CREEKS/ ESTUARY

- It is a coastal wetland
- A narrow, sheltered waterway, especially an inlet in a shoreline or channel in a marsh
- Creeks are coastal aquatic ecosystems characterized by tidal flushing.

WETLAND

- Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres." (Ramsar Convention, 1971, Article 1.1)
- This definition brings ponds, lakes, estuaries, reservoirs, creeks, mangroves and many more water bodies under the ambit of wetlands

METHODOLOGY

LITERATURE STUDY

NEED OF THE STUDY

AIM → Conserve the creek of Thane through planning interventions and sustainable practices.

OBJECTIVES →
1. To analyze growth of the city in and around the Thane creeks.
2. To analyze the impact of development on the Mangroves, fishery, water quality, birds of the creek.
3. To recommend planning strategies towards conservation and management
4. To Raise awareness on wetlands in general and Thane creek in particular.

INTRODUCTION TO SITE AREA

DATA COLLECTION

PRIMARY DATA

Focus group discussion & interviews amongst local communities.
Interactions with the officers
- MMRDA (Mumbai metropolitan region development authority)
- TMC(Thane Municipal Corporation)
- Mumbai mangroves conservation unit
- CIDCO
- MIDC

SECONDARY DATA

Demographic data from census of India 2011
Development plan – MMR 2015, 2035
Mangrove conservation report ,2017
CPCB report –Maharashtra 2000, 2009, 2019
Online journals

DATA ANALYSIS

SPATIAL
Evolution of Mumbai around Thane Creek
Impact of urbanization

BIODIVERSITY
Fisheries
Mangroves
Flamingo bird Sanctuary

POLLUTIONS
Industrial effluents
Non bio degradable solid waste
Water quality

SWOT ANALYSIS

PROPOSALS AND RECOMENDATIONS

CASE STUDIES

S.NO	ASPECTS	EAST KOLKATA WETLANDS
1	Issue	• There has been a 40% shift in the land use from fish farms to agricultural area in East Kolkata Wetlands • Sewage inflow into the catchment area of the wetlands. • Rapid threat to biodiversity and indigenous species of flora and fauna
2	Aim	To envisage ecosystem conservation and sustainable resource development supported by institutional development; communication, education and public awareness
3	Objectives	• To focus on conservation and sustainable resource utilization for ecological security • To develop strategies for economic improvement of stakeholders • To establish effective management practices for EKW • To coordinate actions at river basin level integrating coastal processes. • Promote innovative planning and integrated management approaches towards conservation and management • Raising awareness on wetlands in general and EKW in particular
4	Methods and Strategies	• Management zoning identifying entire wetland area as core zone and direct basin as buffer zone • Ensuring hydrological connectivity of EKW with freshwater and coastal processes at basin level • Regulating industrial effluent discharge as per CPCB standards • Environmental flows as basis for water allocation for conservation and developmental activities • Biodiversity conservation through habitat improvement of endangered and indigenous species • Poverty reduction through sustainable resource development and utilization • Strengthening EKWMA with adequate legal and administrative powers • Result oriented monitoring and evaluation based on activity, outcome and impact levels
5	Results	• Sewerage lines and treatment plants were constructed which succeeded in reducing pollution in catchment area. • Desiltation process helped in enhancing fish farming in the area. • Public awareness provision through celebration of wetlands and community involvement in management has helped in biodiversity conservation.

S.NO	CASE STUDIES	ASPECTS	PARAMETERS
1	Bhoj wetlands- management and conservation	• Visual surveys • Photographs, • Biological and chemical test to check the quality of water	• Total dissolved solids • Chloride • Carbon dioxide • Biological oxygen • Demand (bod) • chemical oxygen demand
2	Impact of urbanisation on water quality parameters – a case study of Ashtamudi lake, Kollam	• Industrial pollution: • Pollution due to coir retting • Fishing • Sand mining • Municipal waste disposal	• Dissolved oxygen • Biological oxygen • Demand (bod) • Fecal coliform
3	Wetland: biodiversity, Conservation in Vasai creek	• Mangroves • Fishery • Water quality- Industrial waste Solid waste	

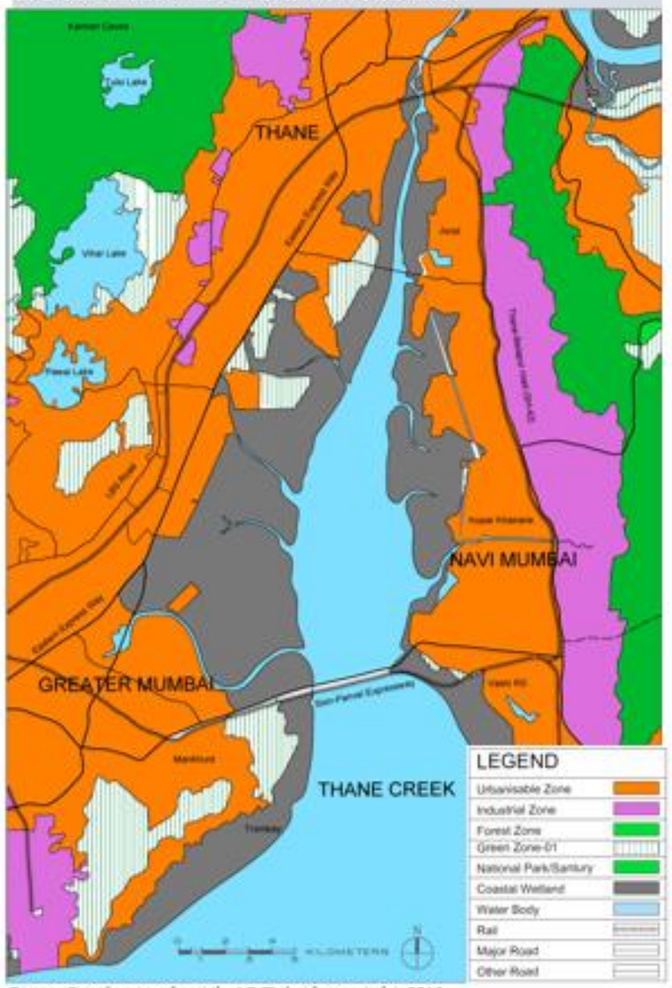
CONSERVATION OF THANE CREEK, MUMBAI

JINSON ABRAHAM
M.PLAN- A51235018005

INTRODUCTION TO STUDY AREA

- **Thane creek** (Long 72’ 55’ to 73° 00’E and Lat 19° 00’ to 19° 15’ N) is 26 km long.
- Thane has a tropical monsoon climate
- Temperature varies from 22 °C to 36 °C in summer and 16 °C to 28 °C in winter
- Rainfall- 2000 to 4000 mm
- **Thane Creek** is an inlet in the shoreline of the Arabian Sea that isolates the city of Mumbai from the Indian mainland.
- Thane creek has been formed due to seismic fault lying below it which runs from Uran to Thane
- Connections
  - Mumbai harbor on south
  - Ulhas River on North
- Creek is narrow and shallow at the riverine end.
- Broader and deeper towards the sea.
- On the east bank exists Asia’s largest industrialized zone namely Thane Belapur industrialized area along with the Navi Mumbai Urban area.
- The west bank has highly urbanized Mumbai and Thane region along with industrial area.

LOCATION OF THANE CREEK

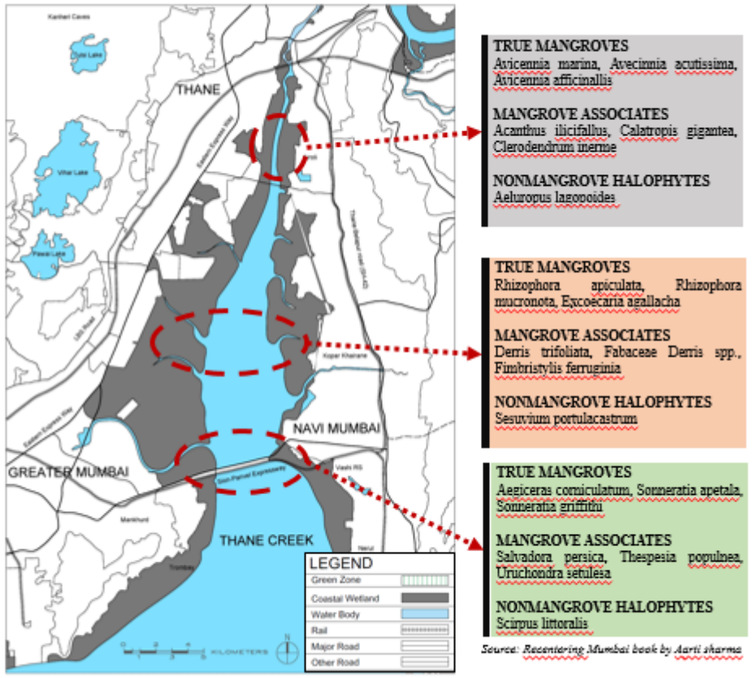


Source: Based on google earth ,MMR development plan 2016

AREA OF FOCUS

MANGROVES

MANGROVES OF THANE CREEK



TRUE MANGROVES
Avicennia marina, Avecinnia acutissima, Avicennia afficinallis

MANGROVE ASSOCIATES
Acanthus ilicifallus, Calatropis gigantea, Clerodendrum inerme

NONMANGROVE HALOPHYTES
Aeluropus lagopoides

TRUE MANGROVES
Rhizophora apiculata, Rhizophora mucronota, Excoecaria agallacha

MANGROVE ASSOCIATES
Derris trifoliata, Fabaceae Derris spp., Fimbristylis ferruginia

NONMANGROVE HALOPHYTES
Sesuvium portulacastrum

TRUE MANGROVES
Aegiceras corniculatum, Sonneratia apetala, Sonneratia eriffithi

MANGROVE ASSOCIATES
Salvadora persica, Thespesia populnea, Urichoondra setulesa

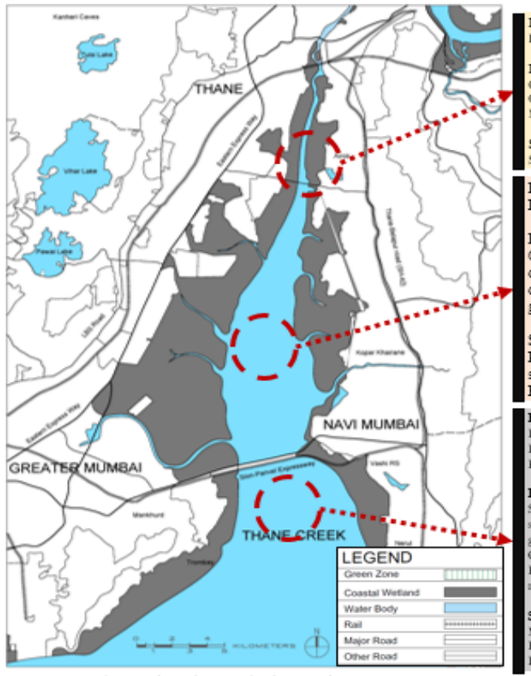
NONMANGROVE HALOPHYTES
Scirpus littoralis

Source: Based on google earth ,MMR development plan 2016

Source: Recentering Mumbai book by Aarti sharma

FISHERIES

THANE CREEK MAP WITH FISHING LOCATIONS



FISHING TYPE ACTIVITY
Barrier net (Vana) - 1

FIN FISH FAUNA:
Chaetosus nasus, Mystus gulio, Otolithoides brunneus, Mugil spigleri, Muugil Dussumieri, Scaena Dussumieri

SHELL-FISH FAUNA:
Scylla serrata

FISHING TYPE ACTIVITY
Driftnet (Disco jail) - 45

FIN FISH FAUNA:
Chaetosus chacunda, Lates calcarifer, Terapon theraps, Teuthis cramin, Therapon jarbua, Mystus gulio, Otolithoides brunneus

SHELL-FISH FAUNA:
Parapenaeopsis sculptilis, Peneaus sp., Cordium sp., Paphia sp., Katelysia.

FISHING TYPE ACTIVITY
Driftnet (Disco jail) - 250
Dragent (Yeri) - 10/150 (prawn)
Bag net (Dol/Bakshi) – 11

FIN FISH FAUNA:
Sillage Sihama, Kawala coval, Trichiurus savala, Coilia Dussumieri, Scaena glaucus, Equula splendens, Polynemus, Cynoglossus elongates, Caranx sp., Rastrellinger kanagurta, Umbrina russelli, Engraulis sp.,

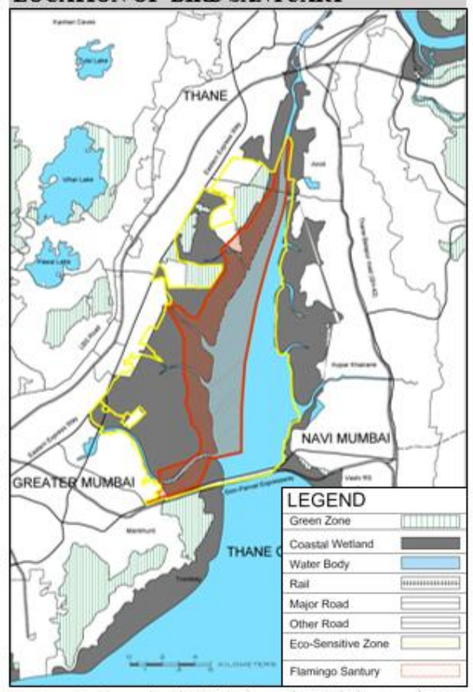
SHELL-FISH FAUNA:
Metapenaeus monoceros, Alpheus sp., Portunus sanguinolentus, Octopus sp., Loligo sp.,

Source: Based on google earth ,MMR development plan 2016

Source: Recentering Mumbai book by Aarti .

BIRD SANTUARY, THANE

LOCATION OF BIRD SANTUARY



Source: Based on google earth ,MMR development plan 2016, bird sanctuary plan 2015

PROMOTED ACTIVITIES
Rain water harvesting.
•Organic farming.
•Adoption of green technology for all activities
•Cottage industries including village artisans.
•Use of renewable energy and fuels.
•Agro-forestry.
•Plantation of Horticulture and Herbals.
•Use of eco-friendly transport.
•Skill development.
•Restoration of degraded land/forests/habitat.
•Environmental awareness.

PROHIBITED ACTIVITIES
Commercial, mining, stone quarrying and crushing units
•Setting of industries causing pollution (Water, Air, Soil, Noise, etc.)
•Establishment of major hydro-electric project.
•Use or production or processing of any hazardous substances.
•Discharge of untreated effluents in natural water bodies or land area.
•Setting up of new saw mills.
•Setting up of bricks kilns.

ORTHER ASPECTS

EVOLUTION OF MUMBAI AROUND THE CREEK

The study shows a progressive growth in the South North direction, focussed with the connectivity with the island city. The urbanization around the Thane creek area is predominantly only after the 1950s, after India’s independence and Bombay State was created.

URBANIZATION

built-up is increasing leading to urbanization which is the main cause of narrowing creek channels.

INDUSTRIAL EFFLUENTS

The no of industries are increasing every year and are generating large no of harmful industrial effluents
The 2 CETPs is not sufficient to treat the generated effluents and immediate action has to be taken.

NON BIODEGRADABLE SOLID WASTE

Animals that eat plastic can strangle or experience digestion problems. Microplastics, tiny bits of polypropylene or polyethylene, hide beneath the water and pose a risk as well

CONSERVATION OF THANE CREEK, MUMBAI

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SWOT ANALYSIS

STRENGTH	WEAKNESS

• The tropical monsoon climate is very good for mangroves cultivation
• Connections
  • Mumbai harbor on south
  • Ulhas River on North
• Northern area of Thane creek was secured as Flamingo Sanctuary under Section 18 of Wildlife Protection Act of 1972
• Rich bio-diversity
• Eco sensitive zone buffer zone of 3kms
	• Thane Belapur industrialized zone on the east side leads to the maximum water pollution
	• Lack of awareness in appreciation of this eco-system
	• Absence of integrated approach towards wetland management.

OPPORTUNITY	**THREATS**
• TMC is planning to increase the no CETP's in the TTC MIDC estate. • There has been rise in the number of mangroves in Maharashtra due to the continuous plantation and from the mangroves department and there is a scope for more betterment. • Open(green) space for eco-tourism related activities and for conducting events and programmes for awareness. • Bird sanctuary to get a better recognition in future • Eco sensitive zone buffer zone of 10kms.	• Built-up is increasing leading to urbanization which is the main cause of narrowing creek channels in the last 4 decades • Growing no of industries around the creek and The presence of BOD, FC less availability of DO in creek water indicates discharge of sewage and wastewater into creek waters is the biggest threat. • Plastics and thermocol are wrongly taken as food by fishes, birds and crabs. This can prove to be fatal to these organisms. It can pose severe threats to the existing mangrove plants and will affect the regeneration process of the mangrove ecosystem • The presence of BOD, FC less availability of DO in creek water indicates discharge of sewage and wastewater into creek waters

PROPOSALS AND RECCOMENDATIONS

1. A management plan should be prepared using participatory approaches.

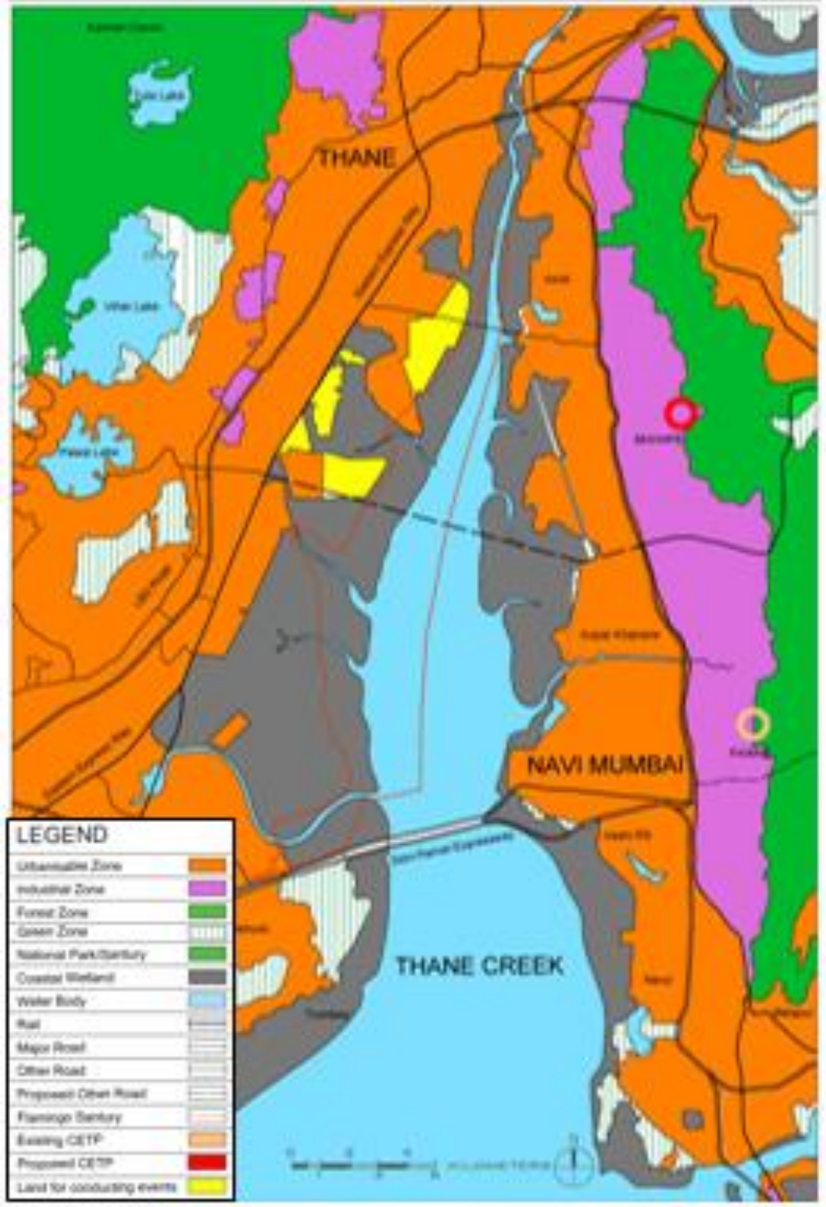
2. Public Participation and Awareness
   - The common man should be educated about the ecological importance and the need for conservation of resources. This can be achieved by conducting educational trails within and around the creek, as the creek is also rich in avian fauna.
   - Plastics is a menace of the 21st century, to tackle this problem the government needs to completely ban the use of plastics (at least the carry bags) and enforce the use of alternate materials instead.
   - Promote mangrove conservation
   - Conservation of mangrove ecosystems is more than just planting new trees. It includes, science, policy, education and much more.
   - The goal of the "Global Mangrove Alliance" is to change the way that people see and value mangroves, which will lead to an increased commitment to conserve and restore these amazing systems

1. Installation of CETP's (Common Effluent Treatment Plant) at Mahape , Mumbai.

A new CETP of 25MLD should be installed at Mahape.

Advantages are as follows
   - Saving in Capital and Operating cost of treatment plant. The Common treatment is always cheaper than small scattered treatment units.
   - Availability of land which is difficult to be ensured by all individual units in the event they go for individual treatment plants. Contribution of nutrient and diluting potential, making the complex industrial waste more amenable to degradation.
   - The neutralization and equalization of heterogeneous waste makes its treatment techno-economically viable.
   - Professional and trained staff can be made available for operation of CETP which is not possible in case of individual plants. Disposal of treated wastewater & sludge becomes more organized.
   - Reduced burden of various regulatory authorities in ensuring pollution control requirement

LOCATION OF PROPOSALS



Source: Based on google earth , MMR development plan 2014

PROPOSALS FORM THANE MUNICIPAL CORPORATION

1. Solid Waste Management
2. Mangroves plantation
3. Dredging and Basin Canalization
4. Rainwater Harvesting
5. Public Participation and Awareness

CONSERVATION OF THANE CREEK, MUMBAI

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