

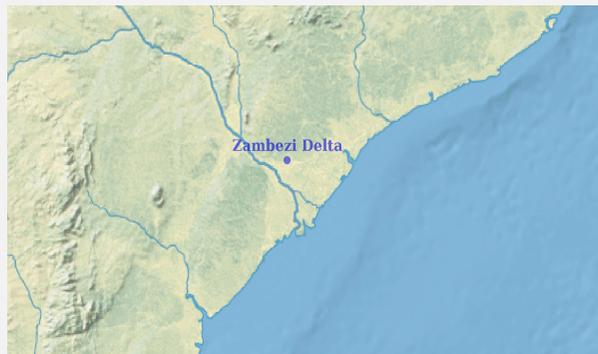


# Ramsar Information Sheet

Published on 23 October 2015

## Mozambique

### Zambezi Delta



Designation date: 3 August 2004

Ramsar ID: 1391

Coordinates: 17°59'32"S 36°0'10"E

Official area (ha): 3 171 172,00

Number of zones: 2

## 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 (This field is limited to 2500 characters)*

The Zambezi Delta is one of the most diverse and productive river-delta systems of the world, and the most important wetland on the Indian Ocean coast of Africa. The vast size of the Zambezi Delta and its unique juxtaposition of different landforms, vegetation types, and water bodies gives rise to immense biodiversity value, including Southern Zanzibar-Inhambane Coastal Forest Mosaic (associated with widely scattered wetland pans), diverse flooded grassland, woodland, and deep-water swamp communities of the Zambezi Delta plain (Zambezi Coastal Flooded Savanna ecoregion), and extensive coastal mangroves of the East African Mangrove ecoregion (all critically threatened ecoregions and global biodiversity conservation hotspots). The Zambezi Delta features diverse and abundant large mammal populations and the largest concentration of waterbirds in Mozambique. In addition to its rich biodiversity values, the Zambezi Delta sustains a wealth of ecosystem services that are vital to food security and socio-economic development for more than 300,000 people that live in the region (Beilfuss et al. 2011).

The North Bank Expansion will substantially increase the size and value of the existing "Marromeu Complex" Ramsar Site, doubling the area of floodplain wetlands under designation and adding the adjacent Morrumbala escarpment, which is vital to the ecological integrity of the delta system. Due to the reduction in floodwaters reaching the delta floodplains resulting from upstream impoundments (especially Kariba and Cahora Bassa dams) and local flood control dykes along the Zambezi River channel, the north bank floodplains are highly dependent on local rainfall-runoff from the Morrumbala escarpment. The North Bank Expansion features coastal moist evergreen forest and miombo woodland, vast flooded grasslands, one of the largest papyrus swamps (>50,000 ha.) in southern Africa, and some of the most extensive mangroves on the east coast of Africa (Beilfuss et al. 2002). Large coconut plantations occur on parallel dune ridges near the coast. Important fauna includes a rich diversity of marine and freshwater fish and shellfish species, bottlenosed and humpback dolphins, abundant waterbirds including Endangered Grey Crowned Cranes, Vulnerable Wattled Cranes, white and pink-backed pelicans, four species of storks, and Caspian terns, and many large mammal species include African buffalo, elephant, hippo, lion, and leopard.

## 2 - Data & location

### 2.1 - Formal data

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

Name

Institution/agency

Postal address *(This field is limited to 254 characters)*

E-mail

Phone

Fax

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

From year

To year

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

### 2.2 - Site location

## 2.2.1 - Defining the Site boundaries

### b) Digital map/image

<2 file(s) uploaded>

Boundaries description (optional) *(This field is limited to 2500 characters)*

The Zambezi Delta Ramsar Site includes the entire deltaic system (the south and north bank floodplains of the Zambezi River Delta) and the adjacent catchment areas of the Cheringoma escarpment (south bank) and Morrumbula escarpment (north bank).

The boundaries of the south bank (Marromeu Complex Ramsar site) are previously established (Marromeu Complex RIS 4.7.2003).

The boundary of the North Bank Expansion is contiguous with the Marromeu Complex Ramsar Site and follows (in a counter-clockwise direction) the main channel of the Zambezi River from the city of Mopeia southeast to the Zambezi River mouth at Chinde on the Indian Ocean coast\*, then extends in a northeast direction along the coast from the Zambezi mouth to Quelimane Municipality, and then follows the catchment divide from Quelimane along the northern and western boundary to Mopeia—cutting across part of Nicoadala district from Quelimina city, then following the border of Mocuba district and Milange Districts, and then cutting across Morrumbula district to a point northwest of Mopeia. As such, the Ramsar site includes the almost the entire local drainage area of the Zambezi Delta (excluding only a small part of the local upper catchment of north bank that extends into Mocuba and Milange Districts). The North Bank Expansion occurs entirely within Zambezia Province.

The entire boundary of the North Bank Expansion along the Zambezi River from Mopeia to Chinde (approximately 120 km) adjoins with the boundary of the Marromeu Complex Ramsar Site, creating one contiguous site, the Zambezi Delta Ramsar site, that extends along 200 km of coastline from Quelimane (north) to the mouth of the Zuni River (south).

## 2.2.2 - General location

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

Sofala / Zambezia Province

b) What is the nearest town or population centre?

Quelimane

## 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): 3171172

Area, in hectares (ha) as calculated from GIS boundaries 3165656.22

## 2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Freshwater Ecoregions of the World (FEOW)	Zambezi

Other biogeographic regionalisation scheme *(This field is limited to 2500 characters)*

- From Freshwater Ecoregions of Africa and Madagascar (Thieme et al. 2005):
- East African Coastal Forests (Southern Zanzibar-Inhambane Coastal Forest Mosaic) ecoregion (8)
  - East African Miombo Woodlands ecoregion (88)
  - Zambezi Flooded Savannas ecoregion (98);
  - East African Mangroves ecoregion (136)
  - East African Marine ecoregion (233)

## 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 *(This field is limited to 3000 characters)*

The proposed North Bank Expansion of the Marrromeu to the Zambezi Delta will substantially increase the area under protection of rare, representative, and highly threatened wetland communities of this bioregion, including:

- Southern Zanzibar-Inhambane Coastal Forest Mosaic, a critically threatened ecoregion and global biodiversity conservation hotspot that features large tracks of Dry Forest and Moist Evergreen Forest that are not found elsewhere in Mozambique and have unusual species composition and high species richness (including nine forest species on the Mozambique Plant Red Data List);
- The diverse grassland and woodland communities of the Zambezi Delta plain, at the heart of the critically threatened Zambezian Coastal Flooded Savanna ecoregion;
- Extensive coastal mangroves that form part of the East African Mangrove ecoregion, a critically threatened and global biodiversity conservation hotspot, fronted by pristine coastal dunes and beaches (Beilfuss et al. 2011).

Wetlands of the coastal forest mosaic include wetland pans scattered throughout dry lowland forest and *Barringtonia* evergreen swamp forest. The coastal flooded savanna mosaic includes floodplain palm and *Acacia* savannas, seasonally and permanently flooded grasslands, papyrus and *Phragmites* swamps on the delta plains. The mangrove forests are interspersed with saline flooded grasslands, *Eleocharis* spikerush swamps, and salt marshes near the coast (Beilfuss et al. 2000, Beilfuss et al. 2002).

Other ecosystem services provided *(This field is limited to 3000 characters)*

Important hydrological values provided by this system, with additional storm surge and coastal erosion protection, flood storage and protection, and seasonal water retention for wetlands that provide a wealth of ecosystem services that are vital to food security and socio-economic development of the region, including but not limited to:

- Lucrative estuarine prawn fisheries that serves as one of the most important sources of export revenue in Mozambique;
- Nutrient-rich floodplain agricultural lands irrigated by the natural ebb and flow of the Zambezi River;
- Productive freshwater fisheries in the mainstream Zambezi, seasonal and permanent floodplain waterbodies, and pans and drainage lines on the escarpment;
- Clean and abundant freshwater, in surface waters and shallow groundwater aquifers, for drinking, cleaning, bathing, and other household uses;
- Extensive dry season livestock grazing lands supported by persistent high water table conditions.

#### Criterion 2 : Rare species and threatened ecological communities

#### Criterion 3 : Biological diversity

Justification *(This field is limited to 3000 characters)*

The Zambezi Delta maintains a rich biodiversity important to this biogeographic region. The North Bank Expansion provides key habitat for the mangrove crab *Scylla serrata* and other mangrove dwelling crustaceans (portunids, etc), which are economically important to the local population. Diverse bivalves and gastropods also are present in the mangrove swamps. The marine fish fauna of the Zambezi Delta region is characterized by a great variety of species. The research vessel "E. Heackel" recorded 341 species of fish, of which 288 were demersal (near shore bottom) species (in 110 families), 45 were pelagic (8 families), and 8 mesopelagic (5 families) (Brinca et al., 1983). Marine mammals are abundant in both shallow and offshore waters of the Zambezi delta. Bottlenosed dolphins (*Tursiops truncatus*) and humpback dolphins (*Sousa chinensis*, NT) are commonly observed around the delta. The Zambezi delta mangrove and adjacent intertidal areas support nesting and breeding grounds for numerous bird species of conservation concern, including the white and pinkbacked pelicans (*Pelecanus onocrotalus*, LC, *P. rufescens*, LC), four species of storks (e.g. *Ciconia episcopus* VUL, *Anastomus lamelligerus* LC, *Ephippiorhynchus senegalensis* LC, *Mycteria ibis*, LC), the Caspian tern (*Sterna caspia*), as well as African fish eagles, egrets, kingfishers, flamingos, waders, cormorants, and herons. More than 10,000 African Openbill storks have been recorded on Zambezi River sandbars in the Zambezi Delta (Bento and Beilfuss 1999 and Beilfuss and Brown 2006). The area is also considered an important breeding colony for the white pelican, with thousands of breeding pairs being observed nesting on the mangrove trees; this is in fact one of the largest breeding colonies in southern Africa (Beilfuss & Bento, 1998).

Criterion 6 : >1% waterbird population

Criterion 8 : Fish spawning grounds, etc.

**Justification** (*This field is limited to 3000 characters*)

The Zambezi Delta supports the key life history requirements of many fish and shellfish species, providing food, spawning grounds, nursery grounds, and migratory pathways for anadromous fish species. Zambezi Delta fisheries, especially the wild-caught prawn fishery, are vital to the national economy of Mozambique. The delta system supports the life history requirements for at least 176 species of estuarine fish and shellfish (Brinca et al. 1983). The Hilsa kelee (Kelee shad) is the most abundant fish species among the coastal estuarine species. Important near-shore fish families include the Carangidae, Scianidae and Haemulidae.

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

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
<i>Barringtonia racemosa</i> 	Powder-puff tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
<i>Eleocharis geniculata</i> 	bent spikerush	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		

(This field is limited to 2500 characters)

- Cola mossambicensis (Vulnerable)
- Dichapetalum zambesiaca (Vulnerable),
- Sterculia appendicula (Vulnerable)
- Afzelia quanzensis (Lower Risk)
- Milicia excels (Lower Risk)
- Millettia mossambicensis (Lower Risk)
- Millettia stuhlmannii (Lower Risk)
- Xylia torreana (Lower Risk)
- Ziziphus pubescens (Status Uncertain)

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

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	<i>Anastomus lamelligerus</i> 	African Openbill	<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"/>	8500	1996	2.12	LC 	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / MAMMALIA	<i>Balaenoptera acutorostrata</i> 	Common Minke Whale; Minke Whale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / AVES	<i>Balearica regulorum</i> 	Grey Crowned Crane	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / AVES	<i>Bugeranus carunculatus</i> 	Wattled Crane	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2570	1990	32.12	VU 	<input type="checkbox"/>	<input type="checkbox"/>		the largest concentration of wattled cranes ever observed in Africa (Goodman, 1992)
CHORDATA / AVES	<i>Ciconia episcopus</i> 	Woolly-necked Stork	<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"/>		
CHORDATA / REPTILIA	<i>Cycloderma frenatum</i> 	Zambezi Flap-shelled turtle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	NT in IUCN redlist	
CHORDATA / AVES	<i>Ephippiorhynchus senegalensis</i> 	Saddle-billed Stork	<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"/>		
CHORDATA / AVES	<i>Hydroprogne caspia</i> 	Caspian Tern	<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"/>		
CHORDATA / MAMMALIA	<i>Megaptera novaeangliae</i> 	Humpback Whale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
CHORDATA / AVES	<i>Mycteria ibis</i> 	Yellow-billed Stork	<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"/>		

RIS for Site no. 1391, Zambezi Delta, Mozambique

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	<i>Pelecanus onocrotalus</i> 	Great White Pelican	<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 checked="" type="checkbox"/>		
CHORDATA / REPTILIA	<i>Proatheris superciliaris</i> 	Eyebrow viper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Near endemic	
CHORDATA / AVES	<i>Rynchops flavirostris</i> 	African Skimmer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	NT in IUCN redlist	
CHORDATA / MAMMALIA	<i>Sousa chinensis</i> 	Humpbacked Dolphin	<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"/>				NT 	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / MAMMALIA	<i>Tursiops truncatus</i> 	Bottlenosed Dolphin; Bottlenose Dolphin	<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 checked="" type="checkbox"/>		

*(This field is limited to 2500 characters)*

The Zambezi Delta is important for the global conservation of two threatened waterbird species, the Endangered grey crowned crane (*Balearica regulorum*) and Vulnerable wattled crane (*Bugeranus carunculatus*) (Bento et al. 2002). The North Bank Expansion will substantially increase the area of available habitat for these species, which occur nowhere else in substantial numbers in Mozambique. Africa skimmer, *Rynchops flavirostris* (NT), a species in regional decline, occurs in large numbers on delta sandbars (Bento 2000). The near-endemic Eyebrow viper (*Proatheris superciliaris*) and locally threatened Zambezi flap-shelled turtle (*Cycloderma frenatum*, NT) occur in the delta (Timberlake 1998, 2000). Findlay et. al. (1994) reported 75 sightings of Vulnerable humpback whale (*Megaptera novaeangliae*, LC) and one sighting on Vulnerable minke whale (*Balaenoptera acutorostrata*, LC) off the delta coast. The delta supports many threatened and rare vegetation communities as part of the critically threatened Southern Zanzibar-Inhambane Coastal Forest Mosaic, Zambezian Coastal Flooded Savanna, and East African Mangrove.

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

<no data available>

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Southern Zanzibar-Inhambane Coastal Forest Mosaic	<input type="checkbox"/>	Characterized by widely scattered wetland pans	Dry Forest and Moist Evergreen Forest found nowhere in Mozambique and homt to some unusual species composition and diversity
Zambeziian Coastal Flooded Savanna ecoregion	<input type="checkbox"/>	Flooded grassland, woodland, and deep-water swamp communities	Palm and Acacia savannah, seasonally and permanently flooded grasslands, papyrus and Phragmites swamps
East African Mangrove ecoregion	<input type="checkbox"/>	Extensive coastal mangroves	Mangroves, coastal dune vegetation, saline mudflats and inlets

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

### 4.1 - Ecological character

*(This field is limited to 2500 characters)*

The major vegetation communities of the Zambezi Delta north bank (Beilfuss 2002) are associated with six physiographic units: (1) Dry lowland forest, wetland pans, miombo woodland/humid grassland/riverine forest mosaic, and Hyphaene palm savannah on the Morrumbula escarpment; (2) Acacia woodland and savanna, Borassus palm savannah, Hyphaene palm savanna, Acacia thicket, and mixed palm-Acacia thicket with cultivation on stratified alluvium on the upper Quaternary Deltoid Plain; (3) intermittently-flooded (tussock) wet grassland, seasonally-flooded (stoloniferous) swamp grassland, permanently-flooded papyrus and reed swamps, intermittently to seasonally-flooded saline grassland, and deep-water aquatic macrophytes on the lower Quaternary Deltoid Plain; (4) Cultivated areas with secondary vegetation on Zambezi River corridor stratified alluvium; (5) Mangrove forest and saline mudflats along the coastal shoreline and inlets; and (6) pioneer dune communities with thicket woodland and coconut plantations on coastal sand dunes.

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

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
E: Sand, shingle or pebble shores				
F: Estuarine waters				
H: Intertidal marshes		0		
I: Intertidal forested wetlands		0		Unique
J: Coastal brackish / saline lagoons		0		
K: Coastal freshwater lagoons				

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
L: Permanent inland deltas		1		
M: Permanent rivers/ streams/ creeks				
N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks				
P: Seasonal/ intermittent freshwater lakes				
R: Seasonal/ intermittent saline/ brackish/ alkaline lakes and flats		0		
Tp: Permanent freshwater marshes/ pools				
Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils				

## Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
1: Aquaculture ponds		0		
2: Ponds		0		
3: Irrigated land		1		
4: Seasonally flooded agricultural land		0		
6: Water storage areas/Reservoirs		0		
9: Canals and drainage channels or ditches		0		

## Other non-wetland habitat

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

## 4.3 - Biological components

### 4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Barringtonia racemosa</i>	Inland mangrove	
<i>Cassipourea gummiflua</i>		
<i>Celtis gomphophylla</i>		
<i>Cyperus papyrus</i>		
<i>Ficus sarmentosa luducca</i>		
<i>Nymphaea nouchali caerulea</i>		
<i>Phoenix reclinata</i>		
<i>Rhizophora mangle</i>	mangrove	

### 4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/MAMMALIA	<i>Aepyceros melampus</i>	impala				
CHORDATA/MAMMALIA	<i>Alcelaphus lichtensteinii</i>					
CHORDATA/AVES	<i>Anas acuta</i>	Northern Pintail				

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/AVES	<i>Anas querquedula</i>	Garganey				
CHORDATA/MAMMALIA	<i>Aonyx capensis</i>	African Clawless Otter				
CHORDATA/AVES	<i>Apalis ruddi</i>	Rudd's Apalis				
CHORDATA/AVES	<i>Batis fratrum</i>	Woodward's Batis				
CHORDATA/AVES	<i>Circaetus fasciolatus</i>	Southern Banded Snake Eagle				
CHORDATA/REPTILIA	<i>Crocodylus niloticus</i>					
CHORDATA/MAMMALIA	<i>Crocuta crocuta</i>	Spotted Hyena				
CHORDATA/MAMMALIA	<i>Equus quagga crawshayi</i>	Crawshay's Zebra				
CHORDATA/MAMMALIA	<i>Hippopotamus amphibius</i>	hippopotamus				
CHORDATA/MAMMALIA	<i>Hippotragus niger</i>	sable antelope				
CHORDATA/MAMMALIA	<i>Loxodonta africana</i>	African Bush Elephant				
CHORDATA/MAMMALIA	<i>Lycaon pictus</i>	African wild dog				
CHORDATA/MAMMALIA	<i>Panthera leo</i>	Lion				
CHORDATA/MAMMALIA	<i>Raphicerus sharpei</i>	Sharpe's grysbok				
ARTHROPODA/MALACOSTRACA	<i>Scylla serrata</i>					

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/MAMMALIA	Taurotragus oryx	eland				
CHORDATA/REPTILIA	Varanus niloticus					



## 4.4 - Physical components

### 4.4.1 - Climate

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

### 4.4.2 - Geomorphic setting

a) Maximum elevation above sea level (in metres)

Lower part of river basin

Coastal

### 4.4.3 - Soil

Mineral

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

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water	<input type="checkbox"/>	No change

Water destination

Presence?	Changes at RIS update
To downstream catchment	No change
Marine	No change

Stability of water regime

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

#### 4.4.5 - Sediment regime

Significant accretion or deposition of sediments occurs on the site

#### 4.4.6 - Water pH

Unknown

#### 4.4.7 - Water salinity

Fresh (<0.5 g/l)

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

Unknown

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

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 i) broadly similar  ii) significantly different   
Site differ from the site itself:

Surrounding area has greater urbanisation or development

Surrounding area has more intensive agricultural use 

## 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	High
Wetland non-food products	Livestock fodder	Medium

#### Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	
Erosion protection	Soil, sediment and nutrient retention	
Hazard reduction	Flood control, flood storage	
Hazard reduction	Coastal shoreline and river bank stabilization and storm protection	

#### Cultural Services

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

#### Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	Medium

Outside the site: 300000

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

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

#### 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
National/Federal government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Other

Category	Within the Ramsar Site	In the surrounding area
Unspecified mixed ownership	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commoners/customary rights	<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: *(This field is limited to 1000 characters)*

The Zambezi Regional Water Authority (ARA-Zambezi) is responsible for water management and allocation in the Zambezi River basin, including the delta. The Director is Mr. Custódio Vicente, based in the city of Tete.

The Provincial Director of Tourism is Mr. António Dinis, the Provincial Director of Environmental Affairs is Mr. António Osvaldo Paqueleque, the Provincial Director of Fisheries is Mr. Arcilio Madede, and the Provincial Director of Forestry & Wildlife Provincial Services is Mr. João Machel, all based in Quelimane.

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

Mr. Custódio Vicente, Mr. António Osvaldo Paqueleque, Mr. Arcilio Madede, Mr. João Machel

Postal address: *(This field is limited to 254 characters)*

not known

### 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	Medium 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	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dredging	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Salinisation	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Canalisation and river regulation	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Energy production and mining

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

## Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Logging and wood harvesting	Medium impact	Medium 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
Fire and fire suppression	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dams and water management/use	High impact		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vegetation clearance/ land conversion	Medium 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
Problematic native species			<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 5.2.2 - Legal conservation status

### National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Hunting concessions	Coutada Oficial no. 10, 11, 12, and 14		partly
Game reserve	Mahimba Game Reserve		partly
Protected area	Reserva Especial de Marrromeu		partly
Forest reserve	Reserva Florestal de Nhampacué and R.F. delr		whole

## 5.2.3 - IUCN protected areas categories (2008)

IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention

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	Partially implemented

### 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: *(This field is limited to 1000 characters)*

not known

### 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	Implemented
Animal community	Implemented
Birds	Implemented
Plant community	Implemented

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

*(This field is limited to 2500 characters)*

Appleton, G. C. (1996). Freshwater mollusks of southern Africa. Pietermaritzburg, University of Natal Press.

Azevedo, J. F., L. C. M. Medeiros, M. M. C. Faro, M. L. Xavier, A. F. Gândara & T. Morais (1961). Os moluscos de água doce do Ultramar Português. III – Moluscos de Moçambique. Estudos, Ensaios e Documentos N° 88: 1-394. Lisboa, Junta de Investigações do Ultramar.

Beilfuss, R. D. & D. G. Allan (1996). Wattled crane and wetland surveys in the Great Zambezi Delta, Mozambique. In: Beilfuss, R. D., W. R. Tarboton & N. N. Gichuki (eds). Proceedings African Crane & Wetland Training Workshop. 345-353 pp. Baraboo, International Crane Foundation.

Beilfuss, RD and Bento, C. 1998. Impacts of hydrological changes on the Marromeu Complex of the Zambezi Delta, with special attention to the avifauna. In: Proceedings of the Workshop on the Sustainable Use of Cahora, Bassa Dam and the Zambezi Valley, 29 September to 2 October, 1997 (Ed. B.R. Davies). ARPAC. Songo, Mozambique.

Beilfuss, R, C. Bento, M. Haldane, and M. Ribae. 2010. Status and distribution of large herbivores in the Marromeu Complex of the Zambezi Delta, Mozambique. WWF-Mozambique Country Office, Maputo.

Beilfuss, R., C. Bento, and P. da Silva. 2010. General Management plan for the Marromeu Complex, Mozambique: A Wetland of International Importance. Government of Mozambique, Maputo.

Beilfuss, R. and C. Brown. 2006. Assessing environmental flow requirements for the Marromeu Complex of the Zambezi Delta: Application of the DRIFT Model (Downstream Response to Imposed Flow Transformations). Museum of Natural History-University of Eduardo Mondlane, Maputo, Mozambique.

Beilfuss, R.D. and Brown, C., 2010. Assessing environmental flow requirements and tradeoffs for the Lower Zambezi River and Delta, Mozambique. Intl. J. River Basin Management 8 (2): 127-138.

Beilfuss, R., A. Chilundo, A. Isaacman, and W. Mulwafu. 2002. The impact of hydrological changes on subsistence production systems and socio-cultural values in the lower Zambezi Valley. Working paper #5 of the Program for the Sustainable Management of Cahora Bassa Dam and the Lower Zambezi Valley. International Crane Foundation, Baraboo, Wisconsin.

Beilfuss, R.D. and D. dos Santos. 2001. Patterns of hydrological change in the Zambezi Delta, Mozambique. Working paper #2 of the Program for the Sustainable Management of Cahora Bassa Dam and the Lower Zambezi Valley. International Crane Foundation, USA.

#### 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>

RIS for Site no. 1391, Zambezi Delta, Mozambique

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

<no file available>

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

Please provide at least one photograph of the site:



Marromeu ( Steven Stockhall, 18-03-2015)



Marromeu ( Steven Stockhall, 18-03-2015)



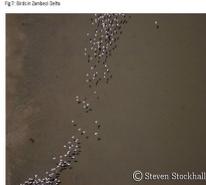
Zambezi ( Steven Stockhall, 18-03-2015)



Marromeu ( Steven Stockhall, 18-03-2015)



Zambezi ( Steven Stockhall, 18-03-2015)



Zambezi ( Steven Stockhall, 18-03-2015)



Zambezi ( Steven Stockhall, 18-03-2015)



Marromeu ( Steven Stockhall, 18-03-2015)

### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation