

BRIEF DOCUMENT OF DHARMADAM - ANCHARAKANDI

State / Union Territory : Kerala

Name and address of person(s) compiling this information :

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- 2.

Section 1: Identification, Location and Jurisdiction

1.1 Name of the Wetland (Alternative names, including in local language should be given in parenthesis after official name) : Dharmadam - Ancharakandi

1.2 Name of the Village(s) , Tehsil(s), Municipal area (s):

Villages : Muzhappilangad, Dharmadam, Eranjoli, Pinarayi, Thalassery, Thiruvangad

Panchayat : Muzhappilangad, Dharmadam, Eranjoli, Pinarayi, Thalassery

Taluks : Thalasseri, Kannur

Municipality : Thalasserri

1.3 District(s) in which wetland complex is located: Kannur

1.4 Geographical coordinates (Latitude and Longitude, to degree, minutes and second)

: Latitude: From 11°45'20.511" to 11°49'6.495"N

: Longitude: From 75°26'58.598" to 75°30'37.791"E

1.5 Name of the Department / Agency which has jurisdiction over the wetland / wetlands complex

: Local Self Governments, Irrigation Department, Kerala Coastal Zone Management Authority and State Wetland Authority Kerala

Section 2: Site Characteristics

2.1 Area of wetland / wetlands category (ha) : 702.00

2.2 Wetland type (Please tick appropriate categories and sub-categories)

Category	Subcategory
<input type="checkbox"/> Natural (Inland)	<input type="checkbox"/> Permanent lakes <input type="checkbox"/> Seasonal/ intermittent lakes <input type="checkbox"/> Permanent streams/ creeks <input type="checkbox"/> Seasonal/ intermittent streams/ creeks <input type="checkbox"/> Oxbow <input type="checkbox"/> River floodplain <input type="checkbox"/> Permanent freshwater marshes <input type="checkbox"/> Seasonal/ intermittent freshwater marshes <input type="checkbox"/> Shrub-dominated wetlands <input type="checkbox"/> Tree-dominated wetlands <input type="checkbox"/> Geothermal wetlands <input type="checkbox"/> Karst and other subterranean hydrological systems
<input checked="" type="checkbox"/> Natural (Coastal)	<input type="checkbox"/> Coastal lagoon <input checked="" type="checkbox"/> Estuary <input type="checkbox"/> Intertidal mud, sand or salt flats <input checked="" type="checkbox"/> Mangroves <input type="checkbox"/> Coral reefs
<input type="checkbox"/> Human-made	<input type="checkbox"/> Aquaculture pond <input type="checkbox"/> Tank <input type="checkbox"/> Saltpan <input type="checkbox"/> Dam / Reservoir

2.3 Depth (m) : No data

2.4 Elevation (m above mean sea level) : 0 to 1160m (Including Zone of Influence)

2.5 Water regimes

a) Main source of water (tick all applicable)

Rainfall Groundwater Catchment runoff Direct / indirect
inflow from river Others, please specify _____

b) Water permanence

Mostly permanent Mostly intermittent

c) Destination of water from wetland

Feeds groundwater To downstream catchment To river To sea

d) Water pH

Acid (< 5.5) Circumneutral (5.5 – 7.4) Alkaline (> 7.4) Not known

e) Water salinity

Fresh (< 0.5 g/l) Brackish (0.5 – 30 g/l) Euhaline (30- 40 g/l)
 Hypersaline (>40g/l) Not known

f) Nutrient in water

Eutrophic Mesotrophic Oligotrophic Not known

2.6 Climatic setting

- a) Annual Rainfall /Snowfall(mm) : 3438
Temperature (°C) : Minimum 25°C , Maximum 33°C
b) Humidity (%) : Minimum 78%, Maximum 84%

2.7 Area of zone of influence (in ha) : 58264.90

2.8 Major land use within zone of influence (provide as approximate % of catchment area)

Forests : 15.16
Plantation : 1.38
Agriculture : 25.31
Settlements (Rural) and (Urban) : 57.13
Water body : 1.01
Industrial : 0.00

2.9 Map of wetland complex and zone of influence: *Annexure I*

Section 3: Biodiversity

3.1 Notable plant species present in wetland

Mangroves: *Avicennia officinalis*, *Avicennia marina*, *Sonneratia alba*, *Rhizophora mucronata*, *Aegiceras corniculatum*

Macroalgae : *Ulva* sp., *Enteromorpha* sp. and *Chaetomorpha* sp.

Seagrass species : *Halophila beccarii*

3.2 Notable animal species present in wetland

Resident Birds: *Alcedo meninting*, *Amaurornis phoenicurus*, *Haliasturindus*, *Microcarbo niger*, *Threskiornis melanocephalus*, *Butorides striata*, *Corvus splendens*, *Copsychus saularis*, *Pycnonotus jocosus*.

Migratory Birds: *Nycticorax nycticorax*, *Ardea cinerea*, *Egretta garzetta*, *Ardea intermedia*, *Egretta gularis*, *Calidris temminckii*, *Tringa glareola*, *Arenaria interpres*, *Numenius arquata*

Fishes: *Elops machnata*, *Caranx heberi*, *Oreochromis mossambicus*, *Eetroplus maculatus*, *Etroplus suratensis*, *Scatophagus argus*, *Planiliza subviridis*, *Mugil cephalus*, *Rhinomugil corsula*, *Megalops cyprinoids*, *Lutianus chrysotaenia*, *Lutjanus argentimaculatus*, *Caranx carangus*, *Chanos chanos*, *Rasborad aniconius*, *Puntius filamentosus*, *Ophisternon bengalense*, *Parambassis dayi*, *Parambassis thomassi*, *Ambassis gymnocephalus*, *Ambassis dussumieri*, *Ambassis commersoni*, *Ambassis nalua*, *Liza parsia*, *Rhinomugil corsula*

Wasp: *Allorhynchium metallicum*, *Antepipona sibilans* , *Antodynerus flavescens*, *Indodynerus capitatus*, *Phimenes flavopictum*, *Rhynchium brunneum brunneum*.

3.3 Species of conservation significance (rare, endangered, threatened, endemic species):

Mystus malabaricus, *Mystus ocellatus* (Endemic to the Western Ghats). *Puntius filamentosus*, *Puntius vittatus* and *Aplocheilus lineatus* (Endemic to India). *Numenius arquata* (NT), *Oreochromis mossambicus*, *Halophila beccarii* (VU)

3.4 Major plant invasive alien species:
No data available

3.5 Major animal invasive alien species:
No data Available

Section 4: Ecosystem services

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Source of drinking water for people living and around	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Source of water for agriculture	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Fisheries	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Thick mangrove vegetation in this region supports freshwater, brackish and estuarine fishes. In addition to fish diversity, different types of crabs and prawns are also present, and the rural population depends on these fisheries resources
Cultivation of aquatic food plants	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
For buffalo wallowing and use of domesticated animals	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed
Medicinal plants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Medicinal plants like <i>Avicennia officinalis</i> , <i>Avicennia marina</i> , <i>Sonneratia alba</i> and <i>Rhizophora mucronata</i> are found in the wetland
Is a recreational site/Tourism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Dharmadam beach and surroundings are popular tourist attractions in Kannur. Pinarayi Panchatayh Park, Jurassic Park Kaliyil and Kaali park situated in the wetland.
Buffering communities from extreme events as floods and storms	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed
Groundwater recharge	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Acts as a sink for sediments	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sri Lakshmiapuram (Mathikkavu Bhagavathy) Temple located in the wetland. Valiya Thattukandiyil temple is located near the wetland.
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports plants species as mentioned in section 3.2
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports animal species as mentioned in section 3.2
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	High congregation of migratory birds are recorded in the area
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports life cycle of fishes mentioned in section 3.2
Mining	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Any other, please list		

Section 5: Pre-Existing Rights and Privileges

Nature of right and privilege	Relevant for the site (please tick yes or no)	Does this negatively impact the wetland's ecological health?	Brief description (up to 50 words for each category)
Community Fishing (without any lease or permission from government department)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	The local people engaged in, the harvest or processing of fishery resources to meet social and economic needs
Fishing under lease from government department	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-

Nature of right and privilege	Relevant for the site (please tick yes or no)	Does this negatively impact the wetland's ecological health?	Brief description (up to 50 words for each category)
Harvest of plants (without any lease or permission from government department)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Harvest of plants under lease from government department	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Agriculture or horticulture within wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Grazing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Livestock grazing is noted in wetland.
Religious practices	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	The sacred groves associated with the temples which include mangrove forests and swamps can be noted here. Theyyam or Theyyatam is one of the traditional ritualistic forms performed in the temple situated near to the wetland.
Withdrawal of water for domestic use	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Withdrawal of water for agriculture or fisheries	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Bathing or wallowing of domestic animals	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Not quantitatively studied

Nature of right and privilege	Relevant for the site (please tick yes or no)	Does this negatively impact the wetland's ecological health?	Brief description (up to 50 words for each category)
Plying of boats	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Country boats used for fishing & local transport
Any other, please list here	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	

Section 6: Present and Potential Threats

Threat	Degree	Present or Potential	Additional information, if any
Pollution	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Waste dumping from domestic and commercial sources reported
Unsustainable harvest of biological resources	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Declining trend of species diversity was observed because of the continuous clams and mussel collection and rearing, intensive shrimp culture practices
Mining	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Uncontrolled sand mining in the lower stretches of the river is reported
Siltation	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Anthropogenic disturbances in the catchment area are causing siltation, but not assessed quantitatively
Others	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	

Section 7: Activities Proposed to be prohibited (other than those listed in Rule 4(2) of Wetlands Rules)

Activity	Prohibited within wetlands or zone of influence	Details of specific area wherein activity is prohibited	Name of department / agency responsible for regulation	Additional information, if any
Any other, please list	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence		

Section 8: Activities Proposed to be regulated

Activity	Place a tick mark if relevant	Regulation within wetlands or zone of influence	Level of regulation (in terms of people, restricted area or any other)	Name of department / agency responsible for regulation	Additional information, if any
Withdrawal of water / impoundment/diversion or any other hydrological intervention	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit, SWAK, Irrigation Department	Need to take prior permission from Wetland Management Unit/SWAK
Discharge of treated sewage/ effluent / wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary	Within the wetland	Wetland Management Unit, SWAK, SPCB	Need to take prior permission from Wetland

Activity	Place a tick mark if relevant	Regulation within wetlands or zone of influence	Level of regulation (in terms of people, restricted area or any other)	Name of department / agency responsible for regulation	Additional information, if any
		<input type="checkbox"/> Zone of influence			Management Unit/SWAK
Aquaculture, agriculture and horticulture activities within the wetland boundaries.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit, SWAK, Dept of Fisheries, Dept of Agriculture	Need to take prior permission from Wetland Management Unit/SWAK
Any other, please list	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence			

Section 9: Activities Proposed to be permitted

Activity	Place a tick mark if relevant	Within wetlands or zone of influence	Additional information, if any
	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary	

Activity	Place a tick mark if relevant	Within wetlands or zone of influence	Additional information, if any
		<input type="checkbox"/> Zone of influence	

Section 10: Listing of Available Scientific Resources Used

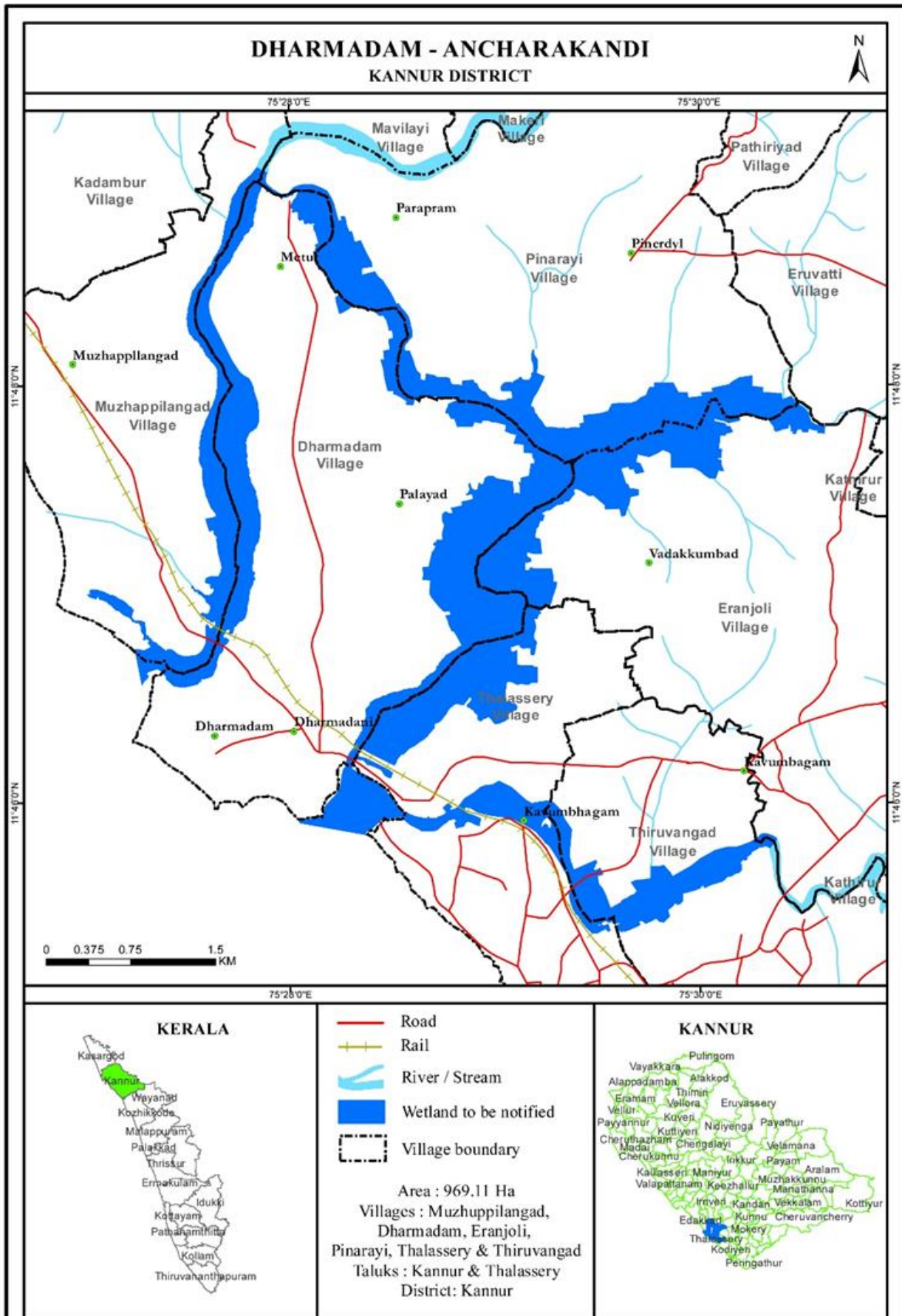
1. Athira, N., & Jaya, D. S, 2020 . Fish Diversity of Anjarakandy River in Kerala, South India. Journal of Aquatic Biology & Fisheries, 19.
2. Central Ground Water Board Kerala Region. 2013 . Ground Water Information Booklet of Kannur District, Kerala State, Technical Report Series D.
3. Kumar, P. G., & Rajmohana, K, 2018. Taxonomic studies on wasps of Kottooli and Thalassery-Dharmadam mangroves of Kerala (Insecta: Hymenoptera). Records of the Zoological Survey of India, 118(4), 337-349.
4. Santhwana, A., Venkitachalam, R, & Prakash, S., 2021. Checklist of bird species in Dharmadam estuary in Kannur district of Kerala. Kongunadu Research Journal, 8(1), 5-7.
5. Prabhakaran, M. P., Jayachandran, P. R., & Bijoy Nandan, S. (2021). The occurrence of vulnerable seagrass species *Halophila beccarii* Ascherson, 1871 from restored mangrove of Koduvally Estuary, south-west coast of India. *Lakes & Reservoirs: Research & Management*, 26(1), 70-75.

CHECKLIST

- Responsible agency has been clearly identified and details of contact person included
- Wetland/ wetlands complex boundary has been delineated using GIS and firmed up by adequate ground truthing
- Wetland/ wetlands complex map has been provided at required scale
- Zone of influence has been delineated and included in wetland map or a separate map

- Wetland zone of influence is sufficient to manage all activities
- Site's importance have been listed, and for major categories, justification is provided
- Site's biodiversity values are listed, and for major categories, justification is provided
- List of pre-existing rights and privileges is provided
- Consistency or inconsistency of pre-existing rights and privileges is indicated to be best of available knowledge
- Threats to site are listed, and for major categories details are provided
- Activities prohibited, beyond those already listed in Rule 4(2) have been mentioned
- List of activities to be regulated within wetlands and zone of influence is provided
- List of activities to be permitted is provided

Annexure I :



Annexure II :

