

BRIEF DOCUMENT OF KALLAYI

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) : **Kallayi**

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

Villages : Kasaba
Taluks : Kozhikode
Corporation : Kozhikode

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

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

: Latitude: From 11°13'36.818" to 11°14'21.714" N
: Longitude: From 75°46'45.063" to 75°47'49.472" E

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

Local Self Governments, Irrigation Department, State Wetland Authority Kerala and the Kerala Coastal Zone Management Authority (in CRZ Area)

Section 2: Site Characteristics

2.1 Area of wetland / wetlands category (ha) : 33.31

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 checked="" 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 available

2.4 Elevation (m above mean sea level) : 0 to 120m (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

Acidic (< 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) : 3130
b) Temperature (°C) : Minimum 23.3°C, Maximum 35.2°C
c) Humidity (%) : Minimum 67 %, Maximum 96 %

2.7 Area of zone of influence (in ha) : 8703.91ha

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

Forests : 1.18
Plantation : 0.00
Agriculture : 9.84

Settlements (Rural) and (Urban)	: 87.52
.	
Water body	: 1.20
Industrial	: 0.27

2.9 Map of wetland complex and zone of influence

Section 3: Biodiversity

3.1 Notable plant species present in wetland:

Mangroves: *Aegiceras corniculatum*, *Avicennia marina*, *A. officinalis*, *Bruguiera cylindrica*, *Excoecaria agallocha*, *Kandelia candel*, *Rhizophora apiculata*, *R. mucronata*, *Sonneratia alba* and *Sonneratia caseolaris*

Grasses: *Dimeria hohenackeri*, *Limnopoia meeboldii*

Marshy Plants: *Lindernia manilaliana*

Aquatic macrophytes: *Nymphoides sivarajanii*

3.2 Notable animal species present in wetland:

Fishes: *Carinotetraodon travancoricus*, *Monopterus digressus*

Birds: *Sypheotides indicus*, *Phoenicopterus roseus*, *Botaurus stellaris*, *Ixobrychus sinensis*, *Ixobrychus cinnamomeus*, *Ixobrychus flavicollis*, *Gorsachius melanolophus*, *Nycticorax nycticorax*, *Butorides striata*, *Ardeola grayii*, *Bubulcus ibis*, *Ciconia nigra*, *Ciconia episcopus*, *Ciconia ciconia*, *Ardea cinerea*, *Ardea purpurea*, *Ardea alba*, *Ardea intermedia*, *Egretta garzetta*, *Egretta gularis*, *Threskiornis melanocephalus*, *Platalea leucorodia*, *Pseudibis papillosa*, *Plegadis falcinellus*, *Phalacrocorax fuscicollis*.

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

Plants: *Dimeria hohenackeri*, *Limnopoia meeboldii*, *Lindernia manilaliana* (EN); *Nymphoides sivarajanii* (CR).

Animals: *Sypheotides indicus* (CR), *Threskiornis melanocephalus*, *Ciconia episcopus* (NT), *Carinotetraodon travancoricus* (VU),

3.4 Major plant invasive alien species

Ageratum conyzoides, *Alternanthera philoxeroides*

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	Not assessed quantitatively
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 assessed quantitatively
Medicinal plants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Is a recreational site/tourism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Kallayi Iron Bridge built by the British is a perfect spot to witness a breathtaking sunset. Other recreational activities are also taking place there like angling, boating etc.
Buffering communities from extreme events as floods and storms	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
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

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Kallai had a glorious past of trade and prosperity. It has an archaic charm and was a busy timber trade centre during the late nineteenth and early twentieth centuries.
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports noteworthy plants as mentioned in section 3.1
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports noteworthy 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	Bird watchers have spotted a rare migratory bird called Lesser Florican. Also the wetland is a site of high congregation of various other migratory birds.
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports life cycle of estuarine, river fish and molluscs
Mining	<input type="checkbox"/> Yes <input type="checkbox"/> No	No data available
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 their dietary 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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Religious practices	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	Not assessed
Withdrawal of water for domestic use	<input type="checkbox"/> Yes <input 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 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	Fishing boats are used here for the livelihood of the fishing community. Boats for local commuting are also seen here.
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	Pressures from urban settlements and other industrial activities cause pollution in the wetland. The area is seen with sewage inflows, industrial effluents & solid waste. But not assessed quantitatively.
Mining	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	Not assessed quantitatively
Siltation	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The accumulation of silt and the poor flow of water is reported in few selected locations
Encroachment	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The revenue department conducted surveys and found encroachment in the area including Kallayi river region.
Spread of invasive species	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	No data available
Degradation of Mangrove ecosystem	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The timber deposition from saw mills seriously affects mangroves there.
Unsustainable harvest of biological resources	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input type="checkbox"/> Present <input checked="" type="checkbox"/> Potential	It may be a potential threat due to over harvesting of the fishery resources

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
Further fragmentation of the estuary	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit, SWAK, KCZMA in CRZ area	More fragmentation of the wetland will affect the whole ecosystem.
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
Silt/sediment removal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Regulated within the wetland boundary	Wetland Management Unit, SWAK, Revenue Department, KCZMA in CRZ area	Large scale removal need to get prior permission from the Wetland Management Unit/SWAK, KCZMA in CRZ area
Hydrological interventions such as diversion, impoundment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary	Within the wetland	Wetland Management Unit, SWAK, Irrigation Department	Need to get prior permission from the Wetland Management

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		and KCZMA in CRZ area	Unit/SWAK, KCZMA in CRZ area
Discharge of treated effluents/wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Regulated within the wetland boundary	Wetland Management Unit, SWAK, PCB, KCZMA in CRZ area.	Need to take prior permission from the Wetland Management Unit/SWAK, KCZMA in CRZ area
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
Sustenance based capture fisheries	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input checked="" type="checkbox"/> Zone of influence	Local inhabitants are permitted to do capture fisheries for their dietary needs and daily sustenance

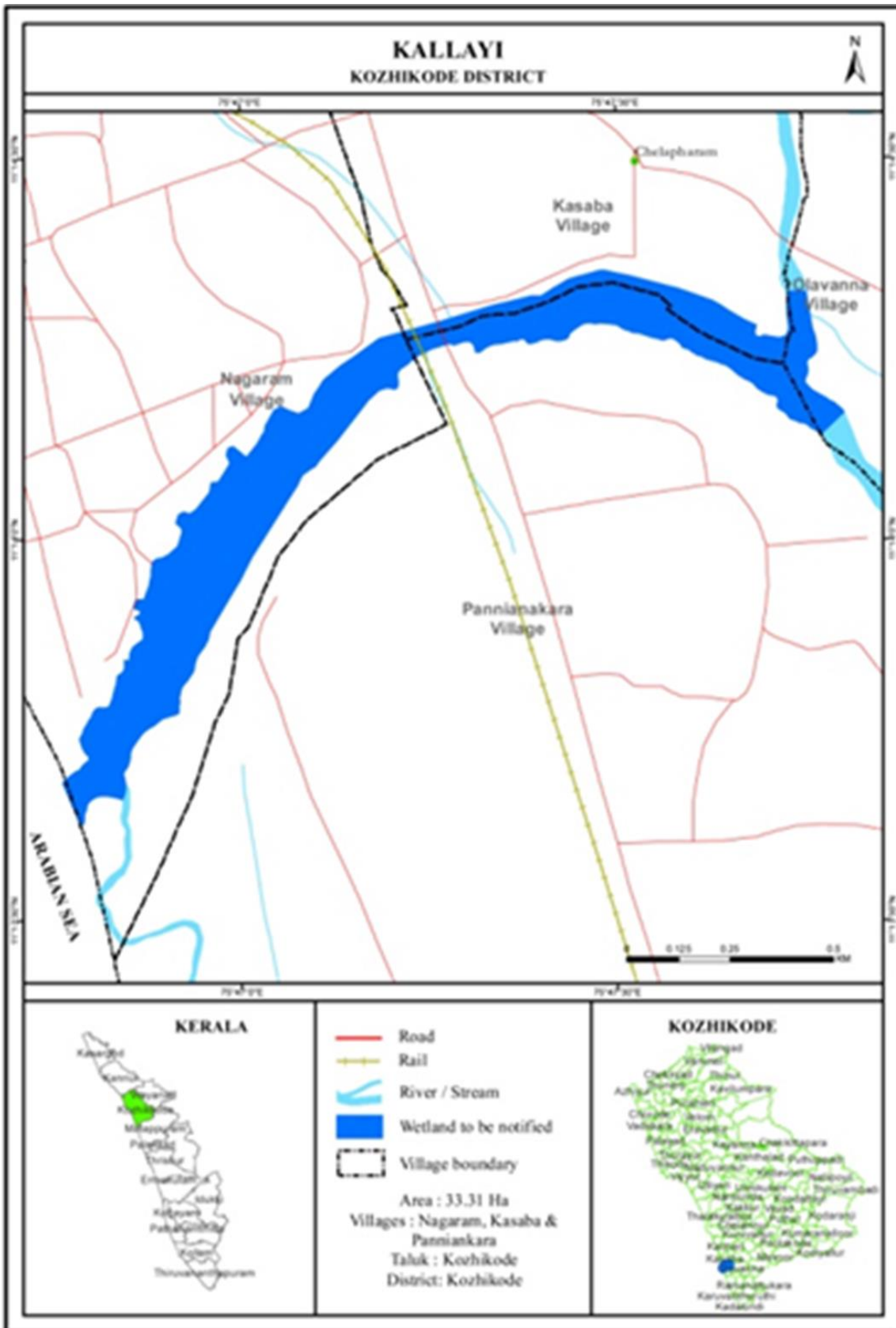
Section 10: Listing of Available Scientific Resources Used

1. Alex, R, 2015. Seasonal changes in water quality, biodiversity and distribution of phytoplankton in Chaliyar and Kallai rivers of Kozhikode, Kerala.
2. Bhat, S. G., & Sreekanth, P. M, 2018. Riverine biodiversity monitoring with reference to true mangroves in comparison with pre flood data. Final Report to Kerala State Biodiversity Board.
3. Kerala State Biodiversity Board, 2018. Final Report Riverine Biodiversity Monitoring with Reference to True Mangroves in Comparison with Pre Flood Data Impact of Floods/Landslides on Biodiversity of Kerala.
4. Pillai, N. G., & Harilal, C. C, 2018. Inventory on the diversity and distribution of mangroves from the coastal ecosystems of Kerala State, India. International Journal of Recent Scientific Research, 9(2), 24002-24007.

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 :

