

BRIEF DOCUMENT OF VATTAKKAYAL AND KOTTAKKAL KAYAL

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) : **Vattakayal-Kottakkal Kayal**

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

Villages : Sakthikulangara
Tehsil(s) : Kollam
Panchayats : -
Corporation : Kollam

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

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

Latitude: From 8°54'53.123" to 8°55'38.424"N

Longitude: From 76°32'33.162" to 76°33'7.563"E

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

State Wetland Authority Kerala and the Local Self Governments

Section 2: Site Characteristics

2.1 Area of wetland complex (ha) : 28.99

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) : Maximum : 4

2.4 Elevation (m above mean sea level) : 0 to 10m (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 – tidal waters enter through the seasonal connectivity to Ashtamudi estuary

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 (mm) : 2,215
- b) Temperature (°C) : Minimum: 22, Maximum: 33
- c) Humidity (%) : Data not available

2.7 Area of zone of influence (in ha) : 366.49ha

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

Forests : 0.00

Plantation	: 0.10
Agriculture	: 19.96
Settlements (Rural) and (Urban)	: 74.35
Water body	: 5.58
Industrial	: 0.00

2.9 Map of wetland complex and zone of influence

Section 3: Biodiversity

3.1 Notable plant species present in wetland:

Higher plants: Water lily, *Excoecaria agallocha*, *Thespesia populnea*,

Phytoplanktons: *Closterium* sp., *Nitzschia* sp., *Navicula* sp., *Oscillatoria* sp., *Microcystis* sp.,
Brachionus sp.

3.2 Notable animal species present in wetland:

Fishes: *Aplocheilus lineatus*, *Aplocheilus panchax*, *Pseudosphromenus cupanus*, *Channa striatus*,
Anabas testudineus, *Awaous grammepomus*, *Oreochromis mossambicus*, *Etroplus surantensis*
Etroplus maculatus, *Parambassis thomassi*, *Hyporhamphus xanthopterus*, *Heteropneustes fossilis*,
Anguilla bicolor, *Chanos chanos*, *Dayella malabarica*, *Terapon jarbua*, *Mugil cephalus*, *Clarias*
batrachus, *Megalops cyprinoides*, *Mystus gulio*, *Mystus vittatus*, *Puntius sarana subnasutus*.

Birds: *Haliastur indus*, *Phalacrocorax fuscicollis*

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

Hyporhamphus xanthopterus, *Dayella malabarica* (Critically Endangered), *Puntius sarana*
subnasutus, *Terapon jarbua*, *Mugil cephalus*, *Heteropneustes fossilis*, *Parambassis thomassi*
(Vulnerable)

3.4 Major plant invasive alien species

Salvinia molesta, *Eichornia crassipes*

3.5 Major animal invasive alien species
No available data

Section 4: Ecosystem services

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (upto 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	Local fishermen collect fishes from the wetland regularly for their livelihood
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	Domestic animals are seen nearby inhabitants which depend on the wetland ecosystem directly
Medicinal plants	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Is a recreational site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Buffering communities from extreme events as floods and storms	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Groundwater recharge	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Water purification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Acts as a sink for sediments	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	There is a temple near Vattakayal and a Church near Kottakkal Kayal which are popular religious places
Is a site for recreation and tourism	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (upto 50 words for each category)
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Several mangrove plants are seen nearby
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports several noteworthy fish species as noted in section 3.2
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports life cycle of several fishes.
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 type="checkbox"/> No <input checked="" type="checkbox"/> Not assessed	Local inhabitants depend on the wetland complex for subsistence fishing
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	-
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	-

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)
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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
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	Maruthady temple near the wetland has ritual practices.
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	-
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	Used for local transportation and for fisheries related activities
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
Changes in water inflow and outflow	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	Not assessed

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	The pollution is moderate to high during pre-monsoon and the load decreases in the monsoon season due to dilution. Organic pollution has also been reported
Unsustainable harvest of biological resources	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	Not assessed
Mining	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	Not assessed
Siltation	<input checked="" type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Siltation is a significant factor in Kottakkal Kayal which impacts on the water flow and quality further
Encroachment	<input checked="" type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Encroachment in the wetlands is alarmingly high
Spread of invasive species	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Spread of Water Hyacinth and Salvinia are observed in the wetland
Decrease in the fish diversity	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The fish diversity has been decreased largely in the past 10 years, especially in Kottakkal kayal (as reported by nearby fishermen)

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

Activity	Place a tick mark if relevant	Prohibition within wetlands or zone of influence	Level of Prohibition (in terms of people, restricted area or any other)	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 checked="" type="checkbox"/> Zone of influence	Applicable to the whole wetland and its catchment area	Wetland Management Unit, SWAK, LSG, District Collector, Irrigation Department	Prior permission from Wetland Management Unit is required for large scale hydrological interventions which affect the ecosystem seriously

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
Discharge of treated sewage/ effluent / wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Applicable within the wetland boundary only	Wetland Management Unit, SWAK, LSG, District Collector, PCB	Prior permission from the wetland management unit is required for large scale discharges which adversely affect the ecosystem
Construction of boat jetties, and facilities for temporary use like pontoon bridges	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Applicable within the wetland boundary only	Wetland Management Unit, SWAK, LSG, District Collector, PCB	Prior permission from the wetland management unit is required
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	Applicable within the wetland boundary only	Wetland Management Unit, SWAK, LSG, District Collector, PCB	Prior permission from the wetland management unit is required for large scale commercial activities
Silt removal and sand mining	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands	Applicable within the wetland	Wetland Management Unit,	Prior permission from the

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
		complex boundary <input type="checkbox"/> Zone of influence	boundary only	SWAK, LSG, District Collector, Revenue Department	wetland management unit is required for large scale operation of > 10 cents area spread or >50m stretch length
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
Community based small scale subsistence level aquaculture/agriculture by the local inhabitants or their self help groups	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	This will encourage the local dependent communities to conserve the wetland ecosystem

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 <input type="checkbox"/> Zone of influence	

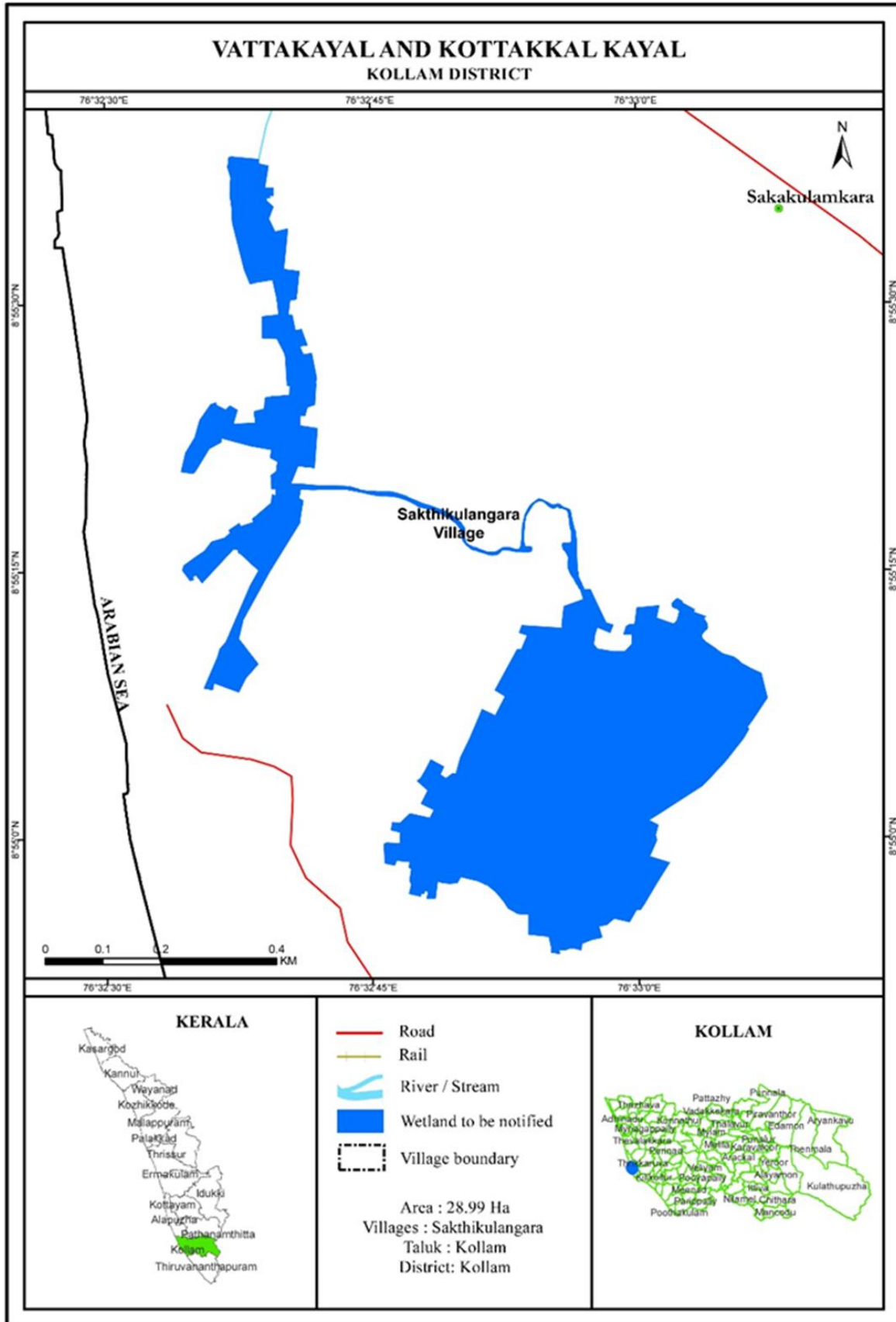
Section 10: Listing of Available Scientific Resources Used

1. Neethu G. P, Anzeer. F. M, Sruthi. S, Tresa Radhakrishnan, 2014. First Report on Ecology of Vattakkayal, Kollam, and Kerala nternational Journal of Scientific Research .Volume: 3 | Issue: 12. pp 132-134.8179
2. Williams S. E, Thomas N P, Vineetha S, 2020. A first report on the plankton status of Vattakkayal Lake, Kerala, International Journal Of Scientific & Technology Research, Volume 9, Issue 03, March 2020.
3. Seethal Lal. S., Jaya D.S, Sherly Williams E., 2013. Biodiversity Status of Fishes from Vattakkayal, A Part of Ashtamudi Lake, Kollam District, Kerala, South India. International Journal of Scientific and Research Publications, Volume 3, Issue 12, pp 1-6.
4. Seethal Lal. S., Jaya D.S, and Sherly Williams E, 2015. Ecological Degradation of Vattakkayal, a Part of Ashtamudi Lake, Kollam District, Kerala, South India. International Journal of Recent Engineering Science (IJRES), pp 20-24.
5. William S.E, Vineetha S, 2018, Seasonal Variation in the Physico - Chemical Parameters of Vattakkayal Lake, Corporation of Kollam, South India, International Journal of Science and Research (IJSR)
6. Observations from the field visit on 29.07.2022 and information collected from local communities.

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 : Zone of influence Map

