratory waterbird species as this otherwise rare duck for Western India regularly occurs in this wetland during winter. The wetland provides a global example of how a wetland originally created for irrigation purpose by a princely state has also been serving as one of the finest waterbird abodes and how it has also been serving as an ecotourism-cum-nature education hub owing to its proximity to a metro-city (viz. Vadodara) of Western India.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Responsible compiler

Institution/agency	Wildlife Division, Vadodara
Postal address	Wildlife Division, Kothi Annexee Building, Raopura, Vadodara - 390001

##### National Ramsar Administrative Authority

Institution/agency	Ministry of Environment, Forest & Climate Change, Government of India
Postal address	Office of the Additional Secretary (Wetlands), Ministry of Environment Forest & Climate Change, Indira Paryavaran Bhawan, Jorbagh, 110003.

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

From year	2016
To year	2021

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Wadhvana Wetland
Unofficial name (optional)	Wadhavana Lake

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

#### b) Digital map/image

<2 file(s) uploaded>

Former maps	0
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#### Boundaries description

North: Seemaliya, Gopalpura  
South: Wadhvana, Manjrol  
East: Manjrol  
West: Akotadar

The boundaries shown in the GIS shapefile and in the digital image share the same boundaries as those shown in the "Management Plan of Wadhvana Wetland" prepared by State Forest Department, Gujarat. In fact, the State Forest Department has also adopted the boundaries decided long back (1909-10) by the creator of this man-made wetland, i.e. the erstwhile ruler of Baroda State. The boundaries also coincide with the outline of the high-water level during the rainy season.

### 2.2.2 - General location

a) In which large administrative region does the site lie?	The wetland is situated in the state of Gujarat. It is located in Dabhoi Tehsil (Taluka), Vadodara district at a distance of 45 km from Vadodara city and 15 km from Dabhoi town.
b) What is the nearest town or population centre?	Dabhoi town (on Vadodara-Rajpipla Road), Vadodara district

### 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):	630
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Area, in hectares (ha) as calculated from GIS boundaries

### 2.2.5 - Biogeography

#### Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Freshwater Ecoregions of the World (FEOW)	Ecoregion: Narmada-Tapi; Ecoregion ID: 708

#### Other biogeographic regionalisation scheme

As per the biogeographic classification by Rodgers and Panwar (1988), Wadhvana Wetland is situated in the Semi-Arids (4) biogeographic zone and Gujarat-Rajwara (4A) biotic province. According to "Directory of Indian wetlands" by Hussain & De Roy (1993)'s categorization of Indian wetlands using Udvardy (1975), Wadhvana Wetland (a water storage reservoir) is located in the biogeographic province 4.8.4/4.15.7 (Indus-Ganges Monsoon Forest/Thar Desert;). Wetland type 17.

### 3 - Why is the Site important?

#### 3.1 - Ramsar Criteria and their justification

<no data available>

Criterion 2 : Rare species and threatened ecological communities

Criterion 3 : Biological diversity

Justification

Wadhvana Wetland and its immediate environs are inhabited by 214 species of birds (including 142 waterbird/obligatorily wetland dependent birds), 7 species of mammals, 9 species of herpetofauna, 5 species of fish, 76 species of zoo benthos & zooplankton; besides rich diversity of other invertebrate fauna. A total of 50 species of insects, 17 species of spiders and 11 species of molluscs have also been recorded by Gujarat Ecological Education and Research (GEER) Foundation, Gandhinagar, India. Rich floral diversity is recorded at Wadhvana wetland and its immediate environs [91 species of flowering plants (angiosperms) that include herbs, grasses, shrubs, climbers and trees] in the wetland premises and its surrounding landscape]. The wetland harbours 30 species of hydrophytes comprising of 11 species of submerged hydrophytes, 2 species of free-floating hydrophytes, 5 species of floating-leaved rooted submerged hydrophytes and 12 species of emergent hydrophytes.

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

Criterion 5 : >20,000 waterbirds

Overall waterbird numbers 46281

Start year 2016

Source of data: Mid-winter Censuses organised by Gujarat Forest Department

Criterion 6 : >1% waterbird population

Criterion 7 : Significant and representative fish

Justification

At least 5 species of fish are known to occur in this wetland. Interaction of the fish species can be considered representative of wetland ecosystem benefits at two levels. Thus, on one hand, there is an interaction of fish species with piscivorous waterbirds that benefits the food chains involving fish-eating waterbirds. Of all the waterbirds recorded at Wadhvana, at least 60 species can consume fish (either obligatorily or facultatively) and many of these waterbirds are migratory ones using Central Asian Flyway indicating the global importance. On the other hand, fishes are also beneficial to fishermen communities from economic and livelihood view-points. At least 50% of all the fish species that are known to occur here are "stocking fish", which indirectly indicates Wadhvana's importance for their life history. The fish Wallago attu is globally Vulnerable (VU) as per IUCN Red List of Threatened Species, which also indicates importance of this wetland from the view-point of fish fauna.

#### 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
<b>Plantae</b>								
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Ceratophyllum demersum</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
CHAROPHYTA/ CHAROPHYCEAE	<i>Chara braunii</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ LILIOPSIDA	<i>Hydrilla verticillata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Ipomoea aquatica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ LILIOPSIDA	<i>Lemna minor</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Ludwigia adscendens</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It contributes to formation of marshy habitat which is useful for birds like Jacanas, Waterhen, Moorhen, Swamphen, Rails and Crakes.
TRACHEOPHYTA/ LILIOPSIDA	<i>Najas marina</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
CHAROPHYTA/ CHAROPHYCEAE	<i>Nitella hyalina</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ MAGNOLIOPSIDA	<i>Nymphaea nouchali</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ LILIOPSIDA	<i>Ottelia alismoides</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		The substrate provides habitat for macroinvertebrates
TRACHEOPHYTA/ LILIOPSIDA	<i>Stuckenia pectinata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds
TRACHEOPHYTA/ LILIOPSIDA	<i>Vallisneria spiralis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LC	<input type="checkbox"/>		It is food for waterbirds

### 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								
<b>Others</b>																	
CHORDATA/ REPTILIA	<i>Crocodylus palustris</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 checked="" type="checkbox"/>	<input type="checkbox"/>		
<b>Fish, Mollusc and Crustacea</b>																	
CHORDATA/ ACTINOPTERYGII	<i>Cirrhinus cirrhosus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Aglobally Vulnerable (VU) species
CHORDATA/ ACTINOPTERYGII	<i>Ctenopharyngodon idella</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		A resident breeding species
CHORDATA/ ACTINOPTERYGII	<i>Gibelion catla</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		A resident breeding species
CHORDATA/ ACTINOPTERYGII	<i>Labeo rohita</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		A resident breeding species
CHORDATA/ ACTINOPTERYGII	<i>Wallago attu</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Aglobally Vulnerable (VU) species
<b>Birds</b>																	

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>Anas acuta</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anas clypeata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anas crecca</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Anas penelope</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anas querquedula</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anas strepera</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anser anser</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2571	2020	10.28	LC	<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Anser indicus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Aquila clanga</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 checked="" type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Arenaria interpres</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Aythya ferina</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Aythya fuligula</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Aythya nyroca</i>	<input checked="" 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 checked="" type="checkbox"/>		Extra-limital migrant and globally Near Threatened (NT) species
CHORDATA/AVES	<i>Botaurus stellaris</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Calidris alba</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Calidris alpina</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Chlidonias hybrida</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Chlidonias leucopterus</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Ciconia ciconia</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Ciconia nigra</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Dendronanthus indicus</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Ephippiorhynchus asiaticus</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Fulica atra</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Some are resident breeding and some are extra limital migrants.
CHORDATA/AVES	<i>Gallinago cinerea</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Grus antigone</i>	<input checked="" 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"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Globally Vulnerable (VU) species, Nesting

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>Gyps bengalensis</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"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CHORDATA/AVES	<i>Gyps indicus</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"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CHORDATA/AVES	<i>Haliaeetus leucoryphus</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"/>				EN	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CHORDATA/AVES	<i>Ichthyophaga ichthyaetus</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Ixobrychus minutus</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Larus minutus</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Leptoptilos dubius</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"/>				EN	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Limicola falcinellus</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Limosa lapponica</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Limosa limosa</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Netta rufina</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"/>		Extra-limital migrant
CHORDATA/AVES	<i>Pelargopsis capensis</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Pelecanus crispus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Extra-limital migrant and globally Near Threatened (NT) species
CHORDATA/AVES	<i>Pelecanus onocrotalus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CHORDATA/AVES	<i>Pelecanus philippensis</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"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Philomachus pugnax</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6495	2020	6.49		<input type="checkbox"/>	<input type="checkbox"/>		Extra-limital migrant
CHORDATA/AVES	<i>Plegadis falcinellus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3981	2020	15.92	LC	<input type="checkbox"/>	<input type="checkbox"/>		Some are resident breeding and some are extra limital migrants.
CHORDATA/AVES	<i>Podiceps cristatus</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Podiceps griseogen</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Podiceps nigricollis</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Sarkidiornis melanotos</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1236	2020	4.94	LC	<input type="checkbox"/>	<input type="checkbox"/>		A resident breeding species
CHORDATA/AVES	<i>Scolopax rusticola</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	
CHORDATA/AVES	<i>Sterna acuticauda</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"/>				EN	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	<i>Sterna aurantia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		A resident breeding and globally Vulnerable species
CHORDATA/AVES	<i>Sternula albifrons</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"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Rare for Wadhvana Wetland	

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence <sup>1)</sup>	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA/ AVES	<i>Tadorna ferruginea</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1102	2020	2.2	LC	<input type="checkbox"/>	<input type="checkbox"/>		Extra limital migrant species

1) Percentage of the total biogeographic population at the site

### 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
Open Water Community	<input checked="" type="checkbox"/>	Extent-wise, open water component of Wadhvana ecosystem is the predominant-one as it occupies over 95% area of the wetland. High species richness & high population of waterbirds, several fish & other aquatic biota characterise this community.	Open water habitats are threatened in India & Asia from draining, dredging, filling & pollution. Occurrence of migratory waterbirds from other countries & globally threatened birds & fish depending on open water of Wadhvana also render global importance.

Optional text box to provide further information

In the table given above, the ecological community is considered as collection of species that are organized as food chains and food webs at different trophic levels. Wadhvana is one of the few sites in Gujarat state where extra-limital (international) migrant Red-crested Pochard immigrates to this wetland in winter in good numbers fairly regularly and contributes international importance to the site. Other extra-limital migrant viz. Greylag Goose immigrates to this wetland in enormous numbers during winter every year. Other extra-limital (international) migrant ducks mentioned in the table above include Northern Pintail, Northern Shoveler, Gadwall, Eurasian Teal and Tufted Pochard. Indian Sarus Crane, though a resident species of an ecological community of the wetland, is globally Vulnerable (VU) giving international importance to the site.

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

### 4.1 - Ecological character

Wadhvana Wetland is a man-made freshwater wetland having predominance of open water area. The wetland and its surrounding landscape form a mosaic of land-forms including open water, cattail cover and plantation (of Casuarina, Pandanus, Eucalyptus etc.), cropland, satellite wetlands (mainly village ponds like those of Kukad and Manjrol villages) and settlements in the surrounding landscape. Though Wadhvana is a man-made wetland, the wetland and its surrounding landscape are heavily influenced by hydrological cycle thanks to good rainfall in the area and its connectivity with Orsang river (a tributary of Narmada that is located in Narmada basin). From water quality view point, the wetland can be considered as an alkaline water wetland (average of pH-9). The entire complex gets inundated in good monsoon, with the main waterbody of Wadhvana attaining maximum water depth of 5 m mainly due to water influx from rain-water, Narmada canal and Orsang river. This is an "open" wetland system having both inlets and outlets. The open water area provides foraging opportunity to a variety of surface-feeding and diving waterbirds (mainly anatids, cormorants & darters, pelicans etc.). Its muddy edges provide foraging area to waders (like Ruff, Godwit etc.) and some dabblers. A few islets (one with some tree cover) are important as resting and roosting places for Anatids, waders and terns. During post-monsoon season, a large portion of the main waterbody gets blanketed by brown coloured scum that is made of decomposing vegetation matter and algae. It is an indicator of ongoing process of nutrient cycling. With receding/shrinking water-spread from mid-winter to summer season, more and more land area on shore gets exposed and the waterbirds (especially waders) get more and more amount of shore-land area for foraging/resting/roosting. Being a man-made reservoir, almost entire open water area is surrounded by the earthen bund. The luxuriant emergent hydrophytic cover exists outside the bund encompassing open water area. The wetland is mainly surrounded by wheat or paddy fields depending on season. They constitute important foraging ground for the migratory geese (e.g. Greylag Geese) and some ducks and waders. The aquatic vegetation of Wadhvana Wetland mainly consists of submerged aquatic plants (like Najas, Chara, Nitella, Stuckenia, Aponogeton etc.) as open water is the main habitat component of this wetland. Main emergent hydrophytes include Typha domingensis which luxuriantly grows outside the main open water area and thus the earthen peripheral bund separates open water area and Typha growth.

### 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 >> M: Permanent rivers/ streams/ creeks	Orsang river	2		
Fresh water > Lakes and pools >> O: Permanent freshwater lakes	Wadhvana wetland/irrigation tank/reservoir	1	580	

#### Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type
2: Ponds	Village ponds of Kukad and Manjrol	4	
3: Irrigated land	Wadhvana wetland/irrigation tank/reservoir	3	
4: Seasonally flooded agricultural land	Wadhvana wetland/irrigation tank/reservoir	3	
6: Water storage areas/Reservoirs	Wadhvana wetland/irrigation tank/reservoir	1	
8: Wastewater treatment areas	Wadhvana wetland/irrigation tank/reservoir	2	

#### (ECD) Habitat connectivity

Wadhvana is connected with Orsang river (a Narmada tributary) through Jojwa headworks canal. Monsoon inundations connect it to adjacent ponds and flooded agricultural land in environs. The connectivity facilitates water, nutrients and species exchange.

### 4.3 - Biological components

#### 4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Acacia nilotica</i>	Provides roosting/nesting habitat to herons/egrets/cormorants etc.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Azadirachta indica</i>	Sparsely occur around the wetland. Good to fulfil resting/roosting needs of birds.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Casuarina equisetifolia</i>	Few trees exist on the southern boundary of the wetland and some birds have been observed perching on them. Also contributes as wind-breakers.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Eucalyptus globulus</i>	Some trees around the wetland. Birds are observed perching on them.
TRACHEOPHYTA/LILIOPSIDA	<i>Pandanus odoratissimus</i>	Cluster of this species exists in south. It helps in soil stabilization.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Pithecellobium dulce</i>	Provides resting/roosting sites to birds.
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Prosopis cineraria</i>	Planted in south.

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/LILIOPSIDA	<i>Eichhornia crassipes</i>	Potential

Optional text box to provide further information

Eichhornia crassipes does not occur in the main waterbody, but it exists in the adjacent landscape of the wetland.

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/AVES	<i>Falco chicquera</i>				IUCN(NT), Schedule I of Indian Wildlife (Protection) Act, 1972
CHORDATA/AVES	<i>Falco peregrinus</i>				IUCN(LC);Schedule I of Indian Wildlife (Protection) Act, 1972
ARTHROPODA/INSECTA	<i>Hypolimnas misippus</i>				IUCN(LC)Schedule II (Part II) under Indian Wildlife (Protection Act), 1972
CHORDATA/AVES	<i>Pandion haliaetus</i>				IUCN(LC)Schedule I of Indian Wildlife (Protection) Act, 1972
CHORDATA/AVES	<i>Platalea leucorodia</i>				IUCN(LC); Schedule I of Indian Wildlife (Protection) Act, 1972

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
B: Dry climate	BSh: Subtropical steppe (Low-latitude dry)

Hydrology of a wetland and its surrounding area is related to rainfall as it leads to inundation either directly by precipitation or indirectly by rain water run-off or a river/canal linked to the wetland. Rainfall data analysis for Vadodara district (in which Wadhvana Wetland is located) for the last 3 decades has indicated that the number of days of heavy rainfall during a year and a rainy season (June-September) has significantly decreased. It is also found that during the last 3 decades, number of dry days in Vadodara district has significantly increased not only during a rainy season (June-September), but also during a year. Such trends are expected to exert adverse impact on hydrological status of the wetland, and in turn, on aquatic habitats of wintering migratory waterbirds. But, besides the above-mentioned water sources, the wetland receives water from Narmada canal that might be independent of the rainfall in Vadodara district.

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.

Larger River Basin: Narmada River Basin  
 Sub-basin: Orsang River Basin

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 soil of Wadhvana Wetland is characterised by mixed black cotton with clay and abundant organic matter and also calcareous kankar sporadically. The Organic Carbon ranges from 0.26% to 2.4%. Partly, the area also consists of alluvial track.

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

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

Water destination

Presence?	
Feeds groundwater	No change
To downstream catchment	No change

Stability of water regime

Presence?	
Unknown	No change

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

Sometimes, during peak summer season, the wetland dries up considerably. Water level is also affected by irrigation water demand which varies from season to season and from year to year.

(EOD) Connectivity of surface waters and of groundwater Ground water table is high (30 to 45 m.), which indicates a connectivity of a surface water and ground water.

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):

Significant deposition and transportation of sediments is very likely. It needs further study/research to determine the magnitude of deposition/transportation.

(ECD) Water turbidity and colour	As per a study by GEER Foundation (2018–19), turbidity widely varies from 0.30 NTU to 247.00 NTU.
(ECD) Light - reaching wetland	Considering wide variation in Turbidity, it can be inferred that light penetration might vary widely as per the season.
(ECD) Water temperature	As per a study by GEER Foundation, water temperature can vary from 12.8°C to 39.1° C.

#### 4.4.6 - Water pH

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

#### 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

(ECD) Dissolved gases in water

As per a study by GEER Foundation (2018 – 19), maximum DO was recorded at the Inlet of the wetland (9.70 mg/l) in winter season, while the lowest value of DO was recorded in open water area (5.68 mg/l) during monsoon season.

#### 4.4.8 - Dissolved or suspended nutrients in water

- Eutrophic
- Mesotrophic
- Oligotrophic
- Dystrophic
- Unknown

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

As per a study by GEER Foundation (2018 – 19), NO3-N concentration ranges from 12.50 mg/l to 75.00 mg/l. Phosphates (PO4-3) range from 0.01 mg/l to 5.50 mg/l.

(ECD) Water conductivity	The value of Electrical Conductivity has been found to be ranging from 0.14 mS/cm to 14.15 mS/cm (GEER, 2018-19).
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#### 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:

In addition to agriculture area the landscape also has scattered human settlements and village ponds. These village ponds function as satellite wetlands of Wadhvana wetland.

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

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
Hazard reduction	Flood control, flood storage	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High
Recreation and tourism	Picnics, outings, touring	High
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High
Scientific and educational	Long-term monitoring site	High
Scientific and educational	Major scientific study site	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High
Soil formation	Sediment retention	Medium
Soil formation	Accumulation of organic matter	Medium
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	High
Pollination	Support for pollinators	Low

Other ecosystem service(s) not included above:

The waters are also supplied to Vadodara city when the critical need arises.

Within the site: 50000 visitors

Outside the site: 25000 residential

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

Description if applicable

Wadhvana Wetland is a century old irrigation tank which was constructed by the erstwhile Gaekwad Ruler in 1909-10.

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

Description if applicable

Water of this wetland is intensively used for paddy cultivation in the surrounding landscape. The magnitude of this use can affect the ecological character of the Wadhvana Wetland. Commercial fishing carried out in this wetland during certain season can also affect the food web operating in this wetland.

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

#### 4.6 - Ecological processes

(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	Migratory and resident piscivorous waterbirds (e.g. comonant, darter, terns etc) predate on fish existing in the wetland.
(ECD) Notable aspects concerning animal and plant dispersal	Due to connectivity of Wadhvana wetland with Orsang river and Narmada Canal, there are good chances of dispersal of animal (e.g. Marsh Crocodile) and plant (e.g. Hydrila, Water Hyacinth) species.
(ECD) Notable aspects concerning migration	The Wadhvana Wetland is heavily used by migratory waterbirds (anatids and shorebirds) in winter seasons.

## 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 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"/>

##### Other

Category	Within the Ramsar Site	In the surrounding area
No information available	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 5.1.2 - Management authority

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

Gujarat Forest Department

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

Dy. Conservator of Forest; Conservator of Forest, Wildlife circle Vadodara.

Postal address:

Dy. Conservator of Forest,  
Wildlife Division  
Kothi Annexee Building, Raopura,  
Vadodara - 390001

E-mail address:

dcf.wl.vra2@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
Tourism and recreation areas	High impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Housing and urban areas		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

##### Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Drainage		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water abstraction		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Dredging		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Salinisation		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water releases		unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

##### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Annual and perennial non-timber crops		unknown 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		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Utility and service lines (e.g., pipelines)		unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

##### Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources		unknown 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	High impact	High impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Dams and water management/use		unknown impact	<input checked="" type="checkbox"/>	<input 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	unknown impact	unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Problematic native species	unknown impact	unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Agricultural and forestry effluents		unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Household sewage, urban waste water		unknown impact	<input 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
Storms and flooding		unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5.2.2 - Legal conservation status

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Other non-statutory designation	Wadhvana lake	<a href="https://cag.gov.in/cag_old/sites/default/files/audit_report_file_s/Gujarat_Economic_Sector_Report_5_2015.pdf">https://cag.gov.in/cag_old/sites/default/files/audit_report_file_s/Gujarat_Economic_Sector_Report_5_2015.pdf</a>	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

Habitat

Measures	Status
Habitat manipulation/enhancement	Partially implemented
Re-vegetation	Proposed

Species

Measures	Status
Control of invasive alien plants	Proposed

Human Activities

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

5.2.5 - Management planning

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

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

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

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

An ecotourism facility has been developed at the site by Vadodara Circle, Gujarat Forest Department. This includes interpretation center and accommodation facility. Watch towers, nature trails, signage boards and tracks have also been developed by the Department.

URL of site-related webpage (if relevant):

5.2.6 - Planning for restoration

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

5.2.7 - Monitoring implemented or proposed

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

At regular interval (usually biennially), Gujarat Forest Department conducts mid-winter waterfowl census.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

1. Gadhvi, D. F. (2019). Management Plan of Wadhvana wetland, Forest Department, Gujarat.
2. Tatu, K. (2012). Wetland and waterbird heritage of Gujarat-An illustrated directory. A report submitted to Gujarat State Forest Department, Gandhinagar. 672pp.
3. GEER (2018). Ecological Monitoring of Important Wetlands of Gujarat (Pariej, Kanewal, Wadhvana, Chhari dhandh and Khijadiya wetlands) – Biennial Report (2016-18). Gujarat Ecological Education and Research (GEER) Foundation, Gandhinagar.
4. GEER (2020). Ecological Monitoring of Important Wetlands of Gujarat (Status of Flora, Fauna, Water & Sediments in 2019-20 and its comparison with the Status in 2018-19). Gujarat Ecological Education and Research (GEER) Foundation, Gandhinagar.
5. Suthar A.M., Tatu K., Gujar R. and Kamboj R.D. (2019). A comparative account of diversity of hydrophytes in some Inland wetlands (Pariej, Kanewal and Wadhvana), Research & Reviews: A Journal of Life Sciences 9(2): 39-43.
6. Vankar, J., Tatu, K., Kamboj, R. D., Gupta, R., & Christian, L. (2019). Assessment of surface water quality of Wadhvana Irrigation Reservoir, Gujarat, India. Research & Reviews: Journal of Ecology, 8(2), 14-21.
7. Gandhi, N., Patel, C., & Padate, G. (2017). Butterfly diversity around an irrigation reservoir in the semi-arid zone of central Gujarat, India: A consideration for conservation management. Int. J. Adv. Res. Biol. Sci, 4, 43-53.
8. Kiran, G. S., Joshi, U. B., Padate, G., & Joshi, A. G. (2012). Preliminary investigation of the water quality of Wadhvana reservoir, Gujarat, India: A case study. Bulletin of environmental and scientific research, 1(3-4), 9-13.
9. Gandhi, N., Sahu, S., Pillai, S., & Padate, G. (2014). Insect diversity and its co-relation with ecological parameters in and around Wadhvana-a wetland in Central Gujarat. Advances in Bio Research, 5(3), 88-97.
10. Padate, G. S., Deshkar, S., & Sapna, S. (2007). Influence of Narmada water inundation on the duck populations of Wadhvana irrigation reservoir. Proceedings of TAAL, 131-136.
11. Udvardy, M.D.F. (1975): A Classification of the Biogeographical Provinces of the World, IUCN Occasional Paper No. 18, IUCN, Gland.
12. Guhathakurta, P., Kulkarni, n., Menon, P., Prasad, A. K., Sable, S.T. and Advani, S.C. (2020). Observed rainfall variability and changes over Gujarat State, India Meteorological Department, Pune, India.

#### 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

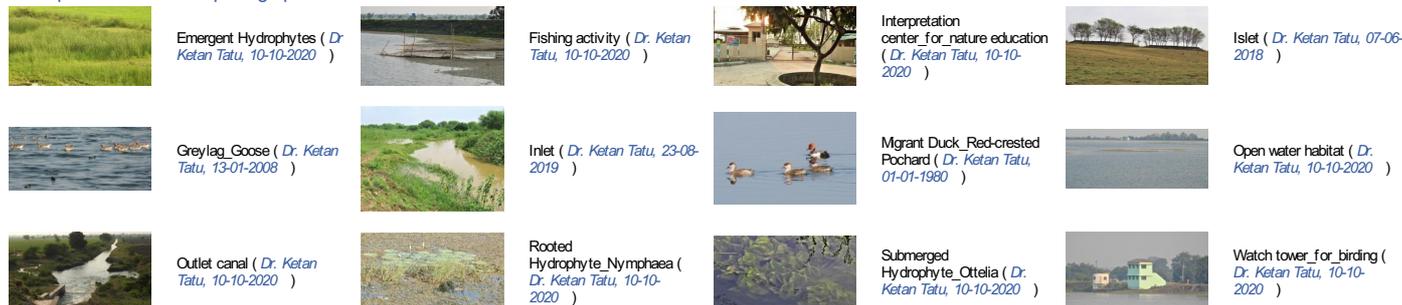
<1 file(s) uploaded>

vi. other published literature

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#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation