C40 CITIES

Thiruvottiyur Shoreline

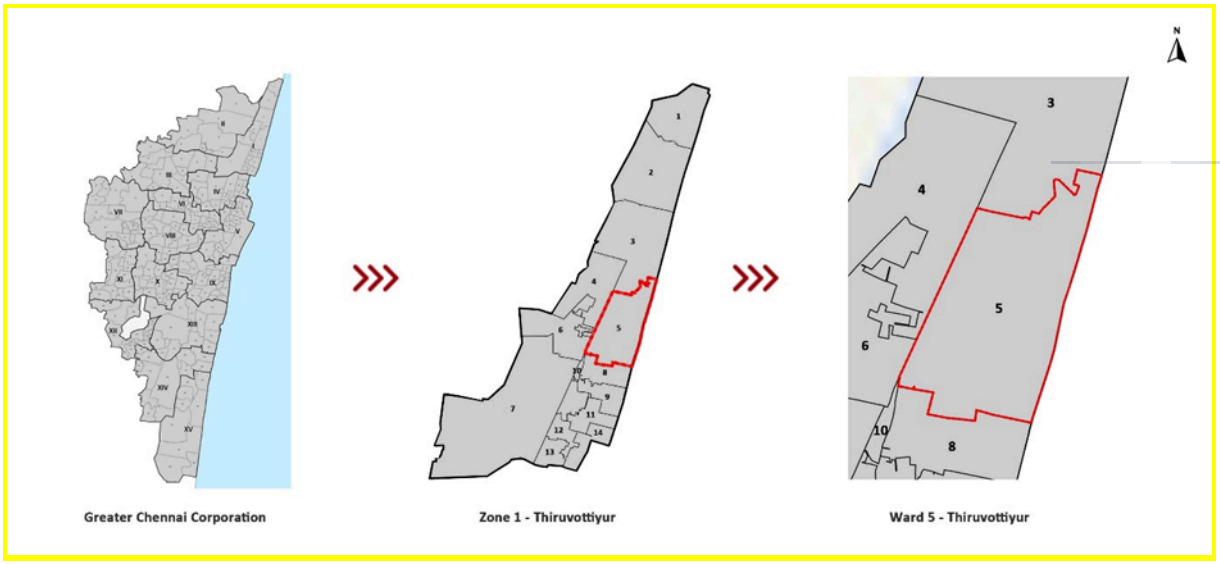
Thiruvottiyur Taluk, Chennai district

As global temperatures accelerate towards 3°C scenarios, Chennai faces increasingly severe climate shocks, including extreme heat waves, intense rainfall, coastal flooding, storm surges and shoreline erosion.

Thiruvottiyur Shoreline, located along the northern coastline of Chennai, is an established coastal and industrial urban area within the Greater Chennai Corporation, where these shocks are felt directly. Its urban character is shaped by a mix of residential neighbourhoods, traditional fishing settlements, industrial establishments and coastal ecosystems, with close proximity to the Manali-Ennore industrial corridor.

The area faces multiple environmental and climate-related challenges, including sea-level rise, shoreline erosion, urban flooding, urban heat exposure, industrial and vehicular air pollution, and periodic water scarcity associated with prolonged dry conditions. Its coastal location and industrial significance make it a strategic intervention area for demonstrating how climate resilient urban redevelopment can integrate coastal protection, ecological restoration, sustainable mobility and inclusive neighbourhood development, starting with rapid spatial solutions.

Participants are challenged to demonstrate how climate sensitive and sustainable urban planning can create liveable, environmentally responsive and resilient neighbourhoods. With a particular emphasis on rapid action for extreme weather, proposals should identify immediate, implementable and scalable spatial interventions that can mitigate climate risks, strengthen local preparedness and enhance the capacity of neighbourhoods to respond to present and future climate shock.



Key Map of the Study Area

Key Information

Zone I of the Greater Chennai Corporation (GCC), is a major coastal and industrial centre within the Chennai Metropolitan Area (CMA). The zone comprises 14 wards, with Ward No. 5, Thiruvottiyur, delineated as the competition area. The study area covers approximately 2.31 sq. km. The selected ward has a recorded population of 21,225, as per the 2011 Census, the latest available Census data.

Priority hazard and expectations

Thiruvottiyur's coastal location exposes its settlements, infrastructure, and livelihoods to marine hazards, mainly coastal flooding from cyclones, storm surges, and sea-level rise, compounded by shoreline erosion and northeast monsoon-induced urban flooding, aggravated by inadequate drainage, especially in low-lying areas. CMA expects an integrated urban planning and design framework that prioritises rapid, implementable, site-specific interventions to reduce exposure and strengthen coastal resilience. Proposals should also integrate urban heat mitigation to create a liveable, sustainable, and inclusive neighbourhood built for long-term climate adaptability.

Site profile

Thiruvottiyur is located in Zone I of the Greater Chennai Corporation, along the northern coastline of the Chennai Metropolitan Area (CMA). The area has evolved into an established coastal and industrial urban centre, characterised by residential neighbourhoods, industrial establishments and coastal infrastructure. Its urban structure is closely connected to the adjoining Manali-Ennore industrial corridor and the northern coastal belt of Chennai. The area accommodates a diverse population, including fishing communities, industrial workers and residents engaged in various commercial and service sector activities. Population distribution and density vary across its residential neighbourhoods and coastal settlements, with variations in age composition and socio-economic conditions influencing the demand for housing, infrastructure and community services.

Its location along the Bay of Bengal exposes parts of the area to coastal hazards, including storm surges, shoreline erosion and sea-level rise. The settlements located close to the shoreline are particularly exposed to coastal flooding, erosion and extreme weather events, potentially affecting housing, fishing-related livelihoods and access to essential services. Industrial workers and outdoor labourers are also vulnerable to prolonged heat exposure, while communities residing close to industrial establishments and major transport corridors experience additional environmental pressures from air pollution. Intense northeast monsoon rainfall further aggravates flooding in low-lying neighbourhoods, particularly where drainage infrastructure is inadequate.

These environmental and climate related challenges are closely linked to the area's existing settlement pattern and distribution of land uses. Within this context, Ward No. 5 exhibits a mixed residential and industrial land use pattern, comprising low-income and middle-income residential neighbourhoods alongside industrial, warehousing, freight and commercial establishments.

Within this context, Ward No. 5 is primarily accessed through key arterial roads, including Thiruvottiyur High Road, State Highway 114 (Ennore Express Road) and Manali High Road, which connect the study area with surrounding neighbourhoods and the northern metropolitan region. The area is further supported by Chennai Metro Blue Line connectivity through Thiruvottiyur, Wimco Nagar and Wimco Nagar Depot Metro Stations. The Thiruvottiyur Bus Terminus provides local and regional bus connectivity, linking surrounding neighbourhoods with central Chennai and the northern metropolitan areas. Although Thiruvottiyur Railway Station is located outside the delineated study area, it serves as an important transport facility for residents of the ward.

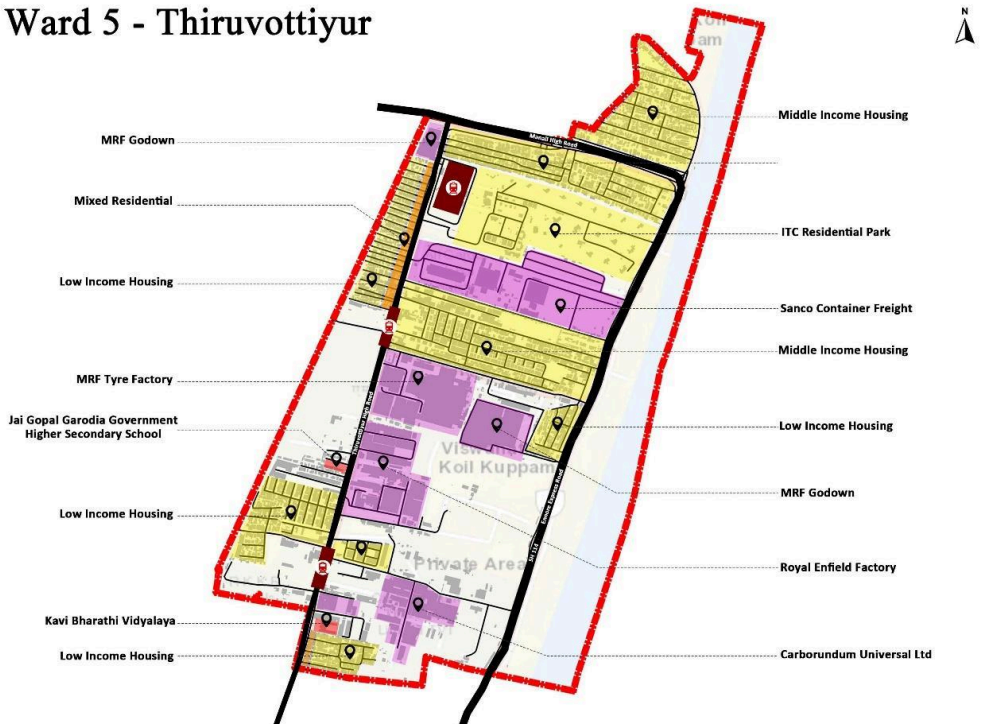


Site Profile

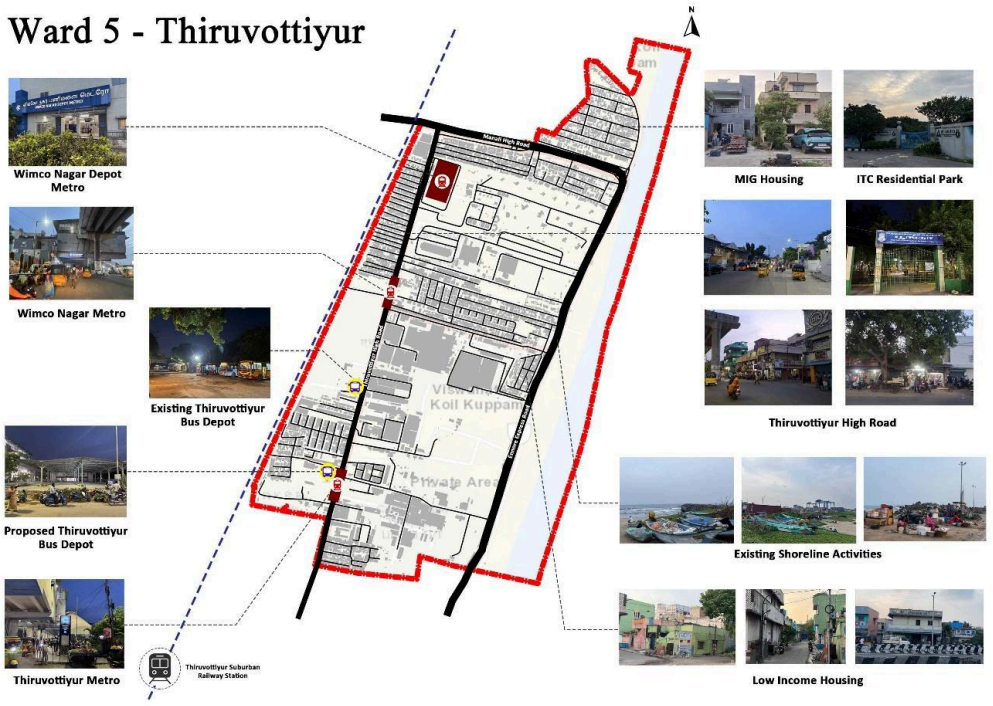
These transport links, together with the concentration of industrial activity and coastal settlements, shape local mobility patterns and place demands on the area's road infrastructure and public realm. The relationship between coastal settlements, industrial land uses, transport networks and natural coastal systems should therefore be examined to identify opportunities for improved connectivity, coastal protection and climate resilient urban redevelopment. Coastal vulnerability, shoreline changes, flood prone locations, drainage performance, water quality and urban heat exposure should be assessed at site level to identify priority intervention areas.

Major industrial and employment generating establishments within and around the study area include Royal Enfield Factory, Carborundum Universal Limited, MRF Tyre Factory, MRF Godown and Sanco Container Freight Station. The presence of ITC Residential Park further reflects the diversity of residential developments within the study area, alongside low-income and middle-income housing neighbourhoods and industrial establishments. Educational facilities, including Jai Gopal Garodia Government Higher Secondary School and Kavi Bharathi Vidyalaya, serve the surrounding residential communities. The close spatial proximity of industrial establishments, freight related activities and residential settlements presents important planning considerations relating to land use compatibility, environmental quality, traffic movement, pedestrian connectivity and the provision of adequate community infrastructure.

Overall, the study area reflects a distinct coastal urban character, shaped by its residential neighbourhoods, fishing activities, industrial establishments and public transport networks, which collectively influence its existing development pattern and planning priorities.



Zoning Map of the Study Area



Characteristics of the Study Area

Development expectations

The competition participants are expected to develop an integrated vision for Thiruvottiyur that advances the vision of creating a liveable, sustainable and climate resilient coastal neighbourhood. Proposals should identify vulnerable coastal stretches, flood-prone settlements, shoreline erosion hotspots and areas exposed to storm surges, while assessing the broader climate vulnerabilities of the neighbourhood. Proposals are presented as a Local Area Plan (LAP) for the 2.31 km² study area, the planning framework within which rapid interventions are located and designed. Participants are encouraged to adopt an integrated approach that combines immediate, implementable and rapidly deployable spatial interventions to protect vulnerable communities from extreme weather, with long-term planning strategies that strengthen the area's overall climate resilience and adaptive capacity.

Priority rapid actions

Rapid action should focus first on coastal flooding and storm surge, followed by extreme rainfall and heat. Participants should assess the potential impacts of storm surges on Thiruvottiyur's coastal settlements, fishing communities, livelihoods and critical infrastructure, particularly in low-lying areas and vulnerable stretches along the northern coastline. Proposals should explore strategies to reduce coastal flood exposure, minimise damage to buildings and infrastructure, and safeguard essential community facilities and livelihood assets. Particular attention should be given to identifying vulnerable settlement edges, strengthening coastal protection through establishing appropriate coastal buffers and integrating flood resilient design measures within the built environment. Nature-based shoreline protection, coastal green buffers and the protection of ecologically sensitive areas should be prioritised alongside engineered measures, together with improved stormwater drainage and temporary rainwater storage.

Rapid action should also reduce heat exposure where it is highest. Teams are encouraged to propose context-specific spatial strategies to mitigate rising temperatures and reduce heat exposure across Thiruvottiyur, with particular attention to vulnerable coastal settlements, densely built residential areas, industrial zones, commercial streets and public spaces. The influence of building materials, extensive paved and impervious surfaces, limited tree canopy, inadequate shading and industrial activities on local heat conditions should be assessed to identify urban heat hotspots and areas of heightened vulnerability. The proposals should also demonstrate how the existing urban fabric, land use patterns, built environment and public spaces can be made more responsive to rising temperatures.

Participants should explore the potential of multifunctional community infrastructure and public spaces that serve everyday neighbourhood needs while being adaptable to emergency situations. These facilities may integrate fishing-related livelihood support, equipment repair and maintenance, skill development programmes, community health services, local resource-sharing facilities, and multipurpose public spaces. Proposals should demonstrate how these facilities can be rapidly adapted to support evacuation, temporary accommodation, emergency supplies, first aid and post-disaster recovery, ensuring that resilience infrastructure delivers continuous social and economic value beyond emergency situations.

The framework should explore decentralised systems for emergency supplies, drinking water, sanitation, power backup, communication and first aid facilities, alongside clearly identified evacuation routes, safe assembly points and accessible early warning communication systems. Such facilities should be designed to serve all sections of the community, particularly fishing communities, children, senior citizens, persons with disabilities and other vulnerable groups.

Long-term resilience

Beyond the immediate measures, the plan should show how the area can move towards a resource-efficient, circular and low-carbon development model. Proposals should identify opportunities for waste minimisation, material recovery, reuse and resource sharing, notably in fishing-related activities, industrial establishments, construction and neighbourhood waste management, and for reducing emissions from mobility, energy use, buildings and infrastructure, including renewable energy, energy-efficient buildings, sustainable mobility and adaptive reuse of existing structures. Approaches should fit the area's land use, infrastructure and economic activities.

Overall, the Local Area Plan should demonstrate an integrated approach to climate adaptation, resource efficiency and low carbon urban development, recognising the relationship between coastal settlements, fishing communities, industrial activities and the surrounding natural environment. Proposals should protect vulnerable communities, essential infrastructure and local livelihoods while promoting ecological conservation, sustainable resource management and socially inclusive neighbourhood development.

The primary outcome should be a comprehensive LAP, supported by land use planning strategies, planning recommendations and policy level interventions. In addition, participants are expected to identify suitable underutilised sites within the study area and develop site-specific proposals. These interventions should be integrated with long term development strategies to accommodate future population growth, land use changes and infrastructure demands while minimising resource consumption, environmental impacts and future climate vulnerability.

City climate priorities and challenges

The Local Area Plan (LAP) for Thiruvottiyur should align with the Chennai Climate Action Plan (CCAP) 2023, which identifies urban flooding, water scarcity, sustainable mobility, energy efficiency, solid waste management and urban greening as key climate action priorities. Given Thiruvottiyur's coastal location and

industrial character, the LAP should place particular emphasis on coastal resilience, flood risk reduction, ecosystem conservation and protection of vulnerable coastal communities. The Chennai Climate Action Plan specifically identifies Manali and Thiruvottiyur as areas vulnerable to sea-level rise, highlighting risks of coastal inundation, storm damage, shoreline erosion, saltwater intrusion and loss of coastal ecosystems.

The LAP should address the key climate vulnerabilities and environmental challenges faced by Thiruvottiyur, including coastal flooding and storm surges associated with cyclones, high tides and rising sea levels, which threaten coastal settlements, infrastructure and fishing livelihoods. Shoreline erosion and the degradation of coastal ecosystems further exacerbate the area's exposure to marine hazards. Intense northeast monsoon rainfall, combined with low-lying topography and insufficient drainage capacity, increases the risk of urban inundation across vulnerable neighbourhoods. Increasing urban heat exposure across densely built-up residential and industrial areas, water scarcity and the risk of saltwater intrusion into freshwater sources pose additional challenges. Industrial activities and associated pollution further place pressure on local environmental quality. These risks should be mapped and assessed at the LAP site level to identify vulnerable settlements, critical infrastructure and priority areas for climate-resilient interventions.

Thus, the LAP should interpret and localise the priorities and strategies outlined in the CCAP in response to Thiruvottiyur's specific geographical, environmental, socio economic and developmental conditions. Through this approach, the LAP should establish a clear link between the city's broader climate action goals and their practical implementation at the neighbourhood level, ensuring that local development proposals contribute to Chennai's long-term climate resilience and sustainability objectives.

Planning rules, regulations and constraints

Ensure all infrastructure and development interventions comply with the applicable provisions of the Tamil Nadu Combined Development and Building Rules (TNCDBR), 2019, particularly those relating to coastal development restrictions, natural hazard-prone areas, land-use compatibility, building parameters, open space reservation, water conservation and infrastructure provision. Proposals should translate these regulatory considerations into context specific planning and design interventions that strengthen coastal resilience, improve environmental quality and support sustainable neighbourhood development.

Language requirements

Proposals must be submitted in English.