MASTER PLAN FOR PATHANAMTHITTA TOWN 2045

VOLUME II



MAY 2026

LOCAL SELF GOVERNMENT DEPARTMENT PLANNING, PATHANAMTHITTA

&

PATHANAMTHITTA MUNICIPALITY

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&
PATHANAMTHITTA MUNICIPALITY

FOREWARD

It is with great satisfaction that I share the Master Plan for Pathanamthitta Town, a comprehensive vision intended to guide the town toward sustainable growth and long-term progress. More than a planning document, this initiative reflects our shared responsibility to create a healthier, safer and more inclusive urban environment for future generations.

Known for its distinctive landscape, cultural significance, and active community life, Pathanamthitta requires a planning approach that respects its character while preparing it for future challenges and opportunities. This plan has been carefully prepared to improve overall living standards through integrated strategies covering social welfare, environmental protection, economic development, infrastructure, and governance. While grounded in the needs of the local population, it also embraces broader principles of sustainable and responsible urban development.

An important highlight of the proposal is the priority given to climate resilience and disaster preparedness. Considering the recurring threats of floods and landslides in the region, the plan introduces practical measures aimed at reducing risk, protecting communities, and strengthening the town's capacity to respond to natural hazards.

The Master Plan also presents a wide range of achievable projects that can directly improve everyday life in Pathanamthitta. These include better transport systems, upgraded public infrastructure, improved civic amenities, conservation of natural resources, enhancement of public spaces, and initiatives to stimulate local economic activity. Together, these proposals aim to create a more connected, vibrant, and sustainable town.

I sincerely acknowledge the efforts of the LSGD Planning team, technical experts, stakeholders, and residents whose valuable inputs shaped this plan. The success of this vision now depends on our collective commitment to implementing these ideas with determination, cooperation, and a shared sense of purpose.

Pathanamthitta

Date: 8.6.2026

MUNICIPAL OFFICE PATHANAMTHITTA

Sindhu Anil

Smt. Sindhu Anil

SINDHU ANIL
CHAIRPERSON
Pathanamthitta Municipality

Chairperson

Pathanamthitta Municipality

PREFACE

The Master Plan for Pathanamthitta is structured around the core principle of enhancing liveability in Pathanamthitta town through integrated proposals across five key pillars such as social, environmental, economic, physical, and institutional. Each component of the plan is designed to reinforce the other, ensuring holistic urban growth while preserving the town's natural heritage.

What truly makes this Master Plan unique is the large numbers of implementable projects it proposes — projects that are not only visionary but also grounded in practicality, fiscal realism, and local relevance. From improved mobility and vibrant public spaces to strengthened infrastructure and economic diversification, the plan outlines a clear roadmap for the town's transformation.

A strong emphasis is placed on disaster risk reduction, particularly in relation to floods and landslides, which are pressing concerns in Pathanamthitta's hilly and riverine terrain. The plan incorporates nature-based solutions, conservation of green-blue network, improved drainage systems and development regulations to make the town more resilient and adaptive to climate-related risks.

I hope this Master Plan serves as a valuable tool for all stakeholders such as policymakers, citizens, and institutions to work collectively towards a safer, smarter, and more liveable Pathanamthitta. Let this plan be a blueprint for progress that blends development with responsibility and growth with sustainability.

The master plan was prepared through a systematic process of Primary Surveys, Data collection and Analysis, Identification of development constraints and potentials, envisioning, and Formulation of development concept, land use proposals, zoning and model projects. Community involvement is ensured in all stages of preparation of the plan. The successful preparation of the Master Plan is the result of combined efforts of Pathanamthitta Municipality and LSGD Planning, Pathanamthitta.

I would like to appreciate the leadership provided by the Pathanamthitta Municipality for this endeavour under the leadership Smt. Sindhu Anil, Municipal Chairperson and Adv.T Zakir Husain, Former Chairperson. The Master Plan committees constituted for the preparation of Risk Informed Master Plan for Pathanamthitta town have made significant contributions.

I take opportunity to appreciate all the officials of LSGD Planning Pathanamthitta under the leadership of Sri. Arun G, Town Planner and Smt. Nimmy Kurian, Deputy Town Planner in the preparation of this document. I would also like to appreciate the team members of the Project Implementation Unit of Program for Results of Rebuild Kerala Initiative by the Kerala Government under the leadership of Sri. P.N. Rajesh, Former Additional Chief Town Planner, for the efforts put forward by them to incorporate risk information in this Master Plan.

I also appreciate Smt. Salini KM, Town Planner and the team of officials in the office of the Chief Town Planner for their efforts in coordinating and finalising the Risk Informed Master Plan for Pathanamthitta town.

Certainly, the Risk Informed Master Plan for Pathanamthitta town will provide guidance for all stakeholders with an interest in the future development of the town.



Thiruvananthapuram

Date: 11.6.2026

Smt. Asha Ajoy Ghosh

Chief Town Planner (Planning)

ACKNOWLEDGEMENT

Master Plan for Pathanamthitta Town is a comprehensive and forward-looking planning document that envisions a safer, greener, and more liveable town that reflects building a resilient, inclusive, and vibrant urban future. This plan has been prepared through a participatory and consultative process, aligning with the vision of sustainable urban development and addressing the unique needs and aspirations of the people of Pathanamthitta. It is with a deep sense of gratitude and fulfilment that I acknowledge the collective efforts behind the preparation of the Master Plan for Pathanamthitta Town.

This plan is the outcome of extensive teamwork, dedication, and continuous engagement with multiple stakeholders. I express my heartfelt appreciation to the enthusiasm shown by Smt. Sindhu Anil, Municipal Chairperson and Adv. T Zakir Husain and Former Chairperson of Pathanamthitta Municipality who took the helm of the plan preparation and actively participated in every stage of the discussions. Also the Councillors of Pathanamthitta Municipality for their active involvement, valuable inputs, and encouragement in shaping the proposals. Without their constant support, timely advice and valuable suggestion, this plan would not have reached at this stage. The sincere efforts put in by the Secretary and Municipal Engineer also needs special mention here.

I sincerely acknowledge the unique leadership provided by Smt. Asha Ajoy Ghosh Chief Town Planner (Planning)i/c, Smt. Sheeba Rani.Y (Former Chief Town Planner (Planning)), Smt. Salini K.M Town Planner and other staff members of the Office of the Chief Town Planner (Planning) for their guidance, leadership, and constant support throughout the process.

I sincerely thank all the team members of Project Implementation unit of Program for results of Rebuild Kerala Initiative by the Kerala Government headed by Team leader Sri. P N Rajesh, Former Additional Chief Town Planner, LSGD Planning. The timely advice and efforts of Sri. Ramachandran A, Retired Senior Town Planner & Consultant Town Planner and Sri. Baiju K, Retired Senior Town Planner & Consultant Town Planner of the Project Implementation Unit is also remembered with gratitude. I take this opportunity to appreciate the officials of the Project Implementation Unit for their enthusiastic approach and dedicated effort to complete the work in a time bound manner, especially Smt. Rahana H, Town Planner.

We have also relied on statistical data from various line Departments. Their readiness to share the data is gratefully acknowledged. Special thanks are also due to various line departments, officials, experts, and field staff, whose coordination and technical inputs were critical in refining the proposals.

The preparation of this plan would not have been complete without the active participation of the local community. Their voices, aspirations, and suggestions were integral in making the proposals grounded and people-centric.

This Master Plan stands out for its comprehensive approach to improving liveability across multiple dimensions — social, economic, environmental, physical, and institutional — and for its strong emphasis on risk reduction. The large number of practical and implementable projects proposed is a reflection of our commitment to action-oriented planning.

I sincerely appreciate the unwavering dedication, efforts and commitment to ensure timely completion of the work by Smt. Nimmy Kurian, Deputy Town Planner who led the planning team during each of their tenure to shape the plan. I also acknowledge Sri. Sharon W G Former Planner Associate who were involved in the plan preparation. The dedication and hardwork of Kum. Ranjusha.V, Geospatial Analyst not only in the meticulous preparation of maps but also in contributing significantly to the planning process and all the staff members of LSGD Planning, Pathanamthitta need to be specially acknowledged for their keen participation at various stages, without which this work would not have been successfully completed.

I thank every member of the planning team for their hard work, perseverance, and collaborative spirit. Let this Master Plan be a meaningful step forward in transforming Pathanamthitta into a resilient and thriving urban centre.

Pathanamthitta
Date: 8.6.2026

Sri Arun G
Town Planner
Pathanamthitta

ARUN. G, B.Tech, M. Plan
Town Planner
LSGD Planning
Govt. of Kerala

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PART II
INTEGRATED DEVELOPMENT VISION



31. Envisioning
32. Development Vision, Goals & Objectives
33. Development Concept
34. General Policies & Strategies



31. ENVISIONING

The envisioning stage is critical for formulating the future vision of a town because it establishes the direction and strategic objectives for its development. By considering current needs, future trends, and stakeholder aspirations, the envisioning stage helps shape a coherent, sustainable and inclusive future for the town. It ensures that the town's development is purposeful, well-coordinated, and aligned with the desires of its residents and the challenges of tomorrow.

The Envisioning Chapter in this master plan serves as a key section where the long-term vision and desired future outcomes for Pathanamthitta town are outlined. This chapter typically sets the tone for this entire master plan by establishing a framework for guiding land use pattern and future development.

Contents

1. Envisioning
2. Concept of Liveability
3. Liveability Factors
4. Liveability Factors for Pathanamthitta town
5. Indicators & Sub indicators
6. Present Status of Liveability
7. Interventions adopted to address the shortfall
8. Summary

31.1 Envisioning

Envisioning process commenced with the findings on demographics, land use, environment, and infrastructure to establish a clear picture of current conditions of Pathanamthitta town. A SWOT analysis followed, identifying the town's strengths to build on, weaknesses to address, opportunities to seize, and threats to mitigate. The existing spatial structure is assessed to understand how the town currently functions—its growth patterns, accessibility, and land-use efficiency. Through public consultations, residents and stakeholders shared their aspirations, challenges, and ideas, ensuring the vision reflect real community needs. Finally, the process considered the inclusion of core values— inclusivity, sustainability, connectivity, environmental stewardship and local identity that direct the town's development over the next two decades (Figure 31.1).

From the various factors considered for envisioning, it is clear that Pathanamthitta need not evolve into a high end commercial hub, trade centre or a large scale market or industrial town. Instead, the town's inherent strengths lie in its rural charm, scenic landscapes, unpolluted air, and tranquil natural settings and well distributed infrastructure all of which offer a unique opportunity for sustainable and liveable development. With adequate land availability and relatively low urban pressure, Pathanamthitta can be shaped as a model town that prioritises quality of life for its residents and comfort for its floating population through well planned civic amenities, mobility solutions and inclusive public spaces. Rather than pursuing high intensity urban growth, the town can focus on enhancing sectors aligned with its identity- particularly agriculture, ecotourism, staycation and wellness retreats.

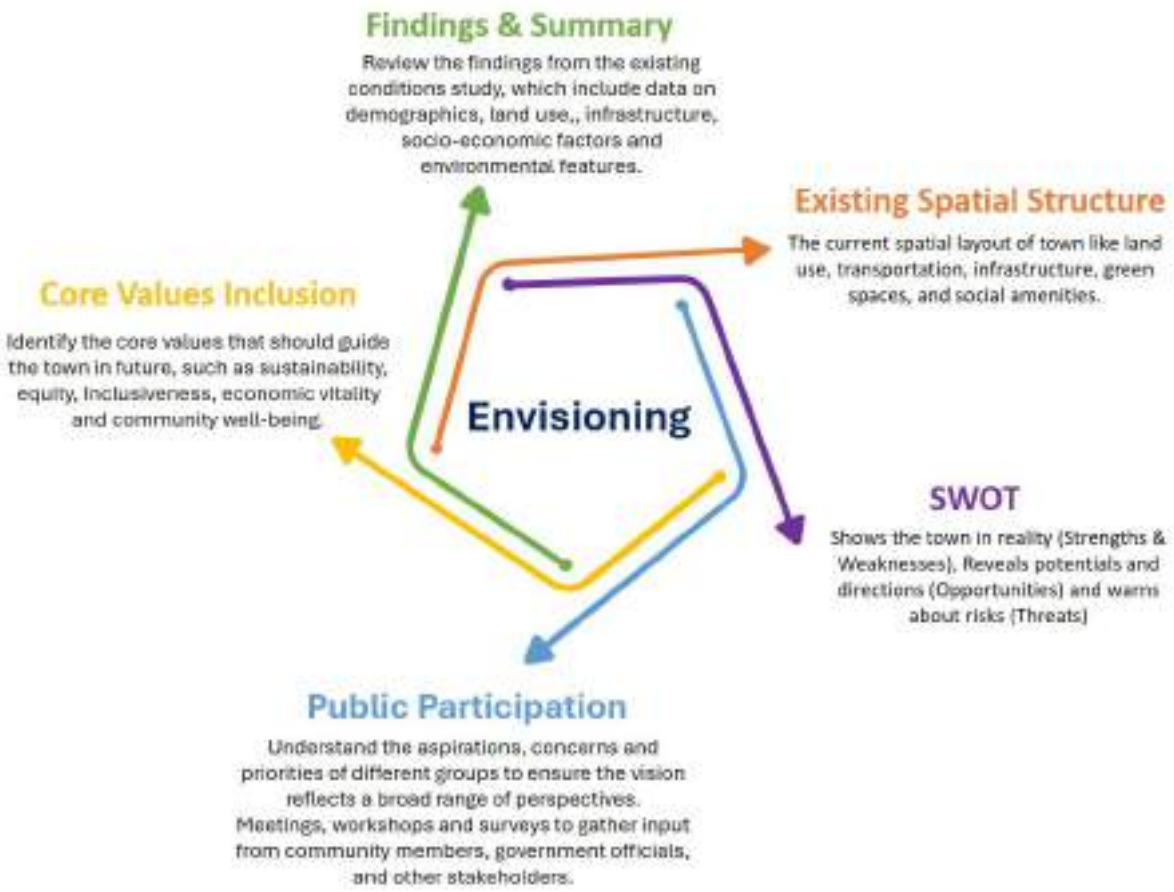

Figure 31.1 Various Factors considered for envisioning

Key Concept Emerged

"Enhancing liveability in Pathanamthitta town"

Interactions with people and stakeholders highlighted the need for Pathanamthitta town to attract future generations back by ensuring a high standard of living while reinforcing its role as the district headquarters. With the rapid urbanization trends in Kerala and the increasing adverse effects of climate change on cities and towns, medium-sized towns like Pathanamthitta have significant opportunities for enhancing community well-being in the future.

From the findings and summary, development seminars, focus group discussions, and stakeholder consultations, the concept of liveability has emerged as a key framework to address the need for an improved quality of life. Based on this, the development vision and development concept for the town over the next twenty years have been structured to align with the principles of liveability, aiming to create a more inclusive, sustainable, and resilient urban environment.

31.2 Concept of Liveability

As the idea of liveability has evolved, understanding it in terms of spatial planning is essential. Relevant literature has been reviewed to explore this relationship. Though there is no established theoretical framework laying out a uniform definition of liveable cities, all definitions encompass Liveability is the "quality of life" experienced by the residents of a city or region. By prioritizing liveability in development, cities/towns can create healthier, more inclusive, and prosperous communities for all residents.

31.3 Liveability Factors

Liveability factors are the various elements that contribute to the overall quality of life in a town. There have been multiple factors of liveability in the context of cities/town. To understand the elements of the liveability, various liveability indices like Mercer's Quality of Living Survey, Economist Intelligence Unit's (EIU) Global Liveability Ranking, Oxford Economics' Global Cities Index, Monocle's Quality of Life Survey, India's City Liveability Index etc. have been analysed.

From various liveability indices, it is understood that liveability is a combination of many factors that affect the quality of life of its residents. There are so many indicators pointing out the core values of the town. Access to quality education and health services is essential. This affects resident's social and economic opportunities, as well as their overall health outcomes. Safety is always a priority, as lower crime rates contribute to the safety and well-being of residents. Environmental sustainability, including green spaces and clean air, plays an important role in improving community health and promoting recreation. Affordable housing, which ensures that all socio-economic groups have access to adequate housing, and efficient transport systems that facilitate mobility and connectivity within the town and to surrounding areas. Community cohesion and inclusive practices, promotes a sense of belonging and participation among residents. From the above factors and indicators, the key elements of liveability is varying around the world, but generally the concept encompasses the eight factors. (Figure 31.2)



Figure 31.2 Identified Key Elements of liveability concept from various indices

31.4 Liveability Factors for Pathanamthitta town

A "liveable town" typically refers to an urban area that offers a high quality of life for its residents. Different cities and countries usually prioritize liveability factors differently based on local contexts and values. Each town have its own unique strengths and challenges. A liveable city aims to provide a supportive and enriching environment for its inhabitants. Based on the literature study of various indices for liveability concept, it is identified as the indicators grouped under the fifteen categories under four pillars by the Ministry of Urban Development has same nature of the methodology adopted for the study of understanding the existing condition for this master plan. Indicators of Ministry of Urban Development generally focus on urban infrastructure.

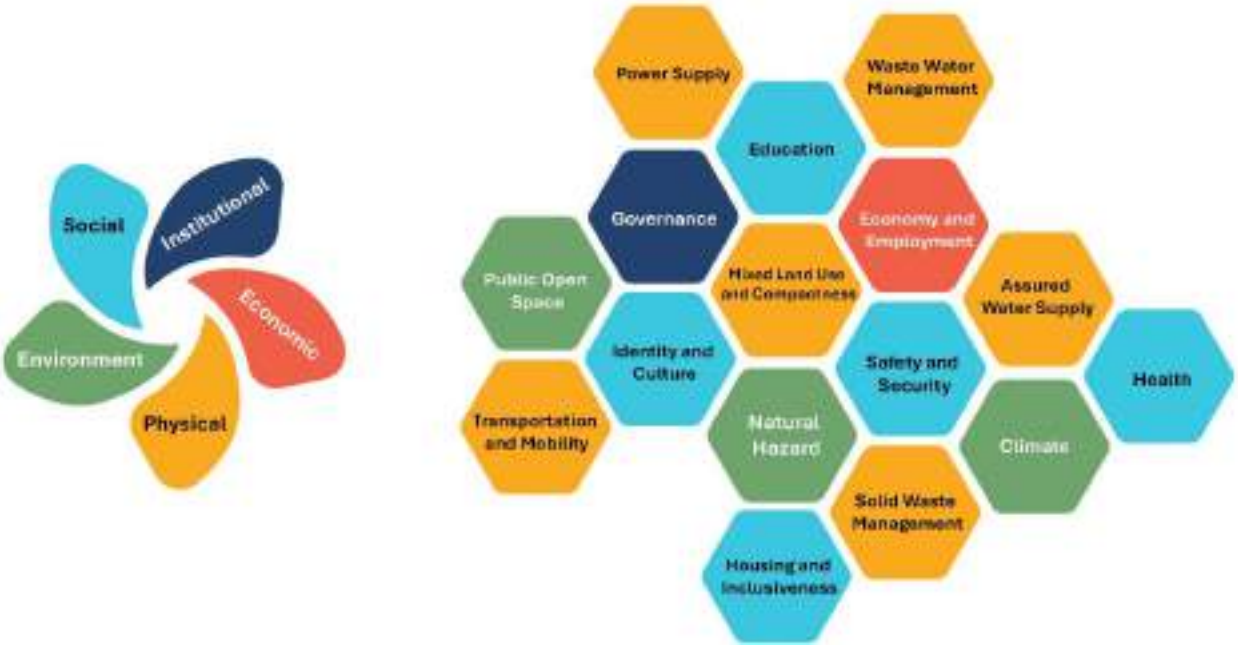

Figure 31.3 Five Liveability pillars and 16 sectors of Pathanamthitta town

As this master plan is a spatial plan and also need to address the hazard and the climate change of the town, environment is considered as a separate pillar. So 5 pillars and 16 sectors (Figure 31.3) are chosen for the liveability concept for Pathanamthitta town.

31.5 Indicators & Sub Indicators

An "Indicator" refers to the various components or factors that make up the overall concept of each sector. A “Sub indicator” is a measurable variable or piece of data used to assess, monitor, and evaluate various aspects of liveability under each Indicator. Sub Indicators provide valuable insights into how well goals and objectives are being met and help guide decision-making processes. 39 Indicators and 143 sub indicators are considered in sixteen liveability sectors for Pathanamthitta town (Table 31.1) based on study and findings, town character, literature studies related to liveability, core values and sustainable development goals considered for a town.

Table 31.1 Selected indicator and sub indicator in each elements and liveability pillars of Pathanamthitta town

Pillar: Physical	Sector: Mixed use and Compactness	
Indicator	Sub Indicator	Correlation with liveability.
Land Use Diversity	1. Type of land uses 2. Land use integration 3. Proximity of land Uses	A mix of residential, commercial, and recreational spaces help resident’s access services and amenities within walking distance. Mixed land use ensures that essential services like shops, schools, parks, and healthcare are located close to residential areas. This reduces travel time and promotes convenience, allowing residents to access what they need easily. This also reduces reliance on cars, promotes active transportation, and fosters a sense of community
Density	1. Population Density 2. Building Density 3. Vertical Development 4. Urban Sprawl expansion 5. Urban form	Compact development often leads to more efficient land use, preserving green spaces and reducing the urban heat island effect. It can also lower infrastructure costs and resource consumption and enhances the overall quality of life by creating vibrant, walkable, and well-integrated communities.

Pillar : Physical	Sector : Transportation and Mobility	
Indicator	Sub-Indicator	Correlation with liveability.
Connectivity	1. Regional 2. Proximity & Access to Key Destinations 3. Coverage and Reach	Good connectivity reduces travel time and makes daily activities more convenient, enhancing overall quality of life.
Efficiency	1. Average Commute Time 2. Traffic Congestion 3. Infrastructure quality	Efficient transportation systems reduce the time people spend traveling, freeing up more time for work, leisure, and family activities.
Safety	1. Accident Rates 2. Pedestrian Safety	Safe travel experiences enhance the overall comfort and convenience of commuting, which contributes positively to daily life and well-being.
Equity	1. Inclusive Design 2. Equity of Access	It ensures all individuals have fair and equal access to transportation services and infrastructure, regardless of their socioeconomic status, geographic location, or personal circumstances

Sustainability	1. Energy Consumption 2. Smart Technology Integration 3. Walkability 4. Climate Resilience	It aligns with long-term goals for environmental stewardship, social equity, and economic vitality.

Pillar : Physical	Sector : Solid waste management	
Indicator	Sub Indicator	Correlation with liveability.
Waste Collection	1. Service Coverage 2. Collection Methods 3. Frequency	Waste collection & processing is a fundamental component of a town's infrastructure that directly impacts public health, environmental quality, aesthetic appeal, economic efficiency, community satisfaction, social equity, and emergency preparedness. By ensuring that waste is collected efficiently and regularly, a town can significantly enhance its liveability
Waste Processing	1. Sorting and Separation 2. Recycling and Composting 3. Treatment Technologies	Compact development often leads to more efficient land use, preserving green spaces and reducing the urban heat island effect. It can also lower infrastructure costs and resource consumption and enhances the overall quality of life by creating vibrant, walkable, and well-integrated communities.
Waste Disposal	1. Landfills 2. Waste-to-Energy 3. Hazardous Waste Management	Proper disposal of solid waste, particularly through sanitary landfills or waste-to-energy facilities, reduces the risk of disease and health hazards associated with improper waste handling, such as contamination from leachate and harmful emissions.
Waste Reduction and Education	1. Source Reduction 2. Public Education 3. Policy and Regulation	Promoting reusable products, minimizing packaging, and encouraging sustainable consumption practices.

Pillar : Physical	Sector : Waste Water management	
Indicator	Sub Indicator	Correlation with liveability.
Infrastructure	1. Coverage 2. Integration with Urban Infrastructure 3. Aesthetic quality	Effective wastewater management prevents the contamination of water sources, reducing the risk of waterborne diseases. Poorly managed wastewater can lead to unpleasant odours, pollution, and visual blight, detracting from the town's overall aesthetic appeal. Clean, well-maintained environments contribute positively to residents' quality of life.
Proximity to Water Bodies	1. Buffer Zones 2. Discharge Locations	Proper treatment and disposal of wastewater help protect local ecosystems, including rivers, lakes, and groundwater. This preservation is vital for biodiversity and the health of surrounding natural areas.
Climate resilience	1. Continuity of Natural drains 2. Green Infrastructure	Sustainable wastewater management practices can enhance a town's resilience to climate change impacts, such as flooding. Green infrastructure solutions, like constructed wetlands and permeable surfaces, can mitigate storm water runoff.

Pillar : Physical	Sector : Water Supply	
Indicator	Sub Indicator	Correlation with liveability.
Distribution	1. Coverage of water supply connections 2. Per capita supply of water 3. Extent of metering of water connections 4. Continuity of water supply 5. Quality of water supplied 6. Cost recovery	Access to safe and clean drinking water is essential for preventing waterborne diseases. Reliable water quality directly impacts community health and reduces healthcare costs. Consistent availability of clean drinking water contributes positively to overall quality of life.
Crisis Resilience	1. Measures in place to promote water conservation. 2. Drinking water coverage in hazard prone area.	A well-managed water supply system enhances a town's resilience to climate change and natural disasters. Reliable infrastructure can better withstand extreme weather events and ensure continued access to water.

Pillar : Physical	Sector : Power Supply	
Indicator	Sub Indicator	Correlation with liveability.
Reliability	1. Coverage 2. Stability 3. Affordability 4. Quality	Consistent and reliable electricity is essential for daily activities, local businesses, healthcare facilities, clean water systems, and sanitation services. Frequent outages can disrupt life and reduce overall quality of life.
Sustainability	1. Renewable energy share 2. Public buildings with solar 3. Waste to energy production	A transition to renewable energy sources reduces greenhouse gas emissions and pollution, contributing to cleaner air and water. This fosters a healthier living environment and enhances the overall quality of life.

Pillar : Social	Sector : Education	
Indicator	Sub Indicator	Correlation with liveability.
Enrolment Capacity	1. Number of School per serving population 2. Enrolment ratio 3. Pupil-Teacher Ratio 4. Drop Out Rate	Adequate enrolment capacity helps ensure that students receive a quality education, contributing to higher levels of community satisfaction and liveability.
Accessibility	1. Serving area of educational institutions 2. Distance from residential areas to the nearest educational institution 3. Safe and accessible routes	Educational facilities are evenly distributed across different socio-economic or geographic areas, ensuring that underserved or marginalized communities have adequate access. Shorter distances make it safe and easier for students to commute, reducing the time and effort required to travel.

Infrastructure Quality	1. Digital education 2. Lab Facilities & Infrastructure 3. Sanitation Facilities 4. Playground 4. Students supports service	Spaces that are clean, safe, and support both physical and mental health, which is crucial for optimal learning. This includes proper sanitation, structural integrity, recreational and emergency preparedness. It ensure schools are safe and healthy places for students and staff.
Environmental Impact	1. Infrastructure adaptation 2. Emergency preparedness 3. Suitable landscape 4. Awareness and training	The primary concern is the safety and well-being of students, teachers, and staff. Mitigating hazards ensures that educational institutions can continue to operate smoothly in the face of emergencies. This minimizes disruptions to students' learning and helps maintain educational progress even during challenging times.

Pillar : Social	Sector : Health	
Indicator	Sub Indicator	Correlation with liveability.
Accessibility	1. Healthcare Density 2. Service Coverage 3. Equity of Distribution 4. Preventive Care 5. People with Disabilities 6. Mental Health Services 7. Aging Population Support(geriatric care) 8. Infrastructure Quality	Accessibility of Health care under different sectors plays a vital role in shaping the overall liveability of a town by ensuring access to quality healthcare, promoting preventive measures, supporting mental health, and fostering community engagement. A robust health system is foundational to a thriving, resilient community.

Pillar : Social	Sector : Safety & Security	
Indicator	Sub Indicator	Correlation with liveability.
Crime Rate	1. Overall Crime Rates 2. Crime Hotspots 3. Accident Hotspots	A secure environment promotes economic growth, social interaction, and overall quality of life.
Emergency Services Accessibility	1. Response Times 2. Service Locations	
Surveillance	1. Street Lighting 2. Visibility in Public Spaces 3. CCTV Coverage	

Pillar : Social	Sector : Housing & Inclusiveness	
Indicator	Sub Indicator	Correlation with liveability.
Affordability	1. Housing costs 2. Cost of living 3. Housing Distribution 4. Basic services to Slum/EWS	Affordable housing ensures that a diverse range of residents can live in the community, including low- and middle-income families. This inclusivity fosters a more balanced social fabric and prevents socioeconomic segregation. Also affordable housing often allows residents to allocate more of their income to other essential areas, such as education, healthcare, and leisure activities, thereby improving overall quality of life.

Adaptability	1. Flood Zones and Natural Hazards areas 2. Housing Design 3. Emergency Access 4. Sustainability	Resilience of housing enhance safety, economic stability, community continuity, health, and environmental sustainability. Resilient housing supports both immediate recovery and long-term adaptability.

Pillar : Social	Sector : Identity & Culture	
Indicator	Sub Indicator	Correlation with liveability.
Cultural Landmarks	1. Preservation of History 2. Design Guidelines 3. Aesthetic Cohesion 4. Cultural Amenities 5. Attractiveness to New Residents	The identity and culture of a town play a crucial role in enhancing liveability by fostering community cohesion, attracting new residents and businesses, and providing a rich array of social, educational, and recreational opportunities. A vibrant cultural landscape creates an engaging and fulfilling environment for residents.

Pillar : Environment	Sector : Public open space	
Indicator	Sub Indicator	Correlation with liveability.
Land Use Integration	1. Proximity to Residents 2. Size and Diversity 3. Buffer Zones	The integration of public open spaces within a town's land use framework greatly enhances liveability by promoting accessibility, social interaction, environmental health, and economic vitality. It creates vibrant, welcoming environments that support the well-being of all residents.
Quality	1. Aesthetic Appeal 2. Cleanliness and Maintenance 3. Inclusivity 4. Safety and Security 5. Green Coverage 6. Condition of amenities	High-quality public open spaces promote physical activity, such as walking, jogging, and playing sports, contributing to residents' overall health. Access to green spaces also enhances mental well-being by providing a peaceful environment for relaxation and stress relief.

Pillar : Environment	Sector : Natural Hazard	
Indicator	Sub Indicator	Correlation with liveability.
Risk Assessment	1. Hazard Maps 2. Risk Information Accessibility 3. Emergency Plans 4. Flexibility in regulation to adapt new information 5. Hazard Monitoring Systems	Effective hazard risk assessments identify potential threats, such as floods, landslides, drought or lighting. By understanding these risks, towns can implement measures to protect residents, enhancing their sense of security.
Resilience Measures	1. Building Standards 2. Infrastructure Quality 3. Development Controls 4. Mitigation Infrastructure 5. Use of natural buffers 6. Ecosystem Protection 7. Sustainable Practices	Evaluating hazard risks helps prioritize investments in infrastructure improvements, such as flood defences and landslide mitigation measures. Resilient infrastructure minimizes damage during disasters, ensuring the continuity of essential services and enhancing the town's overall preparedness.

Pillar : Environment	Sector : Climate	
Indicator	Sub Indicator	Correlation with liveability.
Green Infrastructure	1. Natural Buffers 2. Urban Green Spaces 3. Urban Heat islands	The climate of a town is a crucial factor in determining its liveability. It affects health, recreational opportunities, economic viability, and environmental quality, ultimately shaping the overall quality of life for residents.
Quality	1. Air quality 2. Water quality 3. Noise pollution rate	

Pillar : Economic	Sector : Economy & Empoyment	
Indicator	Sub Indicator	Correlation with liveability.
Economic zones	1. Agricultural zone 2. Commercial Zones 3. Industrial Zones 4. Mixed-Use Development	The economy significantly shapes the liveability of a town by providing jobs, ensuring access to services, enhancing infrastructure, and fostering a vibrant community. A healthy economy directly impacts the overall quality of life for residents, making it a key factor in urban planning and development.
Business	1. Local Business Support 2. Designated space for venters 3. Market infrastructures	

Pillar : Institutional	Sector : Governance	
Indicator	Sub Indicator	Correlation with liveability.
Public Services	1. Provision of essential services 2. Transparency 5. Participatory governance	Effective governance is essential for enhancing the liveability of a town by ensuring the provision of services, fostering community engagement, promoting safety, and supporting sustainable development. Good governance creates an environment where residents can thrive and enjoy a high quality of life.
Policy Implementation	1. Infrastructure Development 2. Crisis Management 3. Sustainability Practices 4. Local Economic Development 5. Cultural and Recreational Opportunities	

31.6 Present Status of Liveability

To gain a clear and detailed understanding of where the town stands in terms of identified liveability factor and to identify both strengths and areas that need improvement allowing for informed decision-making, a qualitative assessment of the present status of all chosen liveability sub-indicators of the town has been assessed and a three-level status classification—Achieved, Transitional, and Need Improvement and colour code has been applied to each sub indicators.

Colour	Status	Meaning
	Achieved	Conditions meet liveability standards
	Transitional	Partial liveability achievements. improvements needed
	Need Improvement	Poor liveability, Interventions required

The three-level status (Achieved, Transitional, and Need Improvement) helps prioritize interventions. It allows the town to focus on areas that require immediate attention, especially those in the "Need Improvement" stage, while continuing to maintain and enhance areas that have already reached the "Achieved" stage. This ensures that resources are allocated efficiently, targeting the most pressing challenges first. By classifying each indicator into one of these three stages, the analysis provides a realistic picture of what has been accomplished and what still needs to be done(Table31.2).

Table 31.2 Present liveability status of town

	Sector	Indicator	Sub Indicator	Existing Status
Physical	Transportation and Mobility	Connectivity	Regional Connectivity	
			Proximity & Access to Key Destinations	
			Coverage and Reach	
		Efficiency	Average Commute Time	
			Traffic Congestion	
			Infrastructure quality	
		Safety	Accident Rates	
			Pedestrian Safety	
		Equity	Inclusive Design	
			Equity of Access	
		Sustainability	Energy Consumption	
			Smart Technology Integration	
			Walkability	
			Climate Resilience	
Physical	Mixed use and Compactness	Land Use Diversity	Type of land uses	
			Land use integration	
			Proximity of land Uses	
		Density	Population Density	
			Building Density	
			Vertical Development	
			Urban Sprawl expansion	
			Urban form	

Physical	Solid waste management	Waste Collection	Service Coverage	■		
			Collection Methods	■		
			Frequency	■		
		Waste Processing	Sorting and Separation	■		
			Recycling and Composting		■	
			Treatment Technologies		■	
		Waste Disposal	Landfills			■
			Waste-to-Energy			■
			Hazardous Waste Management		■	
		Waste Reduction and Education	Source Reduction	■		
			Public Education	■		
			Policy and Regulation	■		
Physical	Waste Water management	Infrastructure	Coverage		■	
			Integration with Urban Infrastructure		■	
			Aesthetic quality			■
		Proximity to Water Bodies	Buffer Zones			■
			Discharge Locations		■	
		Climate resilience	Continuity of Natural drains		■	
			Green Infrastructure		■	
Physical	Water supply	Distribution	Coverage of water supply connections		■	
			Per capita supply of water		■	
			Extent of metering of water connections	■		
			Continuity of water supply			■
			Quality of water supplied		■	
			Cost recovery			■
		Crisis Resilience	Measures in place to promote water conservation.			■
			Drinking water coverage in hazard prone area.		■	
Physical	Power supply	Reliability	Coverage	■		
			Stability	■		

			Affordability			
			Quality			
		Sustainability	Renewable energy share			
			Public buildings with solar			
			waste to energy production			
Social	Education	Enrolment Capacity	Number of School per serving population			
			Enrolment ratio			
			Pupil-Teacher Ratio			
			Drop Out Rate			
		Accessibility	Serving area of educational institutions			
			Distance from residential areas to the nearest educational institution			
			Safe and accessible routes			
		Infrastructure Quality	Digital education			
			Lab Facilities & Infrastructure			
			Sanitation Facilities			
			Playground			
			Students supports service			
		Environmental Impact	Infrastructure adaptation			
			Emergency preparedness			
			Suitable landscape			
			Awareness and training			
Social	Health	Accessibility	Healthcare Density			
			Service Coverage			
			Equity of Distribution			
			Preventive Care			
			People with Disabilities			
			Mental Health Services			
			Aging Population Support(Access to geriatric care)			
			Infrastructure Quality			

Social	Social & Security	Crime Rate	Overall Crime Rates	■		
			Crime Hotspots	■		
			Accident Hotspots		■	
		Emergency Services Accessibility	Response Times	■		
			Service Locations	■		
		Surveillance	Street Lighting		■	
			Visibility in Public Spaces			■
			CCTV Coverage			■
Social	Housing & Inclusiveness	Affordability	Housing costs		■	
			Cost of living		■	
			Housing Distribution	■		
			Basic services to Slum/EWS	■		
			Flood Zones and Natural Hazards areas			■
		Adaptability	Housing Design		■	
			Emergency Access		■	
			Sustainability			■
Social	Identity & Culture	Cultural Landmarks	Preservation of History	■		
			Design Guidelines	■		
			Aesthetic Cohesion			■
			Cultural Amenities	■		
			Attractiveness to New Residents			■
Environment	Public Open Space	Land Use Integration	Proximity to Residents			■
			Size and Diversity			■
			Buffer Zones			■
		Quality	Aesthetic Appeal		■	
			Cleanliness and Maintenance	■		
			Inclusivity			■
			Safety and Security	■		
			Green Coverage			■

			Condition of amenities		■	
Environment	Natural Hazard	Risk Assessment	Hazard Maps	■		
			Risk Information Accessibility	■		
			Emergency Plans	■		
			Flexibility in regulation to adapt new information		■	
			Hazard Monitoring Systems		■	
		Resilience Measures	Building Standards			■
			Infrastructure Quality	■		
			Development Controls			■
			Mitigation Infrastructure			■
			Use of natural buffers			■
			Ecosystem Protection		■	
			Sustainable Practices			■
Environment	Climate	Green Infrastructure	Natural Buffers			■
			Urban Green Spaces			■
			Urban Heat islands			■
		Quality	Air quality	■		
			Water quality	■		
			Noise pollution rate	■		
Economic	Economy & Employment	Economic zones	Agricultural zone	■		
			Commercial Zones	■		
			Industrial Zones			■
			Mixed-Use Development			■
		Business	Local Business Support	■		
			Designated space for venters			■
			Market infrastructures		■	
Institutional	Governance	Public Services	Provision of essential services	■		
			Transparency	■		
			Participatory governance	■		

		Policy Implementation	Infrastructure Development			
			Crisis Management			
			Sustainability Practices			
			Local Economic Development			
			Cultural and Recreational Opportunities			

The liveability assessment of the town has been structured into three development stages—Achieved, Transitional, and Needs Improvement—to provide a clear understanding of sectoral performance and priorities.

In the land use sector, indicators such as the type and diversity of land uses have reached an 'achieved' or 'transitional' stage of liveability. However, indicators related to building density, vertical development, and overall urban form remain in the 'needs improvement' stage, highlighting the necessity for more integrated spatial development strategies.

Under physical infrastructure pillar, indicators related to connectivity and efficiency in transportation sector have reached an ‘achieved / transitional’ stage in terms of liveability. Indicators such as equity and sustainability remain at a 'needs improvement' stage, indicating the need for further planning and interventions to ensure inclusive and environmentally responsible mobility systems. Within the waste management, indicators related to solid waste management have reached an 'achieved/transitional' stages of liveability. Advanced components such as waste-to-energy conversion and hazardous waste management remain in the 'needs improvement' stage. In the case of wastewater management, all key indicators—including service coverage, proximity to water bodies, and climate resilience—are in the 'transitional' or 'needs improvement' stages, indicating significant gaps that require targeted planning and infrastructural upgrades. All key indicators—including distribution efficiency and crisis resilience— in water supply are currently in the 'transitional' or 'needs improvement' stage, reflecting the need for enhanced infrastructure and adaptive systems. Most indicators have reached the 'achieved' stage of liveability in power supply sector; however, aspects related to renewable energy integration and sustainability remain underdeveloped and require focused intervention.

In the social pillar, particularly in education, most indicators are in the 'achieved' or 'transitional' stages of liveability. However, specific aspects such as the availability of playgrounds and infrastructure adaptation for environmental impacts remain in the 'needs improvement' stage. In the health sector, indicators related to support for people with disabilities, mental health services, and access to geriatric care for the aging population are in the 'transitional' or 'needs improvement' stage, signalling the need for more inclusive and resilient healthcare planning. Indicators such as crime rate and the availability of emergency services are in the 'achieved' or 'transitional' stages of liveability. However, surveillance-related indicators—specifically visibility in public spaces and CCTV coverage—remain in the 'needs improvement' stage, pointing to the need for enhanced public safety measures. In the housing sector, indicators such as affordability and the presence of housing in flood-prone or natural hazard areas are also in the 'transitional' or 'needs improvement' stage, reflecting gaps in resilient and inclusive housing

provision. Indicators related to aesthetic cohesion and the attractiveness of the area to new residents are currently in the 'needs improvement' stage, emphasizing the need for urban design strategies that enhance visual identity and place-based appeal.

In the environment pillar, indicators related to land use integration, green coverage, and the inclusivity of public open spaces are in the 'transitional' or 'needs improvement' stage, indicating a need for better ecological planning and equitable access to recreational spaces. Risk assessment indicators are in the 'achieved' stages of liveability. However, the adoption of resilient measures remains in the 'transitional' or 'needs improvement' stage, pointing to the need for more proactive disaster risk reduction strategies. Air and water quality have reached the 'achieved' stage of liveability in climate sector. Yet, the adoption of green infrastructure is still in the 'needs improvement' stage, underscoring the necessity of integrating climate-responsive urban systems to enhance long-term sustainability and resilience."

In the economic pillar, indicators related to industrial and mixed-use activities are in the 'needs improvement' stage, reflecting limited diversification and spatial integration of economic functions. While there is evident support for local businesses within the town, the absence of designated spaces for street vendors highlights a significant gap in inclusive economic planning and public space allocation.

In the institutional pillar, indicators such as the provision of essential services, transparency, participatory governance, and crisis management are at the 'achieved' stage of liveability, reflecting a well-established administrative framework. However, indicators related to the implementation of policies for sustainability practices and the availability of cultural and recreational opportunities remain in the 'needs improvement' stage. This highlights the need for stronger policy execution mechanisms and a more vibrant socio-cultural landscape to support holistic urban development.

31.7 Interventions adopted to address the shortfalls

After identifying present status of liveability indicators and sub-indicators, appropriate intervention must be implemented to achieve the liveability concept of Pathanamthitta Town. These interventions effectively represent the identified indicators and sub-indicators to ensure their fulfilment. Two types of intervention have been identified: Spatial Intervention and Policy Interventions.

At the spatial Intervention, the focus is on strengthening infrastructure through targeted zoning, land use reallocation, integration of various sectoral projects and planning interventions. At the policy level, strategic frameworks and regulatory measures will be implemented to improve transitional and underperforming sectors.

The following spatial / policy level interventions are adopted to fulfil the identified indicators for five liveability pillars of Pathanamthitta town. These interventions form the foundation for developing the vision, goals and objectives, spatial concept, policies and strategies, sectoral proposals and zoning regulations of this master plan.

Physical Pillar
• Mixed use zoning • Infill Development • Vertical Development • Form-Based Codes • Land use regulations • Reduction of urban sprawl • Hierarchical Road Network

- Multimodal Integration for last mile connectivity.
- Intersection and Junction Improvement
- Traffic calming measures
- Expansion & Enhancing of Public Transportation
- Smart bus stops
- Designated space for auto, taxi, street venders
- Multi-level parking and smart parking.
- Barrier free footpaths
- Dedicated Non-Motorized Transport (NMT) Corridors
- Complete Streets Design
- Urban Street Furniture and Wayfinding Systems
- Emergency evacuation route
- Low-emission zones
- Energy efficient street lights
- Green Mobility Corridors
- Uniform coverage of water supply networks
- Reliable and safe drinking water supply
- Rainwater Harvesting
- Decentralized water supply units
- Decentralized waste management
- Clean and well-maintained sanitation
- Mobile Fecal Sludge Treatment Plant
- Decentralized Storm water Management
- Waste-to-energy
- Circular economy program
- Electric Vehicle charging Station
- Underground electric line program
- Conduit duct in road design

Social Pillar

- Quality & Affordable housing, Healthcare and education policies.
- Environmentally responsive school & hospital design
- Proximity-based planning for social infrastructure
- Decentralized service provision
- Urban health-focused program
- Urban regeneration
- Universal Design in Public Infrastructure
- Geriatric-Friendly Neighborhood Planning
- Equity-based planning
- Preserve and promote cultural heritage sites and historical landmarks.
- Well-Lit and visible public spaces
- CCTV surveillance
- Integration of Parks and recreation areas
- Active street frontages
- Community centers and cultural hubs
- Smart Anganawadis

Environment Pillar

- Open Space Integration
- Green spaces within walkable distance
- Active public spaces
- Hazard-Responsive Land Use Planning
- Green Zoning and Environmental Protection Policies
- Restoration of Natural Drainage Channels
- Permeable Surfaces and Low-Impact Development (LID)
- Climate Resilience & Adaptation Strategies
- Detention/Retention Ponds
- Protecting the blue green network
- Green street network
- Sponge park
- Room for river
- Buffer zone
- Pollution control measures.
- Energy-efficient design
- Renewable energy systems
- Compact urban development

- Green building standards
- Urban forests and tree planting
- Urban heat island mitigation
- Climate-responsive infrastructure

Institutional Pillar

- Budget Transparency
- Crisis Management and Resilience
- Public-Private Partnerships
- Capacity Building and Training
- Public Awareness Campaigns
- E-Government Services
- Emergency preparedness
- Renovation of Public buildings
- New buildings for government offices
- Relocation of critical infrastructure

Economic Pillar

- Mixed used development.
- Small Business Development Centers
- Industry Diversification
- Sustainable industries

- Spatial support for Innovation and Technology
- Green job creations
- Inclusive Economic Policies.
- Market upgradation
- Co-working spaces
- Event-based tourism
- Enhance tourism-related infrastructure
- Staycation facilities
- Designated Vendor Zones
- Food street
- Night life enhancement
- Urban agriculture
- Adventure tourism

31.8 Summary

Based on the envisioning, the development vision and development concept for next twenty years of the town have been strategically aligned with the principles of liveability. To understand the indicators of a town's liveability, various global liveability indices were studied during the envisioning stage, leading to the finalization of specific indicators for Pathanamthitta town. Certain urban planning interventions have been discussed and finalised for implementation through development concept, policies and strategies, land use plan and sectoral proposals. These measures aim to achieve the finalised liveability factors of Pathanamthitta town and transform it into a liveable and sustainable urban centre.



32. DEVELOPMENT VISION, GOALS & OBJECTIVES

Vision refers to a comprehensive and aspirational statement that outlines the long-term goals, values, and desired future state of a city or urban area. Goals and objectives are critical components that help translate the broader, aspirational vision into actionable plans. While the vision represents the long-term aspirations for a town's development, the goals and objectives are the specific steps and targets that move the town closer to realizing that vision. Understanding how these elements correlate helps to ensure that development efforts are aligned and focused. This Chapter shows the vision of Pathanamthitta Town for next twenty years and goals and objectives adopted in the town to achieve that vision.

Contents

1 Vision Statement

2 Goals & Objectives

32.1 Vision Statement

A vision statement is a concise, yet comprehensive, articulation of a town's future aspirations. It helps to direct all development efforts towards a common goal and serves as a motivational tool to work towards achieving vision. The vision statement for Pathanamthitta town includes several key components that reflect the town's aspirations and the strategic priorities for its future.

"By 2045, Pathanamthitta shall emerge as a liveable, sustainable, and resilient administrative centre that prioritizes the health, the safety, the economic opportunities and the well-being of its residents."

32.2 Goals & Objectives

Goals are statements of what needs to be accomplished to realise the vision. Objectives are specific actions and timelines for achieving the goal. To achieve the vision outlined in the master plan, specific goals and objectives have been established under each of the five identified pillars of liveability.

1 Goal: Social

Foster an inclusive, equitable, and vibrant community by creating accessible and affordable social infrastructure that promotes social interaction, encourages cultural engagement, and provides essential support services for all residents.

Objectives:

1. Ensure Affordable and Inclusive Housing: Promote compact, walkable neighbourhoods with access to schools, markets, and public services, Upgrade informal settlements with in-situ redevelopment and provision of basic services, Integrate rental housing, dormitories, and transit-linked housing for seasonal and low-income workers.
2. Support Holistic Development of Women, Children, and the Elderly: Ensure safe, inclusive and empowering urban environment that promotes the dignity, participation and wellbeing of women, children and elderly in all aspects of social, economic and civic life.
3. Provide Accessible and Equitable Recreation Spaces: Designate land for neighbourhood parks, playgrounds, and sports facilities in every ward, Link open spaces through green corridors, walking trails, and cycle paths, Protect and enhance natural features (lakes, forests) as multi-use recreational zones.
4. Enhance Community Facilities and Social Infrastructure: Plan adequate coverage of schools, health centres and multipurpose halls for integrated social infrastructure to maximize accessibility. Ensure accessibility and connectivity to social infrastructure through public transit.

This goal aims to cultivate a socially vibrant town that empowers all residents and fosters a sense of belonging.

2 **Goal: Environment**

Create a sustainable urban environment that balances ecological preservation, community well-being & resilience and economic growth by integrating green spaces, promoting efficient land use, and enhancing connectivity to natural resources.

Objectives:

1. Conservation & Protection of Natural Resources: Designate environmentally sensitive areas (wetlands, rocky areas, river buffers) as protected zones in the land use plan, Enforce ecological zoning and land-use restrictions to prevent degradation of ecological hotspots areas, Integrate environmental impact assessments (EIAs) into planning approval processes, Create blue green corridors and green belts to ensure habitat connectivity, Promote sustainable land use around protected zones (e.g. low-impact development, buffer landscaping).
2. Develop Green Infrastructure: Integrate parks, green corridors, urban forests, and rain gardens into the plan, Mandate green buffers and tree-lined streets in new urban developments, Plan for permeable surfaces, bios wales, and urban wetlands to support storm water management, Green energy production in public spaces & buildings, Reclaim and green underutilized or degraded urban lands, Create multi-functional open spaces that provide ecological, recreational, and climate benefits.
3. Risk Reduction Using Nature-Based Solutions: Integrate floodplains and wetlands into urban flood management strategies like Detention/Retention basins, Riparian buffer, Room for river, sponge parks etc., Plan slope stabilization using vegetation and terracing in hilly or erosion-prone areas, Use natural buffers (like green belts or forest strips) for heat and pollution mitigation, Incorporate climate risk maps and resilience zoning in the town's development plans, Involve residents in planning processes to ensure that environmental initiatives meet community needs and foster stewardship.
4. Promote Eco-Tourism: Identify and zone natural and cultural heritage areas suitable for low-impact tourism, Plan eco-tourism circuits with minimal infrastructure footprint and access control, Encourage eco-lodges and community-managed tourism facilities, Preserve scenic landscapes, Integrate eco-tourism infrastructure with local cultural and agricultural landscapes.

This goal aims to create a thriving, resilient and sustainable town that prioritizes the environment while meeting the needs of its residents.

3 **Goal: Physical**

To develop a well-structured and accessible urban framework that fosters efficient land use, enhances mobility, and promotes vibrant, mixed-use neighbourhoods, while ensuring the preservation of community identity and strengthening infrastructure resilience.

Objectives:

1. Enhance Transportation Network: Ensure safe, efficient and inclusive mobility by improving connectivity between key areas, strengthening public transport, promoting walking & cycling through dedicated infrastructure and reducing traffic congestion & pollution along with strong regional linkages.
2. Develop Resilient & Energy-Efficient Infrastructure: Incorporate disaster risk mapping (flood zones, heat islands) into infrastructure siting, Promote green building codes, solar orientation, and passive design in urban layouts, Plan for redundancy and adaptability in key infrastructure (e.g., backup power, elevated roads), Integrate micro grids, solar PV zones, and energy-efficient street lighting, Zone for climate-resilient critical infrastructure (e.g., hospitals, emergency shelters).
3. Improve Utility Efficiency (Water, Drainage, Solid Waste, and Power): utility networks are aligned with land use plans to optimize service coverage, Promote compact, high-density urban forms to increase service delivery efficiency, Provide buffer zones and clear access to utility corridors for maintenance and expansion.
4. Develop Tourism-Enabled Infrastructure: Plan for accessible road network, parking, and walkways leading to key tourist attractions, Integrate infrastructure for wayfinding, interpretation, and sanitation in tourism areas. Include tourist accommodation facilities, base camps, information centres etc.

This goal aims to create a cohesive urban environment that supports growth and enhances the quality of life for all residents.

4 **Goal: Economic**

Reinforce the town as a district headquarters enhancing administrative efficiency while fostering economic development through the growth of the agro-industrial, commercial and tourism sectors.

Objectives:

1. Reinforce Commerce & Trade in the Town: Designate and strengthen core commercial zones with high accessibility and mixed-use development with integrated retail and business nodes, Encourage vertical commercial development in central areas to optimize land use, Upgrade market infrastructure and provide space for informal traders in planned locations, Improve connectivity between commercial areas, transportation hubs, and residential zones.
2. Foster Industrial & IT Sector Development: Allocate land for new industrial parks and IT zones with adequate buffer areas and supporting infrastructure, Develop economic development zones or technology parks with spatial proximity to employee housing, utility infrastructure (power, water, and broadband) Flexible Zoning regulations to accommodate small scale industries in all development zones.
3. Stimulate Tourism-Based Ventures: Identify and zone areas with tourism potential—

natural, historical, or cultural—for targeted infrastructure development, Create tourism circuits connecting key attractions through scenic routes, Promote development of hospitality clusters with access to key transport corridors, Incorporate public spaces, waterfronts, and cultural precincts, Enable supportive uses such as art markets, eco-tourism lodges, and festival grounds.

4. Revitalize the Agricultural Economy: Protect peri-urban agricultural lands from unplanned urban sprawl through zoning controls, Establish agro-logistics hubs, food processing clusters, and farm-to-market infrastructure, Plan infrastructure irrigation, and agri-based industries close to farming areas, Encourage land use plans that support integrated farm tourism, such as farm stays and experiential tourism, Create rural-urban linkages by integrating agricultural production zones with urban consumption centres.

This goal aims to position the town as a thriving district headquarters, serving as a hub for administration, commerce, community life, agro industries and leverage the town's tourism potential to drive economic growth, benefiting both residents and visitors.

5 Goal: Institutional

Strengthen a transparent, participatory, and accountable governance framework that prioritizes the well-being of residents, promotes equitable access to services, and fosters community engagement through accessible and transparent processes.

Objectives:

1. Strengthen Urban Administration and Finance through Spatial development: Redevelopment of administrative and civic offices for better infrastructure facilities, Plan mixed-use zones that generate higher property tax revenue and support municipal finance, Digitization of spatial data to support e-governance, taxation, and service delivery, identify public-private partnership (PPP) opportunities in civic infrastructure development. Allocate land for institutional expansion to accommodate future needs.
2. Promote Decentralization and Community Governance: Establish neighbourhood-level administrative infrastructure (e.g., ward offices, local service centres), Allocate space for local governance bodies, grievance redressal cells, and community-based organizations, Plan for spatially distributed governance nodes to serve peri-urban and marginalized areas.
3. Ensure Accessibility and Resilience of Institutional Infrastructure: Locate critical facilities (e.g., hospitals, police stations, emergency shelters) based on hazard risk and population distribution, Plan road access, universal design, and barrier-free infrastructure to all public buildings, Integrate disaster preparedness infrastructure into institutional areas (e.g., evacuation routes, backup power), Cluster

institutions for functional efficiency (e.g., health and social services co-location).

4. Create Welcoming, Inclusive, and Safe Public Spaces and Facilities: Design civic spaces (town squares, public buildings, libraries) as vibrant, multifunctional hubs, Ensure gender-sensitive and age friendly design of all public spaces and facilities, Promote cultural and civic plazas that host festivals, public dialogues, and civic functions, Integrate street furniture, public art, lighting, and safety features to make public facilities inviting.

This goal aims to create a governance framework that not only meets the current needs of the community but also ensures a sustainable and liveable future for all residents.



33. DEVELOPMENT CONCEPT

Development concept describes how a town's land use and physical space are to be strategically planned and organized to realize its development goals and objectives. It includes how different components like residential, commercial, public and semi-public, agriculture, recreational and conservation areas are to be arranged and integrated to promote sustainable and useful urban development.

Development concept establish a clear spatial long-term vision for the town's growth and development. It Foster economic growth and achieve balanced and integrated development across different areas. By incorporating risk management strategies into the development concept, the town can enhance the quality of life for its residents, ensuring safety, resilience, and sustainability in the face of potential hazards. This chapter explains the spatial development concept of Pathanamthitta Town for the next twenty years (2045).

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33.1 Formulation of Development Concept

The development vision outlined in the preceding chapter serves as an aspirational framework for the town's future development. This vision is planned to achieve through a holistic approach that integrates both spatial-level and policy-level interventions. The spatial development concept offers practical, spatially focused strategies to achieve this vision. While the development goals and objectives have been formulated with a broad, area-wide perspective, they have not yet been spatially assigned at that stage. The integration of various development sectors and local characteristics happens when they are spatially organized together. This process is realized in the formulation of the development concept. In essence, the development concept indicates the direction of development for Pathanamthitta town, guiding how and where each development initiative shall take place.

The concept aligns with the broad vision of the Development Plan for Pathanamthitta published in 1995, continuing key strategies such as ring and radial road concept, wetland conservation, promotion of industrial and agricultural activities in peripheral areas. It also emphasizes commercial development in the central core and the establishment of sub centres to ensure balanced urban growth. These approaches aim to enhance connectivity, sustainability and economic vitality.

In the development vision for Pathanamthitta town, five key pillars have been identified. Since the spatial level strategies are directly related to land, the formulation of the spatial development concept considers the town's existing spatial structure as well along with the five pillars of liveability viz; Environmental, Economic, Social, Physical and Institutional.

33.2 Existing Spatial Structure

The existing spatial structure of Pathanamthitta town (Figure 33.1) highlights that the central part of the town is characterized by a concentration of urban activities with a particular dominance in commercial, public, and semi-public sectors.

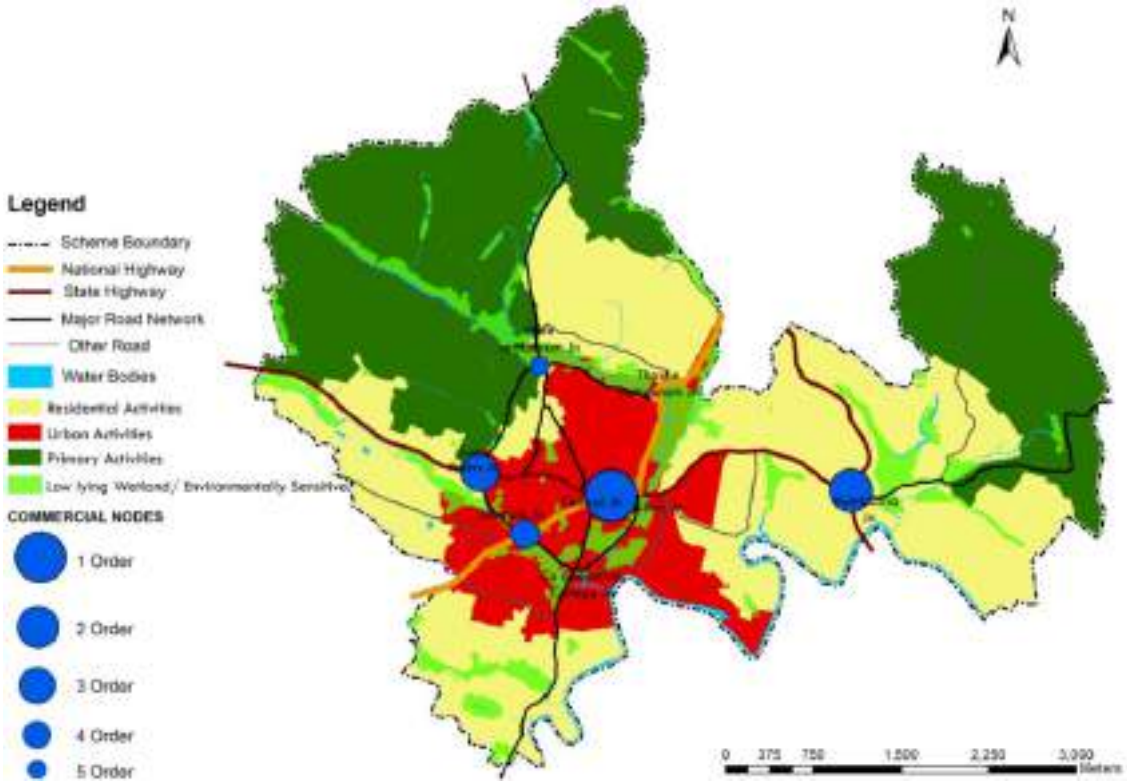


Figure 33.1 Existing Spatial Structure of the town

Residential use with a mixture of other uses could be seen when moving away from the core to the fringes. Industrial activity is found to be minimal and agricultural activity dominates in the northern periphery of the city. Development of transportation network has great influence in forming the character of the city. Major settlements in Pathanamthitta town are primarily located in areas that are in close proximity to the ring road networks. All commercial activities are primarily concentrated in the central part of the town, except for the second-order commercial node at Kumbazha. Surrounding areas of Kumbazha are predominantly residential.

33.3 Environmental Pillar

The Environmental Pillar on development focuses on protecting and enhancing the natural environment while promoting sustainable practices. The environmental pillar ensure that development is both sustainable and resilient. By prioritizing ecological health and integrating environmental considerations into land use, transportation, and infrastructure, communities can create spaces that are not only liveable but also environmentally responsible. Three criteria are considered for the formulation of spatial development concept under Environmental Pillar.

33.3.1 Topography

The topography of a town significantly influences its development patterns, land use, and infrastructure planning. Different types of development can be tailored to the natural features of the landscape, optimizing both functionality and aesthetics.

Level of terrain from low to high presents distinct advantages and challenges for urban development. Flat land is generally easier and cheaper to build on. It requires less grading and land modification, leading to reduced construction costs. Transportation networks, such as roads can be more easily and efficiently constructed on flat land. This promotes better connectivity and accessibility. The flat terrain allows for diverse land uses, such as residential, commercial, and industrial without significant geographic constraints. However, in low flat areas flooding can be a concern, particularly in areas near water bodies, which are more prone to water accumulation.

Building on high terrain presents both challenges and advantages. The steep slopes and uneven surfaces makes construction more complex and expensive, requiring significant grading or retaining structures. However, high terrain often restricts urban sprawl, leading to more compact, vertical development, such as high-rise buildings, which can help conserve land. Elevated locations also offer desirable views, making them ideal for certain types of developments, such as nature-based tourism and may also contain sensitive ecosystems that need to be protected to maintain environmental balance and biodiversity.

Pathanamthitta municipal area has an undulated terrain with lots of hills and rocks. The ground level varies from 15 m to 150 m above the mean sea level (MSL) (Figure 33.2). The existing urban development in the town has primarily occurred in the low lying areas situated between the hills. The general slope of the terrain and the natural flow of surface drainage are primarily towards the southern side of the town, where it discharges into the Achankovil River. The central area of the town lies primarily within the 50-meter elevation range, making it suitable for development. The continuous network of narrow wetlands and water bodies in between the hills serves as a strong natural drainage system of the town. The northern wards of Pathanamthitta town are characterized by hills with steep slopes, and the town features several hills and rocky areas. The hilly terrains are covered with rubber plantations.

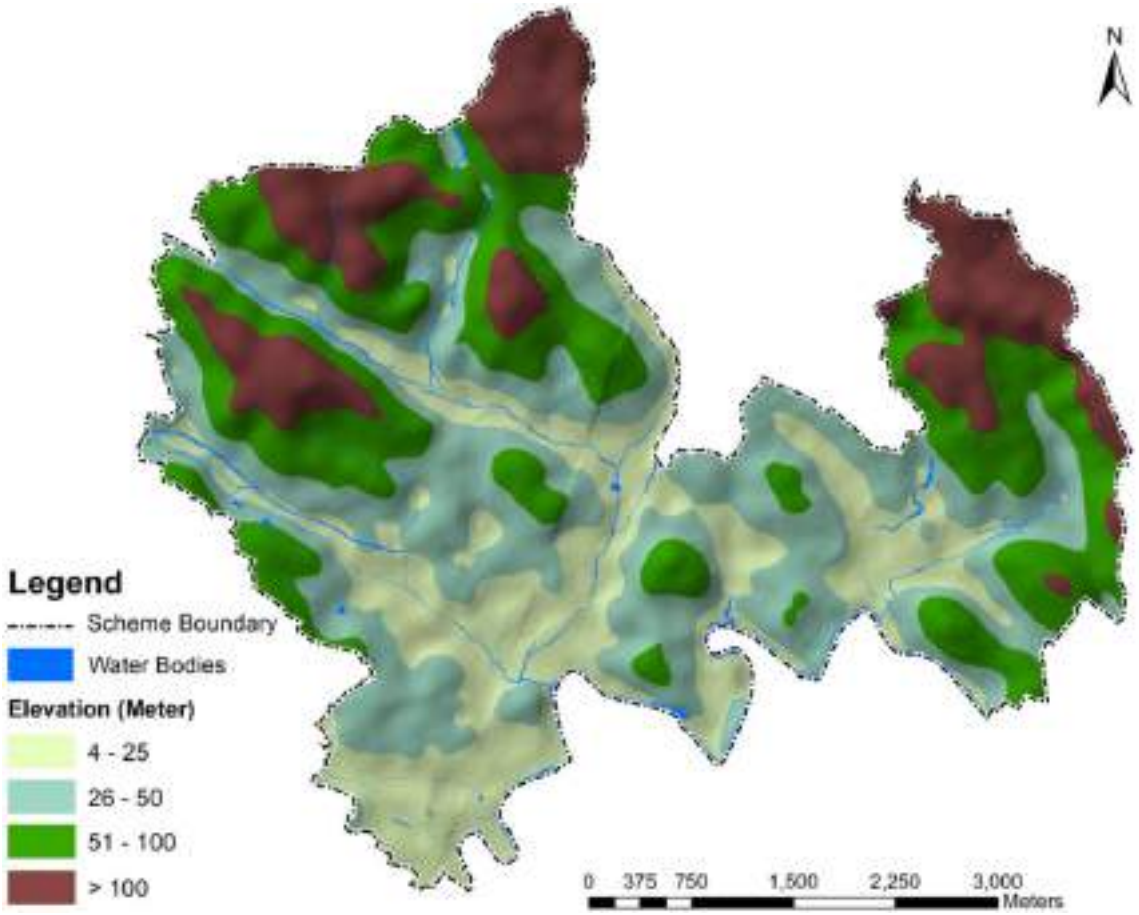


Figure 33.2 Elevation of Pathanamthitta town

33.3.2 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) within a town includes various types of landscapes and habitats that are important for ecological health and require protection from development or degradation. Wetlands, rocky areas, sacred groves, and natural water bodies are considered as the components of the Pathanamthitta town's environmentally sensitive areas (Figure 33.3). Environmentally sensitive areas (ESAs) play a crucial role in flood mitigation by providing natural flood control functions, enhancing water quality, and supporting biodiversity. Such areas, which include water bodies, wetlands, floodplains, and riparian buffers (The interfaces between land and water bodies, such as rivers and streams) help to absorb excess rainfall and manage storm water more effectively.

Wetlands act as natural sponges, as they absorb excess rainwater and reduce the risk of urban flooding. This helps protect communities and infrastructure. Restoring wetlands enhances urban resilience to climate change as are effective at storing carbon, by preserving and restoring wetlands, urban areas can contribute to carbon reduction efforts. Their preservation and management not only help in mitigating flood risks but also promote overall resilience within a community.

Pathanamthitta town has a continuous chain of paddy fields and wetlands, primarily concentrated in the central part, shaped by the town's topographical features (Figure 33.3). These wetlands are located adjacent to significant portions of the ring road. As part of the development concept, a strategy for protecting and restoring these wetlands and low-lying areas is being emphasized to enhance the town's resilience in the future. Chuttipara, Mannarmala, Pulikkottapara, Villoonnipara, Kulavarikkapara Kottapara rocky areas

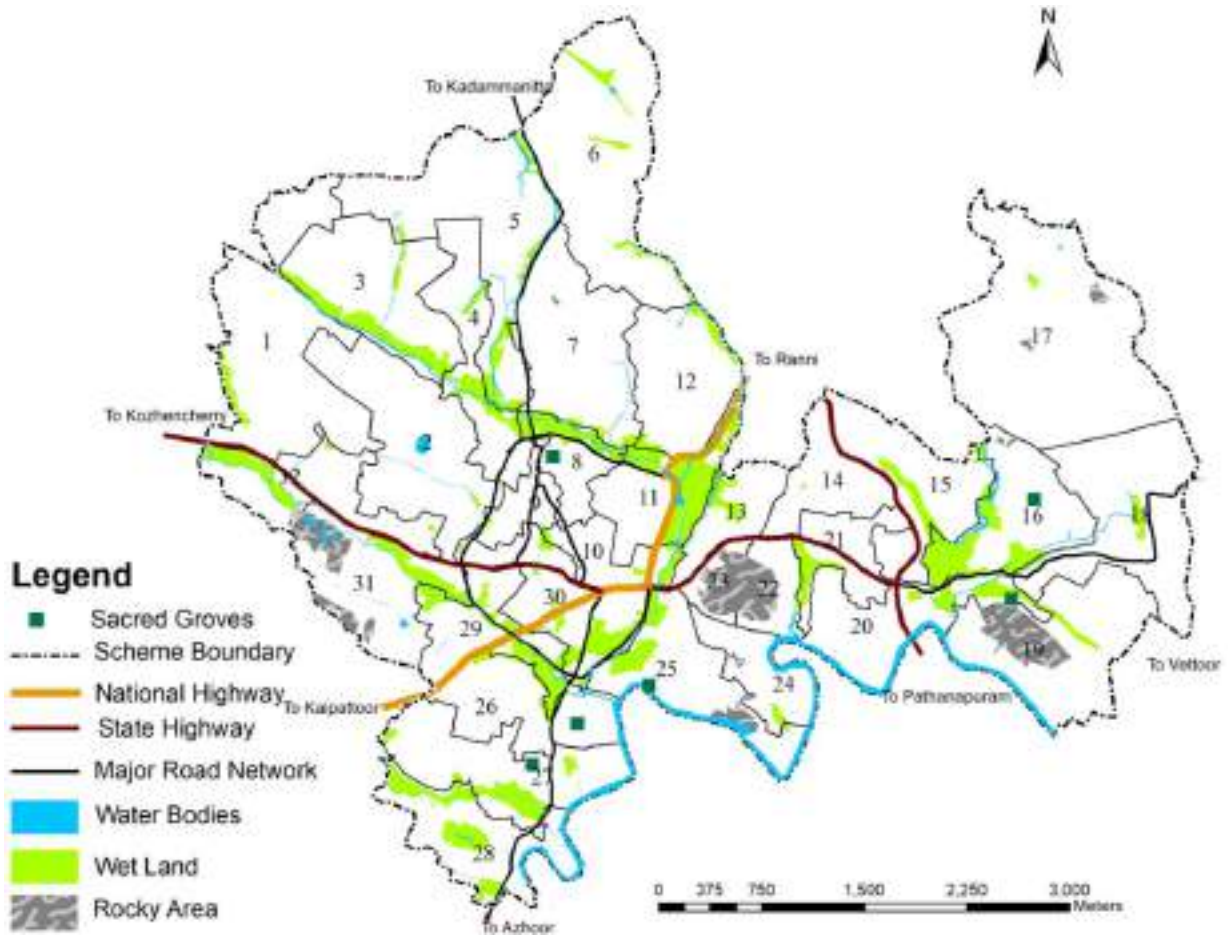


Figure 33.3 Environmentally sensitive areas in town

contribute to the region's geodiversity, though their ecological value is often overlooked. Preserving these type of areas is crucial in maintaining the balance of local ecosystems.

Integrated urban planning is crucial for ensuring preservation of environmentally sensitive areas while allowing sustainable development. This approach combines various aspects of urban design and management, such as transportation, housing, and biodiversity, to create synergies that enhance both ecological and human well-being. By harmonizing urban growth with environmental conservation, town can effectively manage their natural resources and mitigate the risks associated with urbanization.

Urban development projects in the town should prioritize the protection and restoration of habitats in and around ESAs. This involves identifying critical areas and implementing measures to preserve their integrity, such as creating buffer zones around sensitive landscapes. Restoration activities could include wetland restoration, and the removal of invasive species which help to recover lost biodiversity and ecological functions, ensuring the long-term health of the ecosystem.

33.3.3 Natural Hazard Prone areas

Natural Hazard prone areas significantly influence the spatial development of a town, compelling to devise strategies that mitigate risk while promoting sustainable growth. Urbanization can exacerbate hazard vulnerabilities, where as effective spatial planning can enhance resilience. Anchoring urban development in an accurate understanding of risks and implementing appropriate management strategies can ensure a balance between growth and safety.

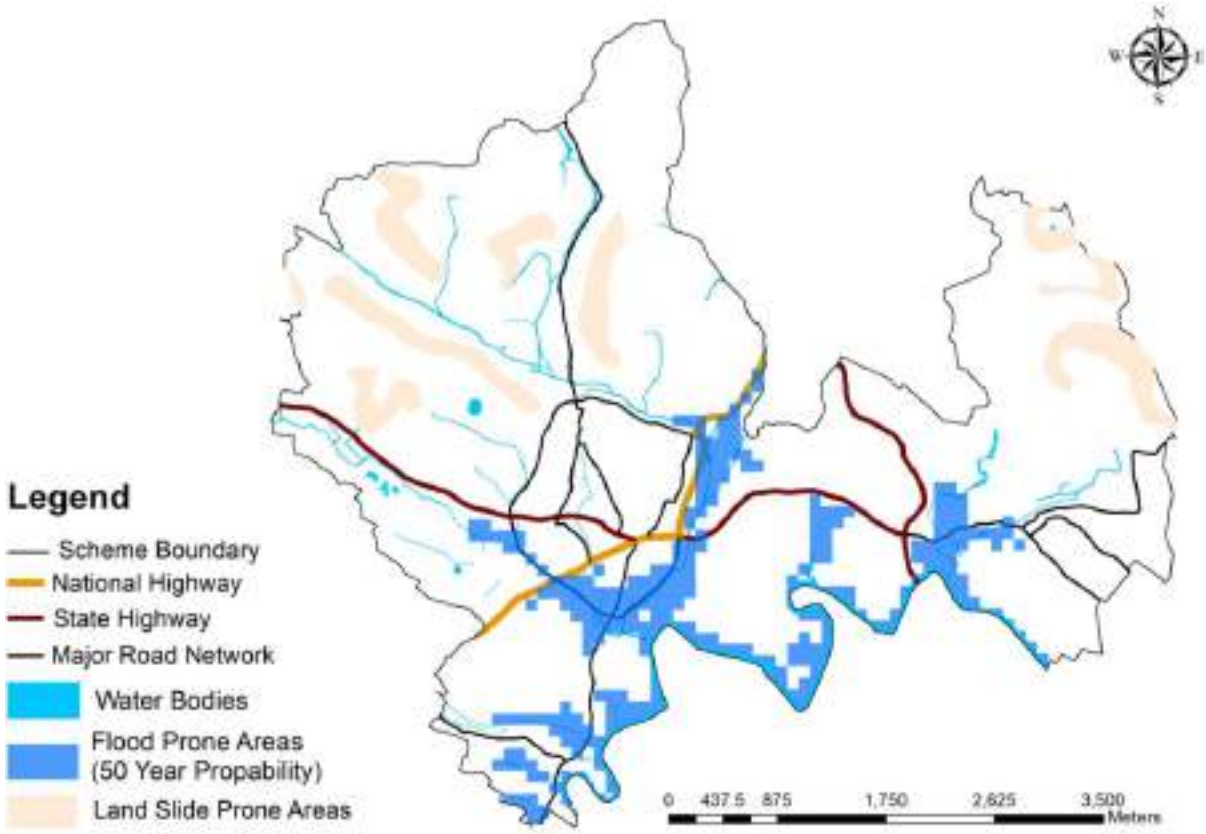


Figure 33.4 Natural Hazard prone areas in town

Source: KSDMA

The sectoral studies in part I of this master plan report reveal that the floods and the landslide are 2 major natural hazards that spatially impact the town (Figure 33.4). The northern part of the municipality, characterized by hilly terrain, falls under low-intensity landslide-prone areas, while the southern part is vulnerable to flood inundation. When planning development projects in areas susceptible to flooding and landslides, it is crucial to prioritize safety, sustainability, and community resilience to mitigate risks and ensure long-term protection for residents and infrastructure.

Areas prone to hazards like floods and landslides shall have strategies for resilience tailored to the specific terrain and risks. Apart from land use zoning, Sponge Parks, Wetland parks, Green blue integration, Green infrastructure techniques such as rain gardens, permeable pavements, and urban forests help manage water flow and enhance ecological functions. Flood mitigation systems, including flood retention basins, levees, floodwalls, and detention ponds, can be used to control floodwaters and protect vulnerable areas. For landslide risk management, slope stabilization techniques and monitoring systems can be used. Zoning regulations, restrict development in high-risk areas, ensure setbacks from water bodies and encourage resilient housing designs.

By integrating green infrastructure, zoning regulations, enhanced drainage systems, flood-resistant designs and community engagement, town can effectively mitigate flood risks and build a safer living environment for residents. Also disaster risk reduction techniques shall be spatially integrated in the plan such as detention/retention ponds, green strip, green islets, river buffer, widening of water bodies, room for river concept etc. The spatial development concept of environmental pillar of the town is shown in Figure 33.5.

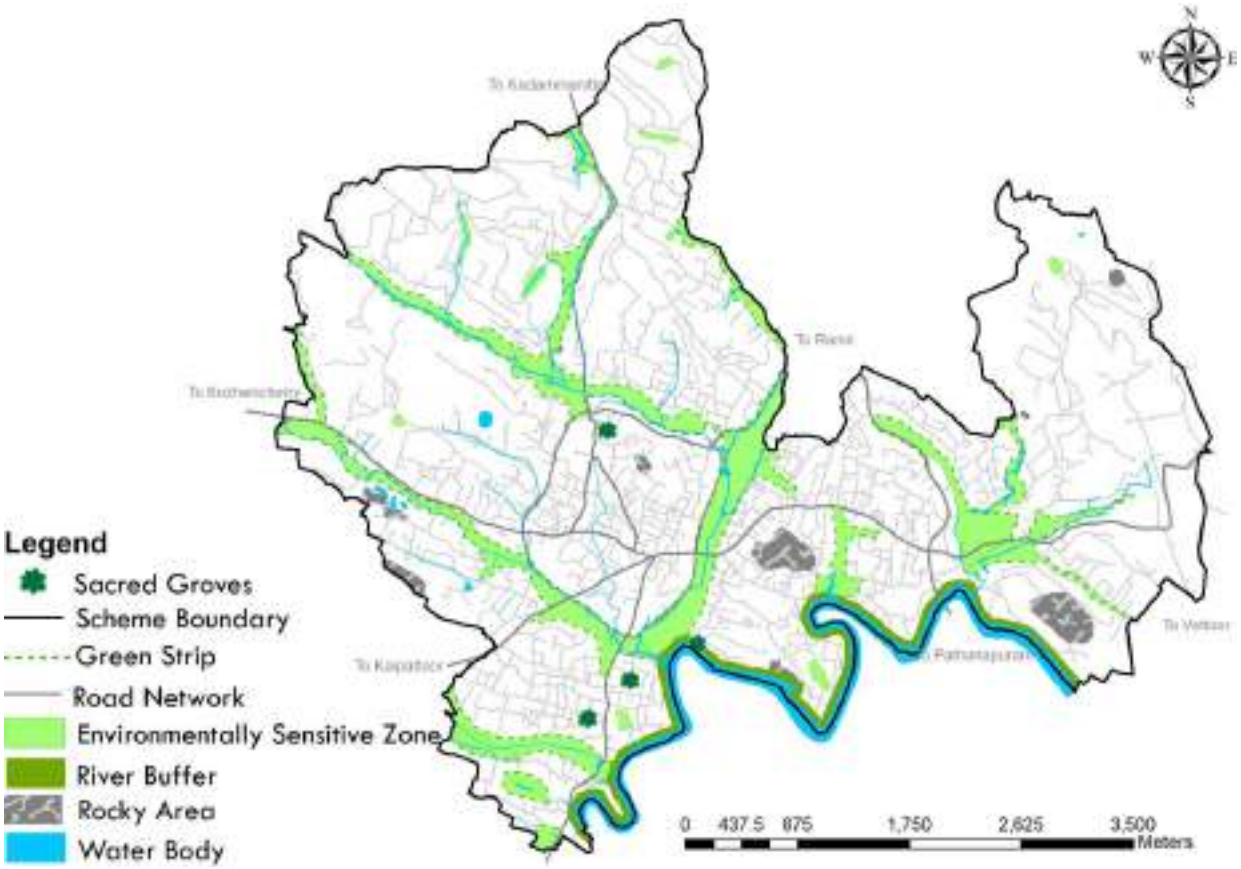


Figure 33.5 Spatial Development concept for Environmental sector of town

33.4 Economic Pillar

Creating a spatial development concept for Pathanmathitta town based on Economic Pillar of liveability involves considering how the spatial structure, infrastructure and the land use can support economic growth while enhancing the quality of life for residents. This concept not only focuses on economic growth but also aims to create a vibrant, liveable town that meets the needs of its residents and businesses. Following seven components are proposed for the spatial development of economic pillar of the town (Figure 33.6).

33.4.1 Hierarchy of Nodes

A hierarchy of commercial nodes within a town provides a structured approach in organizing retail and service activities, enhancing accessibility, and promoting economic development. This concept identifies various levels of commercial facilities, catering to different consumer needs and preferences while optimizing land use. The hierarchy is typically divided into different tiers of commercial nodes based on their size or extent, range of services, and the population required to sustain them. Through the nodes, equitable distribution of commercial activities can be ensured.

Presently the commercial and public office activities are concentrated in the southern part of the town connecting to the central and Aban Junctions with NH, SH & Ring road. As the southern part of the town comes under flood prone area, the northern part of the ring road presents a safer and more resilient alternative for development. Also, the built-up density is low in these areas and has good connectivity as well. As a result, these areas have been identified as potential areas for the future development of the town, offering opportunities for growth while minimizing vulnerability to natural hazards.

Based on this vision, Central Junction and Aban Junction are proposed to combine as the first-order commercial node of Pathanamthitta Town. Second order node is proposed at Kumbazha Junction and third order nodes at St.Peter's Junction and Thazhe Vettipuram Junction. Melevettipuram junction and Cooperative College Junction are proposed as fourth orders; Mundukottakkal Junctions and Stadium Junction are fifth order nodes of the town. Existing commercial areas inside the ring road are retained as the same, ensuring the continuity of established commercial areas while also strategically distributing new commercial developments across the town. This tiered approach will enhance accessibility, support balanced urban growth, and improve connectivity throughout Pathanamthitta Town.

Detailed Town Planning (DTP) Schemes are another type of development approach adopted for the proper achievement of this hierarchical development of nodes and to implement the approaches identified for achieving the liveability factors for the town. Node 1 and 2 already has the DTP schemes. In addition, three new DTP schemes are proposed in this development concept at St. Peter's Junction, Thazhe Vettipuram Junction, and Stadium Junction. These new schemes will support structured and organized growth, fostering sustainable development in key areas. Furthermore, additional DTP schemes may be introduced in other nodes and parts of the town as they develop, ensuring flexibility and adaptability in the town's urban planning to accommodate future needs.

33.4.2 Commercial Core area

The Commercial Core area serves as the primary hub of economic sector in town, functioning as the central location for retail, services, offices, and public amenities. This area is strategically positioned and well-connected through transport infrastructure; it accommodates high-intensity land uses and attracts both residents and visitors. This area not only acts as the town's commercial hub but also plays a critical supportive role to surrounding commercial nodes by anchoring the urban hierarchy.

Two Commercial Core areas are designated to support balanced economic development and improve accessibility to commercial services. The primary commercial core area, located in the central area of the town, functions as the traditional business and retail hub including markets, concentrating high-density commercial activities, public services, and administrative functions. It serves as the main destination for both local residents and visitors, benefiting from strong transport connectivity and existing economic significance. The secondary commercial core area, which is Kumbazha region called gateway of Pathanamthitta town situated in the eastern part of the town, is strategically planned to stimulate growth and reduce development pressure on the town center, and provide a more accessible commercial base for residents in the eastern sectors. While both areas operate independently, they are functionally complementary, with the central core acting as the primary commercial service, and the eastern core supporting regional decentralization, economic diversification, and improved spatial equity across the town.

33.4.3 Town Centre Extension Area

In response to both current challenges and future development needs, the town centre extension area represents a strategic shift in the town's spatial growth pattern. The town has experienced organic urban development primarily within the central core and the southern parts of the ring road. While these areas have become centres of economic and institutional activity, they are increasingly affected by seasonal flooding, due to their low-

lying topography and inadequate natural drainage capacity.

Recognizing these vulnerabilities, it prioritizes a northward expansion of urban activities, focusing on higher elevation areas that are outside the flood-prone zones. The northern part of the town offers a more resilient foundation for long-term growth, with strong connectivity to existing transport networks, proximity to regional roads, and potential for efficient infrastructure extension. Areas near Melevettipuram and Thazhevettipuram (North and Eastern side of the ring road) and Eastern side of Punalur Muvattupuzha State Highway (SH8) are designated as the future urban growth areas.

The town centre extension area is envisioned as a planned and sustainable growth area, guided by the principles of mixed use development and multi-functional activities. This approach not only ensures spatial efficiency and economic vitality, but also supports urban resilience and climate adaptation by avoiding high-risk flood areas and promoting the use of land that can accommodate multiple community needs.

Design guidelines and phasing strategies are to be developed to manage the growth of this area in alignment with infrastructure capacities and environmental considerations with emphasis on public transport accessibility, non-motorized mobility, and inclusive urban design, ensuring that the extension area contributes positively to the town's broader development vision.

33.4.4 Development Promotion area

Development Promotion Area is envisioned as a specialized area designed to stimulate economic growth and spatial integration by leveraging agro-industrial promotion activities and the establishment of innovation villages. This area is proposed as the urban-rural interface on western part of town, this Development promotion area serves as a catalyst for rural transformation and urban sustainability by combining modern agriculture with industrial processing and technological innovation. The core of the concept lies in promoting agro-industrial value chains—from production and processing to distribution—while embedding innovation villages that function as hubs for startups, training centers, research institutions, and pilot projects.

Development promotion area integrates land-use planning, transportation, utilities, and public services to create an attractive environment for private and public investment. Development regulation within these areas will attract public-private partnerships to encourage sustainable development, job creation, and improved urban liveability. By concentrating efforts in specific areas, the town can guide growth efficiently, reduce urban sprawl, and foster cohesive and resilience.

33.4.5 Industrial Area

The Industrial area is a designated area strategically planned to promote industrial growth, attract investment, and stimulate local employment through the development of Industrial Promotion Areas and Industrial Estates. These areas are proposed on the periphery of town, along with good road network to ensure efficient connectivity. The goal of this area is to create a well-organized industrial ecosystem that supports a mix of small, medium, and large-scale industries within a controlled and well-serviced environment.

Industrial Promotion Areas focus on attracting targeted industries such as manufacturing, logistics, and green technology through incentives like tax relief, simplified permitting, and infrastructure support. These areas are planned with zoning regulations that encourage clustering of similar industries to promote synergy, shared services, and supply chain integration. Complementing this, Industrial Estates provide ready-to-use plots and factory

spaces, complete with essential infrastructure such as roads, power, water, waste treatment, and digital connectivity, which significantly reduces setup time and cost for investors.

Additionally, these areas shall be supported by workforce development programs, technical training institutes, and innovation centres to ensure a skilled labor supply and promote technological advancement. Environmental management systems, buffer zones, and sustainable infrastructure shall also be integrated to minimize negative impacts. These industrial-focused areas can drive economic diversification, support employment generation, and establish themselves as regional centers of production and innovation.

33.4.6 Tourism Promotion Area

Tourism promotion area encompasses various strategic components that aim to enhance the accessibility and attractiveness of the town for tourists while ensuring sustainability and community engagement. Key tourism areas such as Chuttipara, Valamchuzhy, Peringamala–Anchakkala, and Vanchipoika have been identified for promotion, leveraging their natural beauty, cultural significance, and recreational potential. These areas shall be developed with improved infrastructure, eco-friendly tourism initiatives, and community-based tourism models to enhance visitor experiences while preserving the local environment. Also tourism infrastructure facilities such as tourist home, base camps and information centres can be proposed.

33.4.7 Agricultural Areas

Agricultural land use in the peripheral areas of town lead to economic benefits by optimizing land use for agricultural production, reducing transportation costs, and increasing local employment opportunities in agriculture-related activities. Additionally, it leads to the development of agro-tourism, which can provide additional revenue streams for local farmers and promote the local economy.

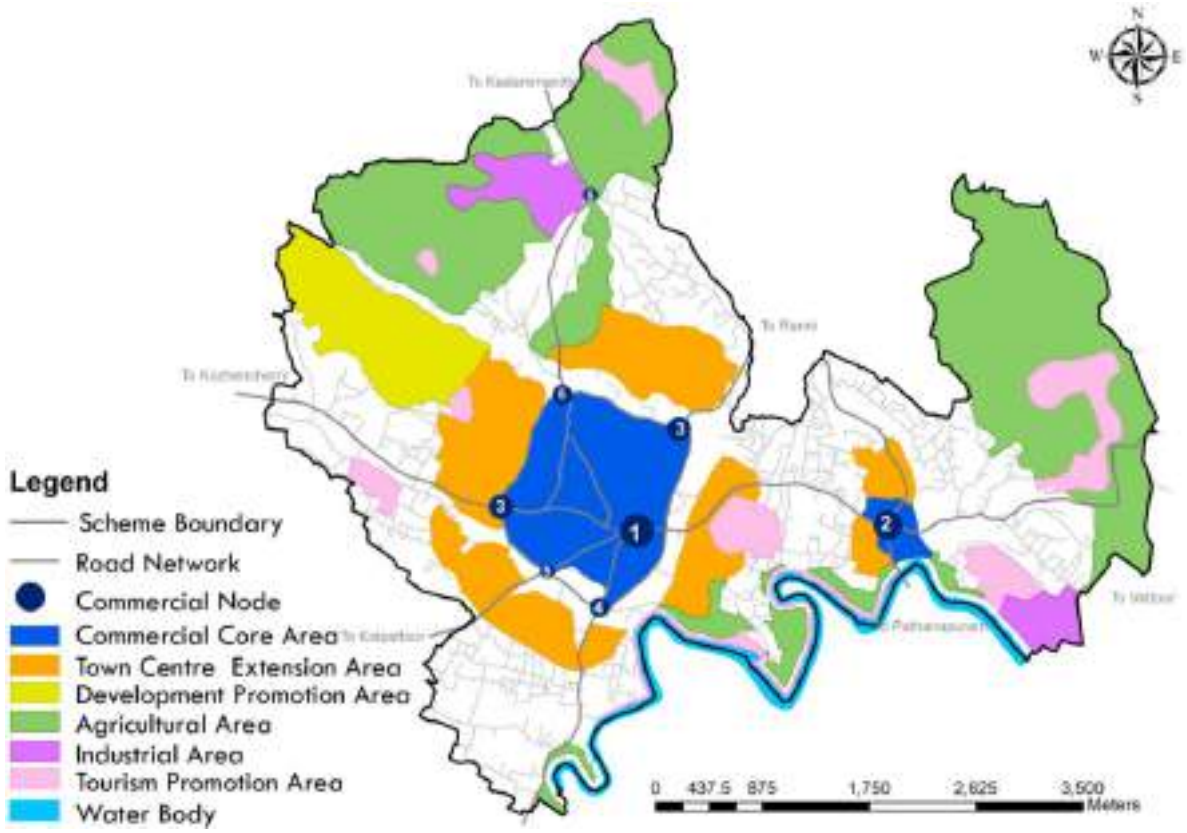


Figure 33.6 Spatial Development concept for economic pillar of town

The development concept adopted for promotion of agriculture focuses on maintaining a balance between agricultural land and urban expansion, ensuring that productive farmlands are safeguarded from encroachment of urban developments.

In Pathanamthitta town, the agriculture activities and urban activities are spatially separated due to topography of the town. The agriculture dominant areas are located in the peripheral areas of the town towards the northern portion. These areas are preserved and promoted to sustain the local economy and meet the growing demand for agricultural produce. By maintaining these areas, the town ensures food security, supports rural livelihoods, and prevents unplanned urban encroachment. Sustainable farming practices, agro-based industries, and market linkages are encouraged to strengthen the agricultural sector while integrating it harmoniously with the town's overall development vision.

Specific areas for urban agriculture within the town is identified which ensures these spaces are preserved for agricultural use, protecting them from urban development pressure. Additionally, the promotion of urban agricultural initiatives enhances food security, fosters sustainability, and strengthens community engagement, creating a resilient and self-sufficient urban ecosystem.

33.5 Social Pillar

The social sector plays a crucial role in the spatial development concept of a town, influencing both the quality of life for residents and the overall functionality of urban spaces. As Education, Health and major civic amenities in the social pillar are sufficient for the town as per planning standards; following factors are mainly considered in the spatial development concept of Social pillar of liveability (Figure 33.7).

33.5.1 Population Distribution

Population distribution influences the type and extent of infrastructure needed. The existing population of Pathanamthitta town is predominantly concentrated in the low-lying central and southern areas. High-density areas near central area and along major roads ensure comprehensive transportation networks, including roads, public transit and utilities to accommodate the larger population. But certain portions of these area falls within flood-prone areas. Meanwhile, the northern region consists of high-elevation lands that where population distribution is less and these low-density areas struggle with infrastructure development other than roads such as public transportation, water supply etc. due to the higher per capita cost associated with extending services over larger distances. A well-distribution of population for efficient deployment of resources and services is difficult due to geographical constraints. The central areas of the town—excluding flood-prone areas—are identified as the most suitable locations for accommodating future population growth.

33.5.2 Residential Area

The residential area accommodates the housing needs of the population while ensuring a high quality of life through access to services, infrastructure, and green spaces. Residential areas significantly influence the spatial development concept of a town by shaping land use, infrastructure development, amenity accessibility, sustainability practices, and future growth management. A well-planned residential area not only enhances the liveability of urban environments but also promotes sustainable and equitable development strategies for future generations.

Existing residential are scattered in all parts of the town and the high-density residential development is mostly found in the southern

and eastern area of town which is mainly around Azhoor and Kumbazha Junction and inside the Ring road. Low lying and easily accessible areas which are mostly located in the southern part of Pathanamthitta town have a higher residential density, when compared with the hilly areas which are located in the North. However, since the southern region falls within a flood-prone area, the central and northern regions of the town are identified as more spatially suitable for future residential development. These areas provide safer and more resilient options for accommodating the town's population while ensuring sustainable urban expansion.

Both residential and residential-cum-agricultural areas enables the town to address diverse socio-economic needs, support peri-urban livelihoods, and promote sustainable land use. The residential use proposed in urban and semi-urban areas is medium- to high-density housing. Mixed-income housing, walkability, environmental sustainability, the residential-cum-agricultural use on the urban fringe or in transitional rural areas of town, are allowing residents to engage in small-scale agriculture alongside their housing. These areas are vital for food security, local economic development, and the preservation of agricultural traditions. Plots in this area are larger, allowing for home gardens, livestock rearing, or greenhouse farming. Infrastructure is tailored to support both residential living and light agricultural use, with provisions for water and local markets. Affordable housing facilities for economically weaker sections and integrated housing projects for floating population are also to be considered.

33.5.3 Recreation Area

Recreational area contributes to sustainable urban living, enhancing resident's quality of life, promoting social interactions and supporting local economies. Their thoughtful integration creates resilient, vibrant, and inclusive spaces that meet the needs of current and future populations. Also help to provide necessary greenery in urban settings, which can mitigate the heat island effect, improve air quality, and support biodiversity. These areas can also contribute to mental well-being by providing peaceful settings for relaxation and social interaction.

Residential, commercial, and recreational areas are planned together to create cohesive communities. Through Zoning, the creation of parks and recreational facilities alongside residential areas enhance accessibility and improve the overall urban experience.

The percentage of existing public open spaces/ recreation spaces in the municipality is significantly lower than the recommended standards outlined in the URPDFI guidelines. To address this shortfall, a strategic approach is adopted to ensure equitable distribution of recreational facilities across the town, promoting inclusiveness and equal access to leisure activities for all residents.

The Kumbazha region is proposed as a city-level recreational centre to serve as a major hub for both residents and visitors. This well-designed recreational area can stimulate local economies by attracting tourism and creating job opportunities in areas such as park maintenance, recreational and community events. Economic activity generated around these areas including local businesses and shops strengthens the overall economic fabric of the town.

The town's stadium is envisioned as a district-level facility, offering a wide range of sports and recreational opportunities for residents and visitors. Existing Subala Park, Parks in Quarry areas will enhance its role as a natural space for relaxation and ecological awareness. Another key development is the Sabarimala Edathavalam Pilgrim Centre, which will serve as

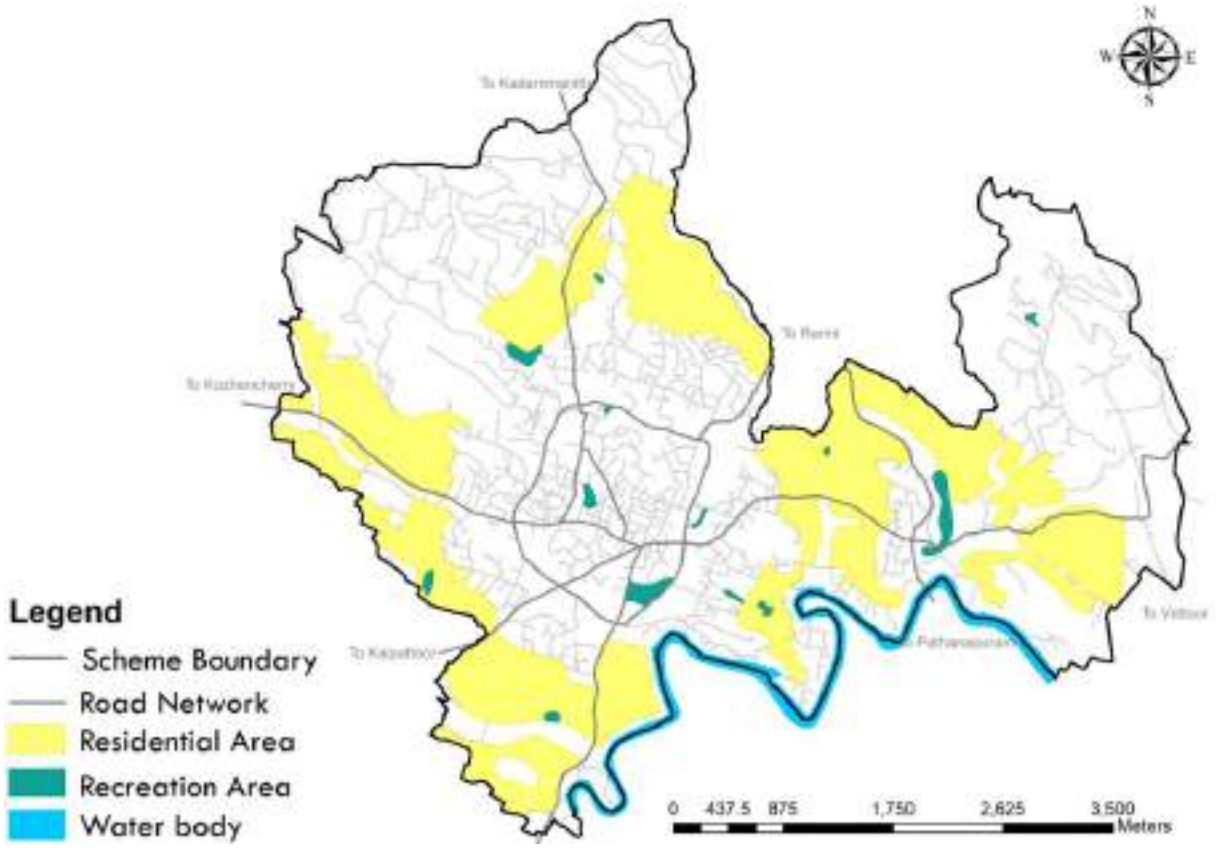


Figure 33.7 Spatial Development concept for social pillar of the town

a multipurpose open space catering to both the religious and recreational needs of visitors. Additionally, smaller neighbourhood parks, wellness parks, fitness hubs, youth level recreation centres, children's park, public gathering spaces planned to meet the recreational needs of residential areas, providing accessible green spaces for community gatherings, outdoor activities, and social interaction. These diverse recreational areas contribute to a balanced urban environment, promoting physical well-being and community cohesion.

33.5.4 Special Concern Areas

To ensure inclusive and equitable urban growth the needs of all citizens including those from vulnerable groups to be addressed. Special attention given to women, children, senior citizens, Differently abled and other socially backward groups. Old age homes, skill development centres for women, Bud school and rehabilitation centres, empowerment and therapy centres for differently abled, barrier free footpaths and buildings, up gradation of SC/ST nagars etc. be ensured.

33.6 Physical Pillar

The physical sector of a town is closely correlated with the spatial development concept, as it encompasses the infrastructure and the physical elements that facilitate urban growth and connectivity. A well-planned and developed physical sector is essential for creating resilient and thriving urban environments that meet the needs of current and future populations. Physical components such as water supply, waste management, energy sectors and the road network of the town are considered for the spatial concept of physical pillar of town (Figure 33.8)

33.6.1 Road Network

A well-planned road network enhances accessibility, connecting residential, commercial, and tourism areas. Improved

access stimulates economic activities; attract investments and supports local businesses by ensuring seamless mobility. Additionally, a well-integrated road network helps in reducing congestion, promoting public transportation, and enabling efficient land utilization, ultimately contributing to a more resilient and liveable urban environment.

The existing major road network comprises mainly of the National Highway-183A, State Highways and a ring road. Since there is no rail network or waterway connectivity within the town, the expansion and improvement of the road network remain the only feasible approach for future transportation planning. Traffic congestion in Pathanamthitta town is primarily caused by insufficient road widths, poor road geometrics, mixed vehicular traffic, and roadside encroachments for parking and other activities. To address these challenges, the development concept focuses on strengthening the public transportation network through strategic improvements in road design and management. This includes widening key roads, enhancing junction designs, implementing traffic management measures, and developing organized parking facilities.

The road network of Pathanamthitta town follows a Ring and Radial Road pattern, with two State Highways passing through the area. Given the increasing traffic volume and congestion, widening these roads is essential to ensure smooth traffic flow. A key concept in traffic and transportation planning for the town is to divert major traffic away from the central area, ensuring smooth mobility and reducing congestion. The ring road plays a crucial role in achieving this by allowing vehicles to reach various destinations without passing through the town's core. To maintain a free-flowing central area, heavy traffic shall be restricted, and an advanced public transport system be introduced to address parking deficiencies and traffic congestion.

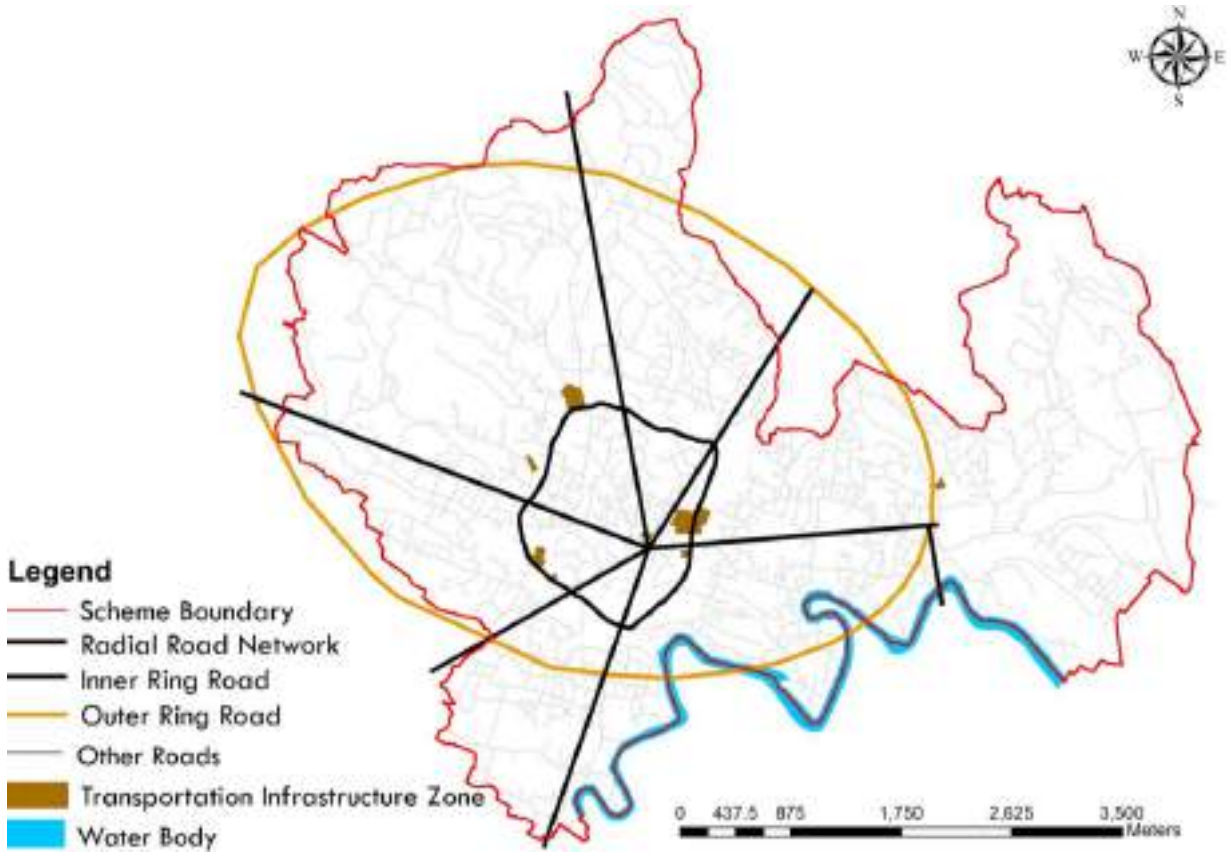


Figure 33.8 Development concept for road network in Pathanamtitta Town

Kumbazha is identified as a sub-transport node, enhancing connectivity within the town. The overall road development concept follows a Ring and Radial pattern, as illustrated in Figure 33.8, ensuring efficient traffic distribution and improved accessibility.

33.6.2 Outer ring road

The Outer Ring Road is a strategic infrastructure element designed to support balanced urban growth, enhance regional connectivity, and manage traffic congestion within the urban core. Proposed at the periphery of the town, the outer ring road functions as a mobility corridor that connects key radial roads with central areas, and facilitates the movement of goods, services, and people around the town rather than through it. It creates opportunities for zonal development, such as development promotion zone, industrial zone, Tourism promotion zone, and residential neighbourhoods, all aligned along the ring to distribute development evenly. The outer ring road also improves access to rural hinterlands and neighbouring areas, strengthening regional integration and economic activity.

The Outer Ring Road serves not only as a transportation and growth management tool but also as a critical component of the town's disaster resilience and emergency preparedness strategy by functioning as a dedicated evacuation route. It is positioned around the periphery of the town, the outer ring road provides a continuous, high-capacity corridor that enables rapid and safe movement of people, emergency vehicles, and resources during natural disasters or other emergencies.

33.6.3 Transportation Infrastructure

The Municipal Bus Stand, KSRTC Bus Terminal and on opposite sides of the Ring Road, serve as the town's primary transit hub. Given that the northern part of the Ring Road is identified as a key area for future growth, ensuring seamless traffic flow and efficient public transportation in this area is essential. To facilitate this, a satellite bus station and a comprehensive mobility plan must be developed, focusing on optimizing connectivity, reducing congestion, and enhancing accessibility for the expanding urban areas.

Pathanamthitta's well-structured ring road, which connects major junctions of the town, is envisioned as a key identity feature. To enhance urban liveability, the concept of an Urban Health Corridor is proposed for the inner ring road. This initiative integrates walkability, cycling infrastructure, green spaces, and wellness-focused urban design, transforming the corridor into a vibrant and accessible public space. By promoting active transportation and community interaction, the Urban Health Corridor aims to improve public health, reduce congestion, and create a sustainable urban environment. Highway travel plaza, Transportation Terminal Interface, Truck Terminal, Parking plaza are also included for supporting town's transportation infrastructures.

33.7 Institutional Pillar

The institutional sector plays a foundational role and it provides the governance, administrative, legal, and civic backbone that enables all other sectors—economic, social, physical, and environmental—to function effectively and equitably. Institutional buildings and complexes form civic landmarks and help define the spatial hierarchy of a town (e.g., town center, civic core, administrative zones). Siting of government offices, courts, police, and civic halls influences urban form. Institutional areas also provides the public face of governance and a space for citizen interaction. It can also create civic pride, public trust, and a sense of collective identity. A well-placed and designed institutional sector enhances the town's legibility, accessibility, and governance image.

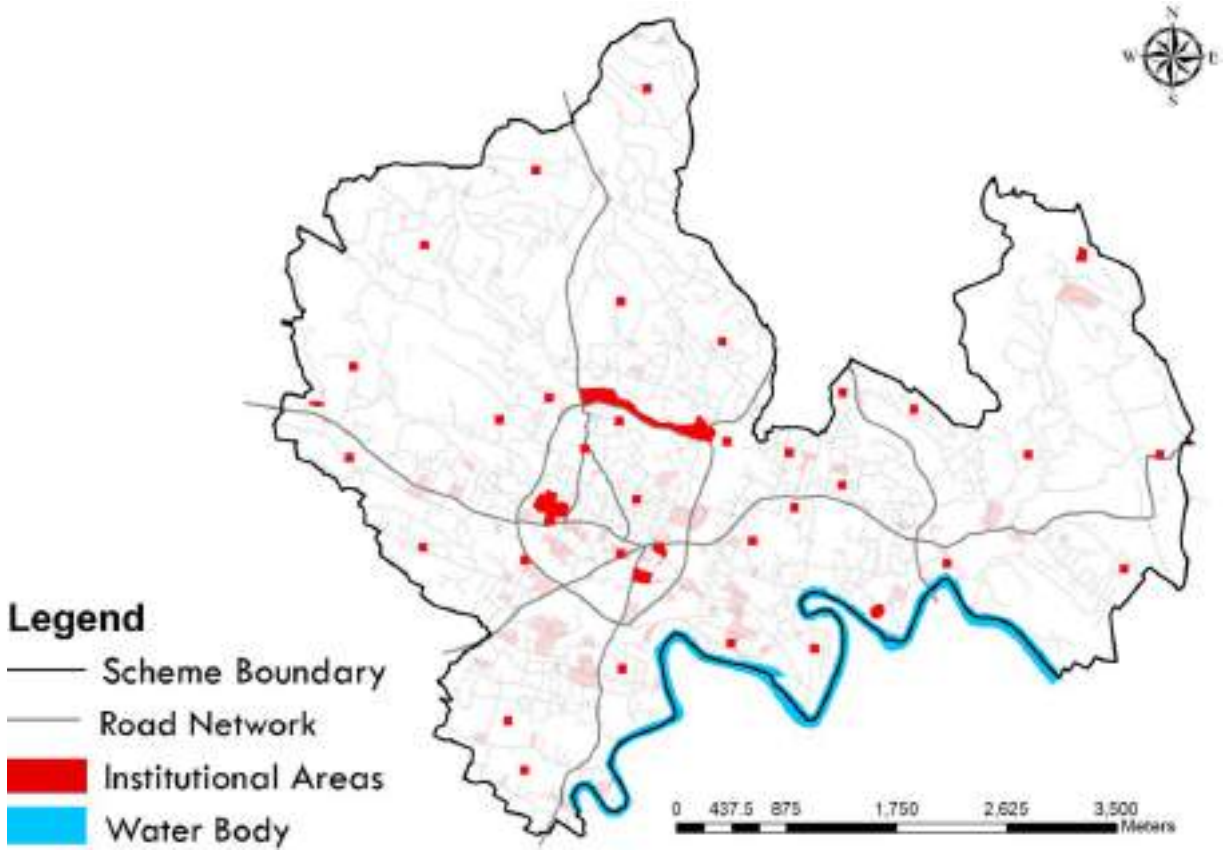


Figure33.9 Spatial Development concept for institutional sector of town

33.7.1 Government office complex

Apart from existing public and semi-public buildings, separate space for a government office complex is essential to accommodate more government offices, improve public service delivery, and reinforce the visibility and accessibility of governance. By clustering key government offices in a designated area, the town enhances interdepartmental coordination, reduces travel time for citizens, and ensures more efficient use of infrastructure and land. This spatial consolidation also allows for better security, streamlined logistics, and long-term planning flexibility, including future expansion. Furthermore, a well-designed government complex becomes a civic landmark, fostering transparency, civic identity, and trust in public institutions. The area between Melevettipuram and Thazhevettipuram in the northern part of ring road is considered for the proposed government office complex. (Figure 33.9)

33.7.2 Redevelopment of other public offices

Redevelopment of existing infrastructure facilities is essential for the existing major institutional buildings under public sector. Civil station, Mini civil station, Municipal office complex etc. are to be redeveloped for better parking and other facilities. Also ward level administrative buildings are suggested for the smooth functioning of ward level activities such as ward sabhas, ward councillors office, local community centre, polling booth, primary unit of disaster relief activities.

33.8 Development Concept

A proposed spatial land use concept for a town involves the strategic distribution of different functions across the urban area, ensuring that the town is sustainable, accessible, and liveable for all its residents. The design aim for a balanced approach considering factors like density, mobility, environmental sustainability,

social inclusion, and economic opportunities. Outputs of above analysed pillars are overlaid (Figure 33.10) to visualize how various geographical, environmental, and urban factors intersect to form the Development concept of the town (Figure 33.11)

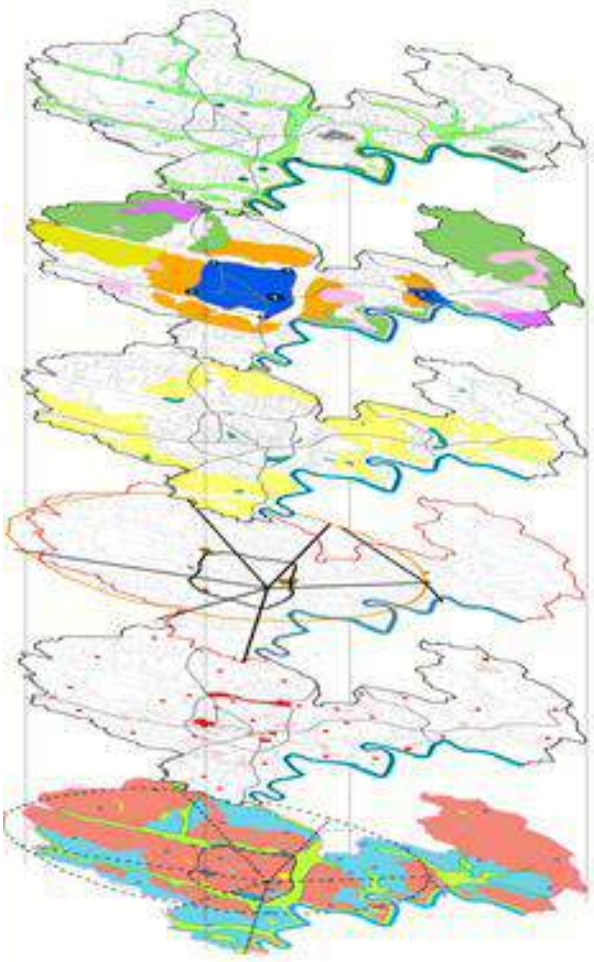


Figure33.10 Overlaying pillar wise Development concepts

It delineates economic development areas such as urban extension areas, development promotion zone, industrial zones, commercial hubs, innovation villages and IT parks in locations with strong connectivity to stimulate job creation and investment. Simultaneously, it identifies environmentally sensitive areas, including green belts, river buffers, wetlands, and conservation zones, to preserve natural ecosystems and enhance urban resilience.

The plan shall consider to incorporate social sector development areas by allocating space for affordable housing, education, healthcare, recreation, and community facilities to ensure inclusive and equitable access to services.

A distinct area is earmarked for the government office complex, where administrative functions are centralized to improve governance, accessibility, and coordination among public departments. Also ward level institutions along with redevelopment of major existing institutions. Lastly, the concept integrates a comprehensive transportation infrastructure network, including roads, transit corridors and pedestrian pathways, to ensure seamless connectivity between all functional areas. The road network adopts a Ring and Radial Pattern that facilitates efficient traffic movement while diverting congestion from the town core.

The Ring Road serves as an Urban Health Corridor, ensuring improved mobility and access to key areas. Strengthening the public transport system, the proposed outer ring road and implementing the road widening projects, will support future growth and connectivity of the town. Together, these spatial elements form a cohesive urban structure that supports economic vitality, environmental sustainability, social equity, and institutional efficiency.

For the implementation of this development concept through land use plan and zoning regulation, town area is categorized into three broad zones. The first is the Built-up Zone, designated for residential, commercial, institutional, transportation, recreation, industrial and other infrastructure developments.

The second is the Green-Blue Zone, a non-built-up area reserved for ecological functions such as green belts, water bodies, wetlands, buffer zones, detention basins and open recreation areas, aiming to enhance environmental resilience and maintain the ecological balance.

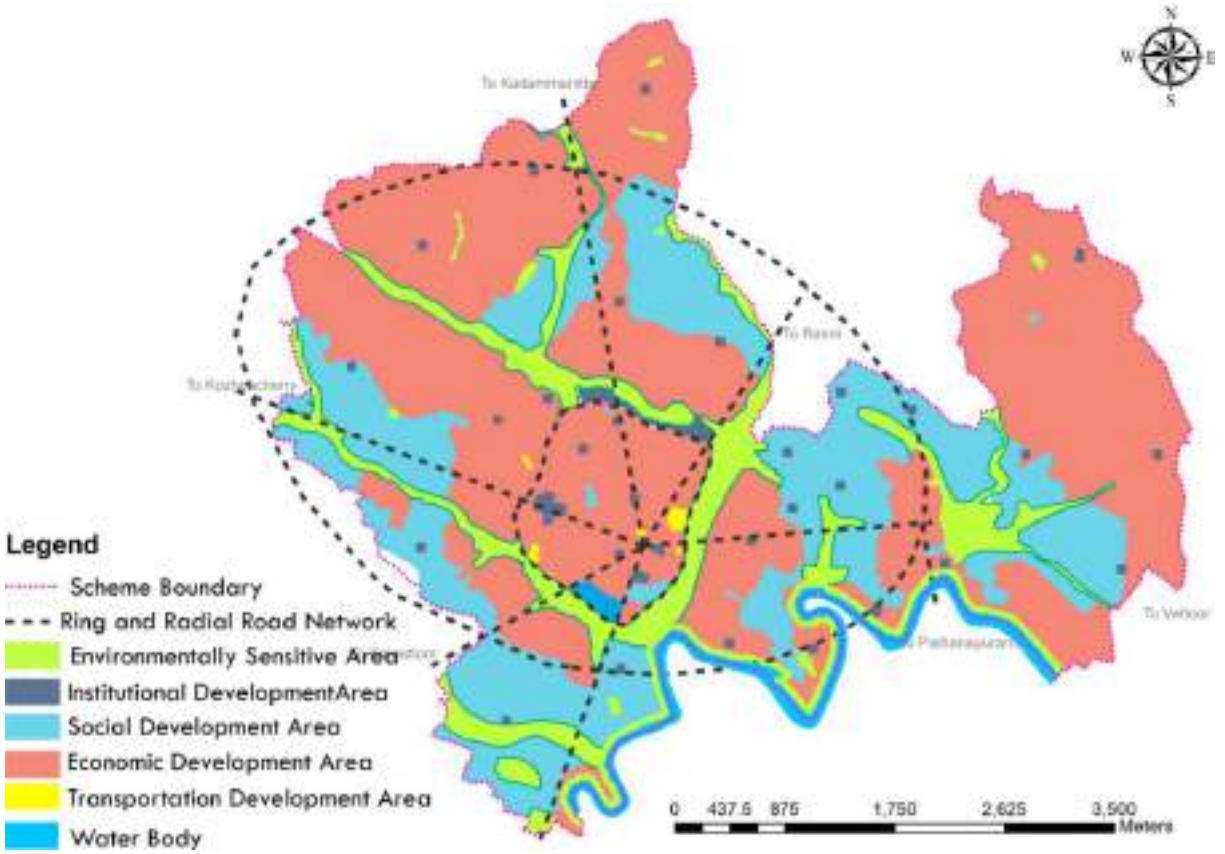


Figure33.11 Development concept for Pathanamthitta town

The third is the Special Zone, earmarked for model projects on privately owned lands, where innovative, sustainable, and exemplary developments can be implemented under guided regulations. This zoning framework provides a balanced approach to urban growth, environmental protection, and innovation.

33.9 Summary

The spatial development concept for Pathanamthitta Town focuses on creating a well-balanced, integrated community where land uses complement and support each other. The concept aims to reduce commuting distances, increase walkability, support economic growth, provide recreational opportunities and ensure sustainability to achieve the development vision of the town. By focusing on mixed-use, protection of environmentally sensitive areas, green spaces and accessibility, this concept envisions a town that is not only functional but also resilient, inclusive, and conducive to a high quality of life.



34. GENERAL POLICIES & STRATEGIES

Policies and strategies are the basic frameworks used to guide the development and management of urban areas. In the context of master plan, policies refer to a structured set of guidelines aimed at regulating land use and managing urban development towards realising the development concept. The policies provide a framework for decision-making regarding the spatial context of the town. Strategies are a series of ways to achieve the policies. It encompasses a variety of interventions designed to address the challenges faced by the town, including growth, sustainability, equity, and resilience.

Policies and strategies focus on balancing economic, social and environmental goals to create sustainable and liveable communities. These are framed with the help of stakeholder consultation and public participation. For easy understanding and implementation, the sector wise adopted policies and strategies are mentioned in this chapter.

Contents

1 Trade & Commerce

2 Industry

3 Tourism & Heritage

4 Agriculture & Allied Sectors

5 Physical Infrastructure

6 Social Infrastructure

7 Traffic & Transportation

8 Special Concern Area

9 Environment

10 Administration & Finance

34.1 Trade and Commerce

Policy: Strengthen Pathanamthitta's role as the administrative and service hub of the district by developing it into a resilient, accessible, and vibrant first-order trade and service centre. Promote local economic development through spatially integrated, hazard-aware, and inclusive commercial infrastructure that caters to both local communities and floating populations.

Strategy:

- Encourage mixed-use zoning that integrates residential, commercial, and recreational uses to enhance walkability, foster vibrant street life, and strengthen community interaction.
- Designate well-defined zones for retail, service-oriented businesses, and office spaces to ensure functional clarity, reduce land-use conflicts, and enhance the quality of life in adjacent residential areas.
- Invest in an integrated network of public transport, cycle lanes, and pedestrian pathways to enhance last-mile connectivity and ensure easy access to commercial areas.
- Upgrade the existing town market into a vibrant district-level commercial hub by improving infrastructure, ensuring better accessibility, and integrating modern facilities to support wholesale and retail activities.
- Promote local businesses by developing dedicated shopping streets and organized vending zones that provide safe, accessible, and well-designed spaces for street vendors and small-scale entrepreneurs, enhancing the local economy and urban vibrancy.

34.2 Industry

Policy: Strengthen the service sector and promote eco-friendly, innovation-driven industries to align with Pathanamthitta's vision

Strategies:

- Promote clean and knowledge-based industries, within the city limits, such as IT-enabled services, health care, education, and green enterprises that align with the town's eco-sensitive character and service-sector strengths.
- Facilitate the integrated development and modernization of traditional industries, particularly automobile services and agro-based units, through infrastructure support, skill development, and access to finance.
- Leverage the town's proximity to pilgrimage and eco-tourism destinations by promoting tourism-based industries, including eco-lodges, guided services, local crafts, and wellness-based enterprises.

34.3 Tourism and Heritage

Policy 1: Leverage Pathanamthitta's unique identity as the gateway to Sabarimala and its rich cultural heritage to develop a sustainable and inclusive tourism economy that enhances local livelihoods and preserves the town's historical and ecological assets.

Strategies:

- Develop a unique identity and branding strategy for the town that showcases its ecological and cultural richness and natural attractions to promote ecotourism.
- Improve roads, public transport, and signage to facilitate easy access for tourists in connection with the Sabarimala pilgrimage.
- Develop amenities such as visitor centers, restrooms, and information

kiosks to enhance the tourist experience.

- Promote eco-friendly practices in tourism development, including waste management and energy efficiency.
- Strengthen local linkages in the tourism value chain by encouraging tourism-related businesses to source products and services locally—supporting homestays, traditional artisans, local cuisine vendors, and women-led enterprises to boost the town's inclusive economic growth.
- Ensure that all tourist facilities comply with health and safety regulations to provide a secure environment for visitors.
- Institutionalize annual events and cultural festivals—including traditional art, music, and food festivals—to celebrate the town's heritage, enhance its cultural identity, and increase visibility and tourist footfall.
- Develop immersive tourism experiences, such as workshops on traditional crafts, heritage walks, cultural storytelling, and culinary trails, to deepen visitor engagement and generate community-based income.

Policy 2: Promote the integration of tourism and agriculture as complementary economic drivers to enhance livelihoods, preserve cultural landscapes, and create sustainable, experience-based development opportunities

Strategies:

- Promote sustainable agri-tourism practices such as organic farming, integrated farming systems, and conservation agriculture to enhance environmental stewardship while offering unique tourism experiences.
- Invest in infrastructure that supports sustainable tourism, such as renewable energy sources for farm operations.
- Create zoning regulations that support agri-tourism development while protecting agricultural land from urban sprawl.
- Encourage developments that combine residential, agricultural, and tourism uses to create vibrant communities.
- Foster partnerships between local agricultural producers and tourism operators to create packages that benefit both sectors.
- Train farmers and rural entrepreneurs in hospitality and digital promotion to enhance the quality of the visitor experience and improve income diversification opportunities.
- Invest in transportation infrastructure to ensure easy access to agricultural areas and farms.
- Organize agri-themed events such as heritage food fairs, farmers' markets, and craft expos to attract urban visitors and encourage direct farm-to-consumer linkages and stimulate local economies.
- Promote seasonal events that highlight agricultural cycles (e.g., harvest festivals, spring planting events).

Policy 3: Creating a town designated as a work staycation centre

Strategies:

- Design neighborhoods that integrate residential units with office spaces, shops, and services to create a vibrant environment.
- Encourage developments that allow residents to live, work, and play in the same area, fostering a sense of community.

- Incorporate parks and gardens for relaxation and recreation, promoting work-life balance.
- Ensure availability of budget-friendly options to accommodate diverse professionals.
- Establish areas that combine workspaces, dining, and leisure to encourage networking and socializing.
- Ensure easy access to grocery stores, healthcare, gyms, and other essential services within walking distance.
- Promote electric vehicle charging stations and public transport
- Promote local businesses and services that cater to remote workers and visitors, strengthening the economy.
- Host special events or initiatives that focus on wellness, productivity, or creativity to enhance the work staycation experience.

34.4 Agriculture and Allied Sectors

Policy: Create an enabling environment for agriculture and allied sectors that ensures food security, enhances local livelihoods, and contributes to sustainable economic development.

Strategies:

- Designate specific zones for agricultural activities, ensuring protection of agricultural land from urban development.
- Allow for mixed-use zoning that incorporates agricultural activities within residential and commercial developments, such as community gardens and farmers markets.
- Promote Urban Agriculture and encourage the establishment of community gardens in public spaces to enhance local food production and community engagement.
- Facilitate rooftop gardens and vertical farming projects to maximize space in urban environments.
- Strengthen water resource management through the promotion of drip irrigation, rainwater harvesting, and greywater reuse, especially in drought-prone upland areas of the municipality to support agricultural productivity.
- Offer workshops and training programs on sustainable farming practices, organic agriculture, integrated pest management, climate-resilient crops and modern agricultural technologies in partnership with Krishi Bhavans, agricultural universities etc.
- Implement green infrastructure practices, such as rain gardens and permeable pavements, to manage stormwater and enhance agricultural land.
- Promote practices that protect local ecosystems and biodiversity, such as planting native species and creating wildlife corridors.
- Partner with universities and research institutions to promote agricultural research, climate-smart agriculture and innovation tailored to local conditions.
- Introduce practical learning programs in schools to foster awareness of local agriculture, sustainable practices, and their critical role in ensuring food security and driving the regional economy.

34.5 Physical Infrastructure

Policy 1: Ensure uninterrupted, adequate, Safe and Affordable Drinking Water for all.

Strategies:

- Upgrade and maintain existing water supply systems, including treatment plants and distribution networks (Extension of water supply pipe lines to

more areas, Provision of separate water distribution system for elevated area, Replacement of damaged pipe lines and fittings) to prevent leaks and ensure efficient delivery.

- Develop multiple sources of water supply, such as surface water, groundwater, and rainwater harvesting, to reduce dependence on a single source
- Continue the existing Integrated Water Resource Management (IWRM) by KWA to combine water supply, quality, and demand management in a single framework to optimize resource use.
- Establish protective buffer zones around water sources to prevent contamination from urban development.
- Implement infrastructure that can withstand climate impacts, such as extreme weather events, flooding, and drought.
- Develop policies to adapt to climate change impacts, including variability in rainfall and potential droughts.
- Promote awareness of water conservation practices among residents and businesses.
- Engage local communities and other private agencies in the decision-making process to address diverse needs.
- Upgrade and expand the water supply infrastructure to meet the growing demands of the population and support future commercial and institutional development.

Policy 2: Create a resilient drainage network that effectively manages storm water, reduces flooding risk, and protects water quality.

Strategies:

- Conserve and rejuvenate the town's natural drainage systems—such as streams, canals, wetlands, and paddy fields—as primary buffers that absorb stormwater, mitigate flooding, and support ecological balance.
- Use zoning regulations to control development in high-risk flood areas and promote low-impact development practices.
- Adopt Integrated Storm water Management (ISM) by combining conventional drainage infrastructure with nature-based solutions such as bioswales, vegetated channels, and infiltration zones to manage storm water effectively.
- Mandate the use of permeable materials for sidewalks, parking lots, and roadways to allow water infiltration.
- Encourage the installation of green roofs on buildings to reduce runoff and provide insulation.
- Ensure proper site grading to direct water flow towards drainage systems and minimize ponding.
- Create retention ponds that hold stormwater and allow for gradual infiltration, reducing downstream flooding
- Establish a maintenance schedule for drainage systems, including cleaning out debris from storm drains and inspecting culverts
- Periodically assess and upgrade aging drainage infrastructure to ensure it meets current and future needs
- Educate residents about the importance of stormwater management and individual actions they can take, such as maintaining gutters and downspouts
- Involve the community in the planning of drainage projects, encouraging input and fostering a sense of ownership
- Develop flexible drainage solutions that can be adjusted based on changing

weather patterns and increased rainfall intensity.

Policy 3: Create a hygienic town through effective waste management

Strategies:

- Develop a holistic waste management plan that covers waste minimization, collection, segregation, recycling, composting, and scientific disposal.
- Use waste audits to understand waste composition and volume, allowing for targeted interventions.
- Ensure reliable and frequent waste collection services to prevent overflow and maintain cleanliness.
- Create easily accessible waste disposal sites for hazardous waste, e-waste, and bulky items.
- Educate residents on the importance of waste management for public health and hygiene through workshops, magazines, and community events.
- Provide accessible and multilingual guidance on source-level waste segregation of recyclables, organics, and non-recyclables.
- Advocate for policies that limit single-use plastics and promote reusable, biodegradable, or locally made eco-alternatives.
- Implement regulations requiring residents and businesses to separate waste at the source to enhance recycling and composting efforts.
- Set up community composting facilities to handle organic waste, reducing landfill use and improving soil health
- Provide resources and incentives for residents to compost at home, reducing waste and promoting sustainable practices.
- Establish and enforce cleanliness standards for public spaces, including parks, streets, and community areas through regular inspections, penalties for non-compliance, and a grievance redressal mechanism.
- Organize community clean-up events to engage residents in maintaining hygiene and cleanliness in their neighborhoods.
- Ensure strict enforcement of waste management regulations to prevent illegal dumping and ensure compliance
- Monitor and address public health concerns related to waste management, including pest control and odour mitigation.
- Prepare emergency waste handling protocols for extreme events like floods, pilgrim surges, or disease outbreaks to maintain urban hygiene and resilience.
- Conduct periodic evaluations of waste management systems and hygiene levels to identify areas for improvement.
- Upgrade and expand sewage and solid waste management infrastructure to meet the demands of a growing population and thriving commercial activity.

Policy 4: Promote energy efficiency and ensure reliable, affordable, and sustainable energy access for all.

Strategies:

- Adopt energy-efficient building codes for new constructions and major renovations, mandating the use of insulation, energy-efficient windows, and HVAC systems tailored to local climatic conditions.
- Promote green building certifications (such as GRIHA or IGBC) through incentives and technical support for residential, commercial, and institutional buildings.

- Implementation of energy-efficient systems in new and existing public and semi-public buildings.
- Support decentralized and renewable energy systems, including rooftop solar and community solar projects, to reduce dependence on the grid and improve energy security.
- Encourage higher density developments to maximize land use efficiency and minimize energy consumption in transportation
- Incorporate parks and green spaces that enhance urban microclimates and reduce the heat island effect, contributing to energy efficiency.
- Conduct awareness campaigns and capacity-building programs to educate residents, builders, and institutions on the benefits of energy conservation and available support schemes.
- Upgrade and expand electricity and internet infrastructure to meet the demands of a growing population and evolving business landscape, ensuring uninterrupted, reliable, and high-speed services that support digital connectivity, economic development, and quality of life.

34.6 Social Infrastructure

Policy: Develop an inclusive, resilient, and future-ready social infrastructure system that promotes equitable access to quality health care, education, recreation, and community well-being.

Strategies:

- Develop policies that prioritize equitable access to social infrastructure for all residents, especially marginalized and low-income communities.
- Ensure that health, educational, recreational, and religious facilities are strategically located to serve all neighborhoods effectively.
- Invest in the construction and renovation of schools to create safe, conducive, and technologically equipped learning environments.
- Promote inclusive recreational spaces by designing parks and recreational facilities that are accessible to all, including those with disabilities.
- Diversify recreational and cultural programs to cater to different age groups, lifestyles, and interests, fostering social cohesion.
- Partner with non-governmental organizations and civil society organizations to enhance social service delivery and support community development initiatives.
- Relocate critical civic amenities from hazard prone areas to safer zones.
- Adopt climate-resilient designs in all new and upgraded social infrastructure projects.
- Strengthen access to hospitals, primary health centers, and clinics by improving their distribution, capacity, and connectivity to meet the current and future healthcare needs of a growing and diverse population.

34.7 Traffic and Transportation

Policy: Transform the road network into a human-centric, inclusive mobility system that prioritizes walkability, public transport, and safety for all users.

Strategies:

- Promote compact and mixed-use development that integrates residential, commercial, and recreational spaces to reduce travel demand and support walkable communities.
- Adopt a connected, grid-based street layout that enhances connectivity and

reduces the reliance on major roads, making it easier for pedestrians to navigate.

- Design developments around transit hubs to make public transport a more viable option.
- Ensure reliable, accessible, and frequent public transport that connects key areas of the town.
- Integrate green corridors and public squares along major routes to serve as recreational spaces, cooling zones, and social nodes within the transportation network.
- Expand sidewalks to accommodate foot traffic, outdoor dining, and accessibility for individuals with disabilities.
- Install pedestrian-friendly crossings with raised crosswalks, refuge islands, and signalized intersections with countdown timers to enhance safety.
- Replace stop signs or traffic signals with roundabouts to reduce conflict points and improve flow for all users.
- Utilize smart technology for real-time traffic monitoring and adaptive traffic signals that prioritize pedestrians and cyclists.
- Conduct awareness campaigns and mobility education programs promoting the benefits of active mobility and public transportation.
- Adopt policies that require all new road projects to consider the needs of all users, not just vehicles.
- Upgrade and regularly maintain road infrastructure to ensure smooth traffic flow, reduce congestion, and enhance climate resilience—especially along key arterial and evacuation routes.

34.8 Special concern Area

Policy: Create an inclusive, supportive, and age-friendly environment that enhances the quality of life for older adults, ensuring their mobility, safety, health, and social participation in the evolving urban fabric of Pathanamthitta.

Strategies:

- Promote mixed-use zoning to place essential services, shops, and recreational areas within walking distance of residential neighborhoods.
- Ensure sidewalks are wide, well-maintained, and free of obstructions, with ramps at intersections to facilitate mobility.
- Strategically locate healthcare facilities, clinics, and wellness centers within walking distance or accessible by public transport.
- Design parks with age-friendly features such as walking paths, seating areas, shaded spaces, and barrier free restrooms.
- Offer recreational programs tailored to older adults, including fitness classes, gardening clubs, and walking groups to promote physical activity.
- Create sensory gardens and quiet areas for relaxation, encouraging social interaction and well-being.
- Encourage home-based health services that offer support for older adults, ensuring they receive necessary care in a familiar environment.
- Improve street lighting in public spaces and along walkways to enhance safety during evening hours.
- Develop multi-purpose community centers that host activities for all age groups, encouraging interaction and collaboration
- Create programs that facilitate intergenerational engagement, such as mentoring initiatives, skill-sharing workshops, and community events.
- Design communities to be resilient to climate change, ensuring that older

adults have access to safe, livable environments even during floods.

Policy: Foster a safe, inclusive, and empowering urban environment in Pathanamthitta that promotes the dignity, participation, and well-being of women in all aspects of social, economic, and civic life.

Strategies:

- Safety and Accessibility: Improve safety in public spaces and transport through better lighting, surveillance, and gender-sensitive infrastructure like women-only zones and secure public toilets.
- Economic Empowerment: Support women-led businesses and self-help groups with training, market space, credit access, and digital literacy to enhance participation in the local economy.
- Health and Social Support: Ensure accessible healthcare, reproductive services, mental health support, and childcare facilities to promote women's well-being and reduce domestic burdens.
- Mobility and Civic Participation: Enhance walkability and public transport for women and ensure their representation in local governance and planning processes.
- Education and Legal Awareness: Promote girls' education, women's leadership programs, and awareness of legal rights through outreach, mentorship, and community engagement.

Policy: Establish a child-friendly Pathanamthitta by ensuring accessible health care, quality education, safe recreational spaces, and strong protection mechanisms

Strategies:

- Create a safe and inclusive urban environment by developing child-friendly streets, parks, and public spaces that are accessible, secure, and free from hazards.
- Strengthen education and development by improving school infrastructure, supporting early childhood learning, and providing after-school programs that foster creativity and skills.
- Ensure access to quality healthcare and nutrition through well-equipped pediatric services, health education, and regular monitoring of child well-being.
- Promote awareness on child safety, anti-drug campaigns, and violence prevention through school-based programs, community workshops, and partnerships with local law enforcement and health professionals.
- Encourage child participation and recreation by developing safe play spaces, organizing cultural and sports events, and establishing forums for children to express their views and concerns.

Policy: Promote inclusive and equitable urban development in Pathanamthitta by ensuring social, economic, and spatial integration of marginalised communities—through targeted support in housing, livelihood, education, and access to basic services.

Strategies:

- Improve Access to Basic Services: Ensure equitable access to basic services like clean drinking water, sanitation, electricity, healthcare, and education in SC/ST nagars and low-income neighborhoods.
- Enhance Housing and Livelihood Opportunities: Implement housing schemes tailored for BPL and marginalised families, including in-situ redevelopment and rental housing options. Facilitate skill development

and job linkages through government programs, NGOs, and local businesses.

- Ensure Educational Support and Social Empowerment: Provide scholarships, mentorship, and digital learning resources for children from SC/ST and BPL families. Establish community learning centers and after-school programs in marginalised localities.
- Promote Participation and Representation: Provide scholarships, mentorship, and digital learning resources for children from SC/ST and BPL families. Establish community learning centers and after-school programs in marginalised localities.
- Build Resilience and Social Protection: Develop targeted social protection schemes to support households affected by disasters, unemployment, or health crises. Partner with civil society organizations for awareness campaigns on rights, entitlements, anti-discrimination, and government welfare schemes.

34.9 Environment

Policy 1: Transform Pathanamthitta as a clean, green and next-generation destination

Strategies:

- Expand urban green cover by planting native tree species along streets, open spaces, and institutional campuses to reduce pollution, provide shade, and improve microclimate.
- Develop green spaces where residents can engage with nature, improving air quality.
- Promote cleaner transportation by enforcing stricter vehicle emission norms and encouraging the use of electric vehicles and non-motorized transport.
- Encourage eco-friendly practices in businesses and institutions by promoting cleaner technologies, energy efficiency, and responsible waste management.
- Use real-time monitoring to track pollution levels and inform the public.
- Share air quality data transparently to raise awareness and encourage community action.
- Encourage local farming and community gardens to reduce food transportation emissions.

Policy 2: Strengthen Pathanamthitta's resilience to natural hazards by integrating risk reduction into planning, enhancing ecosystem-based solutions, and empowering communities for safety and preparedness.

Strategies:

- Integrate risk reduction into planning and zoning by restricting development in hazard-prone areas and promoting resilient land use.
- Designate and maintain protective buffer zones around rivers, streams, and ecologically sensitive areas to absorb floodwaters, reduce erosion, and safeguard biodiversity.
- Adopt nature-based solutions such as restoring wetlands and using green infrastructure like rain gardens, green roofs and permeable pavements to manage stormwater and reduce flood risk.
- Establish and regularly update early warning systems and hazard-specific emergency response and evacuation plans to ensure timely alerts and coordinated action during floods, severe weather, and other disasters.
- Promote resilient construction practices and encourage sustainable

design in both public and private development.

- Raise community awareness through targeted education programs on local hazards, risk reduction practices, and preparedness measures to build a culture of safety and resilience.
- Encourage community participation in disaster preparedness planning and local resilience initiatives to ensure inclusive, locally grounded solutions and stronger collective response capacity.
- Establish emergency funds for disaster recovery and resilience projects.
- Continuously monitor natural hazards and revise preparedness plans and mitigation strategies based on updated data, emerging risks, and past experiences.

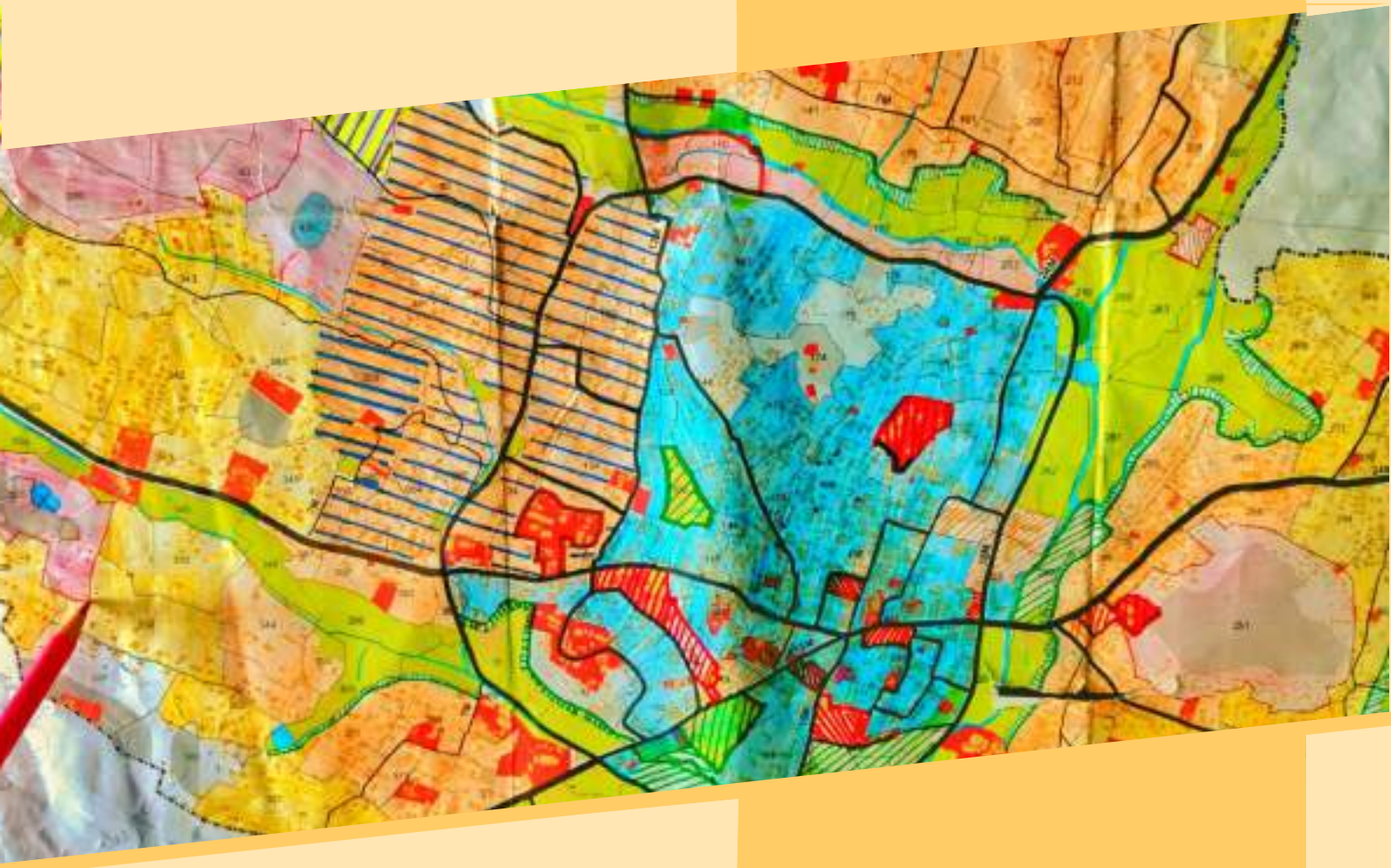
34.10 Development administration and Municipal Finance

Policy: Ensure effective, transparent, and participatory urban governance through sound municipal finance and institutional practices for creating sustainable and resilient town.

Strategies:

- Encourage citizens to actively participate in decision-making processes, contributing to policies that better reflect their needs and preferences
- Enhance the institutional capacity of local governments for more effective service delivery and management of urban challenges
- Leverage land value capture mechanisms to fund infrastructure by reinvesting gains from increased property values.
- Develop long-term financial planning, including multi-year budgets that align with strategic development goals.
- Adopt digital governance tools for seamless public service access, online payments, and citizen engagement.
- Prioritize investments in green infrastructure, such as parks, green roofs, and permeable pavements, to enhance resilience and improve urban quality.
- Implement programs to improve energy efficiency in municipal buildings
- Conduct periodic evaluations of policies and programs, allowing for adjustments based on performance and community feedback.
- Leverage partnerships with private sector entities to fund and implement urban development projects.
- Implement policies to ensure ethical behaviour among municipal officials and staff, fostering public trust.

PART III
PROPOSALS



35. Proposed Land Use
36. Traffic & Transportation Plan
37. Sector Wise Proposals
38. Disaster Risk Reduction (DRR), Mitigation & Climate Change Adaptation
39. Priority Action Plan



35. PROPOSED LANDUSE

Proposed Land Use refers to a key component of a municipality’s long-term planning document that outlines how land within its jurisdiction is intended to be used in the future. Here's a breakdown of what it typically includes and it's important. It’s a forward-looking map and policy framework that guides future development and land use decisions. It’s part of the broader Municipal Master Plan, which may also cover transportation, housing, infrastructure, environment, and public services.

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1 Proposed Land Use

2 Built-up Zone

3 Green Blue Zone

4 Special Zone

35.1 Proposed Land Use

As per the Development concept formulated, a proposed land use plan is formulated for Pathanamthitta town for 2045. The proposed land use break-up, area break up of each of the land use zones and proposed land use map are given in Figure.35.1, Table.35.1 and Figure.35.2 respectively. The proposed land use zones are mainly classified into Built-up Zone, Green-Blue Zone and Special Zone and are further subdivided as per the development concept formulated.

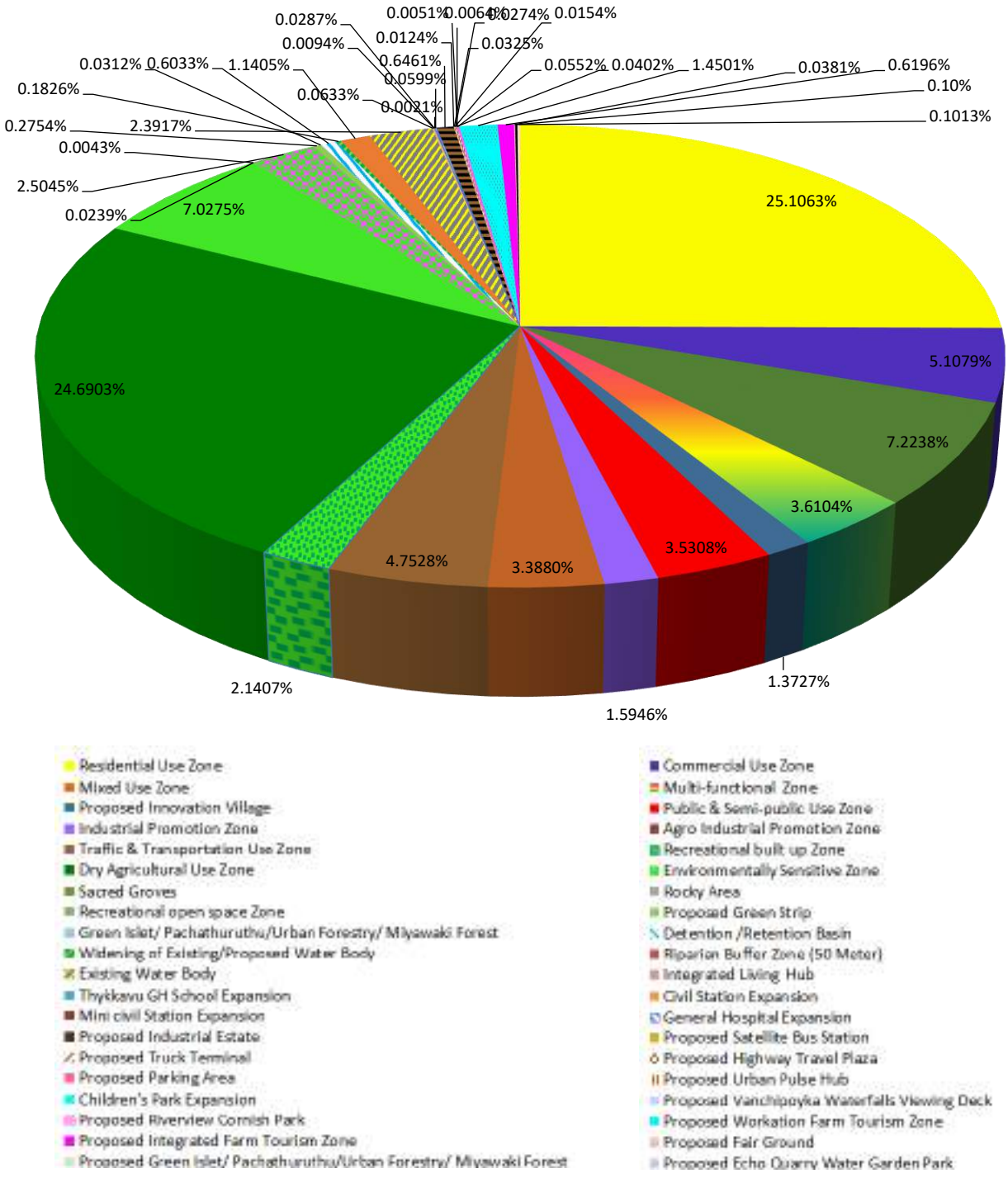


Figure 35.1 Proposed Land Use Split-Up in percentage

Table 35-1 Proposed Land Use Split-Up in area & percentage

Sl. No.	Land Use	Area in km²	% of Total Area
	I. BUILT-UP ZONE		
1	**Residential Use Zone**	5.8712	25.058
1.1	*Proposed Housing Scheme Area*	*0.0053*	*0.023*
2	**Commercial Use Zone**	*1.1945*	*5.098*
2.1	*Central Square*	*0.0015*	*0.006*
2.2	*Modern Municipal Market*	*0.0075*	*0.032*
2.3	*Multi-functional market*	*0.0026*	*0.011*
2.4	*Proposed Food Street*	*0.0026*	*0.011*
3	**Mixed Use Zone**	1.6893	7.210
4	**Multi-functional Zone**	0.8443	3.603
5	**Proposed Innovation Village**	0.321	1.370
6	**Public & Semi-public Use Zone**	0.7022	2.997
6.1	*Town Square*	*0.003*	*0.0128*
6.2	*Proposed Government Office Complex*	*0.0246*	*0.1050*
6.3	*Proposed District Court Complex*	*0.0317*	*0.1353*
6.4	*Municipal Office Complex Expansion &Redevelopment*	*0.0099*	*0.0423*
6.5	*Holistic Neighbourhood Hub*	*0.0021*	*0.0090*
6.6	*Ward Bhavan Mayiladumpara*	*0.004*	*0.0171*
6.7	*Proposed Chuttippara Adventure Tourism Base Camp*	*0.0082*	*0.0350*
6.8	*Proposed Municipal Convention Centre & Tourist Home*	*0.0175*	*0.0747*
6.9	*Proposed Happy Home &Harmony Centre*	*0.0185*	*0.0790*
6.1	*Proposed Fitness hub*	*0.0038*	*0.0162*
6.11	*Proposed Empowerment Centre*	*0.0002*	*0.0009*
7	**Industrial Promotion Zone**	0.3729	1.5915
8	**Agro Industrial Promotion Zone**	0.7923	3.3816
9	**Traffic & Transportation Use Zone**	1.1115	4.7438
9.1	*Proposed Municipal Bus Stand Complex Renovation*	*0.0169*	*0.0721*
9.2	*Proposed Transport Terminal Interface*	*0.0005*	*0.0021*
9.3	*Proposed Municipal Shopping Complex & Parking Plaza*	*0.0035*	*0.0149*
10	**Recreational Built Up Zone**	0.000001	0.000004
10.1	*District Stadium & Sports Complex Redevelopment*	*0.0623*	*0.2659*
10.2	*Subala Park Expansion &Redevelopment*	*0.0474*	*0.2024*
10.3	*Happiness Park*	*0.0048*	*0.0205*
10.4	*Proposed Urban Central Park*	*0.0101*	*0.0431*
10.5	*Proposed Aqua Rock Adventure Park*	*0.0876*	*0.3739*
10.6	*Proposed Museum & Art Gallery*	*0.0342*	*0.1460*
10.7	*Kottappara Hill View Park*	*0.1881*	*0.8028*
10.8	*Proposed Wellness Park*	*0.0098*	*0.0418*
10.9	*Proposed Neighbourhood Park*	*0.0293*	*0.1251*
10.1	*Proposed Mannaramala view point*	*0.027*	*0.1152*
	Total area of Built-up Zone	**13.56**	**57.875**
	II. GREEN-BLUE ZONE		
11	**Dry Agricultural Use Zone**	5.7739	24.6432
12	**Environmentally Sensitive Zone**	1.6434	7.0141

13	**Sacred Groves**	0.001	0.0043
14	**Rocky Area**	0.0056	0.0239
15	**Recreational Open Space Zone**	0.0057	0.0243
15.1	*Proposed Quarry Park &View Point*	*0.0041*	*0.0174*
15.2	*Vanchipoyka Waterfalls Project*	*0.0241*	*0.1029*
15.3	*Valamchuzhi Riverside Recreation Zone*	*0.0382*	*0.1630*
15.4	*Chuttippara Adventure Tourism Park*	*0.2096*	*0.8946*
15.5	*River Side Twilight Rock Ridge Park*	*0.0269*	*0.1148*
15.6	*Proposed Destination Wedding Centre*	*0.0089*	*0.0380*
15.7	*Proposed Infinity Rock Park*	*0.0136*	*0.0580*
15.8	*Proposed Butterfly Park /Blossom Garden*	*0.0073*	*0.0312*
15.9	*Proposed Kadavu Restoration*	*0.0025*	*0.0107*
15.1	*Proposed Sponge Park*	*0.1326*	*0.5659*
15.11	*Proposed Wetland Park (Room for River)*	*0.1122*	*0.4789*
16	**Proposed Green Strip**	0.0644	0.275
17	**Green Islet/ Pachathuruthu/Urban Forestry/ Miyawaki Forest**	0.0073	0.031
18	**Detention /Retention Basin**	0.1411	0.602
19	**Widening of Existing/Proposed Water Body**	0.0427	0.182
20	**Riparian Buffer Zone (50 Meter)**	0.2667	1.138
21	**Existing Water Body**	0.5593	2.387
	Total area of Green-Blue Zone	**9.091**	**38.801**
	III. SPECIAL ZONE		
22	**Integrated Living Hub**	0.0148	0.0632
23	**Thykkavu GH School Expansion**	0.0022	0.0094
24	**Civil Station Expansion**	0.0067	0.0286
25	**Mini civil Station Expansion**	0.0005	0.0021
26	**General Hospital Expansion**	0.014	0.0598
27	**Proposed Industrial Estate**	0.1511	0.6449
28	**Proposed Satellite Bus Station**	0.0029	0.0124
29	**Proposed Truck Terminal**	0.0076	0.0324
30	**Proposed Highway Travel Plaza**	0.0036	0.0154
31	**Proposed Parking Area**	0.0064	0.0273
32	**Proposed Urban Pulse Hub**	0.0094	0.0401
33	**Children's Park Expansion**	0.0015	0.0064
34	**Proposed Vanchipoyka Waterfalls Viewing Deck**	0.0012	0.0051
35	**Proposed Riverview Cornish Park**	0.0129	0.0551
36	**Proposed Workation Farm Tourism Zone**	0.3391	1.4473
37	**Proposed Integrated Farm Tourism Zone**	0.1449	0.6184
38	**Proposed Fair Ground**	0.0089	0.0380
39	**Green Islet/ Pachathuruthu/Urban Forestry/ Miyawaki Forest**	0.0196	0.0837
49	**Proposed Echo Quarry Water Garden Park**	0.0237	0.1012
	Total area of Special Zone	**0.771**	**3.291**
	Total	**23.43**	**100**

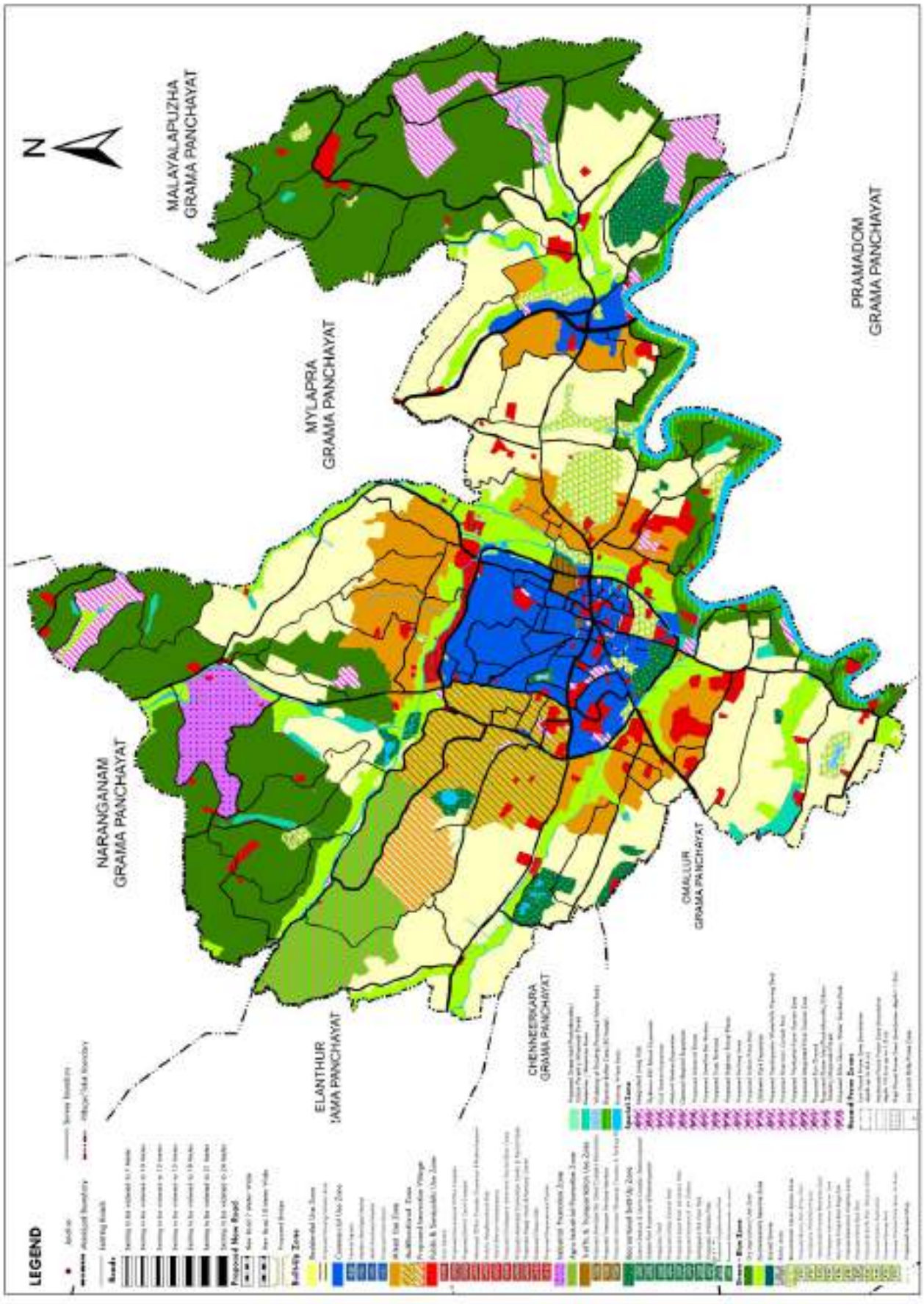


Figure 35.2 Proposed Land Use Map of Pathanamthitta town 2045

35.1.1 Built Up Zone

The built-up zone is characterized by significant human activity and infrastructure, including residential, commercial, public and industrial developments. These zones are essential for sustaining urban life as they provide vital services, amenities, and opportunities for economic activities. Maintaining and enhancing built-up zones can support urban sustainability by promoting efficient land use, reducing travel times, and increasing access to services.

It is also characterised by high population density, well-developed transport networks and access to utilities, proximity to services such as schools, healthcare, shopping, and recreational facilities, Economic activities such as businesses and employment opportunities.

Built-up zone includes diverse Land uses such as Residential Use Zone, Commercial Use Zone, Mixed Use Zone, Multi-functional Zone, Proposed Innovation Village, Public & Semi-public Use Zone, Industrial Promotion Zone, Agro Industrial Promotion Zone, Traffic & Transportation Use Zone and Recreational Built-Up Zone. Total share of built-up land use zone comprises 57.82% of total area of the planning area.

35.1.2 Green - Blue Zone

Green-blue zones play a vital role in urban ecosystems by providing essential environmental, social, and recreational benefits. Integrating Green-Blue zones, Pathanamthitta can improve resilience to environmental risks while enhancing quality of life for residents. Green-blue zones helps in Flood Mitigation, Heat Island Effect Reduction, Air Quality Improvement, Biodiversity Support, Social Resilience and Climate Adaptation.

Green-blue zone of the city constitute 38.90% of the planning area. It consists of Dry Agricultural Use Zone, Environmentally Sensitive Zone, Sacred Groves, Rocky Area, Recreational Open Space Zone, Proposed Green Strip, Proposed Green Islet/ Pachathuruthu/ Urban Forestry/ Miyawaki Forest, Detention/Retention Basin, Widening of Existing/Proposed Water Body, Riparian Buffer Zone and Existing Water Body.

35.1.3 Special Zone

Special zones are those which are proposed to be acquired by the LSGI or any other agency concerned within a specific period to implement specific projects. Special zones constitute 3.28% of the total planning area.

The Special Zones include Integrated Living Hub, Thykkavu GH School Expansion, Civil Station Expansion, Mini Civil Station Expansion, General Hospital Expansion, Proposed Industrial Estate, Proposed Satellite Bus Station, Proposed Truck Terminal, Proposed Highway Travel Plaza, Proposed Parking Area, Proposed Urban Pulse Hub, Children's Park Expansion, Proposed Vanchipoyka Waterfalls viewing Deck, Proposed Riverview Cornish Park, Proposed Workation Farm Tourism Zone, Proposed Integrated Farm Tourism Zone, Proposed Fair Ground, Proposed Green Islet/ Pachathuruthu/ Urban Forestry/ Miyawaki Forest and Proposed Echo Quarry Water Garden Park.

35.2 Built-Up Zone

35.2.1 Residential Use Zone

Residential Use zone is delineated in between the core urban central area and the peripheral dry agricultural belt. The primary objective of this zoning is to enhance infrastructure facilities, particularly by improving connectivity to the residential areas, ensuring seamless integration with the broader urban fabric. Also the provision of recreation facilities within each residential pocket, aiming to elevate the quality of life and support the development of a more liveable and sustainable town. The total land use area under Residential Use Zone is 5.876

sq.km and it constitutes 25.08% of Pathanamthitta town area. Proposed Housing Scheme Area for marginalised groups and economically weaker sections is a project proposed in this zone.

35.2.2 Commercial Use Zone

Currently, commercial activities are concentrated within the town center and along major traffic corridors. To promote balanced urban growth, it is proposed to strengthen commercial and urban functions inside the ring road, with a special focus on the underdeveloped northern part. This approach can help transform the area into an active and vibrant commercial urban center, easing pressure on the core and supporting decentralized development. The total land use area under Commercial Use Zone is 1.208 sq.km and it constitutes 5.15% of town area. Central Square(C01), Modern Municipal Market(C02), Multi-functional Market(C03) and Proposed Food Street(C04) are projects proposed under this zone.

Additionally, a commercial sub-centre is proposed at Kumbazha, which serves as the eastern gateway to the town and is strategically located at the junction of two State Highways. This location holds high potential for commercial growth and regional connectivity, making it ideal for a secondary commercial hub.

35.2.3 Mixed Use Zone

In this zone both Residential as well as commercial uses are proposed in an integrated manner. Mixed use zones are provided along the sides of all major roads. The total land use area under Mixed Use Zone is 1.689sq.km and it constitutes 7.16% of town area.

35.2.4 Multi-functional Use Zone

Multi-functional zone is proposed in the northern part of the Ring road. This zone with multiple activities favours the expansion of the town from its growth centre to the surrounding area. Public, Commercial, High density residential developments promoted in this risk free zone. The proposed NH 183A through this zone also help the area to develop as a multi-function zone exactly. The total land use area under Multi-functional Use Zone is 0.844 sq.km and it constitutes 3.56% of town area.

35.2.5 Proposed Innovation Village Zone

A dedicated innovation-driven zone designed to host IT industries, startups, creative studios, and media centers, supported by a vibrant ecosystem of incentives and mixed-use facilities like accommodation facilities such as Co-living spaces and Guest housing for visiting experts/investors, Recreation & Sports facilities, Cafes and social zones, Commercial & Retail, Learning & Innovation centres, Sustainability Features etc. The total land use area under Proposed Innovation Village Zone is 0.321 sq.km and it constitutes 1.37% of town area.

35.2.6 Public & Semi-public Use Zone

Public & Semi-public Use Zone includes land and buildings used for public services or community needs, regardless of whether they are owned by government or private entities. These areas serve educational, health, cultural, religious, administrative, or welfare functions that are essential for the community.

The total land use area under Public & Semi-public Use Zone is 0.8257 sq.km and it constitutes 3.5% of town area. Town Square(PS 01), Proposed Government Office Complex(PS 02), Proposed District Court Complex(PS 03), Municipal Office Complex Expansion & Redevelopment(PS 04), Holistic Neighbourhood Hub(PS 05), Ward Bhavan Myladumpara(PS 06), Proposed Chuttippara Adventure Tourism Base Camp(PS 07), Proposed Municipal Convention Centre & Tourist Home(PS 08), Proposed Happy

Home & Harmony Centre(PS 09), Proposed Fitness hub(PS 10) and Proposed Empowerment Center(PS 11) are projects proposed under this zone.

35.2.7 Industrial Promotion Zone

Industrial Promotion Zone designed to attract diverse industries, boost manufacturing and value addition, generate employment, and promote balanced regional development with efficient infrastructure and investor-friendly policies. In addition, the plan supports the promotion of non-hazardous, low-impact industries throughout the town, regardless of zoning, to stimulate local employment and economic diversification while ensuring environmental safety and compatibility with surrounding land uses. The total land use area under Industrial Promotion Zone is 0.373 sq.km and it constitutes 1.59% of town area.

35.2.8 Agro Industrial Promotion Zone

Agro Industrial Promotion Zone aimed at boosting the agriculture-based economy by promoting food processing industries, encouraging value addition, minimizing post-harvest loss, and generating rural employment through sustainable industrial practices. The total area set aside as Agro Industrial Promotion Zone is 0.792 sq.km which constitutes 3.38% of town area.

35.2.9 Traffic & Transportation Use Zone

A dedicated land use zone that accommodates infrastructure and services related to urban and regional mobility, enabling efficient movement of people and goods, reducing congestion, and improving connectivity and accessibility. It includes Transportation Terminals, Truck terminals, Public Transport Infrastructure, Travel plazas, Parking and Logistic Support, Road and Street Network.

The total land use area under Traffic & Transportation Use Zone is 1.13 sq.km and it constitutes 4.83% of town area. Proposed Municipal Bus Stand Complex Renovation(T 01), Proposed Transport Terminal Interface(T 02) and Proposed Municipal Shopping Complex & Parking Plaza(T 03) are projects proposed under this zone.

35.2.10Recreational Built Up Zone

Recreational built up Zone is proposed for developed recreational infrastructure, aimed at enhancing quality of life, promoting wellness, supporting sports and tourism, and creating community gathering spaces. It includes both indoor and outdoor built-up recreational facilities. The total land use area under Recreational built up Zone is 0.50 sq.km and it constitutes 2.136% of town area.

District Stadium & Sports Complex Redevelopment(R 01), Subala Park Expansion & Redevelopment(R 02), Happiness Park(R 03), Proposed Urban Central Park(R 04), Proposed Aqua Rock Adventure Park(R 05), Proposed Museum & Art Gallery(R 06), Kottappara Hill View Park(R 07), Proposed Wellness Park(R 08), Proposed Neighbourhood Park(R 09) and Proposed Mannaramala view point(R 10) are projects proposed under this zone.

35.3 Green-Blue Zone

35.3.1 Dry Agricultural Use Zone

The total land use area under Dry Agricultural Use Zone is 5.77 sq.km and it constitutes 24.59% of town area.

35.3.2 Environmentally Sensitive Zone

Pathanamthitta is endowed with a continuous natural belt of wetlands and waterbodies including streams, ponds, and low-lying lands which collectively form a critical natural drainage network. This system plays a vital role in Flood mitigation during monsoons, Groundwater recharge and drought resilience, Sustaining biodiversity and traditional

livelihoods. These ecosystems function as the ecological backbone of the town, and they are zoned as Environmentally Sensitive Zone for their conservation, protection and restoration which is essential for climate adaptation and long-term sustainability. The total land use area under Environmentally Sensitive Zone is 1.643 sq.km and it constitutes 7.013% of town area.

35.3.3 Sacred Groves

It is proposed to identify, preserve, and regenerate traditional sacred groves (locally known as kavus), which are vital for biodiversity conservation, cultural heritage, and ecological stability. The total land use area under Sacred Groove is 0.001 sq.km and it constitutes 0.004% of town area.

35.3.4 Rocky Area

Rocky Area are special landscape category to be considered preserving their ecological, hydrological, geological, and cultural significance while allowing for regulated eco-compatible activities. The total land use area under Rocky Area is 0.005 sq.km and it constitutes 0.024% of town area.

35.3.5 Recreational Open Space Zone

A low-impact, eco-friendly recreation zone that prioritizes natural preservation while allowing for passive, non-intrusive leisure activities. Designed specifically for ecologically sensitive areas, this zone enhances public access to nature without compromising environmental integrity.

The total land use area under Recreational open space Zone is 0.585sq.km and it constitutes 2.49% of town area. Proposed Quarry Park & View Point(R 01), Vanchipoyka Waterfalls Project(R 02), Valamchuzhi Riverside Recreation Zone(R 03), Chuttippara Tourism Adventure Park(R 04), River Side Twilight Rock Ridge Park(R 05), Proposed Destination Wedding Center(R 06), Proposed Infinity Rock Park(R 07), Proposed Butterfly Park /Blossom Garden(R 08), Proposed Kadavu Restoration(R 09), Proposed Sponge Park(R 10) and Proposed Wetland Park (Room for River) (R 11) are projects proposed under this zone.

35.3.6 Proposed Green Strip

Linear green buffers along waterbodies and wetlands serving as ecological corridors, pollution barriers, and visual relief zones within the built environment. A minimum buffer of 3-5 meters (site-specific) is proposed around all wetlands and waterbodies as Green strip. The total land use area under Proposed Green Strip is 0.064 sq.km and it constitutes 0.275% of town area.

35.3.7 Green Islet/ Pachathuruthu/ Urban Forestry/ Miyawaki Forest

Proposal aims to originate and protect natural forest specimens by planting unique trees and indigenous plants in available small land parcels. The total land use area under Proposed Green islet is 0.007 sq.km and it constitutes 0.03% of town area.

35.3.8 Detention /Retention Basin

Detention Basins are proposed to hold runoff temporarily during heavy rains and to slowly release it downstream to prevent flooding. And Retention Basins are proposed to hold water permanently like a pond, and to provide capacity to absorb extra storm water during rains. These ensure water quality improvement, groundwater recharge and also have aesthetic and ecological benefits. The total land use area under Detention /retention Basin is 0.141 sq.km and it constitutes 0.76% of town area.

35.3.9 Widening of Existing/Proposed Water Body

The total land use area under Widening of Existing/Proposed Water Body is 0.042 sq.km and it constitutes 0.18% of town area.

35.3.10 Riparian Buffer Zone (50 Meter)

A 50 m wide strip of Riparian buffer zone is proposed along the edge of Achankovil river to act as a protective barrier between the water body and surrounding land. It ensures water quality protection, filters runoff, reduces erosion, flood control, groundwater recharge, biodiversity protection and also offers shade, which regulates water temperature. It offers high aesthetic and recreational value and can be integrated with trails, picnic spots, or nature parks. The total land use area under Riparian Buffer Zone is 0.266 sq.km and it constitutes 1.138% of town area.

35.3.11 Existing Water Body

The total land use area under Existing Water Body is 0.559 sq.km and it constitutes 2.38% of town area.

35.4 Special Zones

35.4.1 Integrated Living Hub

An integrated residential zone designed to provide safe, inclusive, and dignified living environments for low- and middle-income groups, with access to basic services, livelihoods, and mobility, ensuring long-term social sustainability. The total area set aside as Integrated Living Hub (SP 01) is 0.014sq.km which constitutes 0.06% of town area.

35.4.2 Thykkavu GH School Expansion

The adjacent private land to Thykkavu GH School is proposed to accommodate the expansion of an existing government school for the development of additional infrastructure, student capacity, and learning facilities. The total area set aside as Thykkavu GH School Expansion (SP 02) is 0.002sq.km which constitutes 0.009% of town area.

35.4.3 Civil Station Expansion

The adjacent private land to Civil Station is proposed for the expansion, restructuring, and modernization of the Collectorate campus, incorporating residential quarters, public service facilities, digital governance spaces, and improved public interface. The total area set aside as Civil Station Expansion (SP 03) is 0.0067sq.km which constitutes 0.028% of town area.

35.4.4 Mini civil Station Expansion

The adjacent private land to Mini Civil Station is proposed for the expansion, restructuring, and modernization of the Mini Civil Station campus, incorporating public service facilities, digital governance spaces, and improved public interface. The total area set aside as Minicivil Station Expansion (SP 04) is 0.0005sq.km which constitutes 0.002% of town area.

35.4.5 General Hospital Expansion

The adjacent land to General Hospital is proposed for expanding the capacity and infrastructure of a government hospital, improving access to advanced medical care, public health programs, and patient amenities. The total area set aside as General Hospital Expansion(SP 05) is 0.014sq.km which constitutes 0.06% of town area.

35.4.6 Proposed Industrial Estate

A compact, planned area near Kottappara, developed to accommodate small and medium-sized industrial units with shared infrastructure, aimed at promoting local entrepreneurship, boosting manufacturing, and generating employment. The total area set aside as Proposed Industrial Estate (SP 06) is 0.151sq.km which constitutes 0.645% of town area.

35.4.7 Proposed Satellite Bus Station

The total area set aside as Proposed Satellite Bus Station (SP 07) is 0.02q.km which constitutes 0.1% of town area near Melevettippuram junction.

35.4.8 Proposed Truck Terminal

The total area set aside as Proposed Truck Terminal (SP 08) is 0.0076 sq.km which constitutes 0.03% of town area near Stadium Junction.

35.4.9 Proposed Highway Travel Plaza

The total area set aside as Proposed Highway Travel Plaza (SP 09) is 0.003sq.km which constitutes 0.013% of town area in Kumbazha North.

35.4.10 Proposed Parking Area

Parking Areas are proposed to reduce roadside parking congestion, improve traffic flow, and support commercial and institutional zones. The total area set aside as Proposed Parking Area(SP 10) is 0.006sq.km which constitutes 0.027% of town area. These sites are strategically located near the central junction, town square, Stadium Junction, and along the TK Road.

35.4.11Proposed Urban Pulse Hub

The Urban Pulse Hub will serve as a dynamic youth-centric space, integrating co-working zones, recreational facilities, and cultural arenas to inspire and empower the younger generation. The total area set aside as Proposed Urban Pulse Hub (SP 11) is 0.0094sq.km which constitutes 0.040% of town area near Azhoor Kadavu.

35.4.12Children's Park Expansion

The adjacent land to Children's Park is proposed for expanding the existing Children's Park into a multi-functional, safe, and inclusive recreational space that meets the evolving needs of families and urban children. The total area set aside as Children's Park Expansion (SP 12) is 0.00001sq.km which constitutes 0.00004% of town area.

35.4.13 Proposed Vanchipoyka Waterfalls Viewing Deck

It is proposed to develop a safe, scenic, and eco-sensitive platform near Peringamala junction, for visitors to view and enjoy the Vanchipoyka waterfall while protecting the natural terrain and promoting sustainable tourism. The total area set aside as Proposed Vanchipoyka Waterfall Viewing Deck (SP 13) is 0.0012sq.km which constitutes 0.005% of town area, located Mundukottakal.

35.4.14 Proposed Riverview Cornish Park

Riverview Cornish Park is proposed near Kumbazha bridge to create a picturesque linear park along the riverfront, offering walkways, green spaces, and recreational amenities, while conserving the natural edge and celebrating the river's cultural and ecological value. The total area set aside as Proposed Riverview Cornish Park (SP 14) is 0.0129sq.km which constitutes 0.055% of town area.

35.4.15 Proposed Workation Farm Tourism Zone

Proposed Workation Farm Tourism Zone is a multi-use rural zone where visitors can stay, work, and experience farm life, promoting sustainable tourism, local agriculture, and wellness-based remote work environments. The total area set aside as Proposed Workation Farm Tourism Zone (SP 15) is 0.34sq.km which constitutes 1.45% of town area, located panathoppu

35.4.16Proposed Integrated Farm Tourism Zone

Proposed Integrated Farm Tourism Zone is proposed to establish a multi-functional agricultural tourism zone that promotes farm-based recreation, organic lifestyle experiences, rural entrepreneurship, and environmental education. It is located in Mundukottakal ward. The total area set aside as Proposed Integrated

Farm Tourism Zone (SP 16) is 0.145sq.km which constitutes 0.62% of town area.

35.4.17Proposed Fair Ground

A Fair Ground is proposed as a dedicated open-air venue for hosting periodic fairs, exhibitions, and cultural programs thereby promoting local traditions, commerce, and public engagement. The total area set aside as Proposed Fair Ground (SP 17) is 0.0089sq.km which constitutes 0.038% of town area. It is located near Co-operative College Junction.

35.4.18Proposed Green Islet/ Pachathuruthu/ Urban Forestry/ Miyawaki Forest

Proposal aims to originate and protect natural forest specimens by planting unique trees and indigenous plants in available small land parcels. The total land use area under Proposed Green Islet/ Pachathuruthu/ Miyawaki/ Urban Forest (SP 18) is 0.0196sq.km and it constitutes 0.08% of town area

35.4.19 Proposed Echo Quarry Water Garden Park

Proposed Echo Quarry Water Garden Park is planned to be developed in multiple abandoned quarries transforming them into diverse ecological gardens. Features include aquatic gardens with steel walkways, rock gardens utilizing on-site materials and the design emphasizes ecological restoration and visitor engagement through elevated viewing platforms and interconnected pathways. It is located in Poovanpara.

The total area set aside as Proposed Echo Quarry Water Garden Park (SP 19) is 0.023 sq. km which constitutes 0.10% of town area.



36. TRAFFIC & TRASPORTATION PLAN

A road development plan is essential for ensuring the smooth functioning, growth and sustainability of a town. It helps to Improving, Economic Growth and Connectivity, Urban Expansion and Development, Traffic Management and Safety, Mobility and Accessibility, Environmental Sustainability, Social Inclusion and Community Connectivity, Disaster Preparedness and Emergency Response, Public Health and Well-being, Tourism and Cultural Access, Long-Term Sustainability and Resilience.

The vision, goals, and objectives outlined in the Part II serve as the basis for the goals outlined in the future transport plan. The concept of ring and radial pattern that create a well-connected complete network of road hierarchy with human centric road design for liveability as envisaged in the development concept are also brought to this plan.

Contents

1 Proposed Road Network

2 Urban Health Corridor

3 Outer Ring Road

4 Intersection Redesigning

5 Public Transportation

6 Parking Spaces

7 Non-motorised Transport (NMT)

8 Regional Proposals

9 Summary

36.1 Proposed Road Network

As already mentioned in the chapter 13 of this Master Plan, National Highway 183A connecting Kollam to Vandiperiyar, two State Highways, i.e. Thiruvalla – Kumbazha road (TK road-SH 7) and Punaloor -Moovattupuzha road (SH8) are the major roads passing through the town. These roads along with Ring road at centre of the town carry the major existing share of traffic through the town. Moreover, the major traffic generating activities of the town are concentrated along the side of these said roads.

A hierarchical road network system following a ring and radial pattern is proposed for the town. This is arrived based on widening of existing road width and adding of new road stretch for connecting missing links. The projected traffic volume along each road has been considered for arriving proposed road network of the town. (Annexure 36.1). The proposed road network hierarchical system, structured according to the proposed road width (Right of Way) and the functional classification of each road.

The proposed hierarchical system include Five categories of roads ie, First order roads (24 m and 21m Right of Way width), Second order roads (18 m & 15 m Right of Way width), Third order roads (12 m Right of Way width), Fourth order roads (10 m & 7 m Right of Way width), Fifth order roads (below 7 m Right of Way width). Most of these roads are formed by widening the existing roads.

The proposed road network aims to decongest existing routes and facilitate the opening up of more land for various urban activities. First Order and second order roads are proposed as principal road networks to accommodate through traffic and carry the major share of intra-urban traffic within the town. Third-order roads are proposed to enhance connectivity by linking higher-order roads to lower-order roads, thereby facilitating access to and development of the rural areas within the town. List of proposed roads in the town is mentioned in the table 36.1 and proposed transportation plan of Pathanamthitta town is shown in Figure 36.1.

Table 36.1 Road inventory details of proposed road network

Sl. No	Name of Road	Proposed width (m)	Code in Map (MP/ 02/II)
First Order Roads			
1	Thiruvalla -Kumbazha Road (SH 07) St.Peter's Junction to Municipal Boundary near Churulikkode	24	RD 01
2	Main Eastern Highway (SH 08) Kumbazha Bridge to Municipal Boundary at Kumbazha North	24	RD 03
3	Adoor Road (NH 183A) Stadium Junction to Municipal Boundary near Santhosh Junction	24	RD 04
4	Thiruvalla -Kumbazha Road (SH 07) Town Square to Kumbazha Popular Junction	21	RD 02
5	Sabarimala Road(NH 183A) Thazhevettippuram to Municipal Boundary near Mylapra	21	RD 05
6	Thiruvalla- Kumbazha Road (SH 07) St.Peter's Junction to Town Square via Central Junction	21	RD 06
7	Thiruvalla -Kumbazha Road (SH 07) Kumbazha popular Junction to Kumbazha Market Junction	21	RD 07
Second Order Roads			
1	Ring Road	18	RD 08
2	Kumbazha-Malayalappuzha Road (Kumbazha MDLPS Junction to Municipal boundary near Valavumkal Junction via Kumbazha	18	RD 09

	market)		
3	Thazhoorkadavu Road from Central Junction to Municipal Boundary near Kodumthara	15	RD 10
4	Kadammanitta Road from Central Masjid Junction to Municipal boundary near Mundukottackal via Melevettippuram	15	RD 11
5	Pariyaram Road from Melevettippuram to municipal boundary near Thonikkuzhy via Peringamala	15	RD 12
6	Vettoor Road from Kaliyikkappadi to municipal boundary near Nedumanal	15	RD 13
7	Kaliyikkappadi to Musaliar college junction Road via Plaveli Junction	15	RD 14
8	Central Junction to Municipal Bus Stand Road via KSRTC	15	RD 15
9	KSRTC to Thazhevettippuram Road	15	RD 16
10	Central Junction to Stadium Junction Road	15	RD 17
11	T.B Approch Road to GH Junction	15	RD 18
Third Order Roads			
1	Outer Ring Road		
1.1	Punnalathupadi to Makkamkunnu Road	12	RD 19
1.2	Catholicate College Junction to Power House Junction Road	12	RD 20
1.3	Azhoor-Parakkadavu Road	12	RD 21
1.4	Kallarakkadavu-Kannamkara Road	12	RD 22
1.5	Kannamkara-Korattimukku Junction Road	12	RD 23
1.6	Korattimukku-Kumbazha Bridge Road via Mount Bethany School	12	RD 24
1.7	Mylapra-Mundukottackal Road via Kairaleepuram	12	RD 25
1.8	Konnamoodu-Thonikkuzhy Road via Vanchipoyka	12	RD 26
1.9	KM Road from Churulikkode to Uppukandam	12	RD 27
2	Peringamala- Anchakkala Road via Ottukal Muruppu	12	RD 28
3	Modippadi- Vanchipoyka Road	12	RD 31
4	Mylapra-Kallelimukku Road via Vallyayanthi Junction	12	RD 32
5	GH Junction-Vettippuram Road	12	RD 33
6	Doctor's Lane	12	RD 34
7	Cooperative College Junction-Kallarakkadavu Road	12	RD 37
8	Kodumthara-Omalloor Road	12	RD 38
9	Central Junction-KSRTC Road via Old bus stand	12	RD 40
Fourth Order Roads			
1	Kumbazha Market Junction-Thundumankara Road	10	RD 29
2	Kannamkara- RD 90 meeting Road	10	RD 30
3	Kulasekharapathy-Edathavalam Road via Collector's Residence	10	RD 35
4	Kulasekharapathy -Mylapra Road	10	RD 36
5	Mayiladumpara-Pallikkuzhy Road	10	RD 39
6	Thazhevettippuram-Melevettippuram Road via Holy Angel School	10	RD 41
7	Kodumthara- Puthenpeedika Road	10	RD 42
8	Plaveli Junction-Vettoor Road via Muttumon	10	RD 43
9	Korattimukku-Vallakkadavu Road	10	RD 48
10	Azhoor Kadavu Road	10	RD 49
11	Pallikkuzhy-Malayalappuzha Road	10	RD 51
12	Press Club- Vettppuram Road	10	RD 52

13	Thykkavu School Road from Old bus stand	10	RD 54
14	Masjid Road	10	RD 56
15	Road from Veterinary Hospital to Ring Road	10	RD 57
16	Chittoor Junction -Peringamala Road(part)	10	RD 58
17	Korattimukku Junction – Thonda Kadavu Road	7	RD 23
18	RD 90 meeting point to - Vyazhikadavu	7	RD 30
19	Thundiyath Kavu Road from Thundumankara to Nedumanal Junction	7	RD 44
20	Thazhevettippuram-Njunnunkalppadi Road	7	RD 45
21	Kulashekharapathy Subhashpadi-Chembarathi Road	7	RD 46
22	Kulashekharapathy- Valamchuzhy Road	7	RD 47
23	Ayurvedic Hospital Road from Azhoor to Parakkadavu	7	RD 50
24	Anchakkala Junction to St.Mary's HS Road	7	RD 53
25	Poovanparamala Road from Thazhevettippuram to Mundukottackal via Ponpara	7	RD 59
26	Road connecting Thykkavu school Road and Press club Road	7	RD 55
27	Santhosh Juncion-Azhoor Road via Prakashadhara school	7	RD 60
28	Paruthyanickal-Valavumkal Road	7	RD 61
29	Kumbazha North to MDLPS Road	7	RD 62
30	Kumbazha Clergy road	7	RD 63
31	Kakkathottam-Madathilpadi Road	7	RD 64
32	Mayiladumpara-Kaliyikkappadi road via Madathilpadi	7	RD 65
33	Saradamadom -Vanchipoyka Road	7	RD 66
34	Peringamala-Vanchipoyka Road	7	RD 67
35	Thonikkuzhy-Thonnyamala Kurissadi Road	7	RD 68
36	Road connecting Konnamoodu-Vanchipoyka Road to Modippadi-Vanchipoyka Road	7	RD 69
37	Kurilayyam-Thonnyamala Road	7	RD 70
38	Manikandapuram-Plackal Road	7	RD 71
39	Plackal-Vallyayanthi Road	7	RD 72
40	Road connecting Mundukottackal-Kairaleepuram Road and Kudilukuzhy via Municipal boundary	7	RD 73
41	Road connecting Mundukottackal-Kairaleepuram Road and Kudilukuzhy via Municipal boundary-link road	7	RD 74
42	Ponpara-Vettippuram Road	7	RD 75
43	Poovanpara-HolyAngels School Road	7	RD 76
44	Road connecting Thazhevettippuram-Melevettippuram Road via Holy Angel School and Poovanparamala Road from Thazhevettippuram to Mundukottackal via Ponpara	7	RD 77
45	Road connecting Ring Road near PSC office to Holy Angels School Road	7	RD 78
46	Access road to Proposed Innovation Village	7	RD 79
47	Chittoor junction-Peringamala Road(part)	7	RD 80
48	Nannuvakkad Aqua Roack Adevnture Park approach road	7	RD 81
49	Punnalathupadi-Karimbanakkuzhy Road-Link Road	7	RD 82
50	Ring Road-Mannaramala Road	7	RD 83
51	Road connecting Ring Road-Mannaramala Road and Punnalathupadi-Makkamkunnu Road	7	RD 84
52	Catholicate College Road	7	RD 85

53	Kodumthara-Mary Matha School Road	7	RD 86
54	Ayurveda Hospital-Kadavu Road	7	RD 87
55	Ayurveda Hospital-Kadavu link Road	7	RD 88
56	Krishi Bhavan Road	7	RD 89
57	Road connecting Korattimukku-Vallakkadavu Road and Kannamkara- Vyazhikadavu Road	7	RD 90
58	Valanchuzhi Illathukadavu Road	7	RD 91
59	Valanchuzhi Riverfront Recreation Approach Road	7	RD 92
60	Kumbazha Popular Junction to Main Eastern Highway near Federal Bank	7	RD 93
61	Kumbazha Popular Junction to Main Eastern Highway near Kumbazha North	7	RD 94
62	Road connecting Kulasekharapathy-Mylapra Road and Kumbazha Popular Junction to Main Eastern Highway near Kumbazha North	7	RD 95
63	Municipal Bus Stand-Kannamkara Road	7	RD 96
65	Anappara School Road	7	RD 97
66	Road connecting Municipal Bus Stand-Kannamkara Road and Anappara School Road	7	RD 98
68	Shankarippadi-Pananthopu Road	7	RD 99
69	Ezhuppura Muruppu Road	7	RD 100
70	Malayalappuzha Road to Pananthoppu Road	7	RD 101
71	Pallikkuzhy Road from Musaliar College Junction to Municipal boundary near Malayalappuzha	7	RD 102
72	Kumbazhakkuzhy-Paruthyanickal Road	7	RD 103
73	Road connecting Kadammanitta Road and Thykkavu School Road via Employment office	7	RD 105
74	KSRTC-Thykkavu School Road	7	RD 107
75	Road connecting KSRTC-Thykkavu School Road and KSRTC-Mylapra Road	7	RD 108
76	Road connecting Ring Road and Thykkav School Road via KSRTC	7	RD 110
77	Sastha Temple Road	7	RD 111
78	Central Junction Press Club link Road	7	RD 112
79	Road connecting St Marys school Road to Press Club Road	7	RD 113
80	Road connecting St Marys school Road to Press Club Road and TK Road	7	RD 114
81	Road connecting St Marys school Road to Press Club Road and TK Road lane 2	7	RD 115
82	Good Samaritan Hospital Road	7	RD 116
83	Road Connecting Doctors land and TK Road	7	RD 117
84	Road connecting Press Club- Vettppuram Road and Kadammanitta Road	7	RD 118
85	Vettippuram-Ring Road connecting Road	7	RD 119
86	Road connecting Vettippuram-Ring Road connecting Road and Press Club -Vettippuram Road	7	RD 120
87	Road connecting St Marys School Road and Anchakkala Junction to St.Mary's HS Road	7	RD 121
88	Road connecting Ring Road and Anchakkala Junction to St.Mary's HS Road	7	RD 122
89	Chittoor Vending street Road	7	RD 123
90	Road from Chittoor to St Marys School Road	7	RD 124

91	Collectorate Road Lane 2	7	RD 125
92	Market Road to Mini Civil Station Road lane 2	7	RD 129
93	Access Road to Proposed Industrial Estate	7	RD 131
94	Road connecting TK Road to Road connecting Veterinary Hospital to Stadium Road via Thazhoorkadavu road	7	RD 132
95	TK Road to Veterinary Hospital Road via St.Luke Hospital	7	RD 134
96	Mini Civil Station Road	7	RD 135
97	Road connecting Doctors Lane and TB Approach Road	7	RD 136
98	Malayalappuzha- Mukkadappuzha Road	7	RD 137
99	Shankarippadi-Mayiladumpara Road	7	RD 138
100	Existing backside access road to Civil station	7	RD 139
101	Access Road to Chuttippara Tourism Base camp	7	RD 142
Proposed New Roads			
1	Collectorate Road Lane 2	7	RD 125
2	Collectorate to Ring Road	10	RD 126
3	Road connecting Veterinary Hospital to Stadium Road via Thazhoorkadavu road	10	RD 127
4	Market Road	7	RD 128
5	Market Road to Mini Civil Station Road lane 2	7	RD 129
6	Road connecting Ring Road to Market Road to Mini Civil Station Road lane 2	7	RD 130
7	Road connecting TK Road to Road connecting Veterinary Hospital to Stadium Road via Thazhoorkadavu road	7	RD 132
8	Road connecting Ring Road and Thykkav School Road via KSRTC	7	RD 110
9	Road connecting Ring Road to Market Road to Mini Civil Station Road lane 3	7	RD 133
10	Central Junction Press Club link Road	7	RD 112
11	Shankarippadi-Mayiladumpara Road	7	RD 138
12	Access Road to Echo Quarry Water Garden Park	7	RD 140
13	River Bank Protection Road	7	RD 141
14	Access Road to Chuttippara Tourism Base camp	7	RD 142
Proposed Bridges			
1	Kallarakkadavu Bridge in Outer Ring Road	12	B1
2	Bridge in Shankarippadi-Mukkadappuzha Road	7	B2

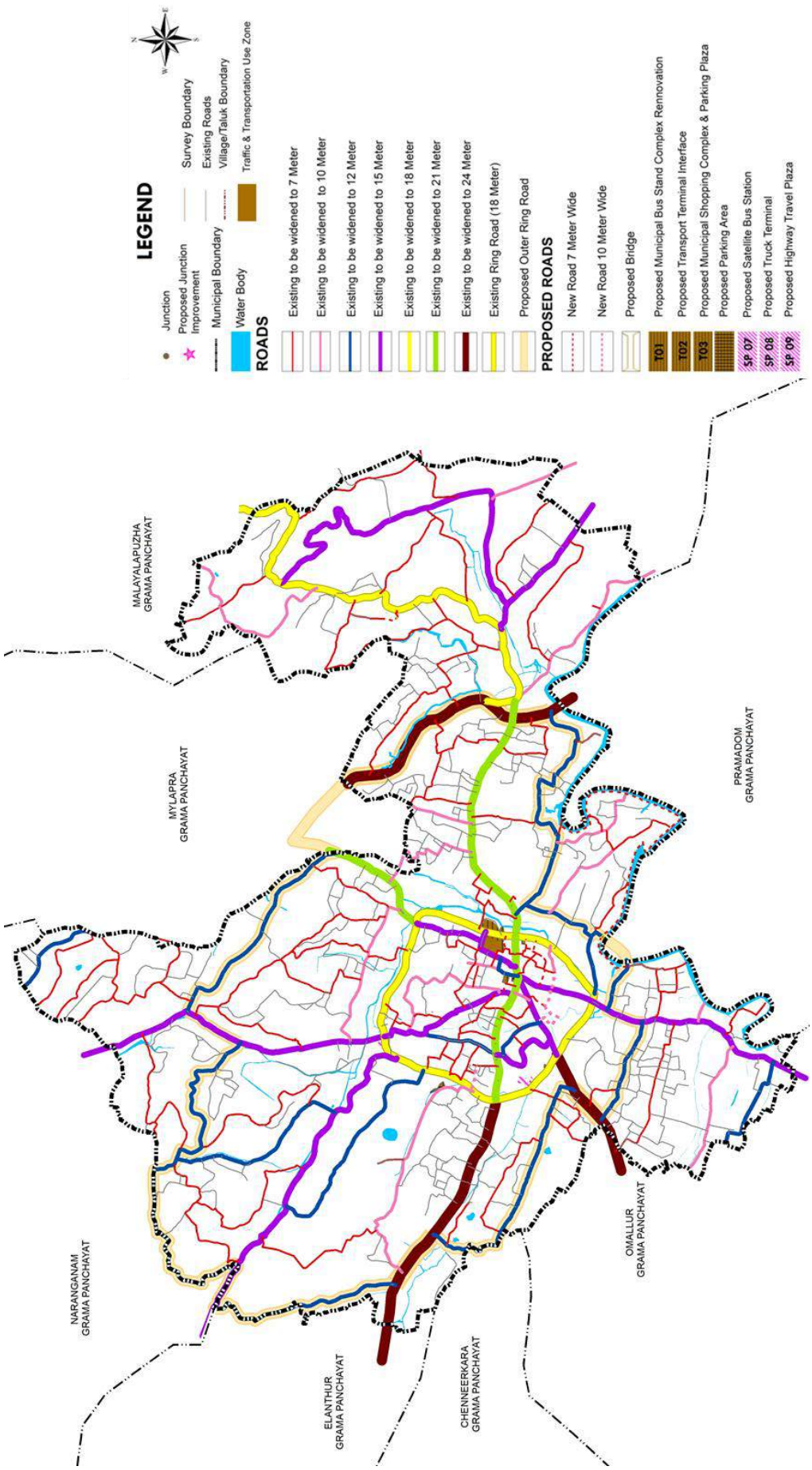


Figure 36.1 Proposed Trasportaion plan of Pathanamthitta town

Roads with smaller widths (fifth order roads) are local streets or access roads that serve limited traffic. These roads are designed for residential neighbourhoods and are not intended for through traffic. They provide access to homes and community spaces and doesn't carry a high volume of traffic or isn't frequently used. Additionally, the general road network is less affected by these routes. So the name of roads with less than 7m width is not mentioned in the table 36.1 unless they require specific attention as they are part of a broader development project. For connecting missing link and reducing congestion at intersection, two over bridges and a flyover is proposed in the town.

36.1.1 Road Cross Section design

The road cross-section and its components serve as the foundation for creating a safe, efficient, inclusive and sustainable transportation network. It's not just about moving vehicles from point A to point B, but ensuring that people of all ages and abilities can safely and comfortably navigate the space, while also promoting environmental stewardship and community health. By paying attention to traffic flow, safety features, and multimodal infrastructure, the road network becomes a functional, adaptable, and liveable part of the community, supporting both immediate and long-term goals. The proposed cross section design of each hierarchy of road is mentioned below Figures 36.1 to 36.6.

36.1.1.1 Design of 24 m wide road

The proposed cross section design of 24 m width road is shown in the Figures 36.2. A 24-meter right of way (ROW) road is the first hierarchy road in the town. Apart from usual vehicle movement, the proposed 24 m wide road integrates multiple components to bring the urban functionality in the town. Design components are:

1. Lanes for Traffic (4-lanes): Two lanes in each direction (typically 3.5 meters each, totalling 7 meters for two lanes per direction) with 1m median in centre. This ensures smooth flow of vehicular traffic.
2. Cycle track Lane: A dedicated 1.5-meter-wide cycle track is proposed to enable safe and independent movement for cyclists, promoting cycling as a healthy and sustainable mode of transport.
3. Pedestrian Sidewalk: A wide, pedestrian-friendly sidewalk is critical for walkability. Each sidewalk with 2 meters width is proposed to accommodate pedestrians, wheelchair users, and to ensure comfortable and safe walking environment.
4. Service ducts: Dedicated utility duct for essential services like water pipes, electrical cables, telecommunication lines etc. Drainage systems to manage stormwater runoff, prevent flooding.



Figure 36.2 Design of 24 m wide road

5. It is proposed to install a network of fire hydrants integrated with the underground utility duct system within the Town Centre to ensure quick emergency response and enhance urban fire safety. Hydrants shall be provided at strategic locations along major roads and commercial areas as part of essential urban infrastructure.
6. Green Buffer / Tree Cover: A 1 m wide green buffer (with trees and plantings) is provided between the roadway and the sidewalk/bike lane. This helps offer shade and enhance cooling, improves air quality, and reduces noise and pollution.
7. Parking: On street parking is not allowed.

36.1.1.2 Design of 21 m wide road

The proposed cross section design of 21 m width road is shown in the Figures 36.3. A 21-meter right of way (ROW) road is also the first hierarchy road in the town along with 24m. This road is also designed with the all feature of the 24m road, including fire hydrants, except cycle track.

36.1.1.3 Design of 18 m wide road

The proposed cross section design of 18 m width road (except inner ring road) is shown in the Figures 36.4. Design of inner ring road of the town is addressed separately in this chapter. 18-meter right of way (ROW) road is the second hierarchy road in the town. Its proposed components are:

1. Lanes for Traffic: Two lanes accommodate moderate traffic volumes, allowing for smooth vehicular movement.
2. Pedestrian-Friendly Design: Barrier free Sidewalks are provided for pedestrians, ensuring safe and comfortable walking spaces separated from vehicular traffic.



Figure 36.3 Design of 21 m wide road

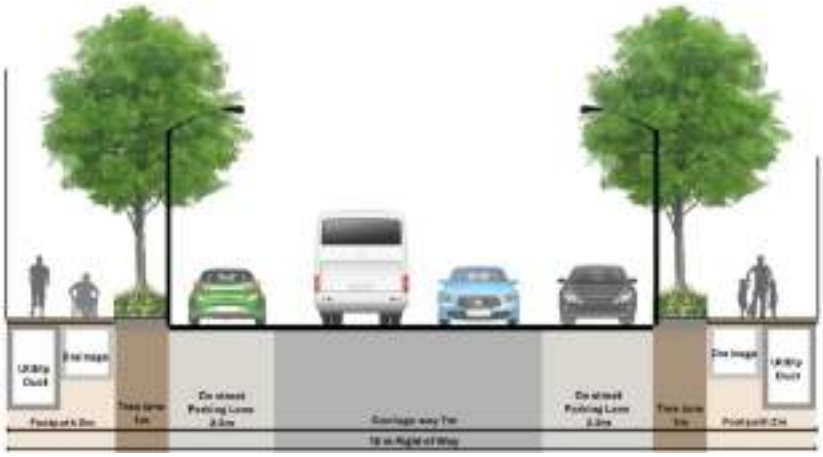


Figure 36.4 Desigh of 18 m wide road (except inner ring road)

3. On-street parking: vehicles can park along the side of the road without obstructing the flow of traffic.
4. Tree Cover and Greenery: Tree cover improves aesthetics and provides environmental benefits such as reducing air pollution, cooling the area, and enhancing biodiversity. Trees along the road can also create a more pleasant walking experience for pedestrians, acting as a natural barrier between traffic and sidewalks.
5. Service ducts: Dedicated utility duct for essential services like water pipes, electrical cables, telecommunication lines etc. Drainage systems to manage stormwater runoff, prevent flooding.

36.1.1.4 Design of 15 m wide road

The proposed cross section design of 15 m width road in the town is shown in the Figures 36.5. 15-meter right of way (ROW) road is also another second hierarchy road in the town. It proposed Components are:

1. Lanes for Traffic: Two lanes accommodate moderate traffic volumes, allowing for smooth vehicular movement.
2. Alternate Tree and On-street parking: vehicles can park along the side of the road without obstructing the flow of traffic. Tree cover in between parking improves aesthetics and provides environmental benefits such as reducing air pollution, cooling the area, and enhancing biodiversity. This will helps to bring both parking and environmental functionality in same lane
3. Pedestrian-Friendly Design: Barrier free Sidewalks are provided for pedestrians, ensuring safe and comfortable walking spaces separated from vehicular traffic.
4. Drainage: To manage stormwater runoff, prevent flooding, and protect the road's structural integrity.

36.1.1.5 Design of 12 m wide road

The proposed cross section design of 12 m width road in the town is shown in the Figures 36.6. 12-meter right of way (ROW) road is the third hierarchy road in the town. Its proposed components are:

1. Lanes for Traffic: Two lanes accommodate moderate traffic volumes, allowing for smooth vehicular movement.
2. Parking: On street parking is not allowed.
3. Tree Cover: Tree cover improves aesthetics and provides environmental benefits such as reducing air pollution, cooling the area, and enhancing biodiversity.



Figure 36.5 Design of 15 m wide road



Figure 36.6 Design of 12 m wide road

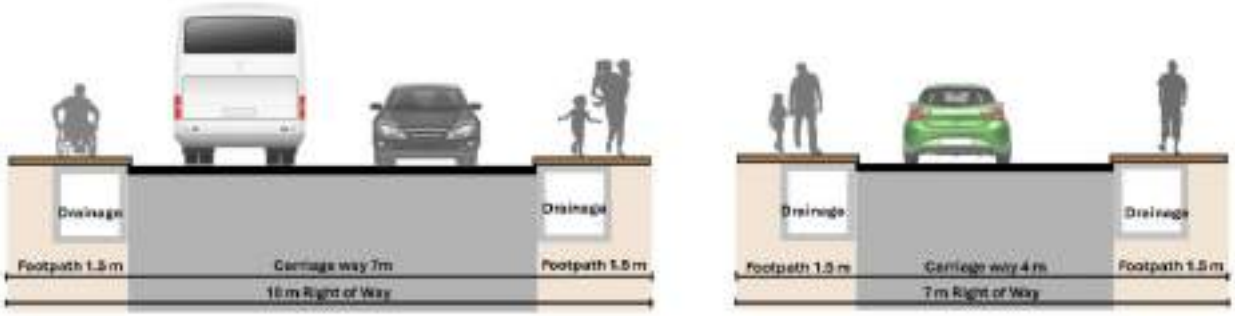


Figure 36.7 Design of 10 m and 7 m wide road

4. Pedestrian-Friendly Design: Barrier free sidewalks are provided for pedestrians, ensuring safe and comfortable walking spaces separated from vehicular traffic
5. Drainage: To manage stormwater runoff, prevent flooding, and protect the road's structural integrity.

36.1.1.6 Design of 10 m & 7m wide road

The proposed cross section design of 10 m & 7m width road is shown in the Figures 36.7. 10 m and 7m road right of way (ROW) roads are the forth hierarchy of roads. Its proposed components are:

1. Lanes for Traffic: Two lanes accommodate moderate traffic volumes, allowing for smooth vehicular movement in 10m road. 7m road having wider single lane with 4m.
2. Pedestrian-Friendly sidewalks and Drainage: Barrier free sidewalks are provided for pedestrians, ensuring safe and comfortable walking spaces separated from vehicular traffic. Drainage to manage storm water runoff, prevents flooding, and protects the road's structural integrity.

The proposed road design is multi-functional and environmentally conscious, providing a balance of vehicle accessibility, pedestrian safety, and green space, creating a more pleasant and liveable urban environment. Vehicle speeds may be permitted in accordance with NH regulations on all road levels, with provisions for appropriate bus bays and street lights.

36.2 Urban Health Corridor

A ring road plays a vital role in ensuring the smooth functioning of a town by supporting both daily traffic management and long-term

urban development. It supports economic growth, environmental sustainability, and improved quality of life by enhancing mobility, reducing congestion and providing better connectivity for residents and visitors. Additionally, when designed with thoughtful aesthetics and consideration for the town's unique character, the ring road can become an integral part of the town's identity and a point of pride for the community. Pathanamthitta town has a well-defined ring road of 5.6km length & 18 m Right of way featuring 2 lane carriage way. Currently, the ring road primarily serves daily traffic management. By integrating both daily traffic management and urban liveability features, it has the potential to evolve into a symbolic element of the town, drawing attention to its unique character while serving as a vibrant space for residents and visitors alike.

This proposal is to transform Pathanamthitta ring road as Urban Health Corridor which ensure both daily traffic management and urban liveability features like physical, mental, and social well-being of communities while addressing broader urban challenges like air quality and traffic congestion.

36.2.1 Design

To transform the ring road into Urban Health Corridor, the ring road is divided as four segment Figure 36.8) based on abutting land use character and required urban liveability features.

Segment 1: Ring Road Stretch from Co-operative College Junction to St. Peter's Junction (Figure 36.9 & 36.13).
Character: Water body abutting left side of right of way.

Segment 2: Ring Road Stretch from St. Peter's Junction to Melevettipuram Junction (Figure 36.10)
Character: Multi-functional Activity on both side of right of way.

Segment 3: Ring Road Stretch from Melevettipuram Junction to Thazhevettipuram Junction (Figure 36.11)
Character: Government Buildings abutting left side of right of way.

Segment 4: Ring Road Stretch from Thazhevettipuram Junction to Cooperative College Junction (Figure 36.12)
Character: Transport Interface and Flyover.

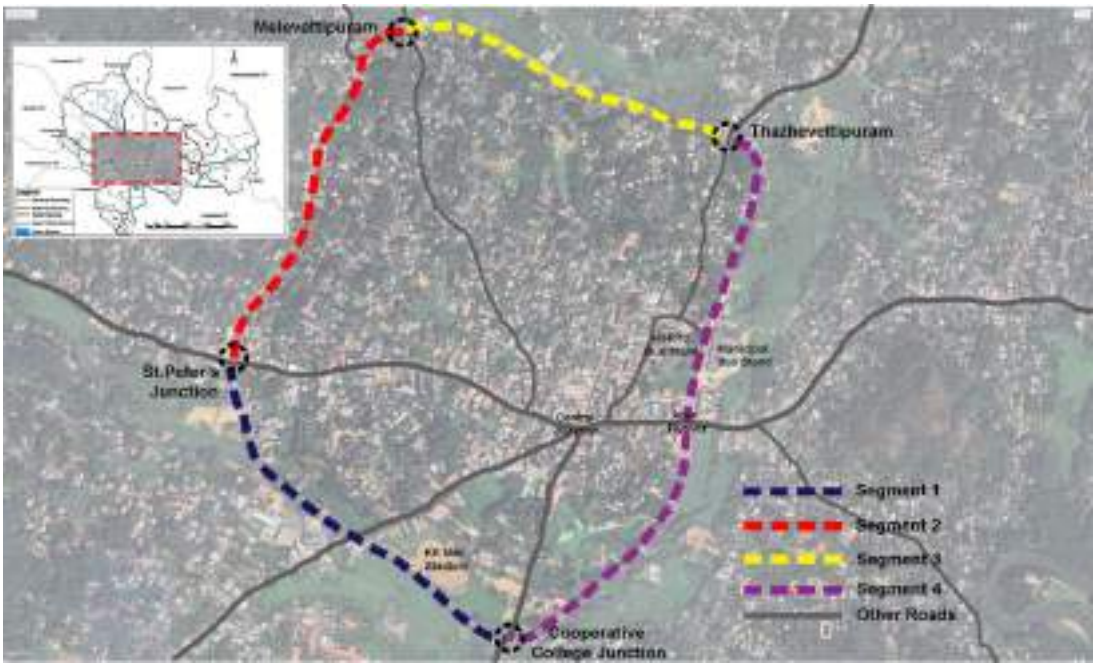


Figure 36.8 Urban Health Corridor - Four segment of ring road

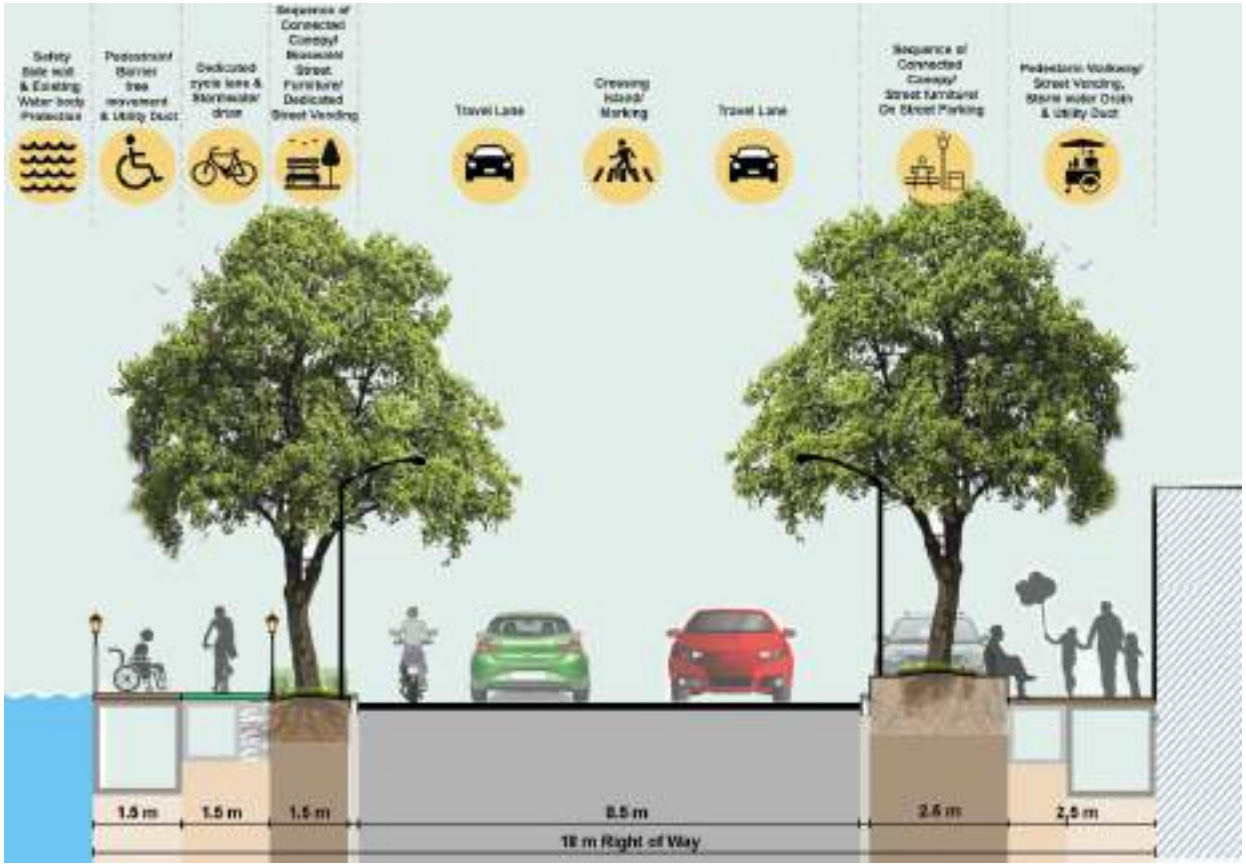


Figure 36.9 Proposed cross section & design components of ring road- Segment 1

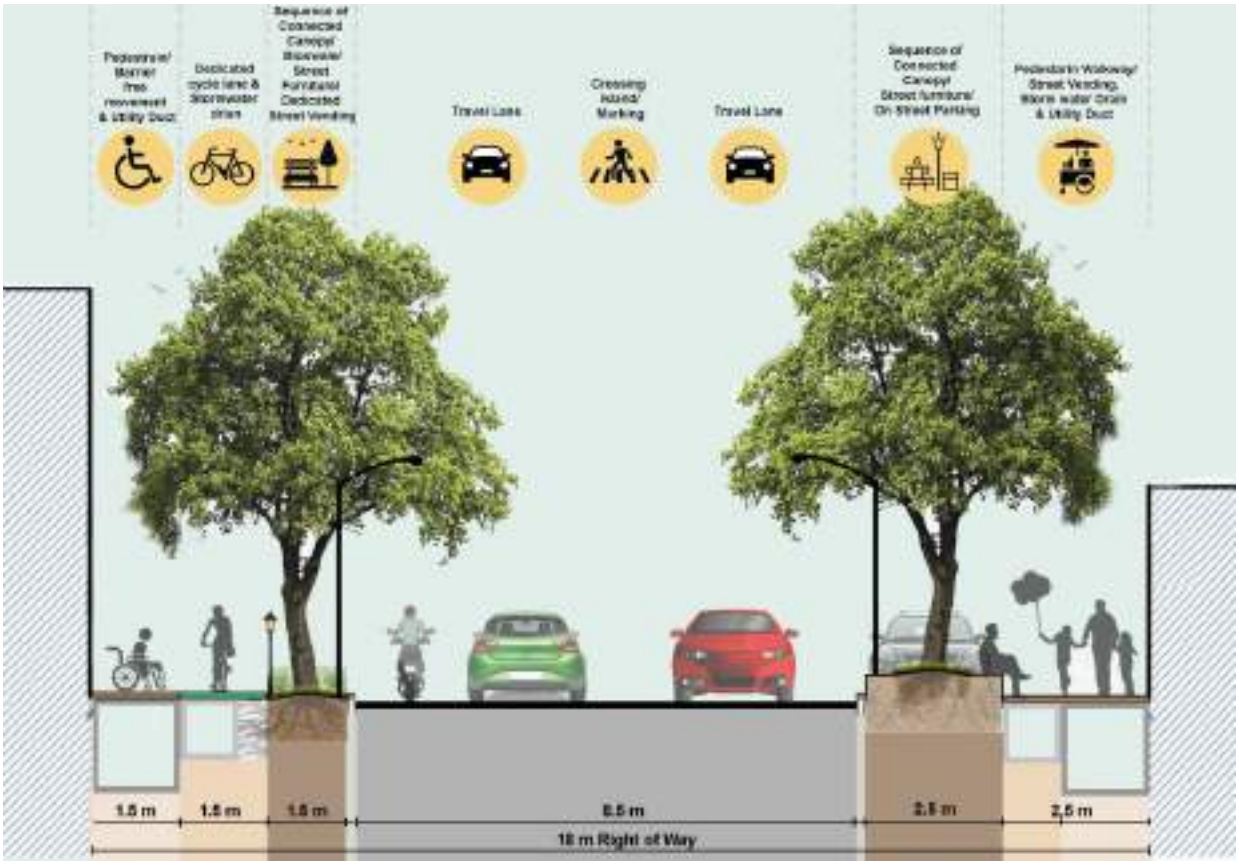


Figure 36.10 Proposed cross section & design components of ring road- Segment 2

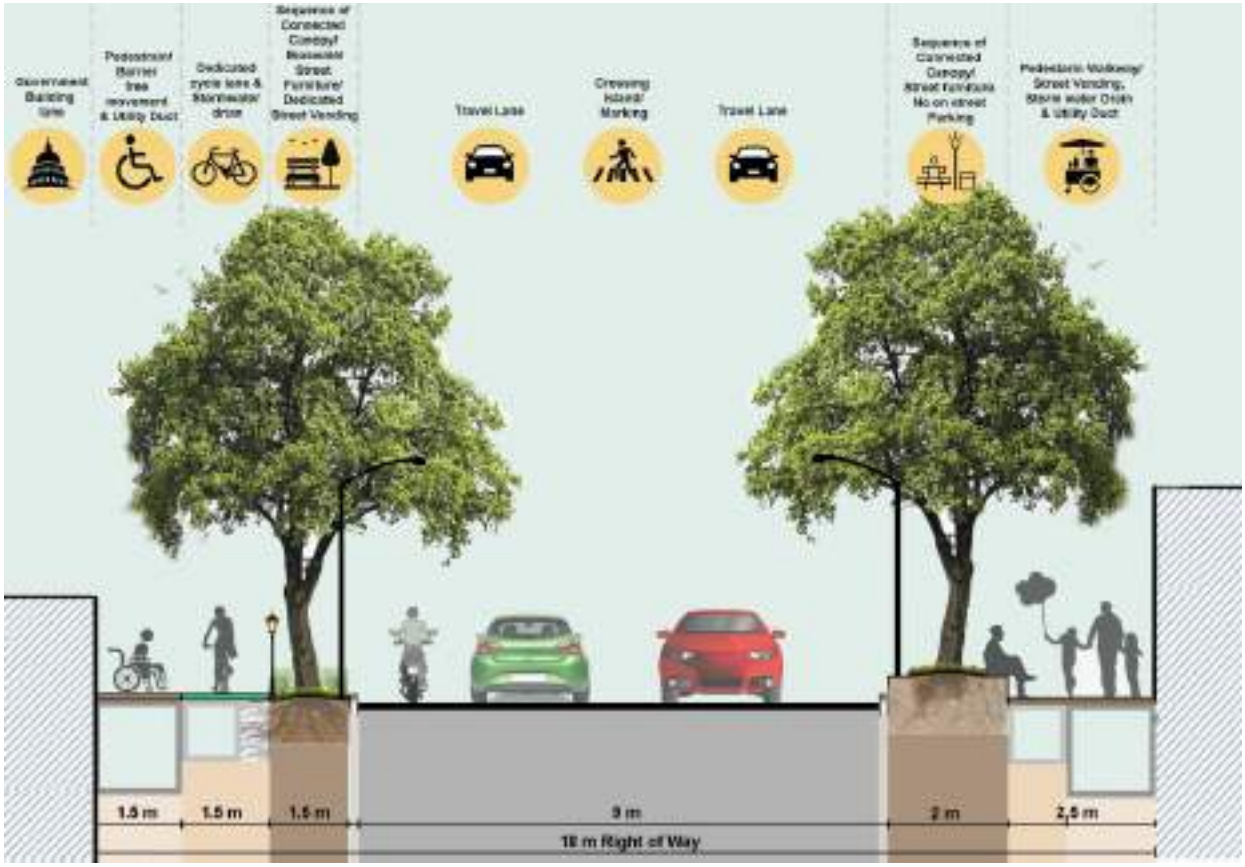


Figure 36.11 Proposed cross section & design components of ring road- Segment 3

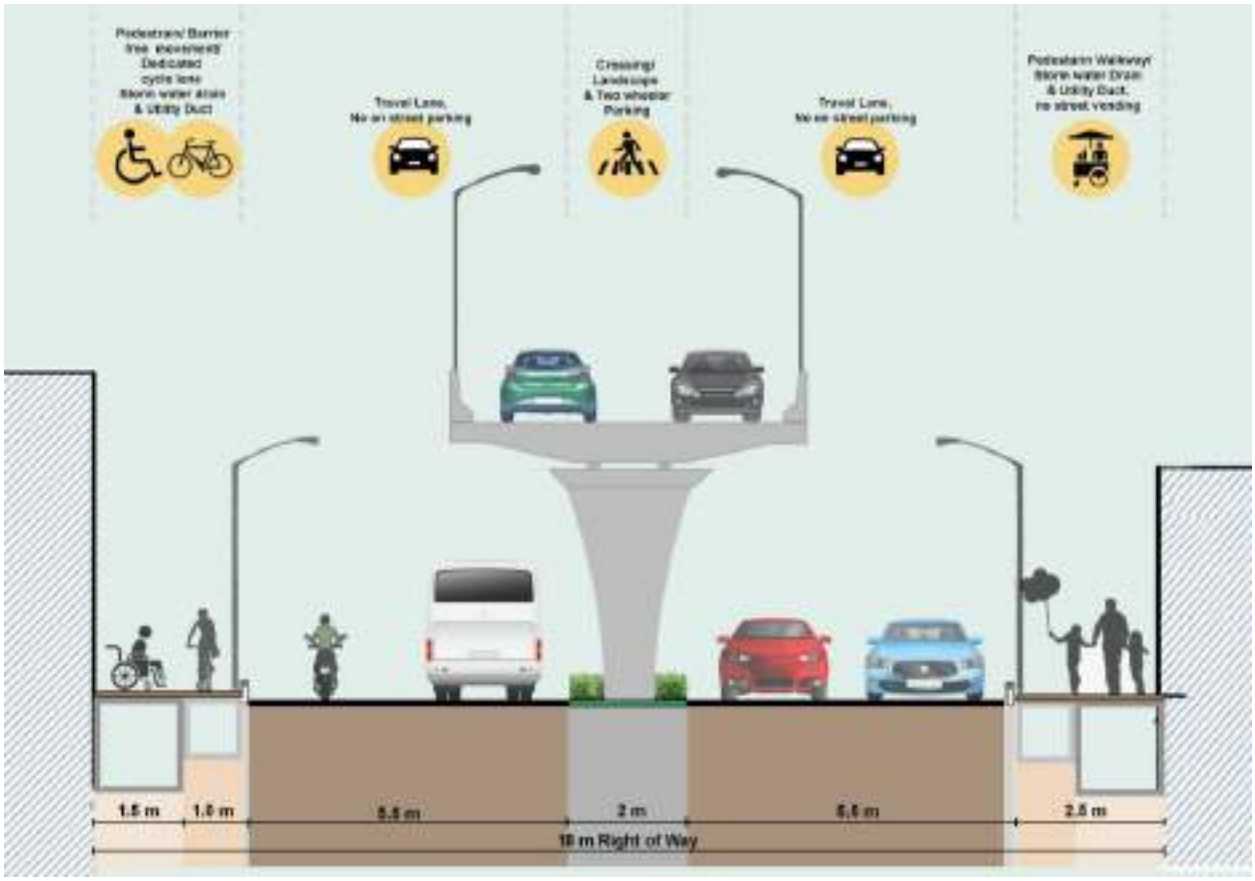


Figure 36.12 Proposed cross section & design components of ring road- Segment 4

Design Elements



1. **Carriageway Width:** Different Carriage way width for each segment based on character of abutting land uses and urban functionality of that segment.
2. **Pedestrian - Friendly Design:** Emphasizes wide and well-designed sidewalks with amenities such as seating, street furniture, and greenery to enhance the pedestrian experience for all users.
3. **Inclusivity Features:** Ensures accessibility for cycle and differently abled individuals through the dedicated lane, incorporation of ramps, tactile pavements and other universal design elements.
4. **Zero Waste Zone:** Entire Urban Health corridor RoW is designated as zero waste zone to reduce, reuse, and recycle as much waste as possible, ultimately aiming to send nothing to landfills or incinerators from this
5. **Urban Functionality based Parking:** On-street parking is not permitted in Segments 3 and 4, as these segments are characterized by government buildings and transportation interface functions
6. **Strom Water Management:** Management of Storm water through Permeable pavements in parking area, Bioswale in tree lane and separate drainage.
7. **Connected Canopy:** Ensures improved air quality and cooling effect, Carbon sequestration and climate change mitigation.
8. **Junction Channelization & Utility Ducts:** Safe movement with proper channelization at junctions, Underground utility ducts to remove overhead electric lines and other utility services, reducing disruption caused by frequent road digging.
9. **Street light & CCTV Surveillance:** Well-lit corridor for both vehicle and pedestrians, CCTV surveillance ensure safety.

Figure 36.13 Plan and Design Elements of Segement 1 of urban health corridor.

Transforming ring road into urban health corridor is essential because it provides a holistic approach in addressing many urban challenges, including poor health outcomes, environmental degradation, social isolation, and unequal access to resources.

By reimagining ring road as spaces that prioritize health and well-being, Pathanamthitta town can create more liveable, sustainable, and equitable urban environment. These transformations lead to healthier, happier residents and stronger, more resilient communities in the long term.

The municipal council has designated this project as a priority initiative. Therefore the details of this project including project components, need, aim & objective, project cost, implementation mechanism etc. are detailed in chapter 39.

36.3 Outer Ring Road

Currently the town has no outer ring road. A new outer ring road is proposed with road stretch (Table 36.2) having 12m & 24m road width. The proposed Outer Ring Road (ORR) (Figure 36.14) circles around the outer limits of Pathanamthitta town, bypassing the urban core to help manage traffic flow. It connects various suburban areas and major highways, providing an alternative route for vehicles that don't need to travel through the town centre. This ORR will enhances the connectivity between sub urban areas, providing residents, businesses, and visitors with easier access to both urban and rural destinations. ORR will also allow better development and expansion of new residential, commercial, or industrial areas without overcrowding the central urban core.

The cross section design of outer ring road with 12m width is mentioned in Figure 36.6. A small stretch of existing road of 183A and SH8 in Mylapra Panchayat is included in the outer ring road in northern part of the town. Similarly a small stretch of existing rural road in Pramadom Panchayat is also included in the outer ring road in the southern part of the town. A over bridge is proposed across Achankoil river in Kallarakkadavu area to connect the missing link of the outer ring road.

The municipal council has designated this project as a priority initiative. Therefore the details of this project including project components, need, aim & objective, project cost, implementation mechanism etc. are detailed in chapter 39.

Table 36.2 Proposed Outer ring road streches of the town

Sl. No	Name of Road	Proposed width	Code in Map (MP/ 02/II)
1	Punnalathupadi to Makkamkunnu Road	12	RD 19
2	Catholicate College Junction to Power House Junction Road	12	RD 20
3	Azhoor-Parakkadavu Road	12	RD 21
4	Kallarakkadavu-Kannamkara Road	12	RD 22
5	Kannamkara-Korattimukku Junction Road	12	RD 23
6	Korattimukku-Kumbazha Bridge Road via Mount Bethany School	12	RD 24
7	Mylapra-Mundukottackal Road via Kairaleepuram	12	RD 25
8	Konnamoodu-Thonikkuzhy Road via Vanchipoyka	12	RD 26
9	KM Road from Churulikkode to Uppukandam	12	RD 27
10	Churulikkode to Punnalathupadi (Part of TK Road Stretch)	24	RD01
11	Makkamkunnu to near college Junction (Part of NH183A)	24	RD04
12	Near Kumbazha Bridge to Municipal Boundary at Kumbazha North (Part of SH 08)	24	RD 03

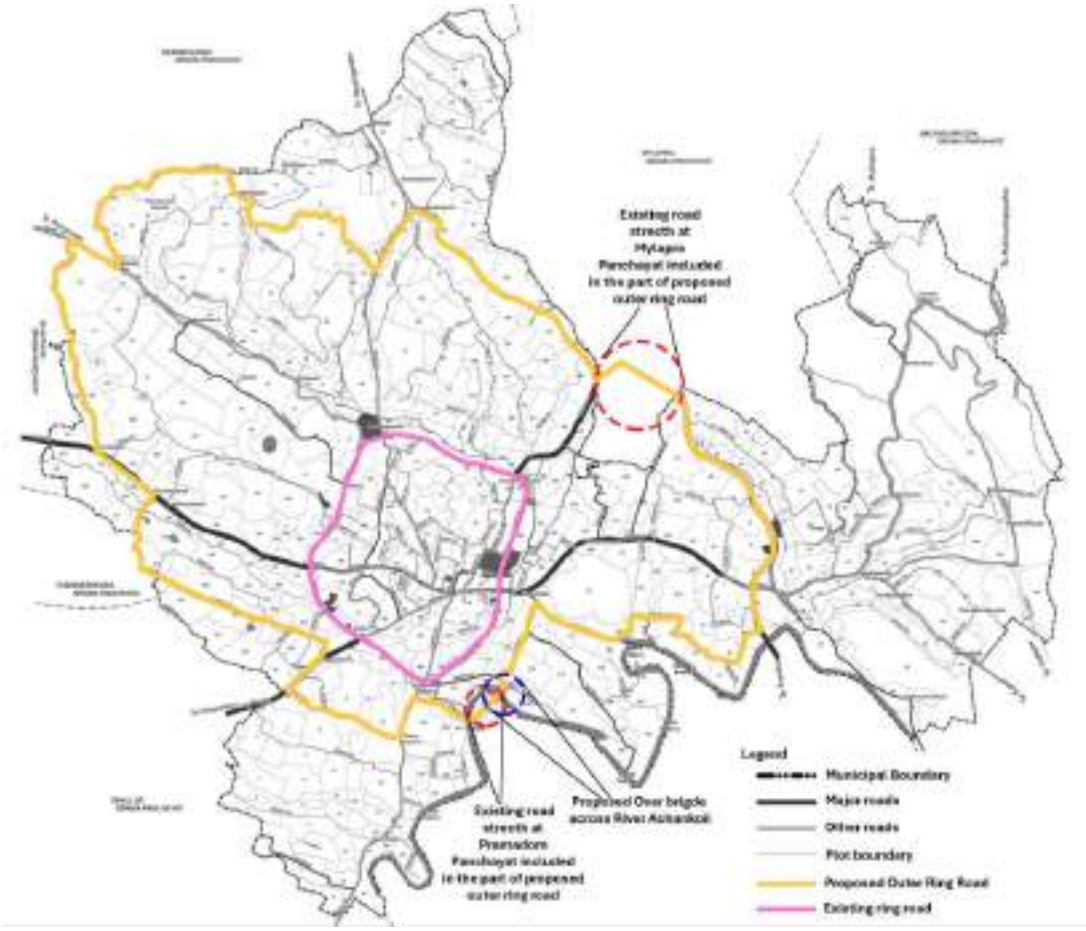


Figure 36.14 Proposed outer ring road

36.4 Intersection Improvements

Intersections are critical points in the road network where traffic from different directions converges and improving them can significantly reduce delays, accidents, and inefficiencies. Road intersection improvements aim to make intersections safer, more efficient, and less congested. A combination of design changes, traffic signal optimization, improved signage, and the use of technology can help achieve these goals. As the road network is proposed duly considering the projected growth, adequate junction improvement needs to be carried out at all main junctions of all major roads. Some of the major junctions which require redesign/ improvement are given below:

36.4.1 Central Junction Redesign

Central Junction is the first order road junction with five arm connectivity. The redesign of the Five-way junction (Figure 36.15) aims to address traffic congestion, enhance vibrancy and welcoming space. This proposal includes the revitalization of the Five-way junction into a Central Town Square, prioritizing traffic movement, pedestrian access and community engagement by incorporating public place and strategically placed vending zones. Widening of road must also be done along with this.

36.4.2 Kumbazha Junction

Kumbazha is a four arm junction that functions as a key connectivity node and is proposed as second order commercial hierarchical node. Two major roads - Punallur – Muvattupuzha (SH-08) and Thiruvalla – Kumbazha (SH-07) - intersect at Kumbazha and these roads are proposed to be widened to 24m and 21m respectively. A model of intersection design at Kumbazha junction is shown in the Figure 36.16. The following are the suggested design changes in the kumbazha Junction.



Figure 36.15 Proposed 3D model design concept for central Junction improvement

1. Roundabouts**:** Replacing traditional signalized intersections with roundabouts to reduce congestion and improve safety. Roundabouts encourage continuous flow and reduce the likelihood of accidents
2. Pedestrian Crossings**:** Adding marked crosswalks, pedestrian signals, and pedestrian islands which make intersections safer for pedestrians and cyclists.
3. Slip Lanes**:** These are short, additional lanes that allow vehicles to enter or exit without needing to stop at the intersection, often used for right turns.
4. Real-Time Monitoring: Using cameras and sensors at intersections to monitor traffic flow can help in detecting congestion and accidents, allowing for faster responses and adjustments to traffic signal timings.
5. Lighting: Installing adequate street lighting, make it safer for drivers, cyclists, and pedestrians, reducing the likelihood of accidents at night.
6. Removing Obstructions: Clearing sightlines by removing obstructions (trees, signs, etc.) around intersections to improve visibility for drivers and pedestrians.

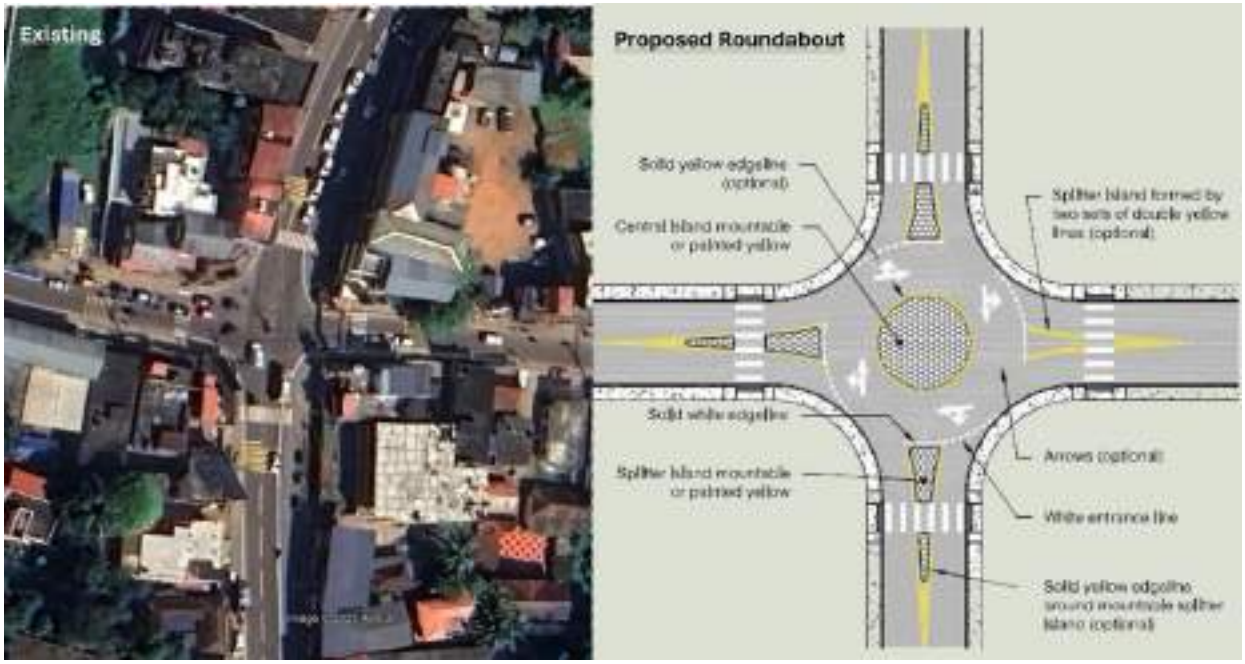


Figure 36.16 Proposed intersection design at Kumbazha junction

Source: google map and reference image from internet.

36.4.3 Town Square Junction

Town Square Junction also called Aban Junction comes under proposed first order commercial hierarchical junction along with central Junction. It is a four arm junction in the ring road near KSRTC Bus Stand and Municipal Bus Stand. Thiruvalla Kumbazha road and ring road are intersecting at Town Sqaure and these roads are proposed to be widened as 21m and 18m respectively. Currently a fly over is under construction in this junction to manage the traffic flow. It is suggested that proper traffic channelization and road markings need to be implemented in this junction after construction of the fly over. Additionally the space beneath the flyover holds an opportunity to enhance urban liveability by transforming them into functional, safe, and visually appealing public areas. Through a combination of green spaces, public art, pedestrian pathways and two wheeler parking infrastructure and safety measures, this underutilized area can be converted into a community asset. Upon completion of flyover construction, the municipality shall take initiative to repurpose and redesign the spaces beneath the flyover to support urban functionality and community engagement. Some conceptual ideas are mentioned below 3 Figures. (Figure 36.17).







Figure 36.17 Conceptual design for spaces beneath flyover
Source: Facebook, Tourism Minister Kerala.

36.4.4 Ring Road Intersections

There are five four arm road junctions in the ring road. (Stadium Junction, St.Peter's Junction, Melevettipuram Junction, Thazhevettipuram Junction and Cooperative College Junction). To effectively serve its role as an Urban Health Corridor, the five key intersections along the ring road must also support and enhance the intended urban functions. These junctions should adopt the universal design concept for inclusivity, barrier free cycle tracks, proper traffic channelization, traffic calming measures, comprehensive road safety markings and CCTV surveillance.

It is proposed a uniform intersection design with roundabouts will not only increase functionality but also give the ring road a unique character and make it a distinctive urban landmark. A model conceptual intersection design for ring road junctions is shown in the Figure 36.18.

Since there are different land uses at these five intersections, a thorough geometric analysis of junction improvement may be carried out, which might include the information outlined in the concept.

36.4.5 Minor Junctions

Apart from above mentioned major junctions, all other minor junctions created out of the proposals and existing junctions which are not mentioned above must follow the following common directions for their improvement.



Figure 36.18 Proposed intersection model concept at junctions in Ring road
Source: reference image from internet

1. Turning Radii**:** The turning radius of curves for left or right turns is an important design consideration for ensuring smooth, safe maneuvering, especially for larger vehicles like trucks.
2. Pedestrian Crossings**:** Crosswalks or pedestrian lanes should be designed to ensure safe movement of pedestrians across the intersection. These may include signalized crossings, raised pedestrian islands, or zebra crossings.
3. Turn Lanes**:** Dedicated lanes for left or right turns help reduce congestion at the intersection, ensuring that turning vehicles don't block through traffic.
4. Pedestrian Islands**:** These are raised areas in the middle of intersections that provide safe refuge for pedestrians crossing multi-lane roads
5. Drains and Gutters: Proper drainage systems at intersections are essential to avoid flooding, especially during heavy rains. Drains should be placed strategically to manage storm water runoff from roads and prevent pooling.
6. Storm water Management: In urban areas, storm water management solutions like permeable pavements, bio-swales, and green infrastructure can be integrated into the intersection to improve water absorption and reduce flooding.
7. Green Spaces**:** Landscaping can be included around or within intersections to improve aesthetics, reduce noise pollution, and provide shade. Urban greenery helps in making intersections more pleasant and can improve air quality.
8. Public Art**:** Some intersections may have public art installations, sculptures, or decorative features to enhance the visual appeal and create a more welcoming space.

Proper design of intersection is required to enable smooth, safe and efficient flow of traffic. A well designed intersection increase the capacity of the same and also adds on to the aesthetics of the area.

36.5 Public Transportation

Public transportation transforms urban functionality by encouraging efficient land use, promoting sustainability, reducing car dependence, enhancing economic vitality, and fostering social interaction. The public transport system of Pathanamthitta town consists of bus transportation only. Bus operation in Pathanamthitta town is served by both private buses as well as KSRTC buses. Both private buses and KSRTC buses have separate bus stands. KSRTC buses cater to long distance operations while the private buses focus on local transit routes. The following are the proposals in public transportation sector of the town (Figure 36.18).

36.5.1 Proposed Municipal Bus Stand Complex Renovation

The Municipal Bus Stand and KSRTC Bus Terminal located facing each other on either side of the Ring Road forms the major Transit hub of the town. This project involves redesigning the Municipal Bus Stand complex. Its goal is to create a strong connection between the Major public building and activity centres with KSRTC Bus Station and The Municipal Bus Station. The Municipal Bus Stand spans 2.18 hectares, with the Bus stand building complex occupying 0.42 hectares. The Municipality owns the entire land. Located in the core area of the town, this site serves as a key activity hub and holds significant potential for integrated development.

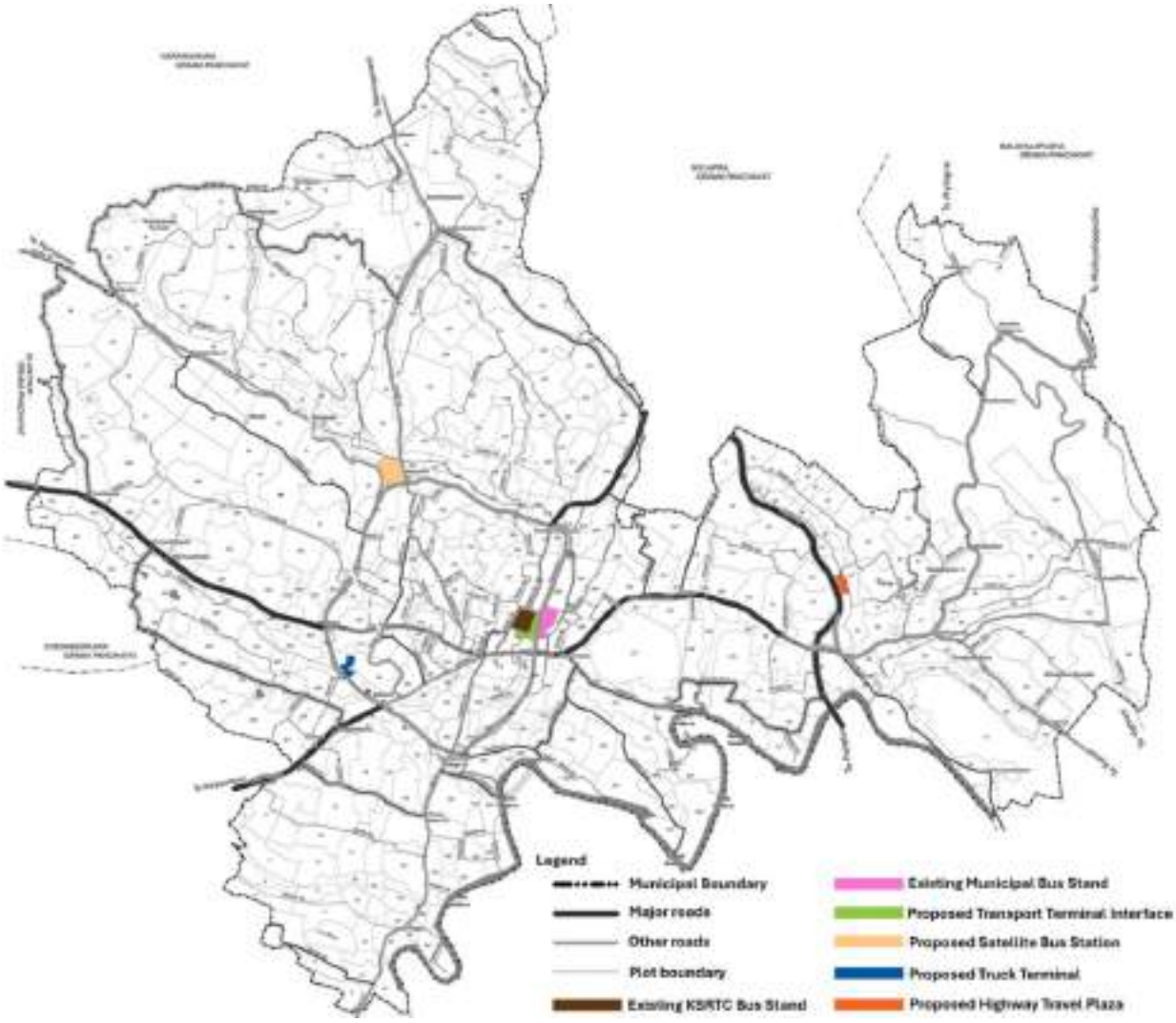


Figure 36.19 Map showing proposals related to public transportation in Pathanamthitta town



Figure 36.20 Elevation & 3D concept of Proposed Municipal Bus Stand



Figure 36.21 Various amenities of proposed Municipal bus stand

Source: Reference images are from Internet

This area needs to be interlinked with a network of public spaces, enhancing accessibility, promoting public amenities, and acting as a catalyst for economic growth. Importantly, any redevelopment or intervention in this area should incorporate strategies focused on resilience to natural disasters, ensuring long-term sustainability and community well-being. The proposal includes improved facilities like Defined Entry/ Exits, driveways, open air theatre, ample parking space, volleyball court/ interchangeable green field, child play area, defined pathways all around, watch tower, vertical circulation cores, waste management spaces. The Figures 36.20 shows the Elevation & 3D view concept of proposed Municipal Bus stand and Figure 36.21 shows the reference image depicting the proposed amenities as part of the Municipal Bus Stand Complex Renovation.

36.5.2 Proposed Transport Terminal Interface

KSRTC bus station and its connectivity to nearby activity centers such as the Mini civil station and with the Municipal bus station needs to be strengthened through the development of commercial active streets and designated vending zones. The area left unused in between the KSRTC bus terminal and the Municipal bus stand as well as the area adjacent to the KSRTC bus terminal shall be integrated to create an interface connecting both the terminals and also with other major centers in town. Facilities include artificial pond for flood mitigation, permeable footpaths, recreational facilities, EV charging Stations, multilevel car parking, dedicated space for street vending and auto/taxi Stand, gathering spaces, children's play areas, tourist information centre, interstate bus halting space, digital display boards, Selfie points etc. The project include built and non-built activities. All design concept are aligned with flood mitigation strategies as the land comes under flood prone area. Figure 36.22, 36.23 and 36.24 shows the adopted design strategies, design synthesis and 3D concept of proposed Transport Terminal Interface.

Project land Area : 1.61 Acre
Survey Numbers: 216(p) & 259(p)
Land Ownership: Municipality
Ward Number : 10

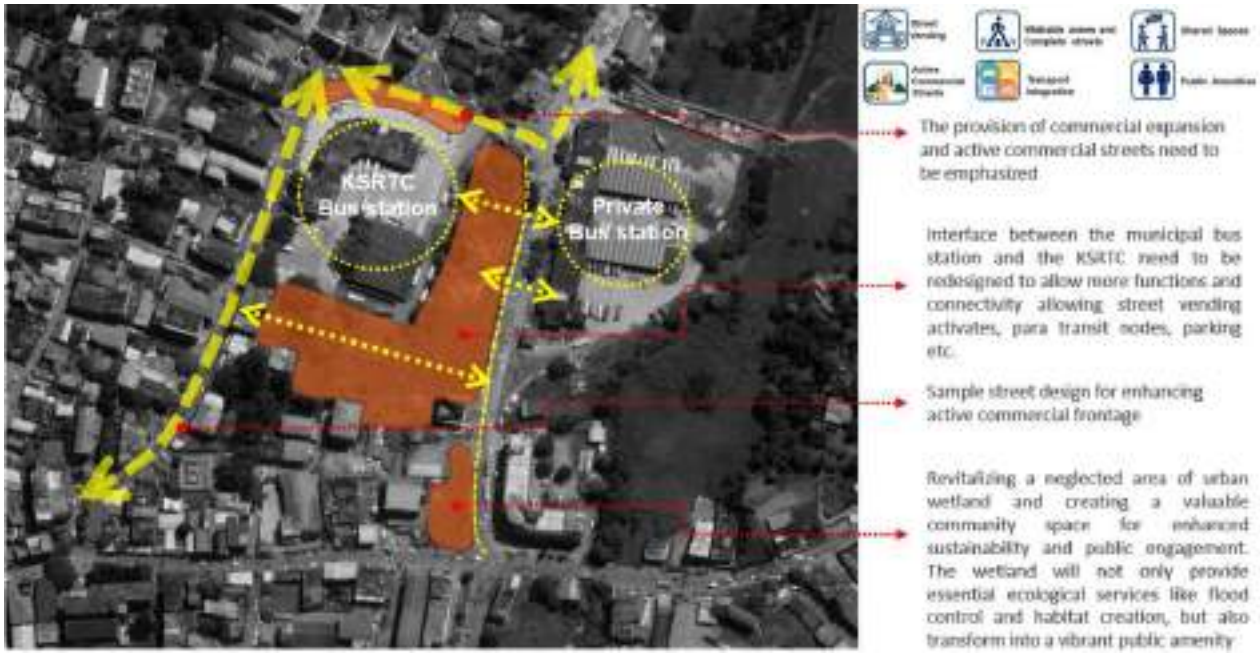


Figure 36.22 Adopted design strategies for Transport Terminal Interface

Source: site reference images from google map

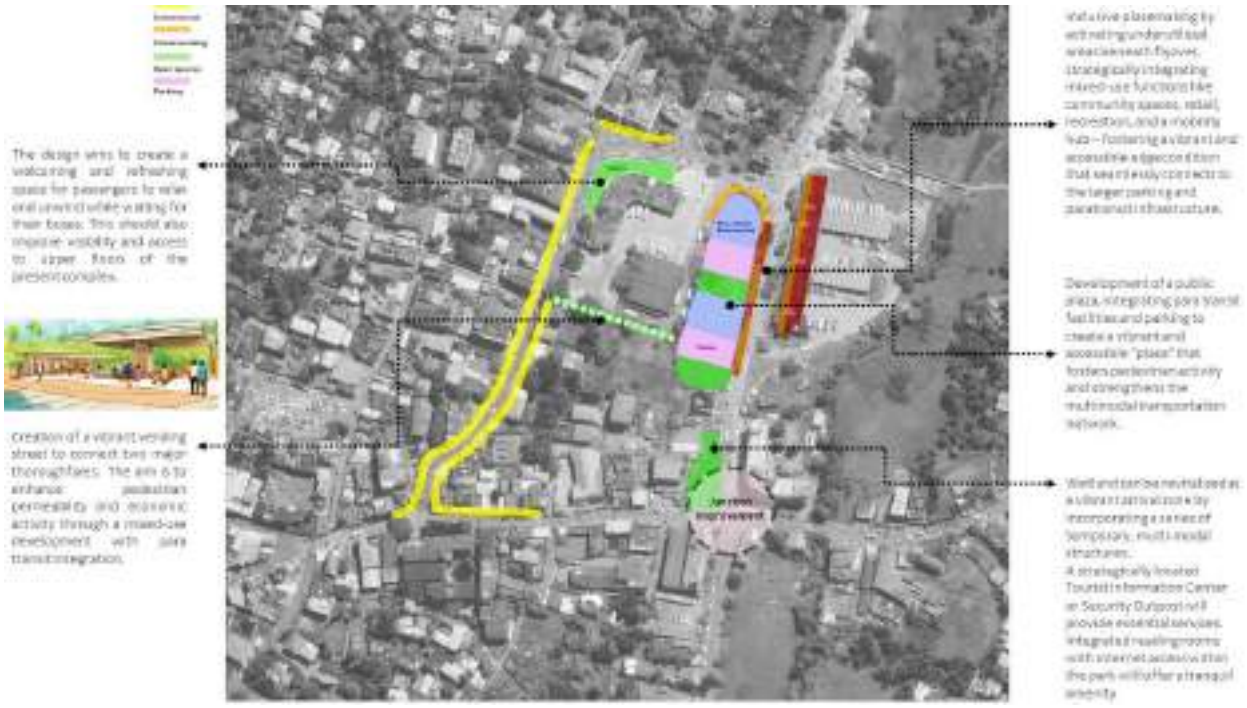


Figure 36.23 Adopted design synthesis for Transport Terminal Interface
Source: site reference images from google map



Figure 36.24 3D concept of proposed Transport Terminal Interface.

The municipal council has designated transport terminal interface project as a priority initiative. Therefore the details of this project including project components, need, aim & objective, project cost, implementation mechanism etc. are detailed in chapter 39.

36.5.3 Proposed Satellite Bus Station

Currently, the northern portion of the ring road is not served by public transportation. Public transportation must be connected to these areas as well, since the northern portion of the ring road is where future developments are

planned. People in these locations require adequate public transit support because the majority of the public, semi-public, and mixed zones are planned there. Since the entire ring road stretch is 5.6 km long, residents may have to rely on private automobiles to go to the existing municipal bus stand and KSRTC stand, which are situated in the eastern portion of the road. A secondary level public transportation station is required in the future to support the public transportation operations in these regions. So a Satellite Bus Station is proposed near Melevettipuram junction.

This satellite bus stand is strategically proposed in a developing or underserved area of the town to enhance accessibility to future developments and to improve transportation connectivity for people living on the outskirts or in remote parts of the town. The introduction of the new satellite bus stand will streamline bus operations by enabling more efficient handling of passengers and facilitating increased service frequency and improved route connectivity. Also, this satellite bus stand can serve as a hub for connecting other modes of transport, like taxis, auto-rickshaws, offering seamless and budget-friendly transfer options for passengers. The location of proposed Satellite Bus Station is shown in Figure 36.19.

Design Components proposed to adopt for Satellite Bus Stand are follows which can be vary based on demand at the implementation stage.

1. Bus Bays: Designated spaces where buses can park, pick up, and drop off passengers. These bays are essential for smooth bus operations, ensuring that buses do not block each other and maintain an orderly flow.
2. Passenger Waiting Area: Sheltered waiting zones with seating arrangements to provide comfort for passengers. This area can include features such as benches, air-conditioning, or fans etc.
3. Restrooms: Clean and well-maintained toilets for passengers, especially on long-distance routes.
4. Food and Retail Outlets: Shops, restaurants, or food stalls that provide essential services like snacks, drinks, or meals, improving the overall experience for passengers during their wait which also gives income to municipality.
5. Parking Areas for Private Vehicles: Designated parking zones for private cars and motorcycles, ensuring that people can easily access the bus stand and transfer between modes of transport.
6. Public Information Systems: Digital screens or signage providing real-time information about bus schedules, delays, and available routes. This helps passengers plan their trips more efficiently.
7. Security Features: CCTV surveillance, security guards, and emergency response services are essential components for ensuring the safety of passengers and their belongings.
8. Women friendly facilities: to ensure safety, comfort, and accessibility. Key components include well-lit premises, dedicated women's waiting areas, and clean, hygienic toilets with menstrual hygiene provisions. A mother and baby care room will be provided for nursing and a dedicated help desk will further ensure safety. Designated pick-up and drop-off zones for last-mile connectivity will also support safe and convenient travel for women.
9. Pedestrian Walkways and inclusive access Routes: Safe pedestrian pathways connecting the bus stand with surrounding areas. These routes should be well-lit, paved, and easily accessible for people with disabilities.
10. Landscaping and Green Spaces: Aesthetic landscaping elements like gardens, trees, or green walls can improve the ambiance of

the satellite bus stand and contribute to environmental sustainability.

Since the land is under private ownership, the project is being proposed as a special project. The project's implementation shall be started by the municipality within seven years.

Project land Area : 5.91 Acre
Survey Numbers: 39(p),101(p)
Land Ownership: Private
Ward Number : 4,8



Figure 36.25 Proposed Satellite Bus Station

36.5.4 Proposed Truck Terminal

Currently there is no designated area for trucks entering into the town. Providing a dedicated space for trucks means that they don't have to stop in unsafe or congested areas, such as on town centre, busy major roads or in residential neighbourhoods. This reduces the risk of accidents involving large trucks in high-traffic zones while providing a designated space for logistics operations to occur smoothly and safely. A truck terminal is proposed near ring road in between St.Peter's Junction and Stadium Junction. It will help to movement of truck to Thiruvalla, Kumbazha, Ranni and Adoor without entering into town centre using ring road. The location of proposed Truck Terminal is shown in Figure 36.19

Since the land is under private ownership, the project is being proposed as a special project. The project's implementation shall be started by the municipality within seven years.

Project land Area : 1.89 Acre
Survey Numbers: 31(p)
Land Ownership: Private
Ward Number : 29



Figure 36.26 Proposed Truck Terminal

36.5.5 Proposed Highway Travel Plaza

For long-distance drivers and passengers often need a place to rest, eat, and recharge. A highway travel plaza provides a safe, easily accessible space for travellers to take a break from driving, reducing fatigue and improving safety on the road. It also helps for quick stops where travellers can stop for a quick meal, refuel, or stretch their legs, which helps maintain the flow of traffic and reduces unnecessary detours into town.

A Highway Travel Plaza is proposed along SH 8 near Kumbazha junction, recognizing the essential need for integrated facilities during long-distance travel. This plaza will offer a combination of food courts, rest areas, fuelling stations, and various amenities, making it a convenient stop for travellers. The location of proposed highway travel plaza is shown in Figure 36.19.

Components of a Highway Travel Plaza:

1. Designated Rest Zones: Comfortable seating areas where travellers can relax and stretch their legs. These areas may include shaded

spots, benches, or even picnic tables for families to enjoy a break.

2. Green Spaces or Landscaping: Well-maintained outdoor areas with landscaping to provide a more comfortable and welcoming environment for travellers to relax.
3. Fuel Stations: For passenger vehicles and commercial trucks to refuel. These stations should be large enough to accommodate both regular vehicles and heavy-duty trucks.
4. Electric Vehicle (EV) Charging Stations**:** With the rise in electric vehicles, travel plazas is equipped with EV charging stations to cater to the growing demand.
5. Food and Beverage Options: Small shops offering snacks, drinks, and medicines for travellers.
6. Car Parking**:** Parking spaces for passenger vehicles, including designated areas for long-term or overnight parking.
7. Clean and Accessible Toilets: They designed to be clean, well-lit, and accessible to people with disabilities.



Figure 36.27 3D model concept of proposed Highway travel plaza

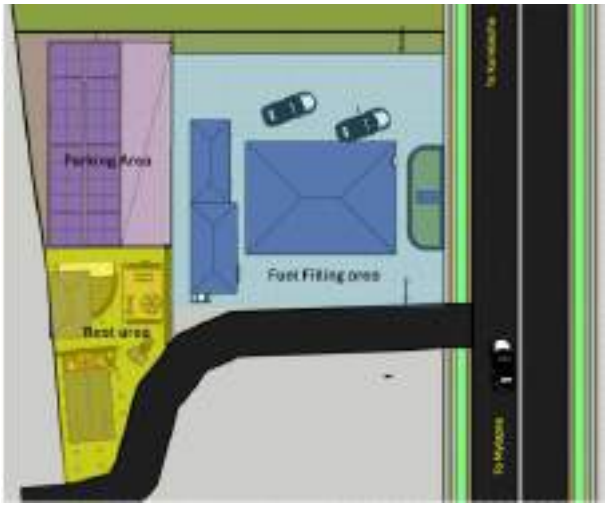


Figure 36.28 Plan of proposed Highway travel plaza (A conceptual model)

Project land Area : 0.89 Acre
Survey Numbers: 53(p)
Land Ownership: Private
Ward Number : 15

Since the land is under private ownership, the project is being proposed as a special project. The project's implementation shall be started by the municipality within seven years. 3D model concept & Plan of proposed Highway travel plaza is shown in Figure 36.25 & 36.26 respectively.

36.5.6 Ring Road Mobility Plan

Currently, both KSRTC and private bus services do not fully cover the entire ring road and several important roads in Pathanamthitta town. As the town's future development is expected to focus on the northern part of the ring road, it is essential to extend public transportation services to these areas while continuing to serve the town's core activity zones. The proposed Satellite Bus station will play a key role in addressing this gap and

support public transportation in entire ring road along with exiting Municipal bus stand.

So it is proposed to prepare a ring road mobility plan for the town. Municipality should take initiative to prepare this mobility Plan with the help of RTO Department, Private Bus Owners, Revenue Department, Other line department and public participation.

36.5.7 Bus stop reinvention

Bus stops are much more than just waiting areas; they are critical infrastructure that can have a profound impact on the liveability, sustainability, and efficiency of a town. By enhancing accessibility, comfort, safety, and the overall public transit experience, these bus stops contribute to creating a more connected, attractive, and forward-thinking community. They not only improve public transportation but also promote environmental sustainability, economic growth, and community engagement.

A reinvention mechanism is proposed to upgrade existing bus stops into smart, modern bus stops that enhance commuter convenience and improve the urban image. By incorporating features such as digital advertisement display boards, the municipality can generate additional revenue, supporting sustainable operations. Bus stop reinvention can be done by municipality alone with own fund or with the help of PPP model or CSR funds. Following are the components need to be included in the bus stops while reinventing.

1. Digital displays provide real-time information about bus arrivals, delays, and schedules. This reduces uncertainty for passengers, allowing them to plan their journeys more effectively.
2. Include accessibility features such as ramps for wheelchair access, tactile paving for the visually impaired, and Braille signage to ensure inclusivity. These elements make the bus stops more user-friendly for individuals with disabilities, the elderly, and families with strollers, promoting equitable access to public transport facilities.
3. With the integration of digital LED advertising boards, modern bus stops can generate revenue through advertising. This revenue can be used to fund public transportation or other community projects, alleviating some of the financial burden on local governments.
4. Well-lit bus stops with surveillance cameras or emergency call buttons help improve safety, particularly at night.
5. Bus stops can be used to display real-time alerts in emergencies, such as weather warnings, evacuations, or other important town-wide notifications.

These bus stops shall designed to complement the town's aesthetic and urban design. With features like artistic displays, landscaping, or sleek, minimalist structures, they can enhance the visual appeal of public spaces, making the town more attractive to residents and visitors alike. Some reference images of bus stops are shown below Figures 36.27.



Figure 36.29 Bus Stops reference images
Source: reference images from Internet

36.5.8 Dedicated space for Auto/taxi

Auto-rickshaws and taxis often operate in high-traffic areas, and without proper space allocation, they can disrupt traffic flow and create congestion. Establishing a dedicated auto/taxi stand provides a specific area for these vehicles to park, wait, and pick up passengers in an organized manner. This not only reduces roadside clutter and prevents bottlenecks at intersections but also improves pedestrian safety and the overall efficiency of urban transportation. Such designated stands contribute to a more orderly and accessible public transport system within the town.

Currently, on-street areas are being used informally as spaces for auto-rickshaws and taxis, but these are not properly designed to accommodate the volume or ensure smooth traffic flow. These make shift areas often lack adequate space, leading to congestion and safety concerns. To address this, designated auto/taxi stands need to be thoughtfully redesigned to include sufficient parking capacity without obstructing roads. Wherever possible, these stands should also feature shelter structures like canopies or covered waiting areas to protect drivers and passengers from adverse weather, enhancing comfort and usability.

36.6 Parking Spaces

Parking spaces are vital elements of urban infrastructure, directly impacting traffic flow, economic vitality, and the overall livability of a town. As mandated by KMBR, buildings above a certain floor area must provide parking within the same plot to support their function. However, additional dedicated parking spaces are essential to accommodate growing commercial and social sector activities.

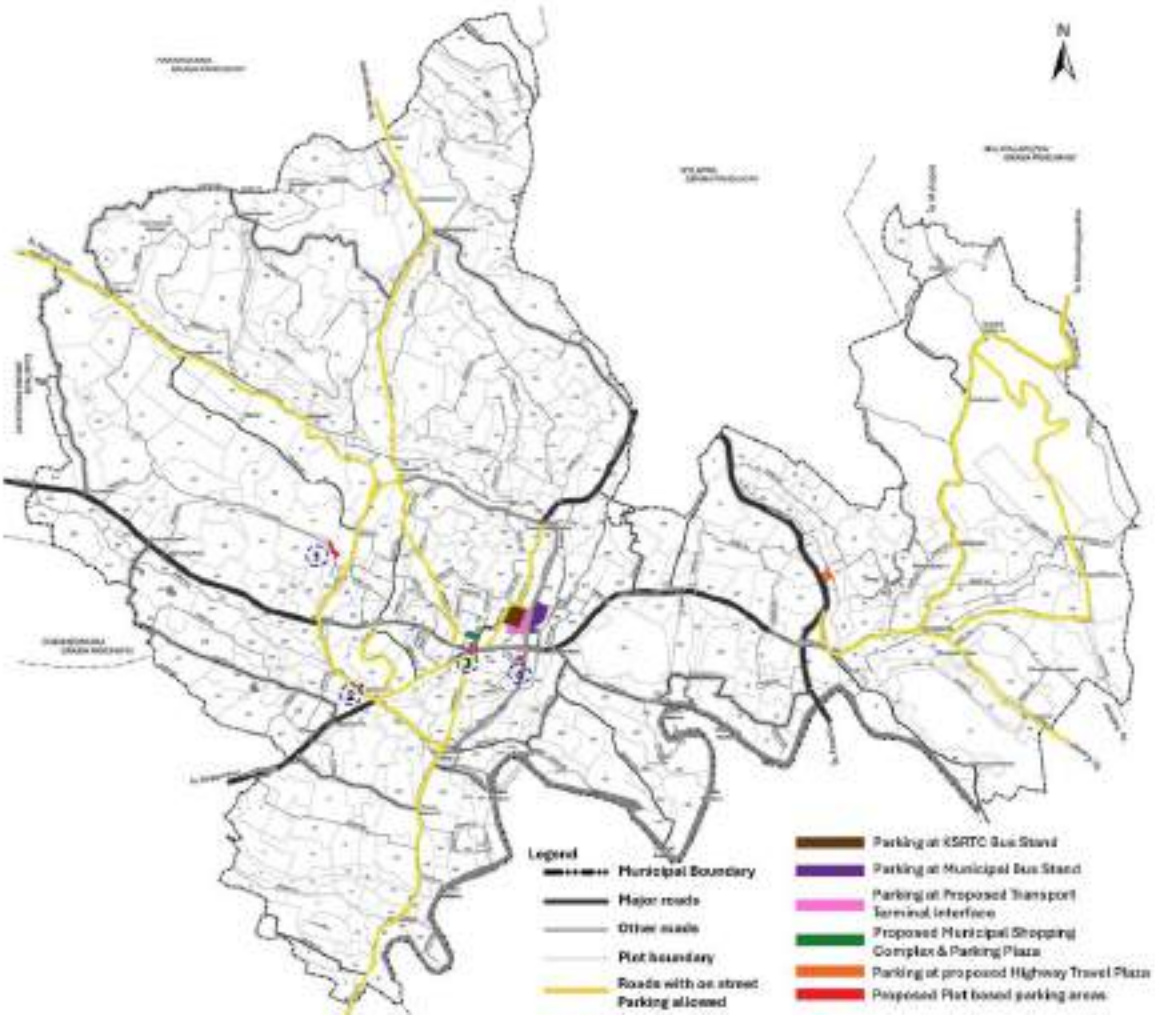


Figure 36.30 Parking Plan of Pathanamthitta town

The master plan proposes two types of parking: on-street and off-street (plot-based). On-street parking, while offering convenient short-term access in commercial or residential areas, can also contribute to congestion, especially on narrow or busy roads. Based on the proposed land use, width of road and urban functionality, on street parking is allowed in the road with 18m and 15 m width and two stretches of ring road (Cooperative College to Melevettipuram Junction via St. Peter's Junction). Figure 36.28 shows the proposed parking plan of Pathanamthitta.

Plot-based or off-street parking involves parking spaces that are located in private lots or public plot. These are usually separate from the street and can either be managed by public or private exclusively for parking. Following are the dedicated plot based parking proposals in the town.

36.6.1 Proposed Parking Area

Four plot level dedicated parking areas are proposed in the town (Table 36.3) for proper management of traffic and parking. Figure 36.28 shows the proposed parking plan of Pathanamthitta and shows proposed plot based parking areas of the town.

Table 36.3 Details of proposed Plot level parking areas of town

Plot 1 Anchakala Ward	Project land Area : 0.69 Acre
	Survey Numbers: 35(p),41(p)
	Land Ownership: Private
Plot 2 College Ward	Project land Area : 0.15 Acre
	Survey Numbers: 150(p)
	Land Ownership: Private

Plot 3 Pettah South	Project land Area : 0.48 Acre
	Survey Numbers: 196(p)
	Land Ownership: Private
Plot 4 Town Ward	Project land Area : 0.26Acre
	Survey Numbers: 229(p)
	Land Ownership: Private

36.6.2 Proposed Municipal Shopping Complex and Parking Plaza

To address the parking challenges in the central area of Pathanamthitta, the old bus stand—situated on land owned by the municipality—is proposed to be developed into a parking plaza integrated with a commercial complex. This dual-purpose development will not only provide ample public parking spaces but also generate revenue through commercial activities. This shopping complex with sufficient parking spaces within the building may reduce the parking issues within the central area.

Project land Area : 0.86 Acre
Survey Numbers: 196(p)
Land Ownership: Municipality
Ward Number : 10

The proposed development of the old bus stand area into a multifunctional parking plaza and commercial complex includes a wide range of modern and sustainable features. Key components of the proposal are clearly defined entry and exit points, organized driveways, and a three-floor parking facility to accommodate a larger number of vehicles. Atop the parking structure, a solar-powered commercial shopping complex is planned, contributing to green energy use. Additional amenities include a dedicated auto stand, resting spaces with board games for recreational use, open green areas with street furniture to enhance public usability, waste management zones, and EV charging stations. These elements together aim to create a vibrant, efficient, and sustainable urban space. Figures 36.29 illustrate the proposed layout and a 3D visual representation of the Municipal shopping complex and parking plaza. The municipal council has designated this project as a priority initiative. Therefore the details of this project including project components, need, aim & objective, project cost, implementation mechanism etc. are detailed in chapter 39.







Figure 36.31 Proposed concept of Municipal Shopping complex and Parking Plaza.

36.7 Non-Motorised Transport (NMT)

Non-motorized transport (NMT), encompassing walking, cycling, and other human-powered travel modes, plays a vital role in shaping healthier, more sustainable towns. To support this, a dedicated NMT plan is proposed in the town, driven by key benefits. Key benefits include:

1. It promotes public health by encouraging physical activity, which lowers risks of respiratory, cardiovascular, and mental health issues.
2. Economic benefits like cost-effective modes of transport and encourages local economic activity
3. Improving quality of life and liveability of resident by providing safer streets and better urban design.
4. Environmental Sustainability by reduction of Air and Noise Pollution and decreasing traffic congestion
5. Climate change mitigation through reducing greenhouse gas emissions and builds resilience to its impacts.

As part of the Non-Motorized Transport (NMT) Plan, the master plan adopts two key types of infrastructure to promote sustainable and inclusive mobility:

1. Pedestrian Infrastructure
2. Cycling Infrastructure

36.7.1 Pedestrian Infrastructure

The pedestrian infrastructure of the non-motorised transport plan includes:

1. Road Sidewalks: Wide, well-maintained sidewalks provide a safe walking environment, especially in urban areas with heavy foot traffic.

2. Pedestrian Crossings: Marked crosswalks, and pedestrian signals in all major roads help pedestrians safely navigate streets.
3. Pedestrian Walkway: Dedicated space for walking only.

Proper and wider road side pedestrian walkways with barrier free design is proposed in all road with width of 24m, 21m, 18m, 15m, 12m, 10m and 7m in the town.

Two pedestrian walkways are proposed in the town (Figure 36.30). One is pedestrian walkway starting from central junction to municipal market via old municipal shopping complex. Another is street in front of police station near municipal market. Defined entry points, safe and comfortable pedestrian friendly walkways are key features that encourage walking habits among residents. The proposed pedestrian walkway prioritizes human centered approach, fostering increased physical activity and promoting public health and wellbeing. By ensuring accessible and seamless connections, especially around the market area, the walkway enhances overall connectivity and urban permeability. This shift towards a walkable environment not only stimulates local economic activity but also contributes to a lower carbon footprint for the town. A conceptual 3D model of proposed pedestrian walkways is shown in Figure 36.31 & 36.32.



Figure 36.32 Location of proposed pedestrian walkways



Figure 36.33 3D model concept of proposed pedestrian walkway – in front of police station





Figure 36.34 3D model concept of proposed pedestrian walkway- Near market

36.7.2 Cycling Infrastructure

Dedicated cycle lanes separate from motor vehicle lanes improve safety and efficiency for cyclists. Currently town has no dedicated cycle lane. Dedicated cycle lanes are proposed along the ring road and major roads of the town to ensure safe and continuous connectivity for cyclists. Design feature of cycle lane is mentioned in the road cross section details of this chapter. The proposed cycle lane route of the town is shows in Figure 36.33.

36.8 Regional Proposals

Regional transportation projects also plays a significant role in shaping the future development of Pathanamthitta town. These projects, which often extend beyond the boundaries of a single town, and have a profound influence on the town's economic growth, land use, property values, social dynamics, and environmental sustainability. These projects also help to shape the town's growth pattern, make it more attractive to residents and businesses, and provide the infrastructure needed to address future mobility challenges. Some regional government projects are also identified which will have an influence in the future on Pathanmathitta town is mentioned below.

36.8.1 Sabari Rail

The project, also known as the Sabari railway project, is aimed at providing connectivity for pilgrims visiting the Sabarimala temple in Pathanamthitta District. The proposed railway line starts from Angamali and ends at Erumeli with potential future extension toward Punalur in Kollam, connecting further to Chenkotta in Tamil Nadu. This extension can connect at Kumbazha in Pathanamthitta municipality and will get chance of rail mode of transportation in the municipality in future.

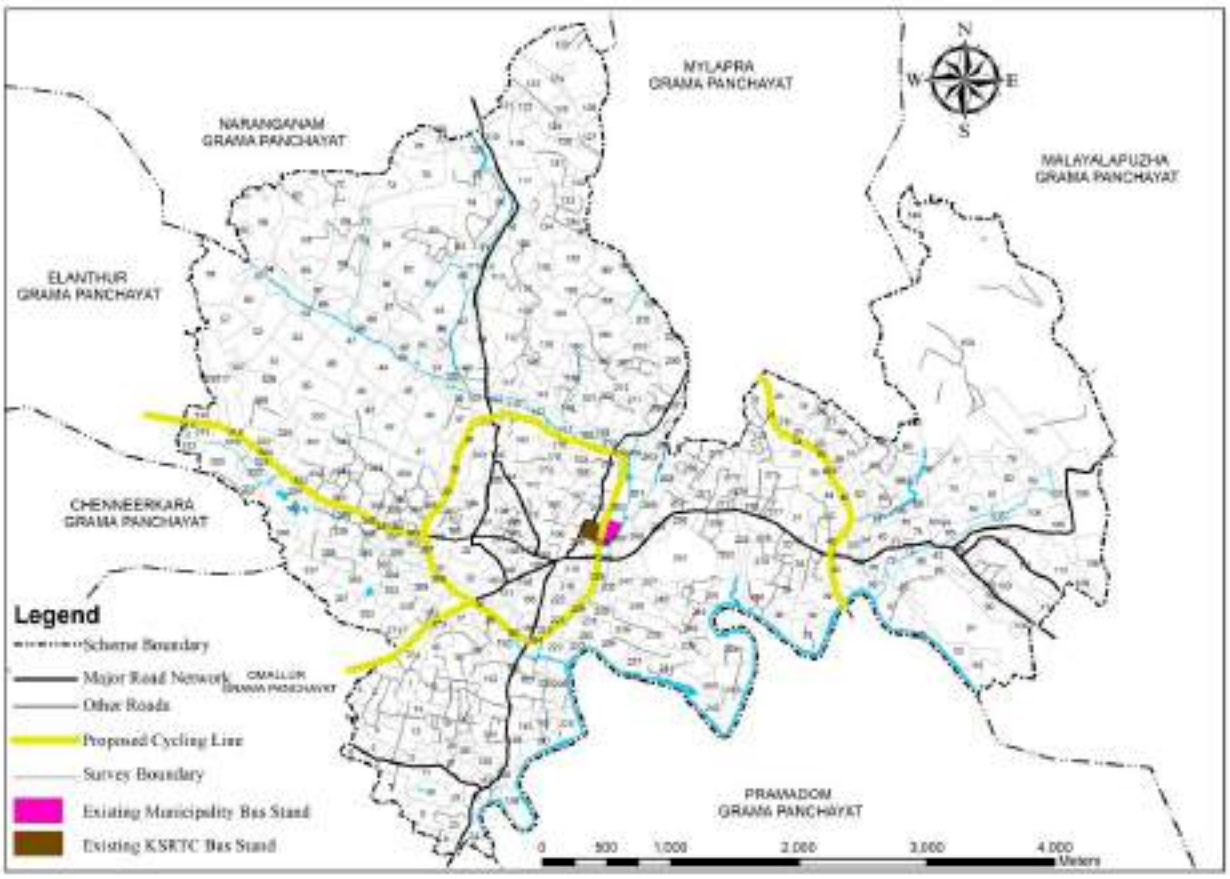


Figure 36.35 Proposed dedicated cycle lane of the town

36.8.2 Sabari Airport

Sabari International Airport, also known as Sabarimala Airport is a proposed Greenfield international airport that will primarily cater to Sabarimala & Central Region of Kerala. In addition to serving religious tourism, the airport is expected to boost access to prominent tourist destinations like Kumarakom and Thekkady, and urban centers such as Thiruvalla, Pathanamthitta, and Kottayam. The airport will be built in between the towns of Erumeli South and Manimala. The nearest railway facility is Thiruvalla Railway Station, approximately 29 km from the site, while the airport will be about 50 km from Pampa, the base camp of Sabarimala. The improved regional connectivity through this airport is anticipated to influence and catalyse the future development of Pathanamthitta town

36.8.3 Greenfield Highway

Thiruvananthapuram – Angamaly Greenfield Highway is a 257 - kilometre-long access-controlled corridor designed to enhance connectivity between Thiruvananthapuram and Angamaly. Running parallel to the existing Main Central Road, the highway aims to improve regional transport through key areas of Kottayam and Pathanamthitta districts. With a planned width of 45 metres, the alignment will traverse 13 taluks across six districts, starting from Pulimath in Thiruvananthapuram and passing through major towns such as Kallara, Kadakkal, Anchal, Pathanapuram, Konni, Kumplampoika, and Kanjirapalli, before ending at Angamaly. Importantly, the proposed alignment intersects Pathanamthitta municipality at Kumbazha junction, enhancing the town's future connectivity and development prospects.

36.8.4 National Highway 183A

The Government of India has proposed a new alignment for National Highway 183A, extending from Bharanikkavu in Kollam to Mundakkayam in Idukki, with a planned width of 24 meters. This alignment passes through key locations including Kadambanad, Adoor, Thatta, Kaipattoor, Omallur, Pathanamthitta, Mannarakulanji, Vadasserikkara, Laha, Plappalli, Elavunkal, Naranamthodu, Pambavali, Kanamala, Mukkoottuthara, Erumeli, and Pulikkunnu, before reaching Mundakkayam. A significant portion of this route lies within Pathanamthitta district, and notably, the alignment also traverses Pathanamthitta municipality, enhancing regional connectivity and development potential.

This transportation plan is flexible and open to incorporating necessary changes that may arise from the implementation of regional transportation connectivity development projects. It is designed to align with evolving infrastructure initiatives such as new highways, rail extensions, and airport connectivity, ensuring seamless integration with the town's overall mobility framework and supporting future growth and accessibility.

36.9 Summary

This transportation plan is a comprehensive strategy that outlines how Pathanamthitta town will develop, manage, and improve its transportation infrastructure and systems over time. This plan typically includes the design, implementation, and management of transportation networks (roadways, public transit, cycling, walking paths, etc.), and focuses on meeting the mobility needs of the population while considering sustainability, safety, and economic growth. By implementing this plan, towns can foster economic growth, improve the quality of life for its residents, reduce environmental impacts, and create a transportation system that is safe, efficient, and accessible to all.



37. SECTOR WISE PROPOSALS

The Sector-Wise Proposal chapter presents targeted development interventions across priority sectors, structured to operationalize the spatial plan's vision, development concept, and associated policy strategies. It includes spatial level projects and specific recommendations made for different functional areas or sectors of Pathanamthitta Town. This chapter functions as a strategic bridge translating high-level planning objectives into actionable implementation mechanisms.

The finalization of these sector-wise proposals for the town was a multi-step process that integrates part I and II of this Master Plan, Public participation, Technical expertise and Policy alignment. All sectors proposals except those related to Traffic & Transportation are mentioned in this chapter. Proposals concerning Traffic and Transportation sector are presented separately in the previous chapter.

Contents

1 Proposals in Built- Up Zone

2 Proposals in Green Blue Zone

3 Goal based Decision Tree

37.1 Proposals in Built –Up Zone

Proposals in Built up zone include proposals from sectors like Trade and Commerce, Industry, Housing, Civic Amenities, Transportation, Tourism, Recreation etc. These proposals are vital for guiding structured growth of town as well as shaping economic base of the town along with improving livability. Proper planning in these sectors ensures balanced land use, efficient infrastructure and inclusive development. Proposals in sectors like trade and commerce, industry, housing, civic amenities, tourism and transportation together define urban character and economic potential in such a way that Trade and industry proposals drive investment and employment, housing and civic amenities proposals improve quality of life. Tourism and recreation proposals enhance local identity and revenue generation. Integrated planning of these built zones ensures balanced development, resilience to risk and a vibrant urban environment that meets future demands.

37.1.1 Trade & Commerce

Considering the status of the town as district headquarters and as Pathanamthitta town is proposed as a first order settlement of the district, it is important to develop the trade and commerce sector more attractive in Pathanamthitta municipal area. The following projects are proposed in the town in Trade and Commerce Sector.

37.1.1.1 Central Square

The Central Square project is proposed at the central junction of Pathanamthitta town. The project aims to enhance the character of the town junction, fostering a vibrant and welcoming space. It also aims to revitalization of the Five-way central junction into a Central Square, prioritizing pedestrian access and community engagement by incorporating public plaza and strategically placed vending zones and parking areas. This project includes the demolishing of old municipal office cum commercial shopping complex building at central junction and builds a new municipal commercial building complex with clock tower ensuring Commercial spaces. The location and conceptual 3D view of Central Square is shown in Figure 37.1& 37.2. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. Details of junction improvements are mentioned in the Transportation Plan (Chapter 36) of this report.

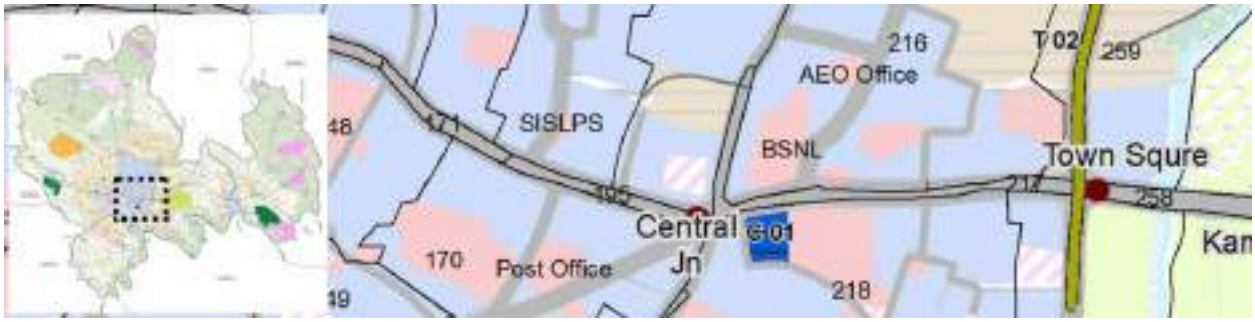


Figure 37.1 Location of proposed Central Square (C01) in proposed land use map



Figure 37.2: Proposed Central Square (A conceptual 3D model)

37.1.1.2 Modern Municipal Market

This project is to upgrade the existing town market as modern district level market which will influence the whole Pathanamthitta district. It is designed as larger than a local neighbourhood market with modern facilities not only supports the economic activity but also enhances the quality of life for residents, and there by social and logistical needs of a wider community, providing a diverse range of products. This project is proposed to be implemented in the area of existing town market through redevelopment mechanism.

Retail Spaces include both permanent shops and temporary stalls with flood mitigation

design. Food Courts ,dedicated entry /exit, parking space and loading and unloading spaces, restrooms, Green spaces, landscaping with native plants, Rainwater harvesting units, decentralised waste water treatment unit and solid waste disposal systems, Seating Areas, covered walkways and indoor shopping areas and solar LED lights and ATMs, CCTV etc. are proposed to be included in the market.

Location and the conceptual design of modern municipal market is shown in the Figure 37.3 and 37.4. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39.



Figure 37.3 Location of proposed modern municipal Market (C02) in proposed land use map



Figure 37.4 Proposed modern municipal market (A conceptual 3D model)

37.1.1.3 Kumbazha Multi-functional Market

The underutilized wholesale fish market in the Kumbazha region (Figure 37.7) is proposed to be expanded into a multi-functional market hub. The plan includes introducing modern market infrastructure with integrated waste treatment facilities, ensuring both functionality and environmental sustainability. To stimulate continuous commercial activity, the proposal also encourages temporary vending shops on wheels and other complementary commercial uses. This initiative aims to transform the presently inactive space—especially during off-peak hours—into a vibrant economic zone.The Location, proposed conceptual images are shown in Figure 37.5&37.6.

Project land Area : 0.63 Acre
Survey Numbers: 56(p), 58(p)
Land Ownership: Municipality



Figure 37.5 Location Map for Proposed Multifunctional Market



Figure 37.6 Proposed Multifunctional Market Conceptual Image

37.1.1.4 Proposed Food Street

A Food Street is proposed in the narrow bet of land owned by Municipality in between the Ring road and an internal road running parallel to ring road at chittoor junction with the objective of enhancing the town's economy, nightlife, and urban vitality. Beyond being a culinary destination, the Food Street is envisioned as a vibrant public space that supports social interaction, promotes local entrepreneurship, and contributes to urban health. By offering opportunities for local vendors, small-scale entrepreneurs, and food producers, it creates an inclusive and friendly environment that brings people together across age groups. This initiative is expected to revitalize the area, support evening economic activity, and become a key social and recreational hub for the town. The parallel road can meet the parking demand without disturbing traffic flow in the ring road. The Location, proposed conceptual images are shown in Figure 37.7 & 37.8.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39.



Figure 37.7 Location of proposed food street (C04) in proposed land use map



Figure 37.8 Proposed food street (A conceptual 3D model)

37.1.1.5 Municipal Shopping Complex and Parking Plaza

The old private bus stand area which is currently used only as public parking space is proposed to be developed as a multi-level parking facility within the central area to attract more commercial activities and generate income for Municipality.

The proposal includes improved facilities like defined Entry/ Exits, Driveways, Three-floor parking area and Solar Powered commercial shopping complex at the top, a dedicated Auto stand, Resting space with Board game facilities for drivers, Open green space with Street furniture, Waste management spaces, EV vehicle charging points etc.

The Location, proposed Layout and 3D View of the proposal are shown in Figure 37.9 & 37.10. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project Cost components and implementation mechanism etc., are detailed in Chapter 39.



Figure 37.9 Location of proposed municipal shopping complex and parking plaza (T03)



Figure 37.10 : Proposed municipal shopping complex and parking plaza (A conceptual 3D model)

37.1.1.6 Dedicated space for street vending

Dedicated spaces for Street vendors are proposed in projects such as Central Square, Modern municipal Market and in Sponge Parks.

All other street vending areas in town shall be relocated for the safe travel of pedestrians as per the recommendations of the Town Vending Committee constituted as per the Protection of livelihood and regulation of street vending Act, 2014.Ensuring sufficient infrastructure support, public health and hygiene.

37.1.2 Agriculture and Animal Husbandry

To strengthen and sustainably develop this sector, the following projects are proposed under the agricultural sector, aiming to enhance productivity, promote sustainable practices, and support the livelihoods of those dependent on agriculture.

The activities in the animal husbandry sector are closely coordinated with agriculture and other allied sectors to promote integrated and sustainable development. A centralized and coordinated approach is essential for ensuring profitable production of key outputs such as egg, meat, and milk. Areas identified as suitable for agricultural use will also be leveraged for animal husbandry activities, given their compatibility in terms of land use and resource availability. In this context, the following projects are proposed to enhance the animal husbandry sector in the town.

37.1.2.1 Workation Farm tourism

A Workation Farm Tourism project is a multi-functional rural project designed to combine Agriculture (as a primary land use), Tourism (especially eco- and agri-tourism) and Remote Work (Workation) opportunities for urban professionals. This project leverages the rural setting, natural landscape, and agricultural activities to create a space where people can work remotely while enjoying a vacation-like environment, all while contributing to rural economies and sustainable development.

This Workation Farm Tourism project aims to revitalize rural areas by attracting urban dwellers for longer stays, Diversify rural income beyond traditional farming, Promote agro-tourism linked to farming, food, and cultural heritage, Support remote working trends by providing peaceful, nature-rich environments with digital infrastructure. This concept supports rural-urban integration, agrarian sustainability, and experience-based tourism in line with spatial development goals. The proposed components of this project include:

1. Agricultural components like Operational farms for crops, orchards, or livestock, Demonstration farms for educational tourism (e.g., organic farming, permaculture), Farm stays that allow tourists to participate in farm activities.

2. Tourism and Recreational Facilities like Agro-tourism infrastructure (guest houses, eco-lodges, traditional homestays), Nature trails, farm-to-table dining experiences, rural craft workshops, Cultural experiences (folk music, cooking classes, rural festivals), Wellness components (yoga spaces, herbal gardens, meditation centers).

3. Workation Infrastructure like High-speed internet and co-working spaces within the farm/tourism area, Hybrid spaces combining work desks with scenic views or natural materials, Power backup, quiet zones, and business-friendly services.

Project land Area : 83.78 Acre

Survey Numbers:
79(p),80(p),81(p),105(p),106(p),107(p),108(p), 139(p),140(p) & 150(p)

Land Ownership: Private

Workation farm tourism project is proposed in the eastern wards of the town such as Mayiladumpara, Mayladumparathazham and Plaveli where wet and dry agriculture activities area active. The Location, proposed conceptual images are shown in Figure 37.11 & 37.12.



Figure 37.11 Location of proposed workation farm tourism project (SP15) in proposed land use map





Figure 37.12 Proposed Workation farm tourism project (A conceptual 3D model)

37.1.2.2 Proposed Modern Slaughter House

The project proposes the renovation of the existing slaughterhouse near Municipal Office in the town to meet modern standards of hygiene, safety, sustainability, and operational efficiency. The upgraded facility helps to ensure the production of safe meat products while also supporting environmental goals and improving working conditions.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.13& 37.14.

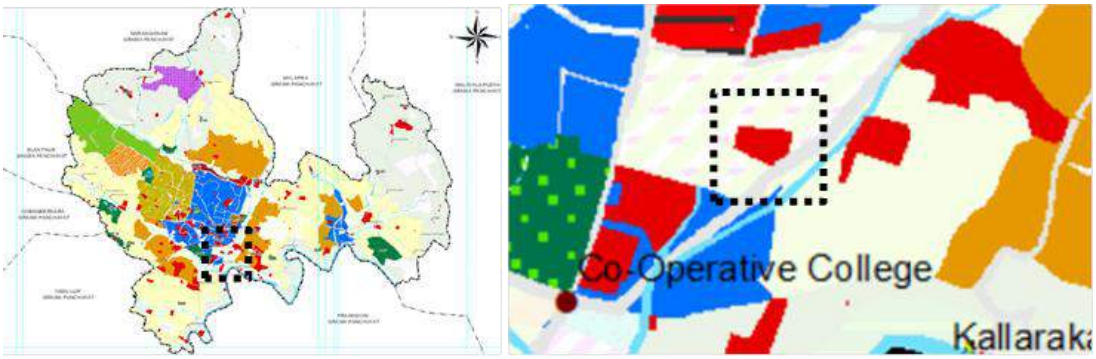


Figure 37.13 Location of proposed Modern Slaughter House



Figure 37.14 Proposed Modern Slaughter House Project

37.1.2.3 Rooftop Farming/Urban Farms/Urban food Forest

The plan encourages the utilization of urban rooftop spaces for growing vegetables, herbs, and even small-scale livestock, as part of a broader push towards urban agriculture. Rooftops can be optimized using modern farming methods such as vertical farming, hydroponics, and aquaponics, effectively transforming underutilized spaces into productive green areas. This approach promotes local food production, improves urban sustainability, and contributes to food security while enhancing the aesthetic and environmental quality of the built environment. The addition of rooftop greenery helps reduce the urban heat island effect, improves building insulation, lowers ambient temperatures, and enhances the overall microclimate, making cities more climate-resilient and livable. Existing roof top farming shows in Figure 37.15



Figure 37.15 Existing roof top farming in Town Center

37.1.2.4 Local Food Processing and Value Addition

The proposal aims to support small-scale local food processing centres by incorporating provisions in zoning regulations and providing necessary infrastructure for the processing and preservation of locally grown produce. These centres will help in adding value to agricultural products, reducing food waste, and generating employment and economic opportunities within the community, thereby strengthening the local agricultural economy and promoting sustainable practices.

Developing of local food supply chains that are less dependent on large-scale, regional agriculture. This reduces carbon footprints, supports local economies, and ensures more stable access to fresh produce.

37.1.2.5 General Proposals under Agricultural Sector

i. Soil Health Programs

Implement programs to restore soil health through organic farming practices, reducing the reliance on synthetic fertilizers and pesticides. This can also improve biodiversity and increase crop yield in urban farms.

ii. Agri-Tech Innovation Hubs

This proposal aims to support the establishment of Agri-Tech Innovation Hubs that focus on the development and implementation of agricultural technologies such as automation, hydroponics, and data-driven farming techniques. These hubs will serve as collaborative spaces for urban farmers, tech companies, and educational institutions (schools and colleges), promoting innovation, research, and practical applications that enhance agricultural productivity, sustainability, and efficiency in urban farming systems.

iii. Agricultural Education in Schools

This proposal advocates for the integration of agricultural education into the curriculum of local schools to foster early awareness and appreciation of sustainable farming practices, food security, nutrition, and ecological responsibility. It includes classroom learning, hands-on gardening, and site visits to farms and agri-based projects, encouraging students to connect with nature and understand the value of local food systems.

iv. Workshops and Public Engagement

Host workshops, public talks, and hands-on learning opportunities to raise awareness about urban farming and food sustainability. This could include cooking classes with local produce, gardening workshops, and urban farming tours aimed at building knowledge, encouraging healthy food habits, and strengthening community involvement in sustainable food systems.

v. Weather Induced Risk Management

1. Installations of automatic weather station to support climate-based farming decisions and provide early warnings during natural calamities, helping farmers take preventive measures.
2. Inclusion of all crops in Crop Insurance Schemes offered by Central, State and LSGI, ensuring broader protection and financial security for farmers against crop losses due to adverse weather conditions.

vi. Strengthening of institutional framework

The proposal aims to modernize and strengthen the agricultural sector by upgrading the Krishi Bhavan into a Smart Krishi Bhavan, while promoting agro parks, post-harvest management, and cold-chain systems to improve processing, storage, and distribution. It also focuses on establishing Agri Knowledge Centres and Farm Schools for training and research, setting up Farmers Service Centres for direct farmer support, and encouraging agricultural innovation through incubation centres and start-ups.

vii. Enhancing Agricultural productivity sustainably

The proposal emphasizes climate-resilient agricultural development through adaptive cropping practices, improved irrigation and bund construction in coordination with relevant departments, and municipal-supported solar or sheet fencing to prevent wild animal intrusion. It includes the experimental use of bio-pest repellents, crop suitability assessments, and productivity zoning to enhance underperforming lands. Integrated farming and agroforestry are promoted using improved seeds, precision farming, and targeted input delivery, along with efforts to enhance agrobiodiversity by cultivating climate-resilient and traditional crops while reducing dependence on high-risk crops (excluding paddy). Additionally, it advocates for collective farming and capacity-building through training on climate-resilient practices.

37.1.2.6 General Proposals under Animal Husbandry

i. Animal disease control and prevention programme

1. Improve vaccination coverage of livestock for new and emerging diseases.
2. Develop surveillance and emergency preparedness systems – advisories to be provided to all farmers owning livestock.
3. Promote community-based animal healthcare services.
4. Promotion of the One Health platform.

ii. Promote fodder grass cultivation as sustainable crops

Promoting fodder grass cultivation can significantly improve livestock farming by ensuring a reliable and cost-effective source of animal feed, and helps in improving soil health and biodiversity. It can be achieved by offering subsidies for purchasing high-quality fodder grass seeds, fertilizers, and irrigation equipment. This can help farmers make an initial investment in fodder grass cultivation. Also promote drought-resistant varieties of fodder grasses, such as Napier grass or elephant grass, that require less water compared to conventional crops, making them ideal for dry or water-scarce regions. Also promote to introduce modern techniques for growing and managing fodder grass, such as hydroponics for fodder production or using organic methods to improve yields without the need for expensive chemical inputs

iii. Promote poultry farming within the Town

To enhance local food security, generate employment, and boost the local economy by encouraging small-scale, sustainable poultry operations in urban and peri-urban areas, which can be achieved through capacity building via workshops and online resources, providing financial support through loans and municipal grants, and creating strong market linkages to ensure consistent demand for locally produced eggs and meat.

iv. Veterinary Services and Health Inspections

Create accessible veterinary services by Veterinary Hospital and supporting administrative level offices that cater to urban livestock, ensuring animal health and safety. Regular health inspections would help minimize disease outbreaks and maintain safe food supplies for urban communities.

v. Vertical Farming for Livestock

Similar to vertical farming for crops, urban spaces could explore vertical farming techniques for raising small livestock. For example, multi-tiered systems for poultry farming or even aquaponics that combine fish farming with plant cultivation can be adapted for urban environments.

In high-density areas, rooftops can be used for small-scale livestock farming. Urban rooftop systems could use as small poultry promoting local food production without occupying valuable ground space.

vi. Backyard Livestock Programs

Encourage residents to raise small numbers of livestock, such as chickens dog, birds, rabbits, in their backyards. This could help supplement their economic needs, reduce food insecurity, and create a more resilient urban food system.

vii. Manure Recycling Programs

The Manure Recycling Program aims to promote sustainable agriculture and waste management by collecting and composting animal manure for use in urban farming and landscaping. Through the establishment of community composting centers, organized manure collection systems, and the promotion of safe composting practices, the program will convert waste into valuable organic fertilizer. It supports soil health, reduces dependency on chemical fertilizers, and fosters a circular economy. The initiative also includes quality assurance, distribution to urban farmers and public green spaces, and awareness campaigns with incentives to encourage participation from farmers and citizens.

x. Research Institutions and Innovation Hubs

Establish urban agriculture research centres that focus on animal husbandry practices suited for urban environments. These hubs can foster innovation in areas like animal welfare, breeding, and feeding practices, adapting them for city settings.

xi. Breeding strategies

There is a need to identify and strengthen local/ endemic breeds that have well adapted to local climatic stress and feed sources. As currently, there are more high-yielding, cross-bred livestock's, there is a need to improve livestock genetics through crossbreeding with heat and disease-tolerant local breeds, so that future bloodlines can tolerate climate stress while still being highly productive.

viii. Processing and Storage Facilities

This initiative proposes the development and support of local infrastructure for the processing and storage of animal products, including slaughterhouses, milk processing units, and facilities for producing value-added items such as cheese, yogurt, or packaged meat. By improving local capacity for hygienic handling, preservation, and value addition, these facilities help reduce post-harvest losses and food waste, enhance food safety and quality, and generate employment and economic benefits for farmers and local entrepreneurs. The initiative also contributes to strengthening local supply chains and ensuring better access to fresh and processed animal products.

ix. Public Awareness Campaigns

Offer public education on the benefits of local animal husbandry, including how it contributes to food security, sustainability, and local economies. Public programs can raise awareness about urban livestock management and health considerations.

xii. Climate resilient livestock production

1. Improving micro-climate in cattle sheds for alleviating heat stress. Modification of cattle sheds with green roofs, white paints, water sprinkler etc.
2. Ensure animal shelters are climate resilient (particularly flood proofed).
3. Establishment of fodder banks and provisioning of subsidized fodder to marginalized farmers
4. Increase coverage of livestock under climate-based insurance schemes.

37.1.3 Industry

Presently no major industrial units are functioning in Pathanamthitta Municipal area and the industrial activities are limited to few MSME units. Proposals for the industrial sector in the town aim to balance the needs of both

agriculture and industry while ensuring sustainable development, environmental protection, and community well-being. The following are the major proposal in the industrial sector to develop and support the economy of the town.

37.1.3.1 Industrial Estate

Industrial Estate is proposed to accommodate manufacturing, processing, warehousing, and related support services, with shared infrastructure and regulatory provisions to ensure organized, efficient, and sustainable industrial growth. This project proposal aimed to reducing urban-industrial conflicts, boosting local employment, and fostering economic development, to establish a well-planned industrial zone with modern infrastructure, to attract Micro, Small, and Medium Enterprises (MSMEs) and large industries, to generate employment and boost the regional economy and to reduce environmental and social impacts by relocating industries to a designated area.

Industrial Estate project is proposed in the south eastern part of the town near Kottappara.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.16 & 37.17.

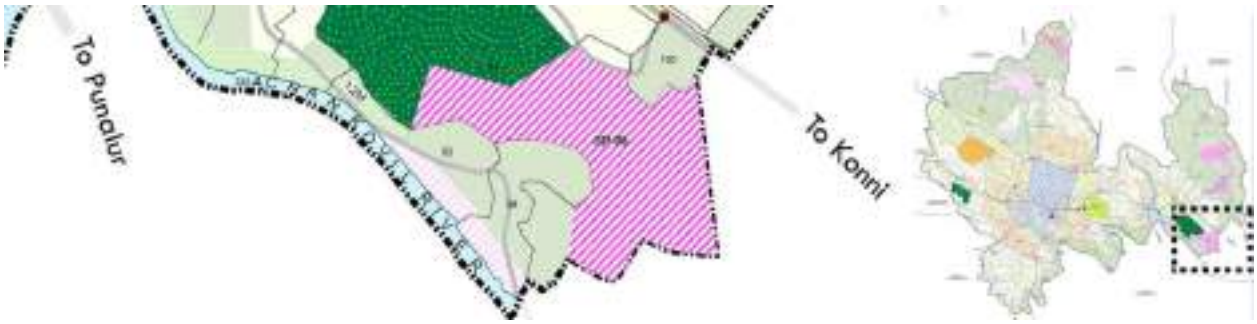


Figure 37.16 Location of proposed industrial estate project (SP06) in proposed land use map



Figure 37.17 Proposed Industrial Estate (A conceptual 3D model)

37.1.3.2 Innovation Village

Innovation Village project is proposed as Smart Ecosystem for start-ups, research, and digital growth in the town. This project proposal includes IT hub, start-ups, and research centre strategically designed in an areas that fosters innovation, technology, entrepreneurship, research and collaboration. This proposal aims

to become a catalyst for knowledge-based economic growth.

Innovation Village project is proposed in the North-western part of the town near Ottukalmuruppu. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.18 & 37.19.

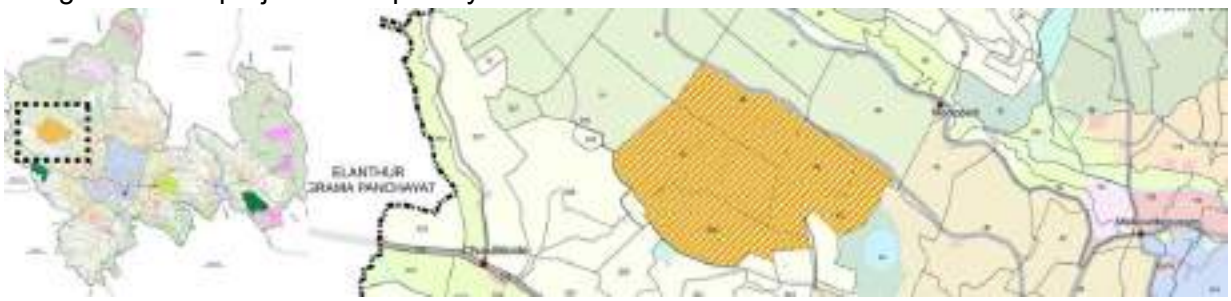


Figure 37.18 Locations of Proposed Innovation Village



Figure 37.19 Proposed Innovation Village (A conceptual 3D model)

37.1.3.3 General Proposals in Industrial sector

i. Agro-Industry Promotion

Promotion of industries that focused on agriculture, such as food processing, dairy products, agrochemicals, packaging, and bioenergy production (e.g., biogas or biofuels). This will add value to agricultural produce and create new economic opportunities for farmers. A dedicated zone is proposed for the promotion of agro-industries in Peringamala and Anchakkala Wards.

ii. Green Manufacturing

Encourage industries to adopt environmentally friendly practices, such as waste recycling, energy-efficient technologies, and reduced water usage. Offer incentives for businesses that utilize renewable energy sources like solar or wind power.

iii. Logistics Hubs

Development of logistics hubs or distribution centres near agricultural areas with good connectivity for the storage and transport of agricultural products. This will streamline the supply chain, ensuring that raw materials can be processed and distributed efficiently.

iv. Skills Training and Education

Provide training programs that align with the needs of both the industrial and agricultural sectors. Offering vocational training in agro-processing, machinery operation, and other industrial skills can help locals transition into new job opportunities without abandoning their agricultural roots.

v. Climate-Resilient Infrastructure

Ensure that industrial buildings and infrastructure are designed to be resilient to climate change impacts, such as extreme heat, flooding, or drought. This includes flood-resistant designs, efficient energy systems, and disaster response plans.

vi. Air and Water Quality Monitoring

Implement strict monitoring of air and water quality in industrial areas to ensure they meet

environmental standards. This will help mitigate negative impacts on both farming activities and local residents' health.

37.1.4 Tourism and Recreation

Pathanamthitta town holds significant potential for Pilgrim, Heritage, Eco, and Leisure tourism due to its strategic location, ecological richness, and cultural heritage. Being a key transit and service center for Sabarimala pilgrims, especially during the Mandala-Makaravilakku season, the town experiences a major influx of visitors. Its unique natural features, such as steep contours, rock hills, and eco-friendly spaces, enhance its attractiveness. The proposed interventions focus on developing supporting infrastructure and amenities to improve the tourist experience, ensure environmental sustainability, and promote inclusive economic development through tourismRecreation activities of the town are essential to create vibrant, healthy, and sustainable communities. The following proposed recreational projects improve residents' quality of life by providing opportunities for urban health, leisure and fitness.

37.1.4.1 Chuttippara Adventure Tourism Base Camp

As Chuttippara is developing as Tourism Adventure Park, there are lot of amenities required to support for the success of that project, like Parking, accommodation facilities, Food and Sanitation facilities, Storage and equipment area, Rental Services like trekking poles, sleeping bags etc., Medical facilities, Activity areas such as Bonfire Area, Outdoor Games or Sports Area, Adventure Activity Zones, Power supply facilities, Common areas and security features etc. are needed for supporting Chuttippara Adventure Park.

As Chuttippara is a hill destination, to accommodate above mentioned supporting facilities, a tourism base camp is proposed at a walkable distance from the proposed chuttippara Adventure Park. Fire Station and District jail are located now in this area which are to be relocated.

The Chuttippara Adventure Park and base camp consist of three zones. Zone 1 is the Chuttippara Hill area which is the proposed as Adventure Park. Zone 2 is base camp area in District jail location which includes the multi-level parking by process of retrofitting of existing buildings and Ticket counter for Adventure Park, cable car and all other activities. Zone 3 is base camp area in Fire Station location which includes Parks, shops, restrooms, refreshment areas, cable car entry areas, etc.

Location of proposed base camp for Chuttippara Adventure Park (Figure 37.20) and proposed model 3D view is shown in Figure 37.21.

Project land Area : 2.03 Acre
Survey Numbers: 251
Land Ownership: Government



Figure 37.20 Location of proposed Base Camp for Chuttippara Tourism Adventure Park (PS07) in proposed land use map



Figure37.21 Proposed Chuttippara Base Camp (A conceptual 3D model)

37.1.4.2 Municipal Convention Centre & Tourist home at Edathavalam

The proposed Convention Centre and Tourist Home project envisions the development of a modern facility that functions both as a hub for business events and as accommodation for visitors. The High-tech Convention Centre is designed to host large-scale events such as conferences, exhibitions, shows, seminars, and other gatherings, equipped with advanced technological infrastructure and services to enhance both the attendee and exhibitor experience. These centres combine cutting-edge technology, sophisticated design, and flexible spaces to meet the evolving needs of the conference and event industry.

Tourist Home is proposed for accommodating local and pilgrim tourist. The surrounding open area can be used as a multi open space/ fair ground. The facility also includes amenities like restaurant, travel desk and local tour packages. This project is proposed to be developed within Edathavalam area on and owned by the municipality The Municipal

Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.22 & 37.23

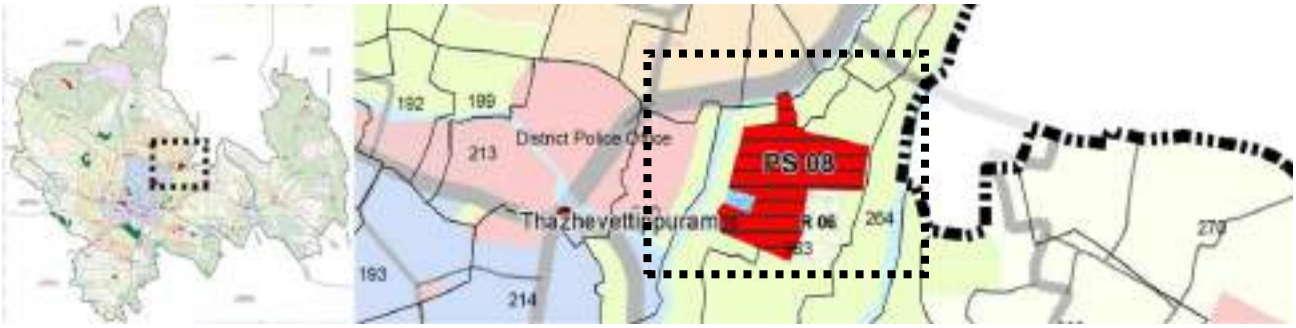


Figure 37.22 Locations of Proposed Municipal Convention Centre & Tourist home





Figure 37.23 Proposed Conceptual Image of Municipal Convention Centre & Tourist home

37.1.4.3 District Stadium & Sports Complex Redevelopment

Redevelopment of KK Nair stadium near ring road is a significant project in the recreation sector of town that can enhance the town's sports culture, attract visitors, and serve as a hub for community events. The renovation focuses on modernizing the infrastructure, improving accessibility, ensuring sustainability and flood resilience

The proposed redevelopment of KK Nair Stadium to District Stadium include nine-lane synthetic track, a ground for cricket and football matches inside the stadium, swimming pools, court for roller skating, sports office complex, sports hostel for students and pavilions. The stadium shall be redeveloped incorporating flood prevention technologies like underground sub-aeration systems that can prevent flooding by actively removing accumulated water. The Location of proposed District Stadium project is shown inFigure37.55.

Project land Area : 15.39 Acre
Survey Numbers: 29(p),30(p),151(p),1529p),166(p),167(p)
Land Ownership: Government and Private

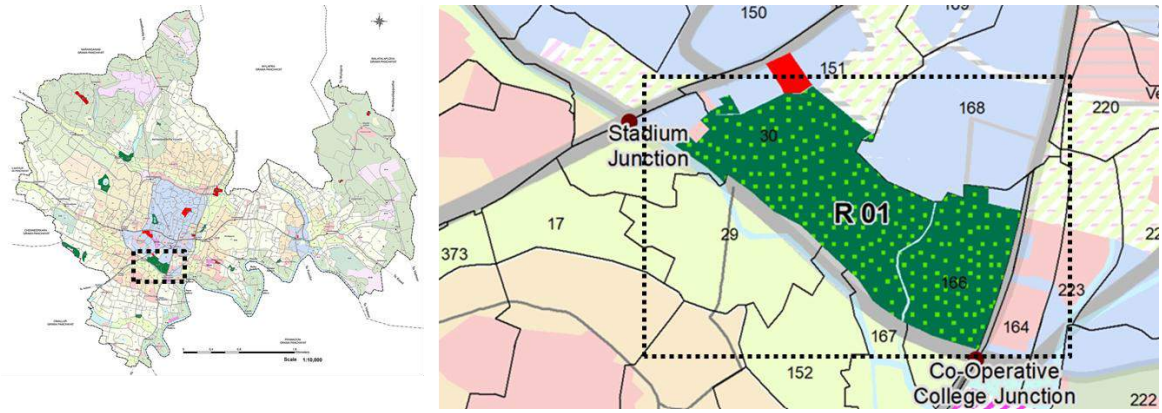


Figure 37.24 Locations of Proposed District Stadium & Sports Complex

37.1.4.4 Subala Park Redevelopment

Subala Park project is the existing project which is located at Vettipuram area in the town. It is a convention centre cum Public Park project which is under Scheduled Caste Development Department. The existing area of the park is 5.1acre and proposed park area is 6.61 acre. The construction of the convention centre has been completed, while the construction of the park has yet to begin. Location of Subala Park is shown in Figure 37.25.

Project land Area : 11.71 Acre
Survey Numbers: 91,39(p),100(p)101(p)
Land Ownership: Government & Private



Figure 37.25 Map showing Subala Park (R02) in proposed land use map

37.1.4.5 Happiness Park

A Happiness Park is proposed as an inclusive and accessible public space aimed at enhancing mental well-being, social connection, and emotional balance among its users. Unlike traditional parks that focus mostly on recreation or greenery, a happiness park incorporates elements that stimulate joy, relaxation, mindfulness, and community engagement. It's a wellness-oriented public park created with the intention of increasing the happiness quotient of the Pathanamthitta town. It promotes both physical health and emotional wellness through design, activities, and atmosphere. Along this project, town can celebrate 'Happiness day' once in a month in the park in which local artists and craftsmen may be given opportunity to perform.

Happiness Park is proposed along with the municipal bus stand renovation Project. The land in the eastern side of the Municipal bus stand is proposed as Happiness Park. Location of proposed Happiness Park and its proposed layout and features are shown in Figures 37.26 & 37.27 respectively

Project land Area : 1.19 Acre

Survey Numbers: 259(p),261(p) & 262(p)

Land Ownership: Government



Figure 37.26 Location of proposed Happiness Park (R 03) in proposed land use map



Figure 37.27 Proposed Layout and features of Happiness Park

37.1.4.6 Urban Central Park

An Urban Central Park is a key green infrastructure initiative designed to serve as a recreational, ecological, and social hub of the town. It's a major, centrally located open space that's not just for greenery—but also a driver of urban transformation, sustainability, and improved quality of life. It's a proposed as large-scale Public Park at the centre of the urban area, strategically located to ensure easy accessibility from various parts of the town. It integrates nature with urban life and acts as a multi-functional space for the town's residents.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.28 & 37.29.



Figure 37.28 Location of Urban Central Park in proposed land use map



Figure 37.29 Proposed Urban Central Park (A conceptual Model)

37.1.4.7 Aqua Rock Adventure Park

This project proposes converting an abandoned quarry having ponds with scenic beauty into an adventure park to revitalize the dormant space and boost adventure tourism in the town. This project is proposed in the Kolavarikkappara area in the Karimbanakuzhi and Churulikkode wards of town. It is proposed as a highly attractive modern tourist park that captivates tourists by combining modern water sports activities and cliffs with adventure activities such as rock climbing.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.30 & 37.31.



Figure 37.30 Location of proposed Aqua rock Adventure Park (R05)in proposed land use map



Figure 37.31 Proposed Aqua Rock Adventure Park (A conceptual 3D model)

37.1.4.8 Museum & Art Gallery

Museum & Art Gallery is proposed to preserve the cultural diversity and art forms of Pathanamthitta, and to create a sense of connection with heritage and art by presenting ancient & contemporary artworks and visual art performances to the new generation. This project is proposed in connection to the innovation village proposal.

This proposal includes Exhibitions of local heritage art, Modern & contemporary artwork, Art workshops & seminars, Exhibition Halls and Cafe & Gift Shop. The adopted design criteria for proposed Museum & Art Gallery focuses on blending architecture with the landscape, minimizing environmental impact, and enhancing the visitor experience.

Project land Area : 8.45 Acre
Survey Numbers: 42
Land Ownership: Government

1. Minimal disturbance to the terrain by avoiding major excavation or blasting of rocks.
2. Design around existing rock formations and using them as part of interior/exterior spaces.
3. Embed the structure within the landscape by using the natural topography to guide layout and flow.
4. Eco-friendly and sustainable materials that blend into the rocky environment
5. Lightweight or modular construction techniques to reduce on-site impact.
6. Green roofs or rooftop gardens to reduce heat and visual impact.
7. Low-impact construction methods and proper site restoration post-build.

Location of proposed Museum & Art gallery and its proposed concept is shown in Figures 37.32& 37.33 respectively



Figure 37.32 Location of proposed Museum & Art Gallery (R 06) in proposed land use map



Figure 37.33 Proposed Museum & Art Gallery (A conceptual Model)

37.1.4.9 Kottappara Hill View Park

Kottappara Hill View Park is a proposed park located on Kottappara rocky hill in ward 19 that offers scenic views of the surrounding landscape. These parks are designed to attract tourists, provide recreational spaces, and preserve natural terrain. This project helps to protect the nature, suitable

Project land Area : 46.47 Acre

Survey Numbers: 91(p)

Land Ownership: Government

for families and adventure tourists alike. The Location and a conceptual model of Kottappara Hill View Park is shown in Figures 37.34 and 37.35



Figure 37.34 Location of proposed Kottappara Hill View Park



Figure 37.35 Location and conceptual view of proposed Kottappara Hill View Park (R07)

37.1.4.10 Neighbourhood Parks

Four small to medium sized Neighbourhood Parks are proposed in Azhoor East, Valamchuzhi Kumbazha South and Poovanpara wards to serve the local community living nearby—usually within walking distance (400–800 meters or 5–10 minutes' walk). Location of proposed 4 Neighbourhood Parks and the proposed

concept is shown in Figures 37.36 & 37.37 respectively

Project land Area : 7.240 Acre

Survey Numbers: 27(p), 36(p), 137(p), 138(p), 245(p), 85 (p)

Land Ownership: Government



Figure 37.36 Map showing location of proposed 4 neighbourhood parks (R 09) in proposed land use map



Figure 37.37 Proposed Neighbourhood Park (A conceptual Model)

37.1.4.11 Mannarmala View Point

Mannaramala Hill, located near Mannaramala Devi Temple on the western boundary of Pathanamthitta town, offers stunning panoramic views of Pathanamthitta, Kadammanitta, and Kozhencherry. Especially vibrant during the monsoon season, the hill is covered in lush greenery and occasional waterfalls. As one of the highest and most serene spots in the municipality, Mannaramala has great potential for promoting pilgrim tourism and eco-tourism. The presence of the Akashavani Radio Station adds to the landmark value of the location. The proposed components of the Mannarmala View Point include Watch tower, Viewing deck and Glass Bridge. The Location, proposed conceptual images are shown in Figure 37.38 & 37.39

Project land Area : 0.29 Acre

Survey Numbers: 54

Land Ownership: Private



Figure 37.38 Location Map for Proposed Mannarmala View Point



Figure 37.39 Existing Location and conceptual view of proposed Mannaramala View Point (R 10)

37.1.4.12 Vanchipoyka Waterfalls Viewing Deck

This proposal envisions the development of a dedicated viewing deck at the Vanchipoyka Waterfalls to promote eco-tourism and enhance visitor experience while safeguarding the site's natural charm. The viewing deck will provide a safe and aesthetically pleasing vantage point for tourists to enjoy the scenic beauty of the waterfalls. It is designed to encourage environmental awareness and support sustainable economic growth through increased tourism-related activities. This project is proposed as special project (SP 13) as it is proposed in private land. The proposed LocationisshowninFigure37.40



Figure 37.40 Location of proposed vanchipoyka waterfalls viewing duck (SP13

37.1.4.13 Town Square

Town square is a central open space in the town, proposed for community gatherings, public events, recreation, and social interaction in the heart of the town. It is proposed at Aban Junction in Pathanamthitta Town, at the intersection of TK Road and Ring Road. The project is located close to the Public Transport Terminals in the Town. The project aims to enhance the character of the town centre, fostering a vibrant and welcoming space. It also includes the revitalization of junction into a Town Square, prioritizing pedestrian access and community engagement by incorporating a public gathering space with an open stage. The Location and proposed design of Town Square is shown in Figure 37.41and 37.42.

Project land Area : 0.75 Acre
Survey Numbers: 216(p)259(p)
Land Ownership: Government

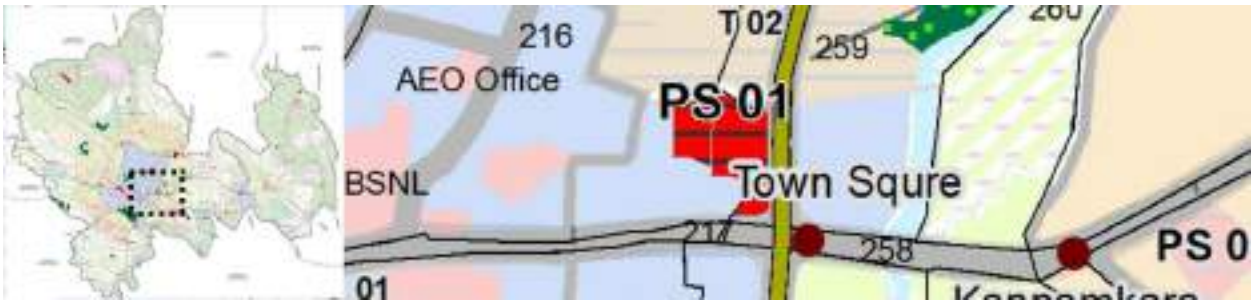


Figure 37.41 Locations of Proposed Tow n Square

SOCIAL ELEMENTS	ECONOMIC ELEMENTS	ENVIRONMENTAL ELEMENTS
Sri. KK Nair & Justice M.Fathima Beevi Memorial Square	Open stage - Social Gathering, Cultural Events, Political Meetings	Urban Green Space
Open stage- Social Gathering, Cultural Events, Political Meetings	Digital display board	Landscape Interface - Street Furniture, Green Walls- Flowering Plants And Creepers, Proper Drainage Efficient Space Utilisation, Breathing Area For Town
Pedestrian Walkway- Disabled Friendly (Tactile Paving, Wheelchair Accessible, vehicular Entry Restricted)	Kiosks	Risk Aspect Considerations - Urban Green Spaces For Rainwater Recharging And Fresh Air, Shading To Reduce Urban Heat
Street Furniture	Employment generation	Proper Waste Management
Selfie Points	Energy management - Solar installations for power generation, Self-sustained town square	Energy Management - Solar Installations For Power Generation, Self-Sustained Town Square
Safety Aspects - CCTV Camera Surveillance Proper Lighting (Wall Mount Lighting And Lamp Pole), Protective Fencing, Tactile Paved Pathways		

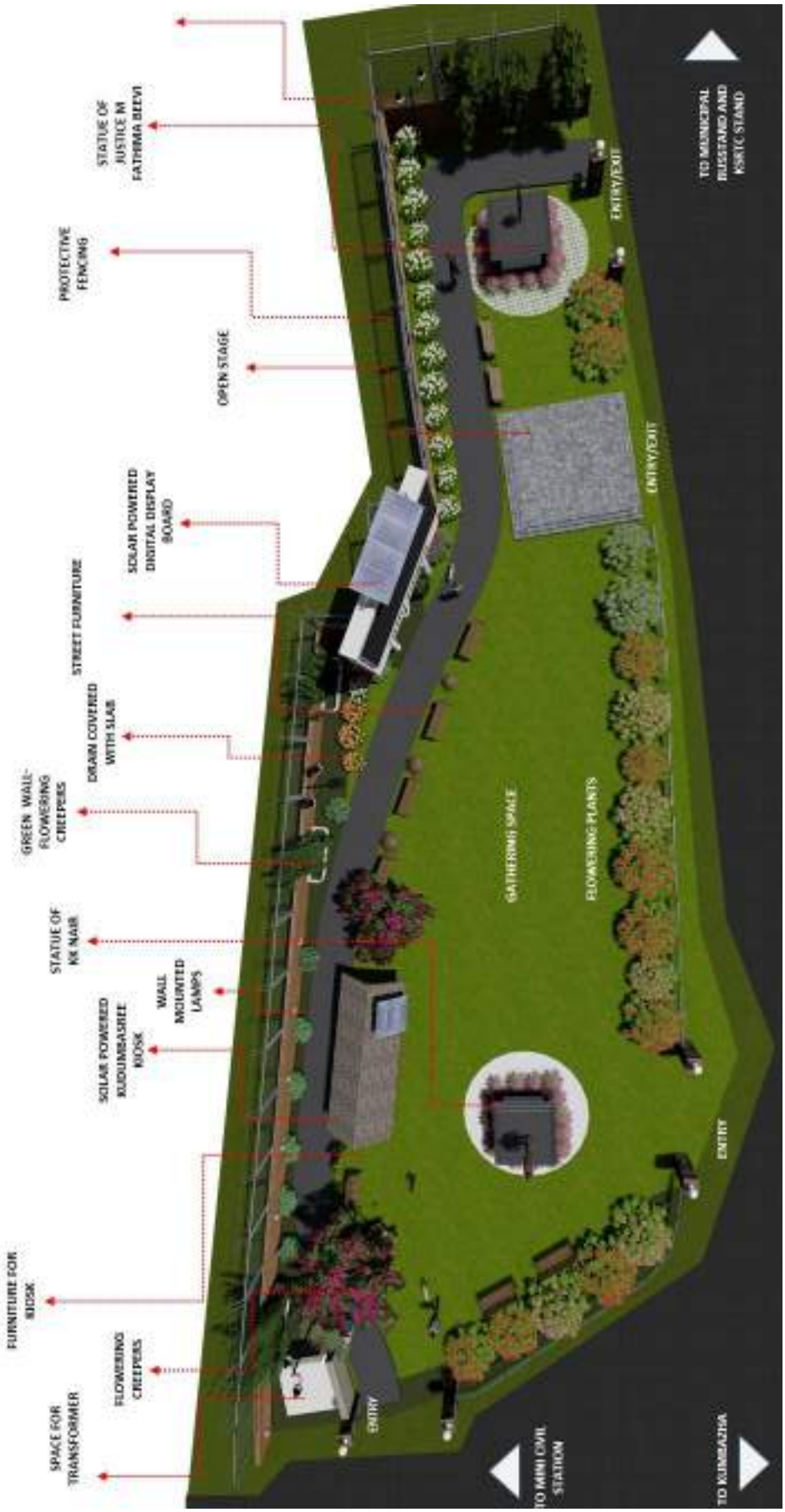


Figure 37.42 Proposed Town Square Layout and Concept

37.1.4.14 Holistic Neighbourhood Hub

It is a large-scale public park that serves not just one neighbourhood but district level—with a focus on holistic well-being, nature, recreation, and community engagement. This park is proposed to integrate into the town to improve urban liveability, promote health, and strengthen social ties. This park is big enough to serve more than one neighbourhood and it's proposed as shared urban asset. The project aims beyond playgrounds or green lawns. It focuses on physical, mental, emotional, and social well-being through thoughtful design and programming.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.67 & 37.68.



Figure 37.43 Proposed Holistic Neighbourhood Park (PS05) in proposed land use map



Figure 37.44 Proposed Holistic Neighbourhood Park

37.1.4.15 Gate Way land mark

A gateway landmark is more than a physical entrance - it's a symbolic and functional feature that gives a town a unique identity and sets the tone for visitors and residents alike. Currently, Pathanamthitta town lacks a visually distinct entry point that reflects its cultural significance and aesthetic appeal. A Gate way Landmark is proposed at Kumbazha Junction, as it serves as both the entrance to the Pathnamthitta municipality and a key turning point for pilgrims travelling to the major pilgrimage sites in the district, such as Sabarimala, Malayalappuzha, Erumeli and Maramon.

This proposal will creates a Sense of Identity, Defines entry & orientations, Boosts tourism appeal of the town, Stand as a symbol of civic pride and Enhances urban design. It is proposed at the entry point close to the bridge near Kumbazha that should be given visual prominence by the construction of a gateway land mark.

37.1.5 Water supply

Ensuring a reliable, sustainable, and high-quality drinking water supply is essential for Pathanamthitta town. Well-planned water management systems not only provide clean water to residents but also ensure long-term sustainability and resilience to climate challenges. Here are some projects that can enhance the drinking water sector of a town.

37.1.5.1 Augmentation of existing water supply scheme

Under AMRUT project, a conventional type water treatment plant of capacity 20MLD is proposed to be constructed at the available land of existing water treatment plant of Kerala Water Authority at Pampoorippara. It is also suggested to provide new water intake system at the existing intake well for sufficient flow of water into the well from the river. Additional coverage of distribution systems in various wards are to be provided by giving water connections.

37.1.5.2 Water Supply and Distribution System Improvements

The proposal focuses on improving water access in Pathanamthitta by expanding and modernizing the distribution network, replacing old pipelines, and ensuring a leak-free system. Smart meters and real-time monitoring will help track usage, detect leaks, and reduce wastage. Pressure-regulating systems will prevent bursts and improve efficiency. In hilly areas, abandoned quarries in locations like Vanchipoyka, Pallikkuzhi, Myladumpara, Poovanpara and Ottukalmuruppu can be developed into decentralized water sources with rainwater harvesting and filtration units. These will be integrated into the local network to provide potable water. Community-led water management models will encourage local participation in maintaining systems and ensuring fair distribution.

37.1.5.3 Water Treatment and Purification Systems

Build or upgrade existing water treatment plants to ensure high-quality, potable water. These plants should incorporate state-of-the-art technologies like reverse osmosis, UV filtration, and activated carbon filtration to remove contaminants and pathogens. Remote areas, develop small-scale, decentralized water treatment systems like bio-sand filters, solar-powered purification units, or community water purification stations.

37.1.5.4 Water Storage Solutions

Construct elevated water storage tanks or reservoirs at strategic points identified by Kerala Water Authority (KWA) within the town to ensure a steady water supply with adequate pressure, particularly during peak demand periods.

37.1.5.5 Water Conservation Initiatives/ Sustainable groundwater management projects

Water conservation and sustainable groundwater management initiatives aim to balance water demand with long-term availability while safeguarding water quality and ecological health. Key measures include aquifer recharge projects through decentralized rainwater harvesting in public and private spaces, supported by filtration systems to reduce dependence on the centralized supply. Recharge basins, trenches, and proposed retention ponds will capture storm water and enhance groundwater recharge. Public awareness campaigns will promote responsible water use across communities, schools, and institutions. Additionally, policies will be introduced to regulate groundwater extraction, prevent overuse and contamination, and encourage artificial recharge through infiltration pits and ponds.

37.1.5.6 Resilience to Climate Change

In Pathanamthitta town, houses located in flood-prone areas currently lack piped water

supply; a project should be initiated to ensure 100% coverage at the earliest. Drought preparedness plans must include water rationing, alternative sources, and public awareness on conservation. Promote water-efficient farming methods like drip irrigation and rainwater harvesting to reduce potable water use in agriculture. Develop climate-resilient water infrastructure by enhancing storage, ensuring sustainable groundwater management, and adopting resilient treatment technologies.

37.1.5.7 Protection of Existing Water Resources

Existing water resources must be protected from pollution to ensure future availability. All the town water bodies should be identified by survey numbers, their boundaries demarcated, and protected from encroachment. Any existing encroachments must be legally removed. Construction around these areas should be strictly regulated to preserve natural catchments and flow, maintaining ecological and hydrological integrity, along with proper maintenance of public wells.

37.1.5.8 Alternative source for Future

The Kerala Water Authority and Irrigation Department may jointly assess the feasibility of using the Maniyar Reservoir under the Pampa Irrigation Project as a water source for Pathanamthitta Municipality. They may also explore the construction of a check dam near Parakkadav Bridge to maintain minimum water levels in Kannankkara Thodu for drinking water supply.

37.1.6 Solid waste Management & Sewerage System

Effective waste management requires a systematic and integrated approach, which includes waste collection, segregation, disposal, recycling, and community engagement. Below are some key proposals for solid waste management & sewerage system in a town.

37.1.6.1 Preparation and Implementation of Solid waste Management Plan

An effective Solid Waste Management (SWM) Plan is essential for sustainable waste handling in the town. It should cover collection, segregation, disposal, recycling, and reduction, along with clear roles, timelines, budget, and community participation.

37.1.6.2 Waste Segregation and Collection Infrastructure

Improve waste collection efficiency by promoting source segregation and optimizing collection methods. Residents should be educated to separate organic, recyclable, and hazardous waste at the source. Door-to-door collection of segregated waste must be ensured across all residential, commercial, and government areas. Daily Street sweeping to all major roads of the town as daily basis, and dedicated systems must be established for collecting bulky, electronic, and hazardous waste.

37.1.6.3 Optimization of Collection Routes and Frequencies

Improve waste collection efficiency by optimizing routes and schedules using GIS technology, considering population density, traffic, and waste generation. Adjust collection frequency based on waste type and local needs. Ensure trucks operate at full capacity with minimal downtime and efficient scheduling.

37.1.6.4 Upgrading Collection Infrastructure

Modernize waste collection equipment and infrastructure to improve efficiency and reduce environmental impacts. Upgrade waste collection by replacing old vehicles with efficient low-emission or electric models, using compactors to increase storage and reduce trips, and implementing mobile apps for residents to schedule pickups, track timings, and report issues.

37.1.6.5 Individual bio degradable waste management systems

This proposal aims to promote source-level treatment of biodegradable waste by encouraging all households, apartments, institutions, and government offices to adopt effective methods such as ring composting, biogas plants, bio-digester pots, and bio-composter bins. Additionally, the Municipality will ensure that biodegradable waste collected from commercial establishments by private agencies is properly managed without being dumped on land or into water bodies.

37.1.6.6 Decentralized bio degradable waste management systems

As the existing Thumbormozhi units are insufficient to handle the biodegradable waste generated in the town, the proposal includes the establishment of two new Thumbormozhi aerobic composting units in the Edathavalam area, along with the upgradation of the existing Kumbazha composting facility by adding two additional units. Biodegradable waste from town market is addressed by the proposal of upgradation of existing market to Modern Municipal Market which is mentioned in the Trade and Commerce Sector of this chapter.

37.1.6.7 Centralised waste management systems

Pathanamthitta, being a base station for the Sabarimala pilgrimage and considering future waste generation and sanitary waste management, requires a centralized waste management system in the next phase. This may include a modern biomethanation plant, Organic Waste Converter (OWC) unit, and sanitary waste incinerator. The project can be implemented on the land proposed for the modern slaughterhouse and crematorium.

37.1.6.8 Extension of RRF Facility

The existing waste transfer and sorting stations at the private bus stand area lack sufficient capacity to handle the town's plastic waste. There is also inadequate space to store baled or shredded plastic. To address this, it is proposed to extend the RRF facility on municipally owned land in the same area. The Municipality may initiate steps to implement the extension.

37.1.6.9 Regional Level Facility Centre

Pathanamthitta Municipality currently lacks treatment facilities for domestic hazardous waste, e-waste, construction and demolition (C&D) waste, and inert waste. Considering the volume and nature of these waste streams, regional-level treatment centres—as recommended by the Kerala Solid Waste Management Project (KSWMP)—are more appropriate. Hence, no standalone treatment units or sanitary landfill are proposed within the municipality. However, to manage these wastes until transportation, a dedicated collection and temporary storage facility is proposed as part of the Resource Recovery Facility (RRF) extension at the private bus stand area. The municipality should also coordinate with the Government of Kerala and nearby LSGIs to develop regional or district-level treatment facilities.

37.1.6.10 Waste-to-Energy (WTE) Plants

To reduce landfill use and generate power, non-recyclable waste can be converted into energy through a Waste-to-Energy (WTE) approach. This involves conducting a feasibility study to identify suitable regional or district-level locations, partnering with technology providers to establish incineration or anaerobic digestion facilities, and raising public awareness about WTE as a cleaner, sustainable alternative.

37.1.6.11 Public Awareness and Education Campaigns

To enhance community participation in waste management, implement educational programs in schools, institutions, and media to promote waste segregation and reduction. Conduct public workshops on composting and

sustainable practices, and introduce incentive schemes, such as service discounts, to reward residents who actively manage and reduce their waste

37.1.6.12 Extended Producer Responsibility (EPR) Programs

This project aims to hold manufacturers accountable for the full lifecycle of their products, including post-consumer waste, by developing municipal policies that require producers to manage waste from their products. It also encourages businesses to implement take-back schemes for used electronics, packaging, and other recyclable or reusable items.

37.1.6.13 Zero Waste Zones

This proposal aims to create zero-waste areas by promoting recycling, composting, and waste diversion. As a pilot, the ring road and its right of way will be the initial focus, with efforts to shift waste from dumping to sustainable processing, integrated with the Urban Health Corridor proposed in Chapter 36. The initiative will involve collaboration with local businesses to reduce packaging waste, promote reusable containers, and enhance recycling efforts. Continuous monitoring and reporting will ensure progress toward zero-waste goals and guide necessary improvements.

37.1.6.14 Mobile FSTP

As outlined in Chapter 17, a Combined Sewage and Faecal Sludge Treatment Plant (FSTP) has been identified as the primary mechanism for managing liquid waste in the town. However, considering advancements in modern technology and the limitations of land availability, mobile FSTP units offer a practical and flexible alternative.

Therefore, it is proposed to procure a Mobile Faecal Sludge Treatment Plant for the town. This mobile solution can be deployed at multiple locations as needed, does not require permanent land allocation, and ensures decentralized and efficient liquid waste management, especially in densely populated or spatially constrained areas.

37.1.6.15 Storm water treatment Plant at Kumbazha

The contaminated water from various part of the town is discharging to the Achankovil River on the eastern side of the intake during the rainy season via natural drainage. The polluted water negatively impacts the water supply because the Achankovil River flows from east to west. Establishing storm water treatment near the outfall of the natural drainage to the river helps reduce pollution in the river and improve the quality of the water supply.

37.1.7 Drainage

To restore and revitalize the natural drainage network across the municipality, ensuring improved storm water management, groundwater recharge, flood resilience, and ecological health. The proposed natural drainage restoration aims to revive and strengthen the municipality's existing network of streams, and low-lying water channels by restoring original flow paths, removing obstructions, desilting, and re-establishing eco-friendly buffer zones using native vegetation. This initiative will improve storm water management, reduce urban flooding, enhance groundwater recharge, and promote biodiversity by integrating nature-based solutions into urban infrastructure. The restoration will be prioritized in flood-prone and ecologically sensitive areas, creating a sustainable blue-green network that supports climate resilience and environmental health.

Drainage systems such as storm water drains, culverts, canals, and underground pipelines are designed to quickly channel rainwater away from urban areas to prevent flooding. However, design, inadequate capacity, lack of maintenance, and encroachments often lead to waterlogging and urban floods. Upgrading and integrating these systems with natural drainage is essential for flood resilience

37.1.7.1 Proposed Drainage Plan

A comprehensive drainage study was undertaken during 2024–25 under the Rebuild Kerala Development Programme (RKDP), with financial support from the World Bank, to prepare a scientific Drainage Plan for Pathanamthitta. The study was carried out by M/s Venkateshwara Enterprises, appointed through a competitive tendering process. As part of the assignment, a detailed technical assessment of the existing drainage system was conducted, including analysis of hydrological parameters, hydraulic capacity, and overall network performance. The assessment identified critical gaps and deficiencies, which form the basis for targeted drainage interventions and system improvements. The outcomes of this study constitute a key input to the Risk Informed Master Plan (RIMP) for Pathanamthitta, positioning the proposed drainage plan as a strategic and regulatory framework to enhance stormwater management, mitigate flood risks, and promote sustainable, climate-resilient urban development.

The proposed drainage plan for Pathanamthitta has been formulated in accordance with the guidelines of the Central Public Health and Environmental Engineering Organisation (CPHEEO), adopting a scientific approach to storm water management. Runoff has been estimated using the Rational Method, incorporating key parameters such as rainfall intensity, duration, runoff coefficient, and time of concentration. Rainfall data were analysed for return periods ranging from 2 to 100 years, and a time of concentration of 25 minutes was considered appropriate for the urban catchment. Although the system was initially designed for a 5-year return period, it was subsequently optimized to a 2-year return period to achieve a practical balance between hydraulic efficiency and economic feasibility.

Hydrological modelling was carried out using Storm CAD by dividing the study area into catch basins and sub-basins to estimate runoff and identify critical drainage points. Hydraulic design was performed using Manning's equation, with suitable roughness coefficients, permissible velocity limits (0.6–3.0 m/s), and freeboard provisions to ensure safe flow conditions. Cross drainage structures were designed to convey peak flows without causing afflux or flooding, incorporating silt traps to minimize clogging. Outfall locations were selected based on receiving water levels to prevent backflow. The capacity of the existing drainage network was also assessed to identify deficiencies and required improvements, resulting in an integrated and resilient storm water drainage system aligned with urban growth needs.

37.1.7.2 Key features of the Drainage Plan

The proposed drainage system is conceived as an integrated network comprising restored natural channels, newly constructed nalas, improved roadside drains, and adequately designed cross-drainage structures. The system is planned to ensure efficient collection, conveyance, and safe discharge of storm water across the municipal area. Emphasis is placed on integrating natural drainage pathways with engineered infrastructure, addressing hydraulically deficient stretches, and eliminating missing links to establish a continuous and well-functioning network. Performance is further enhanced through measures such as lining of channels to reduce hydraulic resistance, strengthening of outfalls to mitigate backwater effects, and adoption of sustainable, low-maintenance design practices. Overall, the system ensures that runoff from all sub-catchments is effectively conveyed to major outfalls, thereby minimizing flood risk in both core urban areas and peripheral zones. The details regarding Restoration of existing nalas, proposed new

nalas, Restoration of existing roadside drains,Proposed roadside drains are identified in the town along with maps are given in Annexure 37.1.

The proposed drainage plan for Pathanamthitta provides a comprehensive and scientifically designed framework to improve stormwater management by addressing key deficiencies in the existing network through nala restoration, new channel construction, upgraded roadside drains, and well-designed cross-drainage structures. By ensuring continuous connectivity across all sub-catchments and enhancing hydraulic capacity, the plan effectively reduces flood risks and waterlogging, particularly in vulnerable urban areas. Aligned with CPHEEO guidelines and incorporating sustainable and climate-resilient approaches, the plan establishes a robust and efficient drainage system capable of supporting long-term urban growth and resilience. Proposed drainage network including restoration of existing drains are shown in Figure 37.45

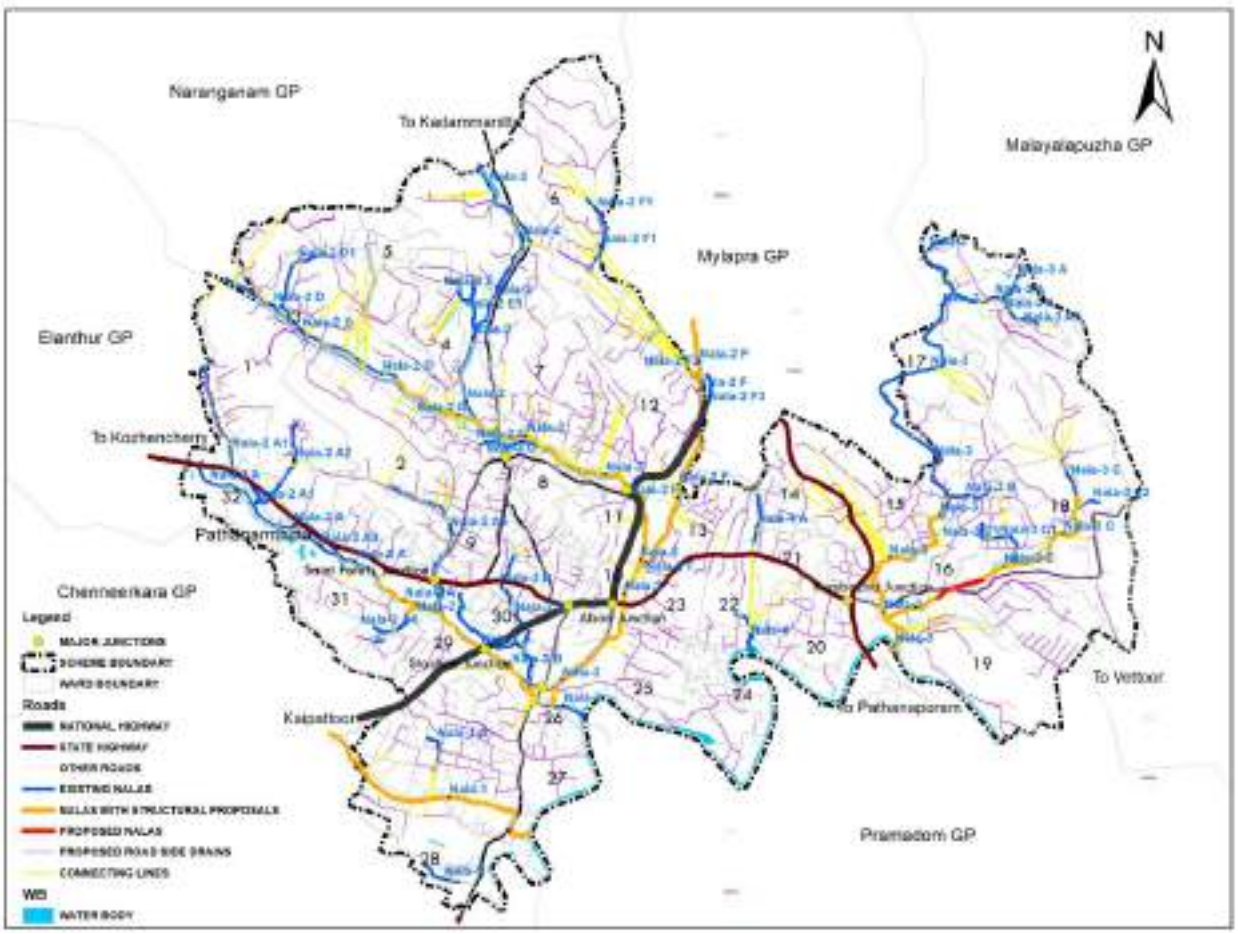


Figure 37.45 Proposed drainage network

37.1.8 Energy

Projects for the Energy sector in Pathanamthitta town are designed to promote long-term sustainability by reducing dependence on non-renewable energy sources and enhancing energy efficiency across residential, commercial, and agro-industrial sectors. These projects aim to address both current energy needs and future demands, focusing on cleaner, more sustainable, and resilient energy systems.

37.1.8.1 Energy Access for All

To ensure access to affordable, reliable, and sustainable energy for all residents, including

those in remote or underserved areas, a range of strategies is proposed. These include deploying off-grid renewable energy systems like solar home units and mini-grids in hilly or unconnected regions, promoting decentralized energy production through microgrids or solar cooperatives using local resources, and introducing subsidies or financing options to make renewable solutions affordable for low-income households.

37.1.8.2 Underground Electric lines

To enhance safety and improve the visual appeal of Pathanamthitta town, it is proposed to replace old and dilapidated overhead electric lines with underground electric cables. These overhead lines pose safety hazards and negatively impact the town's aesthetics, especially in high-traffic and prominent areas.

Kerala State Electricity Board (KSEB) may take the lead in coordinating with the National Highway Authority and Public Works Department (PWD) to construct underground utility ducts along the major roads. Implementation can be carried out in a phased manner, prioritizing the ring road, National Highways (NH), and State Highways (SH) in the initial phase to ensure maximum impact and visibility.

37.1.8.3 Smart Grid System

To improve energy distribution, reduce transmission losses, and integrate renewable sources, the electrical grid needs modernization. This includes deploying smart meters in homes and businesses for real-time monitoring and efficient energy management, and upgrading grid infrastructure to support decentralized, intermittent renewable energy and enable more dynamic demand-supply balancing.

37.1.8.4 Renewable Energy Integration

Although all houses and institutions in the town have adequate electricity supply, the transition to sustainable energy generation remains limited. To reduce the town’s carbon footprint and reliance on fossil fuels, a shift to renewable sources is essential. This includes implementing large-scale solar farms and rooftop solar systems on residential, commercial, and government buildings, as well as establishing biomass plants to convert organic waste such as agricultural residue, food, and green waste into electricity or heat.

37.1.8.5 Energy Efficient Buildings and Infrastructure

Energy consumption can be reduced through the development of energy-efficient buildings and infrastructure. This involves enforcing strict building codes that mandate the use of energy-efficient designs, materials, and technologies such as quality insulation, efficient windows, and LED lighting. Promoting smart homes and offices with energy management systems and automation can further optimize energy use. Additionally, green roofs and walls should be encouraged for their natural insulation benefits and positive impact on air quality.

37.1.8.6 Sustainable Transportation

To reduce energy consumption and greenhouse gas emissions in the transport sector, the town aims to promote electric vehicles by installing EV charging stations across public, residential, and commercial areas, integrated with various proposed projects. Expanding energy-efficient public transport options like electric buses and encouraging non-motorized transportation through pedestrian-friendly streets, dedicated bike lanes, and bike-sharing programs addressed in Chapter 36 .

37.1.8.7 Energy Efficient Public Lighting Systems

To reduce energy consumption in public spaces, the town will replace conventional streetlights with energy-efficient LEDs, implement smart lighting systems that adjust based on usage patterns, and install solar-powered lights in remote or low-energy areas. These measures aim to lower grid

dependency, enhance efficiency, and promote sustainable urban infrastructure.

37.1.8.8 Waste-to-Energy (WTE) Systems

To reduce waste and generate clean energy, municipal solid waste can be converted into usable forms such as electricity, heat, or biogas. This includes developing waste-to-energy plants that use high-temperature incineration with proper emission controls, and establishing anaerobic digestion facilities to convert organic waste like food scraps and sewage sludge into biogas for heating, electricity, or fuel.

37.1.8.9 Climate Action and Carbon Management

To mitigate climate change, the town should reduce its carbon footprint by promoting energy conservation and adopting green building standards like ECBC, GRIHA, LEED, and BREEAM. A comprehensive climate action plan with targets for renewable energy and emission reduction should be developed. The KILA-prepared local plan must be implemented and updated regularly. Carbon pricing mechanisms such as carbon taxes or cap-and-trade systems should also be introduced to encourage emission reductions.

37.1.8.10 Public Engagement and Awareness Campaigns

To promote energy conservation and sustainability, engage the public through educational programs such as workshops, seminars, and awareness campaigns. Encourage community involvement in energy planning through participatory processes and cooperatives. Strengthen public-private partnerships to support sustainable energy projects and initiatives in collaboration with local governments, businesses, and communities.

37.1.8.11 Sustainable Energy Plan for the Town

To Creating a sustainable energy plan for town which integrates renewable energy sources, energy efficiency, and community engagement. This plan should consider the town's unique characteristics, such as its size, energy demand, climate, and available resources to become a 100% renewable energy town by 2035 and achieve net-zero emissions by 2045.

37.1.9 Education

In accordance with URDPFI guidelines, the current number of educational institutions at all levels is adequate for the projected population in 2045, and their spatial distribution encompasses the entire town. So there is no need for the additional new education institutions in the town. The following suggestion aims to increase the effectiveness of the education sector in addition to the regular functions currently performed by educational institutions.

37.1.9.1 Redevelopment and Expansion of Thaikkav GH School

The only one Government Higher secondary school in the town is Thaikavu GH School. Redevelopment and Expansion of this school to meet modern educational standards is critical for the education sector of the town. So redevelopment of Thaikkav GH School of town is the major proposal in the education sector. This includes upgrading classrooms, adding new facilities like laboratories, libraries, and sports complexes, and ensuring schools are climate-resilient.



Figure 37.46 The adopted concept of redevelopment of Thaikav School



Figure 37.47 Adopted strategies of redevelopment Thaikav School

Design Approach & Strategies (Figure 37.46& 37.47): The proposed design reimagines the educational space as an educational neighbourhood, where built forms and open voids interact harmoniously to foster a sense of place, independence, and uniqueness. By strategically replicating and distributing programmatic elements, the school transforms into a cluster of interconnected zones featuring diverse views, landscaped green areas, playgrounds, and rest spaces. The overall design is sensitive to the site's natural topography, following the contour lines to minimize earthwork, thereby reducing cut and fill and ensuring the development blends seamlessly with the landscape. The proposed Thaikkav School campus concept is shown in following Figure 37.48



Figure 37.48 Proposed Thaikav School Campus Plan (A conceptual Model)

This project involves acquiring private land for the future expansion of Thaikkav GH School to support long-term educational growth, community development, and planned infrastructure enhancement. This additional land will provide space for more classrooms, labs, libraries, and facilities to accommodate increasing student enrolment. It also enables the introduction of new initiatives such as skill development centres and other educational programs. This project is proposed as special project as project is proposed in the private land. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location of proposed extension of Thaikav GH School is shown in Figure 37.49



Figure 37.49 Proposed land for the redevelopment and expansion of Thaikav GH School (SP 02) in proposed land use map

37.1.9.2 Municipal Library Renovation & Study Booth

This project proposal includes the renovating (repairing, updating, and improving) the existing municipal library located near municipal Stadium and adding small, individual or group-friendly spaces designed for focused reading, studying, or working called study booths. Proposed concept of municipal library and study booth is shown in Figures 37.66. Municipal Library Renovation involves upgrading the public library with following components:

1. Interior improvements (furniture, lighting, flooring)
2. Technology upgrades (computers, Wi-Fi, digital catalog)
3. Space reorganization for better functionality
4. Accessibility features (for elderly or disabled)
5. Energy-efficient design or green building elements
6. Compound wall and landscaping.

Inclusion of Study Booths in the municipal library means spaces designed to cater to students, remote workers, and researchers for:

1. Quiet, distraction-free areas for individual study
2. Space for small group work or tutoring
3. Charging points, lights, desks, ergonomic seating

The Location, proposed conceptual images are shown in Figure 37.50 & 37.51.

Project land Area : 0.43 Acre

Survey Numbers: 151(p)

Land Ownership: Municipality Land



Figure 37.50 Location of Proposed Municipal Library and Study Booth



Figure 37.51 Proposed Municipal Library and Study Booth (A conceptual Model)

37.1.9.3 General Proposals in Education Sector

i. Renovation and Up gradation of Schools

The existing infrastructure of educational institutions is limited to basic functioning, lacking proper libraries, labs, playgrounds, and adequate sanitation. While all schools have water supply and toilets, more E-toilets should be promoted for improved hygiene. Sanitary napkin vending machines and disposal systems must be mandatory in all institutions. Additionally, aging schools should be renovated to upgrade classrooms, electrical and plumbing systems, and technology infrastructure. Traditional classrooms should be transformed into flexible learning spaces with collaborative areas and integrated technology. Specialized facilities like science labs, libraries, art and music rooms, and sports amenities should also be modernized to support holistic education.

ii. Green and Sustainable School Design

Schools should incorporate sustainable design by constructing new buildings or retrofitting existing ones with energy-efficient features such as solar panels, green roofs, smart lighting, and advanced insulation, which reduce operational costs and serve as educational tools for environmental awareness. Water management practices like rainwater harvesting, permeable paving, and water-efficient designs should be implemented to reduce consumption and manage runoff. Additionally, sustainable landscaping with native plants, community gardens, and natural play areas can enhance student

well-being and support environmental education.

iii. Smart Schools and Digital Learning Spaces

To enhance digital learning, schools should be equipped with high-speed internet, interactive whiteboards, tablets, and computers to support hybrid learning and prepare students for the digital age. Dedicated maker spaces and innovation labs, including AI, robotics, and 3D printing facilities, should be established to promote STEM education and creativity. Additionally, high-speed internet must be extended to all educational institutions, with Wi-Fi hotspots provided in public areas like libraries, parks, and community centers to ensure broader connectivity.

iv. Inclusive and Accessible Educational Environments

Educational facilities should adopt Universal Design for Learning to ensure accessibility for all students, including those with disabilities, by providing ramps, elevators, accessible restrooms, and assistive technology-equipped classrooms. Additionally, promoting language and cultural inclusivity through multilingual education, culturally relevant materials, and multilingual signage will support diverse student needs and create an inclusive learning environment.

v. Public-Private Partnerships for Education

Promote collaborative education initiatives by forming partnerships between local government, private companies, and educational institutions to fund and manage infrastructure projects, including school construction, technology upgrades, and teacher training. Encourage businesses to support education through CSR programs, such as donations, mentorship, and offering internships or apprenticeships to students.

vi. Health and Well-being in Schools

Establish school-based health services, including clinics with nurses, mental health counselors, and wellness programs to support students' physical and emotional well-being. Ensure all schools have access to sports fields, gyms, and recreational areas for physical education, school events, and community activities, promoting overall health and active lifestyles.

vii. Sustainability Education Projects

Integrate sustainability into the curriculum through hands-on projects like school gardens, energy conservation, and waste reduction initiatives. Involve students and the community in activities such as clean-up drives, tree planting, and promoting energy-efficient practices, linking classroom learning with real-world environmental action.

viii. Security and Safety Measures

It is proposed to implement school security measures such as fenced perimeters, controlled access points, surveillance systems, and emergency protocols, ensuring they remain discreet and welcoming. Schools should also be designed with proper evacuation routes, storm shelters, and features to withstand natural disasters like floods, landslides, urban heat, and lightning.

37.1.10 Health

The healthcare sector in Pathanamthitta town has a strong and widespread presence in both the Government and Private sector. Pathanamthitta town has all three categories of health institutions allopathy, ayurveda, and homeopathy under government sector itself. According to the URDPFI guidelines, currently there are enough health institutions at all levels in the town which is adequate for the projected population of town in 2045 also, and their spatial distribution encompasses the entire town. So the following projects aim to enhance

existing public health institutions and system, reduce health disparities, and increase the resilience of healthcare infrastructure.

37.1.10.1 Redevelopment and Expansion of General Hospital Campus

As district headquarters, the existing general hospital in the town directly influence as being regional centre of health care needs of the district. This proposal aims to upgrade the hospital by improving its physical infrastructure and accessibility to enhance the quality and reach of healthcare services. The Vision Plan of General Hospital campus, and proposed campus layout is shown in Figure 37.50.

To strengthen healthcare delivery and address the growing and evolving health needs of the town's population, an expansion project for the General Hospital is proposed. The expansion aims to increase patient capacity by upgrading and extending inpatient and outpatient facilities to reduce overcrowding and accommodate future population growth. It will enhance the quality of care through the modernization of medical equipment, diagnostic tools, and treatment facilities to meet current healthcare standards. Emergency and critical care services will be improved by expanding the emergency department and intensive care units (ICUs) for faster and more efficient response. Additionally, the project proposes the introduction or expansion of specialized services, such as cardiology, oncology, neurosurgery, orthopaedics, and maternity care, based on assessed local health needs. The expansion will also ensure future readiness by developing a flexible infrastructure capable of adapting to emerging healthcare demands, public health emergencies, and technological advancements. This project is proposed as special project as project is proposed in the private land.

The Location, proposed conceptual images are shown in Figure 37.52& 37.53

Project land Area : 6.5 Acre

Survey Numbers: 32(p), 149(p)

Land Ownership: Government and Private







Figure 37.52 The proposed vision and layout plan of general hospital campus redevelopment and Expansion



Figure 37.53 Location of proposed General hospital redevelopment and expansion area (SP 05) in proposed land use map

37.1.10.2 Fitness Hub

A Fitness Hub is proposed as a small-scale, compact, and community-oriented facility aimed at promoting physical health and wellness. Strategically located near MG College and nearby government buildings, the hub will serve as a wellness nucleus for students, office workers, and the general public. Its accessible location encourages regular physical activity by integrating fitness into daily routines. The facility will be designed to be affordable and inclusive, promoting healthy lifestyles across diverse user groups.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project

components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.54 & 37.55.

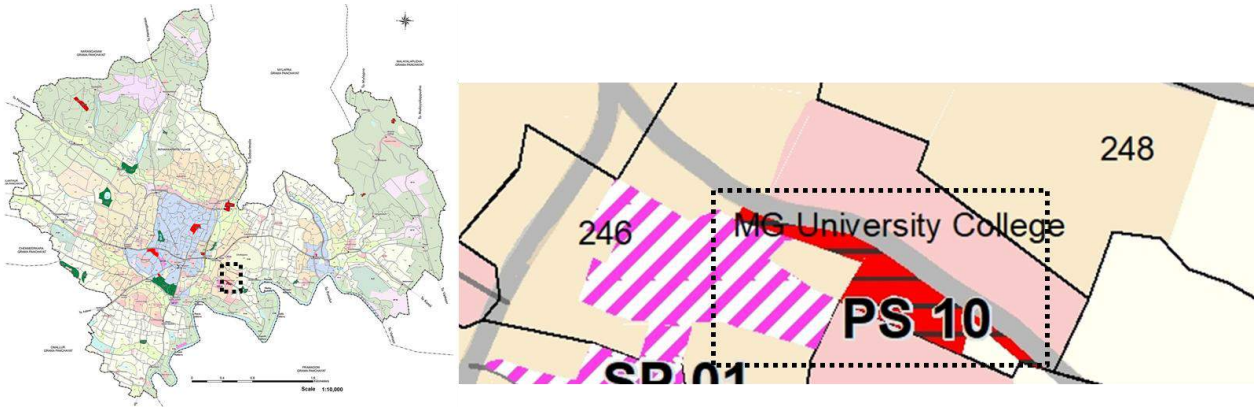


Figure 37.54 location of proposed fitness hub (PS10)

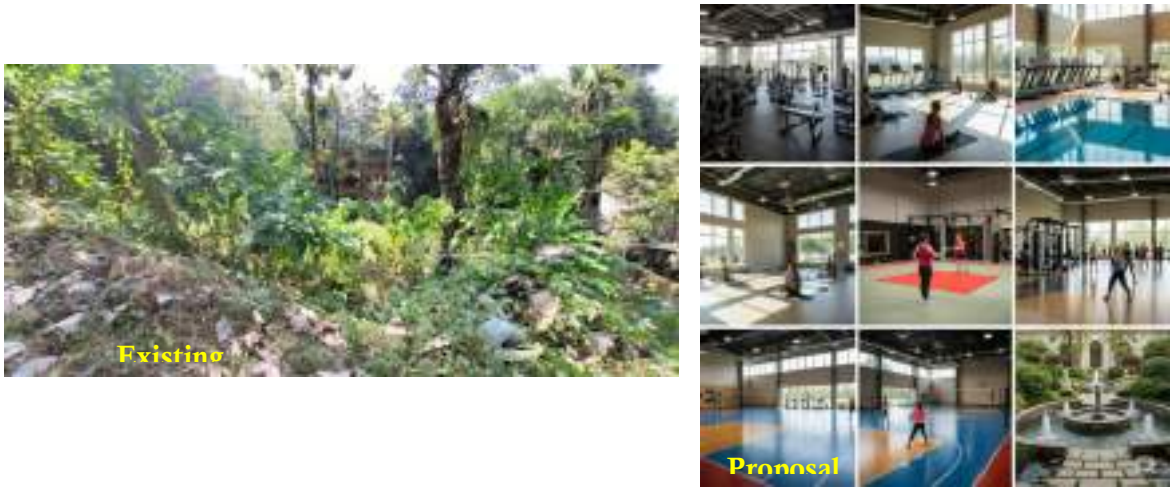


Figure 37.55 Fitness Hub Existing location and C Proposed conceptual Image

37.1.10.3 New hospital complex

There are no Women and Children Hospital, Mental Health Centre, TB Hospital and Leprosy Hospital in the district. As Pathanamthitta town is the district headquarters, bringing these hospitals in the town will also help to the development of town. The proposed government office complex (PS02) land can be used for these hospital projects.

37.1.10.4 Health camps for migrant labours

To ensure hygiene and prevent the spread of communicable diseases among migrant labourers, it is proposed to conduct periodic health camps within the town. As part of this initiative, a proper listing and statistical database of migrant workers from other states should be created. Verification of identity documents and mandatory participation in regular medical check-ups should be enforced.

37.1.11 Housing

The housing and infrastructural quality including those in low income group housing areas in the town is found satisfactory. Those who are not having houses are covered under the existing scheme of “Life Mission” by State Government. Following projects are proposed under Housing sector of Pathanamthitta town apart from this existing mentioned projects for low income individual households.

37.1.11.1 Housing Scheme Area

To provide affordable, safe, and dignified housing for low-income groups and support government housing initiatives within the town, a planned housing scheme area is proposed in

Mayladumpara Ward. This initiative aligns with the principles of inclusive and sustainable spatial development.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.56 & 37.57.

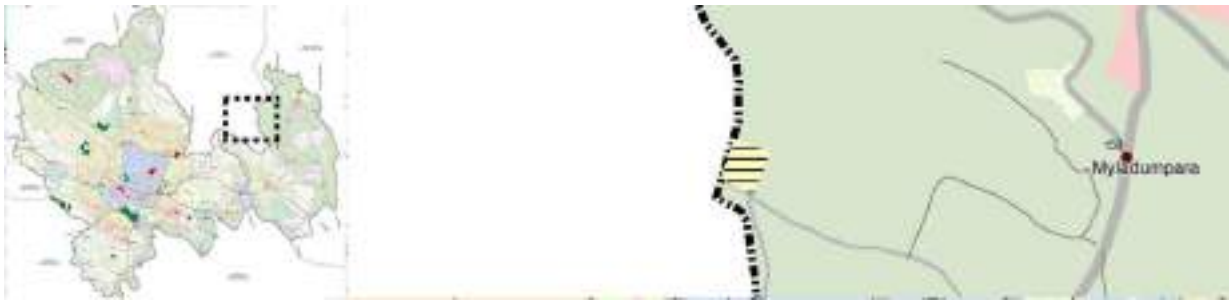


Figure 37.56 Proposed housing scheme area in proposed land use map



Figure 37.57 Proposed Housing Scheme Area (A conceptual Model)

37.1.11.2 Integrated Living Hub

An Integrated Living Hub project is more than just low-cost housing — it's a self-sustaining, inclusive, and well-planned community designed to meet the essential needs of low- and middle-income residents. Proposed Affordable Living Hub is located near MG College, government offices, and public buildings which presents a strategic opportunity to support students, young professionals, government employees, and low-income workers with accessible, inclusive, and vibrant housing options. This hub blends affordability with convenience, connectivity, and community living.

This project includes a mix of Studio, 1BHK, and 2BHK flats to accommodate Students, Government staff, Young professionals, and Service and support workers. Designed with both rental and ownership options, the project includes shared living spaces or dormitories for students or temporary staff and Co-living units for students and young workers with shared kitchens/lounges. It also integrates co-working spaces with high-speed internet, meeting rooms, study areas, and digital libraries to support remote workers and students. Community-focused amenities such as gardens, shaded seating areas, and an amphitheatre or cultural gathering space are incorporated to promote social interaction and enhance quality of life within the neighbourhood. The Location of proposed affordable living hub project is shown in Figure 37.58

Project land Area : 3.65 Acre

Survey Numbers: 236(p),246(p)

Land Ownership: Private



Figure 37.58 Location of proposed affordable living hub (SP 01) project in proposed land use map

37.1.11.3 Repurposing of unoccupied houses

The town has a large number of unoccupied houses, mostly owned by NRIs, offering an opportunity to revitalize neighbourhoods and promote sustainability. It is proposed that the municipality raise awareness about repurposing these homes through various strategies, such as converting them into short-term rentals to attract visitors, co-housing units with shared communal spaces, or creative spaces for artists and community events. Additionally, vacant homes can be retrofitted with eco-friendly technologies and used as models or educational centers for sustainable living

37.1.11.4 Relocation of Nagar (4 are in landslide prone zone and 3 are in flood prone zone)

The housing and infrastructural quality in Nagars in the town is found satisfactory. But out of 34 Nagar in the town, 91 houses of 4 Nagar (Nellikkattil, Palassery, Pathiyathu and Paruthyani) are at low landslide prone area and 81 houses of 3 (Valamchuzhi Laksham veedu Nagar, Nethaji Nagar and Karikulam Nager) are at flood prone areas. The relief camps and evacuation route for the people of these Nagar at the time of natural hazard are proposed and mentioned in the chapter 38. Since the landslide proneness in the area is assessed to be low, Instead of relocation, strengthening slope stability and implementing early warning and preparedness measures can be adopted.

37.1.11.5 Resilient Housing in Disaster-Prone Areas

To enhance safety and sustainability in vulnerable zones, especially flood-prone areas, it is proposed to promote disaster-resilient housing using elevated plinths or stilt-based construction, avoiding low-lying floodplains, and incorporating buffer zones along water bodies. Durable, flood-resistant materials like treated timber, fly ash bricks, or concrete should be used. Proper drainage systems with regular maintenance, permeable surfaces for groundwater recharge, and rainwater harvesting systems placed above flood levels are essential. Housing designs must avoid basements and include elevated wiring and raised platforms for critical utilities. Community shelters, flood-safe zones, evacuation route signage, and emergency kits should be integrated into residential layouts for preparedness.

To ensure safety in landslide-prone areas, it is proposed to adopt safe site selection practices by avoiding steep slopes and unstable soils, prioritizing ridge-top or gently sloping land. Slope stabilization measures such as retaining walls, gabions, and bioengineering with vetiver grass and deep-rooted plants should be implemented. Construction must align with natural contours, using step foundations and terraced layouts to reduce slope stress. Lightweight materials should replace heavy RCC structures in unstable zones. Proper surface water management through drains and preserved natural paths is essential to prevent water accumulation. Maintaining vegetative cover and promoting afforestation helps control

erosion. Early warning systems like rain gauges and landslide sensors should be installed, with community participation in slope monitoring during monsoons. Awareness programs and the formation of local landslide response teams and shelters will further enhance preparedness and resilience.

37.1.12 Civic Amenities

Civic amenities are the foundational elements of urban life that directly influence the quality of living, public services and inclusive growth within a town. Embedding civic amenity proposals ensures that public services are well-integrated, accessible, and sustainably distributed across all residential and functional zones.

37.1.12.1 Government Office Complex

The proposed government office complex in the Melevettipuram–Thazhevettipuram area, adjacent to the ring road, is envisioned to consolidate various government departments currently functioning from rented or scattered locations across and outside the town. Centralizing these offices into a single, well-planned complex will streamline administrative operations, enhance public accessibility, reduce recurring rental costs, and improve inter-departmental coordination. The strategic location along the ring road ensures better connectivity and future expansion potential, making it a sustainable and efficient administrative hub for the town. Proposed location is shown in Figure 37.59

Project land Area : 6.05 Acre
Survey Numbers: 102(p),110(p),142(p)
Land Ownership: Private

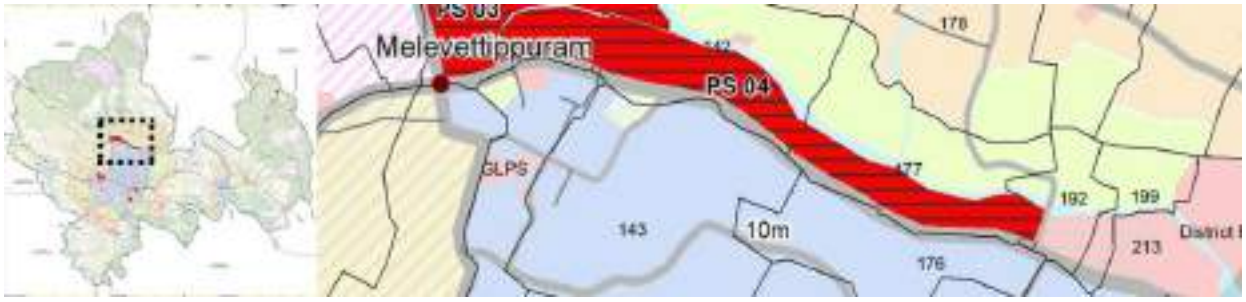


Figure 37.59 Location of proposed government office complex (PS02) in proposed land use map

37.1.12.2 District Court Complex

The current Mini Civil Station houses multiple government offices, including the court, resulting in overcrowding and operational inefficiencies in the central area of the town. The existing court infrastructure is inadequate to meet modern judicial requirements, lacking essential features such as courtrooms, chambers for judges, lawyers, administrative offices, waiting areas for the public and security arrangements.

To address these shortcomings, it is proposed to relocate the court complex to Melevettipuram, thereby separating judicial functions from administrative operations. This relocation will allow for the construction of a dedicated, well-designed court facility that enhances the judicial process and overall service delivery. Proposed location is shown in Figure 37.560.

Project land Area : 7.6 Acre
Survey Numbers: 102(p),110(p),142(p)
Land Ownership: Private

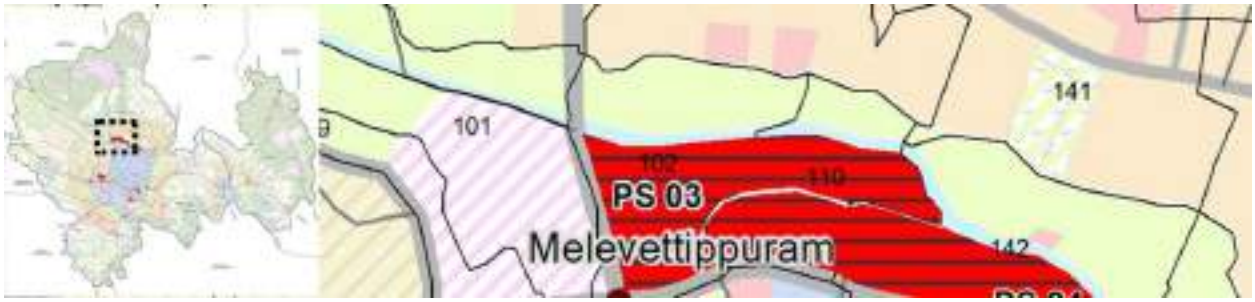


Figure 37.60 Map showing location of proposed district court complex (PS03) in proposed land use map

37.1.12.3 Municipal Office Complex expansion & Redevelopment

This project proposes a strategic extension of the existing Municipal office building aimed at enhancing the urban environment through improved permeability, increased pedestrian activity, and sustainable infrastructure integration. The extension of the Municipal office emphasizes porosity, creating a seamless connection between the existing building and the nearby market.

Project integrates nearby wetland areas with flood-resilient extent of the project. Infrastructure that strengthens environmental advantages and fortifies the urban fabric. The project area is located near the existing Pathanamthitta Municipal office land. This proposal includes new municipal office complex with flood mitigation strategies, commercial shops, parking facilities and landscaping. Proposed location is shown in Figure 37.61



Figure 37.61 Location of proposed Municipal office complex expansion & redevelopment

37.1.12.4 Ward Bhavans (in all wards)

This project is proposed in all wards of the town for enhancing the administration of local government by bringing governance closer to the people. This concept aims to improve local-level service delivery, increase citizen participation, and strengthen the responsiveness of the local government.

Each Ward Bhavan will serve as a direct interface between the public and local representatives, facilitating Ward Sabhas, welfare programs, grievance redressal, and coordination of ward-level activities such as those by ASHA workers and medical camps.

Through these decentralised administration facilities, it reduces the need for residents to travel to a local government office, making it easier to access services and information. As a pilot phase Ward bhavan is proposed in Myladumpara area. The Proposed location and a conceptual model of Ward Bhavan is shown in Figure 37.61 & 37.62respectively.

Project land Area : 0.99 Acre
Survey Numbers: 219(p),220(p)
Land Ownership: Government &Private

This facility is proposed in every ward. Polling booth can also be integrated in this ward bhavan. This will allow reducing the cost of setting up temporary polling booths during every election. Facilities for polling officers (accommodation & refreshment) for election can also be provided.

Spatial distribution of projects in the Institution pillar of proposed land use map is shown in Figure 37.62.



Figure 37.62 Location of proposed ward bhavan (PS04) in proposed land use map



Figure 37.63 Proposed Ward Bhavan (Conceptual models)

37.1.12.5 Renovation of Existing Comfort Stations

All existing comfort stations can be renovated to accessible energy efficient modern comfort stations. To Ensuring the health, safety, and overall quality of life for its residents and visitors.

37.1.12.6 Renovations of Crematorium

It is proposed to renovate the crematorium into a peaceful, efficient, and culturally sensitive facility with modern amenities, digital systems, and support services for grieving families. The Location Map are shown in Figure 37.64

Project land Area : 0.73Acre
Survey Numbers: 221(p)
Land Ownership: Government

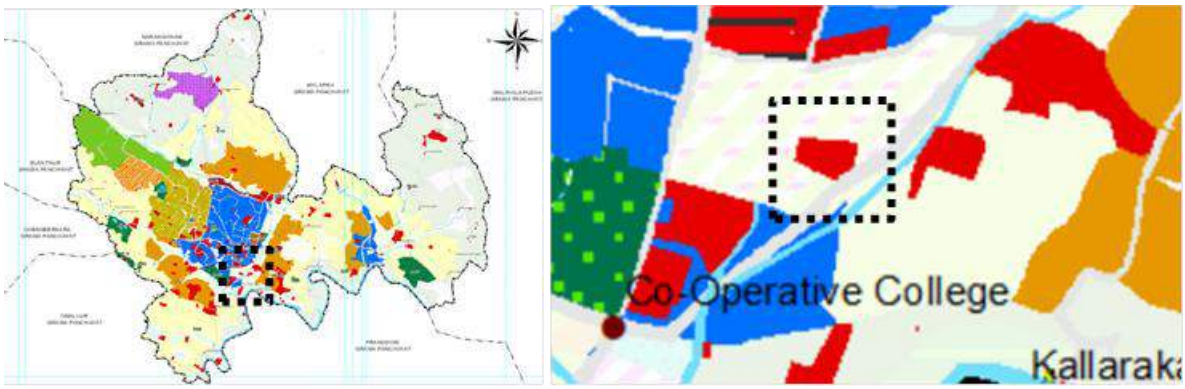


Figure 37.64 Location of Proposed Gas Crematorium

37.1.12.7 Redevelopment and Expansion of Civil Station

The restructuring of the Collectorate campus is essential for improving administrative efficiency, better service delivery, enhanced security, and overall public satisfaction. The collectorate is a central hub for governance and public administration, and its infrastructure needs to be optimized to meet modern standards of functioning. The Vison plan of Collectorate campus, proposed layout for buildings shifting strategy, Annex Buildings and Apartments are shown in Figure 37.65 and 37.66.

Future expansion of civil station is proposed in private land also. Location is shown in Figure 37.67.

Project land Area : 1.67 Acre
Survey Numbers: 34, 104,105
Land Ownership: Private

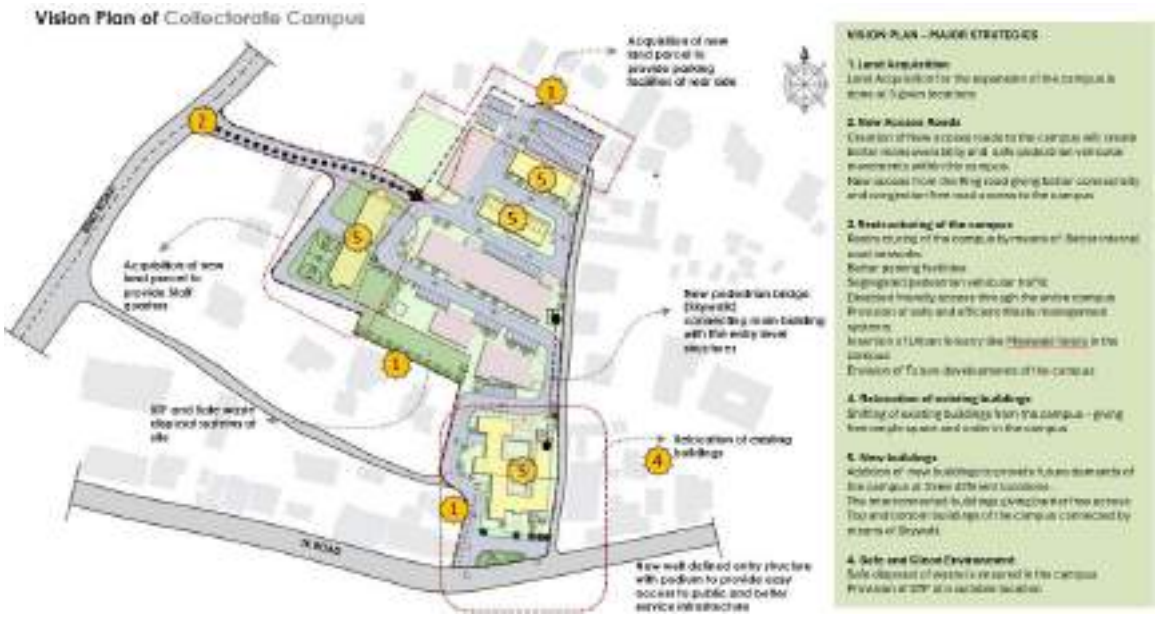


Figure 37.65 Location of proposed Mini Civil Station Expansion (SP04) in proposed land use map



Name of office	Shifting to	Reason for Shifting
Railway Booking Counter	Mini Civil Station	Easy Access for Public
Village Office	Option 1 -Mini Civil Station Option2- New location Near Ring Road	Taluk office proximity, also easy access for public
PWD Offices	Option 1 -PWD building Complex – Rain House Complex Option 2- Thazhe Vettipuram	Proximity advantage Better use of existing infrastructure
Election Building	New EVM building upper floors	Proximity advantage
Yuvajan Sahara Board	Option 1- New KSRTC Bus Stand Complex , Upper Floor. Option 2 - Thazhe Vettipuram	Easy Access for Public
DD Tourism	Thazhe Vettipuram	Easy Access for Public Good visibility to tourists and portrayal of iconic structure to enhance its significance
Rest Of the Buildings	As per discussion	







Figure 37.66 Proposed Layout of Collectorate Campus



Figure 37.67 Location of proposed Civil Station Expansion (SP03) in proposed land use map

37.1.12.8 Redevelopment and Expansion of Mini Civil Station

Redesigning of Mini Civil Station at central junction of the town is a crucial initiative aimed at optimizing space utilization, improving administrative efficiency, and addressing urban traffic challenges. The proposal includes the relocation of court complex to a new location, rearrangement of existing offices to accommodate more, renovation and demolition of old buildings, construction of new buildings at phased manner, Parking facilities and flow regulation at entry and exit points.

Expansion of the Mini-civil station is proposed in the private land also .Location of proposed mini civil station expansion is shown in Figure 37.68.

Project land Area : 1.47 Acre
Survey Numbers: 218 (p)
Land Ownership: Private



Figure 37.68 Locations of Proposed Mini Civil Station

37.1.12.1 Relocation of Fire Station

Currently the fire station is located in the flood prone area of the town. Fire station located in a flood-prone area risks the emergency responders, essential firefighting equipment and safety of firefighters. Floodwaters can disrupt operations, damage vehicles, and make it difficult or impossible for personnel to respond to emergencies during a flood event.

By relocating to a safer ground, the fire station can ensure that it remains fully operational during heavy rains or floods, allowing emergency services to continue functioning without interruption. Relocation ensures that the fire station is positioned in a location with better access to major roads and critical areas of the town, reducing delays caused by infrastructure damage due to floods.

Fire station is proposed to relocate to land proposed for government office complex in northern part of ring road near Thazhevettipuram. The District jail can also be relocated from the town center to adjacent local bodies. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location is shown in Figure 37.69.



Figure 37.69 Proposed location for relocation of fire station (PS 04) in proposed land use map

37.1.13 Special Concern Areas

Proposals related to special concerned areas of the town are the initiatives that are aimed at providing a safety net for citizens, especially the most vulnerable, while also creating an inclusive and sustainable urban environment. These projects directly contribute to the welfare of residents by ensuring access to essential services, reducing inequality, enhancing security, and promoting social cohesion. By addressing the needs of vulnerable populations, following proposals helps create a community where vulnerable people can thrive. The proposed project proposal such as Neighbourhood Park referenced in the recreational section of this chapter will also assist in enhancing the functionality of special concerned individuals in the town.

37.1.13.1 Happy Home and Harmony Centre

The Happy Home and Harmony Centre project is a social development initiative focused on improving community well-being and social harmony within the town. It is a gathering place for women, children, and the elderly peoples together create safe, supportive living environments. It addresses social concerns such as homelessness, mental health, isolation, intergenerational gaps, or conflict among diverse groups.

Happy Home and Harmony Centre is proposed as a community hub/ multi-purpose centre where people from different backgrounds come together to participate in cultural, educational, and recreational activities, encourage inclusion, tolerance, and mutual respect which helps to reduce social tension, prejudice, and loneliness.

It also provides residential facility or supportive housing model that provides Shelter for

vulnerable groups (e.g., elderly, women, homeless, and people with disabilities), a nurturing environment with dignity and care, access to basic needs like food, security, healthcare, social interaction and promotes a sense of belonging, safety, and emotional well-being.

This project is proposed by upgrading existing bud school and old age home in ward 3. It also envisages a day care centre, skill development centre for women, open stage, anganwadi, Sayamprabha Home and Udayam Home project by government.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.70 & 37.71..



Figure 37.70 Location of proposed Happy Home and Harmony Centre (PS 09) in proposed land use map



Figure 37.71 Proposed Happy Home and Harmony Centre (A conceptual Model).

37.1.13.2 Proposed Empowerment Center

Empowerment Center is proposed to promote holistic development and self-reliance of persons with disability through multi displinary approach that integrate rehabilitation, education, vocational training, cultural engagement and social inclusion. To create an inclusive, accessible and empowing space where persons with disabilities can resive therapeutic care, develop new skills, explore cultural expressions and enjoy recreation in an dignified and supportive environment . The Location, proposed conceptual images are shown in Figure 37.72 & 37.73.

Project land Area : 0.05 Acre
Survey Numbers: 244(p)
Land Ownership: Government

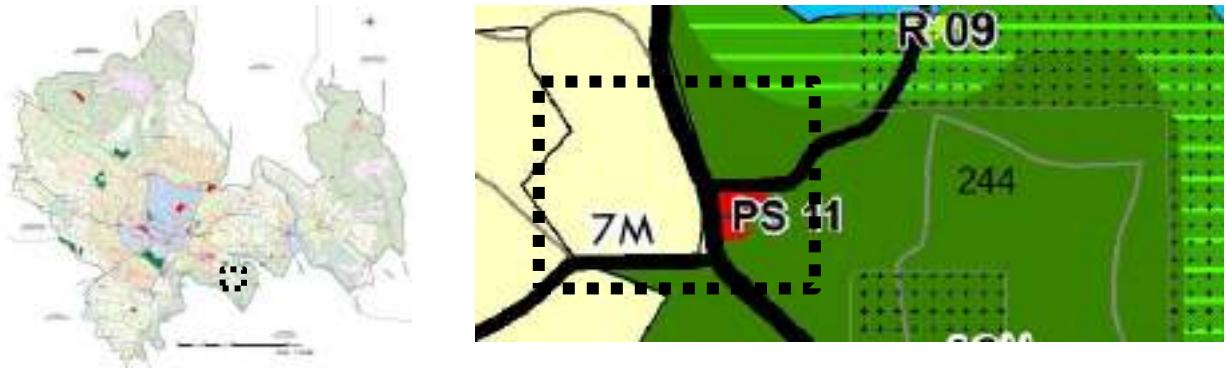


Figure 37.72 Locations of Proposed Empowerment Center



Figure 37.73 Existing location and conceptual image for proposed Empowerment Centre

37.1.13.3 Urban Pulse Hub

Urban Pulse Hub is a large scale centralized, multifunctional wellness and sports complex proposed to encourage physical activity and holistic health for all age groups. It is proposed as a regional level wellness supporting facility with comprehensive, full-service fitness and wellness centre designed to serve a wide population with a variety of physical activities, sports facilities, and health services. This extensive facility that offers a wide range of gym equipment, multiple indoor and outdoor courts, group fitness studios, wellness services, and often health clinics—catering to hundreds to five hundred of users daily.

Target users of this proposal are Fitness enthusiasts and athletes, College students and faculty, Office employees and professionals, Families and community groups. The proposed .

core components of the Urban Pulse Hub include modern gym facilities, Group Activity Studios (Yoga and Pilates rooms, Zumba, dance, and aerobics classes, Martial arts and self-defence workshops, Meditation and mindfulness sessions) and Indoor Sports Courts (Badminton and squash courts), Multi-use court (for futsal, basketball, volleyball), Table tennis area, Spectator seating for small events, Smart Technology Integration like App-based class bookings and fitness tracking, Biometric or card-based entry systems, Climate resilient infrastructure and energy efficient buildings. The location and a conceptual model of proposed Urban Pulse Hub project is shown in Figure 37.74 & 37.75

Project land Area : 2.33 Acre
Survey Numbers: 160
Land Ownership: Private



Figure 37.74 Location of proposed Urban Pulse Hub in the proposed land use map



Figure 37.75 Proposed Urban Pulse Hub (A conceptual Model)

37.1.13.4 Extension of Children's Park

An extension of the existing children's park at central area is proposed adjacent to the town hall. The project aims to enhance green and recreational spaces while improving pedestrian connectivity through interconnected footpaths across the town. The project easily interconnects the road towards stadium junction from Central Square to the market road. The increased green cover will help mitigate urban heat island effects and contribute to climate resilience. Location of proposed extension area of Children's Park is shown in Figure 37.76. The proposed concept of children parks is also shown in Figure37.77.

Project land Area : 0.61Acre
Survey Numbers: 168(p),170(p)
Land Ownership: Municipality, Private

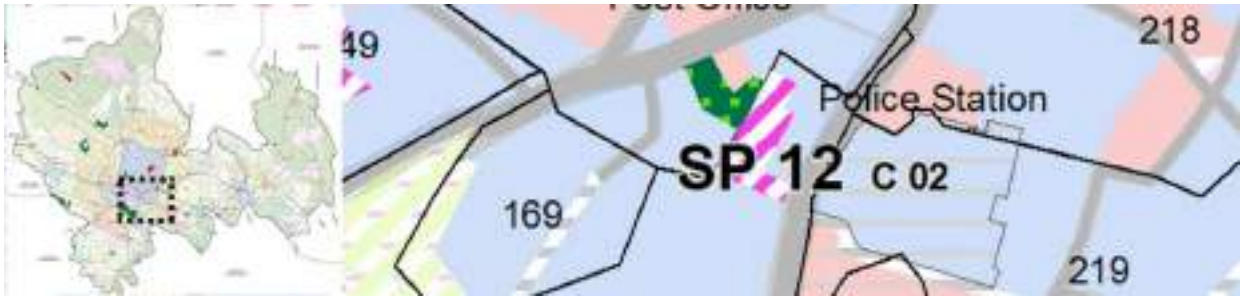


Figure 37.76 Location of proposed extension of Children's Park (SP 12) in proposed land use map

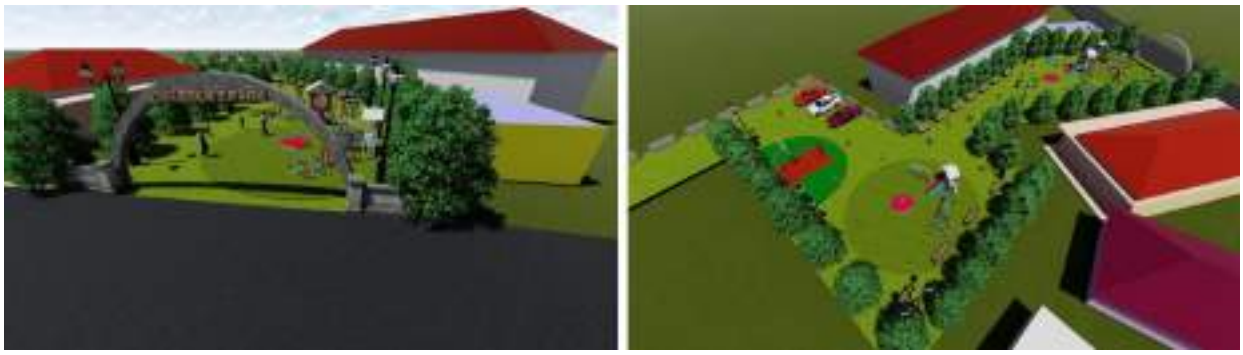


Figure 37.77 Proposed concept of Children Park

37.1.13.5 Wellness Park

A wellness park is proposed near Mannaramala for the local residence which is comparable to a holistic neighbourhood park, but it is a smaller in scale serving community level health-focused public space where people can engage in activities that improve their overall well-being, such as yoga, meditation, walking, fitness training, and relaxation in a calm, nature-rich environment.

Location of proposed Wellness Parks is shown in Figures 37.78

Project land Area : 2.42 Acre
Survey Numbers: 351
Land Ownership: Government

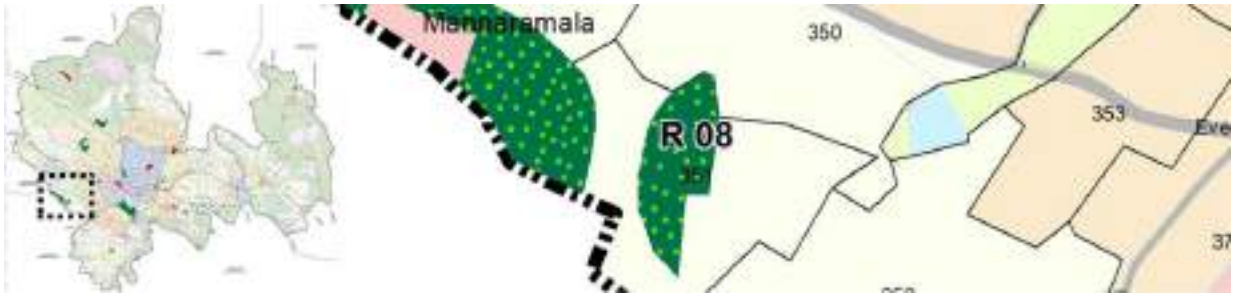


Figure 37.78 Location of proposed wellness parks (R 08) in proposed land use map

37.1.13.6 Proposals for Women friendly Development

Proposals across various sectors of the master plan thoughtfully integrated components aimed at promoting women friendly planning. These include well lit and surveilled pedestrian walkways, creation of safe and inclusive public spaces, provision of gender sensitive public toilets and establishment of breast feeding and child care facilities in key urban nodes. Transportation proposals in chapter 36 incorporate features such as reserved seating, women only last mile connectivity options like she taxi and safe waiting areas with CCTV surveillance. Health sector initiatives focus on setting up women's wellness centers and mobile health units to ensure access to essential services. Skill development centers, workplace crèches and support for women led enterprises are proposed under economic and institutional strategies to enhance women's participation in the workforce. These gender sensitive elements are embedded in various projects, policies, proposals and zoning regulations in this plan.

37.1.13.7 Proposals for Differently abled persons

This plan incorporates several strategies to create an inclusive and accessible environment for differently abled persons in town. These include ensuring barrier free physical infrastructure through step free access, ramps, non-slip surfaces, tactile paving for visually impaired, wider pathways

and entrances to accommodate wheel chairs. Public transport systems are proposed to be accessible along with low floor buses, accessible bus stops and dedicated parking. Public places including parks and gymnasiums are designed with inclusive features. Also projects for health and civic amenities include therapy and rehabilitation centers. Buildings with universal design, accessible toilets, and elevators are proposed.

37.1.13.8 Proposals for Senior citizens

Proposals to create a conducive urban environment for elderly, supporting their mobility, safety and overall well-being such as walkable neighbourhoods, well lit pathways, seating areas, elderly friendly amenities like open gyms with low impact equipment, health and wellness hubs, geriatric care facilities etc. are provided in various projects, policies, proposals and zoning regulations.

37.2 Proposals in Green Blue Zone

Proposals in Blue-Green zone are non-built proposals that contribute to the ecological health, climate resilience and livability of a town. Blue green infrastructure helps manage floods, recharge ground water and improve air quality, while offering spaces for recreation and mental wellbeing. They act as natural safeguards against climate risks like floods and landslides especially in vulnerable areas. Pathanamthitta town with its abundance of wetlands, water bodies and natural rock formations offers immense potential for non-built nature based recreation projects.

37.2.1 Agriculture and Animal Husbandry

37.2.1.1 Integrated Farm tourism Project

The Integrated Farm Tourism project is a strategic initiative where livestock-based farming is combined with tourism and educational activities in a designated area. This project is designed to promote sustainable rural development, agro-tourism, and public awareness of livestock practices, while also contributing to the local economy.

This initiative proposes the development of agri-tourism and educational opportunities that allow visitors to engage with and learn about sustainable farming practices. Activities may include farm tours, hands-on workshops, and agricultural events that highlight local food systems, traditional knowledge, and eco-friendly techniques. These efforts aim to promote awareness, foster community involvement, and strengthen the rural economy through tourism and experiential learning.

The aim of this proposal is to integrate animal husbandry with tourism in a sustainable, educational, and economically beneficial model, to provide urban and school populations with first-hand exposure to livestock farming, to increase income for local farmers through value-added services and to preserve traditional livestock practices and improve animal welfare awareness. Integrated farm tourism project is proposed in the northern part of the town in Mundukottakkal ward.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.79 & 37.80.



Figure 37.79 Proposed Integration Farm Tourism Location



Figure 37.80 Location of proposed Integrated farm tourism project (SP16) in proposed land use map

37.2.2 Tourism and Recreation

37.2.2.1 Quarry Park and View Point at Myladumpara

This project proposal outlines how an abandoned quarry—which is currently unused, possibly unsafe, and environmentally degraded is repurposed into a scenic viewpoint and recreational space for town without degrading again.

Proposal includes Viewpoints / Observation Decks (wooden platforms, glass railings), Walking Trails / Nature Walks, Picnic zones / Resting shelters, Adventure zones (rock climbing, zip-lining if terrain permits), Water feature restoration (as quarry has water collection), Landscape enhancement with native plants and lighting etc.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.81 & 37.82.



Figure 37.81 Location of proposed Quarry Park & View Point (R01) in proposed land use map



Figure 37.82 Proposed Quarry Park & View Point (Conceptual Model).

37.2.2.2 Vanchipoyka Waterfalls Project

The Vanchipoyka Waterfalls Project aims to enhance the scenic beauty and tourism potential of the naturally beautiful waterfalls at Vanchipoyka. The proposal includes the installation of attractive lighting, laser shows, and the development of rock gardens and walkways to create a visually and mentally refreshing experience for visitors. A dedicated viewpoint is also planned near Peringamala Road to offer panoramic views of the waterfalls. Children's Play Area, Adult Adventure Rides/ Activities, Lightings and Beautifications, Selfie Points & Entertainment Features can also be implemented in this project. The Location, proposed conceptual images are shown in Figure 37.83 & 37.84.

Project land Area 1.03 Acre
Survey Numbers: 68(p)
Land Ownership: Public & Private



Figure 37.83 Location of Vanchipoyka Waterfalls in proposed land use map



Figure 37.84 Vanchipoyka Water Fall (A conceptual Model) Source: Tourism Department

37.2.2.3 Valamchuzhi River Front Park

A River Front Park is proposed along the serene stretch of the Achankovil river near Valamchuzhy, spanning nearly 2 kilometers across wards 20, 22, and 24. With multiple entry points and a tranquil natural setting, the area has significant potential to be developed into a vibrant eco-tourism destination. The project aims to attract more visitors and enhance local services through the following nature-friendly tourism activities while preserving the ecological integrity of the riverfront.

This Project is proposed to be developed in stages, with each stage designed to generate enough income for the maintenance and running of the project. The design emphasizes inclusivity, with efforts to make the maximum possible area accessible and friendly to persons with disabilities. Measures will be implemented to ensure the site remains plastic-free, and all solid and liquid waste will be managed and disposed of sustainably within the premises. Additionally, specific areas of the site will be reserved for future expansion, allowing flexibility to introduce new attractions or amenities as needed. Valamchuzhi River front Park proposal and its location shown in Figures 37.85 and 37.86 respectively.

Project land Area : 9.45 Acre
Survey Numbers: 36(p), 37(p), 38(p), 39(p), 250(p), 278(p) & 280(p)
Land Ownership: Government



Figure 37.85 Location of proposed Valamchuzhi River Front Park (R03) in proposed land use map



Figure 37.86 Valamchuzhi River Front Park Project Proposal (Source: Tourism Department)

37.2.2.4 Chuttippara Adventure Tourism Park

Chuttippara is a cluster of three hills, standing at an impressive height of 200 feet, situated in the central area of Pathanamthitta town (1.1 km from Pathanamthitta KSRTC depot). It is a picturesque location with immense potential for tourism and outdoor recreational activities. This project proposes the establishment of an Adventure Park that caters to individuals of all abilities, promoting inclusivity, adventure, and eco-tourism.

The proposals include Adventure Activities, Family & Kids Zones, Hospitality & Amenities and Cultural & Entertainment Spaces. For promotion of adventure activities, it is proposed Cable Car ride that connects base camp with the hilltop or scenic viewpoints of the Chuttippara, Rock Climbing, Glass or wooden walkways connecting cliffs, Zip lines and Hiking & Trekking Trails. Hilltop Restaurant / Café with 360° view along with indoor/outdoor seating. Open Amphitheatre / Cultural Plaza spaces for local music and dance performances, Photo Spots services.

A base camp for supporting the activities of Chuttipara Adventure Park is also proposed which is mentioned in the following section. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.87 & 37.88.



Figure 37.87 Location of proposed Chuttippara Adventure Tourism Park (R04) in proposed land use map



Figure 37.88 Existing and Propos of Adventure Tourism Park

37.2.2.5 Riverside Twilight rock ridge Park

To blend the charm of nature with adventure tourism, a scenic riverside viewpoint is proposed in Ward 25 of the municipality. This project envisions creating a serene and comfortable resting area along the cliffs beside the Achankovil River, where visitors can unwind and enjoy the breathtaking views of sunrise and sunset. The design will enhance the natural beauty of the area, offering a tranquil escape and a memorable experience for tourists and locals alike. Walk ways, recreational spaces, Rock Park, watch tower, viewing gallery, Rock

garden, Open-air Theatre, Amphitheatre and open stage etc., can also be proposed as part of this project. Location of riverside twilight rock Ridge Park and its conceptual 3D model is shown in Figures 37.89 and 37.90.

Project land Area : 6.66 Acre
Survey Numbers: 241
Land Ownership: Government



Figure 37.89 Location of proposed Riverside Twilight rock ridge Park



Figure 37.90 Location and conceptual view of proposed river side twilight rock Ridge Park

37.2.2.6 Destination wedding centre

A Destination Wedding Centre is a specialized venue designed to host weddings in picturesque or culturally rich locations, attracting couples (and their guests) from outside the area. When strategically developed, it creates a unique, serene, and nature-blended experience and significantly boosts local tourism and the economy.

Two destination wedding centres are proposed in the town. One is at bank of river Achankovil and other is in wetland adjacent to Sabarimala edathavalam. These two (Riverside Destination Wedding & Wetland Destination Wedding) strategically located destination wedding centres will give branding the town which helps to turns the town into a wedding hotspot (like Udaipur or Goa). The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39.The Location, proposed conceptual images are shown in Figure 37.91 & 37.92.



Figure 37.91 Location of proposed Destination Wedding Centre (R06)





Figure 37.92 Existing Location and conceptual view of proposed Destination Wedding Centre

37.2.2.7 Proposed Infinity Rock Park

This project proposes the development of a recreation and tourism spot atop Pulikkottappara a large natural rock formation, which is an easy climbable and offers expansive scenic view of the surrounding land scape. It includes panoramic view point deck eco-friendly access trails, sunrise or sun set points, natural interpretation boards etc., The Location of proposed infinity rock park is shown in Figure 37.93

Project land Area : 3.3Acre
Survey Numbers: 150 (p)
Land Ownership: Government



Figure 37.93 Location of proposed Destination Wedding Centre (R06)

37.2.2.8 Butterfly Park/Blossom Garden

Butterfly parks are proposed in two locations of urban center near ring road and Arabic college road. Butterfly parks are aesthetically beautiful filled with vibrant, colourful flowers that enhance the visual appeal of the town. These spaces will provide tranquil environments for residents to relax, meditate, and connect with nature, improving the mental health and well-being of people who live nearby.

The Municipal Council has designated this project as a priority initiative. Therefore, the

details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.94 & 37.95.

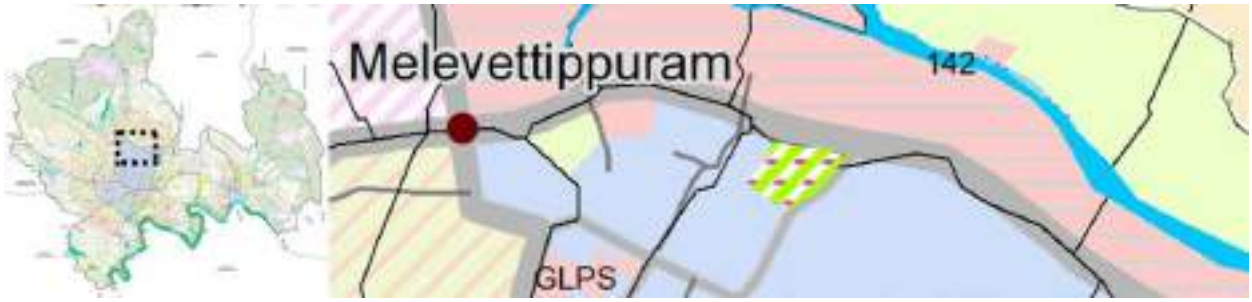


Figure37.94 Map showing location of proposed Butterfly park (R08) in proposed land use map



Figure37.95 Existing and proposed location of Proposed Butterfly Park/Blossom Garden

37.2.2.9 Kadavu Restoration

The term "Kadavu" in Kerala refers to a river mouth, estuary, or waterway, often associated with traditional ferry crossings or ancient trade routes. These locations are integral to Kerala's rich cultural and ecological heritage. The Kadavu Restoration Project aims to preserve and rejuvenate these culturally significant spots within the municipality—specifically Azhoor Kadavu, Para Kadavu, Kallara Kadavu, Vyazhi Kadavu, Illath Kadavu, Thonda Kadavu, and Mooppan Kadavu. The proposal includes beautification efforts, ecological preservation, and heritage conservation, promoting eco-tourism, fishing, and sustainable agriculture.

A tourism circuit connecting all seven Kadavu is proposed to enhance local economic activity and foster awareness of traditional practices. This interconnected network would not only boost tourism but also reinforce community identity and environmental stewardship. The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.96 & 37.97.

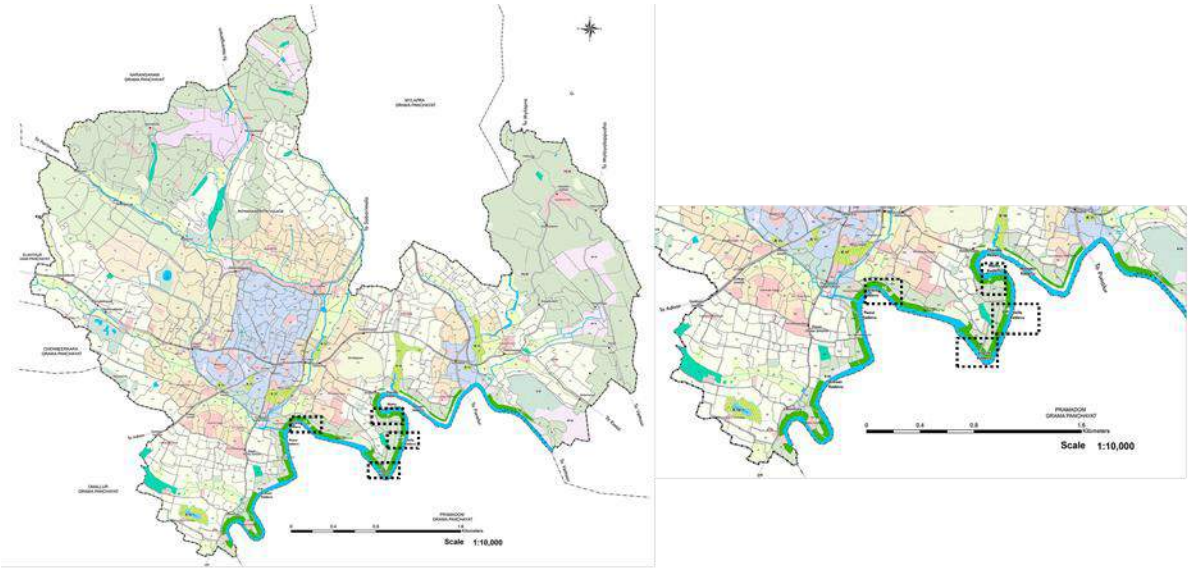


Figure 37.96 Proposed Kadavu Restoration Locations



Figure 37.97 Proposed Kadavu Restoration Project (A Conceptual Model)

37.2.2.10 Riverview Corniche Park

River View Corniche Park is a waterfront park designed along Achankovil riverbanks at Kumbazha region of the town offering scenic views, recreational spaces, and pedestrian-friendly pathways. The park will feature walking, jogging, and cycling tracks, as well as green open areas, resting zones, and family-friendly recreational infrastructure. Aimed at enhancing the liveability and tourism appeal of the town, it will provide a peaceful environment for locals and tourists to unwind, making it a key riverside attraction in the future.

This Riverview Corniche park proposal also includes the beautification of Achankovil River with water adventure activities and new hanging bridge at Thundumankara Kadavu. The stretch of the river in front of Corniche Park can be used for water adventure sports like kayaking and zip lining, which could attract more tourists to the area.

Project land Area : 3.19 Acre
Survey Numbers: 39(p),40(p),56(p) &57(p)
Land Ownership: Private



Figure 37.98 Location of proposed river view Corniche Park (SP14) in proposed land use map

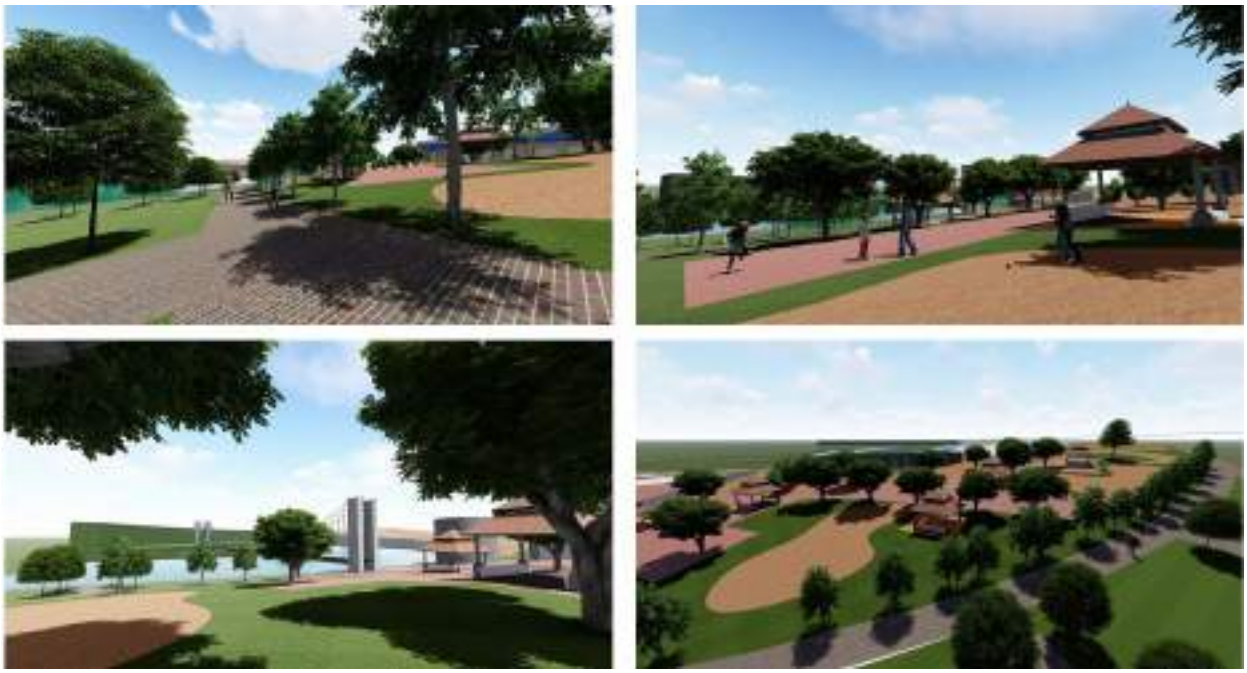


Figure 37.99 Proposed River view corniche Park (A Conceptual model)

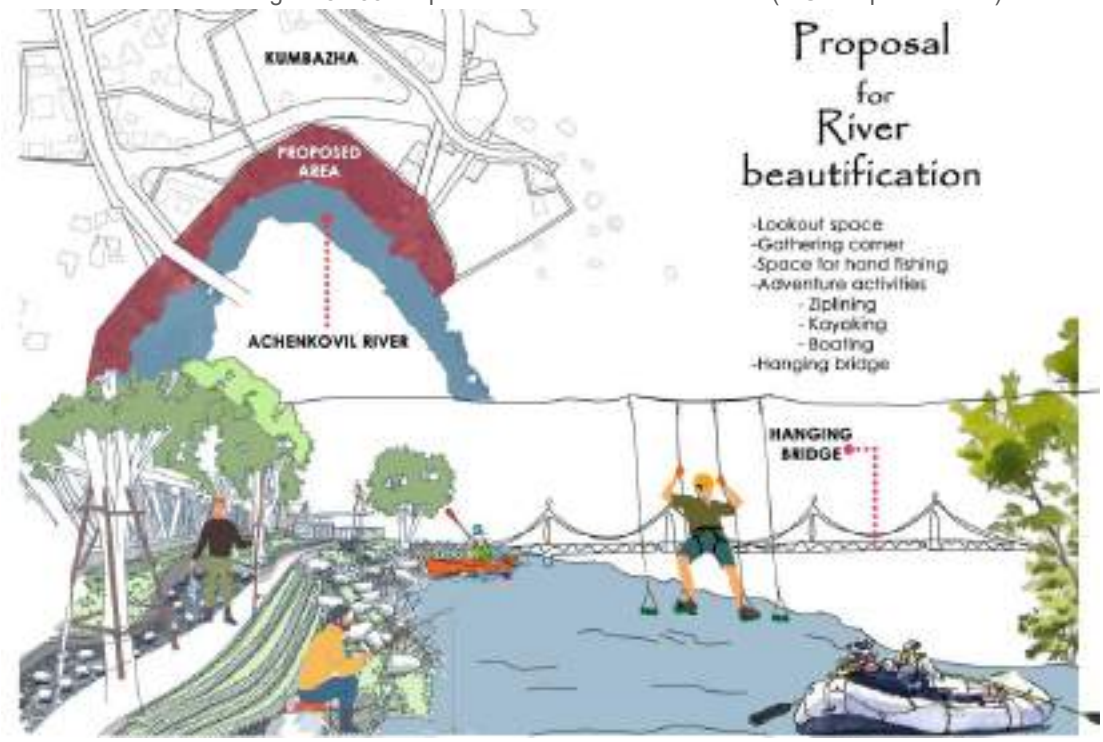


Figure 37.100 Proposal for river beautification (A conceptual Model)



Figure 37.101 Model Hanging Bridge at Thundumenkadavu

Location of proposed Riverview Corniche Park is shown in Figure 37.98. Proposed conceptual view of river view Corniche Park and river beautification is shown in Figure 37.99& 37.100 respectively. Previously, the southernmost bridge of the town, at Thundumankara Kadavu, was operational and connected to Pramadam Panchayath. The bridge is right now in a collapsed state. To address this, it is proposed to construct a modern hanging bridge at the same location. This structure will not only restore connectivity but also enhance the aesthetic appeal of the riverside environment, complementing the Corniche Park development. A model of hanging bridge is shown in the Figure 37.101

37.2.2.11 Proposed Fairground

A fairground is a designated open space or area where temporary events, such as fairs, carnivals, festivals, exhibitions, and public celebrations are held. As Edathavalam area is proposed as a multi open space in the northern part of the town which is not available for the functions at the time of Sabarimala Season, a fair ground is also proposed in the southern part of the town to cater the entire town's demand. Given that the project is located on private land, it is proposed as a special project, requiring appropriate land acquisition. The Location of proposed fairground project is shown in Figure 37.102.

Project land Area : 2.20 Acre
Survey Numbers: 163(p),164(p),223(p) & 224(p)
Land Ownership: Private



Figure 37.102 Location of proposed fairground (SP17) in proposed land use map

37.2.2.12 Proposed Echo Quarry Water Garden Park

The project proposes transformation of a large unused quarry into a vibrant park promoting recreation, biodiversity and sustainable tourism. This unique terrain can be reshaped carefully to host a verity of safe and inclusive recreational activities while preserving its natural character The Location, proposed is shown in Figure 37.103.

Project land Area : 5.89Acre

Survey Numbers: 112 (p)

Land Ownership: Private



Figure 37.103 Location of Proposed Echo Echo-Quarry Water Garden Park

37.2.2.13 Kumbazha Public Square

Kumbazha Junction is the proposed second order junction of Pathanamthitta Town which is located eastern part of the town. For community gatherings, public events, recreation, and social interaction of the people at Kumbazha, the existing open stage and assembly area next to the Kumbazha junction, is proposed as Public Square. Proposed Public Square location, Location, Layout and Concept is shown in Figure 37.104 and 37.105.

Project land Area : 0.25 Acre

Survey Numbers: 42 (p)

Land Ownership: Government

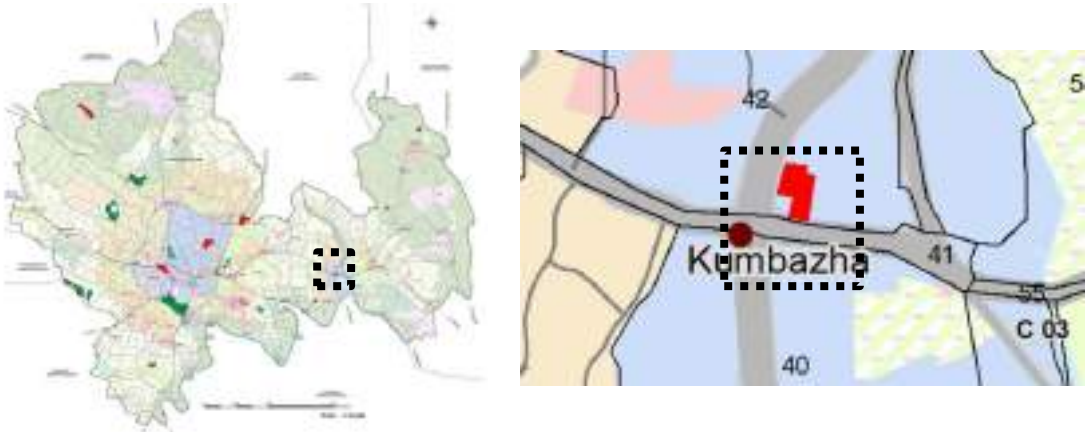


Figure 37.104 Location of Proposed Kumbazha Public Square



Figure 37.105 Proposed Kumbazha Public Square Layout and Concept

37.2.3 Environment

37.2.3.1 Sponge Parks

Sponge Parks is proposed primarily to enhance storm water management and flood mitigation in urban areas of the town. Designed to absorb rainwater like a sponge, the park will help reduce urban flooding, recharge groundwater, and improve water quality. Focus of this project is managing localized water runoff, reducing pressure on natural drainage systems and greening the urban environment.

While the primary function of Sponge Parks is stormwater management, they are also envisioned as vibrant open spaces supporting non-built, passive recreational uses. These parks are intentionally free from heavy infrastructure and buildings, avoiding the creation of 'concrete jungles.' Instead, they are designed to blend functionality with community engagement by incorporating walking paths, sitting areas, birdwatching zones, nature trails, rain gardens or bioswales, and permeable pavements. Essentially, Sponge Parks offer a shared space for both people and nature to thrive.Seven sponge parks are proposed in the town. Four are in the central part of the town and three are in Kumbazha region of eastern part of town.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are show in Figure 37.106 &37.107



Figure 37.106 Locations of Proposed Sponge Parks



Figure 37.107 Existing and Conceptual image of Proposed Sponge Park

37.2.3.2 Wetland Parks (Room for River)

The Room for the River concept means giving river space to flood safely, rather than trying to control them with structures. While Sponge Parks of the town are proposed as storm water management in urban areas of the town, the wetland parks are proposed as large, natural or semi-natural areas connected to hold excess floodwater, Restore natural flow patterns of river and Support biodiversity and water purification. The main objective of this proposal is to restore the natural water flow systems of the town, store excess water from the Achankovil River, and enhance flood resilience, particularly in the southern part of the town. This project envisions utilizing designated wetlands to temporarily hold overflow from the Achankovil River during periods of heavy rainfall, thereby making 'room for the river' and reducing the risk of urban flooding. Two wetland parks are proposed in the town. Location and conceptual design are shown in Figure 37.108& 37.109.

Project land Area : 18.37 Acre
Survey Numbers: 250,252, 253,278, 279
Land Ownership: Government & Private



Figure 37.108 Location of proposed wetland parks (R10) in proposed land use map



Figure 37.109 Proposed Wetland Parks (Conceptual Models)

37.2.3.3 Green Islet/ Urban Forestry/ Pachathuruthu/ Miyawaki Forest

Green Islet/ Urban Forestry/ Miyawaki Forest/ Pachathuruthu is compact patches of green space like a mini-park, planted traffic island, or community garden. Unlike big parks or long green strips, green islets are tiny green "dots" in the urban landscape. Though limited in size, but together, these green spaces help mitigate the urban heat island effect, regulate microclimates, improve air quality, support biodiversity, and enhance public well-being. By using native species and dense planting techniques like the Miyawaki method, they provide quick ecological benefits and contribute to resilient urban design.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.110 & 37.111

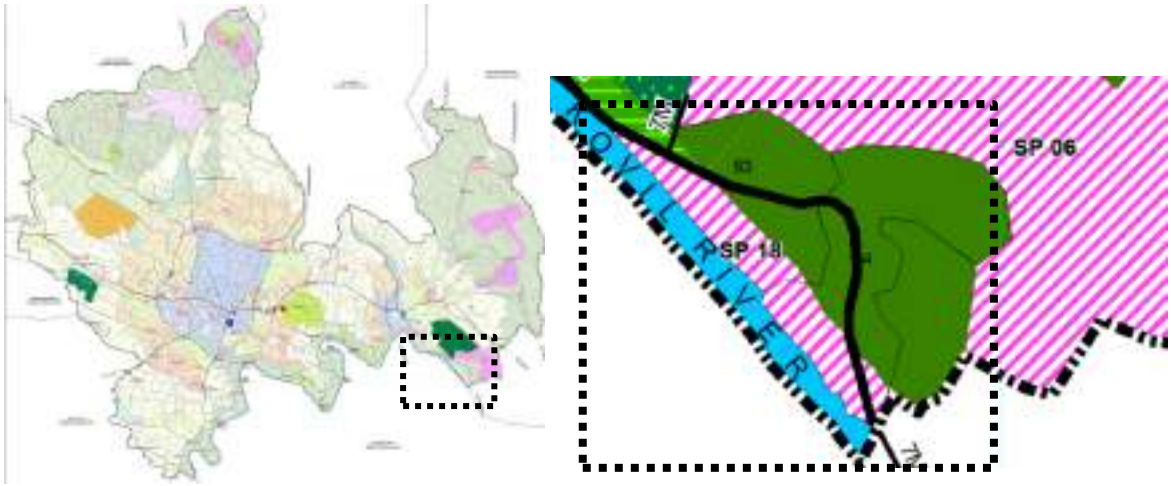


Figure 37.110 Locations of Proposed Green Islet/ Urban Forestry/ Miyawaki Forest/ Pachathuruthu



Figure 37.111 Proposed Conceptual Images for Green Islet/ Urban Forestry/ Miyawaki Forest/ Pachathuruthu

37.2.3.4 Detention/ Retention Basins

While sponge parks and "Room for the River" strategies offer important flood mitigation benefits, urban flooding remains a complex phenomenon that requires multiple layers of protection. To address this, detention and retention basins are proposed at strategic locations across the town, especially in areas not directly connected to the Achankovil River or sponge park networks. Sponge parks may be overwhelmed during intense rainfall, and drainage systems require backup solutions when infiltration is slow or when natural water bodies exceed capacity. With future urbanization expected to increase impervious surfaces—such as roads and buildings—the risk of surface runoff and urban flooding will rise. Small to large scale retention/detention basins are proposed various part the town.

The Municipal Council has designated this project as a priority initiative. Therefore, the details of the project-including Project components, need, aim and objectives, project cost components and implementation mechanism etc., are detailed in Chapter 39. The Location, proposed conceptual images are shown in Figure 37.112 and 37.113

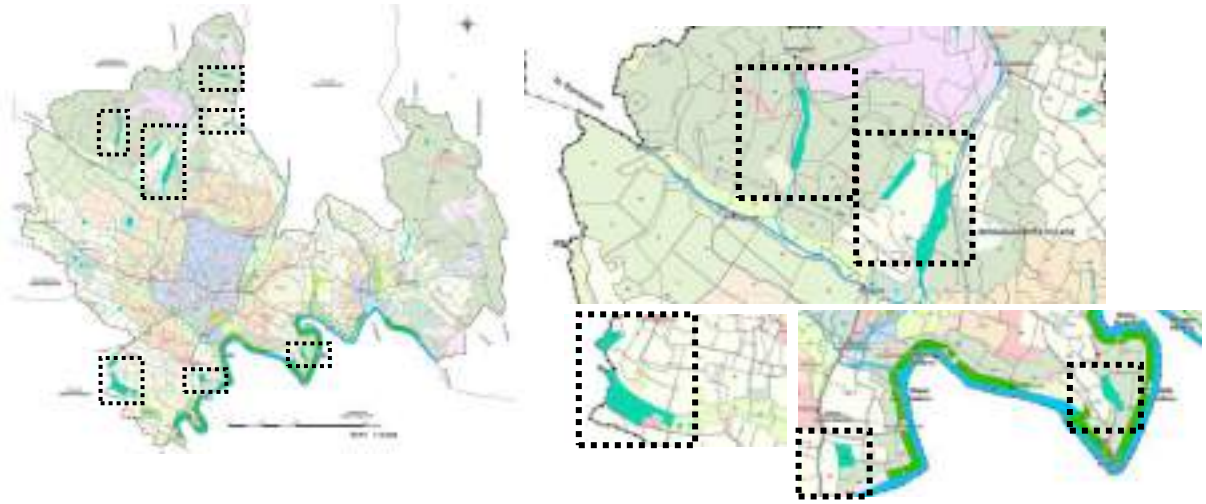


Figure 37.112 Locations of Detention/ Retention Basins



Figure 37.113 Proposed Conceptual Images for Detention/ Retention Basins

37.2.3.5 Riparian Buffer Zone

The proposed green strip is a narrow, linear area of vegetation along water bodies and wetlands of the town, while riparian buffer is a vegetated zone specifically located along River Achankoil. This is proposed along the entire stretch of the Achankoil River, with a width of 50 meters from the river boundary. This aims to protect river from encroachment, improve water quality, stabilize shorelines, and provide natural habitats. The buffer is specifically proposed to safeguard the health of river Achankoil while also contributing to flood management, biodiversity conservation, and enhanced scenic and recreational value for the town. The Location, proposed conceptual images are shown in Figure 37.114 and 37.115.

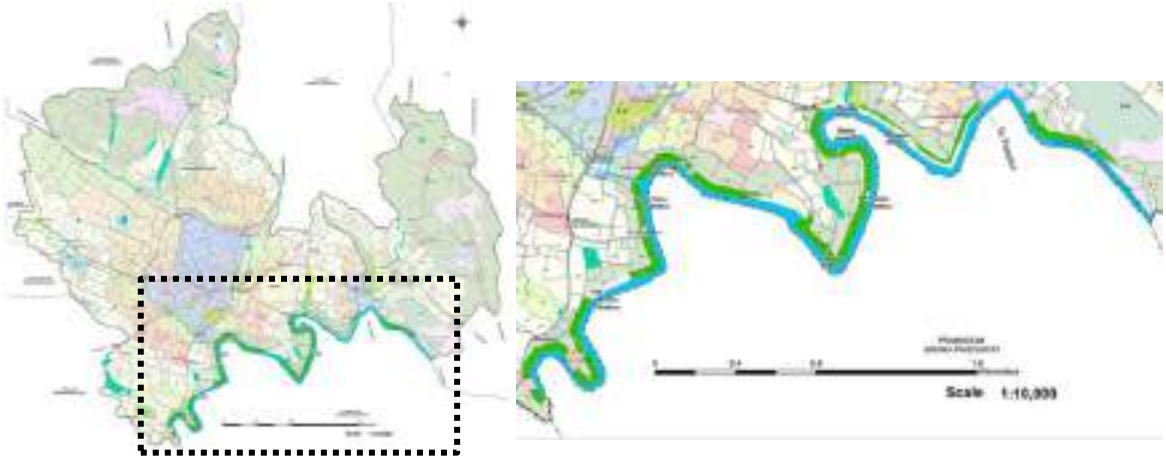


Figure 37.114 Location Proposed Riparian Buffer



Figure 37.115 Proposed Conceptual Images for Riparian Buffer

37.2.4 Goal based Decision Tree

The goal based decision tree (Annexure 37.2) serves as a structured framework linking the overarching vision of Pathanamthitta with its pillar wise goals, objectives and the concrete actions required to achieve them. Rooted in the principles of livability, sustainability, inclusivity and resilience, the tree illustrates a logical flow from high-level aspirations to actionable elements like policies, strategies, regulations and projects. This visual representation ensures that every intervention proposed in the master plan is aligned with the town's long-term vision, providing clarity, coherence and direction for decision-making and implementation.

38. DISASTER RISK REDUCTION, MITIGATION & CLIMATE CHANGE ADAPTATION





Pathanamthitta town, located in a multi-hazard-prone region, faces recurring threats from natural hazards such as floods, landslides, and droughts, along with emerging urban challenges like the urban heat island effect. With increasing climate variability and rapid urbanization, the need for a comprehensive and integrated Disaster Risk Reduction (DRR) strategy has become imperative to ensure sustainable and resilient urban development.

This chapter presents a holistic DRR framework designed to reduce vulnerabilities, strengthen adaptive capacities, and safeguard the lives and livelihoods of residents. Developed with a people-centric approach, the proposals outlined in this chapter incorporate local knowledge, institutional coordination, and inclusive planning to serve as a roadmap for enhancing safety, reducing risks, and fostering climate-resilient urban growth in Pathanamthitta town.

Contents

1 DRR Strategies, Actions and Projects

2 Proposals for Vulnerability Reduction

3 Proposals for Climate Change Adaptation

38.1 DRR Strategies, Actions and Projects

This section outlines specific interventions targeting the key hazards affecting the town. The proposed actions adopt an integrated approach that combines both structural and non-structural measures (Figure 38.1).

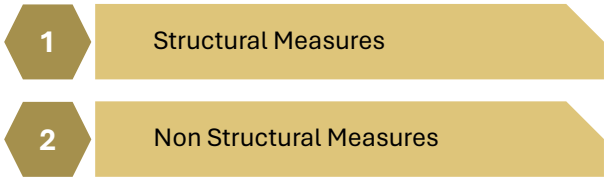


Figure 38-1 Proposed disaster risk reduction strategies of Pathanamthitta Town

Structural interventions include storm water management systems, slope stabilization efforts, water conservation strategies, and urban greening projects aimed at mitigating physical risks and building long-term resilience. In parallel, non-structural strategies such as preparedness planning, regulatory frameworks, and public awareness initiatives play a critical role in strengthening institutional capacity and community readiness. Together, these measures form the backbone of a resilient and sustainable urban environment, aligned with climate adaptation and disaster mitigation objectives.

38.1.1 Non-Structural Measures

As part of the DRR strategies, the non-structural measures focus on risk reduction through governance, planning, and community-based actions. These non-structural actions complement the physical interventions, ensuring that risk reduction is embedded in institutional mechanisms and public consciousness. The following are the proposed non-structural measures for risk reduction (Figure 38.2). The subsequent sections provide detailed insights into each of these components, elaborating their specific roles in enhancing the disaster resilience of Pathanamthitta town.

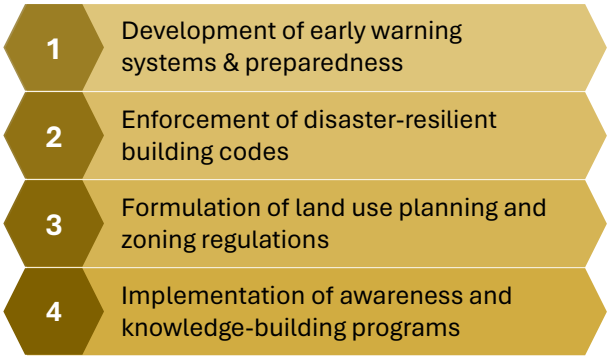


Figure 38-2 Proposed non-structural measures for risk reduction in Pathanamthitta town

38.1.1.1 Development of Early Warning & Preparedness

Seven intervention are proposed in development of early warning and preparedness measure of the town (Figure 38.3). Each of these interventions are elaborated below.



Figure 38-3 Proposed intervensions in development of early warning & prepardness

38.1.1.1.1 Preparedness measures

Preparedness measures are essential components of a comprehensive Disaster Risk Reduction (DRR) strategy aimed at enhancing the town's resilience to natural hazards. These measures are designed to reduce the impact of disasters by ensuring that the community, households, and local authorities are well-

equipped to handle the risks before, during, and after a disaster event. Preparedness efforts focus on timely actions, risk awareness, and capacity-building to mitigate hazards effectively and foster community-based resilience.

Before an Event (Mitigation and Preparedness Phase)

At community Level

1. Early Warning Systems: Establishing community-based early warning systems that provide timely, accurate, and location-specific alerts for floods, landslides, and heatwaves. These systems will use multiple communication platforms, such as mobile alerts, sirens, social media, and community radio.
2. Community Drills and Training: Regular disaster preparedness drills, including evacuation simulations, first-aid training, and response exercises to ensure community members are familiar with emergency procedures and can act swiftly during a crisis.
3. Pre-positioning of Relief Materials: Ensuring that essential disaster relief supplies, such as food, water, medicines, and clothing, are stored in safe, accessible locations and ready for rapid distribution in case of an emergency.

At household Level

1. Emergency Kits: Encouraging households to prepare emergency kits containing essential supplies, such as non-perishable food, clean water, medicines, flashlights, batteries, first-aid kits, and important documents in waterproof containers.
2. Evacuation Plans: Make them aware on how each family member should act during different types of disasters to save their own life and that of the family

During an Event (Response Phase)

At community Level

1. Emergency Response Teams: Establishing local emergency response teams, consisting of trained volunteers, local authorities, and first responders, who will take charge of coordinating evacuation, providing first aid, and assisting with shelter management.
2. Evacuation Coordination: Coordinating with local authorities to ensure safe and efficient evacuation from high-risk areas, particularly those prone to flooding, landslides, and heatwaves. These teams will guide residents to designated shelters and safe zones.

3. Shelter Management: Activation of designated relief camps equipped with basic amenities such as food, water, sanitation, and medical care. The camps should also provide psychological support to reduce trauma.
4. Emergency Communication: Using community-based communication channels to provide real-time updates during the event, keeping residents informed about evacuation routes, shelter locations, and hazard developments.

At household Level

1. Following Emergency Protocols: Households should immediately implement their evacuation plans, moving to designated shelters or safer locations in case of floods or landslides. In case of heat waves, residents should follow precautionary measures like staying indoors, drinking plenty of fluids, and using cooling methods.
2. Ensuring that essential disaster relief supplies, such as food, water, medicines, and clothing, are stored in safe, accessible locations and ready for rapid distribution in case of an

After an Event (Recovery Phase)

At community Level

1. Damage Assessment and Relief Distribution: Conducting rapid damage and needs assessments to identify the most affected areas and prioritize assistance. Relief teams should distribute essential supplies such as food, clean water, and medical aid to communities in need.
2. Psychosocial Support: Providing psychological support services for disaster survivors to help them cope with trauma and stress following a disaster event.
3. Community Restoration Activities: Facilitating community-led efforts to restore public infrastructure, such as repairing damaged roads, schools, and healthcare facilities, and rebuilding homes for the displaced population.
4. Post-Disaster Drills and Evaluation: After the disaster, organizing debriefing sessions with community members to evaluate the effectiveness of preparedness measures, identify gaps, and strengthen future response plans.

At household Level

1. Post-Event Safety Inspections: Households should inspect their properties for damage and hazards, such as weakened structures or flooding, and take immediate corrective actions, like securing unstable structures and cleaning debris.
2. Emotional and Social Support: Families should seek counselling or support from community-based psychosocial programs to address mental health issues stemming from disaster experiences.
3. Recovery and Rehabilitation: Rebuilding efforts should prioritize safety, including using disaster-resilient materials and adhering to updated building codes to minimize future risks. Households should also be informed about available government relief programs and support for recovery.

38.1.1.1.2 Emergency Response team

In line with the directives of the Local Self Government Department as per G.O. (Ms) No. 2462/2018/LSGD and G.O. No. 156/2019/LSGD, Pathanamthitta Municipality has established Emergency Response Teams (ERTs) at the ward level as a vital part of its disaster preparedness and response mechanism. Each ward is mandated to form four ERTs, focusing on early warning and evacuation, search and rescue, first aid and health care, and relief and shelter management, with a minimum of eight members in each team—amounting to at least 32 trained individuals per ward. These members are drawn from community networks like Kudumbashree, LRGs, youth groups, and other local volunteers.

Functioning under the guidance of the Municipal Disaster Management Cell, the ERTs play a critical role in disseminating early warnings, conducting evacuations, assisting rescue operations, providing first aid, and managing relief efforts during disasters such as floods and landslides. The ERT framework fosters a localized, community-driven approach to emergency response, enhancing resilience through regular training, capacity-building, and mock drills. This institutional setup has strengthened the municipality's ability to respond quickly and effectively to disasters while ensuring community participation in disaster risk reduction efforts.

38.1.1.1.3 Relief Camps

Relief camps form a vital component in ensuring the safety, shelter, and well-being of affected populations during and after disasters such as floods, landslides, and other emergencies. These camps are temporary shelters designed to accommodate displaced residents, providing them with essential services including food, water, sanitation, medical care, and psychosocial support.

In Pathanamthitta town, potential relief camp locations have been pre-identified in safe, accessible, and elevated areas that can be quickly converted into functional shelters. Table 38.1 shows the identified relief camps in the town. Location of relief camps shown in the Figure 38.4.

Table 38.1 Identified relief camps in the town

Relief Camps	Number of rooms	Capacity	Govt/ Pvt
Catholicate HSS	40	600	Private
Thaikav Govt.HSS	40	500	Govt
Seventh Days Adventist	20	250	Private
Marthoma HSS	40	500	Private
Amrutha Vidhyalayam	60	800	Private
St.Marys Vettipuram	20	200	Private
Holi Angels Thazhevettipuram	15	200	Private
Evershine school Makkamkunnu	15	200	Private
Catholicate College	100	1500	Private
Musliar College	100	1500	Private

38.1.1.1.4 Mass gathering venues

In the aftermath of a hazard event, mass gathering venues such as community halls, auditoriums, large school campuses, religious institutions, and sports grounds serve as critical

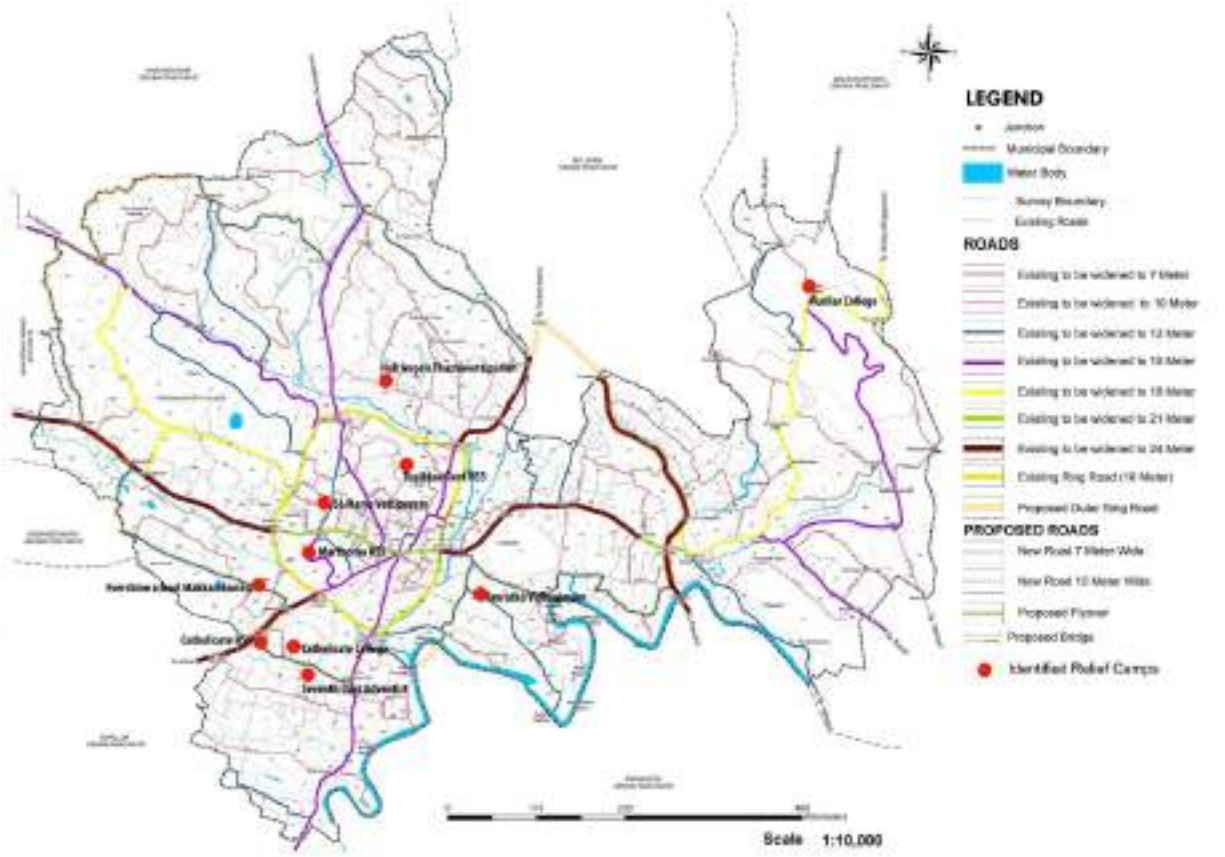


Figure 38-4 Location of identified relief camps in the town

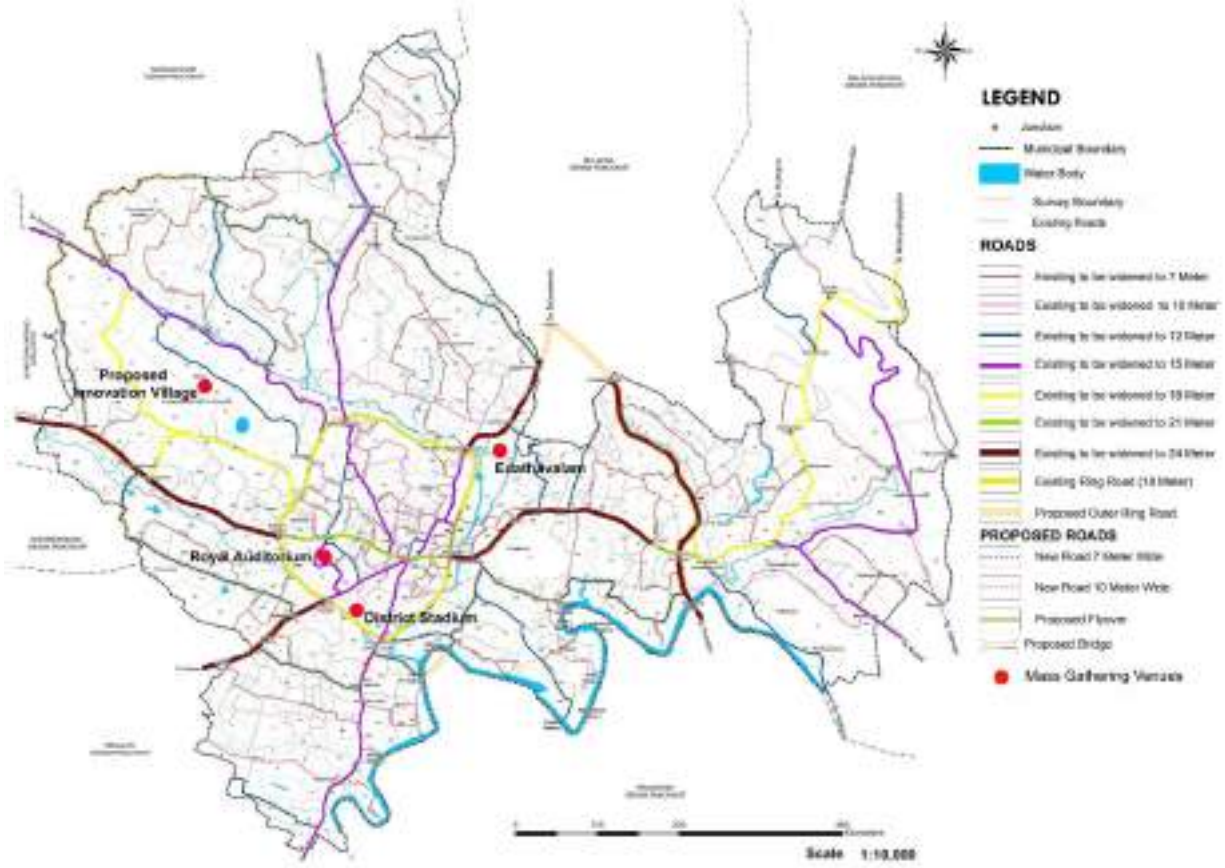


Figure 38-5 Location of identified mass gathering venues in the town

facilities for mass relief distribution, health check-ups, grievance redressal, and information dissemination. These sites are also useful as temporary logistical hubs for government departments and NGOs. Their proximity to main roads, helipads, storage/go-down facilities, and their accessibility from hazard-prone areas make them ideal for coordinated relief and rehabilitation efforts. These venues are to be integrated into the town's emergency response plans with clearly defined roles and protocols.

Royal Auditorium near Marthoma HSS can act as the distribution centre at the time of hazard. Apart from the relief camps identified and religious institutions in the town, Edathavalam, District Stadium (KK Nair Ground) and proposed Innovation village at Anchakkala can be used as mass gathering areas at the time of hazard based on the type of the hazard. These areas also have the facilities for helipad services. Location of mass gathering venues shown in the Figure 38.5.

38.1.1.1.5 Safe Parking Zones

In the event of prolonged flooding or inundation, designated safe zone parking areas are essential to protect vehicles from water damage and ensure mobility post-disaster. These zones are strategically identified on higher ground, outside flood-prone areas, and are accessible from key residential and commercial zones. Such locations include school grounds, stadium premises, and open public lands, which are temporarily repurposed during emergency warnings. These areas are to be clearly marked, maintained, and included in the town's emergency communication plans, allowing residents to relocate their vehicles in an orderly and timely manner. Table 38.2 shows the identified safe parking areas in the town. Location of safe parking areas shown in the Figure 38.6.

Table 38.2 Identified Safe Parking areas in the town

Sl.No	Identified Safe Parking Areas
1	Marthoma School ground
2	Old bus Stand Area
3	Catholicate College ground
4	Proposed Satellite Bus Station
5	Holy Angels model School Ground
6	Arabic College Ground
7	Mount Bethany public School Ground

38.1.1.1.6 Livestock Shelters

Given the semi-urban and peri-urban nature of Pathanamthitta and its surrounding areas, many households depend on livestock for their livelihood. During floods or landslides, animals face the risk of injury, illness, or loss. To address this, livestock shelters have been planned in elevated and accessible locations, preferably near relief camps or agricultural support centers. These shelters are to be equipped with temporary enclosures, feed storage, clean water access, and veterinary support during emergency periods. Community-level awareness and training on the safe evacuation of livestock are also emphasized as part of preparedness planning. Some of the identified safe parking areas can also use as livestock shelters at the time of hazard. Table 38.3 shows the identified livestock shelter areas in the town. Location of livestock shelter areas shown in the Figure 38.6.

Table 38.3 Identified livestock shelter areas in the town

Sl.No	Identified livestock shelter Areas
1	Marthoma School ground
2	Catholicate College ground
3	Proposed Satellite Bus Station
4	Holy Angels model School Ground
5	Arabic College Ground
6	Mount Bethany public School Ground

38.1.1.1.7 Evacuation routes

The identification, planning, and strengthening of evacuation routes play a critical role in ensuring the safety of residents during emergencies. Given the town's geographical characteristics and multi-hazard vulnerability, clearly defined and well-maintained evacuation routes are essential for enabling timely and organized movement of people from high-risk zones to designated safe locations. Evacuation routes in Pathanamthitta town are mapped to connect vulnerable wards, low-lying flood-prone areas, landslide-prone slopes, and densely populated pockets to nearby relief camps, higher grounds, open spaces, and public buildings identified as temporary shelters. Proposed evacuation route of the town is shown in the Figure 38.7.

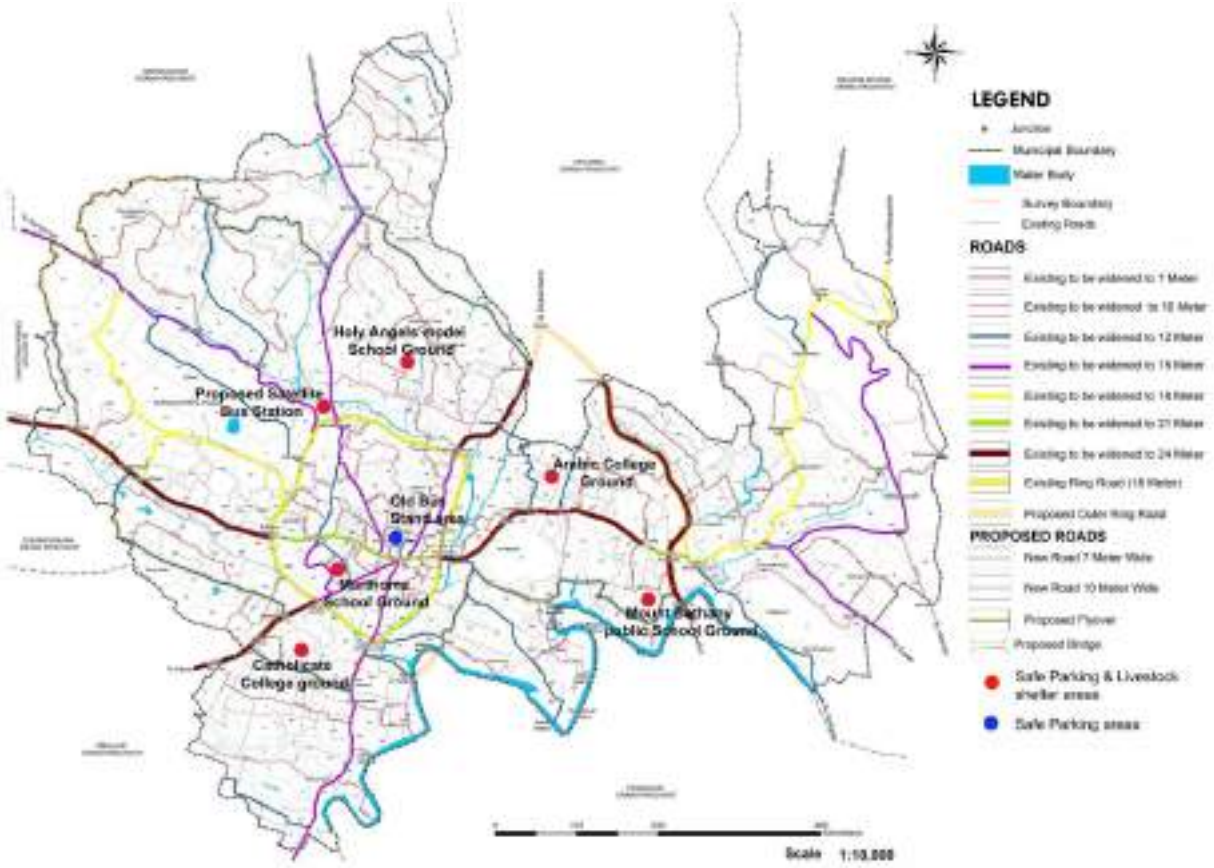


Figure 38-6 Identified safe parking and livestock's shelter areas

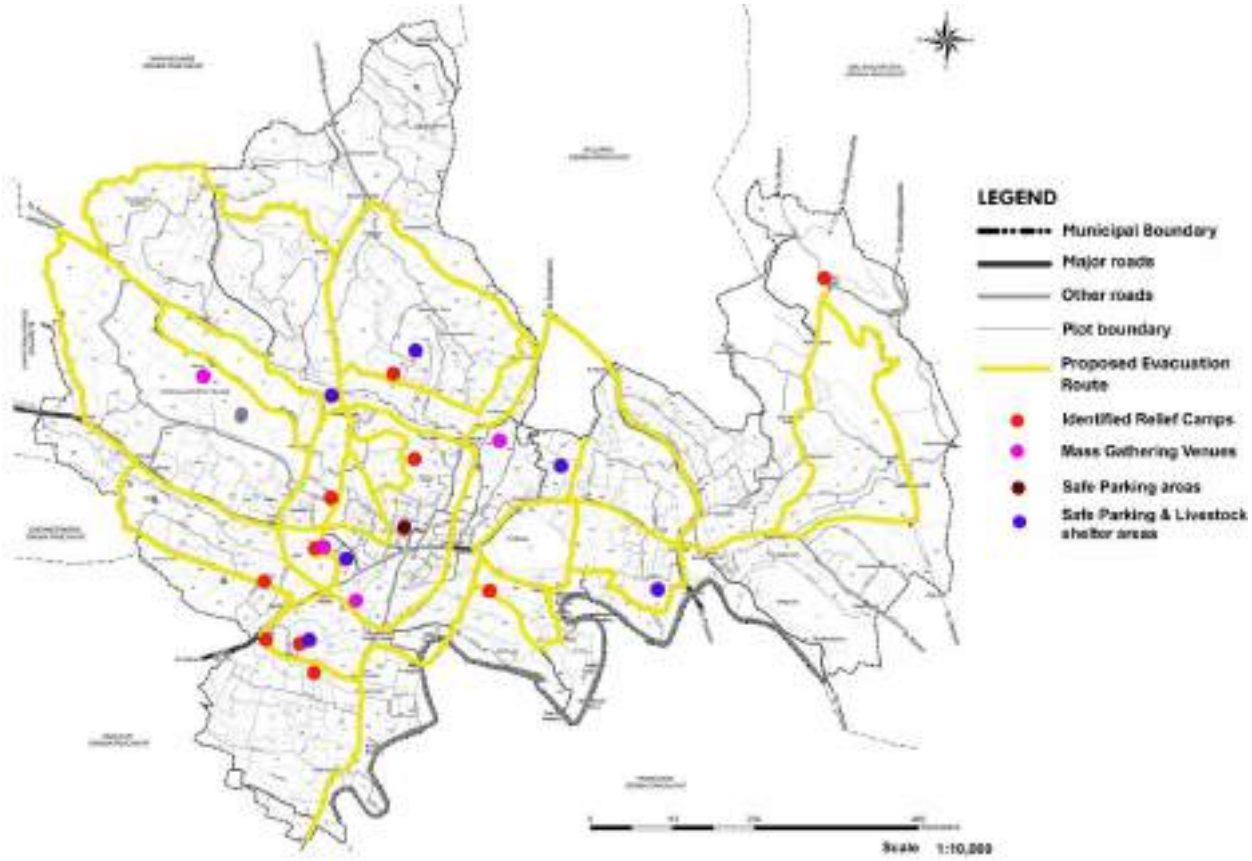


Figure 38-7 Proposed evacuation route of the town

List of roads in evacuation route is shown in table 38.4. Some of the roads in the evacuation route are needed to be upgraded as all weather road as these roads comes under flood and landslide prone areas. List of roads need to be upgraded as all-weather roads are mentioned in the following sections of this chapter.

Table 38.4 list of roads in evacuation route of town.

Sl. No	Name of road	Width (m)
1	Thiruvalla-Kumbzha Road (SH 07) St.Peter's Junction to Municipal Boundary near Churulikkode	24
2	Thiruvalla-Kumbzha Road (SH 07) Town Square to Kumbazha Popular Junction	24
3	Main Eastern Highway (SH 08) Kumbazha Bridge to Municipal Boundary at Kumbazha North	24
4	Adoor Road (NH 183A) Stadium Junction to Municipal Boundary near Santhosh Junction	24
5	Sabarimala Road(NH 183A) Thazhevettippuram to Municipal Boundary near Mylapra	24
6	Thiruvalla-Kumbzha Road (SH 07) St.Peter's Junction to Town Square via Central Junction	21
7	Thiruvalla-Kumbzha Road (SH 07) Kumbazha popular Junction to Kumbazha Market Junction	21
8	Ring Road	18
9	Kumbazha-Malayalappuzha Road (Kumbazha MDLPS Junction to Municipal boundary near Valavumkal Junction via Kumbazha market)	18
10	Thazhoorkadavu Road from Central Junction to Municipal Boundary near Kodumthara	15
11	Kadammanitta Road from Central Masjid Junction to Municipal boundary near Mundukottackal via Melevettippuram	15

12	Pariyaram Road from Melevettippuram to municipal boundary near Thonikkuzhy via Peringamala	15
13	Kaliyikkappadi to Musaliar college junction Road via Plaveli Junction	15
14	T.B Approch Road to GH Junction	15
15	Outer Ring Road	12
16	Peringamala- Anchakkala Road via Ottukal Muruppu	12
17	Kannamkara- Vyazhikadavu Road via MG University college	12
18	GH Junction-Vettippuram Road	12
19	Kulasekharapathy-Mylapra Road	12
20	Thazhevettippuram-Melevettippuram Road via Holy Angel School	10
21	Kulashekharapathy- Valamchuzhy Road	10
22	Korattimukku-Vallakkadavu Road	10
23	Press Club- Vettppuram Road	10

38.1.1.2 Building codes and standards

Given the town's vulnerability to multiple hazards, enforcing robust building codes and construction standards is a key aspect of Pathanamthitta's non-structural approach to Disaster Risk Reduction (DRR). These regulations are essential to ensure the structural safety and resilience of buildings against natural hazards including floods, landslides, drought-induced subsidence, and the growing threat of urban heat island effects. Specific measures include:

1. Minimum plinth height and prohibition of basement construction in flood-prone zones to reduce flood vulnerability.
2. Slope stability considerations for construction in landslide-prone hilly areas, including retaining wall requirements and mandatory geotechnical assessments.
3. Structural audits for critical infrastructure like hospitals, schools, and public buildings to ensure compliance with hazard-resistant standards.
4. Promotion of climate-sensitive design features such as cool roofs, natural ventilation, and solar reflectivity in materials to address urban heat island effects.
5. Enforcement of rainwater harvesting systems, pervious paving, and green building norms to improve water conservation and mitigate drought conditions.

All new development projects proposed in the town incorporates climate-sensitive design principles and comply with green building codes. In the identified flood-prone areas of the town, plinth level regulations have been adopted based on the degree of flood risk—categorized as low, moderate, and high. Accordingly, the minimum plinth height for all buildings is fixed at 0.6 meters above the flood submersion level of particular area, determined using 50-year flood return probability. Additionally, basement floors are strictly prohibited for any usage in these zones. In landslide-prone areas, regulations apply to sites with a slope angle of 20 degrees and above with appropriate slope stabilization measures. The integration of solar water heating and solar power systems shall be in accordance with Kerala Municipality Building Rules (KMBR). Furthermore, the permissible building coverage and ground paving percentages are regulated based on site-specific hazard vulnerabilities. Detailed provisions of these building regulations are provided in Chapter 40 Zoning Regulations.

In Pathanamthitta town, these codes are not only tools for regulating construction but also act as instruments for risk-informed development planning. Their rigorous implementation is vital to reducing structural vulnerabilities, protecting life and property, and

fostering a safer urban environment in the face of evolving climate and disaster risks.

38.1.1.3 Land use planning & zoning regulations

Pathanamthitta town, being located in a multi-hazard-prone region, requires a proactive and risk-informed approach to land use planning to ensure sustainable and resilient urban development. Integrating disaster risk considerations into land use planning and zoning regulations serves as a preventive strategy that minimizes exposure and vulnerability to hazards such as floods, landslides, drought, and urban heat island effects.

One of the key non-structural measures for Disaster Risk Reduction (DRR), land use planning enables the identification and designation of safe zones for development while restricting or regulating construction and land conversion in hazard-prone areas. In Pathanamthitta town, this involves mapping vulnerable zones using hazard-risk assessments and overlaying them onto the land use map to guide appropriate zoning regulations. Flood-prone low-lying areas, steep slopes susceptible to landslides, and ecologically sensitive regions are earmarked for restricted development or designated for compatible uses like open green spaces, urban forests, water retention areas, and recreational spaces.

Zoning regulations are being framed and strengthened to ensure that critical infrastructure and residential settlements are located away from high-risk zones. Buffer zones along riverbanks and steep slopes are being proposed, alongside provisions for regulating landfills, construction practices, and impervious surface coverage to reduce urban runoff and erosion. Mixed-use and transit-oriented development strategies are also encouraged in safer zones to reduce stress on vulnerable areas.

Further, these regulations are aligned with the Risk-Informed Master Plan (RIMP) of the town and incorporate climate resilience principles. By institutionalizing risk-sensitive land use planning and zoning, Pathanamthitta can ensure long-term risk mitigation, reduce disaster-induced losses, and support a resilient urban transformation process.

38.1.1.4 Knowledge and awareness raising

In disaster-prone urban areas such as Pathanamthitta town, strengthening community knowledge and public awareness serves as a fundamental pillar of effective Disaster Risk Reduction (DRR). Empowering individuals, households, institutions, and local governance systems with the ability to identify hazards, understand vulnerabilities, and take timely action significantly enhances resilience. This approach fosters a culture of preparedness at the grassroots level and contributes to long-term risk mitigation.

Pathanamthitta Municipality can integrate targeted awareness programs within its DRR framework, focusing on diverse community groups including school children, local residents, traders, self-help groups, youth clubs, and civic organizations. In collaboration with the District Disaster Management Authority (DDMA) and Local Resource Groups (LRGs), regular initiatives such as community-based disaster risk management workshops, hazard-specific mock drills (for floods, landslides, etc.), and public exhibitions can be conducted to improve public understanding and readiness.

Dissemination of early warning information and educational content through varied communication channels—such as local radio, mobile alerts, social media, posters, and public announcement systems—will ensure timely and inclusive outreach during emergencies. The

use of visual aids, prominent signage in vulnerable zones, and the public display of hazard maps in key buildings will further reinforce community risk perception and safety awareness.

Developing and distributing hazard maps and conducting vulnerability assessments for different areas of the town can help residents understand risks related to floods, landslides, urban heat islands, and droughts. Public campaigns should also focus on promoting preparedness actions such as safe construction practices, the importance of insurance, household-level emergency planning, and efficient resource management during hazard events.

Educational institutions play a vital role in promoting disaster literacy from an early age. Schools can be engaged through disaster awareness clubs, curriculum-based modules, and mock drills that prepare children to act safely in emergencies. Additionally, special attention should be given to communicating with vulnerable groups—including the elderly, persons with disabilities, and women—ensuring inclusivity and equity in preparedness strategies.

By fostering a well-informed and alert community through continuous knowledge dissemination and awareness-building initiatives, Pathanamthitta town can move toward a more proactive, inclusive, and resilient disaster management framework—capable not only of responding to disasters effectively but also of anticipating and minimizing their impacts.

38.1.2 Structural Measures

The structural measures proposed aim to address the physical vulnerabilities of Pathanamthitta town to natural hazards such as floods, landslides, droughts, and urban heat island effects. These interventions involve engineered solutions and infrastructure development designed to reduce hazard impacts, enhance resilience, and protect lives, property, and essential services. These initiatives are planned with a long-term vision, ensuring that the town's built environment evolves in harmony with its natural systems while strengthening its capacity to absorb and recover from disaster events. The following sections detail the key structural projects and actions proposed to enhance the town's disaster resilience through sustainable and climate-responsive infrastructure.

38.1.2.1 Flood

Pathanamthitta town, being highly susceptible to seasonal flooding, necessitates comprehensive structural Disaster Risk Reduction (DRR) interventions to mitigate the impact of recurring flood events. This section introduces two key structural strategies. Room for the River and Flood-proofing measures (Figure 38.8).

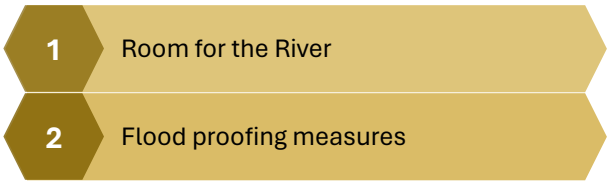


Figure 38-8 Proposed key structural measures for flood risk reduction in Pathanamthitta town

Together, the interventions in these two strategies aim to strengthen the town's physical resilience to floods while ensuring long-term sustainability. The components of these structural measures are detailed in the following sections.

38.1.2.1.1 Room for the River

The Room for the River approach, originally conceptualized in the Netherlands, is a sustainable flood management strategy that seeks to restore the natural capacity of river systems by giving rivers more space to flow safely, especially during peak monsoon or flood periods. In the context of Pathanamthitta town, which is intersected by several rivers, streams,

and drainage channels and is vulnerable to seasonal flooding, adopting this approach can significantly enhance flood resilience while also contributing to environmental conservation and urban liveability.

"Room for the River" concept focuses on restoring natural drainage systems, removing encroachments from streams and channels, and implementing sponge city strategies for storm water retention and floodwater management. Integrating "Room for the River" principles into town planning and development regulations will ensure that future constructions are not carried out in high-risk zones. Urban design should prioritize open space preservation, minimum setback from water bodies, and zoning policies that respect natural hydrological flows. Figure 38.9 shows the structural measures adopted under Room for the River strategy in Pathanamthitta town.

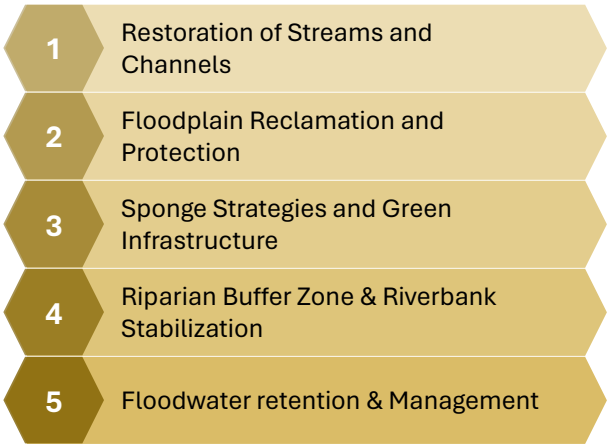


Figure 38-9 Structural measure adopted in Room for the River strategy of the town for flood risk reduction

38.1.2.1.1.1 Restoration of streams and channels

Many of the natural drainage paths and minor streams in Pathanamthitta have been encroached upon or degraded due to unplanned urbanization. Restoring these watercourses by removing encroachments, clearing blockages, and reconnecting fragmented channels can significantly improve the drainage capacity of the town. This will reduce localized flooding and allow smoother flow of water during high-intensity rainfall events.

To ensure the efficient and safe conveyance of storm water through the town, a range of natural canal widths of 3 m to 20 m has been proposed by widening of existing canals in the town. Details of these waterbody widening is outlined in chapter 37.

38.1.2.1.1.2 Floodplain Restoration and Protection

Restoring and preserving natural floodplains—especially along the Achankovil River and their tributaries—will provide space for floodwaters to spread out safely, reducing pressure on built-up areas. These restored zones can be developed as multifunctional open spaces like urban parks, community greens, or ecological corridors which retain water during floods and serve as recreational areas during dry periods. For flood plain restoration and protection, following projects (Figure 38.10) are proposed in the town.

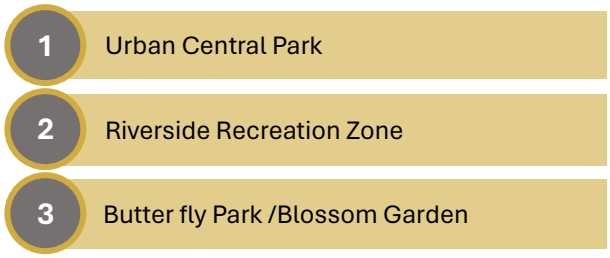


Figure 38-10 Proposed projects in flood plain reclamation and protection measures of the town for flood risk reduction

The projects proposed in flood-prone areas—namely the Urban Central Park, Riverside Recreation Zone, and Butterfly Park—are designed with integrated floodplain protection measures that align with the principles of climate resilience, ecological conservation, and sustainable land use. These projects do not obstruct natural drainage or alter the flow regime of nearby water bodies. Instead, they are planned as multi-functional green spaces that serve as flood buffers, absorbing and safely

channelling excess storm water during high rainfall events.

The Urban Central Park, strategically located in the town's floodplain, incorporates features such as rain gardens, bios wales, permeable pathways, and artificial retention ponds to facilitate infiltration and regulate surface runoff. Landscape design ensures that low-lying sections of the park function as temporary water holding basins, reducing peak flood impacts downstream.

The Riverside Recreation Zone, situated along the banks of River Achankovil, wherein construction-free buffer zones are maintained along the riverbank. This zone integrates riparian vegetation, regraded natural slopes, and flood-tolerant planting to stabilize the banks and enhance water retention capacity, thereby minimizing erosion and flood hazard.

Similarly, the Butterfly Park is planned with a low-impact ecological design, using native plant species tolerant to moisture variability. Its layout avoids hard paving and utilizes porous surfaces, swales, and decentralized water collection pits that act as both habitat features and water absorption zones. The site is also designed to withstand periodic submersion without structural or ecological damage. Details of each project like location, survey number, area, land ownership and project concept are outlined in the Figure 38.11.

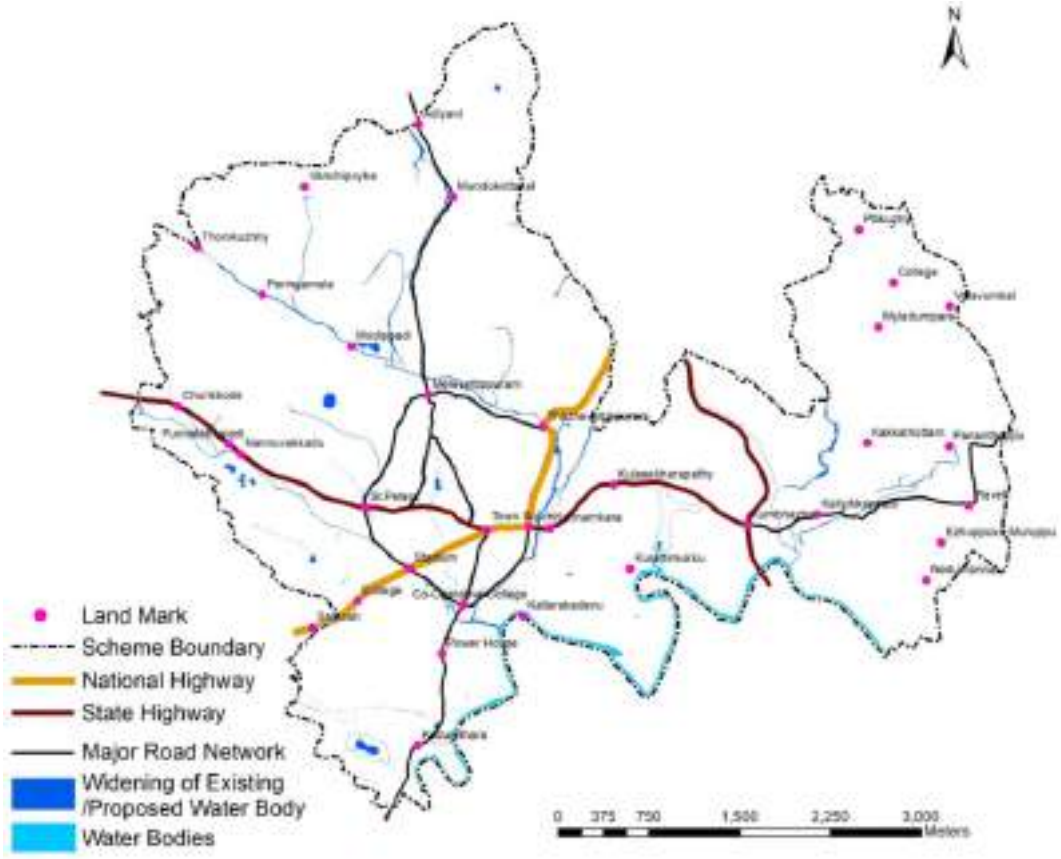


Figure 38-11 Details of Water body Widening

38.1.2.1.1.3 Sponge strategies and Green Infrastructure

Incorporating sponge city elements like permeable pavements, bioswales, rain gardens, vegetated buffer strips, and constructed wetlands will enhance the capacity of the urban landscape to absorb, store, and gradually release rainwater. This is particularly relevant for low-lying and flood-prone areas such as those around the ring road, Azhoor,

Kannamkara and Kumbazha. Three level of strategies' are adopted in sponge and green infrastructure.

At Town Scale

These are town-wide planning and infrastructural strategies designed to improve the hydrological resilience of the entire urban system.

1. Urban Wetlands Restoration and Conservation: Restore existing wetlands and ponds in and around the municipality to act as natural reservoirs and flood buffers.
2. Green Corridors and Urban Forests: Develop green belts and tree-lined corridors along roads and riverbanks to absorb surface runoff and reduce urban heat.
3. Rainwater Harvesting Infrastructure in Public Spaces: Construct large-scale rainwater harvesting tanks in public parks, bus stands, markets, and transport hubs.
4. Permeable Street Design: Convert roads, footpaths, and medians with permeable paving materials to allow infiltration.
5. Flood Retention Parks: Design low-lying public open spaces as dual-use recreational areas and retention basins during monsoon months.

Master plan integrates a network of following sponge-based urban ecological projects (Figure 38.11) to effectively manage storm water, restore natural hydrology, and enhance climate resilience. These sponge strategies, inspired by nature-based solutions, are tailored to each project type, ensuring multi-functional landscape infrastructure that supports flood mitigation, groundwater recharge, microclimate regulation, and urban biodiversity.

- 1 Sponge Park (7 Numbers)
- 2 Wetland Park (2 Numbers)
- 3 Urban Health Corridor
- 4 Green Strip
- 4 Green Islet (2 Numbers)

Figure 38-12 Proposed projects in sponge strategies and green infrastructure measures at town level for flood risk reduction.

In the Sponge Parks, landscape interventions such as bioswales, rain gardens, percolation trenches, vegetated filter strips, and shallow retention ponds are introduced. These features slow down surface runoff, enhance infiltration, and reduce the burden on conventional drainage systems. The soil profile is enriched with bioengineered layers to maximize water retention capacity, while native and flood-tolerant plants stabilize the ground and filter pollutants. The Wetland Park is designed as a large-scale ecological buffer zone that mimics natural wetland functions that act as sponges, absorbing floodwater and gradually releasing it into the ground or nearby Achankovil River.

The Urban Health Corridor, which combines green mobility routes with health and wellness spaces, integrates linear bioswales, tree-lined stormwater infiltration belts, and rainwater-fed planting beds along its entire length. The corridor connects various public facilities and open spaces, forming a green spine that improves ecological connectivity and water-sensitive urban design. The Green Strips, are planted with deep-rooted native species serve as linear ecological corridors that enhance biodiversity while moderating air and surface temperatures. The Green Islets (Urban Forests) absorb rainwater, improve soil permeability, and recharge shallow aquifers. Their design includes permeable boundaries, minimal hardscaping, and layered vegetation to maximize canopy cover and evapotranspiration,

contributing to overall hydrological balance. Details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 36 & 37.

At Institutional Scale

Focused on larger individual facilities like government buildings, schools, hospitals, markets, and religious institutions.

1. Green Roofs and Rain Gardens: Install green roofs and vegetated rain gardens within campuses to reduce storm water runoff and improve insulation.
2. Bios wales and Permeable Parking: Develop bioswales along access roads and convert impermeable parking areas into permeable or semi-permeable surfaces.
3. Institutional Rainwater Harvesting: Implement rooftop rainwater harvesting systems for water conservation and reduction of peak flows into the public drainage system.
4. Stormwater Detention Tanks: Integrate stormwater collection tanks in institutional campuses that can delay water discharge and ease pressure on urban drainage.
5. Tree Canopy Expansion: Expand shaded areas through structured plantation drives to enhance evapotranspiration and reduce surface temperature and runoff.

For Sponge strategies and Green Infrastructure at institutional level, above mentioned strategies are incorporated in following mentioned proposed projects in the town (Figure 38.12).

1. Government office Complex
2. District Court Complex
3. Municipal Office Complex expansion & Redevelopment
4. Thaikkav Government school redevelopment
5. Redevelopment of General Hospital Campus
6. Restructuring of Civil Station
7. Redesigning of Mini Civil Station

Figure 38-13 Proposed projects in sponge strategies and green infrastructure measures at town level for flood risk reduction.

Key common sponge features proposed across all campuses includes permeable surfaces in driveways, walkways, and courts, Rain gardens and bioswales for natural filtering and infiltration, Soak pits and recharge trenches to reduce runoff discharge, Green roofs, terrace gardens, and vertical planting systems, Rainwater harvesting for reuse in utilities and landscaping, Native vegetation to increase infiltration and reduce maintenance. The details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 37.

At Plot Scale

These measures apply to individual residential or commercial plots and help in decentralized storm water management.

1. Permeable Compounds and Paving: Encourage homeowners to use interlocking blocks or gravel surfaces instead of full concrete pavements for driveways and walkways.
2. Household Rainwater Harvesting Units: Mandate rainwater harvesting pits or tanks for all buildings through building bylaws or incentives.
3. Green Boundary Treatments: Promote planting hedges and native vegetation instead of concrete walls to improve percolation and reduce runoff.
4. On-site Soak Pits and Recharge Wells: Install soak pits to enable excess water to recharge

groundwater rather than being directed to stormwater drains.

5. Small Rain Gardens: Encourage landscaping and gardening practices that allow infiltration, especially in front yards and terraces.

38.1.2.1.1.4 Riparian Buffer Zones and Riverbank Stabilization

Establishing riparian buffer zones along the banks of major and minor rivers will not only reduce erosion and sedimentation but also act as natural barriers against flood surges. Native vegetation can be planted in these buffers to stabilize banks and enhance ecological value. A 50 m wide strip of Riparian buffer zone is proposed along the edge of Achankovil River. Details related to developments in the riparian buffer is mentioned in chapter 40 Zoning Regulations.

38.1.2.1.1.5 Flood water retention & Management

Given the town's topography, high rainfall, and increased impervious surfaces due to urbanization, integrated flood management measures focused on retaining, detaining, and safely draining storm water are essential to minimize flood risks and enhance urban water resilience.

Basin for Flood Water Retention

The creation of strategically located retention and detention basins can help manage excess stormwater during peak rainfall events. Flood retention basins are designated low-lying areas designed to temporarily store excess rainwater during heavy rainfall events, reducing peak runoff and preventing downstream flooding. In Pathanamthitta town, these can be developed through the following approaches:

1. Natural Retention Basins: Identify and conserve existing depressions, ponds, and marshy lands within the town limits—such as degraded wetlands and unused open spaces—to function as natural retention areas. These areas can be enhanced with minor earthworks and native vegetation to maximize water storage and infiltration.
2. Constructed Retention Basins: Develop purpose-built retention basins in flood-prone zones and near key drainage outfalls. These can be designed as dual-use spaces—serving as public parks or playgrounds during dry periods and as detention areas during storms.
3. Integration with Urban Parks and Open Spaces: Convert existing public parks and green spaces into multifunctional flood retention areas by incorporating landscape features such as swales, sunken lawns, and berms. These can detain water and allow it to infiltrate naturally into the soil.
4. Decentralized Mini Basins in Institutional Areas: Schools, hospitals, bus terminals, and large markets can incorporate on-site detention basins to manage runoff within their premises before it enters the municipal storm water system.

For Flood water retention, thirteen small to large scale retention/detention basins are proposed various part the town and details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 37.

Storm water management

Effective storm water management is critical in controlling the volume, velocity, and quality of runoff during intense rainfall events. For Pathanamthitta, a combination of traditional and nature-based storm water management techniques can be adopted:

1. Drainage Network Rehabilitation and Expansion: Upgrade the existing open and covered drainage system to improve capacity and connectivity, especially in low-lying and water-logging hotspots. Ensure

periodic cleaning and desilting of drains and canals before the monsoon.

2. Detention and Infiltration Trenches: Construct detention trenches along major roads, especially in commercial and high-density residential areas, to intercept runoff and facilitate gradual infiltration.
3. Bioswales and Vegetated Channels: Incorporate bioswales along road medians, parking lots, and green corridors to slow down runoff, filter pollutants, and support percolation.
4. Permeable Pavements: Use permeable materials in pavements, footpaths, and parking areas to reduce surface runoff and promote groundwater recharge.
5. Stormwater Harvesting Pits: Mandate stormwater harvesting in all new developments through building rules, enabling recharge wells and pits to be installed for capturing roof and surface runoff.
6. Smart Drainage Planning Using GIS: Utilize GIS and hydrological modeling tools to map stormwater flow patterns, identify bottlenecks, and prioritize investments in critical drainage improvement zones.

All roadways with a width of more than 7 meters are recommended to be improved with storm water drainage on both sides in order to manage storm water efficiently. Bioswale and permeable pavements are proposed in the entire ring road as part of proposed Urban Health Corridor project. Zoning Regulation mandate the construction of Storm water Harvesting pits in new development. A drainage master plan is proposed to provide a framework to manage stormwater effectively, preventing flooding during rains.

38.1.2.1.2 Flood proofing measures

Flood proofing measures are critical structural interventions under the Disaster Risk Reduction (DRR) strategy for Pathanamthitta town, which is increasingly vulnerable to frequent and intense flooding events. These measures aim to minimize the damage caused by floods by making the built environment more resistant and adaptive to water intrusion, ensuring the continuity of essential services and the safety of residents. Figure 38.13 shows the flood-proofing strategies adopted in Pathanamthitta:



Figure 38-14 Structural measure adopted in Flood Proofing Measures strategy of the town for flood risk reduction

38.1.2.1.2.1 Elevated buildings

Elevating buildings above known flood levels is a fundamental method of preventing water ingress. In flood-prone areas of Pathanamthitta:

1. New constructions are mandated to raise the plinth level above the highest flood level, as per hazard zonation and contour data.
2. Retrofit solutions for existing structures may include raising floors, relocating utilities above base flood elevations, and constructing flood walls or plinth beams around low-lying buildings.
3. Elevated platforms can also be provided in public buildings such as schools and community halls to safeguard essential services during floods.

Three level of plinth height (table 38.5) is proposed in the development of flood prone area of the town.

Table 38.5 Proposed plinth height for development in various flood prone areas

Flood Intensity	Flood Inundation level	Proposed minimum Plinth Height
Low	Below 0.6m	1.2 m
Moderate	0.6m to 1.5m	2.1m
High	Above 1.5m	3 m

38.1.2.1.2.2 Relocation from High-Risk Zones

Relocation is a long-term, sustainable option where structural interventions are insufficient or economically unfeasible. It is proposed to relocate Fire Station from flood prone area to flood free zone for proper functionality at the time of hazard. Details of relocation of fire station including the land details are outlined in the chapter 37.

38.1.2.1.2.3 All weather roads

Ensuring road accessibility during and after flood events is crucial for evacuation, relief delivery, and emergency services:

1. Roads in vulnerable zones should be designed with proper camber, cross-drainage structures, culverts, and elevated embankments.
2. Use of flood-resistant materials and pavement technologies can reduce deterioration during waterlogging.
3. Critical evacuation routes and access roads to relief camps and hospitals should be declared as priority corridors for flood-proofing upgrades.

The proposed all weather roads in the town is shown in Figure 38.14 and list of roads shown in table 38.6.

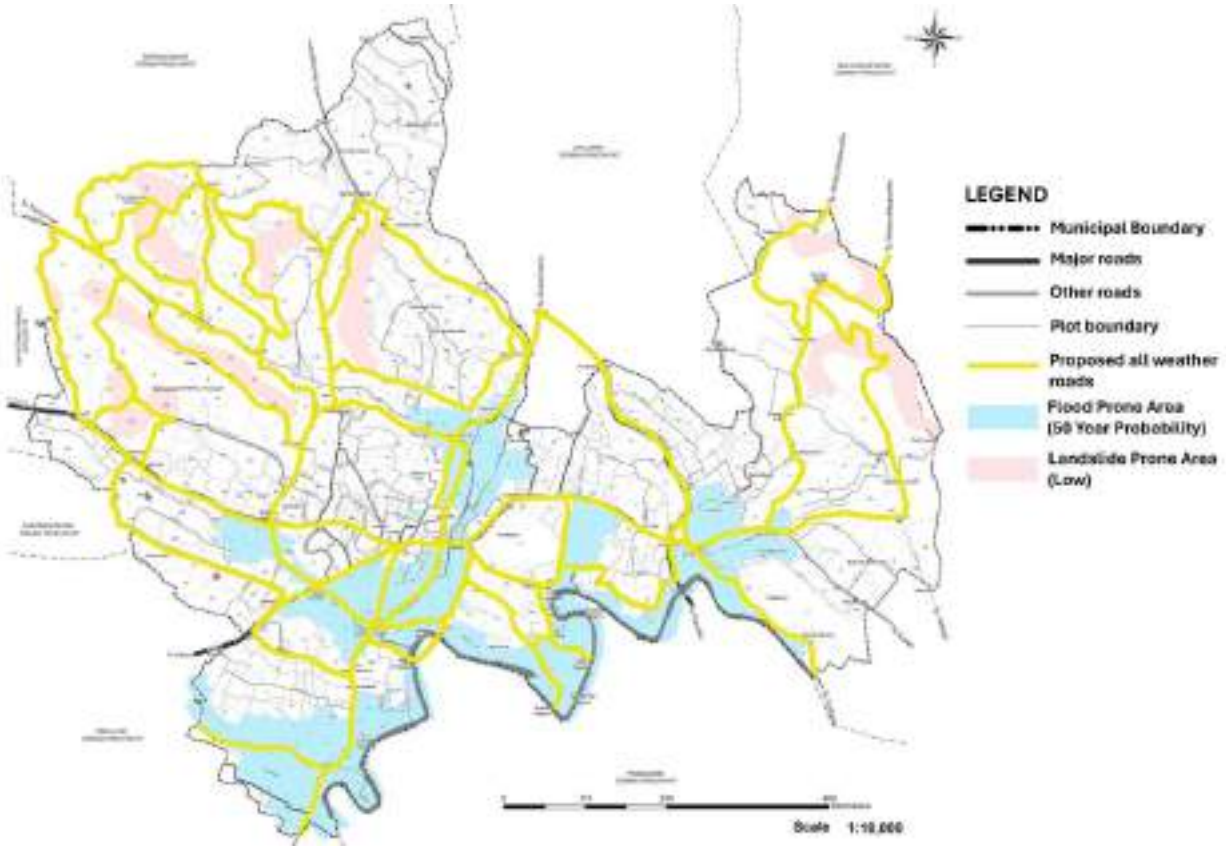


Figure 38-15 Proposed all weather roads in the town

Table 38.6 list of proposed all weather road in the town.

Sl. No	Name of road	Width (m)
1	Thiruvalla-Kumbzha Road (SH 07) St.Peter's Junction to Municipal Boundary near Churulikkode	24
2	Thiruvalla-Kumbzha Road (SH 07) Town Square to Kumbazha Popular Junction	24
3	Main Eastern Highway (SH 08) Kumbazha Bridge to Municipal Boundary at Kumbazha North	24
4	Adoor Road (NH 183A) Stadium Junction to Municipal Boundary near Santhosh Junction	24
5	Sabarimala Road(NH 183A) Thazhevettippuram to Municipal Boundary near Mylapra	24
6	Thiruvalla-Kumbzha Road (SH 07) St.Peter's Junction to Town Square via Central Junction	21
7	Thiruvalla-Kumbzha Road (SH 07) Kumbazha popular Junction to Kumbazha Market Junction	21
8	Ring Road	18
9	Kumbazha-Malayalappuzha Road (Kumbazha MDLPS Junction to Municipal boundary near Valavumkal Junction via Kumbazha market)	18
10	Chittoor Junction -Peringamala Road(part)	18
11	Thazhoorkadavu Road from Central Junction to Municipal Boundary near Kodumthara	15
12	Kadammanitta Road from Central Masjid Junction to Municipal boundary near Mundukottackal via Melevettippuram	15
13	Pariyaram Road from Melevettippuram to municipal boundary near Thonikkuzhy via Peringamala	15
14	Kaliyikkappadi to Musaliar college junction Road via Plaveli Junction	15
15	Outer Ring Road	12
16	Peringamala- Anchakkala Road via Ottukal Muruppu	12
17	Kumbazha Market Junction-Thundumankara Road	12
18	Modippadi- Vanchipoyka Road	12
19	Kannamkara- Vyazhikadavu Road via MG University college	12
20	GH Junction-Vettippuram Road	12
21	Kodumthara-Omalloor Road	12
22	Mayiladumpara-Pallikkuzhy Road	12
23	Thazhevettippuram-Melevettippuram Road via Holy Angel School	10
24	Kulashekharapathy- Valamchuzhy Road	10
25	Korattimukku-Vallakkadavu Road	10
26	Road connecting Konnamoodu-Vanchipoyka Road to Modippadi-Vanchipoyka Road	7
27	Peringamala-Vanchipoyka Road	7
28	Thonikkuzhy-Thonnyamala Kurissadi Road	7
29	Ponpara-Vettippuram Road	7
30	Nannuvakkad-Peringamala Road	7

38.1.2.1.2.4 Modifying critical infrastructure

Hospitals, government offices, water supply systems, power stations, and emergency shelters form the backbone of disaster response and must be made resilient:

1. Upgrades can be made to critical infrastructure that cannot be readily relocated out of a hazard zone. Typical upgrades include raising floor levels to reduce inundation risk and changing infrastructure design and materials, will reduce the consequence of inundation.
2. Install flood-resistant doors, electrical systems, and waterproof sealing in vital facilities.

3. Backup systems like elevated diesel generators, solar panels, and emergency water tanks should be part of the design.
4. Location of new critical infrastructure should be planned away from flood-prone and low-lying areas.
5. Replacing of overhead electric lines with Under Ground cables in whole of the flood plain area
6. All transformers in the flood prone areas should be raised above HFL with raised platform or should be shifted to elevated places nearby.

Several critical infrastructures in the town—including the Municipal Bus Stand, Muthoot Hospital, Muthoot Nursing College, District Stadium, Krishi Bhavan, Superintendent of Police (SP) Office, Slaughter House, MSELP School, and Bhavas School—are located within high-intensity flood-prone areas. Additionally, the Veterinary Hospital is situated in a moderate-intensity flood-prone zone. Following the 2018 floods, many private institutions proactively adopted flood mitigation strategies, such as relocating critical office functions from ground floors to upper levels, and repurposing ground floors for flood-resilient or easily relocatable uses. Currently, Municipal Bus Stand and the District Stadium are undergoing redevelopment with flood mitigation measures integrated into their design. However, it is essential that all critical infrastructures located within flood-prone areas adopt comprehensive and climate-resilient design principles during any future redevelopment. This includes measures such as elevated plinth levels, permeable landscaping, rainwater management systems, flood-resilient construction materials, and the reconfiguration of internal functions to minimize flood damage.

38.1.2.1.2.5 Resilient building construction

All construction activities in the municipality should align with resilient design principles:

1. Encourage the use of flood-resilient construction materials such as RCC, bricks with waterproof plaster, and corrosion-resistant metal fixtures.
2. Promote stilt-based housing designs in low-lying areas to allow floodwater passage beneath buildings.
3. Compulsory installation of Septic tanks with Control valves and Inspection chamber
4. Enforce flood-specific building codes and urban design guidelines, particularly in newly developing zones and hazard-sensitive wards.

38.1.2.2 Landslide

In Pathanamthitta town, the areas like Churulikode, Peringamala, Thonnyamala, Anchakkala, Vanchipoyka, Saradhamadam, Vettipuram, Poovanpara, Ponpara, Myladumpara, Pallikkuzhy, Valavamkal and Plaveli areas are in low landslide prone zone. Even the overall landslide probability is relatively low, certain pockets—particularly those with steep terrain, unstable soil conditions, and exposure to intense rainfall—remain vulnerable to slope failures. To safeguard life, property, and infrastructure in these susceptible areas, structural Disaster Risk Reduction (DRR) measures are crucial. Following two key interventions are proposed (Figure 38.15).

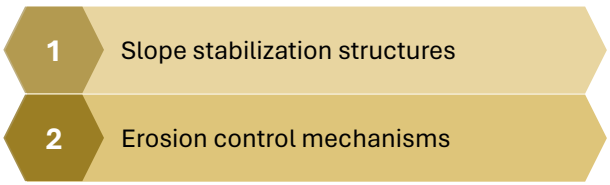


Figure 38-16 Key interventions proposed for landslide hazard risk reductions

These measures are aimed at reinforcing slope integrity, managing storm water and

groundwater effectively, and reducing soil erosion. When integrated with strategic land use planning and regular monitoring, such structural approaches can greatly enhance the town's resilience to landslide hazards. The type of measures in each key intervention are elaborated in the following sections. Suitable measures need to be considered when earth cutting, earth filling and infrastructure development are done in these low landslide prone areas.

38.1.2.2.1 Slope stabilization structures

To mitigate landslide risks in vulnerable parts of Pathanamthitta town, especially in areas with steep gradients and loose or weathered soil, slope stabilization structures play a vital role in ensuring terrain stability and protecting infrastructure and communities. The following structural interventions are commonly recommended as part of a comprehensive landslide Disaster Risk Reduction (DRR) strategy:

38.1.2.2.1.1 Retaining Walls

Retaining walls are one of the most widely used slope stabilization techniques in hilly terrains. These engineered structures support vertical or near-vertical soil slopes and prevent the downward movement of soil during rainfall or seismic activity. In Pathanamthitta, masonry, reinforced concrete, or gabion retaining walls can be constructed in strategic locations such as road cuttings, embankments near habitations, and near public infrastructure in landslide-prone wards. Proper drainage arrangements, like weep holes and scuppers, are essential components of retaining walls to prevent water pressure build up behind the wall.

Concrete & Masonry Retaining Walls

Concrete and masonry retaining walls are among the most effective and widely used structural interventions to control slope instability and prevent landslides in vulnerable terrains. In Vettippuram, Saradamadom, Vanchipoyka, Mayilaumpara areas of Pathanamthitta town, where certain areas are susceptible to slope failures due to steep gradients, soil saturation, or human interventions like road cutting and construction, these walls serve as critical protective barriers. They are best suited where large volumes of soil need to be retained.

Gabion Walls

Gabion walls are an effective and flexible structural solution for landslide-prone areas in Pathanamthitta town. Constructed by filling wire mesh baskets with rocks or rubble, these walls provide natural-looking yet robust support for unstable slopes. Their permeable nature allows water to drain through, thereby reducing hydrostatic pressure and minimizing the risk of slope failure. This makes them particularly useful in hilly terrains or along road embankments and riverbanks where soil erosion and slope instability are common due to intense rainfall.

Gabion walls can be strategically implemented in areas with moderate slope vulnerability, especially where quick, economical, and eco-friendly stabilization is needed. Their ability to adapt to minor ground movement makes them suitable for both urban and semi-urban settings. Additionally, when combined with vegetation, they serve as sustainable bioengineering solutions, supporting ecological restoration while enhancing slope stability. Gabion walls, when integrated with other slope management strategies, can significantly contribute to reducing the risk of landslides and protecting lives, infrastructure, and the environment. Gabion walls are also proposed as a part of Vanchipoyka waterfall project.

38.1.2.2.1.2 Reinforced Slopes

Reinforcement of soil slopes using geosynthetics (e.g., geogrids or geotextiles) helps in improving the shear strength and overall stability of the slope. This method is particularly effective in population dense areas of Pathanamthitta like Vettippuram, Kumbhangal areas where space constraints may not allow massive retaining walls. These reinforced slopes can be vegetated for additional protection and environmental integration. This technique can be employed around educational institutions, health centers, and along vulnerable road corridors.

38.1.2.2.1.3 Terracing

Terracing is a traditional and eco-friendly method of slope stabilization that involves cutting the slope into a series of horizontal steps, thereby reducing the steepness and minimizing soil erosion. In areas like Mayiladumpara, Saradamadom, Ponpara, Peringamala, Mundukottackal, Valavumkal areas with moderate slope gradients and agricultural activity, terracing can be a sustainable and low-cost intervention. This not only prevents landslides but also supports groundwater recharge and slope farming practices in the peri-urban and rural parts of Pathanamthitta municipality.

38.1.2.2.2 Erosion Control Measures

Erosion control measures are vital components of landslide risk reduction in Pathanamthitta town, particularly in areas like Thonnyamala, Peringamala, Pallikkuzhy where fragile slopes, loose soil composition, and intense rainfall contribute to frequent soil erosion and instability. These measures aim to protect the soil surface, slow down water runoff, and intercept falling debris and rocks, thereby preventing the initiation and escalation of landslides. A combination of bioengineering solutions, rock fall protection barriers, and debris basins can be adopted to effectively manage erosion and enhance slope stability in the region.

38.1.2.2.2.1 Bio-Engineering Solutions

Bioengineering solutions involve the use of vegetation and organic materials to stabilize slopes and control surface erosion. Techniques such as vetiver grass planting, turfing, mulching, and live staking with deep-rooted plants help bind the soil, reduce runoff velocity, and promote water infiltration. These methods are cost-effective, environmentally friendly, and visually integrate well with the natural landscape. On moderately steep slopes in Pathanamthitta, especially along road cuttings and embankments at Mayiladumpara, Thonnyamala, Peringamala and Saradamadom, bioengineering offers a sustainable alternative to hard engineering, while also enhancing biodiversity and microclimate regulation.

38.1.2.2.2.2 Rockfall Protection Barriers

Rock fall protection barriers—such as steel mesh nets, rockfall fences, and catch ditches—are important in areas where weathered rock formations or steep escarpments pose a threat of dislodged rocks. These barriers are designed to absorb and deflect the energy of falling rocks, preventing them from reaching roads, buildings, or other vulnerable infrastructure. Installing such systems in critical zones, particularly along hillside roads and inhabited slopes, like Vettippuram, Kumbhangal, Mayiladumpara will significantly reduce the risk of injury and property damage during slope failures.

38.1.2.2.2.3 Debris Basins

Debris basins are engineered depressions or impoundments constructed at the base of unstable slopes or stream channels to trap sediments, boulders, and landslide debris before they reach downstream settlements. These are particularly useful in mitigating the

impact of debris flows triggered by intense rainfall or slope failures. In Pathanamthitta, debris basins can be integrated with natural drainage pathways in Mayiladumpara, Vanchipoyka etc. and maintained seasonally to retain their storage capacity, acting as a buffer against sudden and destructive flow events.

38.1.2.3 Urban Heat Island

Urban Heat Island (UHI) effects are becoming increasingly evident, where rapid urbanization, dense built environments, and diminishing green cover contribute to elevated ambient temperatures, particularly during dry summer months. Structural Disaster Risk Reduction (DRR) measures aimed at mitigating UHI impacts are essential to enhance thermal comfort, reduce energy demand, and protect vulnerable populations such as the elderly, children, and outdoor workers.

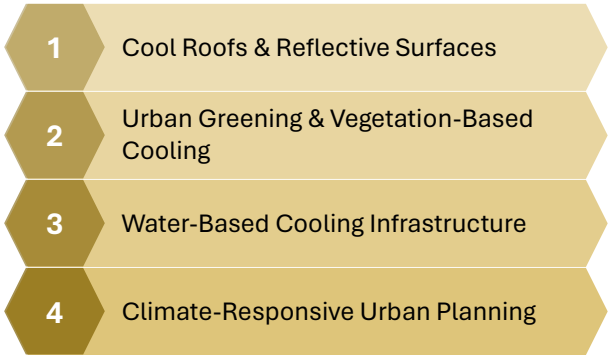


Figure 38-17 proposed key structural interventions for UHI mitigation in Pathanamthitta

Key structural interventions for UHI mitigation in Pathanamthitta (Figure 38.16) include the adoption of cool roofs, expansion of urban greening, implementation of water-based cooling systems, climate-responsive urban planning, and the use of smart infrastructure and heat-resilient materials in construction and public spaces. These strategies not only address immediate temperature moderation but also support long-term climate resilience and sustainability goals. The components mentioned above are elaborated in the following sections.

38.1.2.3.1 Cool Roofs & Reflective Surfaces

Cool roofs and reflective surfaces are effective and low-cost structural interventions to mitigate the Urban Heat Island (UHI) effect. These solutions work by increasing the solar reflectance (albedo) and thermal emittance of building surfaces, thereby reducing the absorption and retention of heat in the built environment. In hot and humid climates such as that of Pathanamthitta, such interventions can significantly lower indoor temperatures, reduce energy consumption for cooling, and enhance the thermal comfort of both residential and institutional buildings.

38.1.2.3.1.1 Cool Roof Technology

Cool roofs can be implemented through materials and techniques such as white or light-colored coatings, reflective membranes, and high-albedo tiles. These are especially beneficial for low-rise buildings, schools, hospitals, and government offices, where large roof surfaces are exposed to direct sunlight. Integrating cool roof strategies into building byelaws and incentivizing their use in new constructions and retrofitting projects can make Pathanamthitta more heat-resilient in the face of rising temperatures and climate change.

The municipality can initiate pilot projects in public buildings—such as schools, community halls, municipal offices, and health centers—to demonstrate the effectiveness of cool roof technologies. These projects can serve as model examples showcasing the thermal comfort, energy savings, and long-term benefits associated with reflective roofing materials. By visibly illustrating the advantages in everyday public use spaces, the municipality can build public confidence and interest in adopting similar measures in private residences, commercial buildings, and institutional facilities. Additionally, data collected from these pilot sites can help inform future policies,

guidelines, and incentive programs for broader implementation across Pathanamthitta town.

38.1.2.3.1.2 Solar-Reflective Pavements

Conventional pavements made of asphalt and dark-colored materials tend to absorb and retain heat, contributing significantly to elevated surface and ambient temperatures. In contrast, solar-reflective pavements are designed to reflect more sunlight and absorb less heat, thereby keeping surface temperatures lower.

In Pathanamthitta, implementing solar-reflective pavements can be particularly beneficial in high-traffic zones such as town centers, marketplaces, school zones, hospital premises, and residential neighborhoods with limited vegetation. These pavements can be made using materials such as light-colored concrete, special reflective coatings, or interlocking pavers with high solar reflectance indices (SRI). The reduced surface temperatures contribute not only to lower ambient temperatures in the surrounding area but also extend the life of pavement materials, reduce the urban energy demand for cooling, and improve pedestrian comfort.

Pathanamthitta Municipality can incorporate such materials into urban design guidelines, promote pilot projects in public spaces, and incentivize the adoption of reflective pavements in new developments and streetscape upgrades.

38.1.2.3.2 Urban Greening & Vegetation-Based Cooling

Urban greening and vegetation-based cooling are vital structural strategies to address Urban Heat Island (UHI) effects in Pathanamthitta, where rapid urbanization has reduced natural cover and increased localized temperatures. These measures not only help cool surface and ambient air but also offer multiple co-benefits, such as improving air quality, enhancing biodiversity, and promoting public health and well-being. At the town level, strategies may include developing green corridors along roads and canals, revitalizing public parks and wetlands, and establishing green buffers in flood-prone or environmentally sensitive areas to improve overall microclimatic conditions.

At the neighborhood and plot scale, institutions can adopt rooftop gardens, green walls, and shaded courtyards, while individual buildings can incorporate backyard greenery, potted plants, and vertical vegetation using native, low-maintenance species. These interventions can be supported through municipal policies, zoning regulations mandating green spaces, and incentive programs for community participation.

38.1.2.3.2.1 Green Roofs & Vertical Gardens

Green roofs and vertical gardens are effective nature-based solutions to reduce Urban Heat Island (UHI) effects in by increasing vegetative cover on buildings, thus lowering surface temperatures and enhancing urban thermal comfort. Green roofs insulate rooftops, reduce heat gain, and manage rainwater, making them ideal for public buildings and dense urban areas with limited ground space. Vertical gardens cool building façades and improve aesthetics, air quality, and energy efficiency. The municipality can promote these practices through pilot projects, planning regulations, and awareness campaigns, encouraging adoption across residential, institutional, and commercial properties using low-maintenance native plant species.

In Pathanamthitta, the municipality can promote the adoption of green roofs on public buildings such as schools, hospitals, municipal offices, and community centers as pilot projects. Vertical gardens can be adopted in institutional buildings, public infrastructure (such as bus shelters and parking lots), and

commercial properties to promote a visually appealing and climate-responsive urban design. The use of native, drought-resistant plant species is recommended to ensure ecological harmony and lower maintenance requirements.

38.1.2.3.2.2 Tree Canopy & Urban Forests

Expanding tree cover along streets, in parks, around public institutions, and in residential areas helps lower ambient temperatures through evapotranspiration while improving air quality and biodiversity. Urban forests can be developed in underutilized public lands and ecologically sensitive zones using native, drought-tolerant species for sustainability. Integrating these green interventions into planning regulations and promoting community participation in tree planting can significantly enhance the town's climate adaptability and livability. Under this measure, all road with width above 10m is designed with tree canopy

Urban forestry initiatives like Miyawaki forests and the Pachathuruth project launched by the Government of Kerala exemplify effective models for enhancing green cover and mitigating Urban Heat Island (UHI) effects in towns like Pathanamthitta. The Miyawaki method, which involves dense planting of native species in small urban spaces, creates fast-growing micro forests that improve air quality, reduce heat, and boost biodiversity. Similarly, the Pachathuruth project focuses on establishing small green groves (thuruths) in public spaces, school campuses, and road margins, contributing to ecological restoration and climate resilience. Eg: Kawaki initiative by Kochi Corporation with community participation in maintenance. 2 urban forest are proposed in the town for urban greening and vegetation-based cooling. The details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 37.

Adopting and scaling up such models across various wards of Pathanamthitta can significantly strengthen the town's urban greening strategy and support long-term disaster risk reduction.

38.1.2.3.2.3 Green Corridors & Parks

Green corridors refer to linear green spaces that connect different parts of a town, such as tree-lined streets, canal-side greenways, and vegetated pathways. These corridors facilitate air flow, reduce heat accumulation, support non-motorized transport like walking and cycling, and create habitat continuity for urban biodiversity. When strategically planned, they also act as buffer zones along flood-prone or environmentally sensitive areas, contributing to multi-hazard resilience.

Urban parks, on the other hand, function as lungs of the city by providing large pockets of vegetation that cool the surrounding air, reduce surface temperatures, and improve public health and recreational opportunities. In Pathanamthitta, the municipality can prioritize the development of new parks in heat-stressed and densely built-up areas, while revitalizing existing open spaces with shaded seating, water features, and native landscaping. Integrating green corridors with urban parks can create an interconnected network of cool zones throughout the town, improving microclimatic conditions, enhancing liveability, and supporting community well-being as part of an inclusive and climate-responsive urban design strategy.

Ring road is proposed an Urban Health Corridor outlined with strategy of green corridor. Similarly three neighbourhood parks are proposed in the town. The details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 36 and 37 respectively.

38.1.2.3.3 Water-Based Cooling Infrastructure

Water-based cooling systems are an effective and natural method for mitigating Urban Heat Island (UHI) effects in urban areas like Pathanamthitta, offering both thermal relief and aesthetic benefits. At the town scale, large water bodies such as artificial lakes, ponds, and urban wetlands can be integrated into urban planning to provide cooling through evaporation. These water bodies not only absorb heat but also improve water retention, support biodiversity, and reduce flooding. Green-blue corridors along rivers and canals can further help reduce UHI effects while enhancing stormwater management and ecological value. Such large-scale water features contribute to both environmental resilience and urban cooling. At smaller scales, water-based cooling systems can be incorporated into individual buildings, commercial complexes, and residential areas. Institutional buildings like schools and hospitals can include fountains, reflecting pools, or ponds to cool outdoor spaces through evaporation. At the plot scale, solutions like rooftop gardens with irrigation systems, misting fans, and rainwater harvesting can provide localized cooling, reduce reliance on municipal water, and enhance sustainability. Additionally, permeable surfaces and water-retaining pavements can help absorb rainwater, further reducing heat absorption and contributing to a cooler urban environment. These water-based solutions collectively contribute to mitigating UHI effects and promoting a more resilient and sustainable urban fabric.

The proposed projects like transport terminal interface, Subala Park, Urban Central Park, Happiness Park are integrated with water cooling components like artificial ponds, fountain etc. Similarly sponge park and wetland parks will also help in the reduction of urban heat island effect based on water based cooling intervention. The details of each project like location, survey number, area, land ownership and project concept are outlined in the chapter 36 and 37 respectively.

38.1.2.3.4 Climate-Responsive Urban Planning

Climate-responsive urban planning plays a crucial role in mitigating Urban Heat Island (UHI) effects in towns like Pathanamthitta, where rapid urbanization and climate change contribute to increasing temperatures. This approach involves designing urban areas in ways that minimize heat absorption, maximize natural ventilation, and promote energy-efficient, comfortable living conditions. Two key aspects of climate-responsive urban planning—building orientation and ventilation, and compact city design with mixed-use developments—are particularly effective in addressing the UHI challenge.

38.1.2.3.4.1 Building Orientation & Ventilation

Proper building orientation and strategic placement can reduce the amount of direct sunlight absorbed by structures, lowering the internal temperature and reducing the need for air conditioning, thus cutting energy consumption. In hot climates like that of Pathanamthitta, buildings should be oriented to minimize sun exposure, especially on the western and southern sides, where the sun's intensity is strongest during the day. Additionally, maximizing natural ventilation by aligning windows and openings with prevailing wind directions can help cool buildings passively. Cross-ventilation, through strategically placed windows and ventilation shafts, allows for air circulation, which helps in reducing indoor temperatures and provides a comfortable indoor environment. The use of lightweight, reflective building materials, along with maximizing shading from overhangs, trees,

or pergolas, can further help in reducing the heat load on buildings.

38.1.2.3.4.2 Compact City Design with Mixed-Use Developments

A compact city design, which promotes higher density but also more efficient land use, can significantly reduce the UHI effect by reducing the overall amount of paved surfaces and increasing green spaces. Mixed-use developments, where residential, commercial, and recreational spaces are integrated, help reduce the dependency on motorized transportation, thus minimizing the heat generated by traffic. Furthermore, this approach fosters the creation of walkable neighborhoods, reducing the urban heat footprint while promoting a more vibrant and sustainable urban lifestyle. Compact city designs with mixed-use zoning can also increase the feasibility of integrating green infrastructure, such as parks, green roofs, and urban forests, into urban planning. By encouraging dense development in areas with access to public transportation and other services, Pathanamthitta can reduce sprawl and increase connectivity, making the town more resilient to both heat and other climate-related challenges.

38.1.2.3.5 Proposals for Hotspots identified

As per the study, the hotspots identified in the town are A) Bare Rock Surfaces, B) Dense Built-up Areas, C) Open bare ground, D) Hilly area with cleared rubber cultivation, E) Mixed open space and sparse built up area. (Figure 38.17)

To mitigate Urban Heat Island (UHI) effects in the identified hotspot typologies of Pathanamthitta town, a combination of nature-based solutions, smart infrastructure, and urban design interventions is essential. Apart from above mentioned proposed projects and intervention for regulating urban heat island effect in town, below are tailored proposals for each category of UHI hotspot:

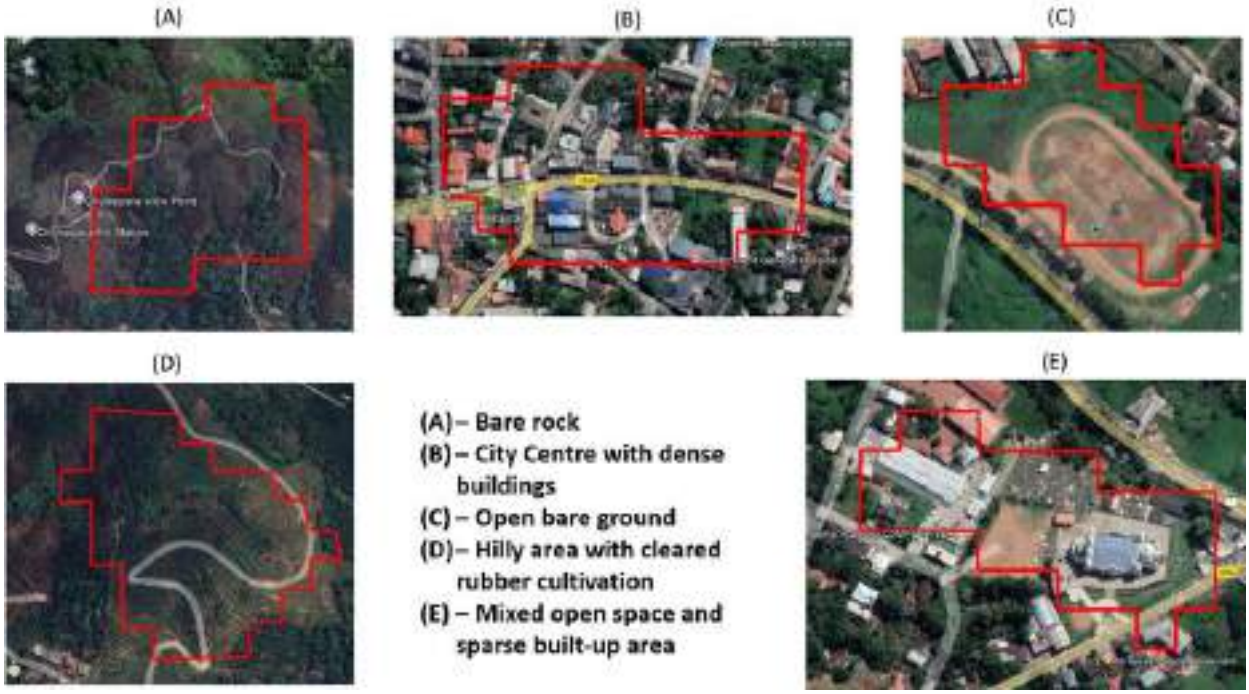


Figure 38-18 Identified hotspots of Urban Heat Island effect

Bare Rock Surfaces

Since direct greening is infeasible due to the nature of the rocky terrain, the focus shifts to a buffer-based and passive cooling approach.

1. Dense Vegetation Belts can be developed around the edges of rock zones using native, drought-tolerant trees and shrubs (Neem, Bamboo, Vetiver).
2. Introduce shallow reflecting pools, fountains, in adjacent zones.
3. Install shade sails, tensile canopies, or green pergolas at public interaction zones near the rocks.

Dense Built-up Areas

1. Cool Roof & Cool Pavement Technologies: Implement light-colored, reflective coatings on roofs and roads to increase albedo and reduce surface heat.
2. Urban Greening: Develop vertical gardens, rooftop gardens, and roadside tree lines to enhance evapotranspiration and shading.
3. Green Infrastructure Regulations: Promotion of green coverage in new developments and redevelopment projects.

Open bare ground

1. Permeable Pavements: Install permeable paving materials to reduce heat absorption and promote natural water infiltration.
2. Green Spaces and Urban Greening: Create green buffers around the stadium with shade trees, grasses, and shrubs; integrate vertical greening and green roofs where possible.
3. Water Features: Add ponds, fountains, misting systems, or reflective pools to cool the environment through evaporation.
4. Cool Roofs & Reflective Surfaces: Use cool or reflective roofing materials to minimize heat absorption from the stadium's structure.
5. Shade Structures: Install pergolas, shaded walkways, and canopy systems in spectator areas and common spaces.
6. Sustainable Drainage Systems (SuDS): Implement bioswales, rain gardens, and retention basins to manage stormwater and reduce surface temperatures.
7. Cool Pavement & Reflective Coatings: Apply reflective coatings or cool pavements in open areas like roads, walkways, and parking lots.

Hilly area with cleared rubber cultivation

1. Greening Interventions: Transform barren land into urban forests or pocket parks using initiatives like the Miyawaki forest method or the Pachathuruth project.
2. Agroforestry & Community Gardens: Promote the use of vacant lands for urban agriculture or community gardens, combining food production with cooling benefits.

Mixed open space and sparse built up area

1. Urban Greening: Promote the planting of shade trees along roads and buildings, establish community gardens and green patches, and use native, drought-tolerant plant species to increase vegetative cover and enhance cooling.
2. Green Infrastructure: Encourage the adoption of green roofs and vertical gardens on buildings and create green buffers between built and open areas to moderate temperatures and improve microclimate.
3. Cool Roofs & Reflective Surfaces: Apply solar-reflective coatings to rooftops and use high-albedo materials for pavements and open surfaces to reduce heat absorption and enhance reflectivity.

4. Shaded Public Spaces: Develop shaded community spaces by installing pergolas, canopies, and small pocket parks in open areas to reduce direct solar exposure and provide thermal comfort.
5. Water-Based Cooling: Integrate water features like fountains, shallow ponds, and rain gardens to enable evaporative cooling while also managing stormwater effectively.
6. Permeable Surfaces: Implement permeable pavements such as grass pavers and gravel to reduce surface heat retention and enhance groundwater recharge.
7. Climate-Responsive Urban Design: Encourage building orientation that maximizes natural ventilation and maintain adequate spacing between buildings to facilitate airflow and reduce heat accumulation.

Figure 38.19 shows the projects proposed in this master plan which also include interventions for regulating urban heat island effect in town.

1. Proposed Green Islet/ Pachathuruthu/ Urban Forestry/ Miyawaki Forest
2. Subala Park Expansion & Redevelopment (Green space, Pond,
3. Urban Central Park (Green space, Pond, Fountain)
4. Aqua Rock Adventure Park (Green space, Pond, Fountain)
5. Museum & Art Gallery (Green space, Pond, Fountain)
6. Quarry Park & View point Mayiladumpara (Green space, Pond, Fountain)
7. Shopping Complex & Parking Plaza (Green space, Fountain)
8. Town Square (Green space, Fountain)
9. River view Cornish Park (Green space)
10. Butterfly Park (Green space, Pond, Fountain)
11. Wetland Park (Green space, Pond, Fountain)
12. Sponge Park (Green space, Pond, Fountain)

Figure 38-19 Projects including interventions for regulating urban heat island effect in town

38.1.2.4 Drought

In light of changing climatic patterns and increasing instances of water stress, structural Disaster Risk Reduction (DRR) measures for drought are becoming increasingly relevant for towns like Pathanamthitta, which are otherwise known for abundant rainfall but may experience localized drought-like conditions during dry spells. Addressing drought resilience requires a proactive approach to ensure water security and sustainable resource management.

1. Water storage and conservation structures
2. Water supply infrastructure
3. Drought-resilient agricultural systems
4. Water management technologies

Figure 38-20 Proposed structural intervention for drought mitigation in the town

Structural interventions (Figure 38.18) such as water storage and conservation structures, enhancements in water supply infrastructure, drought-resilient agricultural systems, and improved water management technologies are essential to mitigate the impacts of water scarcity on both urban and rural populations. These components aim to strengthen the town's capacity to store, distribute, and manage water efficiently, reduce dependence on vulnerable sources, and safeguard livelihoods dependent on water availability. The following sections provide a detailed account of these

critical structural strategies tailored to the local context of Pathanamthitta town.

38.1.2.4.1 Water Storage & Conservation Structures

At the town level, developing and maintaining structures like percolation tanks, and rejuvenated ponds can significantly boost groundwater recharge and act as decentralized storage systems for use during dry periods. These structures help capture monsoon runoff and reduce dependence on centralized water sources, especially for irrigation, domestic needs, and public utility services.

At the neighborhood and plot levels, integrating rainwater harvesting systems in institutions and individual households can further strengthen water conservation efforts. Public buildings such as schools and hospitals can install rooftop collection systems and underground storage tanks, serving both as functional water reserves and awareness models. The municipality can support these efforts through incentives, building code regulations, and awareness campaigns, encouraging citizens to adopt greywater recycling, moisture-retaining landscaping, and water-efficient technologies. Together, these measures create a multi-scale, community-driven water conservation framework that enhances the town's drought preparedness.

38.1.2.4.2 Water Supply Infrastructure

Robust and climate-resilient water supply infrastructure is a vital structural measure for addressing drought risks in Pathanamthitta town. As prolonged dry spells can strain existing water sources, ensuring the efficiency, reliability, and sustainability of the town's water supply systems is critical. This includes upgrading the intake, treatment, storage, and distribution components of the municipal water supply network to reduce water loss, improve service delivery, and support equitable access, especially during drought conditions. Leak-proof pipelines, energy-efficient pumping systems, and adequate overhead storage tanks can help maintain supply continuity while minimizing wastage.

Diversifying water sources is another important aspect of drought-resilient water infrastructure. Pathanamthitta town can invest in decentralized water systems such as bore wells, protected springs, and localized surface water collection points that complement the central supply. Additionally, integrating smart water management technologies like automated water meters, real-time monitoring systems, and GIS-based water supply mapping can help the municipality track usage patterns, detect leaks, and optimize distribution. Backup water supply systems using solar-powered pumps or tanker-fed emergency supplies can also be part of the contingency framework. Such investments not only improve water security but also strengthen the town's ability to cope with future climatic uncertainties.

38.1.2.4.3 Drought-Resilient Agricultural Infrastructure

Key interventions include the development of micro-irrigation systems such as drip and sprinkler irrigation, which deliver water directly to the root zones of crops, significantly reducing water wastage and improving irrigation efficiency. These systems are particularly useful in water-scarce conditions and can be adopted by farmers with support from government schemes and technical training.

In addition, the construction of farm ponds, check dams, and percolation tanks can help harvest rainwater and enhance groundwater recharge, ensuring water availability during dry spells. Mulching techniques, raised bed farming, and shade nets can further protect crops from heat stress and moisture loss. Pathanamthitta municipality, in coordination with agricultural departments and Krishi Bhavans, can also promote the cultivation of

drought-tolerant crop varieties, integrated agroforestry practices, and climate-smart farming methods.

38.1.2.4.4 Water Management

Effective water management is essential for strengthening drought resilience in Pathanamthitta town, especially as climate change intensifies the frequency and severity of dry spells. One of the key structural DRR strategies is the development of water recycling and reuse infrastructure. Establishing decentralized wastewater treatment plants and greywater systems in residential and institutional complexes can significantly reduce the pressure on freshwater sources by making treated water available for non-potable uses such as irrigation and toilet flushing. Rainwater harvesting systems—through rooftop tanks or ground-level collection—should be promoted and made mandatory to harness seasonal rainfall for year-round use. Additionally, groundwater recharge structures like percolation pits and injection wells can help maintain underground water levels and ensure sustainable water supply during drought periods.

Complementing this approach, permeable pavements and green infrastructure play a crucial role in managing surface runoff and enhancing groundwater recharge. By replacing impermeable surfaces with permeable alternatives in pavements, parking lots, and low-traffic zones, the town can improve soil infiltration and reduce waterlogging. Integrating bioswales, rain gardens, and vegetated buffers in public spaces, parks, and along canal edges can further support urban greening, reduce urban heat, and improve water retention. These green infrastructure solutions not only address water scarcity but also contribute to improving the overall climate resilience and ecological health of the town.

38.2 Proposals for Vulnerability Reduction

Vulnerability represents the degree of loss resulting from the occurrence of a hazardous phenomenon. Disaster risk is influenced not only by the severity of a hazard and the number of exposed people or assets but also by their susceptibility to loss and damage. Even in areas experiencing the same degree of hazard impact, vulnerability levels may differ based on factors such as population density, socio-economic conditions, and the availability of basic services. Effective vulnerability reduction measures can significantly decrease disaster risk by addressing these underlying factors. The following measures can be used for vulnerability reduction.

38.2.1 Economic diversity and resilient livelihoods

Pathanamthitta town, known for its strong agricultural base, trade, and service sector, must focus on diversifying its economy to enhance resilience against hazards such as floods and landslides. The town's economy currently depends on agriculture, including rubber cultivation, trade and small-scale industries. However, climate change and disaster risks threaten these traditional sectors. To reduce economic vulnerability, Pathanamthitta should encourage a mix of sustainable industries, agro-based enterprises, and eco-tourism. Strengthening small businesses, promoting digital entrepreneurship, and developing climate-resilient agricultural practices can ensure economic stability while reducing the risks posed by natural hazards. Additionally, the presence of religious tourism, particularly linked to Sabarimala, provides opportunities for expanding the hospitality and service industries in a sustainable manner.

To enhance resilience, alternative and climate-adaptive livelihoods should be promoted. Flood-prone areas can benefit from integrated aquaculture, floating farms, and sustainable inland fisheries, while landslide-prone regions can adopt agroforestry, contour farming, and soil conservation techniques. Training programs in eco-tourism, handicrafts, and digital trade can diversify employment opportunities, particularly for vulnerable groups, including women and youth. Access to financial resources through microfinance, cooperative banking, and credit-linked insurance can help small businesses and farmers recover quickly from disasters. Additionally, the town should integrate hazard-resistant planning in commercial and industrial zones to ensure economic continuity. By fostering economic diversification, leveraging existing strengths, and investing in resilient infrastructure, Pathanamthitta can build a more sustainable and shock-resistant economy.

38.2.2 Safe and Resilient Infrastructure and services

Developing safe and resilient infrastructure is essential for reducing vulnerability in Pathanamthitta town, which faces recurring risks from floods, landslides, and extreme weather events. Critical infrastructure such as roads, bridges, buildings, drainage systems, water supply, and power networks must be designed to withstand these hazards, ensuring that essential services remain operational during and after disasters. Strengthening these systems will help maintain community functionality, minimize disruptions to daily life, and reduce the socio-economic impact of disasters.

38.2.2.1 Hazard-Resistant Building Design

To mitigate flood risks, buildings should incorporate raised foundations, flood-resistant materials, and efficient drainage systems. In landslide-prone zones, construction should include slope stabilization measures, retaining walls, and erosion control techniques to prevent structural damage. For heat resilience, buildings must integrate green roofs, reflective materials, and proper ventilation to counteract the urban heat island effect.

38.2.2.2 Climate-Resilient Transport and Mobility Infrastructure

Ensuring accessibility and connectivity during emergencies requires well-planned transport infrastructure. Roads in flood-prone areas should be elevated and equipped with proper drainage to prevent waterlogging, while bridges and culverts must be designed to withstand heavy rainfall and flash floods. In landslide-prone areas, protective structures such as gabion walls and bioengineering techniques should reinforce roads to prevent slope failures.

38.2.2.3 Sustainable Water and Sanitation Systems

Water supply networks in Pathanamthitta must be resilient to disaster impacts, incorporating flood-protected wells, rainwater harvesting systems, and robust distribution networks. Wastewater treatment facilities should use flood-resistant designs to prevent contamination of drinking water sources. In areas vulnerable to drought, water conservation techniques such as groundwater recharge systems and drought-resistant landscaping should be implemented.

38.2.2.4 Strengthening Energy and Communication Systems

A resilient power supply is crucial for disaster preparedness. Underground cabling and decentralized renewable energy sources like solar and wind should be prioritized to ensure uninterrupted electricity supply. Critical facilities, such as hospitals, emergency shelters, and government offices, must have backup power systems. Communication networks should be strengthened with disaster-

resilient infrastructure and integrated with early warning systems to provide timely alerts and enhance emergency coordination.

38.2.2.5 Integrated Drainage and Flood Management Systems

Flood-prone areas in Pathanamthitta require robust stormwater management solutions. Permeable pavements, bioswales, detention basins, and rain gardens can enhance urban flood resilience by improving water absorption. Natural drainage systems, including wetlands, canals, and green buffers, must be restored and incorporated into urban planning to facilitate sustainable water management and reduce flood risks.

38.2.2.6 Critical Public Services and Emergency Infrastructure:

Essential public infrastructure, including hospitals, schools, police stations, and fire services, must be built to withstand extreme weather events and serve as emergency response centers. Multi-purpose community centers should be designed to function as temporary shelters during floods, heatwaves, and other disasters. Integrating disaster risk reduction measures into urban planning will ensure these critical services remain accessible and operational in times of crisis.

38.2.2.7 Sustainable Urban Planning and Green Infrastructure:

To mitigate urban heat and improve environmental resilience, Pathanamthitta must increase green spaces through tree plantations, parks, and green corridors. Compact urban development with adequate open spaces and buffer zones around water bodies can help manage climate-related risks. Climate-responsive urban design, mixed land use, and transit-oriented development (TOD) can further enhance accessibility, reduce emissions, and support sustainable urban growth.

38.2.3 Capacity Building & Community Awareness

Capacity building and community awareness are crucial for reducing vulnerability in Pathanamthitta town, which faces flood and landslide risks. Educating residents about disaster risks, preparedness measures, and response strategies will help build a resilient and informed community. Community-based disaster risk reduction initiatives, training programs, and public awareness campaigns should be implemented to empower individuals to safeguard their lives and property. The municipality should organize emergency drills, promote early warning systems, and integrate traditional knowledge with modern disaster preparedness techniques. Additionally, first responders, local authorities, and policymakers must receive specialized training to improve disaster response capabilities and incorporate risk reduction measures into urban planning and development strategies.

A critical component of vulnerability reduction is ensuring that citizens have access to accurate risk information. The municipality must proactively communicate hazard assessments, risk maps, and safety guidelines so that residents can make informed decisions regarding land use, insurance, and disaster preparedness. Transparent dissemination of risk information will encourage the adoption of precautionary measures, such as safer construction practices and relocation from high-risk areas where necessary. By fostering a culture of preparedness, supported by community networks and proactive governance, Pathanamthitta town can strengthen its resilience and minimize the impacts of future disasters.

38.2.4 Social Inclusion & Community Engagement

Social inclusion and community engagement are essential for reducing vulnerability in

Pathanamthitta town, which is prone to floods and landslides. Disasters disproportionately impact marginalized groups such as low-income households, the elderly, persons with disabilities, and women. Ensuring their participation in disaster risk reduction (DRR) planning and decision-making is crucial for equitable resilience. The municipality should prioritize inclusive infrastructure, accessible early warning systems, and strong social safety nets. Strengthening grassroots organizations and empowering local leaders can help bridge gaps in disaster preparedness and response, ensuring that all community members are involved in building resilience.

Active community participation enhances disaster resilience by leveraging local knowledge, fostering collective action, and building trust with authorities. The municipality should promote participatory hazard mapping, awareness campaigns, and skill-building programs to educate residents about disaster risks. Establishing community-based emergency response teams and volunteer programs will further strengthen preparedness. By embedding inclusivity and engagement into disaster risk management, Pathanamthitta can create a well-prepared and socially cohesive community capable of effectively responding to and recovering from disasters.

38.2.5 Insurance & Risk transfer

Pathanamthitta town is vulnerable to multiple hazards, including floods and landslides, which can lead to significant economic losses for individuals, businesses, and the local administration. Implementing robust insurance and risk transfer mechanisms is essential to enhance community resilience by mitigating financial impacts and facilitating quicker recovery. A well-structured risk transfer framework ensures that the burden of disaster-related losses is distributed across a wider population, reducing direct financial stress on affected individuals and promoting long-term sustainability.

To effectively reduce vulnerability, it is crucial to ensure that every household in hazard-prone areas is covered by insurance. Insurance policies should be designed based on comprehensive multi-hazard risk assessments, factoring in structural integrity, geographical risks, and environmental conditions. Insurance companies operating in Pathanamthitta should be trained to conduct detailed evaluations, allowing for fair and risk-reflective premium calculations. To improve affordability, the government could subsidize insurance premiums for low-income households or integrate risk coverage within existing social protection schemes.

To further reduce long-term exposure to hazards, a combination of incentives and disincentives should be introduced. Households in extremely high-risk areas could be encouraged to relocate to safer zones through financial assistance, access to subsidized housing, or tax relief. Meanwhile, disincentives such as higher property taxes or ineligibility for relief funds may be applied to discourage continued habitation in hazardous zones. For cases where relocation is necessary, the government should explore Transfer of Development Rights (TDRs), wherein land in hazard-prone areas is acquired at market rates while offering alternative development opportunities in safer locations. This ensures sustainable land-use planning and prevents future encroachments in vulnerable zones.

Insurance companies in Pathanamthitta can play a proactive role in disaster risk reduction by linking insurance premiums to risk mitigation measures. Homeowners and businesses that adopt flood-resistant designs, landslide stabilization techniques, or other safety improvements could benefit from lower premiums. A structured incentive system, including discounts and refunds for

implementing hazard-resistant measures, can drive widespread adoption of safer construction practices. Conversely, properties that fail to adhere to recommended safety standards may face higher insurance costs, reinforcing the importance of preparedness.

Credit institutions and banks can also support hazard-resilient development by integrating hazard mapping into their lending policies. Offering lower interest rates for buildings constructed with hazard-resistant designs would encourage safer investments and make disaster preparedness financially viable. Additionally, collaboration between local authorities, insurance companies, and financial institutions is crucial to ensuring that risk reduction strategies are embedded within urban development policies.

By integrating insurance and risk transfer mechanisms into Pathanamthitta's disaster management framework, the municipality can create a financially resilient community that is better prepared to withstand and recover from future hazards.

38.2.5.1 Institutional Support & Governance

A strong institutional framework and effective governance are essential for reducing vulnerability and enhancing disaster resilience in Pathanamthitta town. Given the town's susceptibility to hazards such as floods, landslides, and extreme weather events, a well-structured disaster risk reduction (DRR) mechanism must be integrated into urban planning, land-use policies, and infrastructure development. The municipal administration, in coordination with state and national authorities, should establish clear policies, regulations, and response mechanisms to ensure systematic disaster preparedness, response, and recovery efforts. Collaboration with non-governmental organizations (NGOs), academic institutions, and private sector stakeholders will further strengthen the disaster management framework.

Institutional capacity-building is crucial to equip the municipal authorities with the necessary expertise and resources to assess risks, enforce building codes, and implement early warning systems. Establishing municipal disaster management committees and strengthening local governance structures will enable better coordination during emergencies. Transparency, accountability, and participatory governance must be prioritized to foster public trust and ensure community involvement in disaster mitigation measures.

Additionally, ensuring that risk information is accessible to all citizens is critical for promoting informed decision-making regarding land use, construction practices, and emergency preparedness. The municipality should implement awareness campaigns and establish digital platforms where residents can access real-time hazard data, evacuation plans, and safety guidelines. By integrating risk reduction measures into governance, Pathanamthitta Town can enhance resilience, minimize disaster impacts, and safeguard the well-being of its residents.

38.3 Proposals for Climate Change Adaptation

Adapting to climate change requires proactive measures to minimize its adverse effects while also harnessing potential benefits through strategic adjustments. This adaptation process involves implementing solutions that enhance resilience, reduce vulnerability, and protect communities from climate-related hazards such as floods, droughts, heatwaves, and extreme weather events. While adaptation does not directly address the root causes of climate change, it focuses on mitigating its consequences by integrating climate-responsive strategies into urban planning,

agriculture, water management, and infrastructure development.

By prioritizing climate adaptation, municipalities and communities can safeguard lives, livelihoods, and critical resources. Strategies such as strengthening disaster preparedness, promoting climate-smart agriculture, enhancing water conservation techniques, and investing in nature-based solutions contribute to long-term sustainability.

38.3.1 Energy efficient & low carbon strategies

Pathanamthitta town, like many urban centers, faces the challenge of rising greenhouse gas (GHG) emissions due to increased energy consumption, vehicular pollution, and inefficient infrastructure. Transitioning to energy-efficient and low-carbon strategies is essential to mitigate these impacts and create a sustainable, climate-resilient urban environment. By adopting renewable energy solutions, promoting sustainable transport, and implementing energy-efficient urban planning, the town can significantly reduce its carbon footprint while enhancing energy security and economic efficiency.

A key approach is the promotion of renewable energy sources such as solar, wind, and bioenergy to decrease reliance on fossil fuels. Municipality should prioritize the widespread adoption of solar energy installations across households, commercial buildings, and public infrastructure. Encouraging decentralized solar power generation through rooftop solar panels and community solar projects can contribute to energy independence and reduce electricity costs. Additionally, integrating smart energy systems, including solar-powered public infrastructure and energy-efficient appliances, will help optimize energy use.

The transport sector plays a major role in urban emissions, necessitating a shift toward sustainable mobility solutions. Transitioning to electric public transport systems and promoting non-motorized transport options such as walking and cycling can effectively reduce vehicular pollution. Developing pedestrian-friendly pathways, bicycle lanes, and electric vehicle (EV) charging stations will further support the transition to a low-carbon transport system. Additionally, industries in the town should be encouraged to adopt cleaner production technologies, implement waste-to-energy solutions, and follow circular economy principles to reduce waste and optimize resource use.

To reinforce energy efficiency, policy interventions such as green building codes, carbon offset programs, and incentives for energy-efficient construction should be implemented. Mandating energy-efficient building designs that incorporate passive cooling techniques, green roofs, and improved insulation will significantly reduce energy consumption. Retrofitting existing structures with energy-saving appliances, LED lighting, and thermal insulation can further enhance sustainability. The municipality should also integrate smart grids and LED streetlights to improve energy conservation and reduce urban heat island effects.

By adopting these energy-efficient and low-carbon strategies, Pathanamthitta town can foster a climate-resilient urban environment with reduced environmental impact. These initiatives will not only lower emissions but also improve air quality, reduce energy costs, and enhance the overall liveability of the town. Collaborative efforts between government agencies, local businesses, and the community will be essential to successfully implement these sustainability measures and transition toward a greener future.

38.3.2 Climate resilient farming and disaster preparedness

Pathanamthitta town faces increasing climate variability, affecting agricultural productivity, water availability, and soil health. Climate-resilient farming and disaster preparedness are crucial to ensuring sustainable livelihoods and food security for the community. Implementing adaptive measures such as drought-resistant and flood-tolerant crop varieties can enhance agricultural resilience. Integrated farming systems, including crop-livestock-fisheries, should be promoted to diversify income sources and improve soil conservation. Agroforestry and organic farming practices can help restore soil fertility while reducing dependence on chemical fertilizers.

Efficient water and soil management are essential for climate-resilient agriculture. Expanding micro-irrigation techniques such as drip and sprinkler irrigation can optimize water use. Constructing rainwater harvesting ponds in agricultural areas will support groundwater recharge and ensure water availability during dry periods. Promoting bio-fertilizers and organic soil amendments can improve soil structure and increase resilience against extreme weather events.

Disaster preparedness in farming is necessary to mitigate the risks associated with climate change. Providing timely weather advisory services to farmers can help them plan agricultural activities based on real-time climate data. Strengthening crop insurance schemes will protect farmers from financial losses due to climate-related hazards. Additionally, establishing early warning systems for droughts, floods, and pest outbreaks can enhance preparedness and response capacity.

Sustainable livestock and fisheries management are also critical for building climate resilience. Climate-smart animal husbandry, including heat-resistant livestock breeds and improved fodder management, should be encouraged. Developing fodder banks will ensure livestock feed availability during extreme weather conditions. Sustainable inland fisheries should be promoted with better water management strategies to support fish populations and maintain ecological balance.

38.3.3 Sustainable water resource management

Pathanamthitta town, located in the Pamba River Basin, faces increasing challenges in water resource management due to climate change, rapid urbanization, and extreme weather events such as floods and droughts. Sustainable water resource management is critical for ensuring water security, reducing disaster risks, and enhancing the town's resilience. Given the town's reliance on surface and groundwater sources, an integrated approach combining conservation, efficient usage, and pollution control is necessary to address both seasonal water scarcity and flooding.

To improve water resilience, restoring the natural drainage system, including rivers, wetlands, and canals, is essential. The town should prioritize the protection of streams from encroachments and pollution through strict land-use regulations, improved wastewater treatment, and community-driven conservation programs. The adoption of sponge city strategies, such as rainwater harvesting, permeable pavements, bioswales, and urban wetlands, can enhance groundwater recharge while mitigating urban flooding. Additionally, integrating stormwater management with green infrastructure—such as paddy field restoration, urban forests, and community green spaces—can help regulate water flow and improve climate adaptation.

Furthermore, ensuring the sustainability of drinking water supply systems is crucial. Flood-protected wells, decentralized rainwater

harvesting systems, and resilient water distribution networks should be implemented to reduce dependency on centralized water supply infrastructure, which may be vulnerable to extreme weather events. In flood-prone areas, elevated water storage tanks and water purification units can ensure access to clean drinking water even during disasters. Similarly, in drought-prone regions, promoting efficient irrigation techniques, groundwater recharge structures, and desalination technologies can strengthen water security.

Community participation and policy interventions will play a vital role in sustaining these efforts. Raising public awareness about water conservation, enforcing water-efficient building codes, and promoting eco-friendly sanitation systems can significantly reduce water wastage and pollution. Strengthening institutional coordination among municipal authorities, local communities, and environmental agencies will ensure the long-term sustainability of water resources in Pathanamthitta. By integrating nature-based solutions, modern water management practices, and inclusive governance, the town can effectively adapt to climate change while safeguarding its water resources for future generations.

38.3.4 Climate resilient infrastructure and sustainable transport systems

Pathanamthitta Town, being highly vulnerable to climate-induced hazards such as floods, landslides, and extreme heat, requires resilient infrastructure and sustainable transport systems to enhance its adaptability to climate change. Strengthening public infrastructure, improving urban mobility, and integrating climate-responsive designs into development planning are critical for minimizing disaster risks and ensuring long-term sustainability.

To build climate-resilient infrastructure, all critical public facilities—including hospitals, schools, government offices, and emergency response centers—must be designed to withstand extreme weather events. Implementing hazard-resistant construction techniques, such as elevated structures in flood-prone zones, reinforced foundations in landslide-prone areas, and energy-efficient building designs, will enhance safety and sustainability. Additionally, integrating green infrastructure—such as permeable pavements, urban forests, and green roofs—can mitigate urban flooding, regulate temperatures, and improve air quality. The town's stormwater drainage system should also be upgraded using nature-based solutions like bioswales, rain gardens, and restored wetlands to enhance water absorption and prevent urban waterlogging.

Pathanamthitta's transport network plays a crucial role in maintaining connectivity and economic activity. A climate-resilient road system must consider elevation adjustments, reinforced embankments, and improved drainage to prevent disruptions during heavy rainfall and floods. Roads in landslide-prone areas should be strengthened with slope stabilization measures such as gabion walls, bioengineering techniques, and retaining structures to ensure safety. Expanding and maintaining pedestrian-friendly infrastructure, such as shaded walkways and cycling lanes, will promote sustainable mobility while reducing vehicular emissions.

Public transport should be enhanced with low-carbon and electric mobility solutions. Investing in an electric bus network, integrating renewable energy charging stations, and promoting shared mobility options will contribute to a cleaner and more resilient transport system. Additionally, transport hubs should be designed with disaster-resilient infrastructure to ensure accessibility during emergencies.

Institutional interventions and community participation are key to ensuring the success of these initiatives. Policy measures, including green building codes, climate-resilient transport planning, and incentives for eco-friendly construction, should be enforced to promote sustainable urban development. By prioritizing climate resilience in infrastructure and transport planning, Pathanamthitta town can enhance its preparedness for climate change impacts while fostering a more sustainable and livable urban environment.

38.3.5 Ecosystem-Based Adaptation (EBA) & Nature-Based Solutions

Pathanamthitta town, with its rich network of waterbodies and wetlands, has immense potential to leverage Ecosystem-Based Adaptation (EBA) and Nature-Based Solutions (NBS) to mitigate climate risks and enhance resilience. Given the town's vulnerability to floods, landslides, and urban heat, integrating natural ecosystems into urban planning can provide cost-effective and sustainable solutions for climate adaptation.

One of the key strategies for Pathanamthitta is the restoration and conservation of natural drainage systems. The town's rivers and canals must be protected from encroachments and pollution to maintain their capacity to absorb excess rainfall and prevent urban flooding. Wetland conservation and the rejuvenation of water bodies through desiltation, afforestation of riparian zones, and pollution control measures will enhance water retention and groundwater recharge while reducing flood risks.

To address landslide risks in vulnerable zones, slope stabilization using bioengineering techniques such as vetiver grass planting, afforestation of degraded slopes, and contour trenching should be prioritized. These approaches not only strengthen soil stability but also promote biodiversity and carbon sequestration. Community-led afforestation and agroforestry programs can further contribute to slope protection while supporting livelihoods.

In urban areas, green infrastructure solutions such as urban forests, rain gardens, permeable pavements, and rooftop gardens can help mitigate the urban heat island (UHI) effect and improve air quality. Expanding tree cover along roads, public spaces, and flood-prone areas will provide cooling benefits, improve stormwater absorption, and enhance biodiversity.

The adoption of sponge city principles, which emphasize rainwater harvesting, retention ponds, and green corridors, can be instrumental in addressing both flooding and water scarcity in the town. Nature-based flood management solutions, such as restoring floodplains and creating bio-swales, will help regulate stormwater flow while supporting ecological functions.

Institutional frameworks must ensure that nature-based solutions are integrated into urban planning policies, building codes, and disaster management strategies. Community participation in conservation efforts—through river monitoring groups, afforestation drives, and eco-restoration initiatives—can enhance the sustainability of these interventions. By prioritizing EBA and NBS, Pathanamthitta town can build resilience against climate change while preserving its natural heritage and ecological balance.



39. PRIORITY ACTION PLAN

The Priority Action Plan outlines a clear roadmap for the effective execution of sectoral projects by identifying the implementation strategy, project phasing, priority projects and elaborating the key components of priority projects to support preparation of Detailed Project Reports (DPR). The implementation strategy adopts a phased approach over a 20-year horizon, divided into four 5-year phases. Within this framework, development priorities have been identified through a combination of spatial and socio-economic need assessments and estimation of infrastructure gaps. Projects that offer high public benefit, address critical service deficits, and promote inclusive urban growth have been prioritized. Overview of key project components will help to facilitate the preparation of DPRs and mobilization of funds. This structured prioritization ensures that early investments generate visible impact while laying the foundation for long-term planned urban development.

Contents

1 Implementation strategy & Project Phasing

2 Identification of Priority Projects

3 Details of Priority Projects in Built up Zone

4 Details of Priority Projects in Green Blue Zone

39.1 Implementation strategy & Project Phasing

The implementation of all identified projects in the chapters 36, 37 & 38 is proposed through a structured phasing strategy to ensure manageable investment, adaptive planning, and progressive development. The 20-year planning horizon is divided into four phases of 5-year each, aligning with municipal budget cycles, institutional capacity, and the prioritization of urgent needs. This approach helps in planning, budgeting, monitoring and ensuring that resources are used efficiently while managing the risks and demands of future growth.

Phasing allows the project to be implemented gradually, with each phase contributing to the overall development. The implementation mechanism, along with the approximate cost (Project finance/ Fiscal requirement) for each project identified in each phase is presented in Table 39.1 to provide a clear and actionable roadmap.

Phase I (Years 1–5)	Focus on high-impact, Low-cost, and urgently needed interventions.
Phase II (Years 6 -10)	Strengthen supporting infrastructure and scale pilot initiatives.
Phase III (Years 11–15)	Integrate regional linkages, introduce advanced systems, and address mid-term goals.
Phase IV (Years 16–20)	Consolidate outcomes, ensure long-term sustainability, and enable full operationalization of the master plan vision.

Table 39.1 Project phasing of all master plan project

Phase I (Years 1–5)				
Sl. No	Project Name	Sector	Implementation Agency	Cost Estimate (in Rs Cr)*
1	Central Square	Trade & Commerce	Municipality & PWD	5
2	Modern Municipal Market	Trade & Commerce	Municipality &PWD	7
3	Food Street	Trade & Commerce	Municipality	2.5
4	Kumbazha Multi-functional Market	Trade & Commerce	Municipality & PWD	2.5
5	Floriculture	Agriculture	Municipality, Agricultural Department	0.15
6	Modern Slaughter house	Animal Husbandry	Municipality & PWD	1.8
7	Industrial Estate	Industry	KINFRA, SIDCO	5
8	Chuttippara Adventure Tourism park	Tourism	Municipality & Tourism Department / PPP	12
9	Aqua Rock Adventure Park	Tourism	Municipality & Tourism Department /PPP	13
10	Vanchikapoika Waterfall Project	Tourism	Tourism department	1
11	Valamchuzhi Tourism Project (Riverfront Park)	Tourism	Tourism Department	5
12	Destination wedding centres	Tourism	Municipality / PPP	2.3
13	Kadavu Restoration	Tourism	Municipality & Tourism Department / PPP	11

14	Urban Health Corridor	Transportation	Municipality & PWD	28
15	Intersection Improvement (Central Junction Redesign)	Transportation	NHAI	9
16	Municipal Bus Stand Complex Renovation	Transportation	Municipality	5
17	Bus stop reinvention	Transportation	Municipality/ PPP	0.40
18	Municipal Shopping Complex and Parking Plaza	Transportation	Municipality & PWD	33
19	Pedestrian Walkway	Transportation	Municipality	0.25
20	Improved piped water supply coverage	Water supply	KWA	50
21	Quarry based decentralised water supply schemes	Water supply	KWA & Municipality	1
22	Drought Preparedness Plan	Water supply	KWA & Municipality	0.15
23	Solid Waste Management (SWM) Plan	Solid Waste Management	LSGD, KSWMP	0.2
24	Extension of RRF Centre near private bus stand	Solid Waste Management	Municipality & KSWMP	0.2
25	Thumbormozhi aerobic composting units (Upgradation & New)	Solid Waste Management	Municipality & KSWMP	0.30
26	Mobile FSTP	Liquid Waste Management	Municipality	0.5
27	Drainage Master Plan	Drainage	KSDMA & Municipality	1.4
28	Underground Electric line(partial)	Energy	KSEB	10
29	Roof top solar energy generation in public buildings & Schools	Energy	ANERT	0.50
30	Thaikkav School Redevelopment	Education	Municipality & PWD, Education Department	13
31	Infrastructural upgradation of schools	Education	Municipality & Education Department	1.5
32	Redevelopment of General Hospital Campus.	Health	Municipality & PWD, Health Department	10
33	Infrastructural upgradation in PHC	Health	Municipality & Health Department	0.25
34	Fitness Hub	Health	Municipality & PWD	1.5
35	Housing Scheme Area	Housing	Municipality	1
36	District Stadium & Sports Complex Redevelopment (Renovation of KK Nair Stadium)	Recreation	Sport Council	10
37	Town Square	Recreation	Municipality	1
38	Urban Central Park	Recreation	Municipality	2.8
39	Holistic Neighbourhood Park	Recreation	Municipality & Department of Higher	3.8

			Education	
40	Relocation of Fire Station	Civic Amenities	Kerala Fire and Rescue Department	2.4
41	Municipal Convention Centre & Tourist home at Edathavalam	Civic Amenities	Municipality & PWD	40
42	Renovation of Existing Comfort Stations	Civic Amenities	Municipality	0.25
43	Happiness Park	Special Concerned Areas	Municipality	5
44	Happy Home & Harmony Centre	Special Concerned Areas	Municipality, Social Justice & Women and Child Department	1
45	Empowerment Centre	Special Concerned Areas	Social Justice Department	0.50
46	Smart Anganawadi (Phase 1 – 10 Numbers)	Special Concerned Areas	Municipality	0.50
47	Sponge Park	Hazard & Climate Change	KSDMA & Municipality	4.9
48	Wetland Parks (Room for River)	Hazard & Climate Change	KSDMA & Municipality	5
49	Detention/ Retention Basins	Hazard & Climate Change	KSDMA & Municipality	2.7
50	Waterbody widening	Hazard & Climate Change	Irrigation Department, KSDMA & Municipality	2.4
51	All Weather roads	Hazard & Climate Change	PWD, KSDMA & Municipality.	50
52	Green Islet/ Urban Forestry/ Miyawaki Forest/ Pachathuruthu	Hazard & Climate Change	Municipality , Tourism department & K-DISC	0.20
53	Riparian Buffer	Environment	Irrigation Department	1
54	Green Strip	Environment	Municipality	0.35
55	Butterfly Park/Blossom Garden	Environment	Municipality	1
56	Quarry Park and View Point at Myladumpara	Environment	Municipality / PPP	1.6
57	Redesign of Mini Civil Station	Administration	PWD	15
58	New Court Complex	Administration	PWD	10
59	Ward Bhavans (Phase 1)	Administration	Municipality	5

Phase II (Years 6–10)				
Sl. No	Project Name	Sector	Implementation Agency	Cost Estimate (in Rs Cr)*
1	Vending Street at Sponge Park	Trade & Commerce	Municipality	0.25
2	Workation Farm tourism	Agriculture, Tourism	Municipality & Agricultural	3

			Department	
3	Integrated Farm tourism	Animal Husbandry	Municipality & Animal Husbandry Department	2.2
4	Innovation Village	Industry	KINFRA, SIDCO	110
5	Chuttippara Adventure Tourism Base Camp	Tourism	Municipality, Tourism Department & Department of Prisons and correctional Services Kerala	7
6	Kottappara Hill View Park	Tourism	Municipality / PPP	1
7	Vanchikapoika Waterfall viewing deck	Tourism	Municipality / PPP	1
8	Outer Ring Road	Transportation	Municipality & PWD	500
9	Intersection Improvement (Kumbazha Junction)	Transportation	PWD	10
10	Intersection Improvement (Town Square Junction)	Transportation	PWD	10
11	Transport Terminal Interface	Transportation	Municipality & PWD	18
12	Satellite Bus Station	Transportation	Municipality	10
13	Ring Road Mobility Plan	Transportation	Municipality	0.50
14	Highway Travel Plaza	Transportation	Municipality	6
15	Water conservation projects in Public buildings & Schools	Water supply	Municipality	0.75
16	Wellness Park	Health	Municipality & Health department	0.5
17	Urban Pulse Hub	Recreation	Municipality & Sports Department	1
18	Kumbazha Public Square	Recreation	Municipality	0.75
19	Subala Park Redevelopment	Recreation	SC/ST Department	3
20	Extension of Children's Park	Recreation	Municipality & Tourism Department,	2
21	Municipal Library Renovation & Study Booth	Civic Amenities	Municipality	0.75
22	Renovation of Crematorium	Civic Amenities	Municipality	1
23	Smart Anganawadi (Phase 2 – 10 Numbers)	Special Concerned Areas	Municipality	0.50
24	Restructuring of Collectorate Campus (Civil Station)	Administration	PWD	7

Phase III (Years 11–15)				
Sl. No	Project Name	Sector	Implementation Agency	Cost Estimate (in Rs Cr)*

1	Vending Street at Kumbazha	Trade & Commerce	Municipality	0.25
2	Mannarmala View Point	Tourism	Municipality / PPP	0.35
3	Riverside Twilight rock ridge Park	Tourism	Municipality / PPP	1.7
4	River View Corniche Park at Kumbazha (Beautification of Achankovil River with Water Adventure Activity & Hanging Bridge at Thundumenkadavu)	Tourism	Municipality, & Tourism department/ PPP	10
5	Waste-to-Energy (WTE) Plant	Energy	KSIDC	0.60
6	New hospital complex	Health	Health department	18
7	Neighbourhood Park	Recreation	Municipality	1
8	Museum & Art Gallery	Civic Amenities	Municipality	0.65
9	Smart Anganawadi (Phase 3 – 13 Numbers)	Special Concerned Areas	Municipality	0.50
10	Municipal Office Complex expansion & Redevelopment	Administration	Municipality	6

Phase IV (Years 16–20)				
Sl. No	Project Name	Sector	Implementation Agency	Cost Estimate (in Rs Cr)*
1	Truck terminal	Transportation	Municipality	2
2	Dedicated space for Auto/taxi	Transportation	Municipality	0.75
3	Storm water treatment Plant at Kumbazha	Drainage	Irrigation Department & Municipality	0.65
4	Integrated Living Hub	Housing	Municipality	1.9
5	Gate Way land mark	Recreation	Municipality	0.50
6	Relocation of Sub jail	Civic Amenities	Department of Prisons and correctional Services Kerala	5
7	Government Office Complex	Administration	PWD	75

**Note: cost calculations are only approximate figures.*

The municipality currently has limited financial capacity to implement all proposed projects identified in this master plan. Given the scale and diversity of interventions required, relying solely on the municipality and the municipal revenues will be insufficient. Therefore, resource mobilization becomes a critical strategy, wherein the municipality must actively seek to augment its funding base through both conventional and innovative means. This may include leveraging State and Central government schemes and projects, MP & MLA

funds, accessing funds from missions like AMRUT, Smart Cities and partnering with private entities through CSR contributions or Public-Private Partnerships (PPPs). Additionally, land-based financing instruments, improving tax collection efficiency, and community participation to mobilise local resources can be explored. Through such a diversified approach, the municipality can ensure that essential urban projects are phased, financed, and implemented effectively, despite fiscal constraints.Muncipality shall also take the lead for the convergence of projects of all development agencies, towards the master plan proposals.

39.2 Identification of Priority Projects

Priority projects are certain identified urban development projects (table 39.2) from the above phased sectoral projects that are urgent and important for the community, focusing on improving infrastructure, public services, and overall quality of life. These projects vary based on the specific challenges and goals of the town such as economic development, environmental protection and social equity. Priority projects are identified through a combination of suggestions from public seminars, technical studies, and urban context of the town and finalised by the municipal council after discussions and site visits of Master Plan committee.

Table 39.2 Priority Projects of Pathanamthitta town

Sl. No	Project Name	Sector	Liveability Pillar
Built up Zone			
1	Central Square	Trade & Commerce, Aesthetic	Economy
2	Modern Municipal Market	Trade & Commerce	Economy
3	Food Street	Trade & Commerce	Economy
4	Modern Slaughter House	Animal Husbandry	Economy, Physical
5	Industrial Estate	Industry	Economy
6	Innovation Village	Industry	Economy
7	Aqua Rock Adventure Park	Tourism, Environment,Hazard Mitigation & Climate change adaptation	Economy, Environment
8	Urban Health Corridor	Transportation, Environment, Hazard Mitigation & Climate change adaptation	Physical, Environment
9	Municipal Shopping Complex & Parking Plaza	Transportation, Trade & Commerce, Hazard Mitigation & Climate change adaptation	Physical
10	Outer Ring road	Transportation, Disaster Preparedness	Physical
11	Transport Terminal Interface	Transportation	Physical, Social

12	Thaikkav School Redevelopment	Education	Social
13	Fitness Hub	Health	Social
14	Housing Scheme Area	Housing	Social
15	Urban Central Park	Recreation, Hazard Mitigation & Climate change adaptation	Social
16	Holistic Neighbourhood Hub	Recreation, Hazard Mitigation & Climate change adaptation	Social
17	Relocation of Fire Station	Civic Amenities, Disaster Preparedness	Institutional
18	Municipal Convention Centre & Tourist Home	Civic Amenities,	Social
19	Happy Home &Harmony Centre	Special Concern Area	Social
Green Blue Zone			
1	Chuttippara Adventure Tourism Park	Tourism, Environment, Hazard Mitigation & Climate change adaptation	Economy, Environment
2	Kadavu Restoration	Tourism, Hazard Mitigation & Climate change adaptation	Economy
3	Destination Wedding Centers	Tourism, Hazard Mitigation & Climate change adaptation	Economy
4	Integrated Farm Tourism	Agriculture, Animal Husbandry, Tourism, Hazard Mitigation & Climate change adaptation	Economy, Social
5	Quarry Park &View Point	Environment, Hazard Mitigation & Climate change adaptation	Environment
6	Butterfly Park	Environment, Hazard Mitigation & Climate change adaptation	Environment
7	Sponge Park	Hazard Mitigation & Climate change adaptation	Environment
8	Green Islet/Pachathuruth/Miyawaki forest	Hazard Mitigation & Climate change adaptation	Environment
9	Detention Pond	Hazard Mitigation & Climate change adaptation	Environment
10	Restoration of streams& channels,	Hazard Mitigation &	Environment

	Flood plain protection, Riparian buffer zone & Riverbank stabilisation.	Climate change adaptation	

39.3 Details of Priority Projects in Built up Zone

This section presents an overview of the above selected priority projects in Built up zone for urban development and resilience enhancement within the town. It provides essential project details including the project brief, specific location, land ownership status, key components, responsible implementing agencies, suggested implementation mechanism, and estimated project cost and project duration. These details are intended to guide the preparation of Detailed Project Reports (DPRs). The information acts as a quick reference for authorities to prioritize action and ensure timely, sustainable, and community-focused urban transformation.

39.3.1 Central Square

39.3.1.1 Project Brief

Need for the Project

The current condition of the town centre is heavily congested, with inadequate parking facilities contributing to traffic bottlenecks and limited accessibility. Unregulated street vending further crowds public spaces, hindering pedestrian movement and diminishing the overall urban experience. Visually, the town centre lacks aesthetic appeal, marked by the presence of an old, deteriorating municipal shopping complex that no longer meets modern commercial or safety standards (Figure 39.1). Revitalizing the town centre through thoughtful spatial interventions will address these challenges by reorganizing land use, improving infrastructure, enhancing public spaces, and creating a more functional, attractive, and sustainable urban environment that better serves the community's current and future needs.

Project Aim

Demolish the outdated or underperforming municipal shopping complex and replace it with a modern, more efficient, and sustainable shopping centre that will better serve the needs of the community, attract more visitors, and contribute to the economic revitalization of the central area. Also provide parking facilities, dedicated space for street venders and pedestrian friendly public spaces. Through this modernizing and revitalizing, the Central Junction will be elevated as Central Square as proper planned Junction is formed. The location, existing and proposed images of the project area are shown in Chapter 37.







Figure 39-1 Images showing existing condition of Central Junction of Pathanamthitta Town (Municipal Shopping complex building at demolishing stage, on street parking and street vending)

Project Objectives

1. Modernization of Infrastructure: Demolish the existing old municipal shopping complex.
2. Economic Revitalization: Increase commercial activity in the town center by offering new retail spaces, restaurants, and amenities.
3. Urban Regeneration: Improve the visual appeal and functionality of the central junction, making the area more attractive for both residents and tourists and elevate the junction name as Central Square of the town.
4. Sustainability: Design and construct the new shopping complex with sustainable practices, incorporating energy-efficient technologies, eco-friendly materials and green spaces.
5. Improve Accessibility: Ensure the town center is barrier free and inclusive social interaction areas.

39.3.1.2 Location and Ownership

The Central Square project located in western side of Mini Civil Station abutting five arm road junction called Central Junction (figure 39.2).

Land Ownership	Municipality
Ward Number	30
Project Area	0.36 Acre
Survey Numbers	218(p)



Figure 39-2 Location of Central Square project

39.3.1.3 Project Components

1. Safely demolishing of existing structure, removing hazardous materials and clearing the site for construction.
2. Design and Planning of Central Square with inclusive new shopping complex building which resembling the existing clock tower, designated vending areas, pedestrian friendly design with seating and parking areas.
3. Energy-saving lighting, HVAC systems and insulation.
4. Green areas, both inside and outside the complex, such as landscaped plazas, green roofs, and plantings that improve air quality and provide aesthetic value.
5. CCTV cameras, emergency lighting, and other security features to ensure safety within the complex.
6. Develop strategies for promoting the new shopping complex to potential customers

and businesses, highlighting its modern design and prime location.



Figure 39-3 Central Square project concept (proposed)

39.3.1.4 Responsible Agencies

Role	Agencies likey to be involved
Preparation of detailed Plan	Municipal Engineering Section/ PWD & LSGD Planning
Monitoring the project	Municipality
Project implementation	Municipal Engineering Section/ PWD
Possible Funding Options	Municipality, State Govt., PPP Model, CSR

39.3.1.5 Suggested Implementation Mechanism

The Municipality should take initiative to prepare the DPR with the help of PWD/ Engineering section & LSGD Planning as this project deals with both structural and urban aspects. The DPR should contain a Plan for demolition of existing building, plan for new shopping complex building and plan for surrounding amenities. The Pathanamthitta Municipality engineering section/ PWD is the primary agency involved in the execution

39.3.1.6 Other Associated Issues to be addressed

Considering the demolition of old shopping complex in a town centre, it's important to create a detailed demolition plan to ensure the process is carried out efficiently, safely, and with minimal disruption to the surrounding area. Municipality coordinate with Police and Traffic department to divert traffic around the demolition site and ensure pedestrian safety. Implement a plan for sorting and recycling demolition debris. Ensure that reusable materials (e.g., steel, wood, concrete) are separated for recycling, and the remaining waste is disposed of responsibly.

39.3.1.7 Project Cost & Period

Component	Cost*
Demolition of existing building	50 Lakh
Construction of new building	2cr
Central Square	2.5cr
Total Cost of the project	5 Cr

**Note: cost calculations are only approximate figures.*

The priority of the project is coming under 1st phase (0-5 years). The approximate estimated project period will be 2 years.

39.3.2 Modern Municipal Market

39.3.2.1 Project Brief

Need for the Project

The current market have outdated facilities, which be in poor condition due to years of wear and tear leads to declining Infrastructure and aesthetics. Renovation is essential to restore and improve market elements, ensuring safety and attractiveness. As consumer preferences evolve, there is a need to provide a more diverse shopping experience. Modernizing the market

can include offering a wider range of high-quality goods, services, and experiences that align with current trends. Now the market fails to meet modern hygiene, safety, and environmental regulations (Figure 39.4). Renovation allows for the introduction of proper sanitation facilities, better ventilation, and compliance with safety codes, making the market as a modern district-level market.

Modernizing the market can play a key role in the overall revitalization of the town center, boosting tourism, and improving the commercial viability of the surrounding area. A renovated market can become a focal point for the community and a catalyst for further development for years to come.

Project Aim

To revitalize the existing infrastructure, enhance its functionality, and improve the overall experience for both vendors and consumers by attractive, efficient, and sustainable marketplace. The location, existing and proposed images of the project area are shown in Chapter 37.





Figure 39-4 Images showing existing conditions of town market

Project Objectives

1. Improve Infrastructure and Layout of market buildings.
2. Enhance the aesthetic appeal of market to attractive both locals and tourists.
3. Increase commercial opportunities and remove street venders in the road side near market areas and other town junctions and provide a designated place inside the market and make them into formal economy.
4. Enhance the market's role as a key economic and social hub for the town center.
5. Enhance the quality of vendor facilities, ensuring they are safe, hygienic, and equipped for modern retailing.
6. Create a more comfortable shopping experience for customers, with better amenities like seating, rest areas, and clean restroom facilities.
7. Integrate sustainable practices such as energy-efficient lighting, renewable energy sources (e.g., solar panels), water-saving technologies, and waste recycling systems.

39.3.2.2 Location and Ownership

The modern municipal market is proposed at existing municipal market land which is north eastern side of Municipal office building abutting Central Junction – Co-operative College Junction road (figure 39.5).

Land Ownership	Municipality

Ward Number	30
Project Area	1.85 Acre
Survey Numbers	168(p), 218(p), 219(p) & 220(p)



Figure 39-5 Location of Modern Municipal Market project

39.3.2.3 Project Components

1. Renovation of market's physical structure, including buildings, stalls, pathways, and common areas to improve accessibility and flow.
2. Retail Spaces include both permanent shops and temporary stalls
3. Food Courts Areas where multiple food vendors are gathered, offering a variety of ready-to-eat meals, snacks.
4. Dedicated entry/exit and parking space and for vehicle for loading and unloading. Adequate parking spaces for customers using private vehicles.
5. Restrooms with Clean and inclusive accessible.
6. Green roof, Green Spaces and Landscaping with native plants, small gardens, or trees.
7. Rainwater harvesting units with Decentralised waste water treatment unit. Proper solid waste disposal systems with no foul smells.
8. Seating Areas like Lounges or benches where visitors can rest, especially near food courts.
9. Use of LED lights and solar panels for energy conservation.
10. CCTV cameras to ensure the safety of shoppers and vendors.



Figure 39-6 Modern Municipal market project concept

39.3.2.4 Responsible Agencies

Role	Agencies likey to be involved
Preparation of detailed Plan	Municipal Engineering Section/ PWD & LSGD Planning
Monitoring the project	Municipality
Project implementation	Municipal Engineering Section/ PWD
Possible Funding Options	Municipality, State Govt., CSR, PPP

39.3.2.5 Suggested Implementation Mechanism

The Municipality should take initiative to prepare the DPR with the help of PWD/ Engineering section & LSGD Planning as this project deals with both structural and urban aspects. The DPR should contain a Plan for demolition of existing market building, Plan for new modern market Building and Plan for Urban Components and aesthetics. The main Agencies involved in the implementation is PWD/ Engineering section of Pathanamthitta Municipality.

39.3.2.6 Other Associated Issues to be addressed

A temporary rehabilitation has to be developed for the relocation of the existing shops and stalls during construction.

39.3.2.7 Project Cost & Period

Component	Cost*
Demolition of existing building	50 Lakh
Construction of new buildings	4 cr
Urban Components	2.5 cr
Total Cost of the project	7 Cr

**Note: cost calculations are only approximate figures.*

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.3 Food Street

39.3.3.1 Project Brief

Need for the Project

Currently town is inactive at night. A food street encourages evening social activity and foot traffic. Evening food businesses (especially small vendors) generate income and jobs beyond typical business hours. A food street will contributes to a lively, safe, and culturally rich night-time environment, appealing to youth, tourists, and families and regional visitors.

Project Aim

To create a vibrant, safe, and inclusive food street that revitalizes the town's nightlife, supports local vendors, and enhances public spaces through structured spatial development. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. Develop a regulated night-time food zone that is hygienic, accessible, and attractive.
2. Encourage safe night-time economy and public engagement.
3. Formalize street vending into an organized urban system.
4. Enhance the visual and functional quality of town centres during night hours.
5. Integrate cultural events, food diversity, and local identity into nightlife.

39.3.3.2 Location and Ownership

The food Street is proposed at Chittoor Junction in ring road between St. Peters Junction and Melevettipuram Junction (Figure 39.7).

Land Ownership	Municipality
Ward Number	9
Project Area	0.64 Acre
Survey Numbers	35(p)



Figure 39-7 Location of Food Street project

39.3.3.3 Project Components

1. Infrastructure: Night-operable food stalls (well-lit, mobile or modular), power connections, water supply.
2. Public Amenities: Lighting, toilets, seating, public Wi-Fi, and drinking water.
3. Cultural Integration: Spaces for street performances, music, or local art displays to enhance the night experience.
4. Waste Management: Night-time cleaning teams, dustbins, and eco-friendly disposal practices.
5. Traffic and Accessibility: night-time parking arrangements.

6. Security Measures: CCTV, Women friendly design (safe lighting, signage).



Figure 39-8 food street project concept

39.3.3.4 Responsible Agencies

Role	Agencies likey to be involved
Lead agency for implementation, sanitation and vendor management.	Municipality
Layout integration with spatial plan	LSGD Planning
Night-time security, emergency response planning	Police and Fire Department
Hygiene monitoring, vendor compliance	Health & Food Safety Department
Event coordination, marketing, and branding	Tourism Department
Coordination with vendor representatives	Street Vending committee

39.3.3.5 Suggested Implementation Mechanism

A Detailed Project Report (DPR) will be prepared, outlining the design, budget, timeline, and operational model. A pilot phase will test the concept in a limited area during weekends or special events to refine the plan based on real-time feedback. Capacity building will be crucial, with training for vendors in hygiene, customer service, and waste management. An operation and maintenance framework will assign responsibilities for cleaning, security, and stall management to ensure smooth functioning. Finally, the project will be supported by a robust promotion and branding strategy, leveraging digital platforms, community events, and partnerships with local artists and chefs to attract visitors and build a strong identity.

39.3.3.6 Other Associated Issues to be addressed

In addition to the core implementation plan, several operational challenges must be addressed to ensure the street vending zone functions effectively and sustainably. Noise and disturbance to nearby residents can be mitigated through defined operating hours and sound control measures. Waste disposal, particularly overnight cleaning, is essential to maintain city hygiene before daily routines begin. Increased footfall may lead to traffic congestion and parking shortages, requiring coordinated traffic management. Safety concerns, especially for women and vulnerable groups, necessitate strong policing, proper lighting, and CCTV surveillance. Reliable electricity must be ensured to support vendors' operations at night. Sustaining vendor compliance with rules on hygiene, timings, and fees will be critical, along with mechanisms for regular monitoring. Additionally, providing weather protection such as covered stalls will help vendors operate comfortably during adverse conditions like rain. Addressing these issues holistically will contribute to a well-managed, inclusive, and resilient vending environment.

39.3.3.7 Project Cost & Period

Components	Estimated Cost (INR)*
Paving, drainage, stall bases	₹30–50 lakh

Modular or semi-permanent kiosks with lighting, signage	₹50–70 lakh (₹50,000–₹1.5 lakh per stall)
Street lighting, stall power supply, decorative lighting	₹15–25 lakh
Dustbins, segregated waste zones, night cleaning systems	₹5–10 lakh
Drinking water taps, vendor water lines, public toilets	₹10–15 lakh
CCTV, public announcement system, fire extinguishers	₹10–20 lakh
Benches, bollards, shade structures	₹10–20 lakh
Vendor training sessions, IEC material	₹2–5 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹1.5 crore – ₹2.5 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.4 Modern Slaughter House

39.3.4.1 Project Brief

Need for the Project

The existing slaughterhouse in the town lacks adequate infrastructure, leading to poor hygiene, improper waste disposal, pollution, and public health concerns. With growing urbanization and demand for meat, there is a critical need to upgrade or replace outdated facilities with a scientifically designed modern slaughterhouse. A modern facility ensures hygienic meat processing, environmental safety, animal welfare, and compliance with regulatory standards, while also improving the town's sanitation and public image.

Project Aim

To establish a modern, hygienic, and environmentally compliant slaughterhouse ensuring safe meat processing, proper waste management, and sustainable urban infrastructure. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. Replace or upgrade the existing under-equipped slaughterhouse.
2. Ensure hygienic meat production and public health safety.
3. Implement efficient solid and liquid waste management systems.
4. Minimize environmental pollution and reduce human-animal contact risks.
5. Improve working conditions for butchers and meat handlers.
6. Promote animal welfare through humane slaughtering practices.

39.3.4.2 Location and Ownership

The modern slaughter house is proposed at existing municipal slaughter house land (Figure 39.9)



Figure 39-9 Location of Modern Slaughter House project

39.3.4.3 Project Components

1. Animal Holding Area: Covered enclosures, water, feeding, and rest areas
2. Slaughter Hall: Segregated zones for large/small animals, blood collection
3. Meat Processing Area: Meat inspection, cutting, chilling, and packaging facilities
4. Waste Disposal System: Effluent treatment plant (ETP), composting or biogas unit for solid waste
5. Cold Storage: Chilling rooms, cold chain for meat preservation
6. Workers' Facilities: Changing rooms, toilets, rest areas, first aid

7. Administrative Block: Office, records, CCTV monitoring, documentation
8. Solar/Backup Power: Sustainable energy integration, backup diesel generator

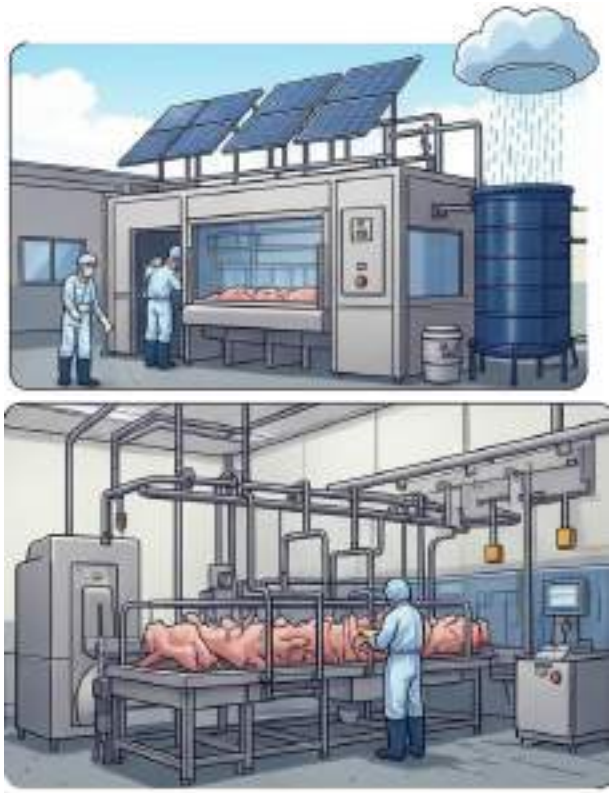


Figure 39-10 Modern Slaughter house project concept

39.3.4.4 Responsible Agencies

Role	Agencies likey to be involved
Infrastructure planning, licensing	Municipality
Veterinary support, inspection, welfare guidelines	Department of Animal Husbandry
Environmental clearance, ETP guidelines	Pollution Control Board (PCB)
Health and hygiene inspections	Public Health Department
Construction and civil works	Public Works Department (PWD)
O&M under PPP models if applicable	Private Operators/PPP Partners

39.3.4.5 Suggested Implementation Mechanism

Stakeholder consultations involving butchers, vendors, municipal officials, and regulatory bodies are essential to ensure alignment and acceptance. After securing necessary approvals from Departments, construction should commence in phases—starting with core infrastructure such as the slaughter hall, animal holding areas, and effluent treatment systems. The facility can be operated either by the municipal body or through a Public-Private Partnership (PPP) model, with clear responsibilities for waste disposal, veterinary inspection, and hygiene enforcement. Training programs for workers and awareness campaigns on safe meat practices should be integrated into the operational rollout.

39.3.4.6 Other Associated Issues to be addressed

Public opposition may arise due to concerns about odour and pollution. Effective waste management is critical, as untreated effluents or solid waste can lead to severe environmental and health hazards. Regulatory clearances, especially from the Pollution Control Board and food safety authorities, may cause delays if not planned in advance. Resistance from traditional butchers and workers due to changes in work methods can be mitigated through proper training and stakeholder sensitization. Animal welfare practices must be strictly followed, including humane slaughter techniques and proper handling. Additionally, logistics for animal transport and meat distribution should be designed to minimize traffic disruption and public nuisance.

39.3.4.7 Project Cost & Period

Component	Estimated Cost (INR)*
Civil Structures (slaughter hall, admin, etc.)	₹40 -50 lakh
Machinery & Equipment	₹20-30 lakh

Cold Storage & Power Backup	₹20–30 lakh
Veterinary Lab & Inspection Facilities	₹10–15 lakh
Waste Management Systems (ETP, biogas)	₹10-20 lakh
Workers' Amenities	₹5–10 lakh
CCTV, Solar Power, IT Systems	₹5–10 lakh
Contingency & Project Management	₹10–15 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹1.8 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 1 years.

39.3.5 Industrial Estate

39.3.5.1 Project Brief

Need for the Project

The need for establishing an industrial estate in the town arises from the lack of organized industrial zones and the dispersed small-scale industries. A dedicated industrial estate will support micro, small, and medium enterprises (MSMEs), provide a structured platform for industrial growth, and create employment opportunities for the local population. It will also help the town achieve balanced economic development and reduce migration by supporting local livelihoods.

Project Aim

To establish a well-planned, environmentally sustainable industrial estate that promotes local employment, supports MSMEs, and enhances the economic base of the town. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To provide planned industrial plots with basic and shared infrastructure.
2. To attract MSMEs and agro-based/eco-friendly industries.
3. To generate employment for local youth and skilled workers.
4. To ensure integration with logistics, transport, and utility services.

39.3.5.2 Location and Ownership

Industrial Estate project is proposed in the south eastern part of the town (Figure 39.11) near Kottappara area abutting municipal boundary. It is outside the landslide and flood prone area in town.



Figure 39-11 Location of Industrial estate project

Land Ownership	Private
Ward Number	19
Project Area	37.32 Acre
Survey Numbers	91(p)

39.3.5.3 Project Components

1. Site Development : Land acquisition, leveling, grading, drainage
2. Road & Circulation Network: Internal roads, pedestrian pathways, truck access roads
3. Industrial Plots : Demarcated plots for industrial units with standard sizes
4. Common Facility Centre (CFC): Testing labs, R&D center, training facility
5. Administrative Block: Office for estate management and regulatory functions Water Supply & Sewerage: Borewells, storage tanks, internal pipelines, STPs
6. Power Supply : Substation, solar power systems, internal distribution
7. Green Buffer & Landscaping ; Tree-lined buffers, green parks, storm water ponds

8. Worker Amenities; Restrooms, canteen, crèche, health center



Figure 39-12 Industrial Estate project concept

39.3.5.4 Responsible Agencies

Role	Agencies likey to be involved
Project Initiator	Municipality
Nodal Department	Department of Industries
Technical Support	KSIDC, KINFRA, Industrial Parks Board
Infrastructure Support	PWD, LSGD, KSEB, KWA, Pollution Control Board
Possible Funding Options	State Govt., MSME Ministry (GoI), SIDBI, NABARD, PPP partners

39.3.5.5 Suggested Implementation Mechanism

The project is proposed in private ownership lands. So municipality may take initiative to acquisition of land within 7 years. The project may be implemented along with the collaboration of the Department of Industries, relevant state agencies (such as KSIDC or KINFRA), and private sector partners where applicable. The implementation will be carried out in phases, beginning with land acquisition and site development. This will be followed by the provision of essential infrastructure such as roads, power, water supply, sewerage, and common facilities. Once basic infrastructure is ready, industrial plots will be allocated to MSMEs based on pre-defined criteria. Public-private partnerships (PPP) can be explored to attract investment and ensure professional estate management.

39.3.5.6 Other Associated Issues to be addressed

Several critical issues need to be addressed during the planning and implementation of the industrial estate. These include securing environmental clearances, resolving potential land acquisition disputes, and ensuring connectivity to major transport networks. Local utility infrastructure, such as power and water supply, may need to be upgraded to meet increased industrial demands. Provisions for climate resilience, such as solar energy use, rainwater harvesting, green buffers, and effective solid waste management, should be integrated into the estate design to ensure long-term sustainability and compliance with environmental regulations.

39.3.5.7 Project Cost & Period

Component	Estimated Cost (INR)*
Land Acquisition	₹ 25 Cr
Infrastructure Development	₹20 Cr
Green, Environmental protection	₹5 Cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 50 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 3 years.

39.3.6 Innovation Village

39.3.6.1 Project Brief

Need for the Project

The town currently lacks a structured ecosystem to nurture innovation, start-ups, and technology-based enterprises. Despite the presence of skilled youth and educational institutions, there is a significant gap in translating knowledge into economic value. An Innovation Village will provide a platform for idea incubation, product development, and collaboration between academia, industries, and local entrepreneurs. This project aims to prevent youth outmigration, generate local employment, and strengthen the knowledge economy by fostering innovation-driven development within the spatial framework of the town.

Project Aim

This project aims to become a catalyst for knowledge-based economic growth that fosters innovation, technology, entrepreneurship, research and collaboration.

The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To create a dedicated IT and start-up hub
2. To promote research and product development
3. To provide structured incubation and innovation support
4. To build a skilled and future-ready workforce
5. To reduce youth outmigration and foster local economic transformation

39.3.6.2 Location and Ownership

Innovation Village project is proposed in the western part of the town near Anchakkala area

Land Ownership	Municipality
Project Area	32.10 sqkm
Survey Numbers	50, 48(p), 320(p), 330(p), 49, 43(p), 44(p)



Figure 39-13 Location of Innovation Village project

39.3.6.3 Project Components

1. IT & Start-up Hub: Tech Park with modular office spaces, Co-working and co-innovation spaces, Accelerator and venture capital offices.
2. Research and Development Zone: Sector-specific labs (AI, biotech, clean tech, agri-tech), Corporate and university R&D centres, Intellectual Property facilitation and technology transfer offices.
3. Incubation & Innovation Support: Incubation center with mentorship, seed funding, legal, and HR support, Hackathon zones, innovation challenge arenas, Fab labs, maker spaces and prototyping units.
4. Talent Development and Education: Training academies for coding, data science, IoT, robotics, etc., Partnership with universities for internships and research exchange.
5. Digital library, e-learning zones, and certification labs.
6. Residential & Lifestyle Amenities: Smart housing for students, professionals, and researchers, Cafeterias, wellness centres, recreational parks, amphitheatres, Cultural hub for tech events, exhibitions, and workshops.

39.3.6.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Kerala Start-up Mission (KSUM) / State IT Department
Technical Support	NID, NIFT, IEDC, TBI, KSIDC, ICT Academy

Possible Funding Options	State Govt., Ministry of MSME, DST, CSR funds
Implementation Partners	NGOs, Incubators, Innovation Hubs, Private Sector

39.3.6.5 Suggested Implementation Mechanism

The Innovation Village project should be implemented through a Special Purpose Vehicle (SPV) formed by the municipality in collaboration with state-level innovation agencies such as the Kerala Startup Mission (KSUM), industrial development corporations, and academic institutions. Implementation will be carried out in phases, starting with the core incubation and co-working infrastructure, followed by the establishment of the R&D zone, training hubs, and residential amenities. A public-private partnership (PPP) model can be adopted for financing and operating specific components like the IT hub, training centers, and dormitories. The SPV will also coordinate with funding sources such as state innovation grants, central government schemes (like Start-up India, Atal Innovation Mission), CSR contributions, and venture capital support to ensure sustainability and scalability.

39.3.6.6 Other Associated Issues to be addressed

The project must address digital infrastructure needs, including high-speed internet and smart facilities, while ensuring energy efficiency and climate resilience through the integration of solar energy systems and rainwater harvesting. Long-term success will depend on effective talent retention, dynamic industry-academia collaboration, and continuous monitoring of performance outcomes such as start-up survival rates, job creation, and innovation outputs.

39.3.6.7 Project Cost & Period

Component	Estimated Cost (INR)*
Land Development & Infrastructure	₹50 Cr
Research & Collaboration Space	₹30 Cr
Skill Development Hub	25
Green, Environmental protection	₹5 Cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 110 crore

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 4 years.

39.3.7 Aqua Rock Adventure Park

39.3.7.1 Project Brief

Need for the Project

Abandoned quarries often pose serious environmental, safety, and land degradation risks if left unattended. The proposed Aqua Rock Adventure Park seeks to address this by transforming a disused quarry into a safe, eco-friendly, and economically productive recreational space. This adaptive reuse not only protects the site from further deterioration and illegal dumping but also revitalizes it as a tourism and leisure destination. Such a park would attract visitors, support local employment, and serve as a unique nature-adventure destination in the town. It aligns with sustainable spatial planning by converting a brownfield into a vibrant, public asset with minimal ecological impact.

Project Aim

To develop an eco-sensitive Aqua Rock Adventure Park within an abandoned quarry, combining water-based and rock-based recreational activities that promote environmental restoration, tourism development, and local economic growth. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To reclaim and secure the abandoned quarry site through environmentally safe development.
2. To provide a unique adventure tourism destination featuring water and rock-based activities.
3. To create employment opportunities through eco-tourism, event management, and related services.
4. To promote safe recreation, environmental education, and sustainable leisure infrastructure for residents and tourists.
5. To integrate the park into the town's tourism and green infrastructure network.

39.3.7.2 Location and Ownership

Aqua rock adventure park project is proposed near Punnalathupadi junction area. The park is abutting the municipal boundary at western side. It is outside the landslide and flood prone area in the town.



Figure 39-14 Location of aqua rock adventure park project

Land Ownership	Municipality
Ward Number	31,32
Project Area	20.41 Acre
Survey Numbers	321(p), 334(p) &335(p)

39.3.7.3 Project Components

Component	Description
Entrance Plaza & Ticketing	Entry gate, ticket counter, security, and waiting area
Aqua Zone (Quarry Lake)	Paddle boating, kayaking, inflatable water games, floating deck
Rock Adventure Zone	Rock climbing walls, zip-lining, rope bridges, rappelling tracks
Observation Decks & Photo Points	Platforms overlooking quarry and adventure areas
Safety & Rescue Infrastructure	Lifeguard station, safety gear, medical bay
Eco-Lodging / Camping Zone	Tent platforms, eco-cabins, fire pits
Food Court & Restrooms	Local food kiosks, shaded seating, hygienic facilities
Solar Lighting & Rainwater Harvesting	For energy efficiency and ecological management
Parking, Admin Office & Surveillance	Parking space, control room, CCTV, staff amenities



Figure 39-15 Aqua rock adventure park project concept

39.3.7.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Technical Support	Department of Tourism
Quarry Safety & Conversion	Department of Mining & Geology, Pollution Control Board
Infrastructure Execution	PWD / Accredited Adventure Park Developers
Environment &	Ecological Experts /

Design Support	Landscape Architects
Possible Funding Options	State Tourism Dept., CSR Funds, PPP Investors
Local Operation Partners	SHGs, Youth Clubs, Local Entrepreneurs

39.3.7.5 Suggested Implementation Mechanism

The project can be implemented through a municipality-led initiative, in coordination with the Department of Tourism and technical support from adventure tourism experts. A Detailed Project Report (DPR) must be prepared through an experienced consultancy firm specializing in eco-tourism and terrain-sensitive development. Funding may be mobilized through state tourism schemes, centrally sponsored eco-tourism missions, Corporate Social Responsibility (CSR), or Public-Private Partnership (PPP) models. The site can be operated under a Build-Operate-Transfer (BOT) or lease model, ensuring trained local youth and SHGs are involved in day-to-day activities. A quarry safety clearance and environmental management plan must be mandatory before implementation begins.

39.3.7.6 Other Associated Issues to be addressed

The successful development of the Aqua Rock Adventure Park requires careful attention to a range of environmental, safety, and operational issues. Ensuring public safety is paramount, as quarry terrains involve steep rock faces, deep water bodies, and unstable edges; therefore, comprehensive structural assessments, fencing, and continuous monitoring are essential. The water quality in the quarry must be tested and treated if necessary to make it safe for recreational use. Being an environmentally sensitive site, all interventions should adopt eco-friendly construction techniques, minimize land disturbance, and promote native vegetation restoration. Proper waste management systems, noise control, and visitor capacity planning must be implemented to prevent ecological degradation. Long-term success will depend on effective maintenance, trained staff, community participation, and a clear operational plan to balance economic use with environmental protection.

39.3.7.7 Project Cost & Period

Component	Estimated Cost (INR)*
Entrance Plaza, Parking & Admin Block	₹ 25 lakh
Aqua Zone (Boating, Floating Decks, Inflatable Games)	₹3 Cr
Rock Adventure Installations	₹5 cr
Observation Points, Trails & Nature Walk	₹ 1cr
Camping & Eco-Lodging Facilities	₹ 25 lakh
Food Court & Sanitation Blocks	₹ 25 lakh
Safety Infrastructure & First Aid	₹ 10 lakh
Solar Lighting & Rainwater Harvesting	₹ 25 lakh
Landscaping & Green Cover Restoration	₹ 25 lakh
Project Management, Promotion & Contingency	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 12 crore – 13 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.8 Urban Health Corridor

39.3.8.1 Project Brief

Need for the Project

Currently, the ring road primarily cater to daily traffic needs. The corridor lies at the interface of growing residential, commercial, and institutional zones, making it a vital mobility spine for daily commuters and local communities. The town is currently experiencing increasing traffic congestion, poor pedestrian infrastructure, lack of public open

spaces, and environmental degradation—all of which this project directly addresses. By integrating both daily traffic needs and urban liveability features, it has the potential to evolve into a symbolic element of the town. Transforming ring road into urban health corridor can significantly enhance the physical, mental, and social well-being of communities while addressing broader urban challenges like air quality, traffic congestion, and social inequality.

Project Aim

To transform the town's ring road into a vibrant, inclusive, and sustainable Urban Health Corridor that promotes walking, community interaction, active mobility, and environmental health.

Project Objectives

1. To enhance walkability and non-motorized transport (NMT) with safe, shaded, and accessible pedestrian infrastructure.
2. To improve public health by encouraging physical activity, cleaner air, and open-space interaction.
3. To create dedicated vending zones, improving livelihoods and street vibrancy.
4. To incorporate climate-sensitive infrastructure, including stormwater management, connected canopy, and zero-waste systems.
5. To support multi-functional use of public spaces by integrating parking, recreation, and eco-urban design.

39.3.8.2 Location

18 m right of way of entire 5.6km length ring road.



Figure 39-16 Location of Urban Health Corridor project

39.3.8.3 Project Components

Component	Description
2-Lane Carriageway (Dual Direction)	for vehicle movement
Pedestrian Walkways (on both sides)	universal access design
Dedicated Street Vending Zones	Designed vending bays with water, power & waste access
Bicycle Lanes	For dedicated Non-Motorised Transport
Connected Green Canopy	Native shade trees and green cover continuity
Zero-Waste Public Space	No littering zone
Stormwater Management	Bioswales, pervious paving, street-side drains
Organized Parking Bays	On-street parking with permeable surface treatments
Street Furniture & Lighting	Benches, smart poles, dustbins, signage boards
Wellness & Fitness Zones	Open gyms, reflexology paths, yoga spaces (at nodes)

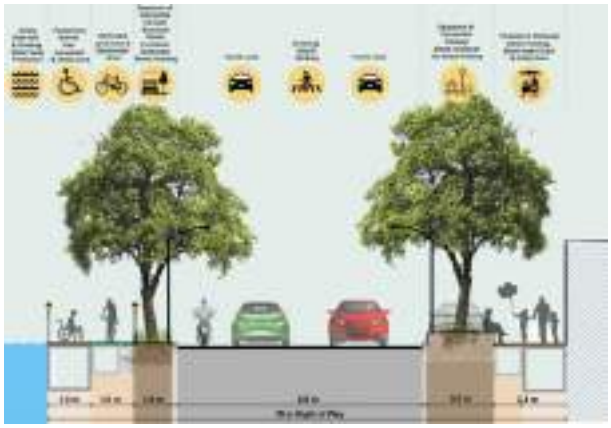


Figure 39-17 Urban Health corridor project concept

39.3.8.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Technical Support	Public Works Department (PWD), AMRUT/Smart City Mission consultants
Urban Design & Landscape	LSGD Planning / Accredited Urban Designers
Infrastructure Execution	PWD
Environment & Design Support	Ecological Experts / Landscape Architects
Possible Funding Options	Central & State fund, CSR Funds, PPP Investors

39.3.8.5 Suggested Implementation Mechanism

The project can be implemented under the leadership of the Municipality, with technical assistance from PWD and Town Planning Department. A Detailed Project Report (DPR) should be prepared by a certified urban design consultancy with specialization in sustainable mobility and inclusive public space design. The project may be divided into 4 segments based on major junctions and implemented in phases, prioritizing high-use sections and integrating feedback. As a pilot phase, St.Petrs Junction to Melevettipuram Junction (Segment 2) can be done. Funding sources can include AMRUT 2.0, Green Urban Mobility Schemes, CSR contributions, or state infrastructure grants.

39.3.8.6 Other Associated Issues to be addressed

While implementing the Urban Health Corridor, several key concerns must be addressed to ensure long-term functionality and sustainability. Land availability and encroachment clearance along the 18-meter Right of Way must be carefully managed through stakeholder engagement and transparent resettlement where needed. Utility shifting, such as electric poles, water lines, and drainage connections, should be coordinated early in the execution phase to avoid delays. The design must consider universal accessibility for persons with disabilities, the elderly, and children, and adhere to barrier-free design standards. Integration of smart lighting, waste management, and CCTV surveillance should be planned to improve usability and safety during night-time. Maintenance responsibilities, including tree canopy upkeep, vending zone cleanliness, and pavement repairs, must be clearly defined in an operation and maintenance (O&M) framework, possibly involving SHGs or ward-level committees. Furthermore, the corridor must be climate-adaptive, accounting for local flood risks, heat conditions, and biodiversity enhancement through native landscaping.

39.3.8.7 Project Cost & Period

Component	Estimated Cost (INR)*
Pedestrian Walkways (Both sides)	₹ 15 Cr
Street Vending Infrastructure	₹25 lakh
Tree Plantation & Green Canopy	₹20 lakh
Stormwater Management	₹ 10 cr
Parking & Street Furniture	₹ 1Cr
Street Lighting & Smart Poles	₹ 1Cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 27 crore – 28 crore

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 2 years.

39.3.9 Municipal Shopping Complex & Parking Plaza

39.3.9.1 Project Brief

Need for the Project

The central area of Pathanamthitta town is experiencing increasing traffic congestion and parking shortages, particularly during peak hours, festivals, and commercial activity. The lack of organized parking infrastructure results in haphazard roadside parking, which obstructs traffic flow, reduces pedestrian safety, and diminishes the overall urban experience. The old bus stand, owned by the municipality, is a strategically located underutilized land parcel. Repurposing it into a multi-level parking plaza integrated with a commercial complex not only addresses the acute parking demand but also promotes efficient land use, revenue generation, and sustainable urban infrastructure.

Project Aim

To develop a multi-functional, eco-friendly parking and commercial hub in the heart of Pathanamthitta town that eases congestion, enhances accessibility, and generates economic activity in a sustainable manner. The location, existing and proposed images of the project area are shown in Chapter 36.

Project Objectives

1. To provide an organized and efficient multi-level parking facility to reduce congestion in the town center.
2. To revitalize municipal land assets for public benefit and economic return.
3. To promote green urban development through solar-powered infrastructure and EV facilities.
4. To offer inclusive recreational and commercial spaces that benefit both residents and visitors.
5. To ensure last-mile connectivity by integrating auto stands and pedestrian-friendly amenities.

39.3.9.2 Location and Ownership

Location of Municipal Shopping Complex & Parking Plaza project is proposed at old municipal bus stand area.



Figure 39-18 Location of municipal shopping complex & parking plaza project

Land Ownership	Municipality
Ward Number	10
Project Area	0.86
Survey Numbers	196(p)

39.3.9.3 Project Components







Component	Description
Three-Level Parking Structure	3 floor (Capacity for 200–250 vehicles
Rooftop Solar-Powered Commercial Complex	3 floor Retail shops, food courts, office spaces using renewable energy
Auto-Rickshaw Stand	Dedicated zone for autos ensuring last-mile access
Resting & Recreation Area	Indoor seating with board games and shaded spaces
Open Green Areas	Landscaping, native plants, benches, and street furniture
EV Charging Stations	At least 3 bays for electric vehicle charging
Lighting, Surveillance & Utilities	Smart lighting, CCTV cameras, and water/power infrastructure

39.3.9.4 Responsible Agencies

Role	Agencies likey to be involved
Project Owner	Municipality
Planning & DPR	Department of Town & Country Planning / Urban Design Consultant
Execution Support	Local Self Government Department (LSGD), PWD
Green Energy Integration	ANERT / Kerala State Electricity Board (KSEB)
Operations & Maintenance	Municipality / Private Operators (under PPP/lease model)
Possible Funding Options	Own fund, CSR Funds, PPP Investors

39.3.9.5 Suggested Implementation Mechanism

The project should be implemented by the municipality as the nodal agency, in collaboration with town planning and engineering departments. A Detailed Project Report (DPR) must be prepared for 3 floor parking structure and 3 floor commercial complex by an accredited urban design and architecture consultant, covering technical, structural, financial, and environmental aspects. The plan must have open areas, EV charging stations, dedicated space for auto-taxi. Implementation can be pursued through a Public-Private Partnership (PPP) or Design-Build-Operate-Transfer (DBOT) model to attract private investment in commercial operation, while the municipality retains ownership. Solar integration may be supported through ANERT or KSEB solar subsidy schemes.

39.3.9.6 Other Associated Issues to be addressed

Traffic circulation and congestion management around the entry and exit points will require

careful planning, especially during peak hours, to avoid bottlenecks in the central area. The project must comply with building codes, environmental norms, and fire safety regulations, particularly due to the presence of solar panels and commercial activity. Inclusivity and accessibility must be ensured through barrier-free access, lifts, and signage for differently abled and elderly users. Lastly, the municipality should establish a dedicated O&M framework to handle daily operations, maintenance, waste management, and security to ensure the facility remains efficient, clean, and citizen-friendly over time.

39.3.9.7 Project Cost & Period

Component	Estimated Cost (INR)*
3-Level Parking Structure (Civil Work)	₹ 15 Cr
Rooftop Commercial Complex	₹15 Cr
Solar Panel Integration (50–100 kWp)	₹ 50 lakh
Auto Stand & Public Access Zones	₹ 30 lakh
Recreational & Green Space Development	₹ 30 lakh
EV Charging Station Setup	₹ 20 lakh
Surveillance, Lighting & Utility Systems	₹ 20 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 32 crore – 33 crore

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 2 years.

39.3.10 Outer Ring Road

39.3.10.1 Project Brief

Need for the Project

The town and its surrounding settlements face increasing vulnerability to floods and landslides, especially during monsoon seasons. The existing internal road network is narrow, congested, and not resilient enough to handle emergency traffic. In such a context, developing an Outer Ring Road becomes crucial, not only for decongesting urban cores and supporting future urban growth, but also as a dedicated disaster mitigation infrastructure. This strategic road will facilitate the swift movement of emergency vehicles, evacuation of residents, and rerouting of traffic during natural calamities. Additionally, it will serve long-term economic functions by improving regional connectivity, supporting urban expansion, and enabling faster goods and passenger mobility around the town.

Project Aim

To develop a strategically located Outer Ring Road that enhances mobility, supports urban expansion, and acts as a critical evacuation and emergency response corridor during floods and landslides. The location, existing and proposed images of the project area are shown in Chapter 36.

Project Objectives

1. To provide a peripheral traffic bypass that decongests the core town area.
2. To serve as an emergency evacuation route during floods, landslides, or other disasters.
3. To ensure year-round connectivity between major entry and exit points of the town.
4. To facilitate planned urban growth by improving accessibility to fringe and undeveloped areas.

39.3.10.2 Location

The road stretches comes under outer ring road is mentioned below.

Sl. No	Name of Road	Proposed width
1	Punnalathupadi to Makkamkunnu Road	12
2	Catholicate College Junction to Power House Junction Road	12
3	Azhoor-Parakkadavu Road	12
4	Kallarakkadavu-Kannamkara Road	12

5	Kannamkara-Valamchuzhy Road	12
6	Korattimukku-Kumbazha Bridge Road via Mount Bethany School	12
7	Mylapra-Mundukottackal Road via Kairaleepuram	12
8	Konnamoodu-Thonikkuzhy Road via Vanchipoyka	12
9	KM Road from Churulikkode to Uppukandam	12
10	Churulikkode to Punnalathupadi (Part of TK Road Stretch)	24
11	Makkamkunnu to near college Junction (Part of NH183A)	24
12	Near Kumbazha Bridge to Municipal Boundary at Kumbazha North (Part of SH 08)	24

39.3.10.3 Project Components

Component	Description
12 m road width	Standard carriageway with shoulders and markings
Elevated Embankments / Bridges	In flood-prone sections to ensure all-weather access
Stormwater & Landslide Control Structures	Retaining walls, culverts, drainage channels
Solar Street Lighting	Sustainable and disaster-resilient lighting solution
Roadside Tree Plantation	For environmental buffer and slope stability
Junction Development	Intersections with arterial roads and town access points
Crash Barriers & Guardrails	For safety in hilly or river-adjacent areas

39.3.10.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Executing Agency	Public Works Department (PWD) / Kerala Road Fund Board (KRFB)
Project Owner	Municipality / District Administration
Disaster Management Inputs	District Disaster Management Authority (DDMA) / Revenue Dept.
Land Acquisition	Revenue Department
Possible Funding Options	State Government, SDRF, NABARD RIDF, National Disaster Mitigation Fund, PPP

39.3.10.5 Suggested Implementation Mechanism

The Municipality or District Authority should act as the coordinating agency, while PWD or KRFB leads technical implementation. The project should begin with a Detailed Project Report (DPR), including contour mapping, hydrological study, and climate-resilient engineering design. Land acquisition should be undertaken transparently, with stakeholder consultations to minimize displacement and delays. The project may be phased into segments, prioritizing high-risk zones for early implementation. The road stretches in the southern part of the town should be considered in the first phase as these areas are flood prone. Disaster mitigation funding, such as SDRF, along with State Urban Infrastructure funds can also be considered as funding source.

39.3.10.6 Other Issues to consider

Land acquisition remains a major challenge, especially in peri-urban and agricultural zones, and must be handled with fair compensation, public consultations, and legal clarity to prevent delays. The road should be designed for year-round usability, with elevated stretches and proper stormwater drainage in flood-prone segments. Integration with the District Disaster Management Plan (DDMP) is essential to ensure the road supports coordinated evacuation, medical relief, and supply movement during emergencies. Maintenance protocols and rapid

repair mechanisms after disaster events must be established to keep the corridor functional when needed most.

39.3.10.7 Project Cost & Period

Cost of 25 crore rupees for 1 km, Total Estimated Cost: ₹ 500 crore.

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 3 years.

39.3.11 Transport Terminal Interface

39.3.11.1 Project Brief

Need for the Project

Currently, the area between the KSRTC bus terminal and the municipal bus stand remains underutilized, lacking coordinated movement, accessible facilities, and public-friendly infrastructure. The absence of a unified transit interface leads to pedestrian congestion, poor multimodal integration, underutilization of space, and discomfort for commuters. This location, being the primary transit hub of the town, holds strategic importance. By integrating this space into a multifunctional, inclusive, and sustainable transit interface, the project will enhance urban mobility, reduce last-mile connectivity issues, support local livelihoods, and improve the commuter experience while turning the zone into a vibrant public space.

Project Aim

To transform the underutilized space between the KSRTC and municipal bus terminals into an integrated, multimodal, and people-centric urban transit interface, combining transport, recreation, commerce, and sustainability. The location, existing and proposed images of the project area are shown in Chapter 36.

Project Objectives

1. To establish a seamless physical and functional connection between the two bus terminals.
2. To enhance last-mile connectivity and modal integration by incorporating auto/taxi stands and pedestrian pathways.
3. To create multi-use public spaces for recreation, waiting, vending, and tourism support.
4. To provide sustainable infrastructure, including EV charging, permeable paving, and green cover.
5. To improve the efficiency and experience of both daily commuters and inter-state travelers.

39.3.11.2 Location and Ownership

Land in between the KSRTC and Pathanmathitta municipal bus terminal.



Figure 39-19 Location of Transport terminal interface project

Land Ownership	Government
Ward Number	10
Project Area	1.61 Acre
Survey Numbers	216(p) & 259(p)

39.3.11.3 Project Components

Component	Description
Multilevel Car Parking	For private vehicles, integrated with both terminals
Pedestrian Pathways	Wide, shaded, permeable walkways between and around terminals
Auto & Taxi Stands	Designated, organized space for last-mile transport
EV Charging Stations	Electric vehicle charging bays for public use
Recreational & Gathering	Open areas with seating, shaded zones, board

Spaces	games, etc.
Tourist Information Centre	Digital kiosks and staffed counter with travel/tourism details
Interstate Bus Halting Bay	Designated space for inter-district/interstate long-distance buses
Street Vending Zone	Formalized area for local vendors with services
Children's Play Area	Safe, shaded zone for children with play equipment
Digital Display Boards	For route info, arrival/departure, public announcements and advertisements
Green Landscaping & Selfie Points	Native plants, seating zones, water fountain, interactive photo spots



Figure 39-20 Transport Terminal Interface project concept

39.3.11.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Municipality
Technical Design	Town Planning Department / Accredited Urban Design Consultant
Infrastructure Execution	Public Works Department (PWD) / LSGD
Green Energy Integration	ANERT / Kerala State Electricity Board (KSEB)
Street Vending & Recreation	Kudumbashree / Urban Livelihood Mission
Possible Funding Options	Own fund, CSR Funds, State Urban Infrastructure Fund, AMRUT, Smart City Mission (if applicable), PPP

39.3.11.5 Suggested Implementation Mechanism

The Municipality will serve as the lead implementing agency, coordinating with KSRTC and other stakeholders. A Detailed Project Report (DPR) should be prepared by a qualified urban planning and infrastructure consultancy, addressing connectivity, safety, design standards, sustainability, and cost. Execution can be undertaken in phases, beginning with essential connectivity and parking infrastructure, followed by public spaces and EV/green components. Funding can be sourced through state urban development schemes, convergence with transport infrastructure funds, or private sector involvement under PPP models for the commercial and parking elements. Local SHGs and micro-entrepreneurs may be included in managing vending zones and recreational activities.

39.3.11.6 Other Issues to consider

Inter-agency coordination, particularly between the municipality and KSRTC, are essential to avoid administrative delays. Pedestrian safety and circulation planning should be prioritized in the design, especially given the high footfall and movement of buses, autos, and private vehicles. Vendor management must be handled transparently to prevent encroachments and ensure equitable access for local micro-entrepreneurs. Additionally, the project must incorporate inclusive and barrier-free design principles to serve all age groups and abilities. Adequate provisions for stormwater drainage, lighting, surveillance, and night-time usability should be integrated from the outset. Maintenance of public amenities, green zones, and parking areas must be planned through clearly defined operation and maintenance (O&M) protocols, possibly involving private participation or local self-help groups. Lastly,

the space should be flexible enough to accommodate future transit upgrades such as electric bus charging or digital ticketing systems.

39.3.11.7 Project Cost & Period

Component	Estimated Cost (INR)*
Multilevel Parking Structure	₹ 15 Cr
Pedestrian Linkages & Paving	₹1 Cr
Auto/Taxi Stand & Bus Halting Bay	₹ 50 lakh
Recreational & Green Spaces	₹ 30 lakh
Children's Play Area	₹ 30 lakh
EV Charging Station Setup	₹ 20 lakh
Street Vending Infrastructure	₹ 20 lakh
Digital Displays & Signage	₹ 25 lakh
Landscaping & Selfie Points	₹ 20 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 17.5 crore – 18 crore

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 2 years.

39.3.12 Thaikkav School Redevelopment

39.3.12.1 Project Brief

Need for the Project

The existing Government Higher Secondary School is functioning with inadequate infrastructure and outdated facilities that no longer meet modern educational or environmental standards. Lack of adequate laboratories, limited recreational and sports infrastructure, and poor climate resilience are absent. Redevelopment is crucial to transform the school into a model institution that fosters academic excellence, student well-being, and climate-conscious infrastructure.

Project Aim

To develop a future-ready, inclusive, and climate-resilient educational campus that enhances learning outcomes and promotes holistic development of students through upgraded academic and physical infrastructure. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. Upgrade existing classrooms with smart learning features.
2. Develop modern science and computer laboratories, libraries, and activity spaces.
3. Provide accessible and dedicated sports infrastructure including football and badminton courts.
4. Introduce climate-resilient infrastructure such as terraced landscaping and rainwater harvesting.
5. Improve campus access through a new rear access road and land acquisition.
6. Encourage community use through facilities like an open-air theatre.
7. Ensure safety, inclusivity, and sustainability in all design and construction.

39.3.12.2 Location



Figure 39-21 Location of Thaikkav School redevelopment project

39.3.12.3 Project Components

Component	Description
Classroom Upgradation	Smart classrooms with improved lighting, ventilation, and digital teaching aids
Laboratories & Library	New science labs, ICT lab, and library with reading spaces
Sports Infrastructure	Small football court, badminton court with safety barriers, student seating.

Open-Air Theatre	Multi-use theatre for cultural events with a rainwater storage tank beneath.
Terraced Landscaping	Sloped garden spaces for seating, rainwater percolation and learning zones
Access Road & Plot Acquisition	Road from rear side for better circulation; land acquisition for expansion.
Climate Resilience Measures	Rainwater harvesting, solar panels (optional), green cover enhancement.
Admin & Utility Blocks	Upgraded staff rooms, sanitation facilities, and storage units.

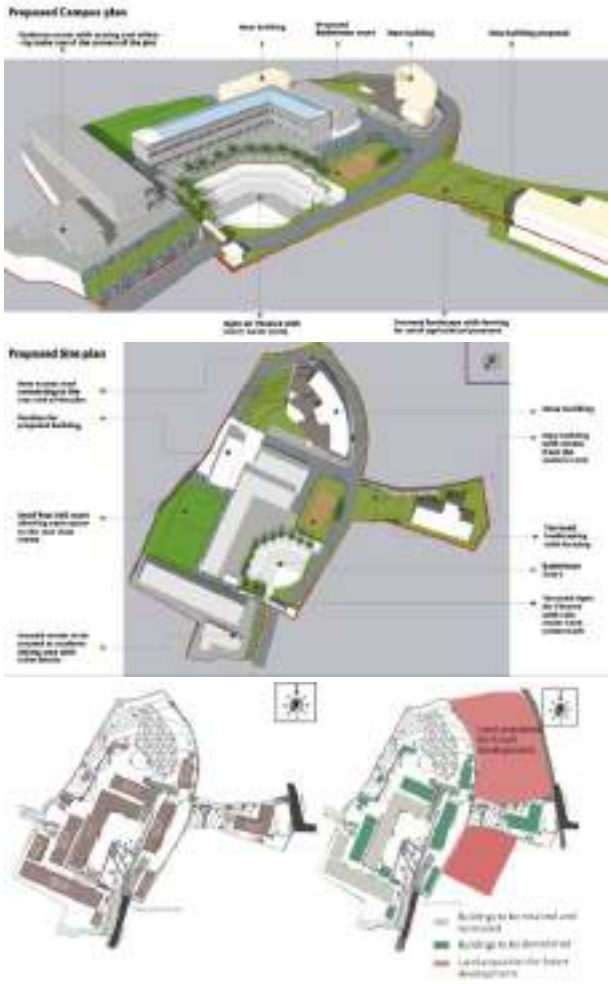


Figure 39-22 Thaikkav School redevelopment project proposed campus plan

39.3.12.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Department of General Education, Government of Kerala
Implementation Support	Kerala Infrastructure Investment Fund Board (KIIFB) or Local Self Government Department
Planning & Design	Public Works Department (Buildings) or empanelled consultant
Execution	Accredited construction agencies (e.g., Uralungal Labour Contract Cooperative Society, KITCO, or LSGD engineering wing))

39.3.12.5 Suggested Implementation Mechanism

The redevelopment of the Government Higher Secondary School shall be undertaken through a phased and integrated implementation strategy to ensure minimal disruption to ongoing academic activities. The first step involves preparing a Detailed Project Report (DPR), including site survey, stakeholder consultation, and cost estimation. Simultaneously, steps for land acquisition and rear-side access road development will be initiated to facilitate future construction logistics and campus expansion. Recreational and landscape components such as the open-air theatre, courts, and terraced green areas will be implemented in subsequent phases. A dedicated Project Implementation Committee comprising representatives from the Department of Education, Local Self Government Department, and technical agencies will oversee the execution. Funding may be sourced from a combination of State Plan Funds, KIIFB, NABARD (for water management components), CSR contributions, and local body allocations.

39.3.12.6 Other Issues to consider

Temporary learning arrangements or phased construction must be planned to avoid

disruption in teaching during building works. Inclusive infrastructure, such as ramps, accessible toilets, and tactile pathways, should be integrated to cater to children with disabilities. Environmental management during construction—including noise and dust control, green barricading, and safe material storage—is essential to ensure student safety. Post-implementation, the school must establish a dedicated operation and maintenance (O&M) plan, including provision for periodic repair, rainwater tank cleaning, and security management. Preference may also be given to local contractors and suppliers to boost community employment and reduce costs.

39.3.12.7 Project Cost & Period

Component	Estimated Cost (INR)*
Classroom upgradation	₹ 10 Cr
Laboratories & Library	₹ 50 lakh
Small Football court with turf	₹ 30 lakh
Badminton court	₹ 20 lakh
Open-air theatre with tank	₹ 30 lakh
Terraced landscaping	₹ 20 lakh
Access road construction	₹ 25 lakh
Land acquisition	₹ 50 lakh
Admin & Utility Upgrades	₹ 20 lakh
Climate resilience (rainwater, solar)	₹ 30 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 12 crore – 13 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.13 Fitness Hub

39.3.13.1 Project Brief

Need for the Project

An accessible space is needed for all age groups to engage in physical activity, recreation and wellness programs.

Project Aim

To promote a healthy, active and inclusive lifestyle among all sections of community with well-equipped spaces for physical exercise.

Project Objectives

1. Promote public health
2. Constructive and positive environment for youth to engage in sports and fitness
3. Social Interaction and community building
4. Improve urban livability

39.3.13.2 Location and Ownership

Land Ownership	Municipality
Ward Number	
Project Area	0.94 Acre
Survey Numbers	246

39.3.13.3 Project Components





Figure 39-23 Proposed Fitness hub concept

Component	Description
Compact size	Fits into a small building, shared space, or a repurposed structure.
Essential fitness equipment	Treadmills, dumbbells, resistance machines, mats.
Multi-purpose room	Can be used for yoga, aerobics, Zumba, or stretching.
Indoor activity court	May include 1–2 courts (e.g., badminton, table tennis).
Affordable access	Designed to be low-cost or even free for students and locals.
Minimal staffing	One or two trainers or staff members may manage the space.
Flexible usage	Open to schools, college students, office workers, and community groups.

39.3.13.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Municipality
Planning & Design	Municipality
Implementation	Municipality
Possible Funding Options	AMRUT 2.0 / State Plan / KIIFB / MLA-MP Funds / CSR initiatives

39.3.13.5 Suggested Implementation Mechanism

The implementation will begin with preparation of a Detailed Project Report (DPR) through engineering wing. A phased development model is suggested, prioritizing basic infrastructure initially, followed by advanced facilities.

39.3.13.6 Other Issues to consider

Long-term maintenance strategies are required, along with adequate lighting, CCTV cameras, gender-sensitive planning. Partnerships with neighbouring Colleges, youth clubs etc. can be adopted.

39.3.13.7 Project Cost & Period

Component	Estimated Cost (INR)*
Civil Works (Basic Interior)	15 lakh
Essential Fitness Equipment	10 lakh
Multi-Purpose Room Setup	5 lakh
Indoor Activity Court	3 lakh
Storage & Locker Units	2 lakh
Basic Electrical & Lighting	2 lakhs
Restroom/Changing Area	2 lakh
Minimal Staffing Setup	1 lakh
Branding & Signage	0.5 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 40 lakhs – 42 lakhs

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.14 Housing Scheme Area

39.3.14.1 Project Brief

Need for the Project

To address the urgent need to provide permanent dignified living spaces with essential amenities to economically weaker section.

Project Aim

Ensure safe and secure shelter through housing project which contributes to better public health, reduces vulnerability during disasters and promote more equitable and resilient urban environment.

Project Objectives

1. Provide affordable and safe housing
2. Promote social inclusion
3. Improve living standards
4. Support livelihood and empowerment
5. Strengthen urban infrastructure
6. Ensure safety of vulnerable groups

39.3.14.2 Location and Ownership

Land Ownership	Municipality

Ward Number	
Project Area	1.31 Acre
Survey Numbers	32, 149

39.3.14.3 Project Components

This proposal adopts a terrain sensitive design which includes:

1. The housing layout respects the natural topography, minimizing heavy cutting and land levelling,
2. Stepped or terraced building designs are used to blend into the slope, reducing erosion and visual impact.
3. Construction aligns with the natural contours, preserving the slope's integrity and aesthetics.
4. Natural water flow is maintained with storm water management systems like swales, bio-drains, and percolation pits.

Rainwater harvesting is integrated to reduce runoff and recharge groundwater. Use of permeable pavements and green buffers helps manage water sustainably

39.3.14.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Municipality
Planning & Design	Town and Country Planning Department / Landscape Architects
Implementation	Municipality,PPP
Possible Funding Options	central / State Plan / LIFE MISSION / MLA-MP Funds / CSR initiatives/Housing funds

39.3.14.5 Suggested Implementation Mechanism

The implementation will begin with preparation of a Detailed Project Report (DPR) through qualified landscape architects. A phased development model is suggested, prioritizing basic infrastructure initially, followed by housing and then recreational features.. Sustainable procurement, local labour engagement, and public-private partnerships can ensure efficiency and local ownership.

39.3.14.6 Other Issues to consider

The terrain of the area is to be considered and constructions with minimum cutting and filling of slope is suggested.

39.3.14.7 Project Cost & Period

Component	Estimated Cost (INR)*
Stepped/Terraced Site Preparation & Earthworks	3 lakhs
Individual House (15 Nos)	90 lakhs
Foundation & Retaining Walls	25 lakhs
Stormwater Management Systems	5 lakhs
Percolation Pits & Recharge Trenches	1 lakhs
Rainwater Harvesting Systems	5 lakhs
Permeable Pavements & Internal Roads	10 lakhs
Community Park	5 lakhs
Sustainability Features	3 lakhs

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 1.47crore – 1.48 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.15 Urban Central Park

39.3.15.1 Project Brief

Need for the Project

In town, the lack of accessible and integrated green open spaces has led to a decline in environmental quality, public health, and overall livability. Pathanamthitta, faces issues such as rising urban heat, inadequate recreational infrastructure, fragmented social spaces, and limited public green zones. An Urban Central Park responds to these challenges by functioning as a green lung, a social commons, and a microclimate regulator. It not only enhances the town's ecological

balance but also contributes to citizens' physical and mental well-being, supports biodiversity, and anchors sustainable urban growth.

Project Aim

To develop a centrally located, multifunctional Urban Central Park that integrates ecology, recreation, and community well-being—thereby improving the environmental quality and livability of the town. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To provide accessible recreational and relaxation space for all age groups and abilities.
2. To enhance urban biodiversity and promote green cover through native plantation.
3. To regulate microclimate and mitigate heat island effects.
4. To incorporate sustainable water, energy, and waste management practices.
5. To serve as a social and cultural gathering space that strengthens community ties.
6. To establish an ecological corridor or node within the town's green infrastructure network.

39.3.15.2 Location and Ownership

Urban Central park is proposed inside the ring road opposite to the Government hospital.



Figure 39-24 Location of Urban Central Park project

Land Ownership	Municipality
Ward Number	9,10
Project Area	2.5 Acre
Survey Numbers	108(p) & 146(p)

39.3.15.3 Project Components

Component	Description
Lush Landscaping	Lawns, shaded tree groves using native species, flowering gardens, aromatic plants.
Recreational Zones	Walking/jogging tracks, children's play areas, open gym, yoga lawns, picnic zones.
Water Features	Artificial ponds/lakes, rain gardens, bio-swales, fountains to enhance cooling and aesthetics.
Sustainability Features	Solar-powered lighting, eco-paving for stormwater percolation, compost pits, rainwater tanks.
Accessibility & Infrastructure	Barrier-free design, seating areas, toilets, signage, shaded pavilions, food kiosks.



Figure 39-25 Urban Central Park project concept

39.3.15.4 Responsible Agencies

Role	Agencies likey to be involved

Nodal Implementing Agency	Municipality
Planning & Design	Town and Country Planning Department / Landscape Architects
Implementation	Haritha Kerala Mission (for greening) PWD (for paths/infrastructure)
Possible Funding Options	AMRUT 2.0 / State Plan / KIIFB / MLA-MP Funds / CSR initiatives

39.3.15.5 Suggested Implementation Mechanism

The implementation will begin with preparation of a Detailed Project Report (DPR) through qualified landscape architects. A phased development model is suggested, prioritizing basic infrastructure and plantation initially, followed by recreational features and water systems. Sustainable procurement, local labor engagement, and public-private partnerships (especially for operation of kiosks and open gym equipment) can ensure efficiency and local ownership. The park may be maintained under a hybrid model involving municipal staff and outsourced horticultural services.

39.3.15.6 Other Issues to consider

The park must have a long-term maintenance strategy including water management, seasonal pruning, and cleaning. Adequate lighting, CCTV cameras, and visible staff presence are necessary. Park must cater to differently-abled users, elderly citizens, and women's safety through universal design and gender-sensitive planning. School partnerships, "Friends of the Park" groups, and public art initiatives can create civic pride and discourage misuse.

39.3.15.7 Project Cost & Period

Component	Estimated Cost (INR)*
Site preparation and Infrastructure	₹ 50 lakh
Landscaping (trees, lawns, gardens,)	₹ 40 lakh
Walking/jogging tracks & open gym	₹ 30 lakh
Children's play area & benches	₹ 20 lakh
Artificial lake / water features	₹ 50 lakh
Rain gardens, bioswales & irrigation	₹ 25 lakh
Solar lighting & sustainability features	₹ 25 lakh
Signage, fencing, CCTV	₹ 15 lakh
Accessibility features (ramps, tactile paths)	₹ 20 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 2.7crore – 2.8 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.3.16 Holistic Neighbourhood Hub

39.3.16.1 Project Brief

Need for the Project

With rising stress, sedentary lifestyles, and limited social interaction, there is an urgent need in the town for public infrastructure that supports physical, emotional, and social well-being. This project responds to that need by offering a multifunctional, inclusive, and sustainable large-scale park that acts as a district-level shared public space. It serves as an anchor of urban livability, community cohesion, public health, and environmental stewardship.

Project Aim

To develop a multi-neighbourhood, district-level Holistic Neighbourhood Park that promotes comprehensive wellness—physical, mental, emotional, and social—while integrating sustainability, inclusiveness, and civic engagement. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To provide a safe and inclusive environment that nurtures wellness and community connection.
2. To facilitate physical health through activity zones and therapeutic spaces.
3. To support mental and emotional health via sensory and healing landscapes.
4. To offer age-friendly and inclusive recreational infrastructure for children, elderly, and differently-abled.
5. To promote environmental stewardship through sustainable design and learning.

39.3.16.2 Location and Ownership

Holistic Neighbourhood Hub project is proposed near Myladumpara area.



Figure 39-26 Location of Holistic Neighbourhood Hub project

Land Ownership	Municipality
Ward Number	16
Project Area	0.53 Acre
Survey Numbers	150(p)

39.3.16.3 Project Components

Component	Description
Physical Wellness	Open-air gyms, yoga decks, jogging tracks, health clinics, art/cultural centres
Mental & Emotional Wellness	Meditation groves, therapeutic gardens, sensory pathways, aroma gardens.
Child & Senior Friendly	Inclusive play zones, shaded seating, storytelling nooks, chess tables, rest shelters.
Learning & Engagement	Urban farming plots, outdoor classrooms, amphitheatre, citizen science boards.
Sustainability Features	Solar lights, compost pits, recycled path materials, water harvesting tanks, green roofs.



Figure 39-27 Holistic neighbourhood hub project concept

39.3.16.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Municipality
Planning & Design	Town and Country Planning Department / Landscape Architects
Implementation	Municipality, Haritha Kerala Mission, PWD (Buildings & Roads), KITCO, or accredited NGOs
Possible Funding Options	AMRUT 2.0 / State Plan / KIIFB / MLA-MP Funds / CSR initiatives
Partnerships	Ayush Department (for wellness programming), Health Department, Kudumbashree, local schools/colleges

39.3.16.5 Suggested Implementation Mechanism

Implementation will be phased and participatory. Phase 1 includes essential physical infrastructure—tracks, pathways, basic landscaping, and water management systems. Phase 2 will focus on thematic zones: wellness gardens, play zones, and engagement spaces. Phase 3 will involve programming partnerships, clinic setup, and citizen-driven activities. Components will be developed through eco-sensitive construction, use of local labour, and public-private partnerships. Ongoing programming will be coordinated by a local "Park Management Council" including community groups, health workers, and municipal representatives.

39.3.16.6 Other Issues to consider

First, safety and accessibility must be prioritized—universal design features such as ramps, tactile paths, shaded seating, gender-sensitive lighting, and CCTV surveillance are essential to make the park welcoming and secure for all users, including women, children, the elderly, and persons with disabilities. Community engagement is equally important, not just during planning but throughout the park's life cycle. This includes forming local stewardship groups, involving schools, resident associations, and Kudumbashree units in gardening, maintenance, and programming. The operation and management strategy should include clear roles, possible public-private partnerships, and budgeted maintenance to prevent neglect and degradation over time. From an environmental standpoint, installation of permeable surfaces, and robust rainwater harvesting systems will make the park climate-resilient. Lastly, regular programming and health-related events must be planned to activate the space continuously, making it not just a green space, but a vibrant community wellness hub.

39.3.16.7 Project Cost & Period

Component	Estimated Cost (INR)*
Site Preparation & Pathways	₹ 60 lakh
Physical Wellness Zones (gym, yoga decks, clinics)	₹ 70 lakh
Meditation & Sensory Gardens	₹ 40 lakh
Child & Senior Zones	₹ 50 lakh
Learning & Engagement (urban farming, outdoor classes)	₹ 35 lakh
Amphitheatre / Cultural Space	₹ 30 lakh
Sustainability Features (solar, compost, rainwater harvesting)	₹ 40 lakh
Toilets, Shade Structures, Fencing	₹ 30 lakh
Inclusive Infrastructure (signage, ramps, benches)	₹ 20 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 3.7crore – 3.8 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.3.17 Relocation of Fire Station

39.3.17.1 Project Brief

Need for the Project

Currently the fire station is located in the flood prone area of the town. 2018 Floodwaters disrupted operations and make it difficult or impossible for personnel to respond to emergencies during a flood event. By relocating to a safer ground, the fire station can ensure that it remains fully operational during heavy rains or floods, allowing emergency services to continue functioning without interruption

Project Aim

To relocate the fire station to a flood-safe and strategically accessible location, enabling efficient, uninterrupted, and climate-resilient emergency response services for the town and surrounding areas. The location, existing and

proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To ensure continuity of fire and rescue services even during adverse weather and flood events.
2. To improve emergency response times through better accessibility and location advantage.
3. To modernize fire station infrastructure with upgraded equipment and amenities.
4. To free up vulnerable land for other flood-mitigation or compatible uses.

39.3.17.2 Location

Fire station is proposed to relocate to land proposed for government office complex project in northern part of ring road near Thazhevettipuram

39.3.17.3 Project Components

Component	Description
Land Preparation	Site clearance, access road, flood-safe foundation, fencing.
Fire Station Building	Administrative office, staff rest areas, equipment storage
Vehicle Bay & Workshop	Covered area for fire tenders, water tankers, and rescue vehicles.
Communication & Control Room	Emergency dispatch room with digital connectivity and monitoring systems.
Water Storage & Rainwater Harvesting	Tank with high-capacity water storage and recharge facility.
Sustainability Features	Solar lighting, energy-efficient systems, fire-safe materials.
Drainage & Landscaping	Site drainage, tree planting, green buffer zones.

39.3.17.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Department	Kerala Fire and Rescue Services Department
Supporting Agencies	Revenue Department (land allocation), Local Self Government Institution, PWD (Buildings)
Design & Execution	Kerala State Nirmithi Kendra / KITCO / Accredited engineering firms
Possible Funding Options	State Disaster Mitigation Fund (SDMF), KIIFB, District Plan Fund, MLA-LSGD Funds

39.3.17.5 Other Issues to consider

The design should ensure future scalability, especially as urban areas expand. Adequate attention should be given to safe storage of flammable materials, secure parking of heavy vehicles, and compliance with fire safety norms. Stakeholder consultation with fire service staff is crucial to ensure the new facility meets operational needs. The vacated site in the flood zone can be repurposed for flood mitigated infrastructure.

39.3.17.6 Project Cost & Period

Component	Estimated Cost (INR)*
Land development & access roads	₹ 40 lakh
Administrative building	₹ 70 lakh
Vehicle garage & equipment shed	₹ 40 lakh
Communication & control room	₹ 20 lakh
Drill yard & training zone	₹ 15 lakh
Rainwater harvesting & storage	₹ 25 lakh
Solar and energy-efficient installations	₹ 10 lakh
Landscaping and site drainage	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 2.3 crore – 2.4 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 3 year.

39.3.18 Municipal Convention Centre & Tourist Home

39.3.18.1 Project Brief

Need for the Project

The town currently lacks modern, integrated infrastructure to host large-scale public, business, and cultural events. As a result, important conventions, exhibitions, weddings, and tourism-related gatherings are either held in under-equipped halls or diverted to nearby towns. Simultaneously, there is a shortage of reliable and diverse accommodation options for tourists, business travellers, and event participants. With increasing tourism and regional commercial activity, the need for a multifunctional convention and hospitality facility has become critical.

Project Aim

To develop a modern, high-tech Convention Centre and integrated Tourist Home complex that enhances the town's capacity for tourism, events, business functions, and hospitality services. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To provide an advanced, flexible venue for hosting conferences, exhibitions, weddings, and cultural programs.
2. To offer a wide range of quality accommodation options for visitors and tourists.
3. To strengthen the town's appeal as a regional hub for meetings, incentives, conferences, and exhibitions (MICE).
4. To integrate tourism support services like information and facilitation centres into one node.
5. To create employment opportunities and boost the local economy through tourism and event-based services.

39.3.18.2 Location and Ownership

Municipal Convention Centre & Tourist Home is proposed at Edathavalam Area.



Figure 39-28 Location of Modern Municipal Market project

Land Ownership	Municipality
Ward Number	11
Project Area	4.33 Acre
Survey Numbers	208(p), 209(p) & 263(p)

39.3.18.3 Project Components

Component	Description
High-tech Convention Centre	Large auditorium with modular seating, multiple seminar halls, AV-equipped conference rooms, exhibition spaces.
Tourist Accommodation Facilities	Tourist homes, hotels, resorts, lodges, Ayurvedic wellness centres, guest houses.
Tourist Facilitation Infrastructure	Tourist Information Centre, Travel Assistance Booths, and Help Desks.
Community and Social Event Spaces	Multipurpose community hall, wedding hall, indoor function rooms.
Parking Plaza	Multilevel or surface parking with EV charging, visitor drop-off zones.
Landscaping and Public Amenities	Gardens, pedestrian zones, toilets, food courts, signage, shaded walkway
Sustainability	Solar rooftop, rainwater

Features	harvesting, STP, composting units, green building elements.

39.3.18.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Implementing Agency	Municipality/ Department of Tourism
Planning & Design	Planning & Design: Department of Town and Country Planning / KITCO / Nirmithi Kendra / accredited architect firms
Execution	PWD
Possible Funding Options	Central Schemes, State Plan Fund, KIIFB, Department of Tourism, CSR, and PPP (Public-Private Partnership)
Operations & Management	Municipality, or under PPP with a reputed operator or Tourism Development Corporation

39.3.18.5 Suggested Implementation Mechanism

The project will follow a phased implementation approach, starting with DPR preparation through professional consultants. Construction may be split into Phase 1 (Convention Centre + parking) and Phase 2 (tourist accommodation + community hall + landscaping). The model can be PPP-based or BOOT (Build-Own-Operate-Transfer) for accommodation units to reduce financial burden. A Special Purpose Vehicle (SPV) or Project Management Committee can be set up to manage implementation, ensure quality standards, and facilitate convergence of funds from various sources.

39.3.18.6 Other Issues to consider

Flood mitigation measures should be adopted in the project. Accessibility features for persons with disabilities, elderly visitors, and families with children must be integrated. Also, attention should be given to disaster preparedness (fire safety, evacuation routes) and digital infrastructure (Wi-Fi, event management software, visitor apps). Community involvement and local employment (hospitality, security, and housekeeping) will be crucial for local ownership and economic benefit.

39.3.18.7 Project Cost & Period

Component	Estimated Cost (INR)*
High-tech Convention Centre (Auditorium, Halls, AV Systems)	₹ 75 Cr
Tourist Homes, Resorts, Guest Houses, Lodges	₹ 21 Cr
Parking Plaza (Surface or Multilevel)	₹ 2 Cr
Public Amenities & Landscaping	₹ 1 Cr
Green Infrastructure (Solar, RWH, STP, Waste Systems)	₹ 1 Cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 100 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.3.19 Happy Home & Harmony Centre

39.3.19.1 Project Brief

Need for the Project

Happy Home and Harmony Centre, a socially inclusive initiative focused on the well-being and empowerment of vulnerable populations and socially dependent groups such as the women, elderly, children from marginalised backgrounds, persons with disabilities, and under-skilled youth. The project responds to the growing need for intergenerational support, care, skill building, and community-based rehabilitation, all within one inclusive campus.

Project Aim

To create an integrated, inclusive and dignified care facility—Happy Home and Harmony Centre—that brings together women, children, senior citizens, differently-abled individuals, and the underprivileged in a supportive and nurturing environment. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To upgrade and expand existing social welfare facilities into a multi-use inclusive care campus.
2. To provide day care and early childhood education services through upgraded Anganwadi and Bud School.
3. To enhance the quality of life for senior citizens through improved activity infrastructure.
4. To enable capacity building and skill training for youth, women, and marginalized communities.
5. To promote emotional well-being and intergenerational harmony through cultural, learning, and recreational programs.
6. To integrate government welfare programs like Udayam Home under one operational framework.

39.3.19.2 Location and Ownership

Happy home & harmony centre project proposed near Vanchipoyka area.



Figure 39-29 Location of Happy Home & Harmony centre project

Land Ownership	Municipality
Ward Number	3
Project Area	4.57 Acre
Survey Numbers	63(p),68(p), & 69(p)

39.3.19.3 Project Components



Figure 39-30 Happy Home and Harmony Centre project concept

Component	Description
Upgrade Bud School & Anganwadi	Early childhood development centre with improved learning and nutrition facilities.
Upgrade Old Age Home	Comfortable living, medical care, common recreation, therapy and nutrition spaces.
Skill Development Centre	Training facilities for tailoring, IT, handicrafts, home nursing, etc..
Harmony Open Stage	Community space for performing arts, interaction, therapy through cultural expression.
Udayam Home Integration	Space for shelter and welfare of destitute or abandoned individuals

	under the Udayam scheme.
Barrier-free Design & Green Elements	Ramps, tactile paths, eco landscaping, solar lights, rainwater harvesting.

39.3.19.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Social Justice Department / Women and Child Development Department
Supporting Agencies	Municipality, Kudumbashree, ICDS, NRLM
Planning & Design	Town and Country Planning Department, Kerala State Nirmithi Kendra
Execution	Accredited NGOs, KITCO, LSGD Engineering Wing, SHG federations
Possible Funding Options	Central & State Scheme, KIIFB, Udayam Home Scheme, CSR, MP/MLA Fund, Social Justice Grant

39.3.19.5 Suggested Implementation Mechanism

The project will begin with a Detailed Project Report (DPR), including building assessments of existing Bud School and Old Age Home. A phased implementation model is proposed, starting with structural upgrading, followed by service expansion and programming. Components like rehabilitation centre, women empowerment programs, skill training and cultural programs can be launched in collaboration with Kudumbashree, NGOs, or Mission offices. Public consultations and design co-creation (especially for barrier-free infrastructure) will ensure user-centric outcomes.

39.3.19.6 Other Issues to consider

The design must incorporate universal accessibility (wheelchair paths, assistive devices), safety (CCTV, secure entry), and gender sensitivity. Adequate staffing, medical backup, and dedicated caretakers must be planned for sustainability. Partnerships with local hospitals, training institutes, and SHGs will be vital for operations.

39.3.19.7 Project Cost & Period

Component	Estimated Cost (INR)*
Upgradation of Bud School and Anganwadi	₹ 40 lakh
Old Age Home	₹ 30 lakh
Skill Development Centre for women and youth	₹ 30 lakh
Open Stage and Cultural Space	₹ 20 lakh
Facilities for Udayam Home residents	₹ 40 lakh
Accessibility & Green Infrastructure	₹ 20 lakh
Furniture, Equipment, and Appliances	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 1.9 crore – 2 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4 Details of Priority Projects in Green Blue Zone

This section presents a consolidated overview of the selected priority projects in Green Blue zone for environmental sustainability and resilience enhancement within the town along with social recreation and economic benefits. It provides essential project details including the project brief, specific location, land ownership status, key components, responsible implementing agencies, suggested implementation mechanism, and estimated project cost and project duration. These

summaries are intended to guide the preparation of Detailed Project Reports (DPRs). The information acts as a quick reference for authorities to prioritize action and ensure timely, sustainable, and community-focused urban transformation.

39.4.1 Chuttippara Adventure Tourism Park

39.4.1.1 Project Brief

Need for the Project

Currently town faces a shortage of diverse recreational spaces. The Rocky Hill at centreal part of the town offers a unique opportunity to create an adventure park that fills this gap by offering both natural beauty and active outdoor options. The Rocky Hill area likely has significant natural and scenic value. An adventure park can offer a way to protect and showcase this environment by using it for responsible recreational activities while avoiding overdevelopment that harms the natural habitat. The development of Chuttippara as Adventure Park would help attract visitors from outside the area, providing a boost to local businesses, including hospitality, retail, and food services. This can also create jobs and stimulate investment in the region. In today's fast-paced, technology-driven world, outdoor activities are essential for promoting physical health and mental wellness. An adventure park provides a natural environment to encourage healthy lifestyles, including exercise, adventure, and stress relief.

Project Aim

To transform the Rocky Hill area of the town into a dynamic recreational space that provides a range of outdoor activities and promotes tourism. The park will aim to create a unique, nature-based environment that caters to adventure enthusiasts, families, and tourists while preserving and showcasing the natural beauty of the hill area. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. Provide a Diverse Range of Activities: Develop a variety of adventure and recreational activities suitable for different age groups, skill levels and interests.
2. Enhance Tourism: Position the adventure park as a major attraction for tourists, contributing to the local economy by creating job opportunities, attracting visitors, and increasing demand for local services such as accommodation and food.
3. Promote Physical and Mental Health: Encourage physical fitness and outdoor engagement.
4. Preserve Natural Landscape and Ecosystem**:** Protect the natural environment of the Rocky Hill area while enhancing its accessibility for recreation. Design the park to blend with and respect the natural landscape, avoiding overdevelopment and minimizing ecological disruption

39.4.1.2 Location and Ownership

Chuttippara situated at the centre part of the town abutting Thiruvalla Kumbazha State Highway (SH7) (TK Road). It is outside the landslide and flood prone area in town.



Figure 39-31 Location of Chuttippara Adventure Tourism project

Land Ownership	Private
Ward Number	22,23
Project Area	9.45 Acre
Survey Numbers	36(p), 37(p), 38(p), 39(p),

	250(p), 278(p) & 280(p)

39.4.1.3 Project Components

1. Cable car ride
2. Adventure and Sports Zones like Rock Climbing Walls, Zip-lining and Obstacle Courses.
3. Family and Children's Adventure Area (Base camp 1)
4. Glass or wooden walkways connecting 3 hills of chittippara.
5. Designate areas for picnicking with benches, tables, shaded areas and peaceful spaces for meditation or quiet reflection.
6. Hilltop Restaurant / Café with 360° view along with indoor/outdoor seating.
7. Open Amphitheatre / Cultural Plaza spaces for local music and dance performances.
8. Solar panels for park operations.
9. Helipad & Heli-taxi Services for town view
10. Base Camps 2 for multi-level parking, Sanitation facilities, Storage and equipment area, Ticket counter.
11. Town night view tourism destination.





Figure 39-32 Chuttippara Adventure Tourism project concept

39.4.1.4 Responsible Agencies

Role	Agencies likey to be involved
Preparation of detailed Plan	Tourism Department
Monitoring the project	Tourism Department & Municipality
Project implementation	Tourism Department
Possible Funding Options	Tourism Department, Municipality, State Govt., CSR, PPP

39.4.1.5 Suggested Implementation Mechanism

To effectively implement the adventure park at Chuttippara Hill, a structured and phased approach is required, ensuring that all aspects of development, safety and environmental concerns are properly addressed. A DPR may be prepared for Adventure Park while considering the conservation and protection of the Chuttippara Hill. The Chuttippara Adventure Park and base camp consist of three zones. Zone 1 is the Chuttippara Hill area which is the proposed as Adventure Park. Zone 2 is base camp area in District jail location which includes the multi-level parking by process of

retrofitting of existing buildings and Ticket counter for Adventure Park, cable car, Heli-taxi and all other activities. Zone 3 is base camp area in Fire Station location which includes Parks, shops, restrooms, refreshment areas, cable car entry areas, etc.

39.4.1.6 Other Associated Issues to be addressed

No Parking facilities currently available near Chuttippara area. To cater the parking facilities and base camp facilities for this adventure park, two base camp areas are identified. One is at the land where District jail is located which is not functioning now and the other is fire station area which is proposed to be relocated. Building the base camp for the Chuttippara Adventure park is possible on these areas only after the relocation of district jail and fire station.

39.4.1.7 Project Cost & Period

Component	Estimated Cost (INR)*
Adventure Activities	₹1cr
Family & Kids Zones	₹50–60 lakh
Hospitality & Amenities and Cultural & Entertainment Spaces.	₹75 lakh
Cable Car ride	₹1cr
Rock Climbing, Glass or wooden walkways connecting cliffs, Zip lines and Hiking & Trekking Trails	₹50–60 lakh
Hilltop Restaurant / Café with 360° view along with indoor/outdoor seating	₹50 lakh
Open Amphitheatre / Cultural Plaza spaces for local music and dance performances	₹50 lakh
Photo Spots & Heli-taxi (using Helicopters) services.	₹6 cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹10 crore – ₹12 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 3 years.

39.4.2 Kadavu Restoration

39.4.2.1 Project Brief

Need for the Project

The town's seven traditional Kadavu (ferry points) hold significant cultural, historical, and transportation value. These riverbank areas once served as key nodes for local water-based mobility, trade, and social interactions, but over time have fallen into disrepair due to neglect, urban pressure, and lack of modern relevance. Restoring these Kadavu with a recreational and tourism-oriented vision not only revives their heritage but also opens up opportunities for eco-tourism, community recreation, water transport revival, and livelihood generation. Developing them as part of a riverfront circuit will improve public space quality, promote sustainable tourism, and reconnect communities with their riverside heritage.

Project Aim

To restore and redevelop the town’s seven traditional Kadav points into a cohesive Heritage River Circuit that supports recreation, tourism, cultural revival, and sustainable riverfront development. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To conserve and upgrade the structural and environmental quality of the seven kadavu locations.
2. To integrate the kadavu into a recreational and tourism circuit with boating, cycling, and walking trails.
3. To create public spaces that serve both locals and tourists, enhancing social and cultural engagement.

4. To promote eco-friendly transport, river awareness, and heritage education.
5. To generate livelihoods for local communities through boating, guiding, crafts, and food stalls.

39.4.2.2 Location and Ownership

Seven traditional Kadavu (ferry points) ie. Azhoor Kadavu, Para Kadavu, Kallara Kadavu, Vyazhi Kadavu, Illath Kadavu, Thonda Kadavu, and Mooppan Kadavu in river Achankovil.

Land Ownership	Municipality
Ward Number	24, 25
Project Area	0.56 Acre
Survey Numbers	234(p), 242(p),243(p)

39.4.2.3 Project Components

1. Restoration of Kadavu Structures: Strengthening steps, paving, traditional shelter (mandapam), signage
2. Access Infrastructure: Pathways, lighting, landscaping, seating areas, toilet blocks
3. Riverfront Circuit Design: Walking/cycling trail connecting all kadavu with information boards
4. Floating Jetties or Platforms: For eco-boating, kayaking, and cultural activities
5. Recreational Amenities: Play zones, green parks, open stages, fitness installations.
6. Eco-Tourism Services: traditional Non-motorized boats, heritage walks, cultural event space
7. Environmental: greening, native vegetation, waste bins, rain shelters
8. Lighting & Security Solar lights, CCTV, and safety signage for visitors.



Figure 39-33 Proposed Kadavu Restoration Project concept

39.4.2.4 Responsible Agencies

Role	Agencies likey to be involved
Project Initiator	Municipality
DPR & Technical Support	Municipality / Department of Tourism
Infrastructure Development	PWD, LSGD, Irrigation Department
Eco-tourism Activities	DTPC, Kerala Tourism Development Corporation (KTDC)
River Health & Environment	Pollution Control Board
Possible Funding Options	Municipality, Schemes of Ministry of Tourism, Plan Funds, CSR, PPP

39.4.2.5 Suggested Implementation Mechanism

To initiate the project for restoring and developing the town's seven traditional kadavu, the municipality may take the lead as the primary implementing agency, in collaboration with the Department of Tourism and other relevant state departments. The first step should be the preparation of a Detailed Project Report (DPR) through a qualified consultant or technical support agency with experience in riverfront or cultural heritage projects. Once the

DPR is completed and approved, the municipality can coordinate with the state government to mobilize funding through tourism schemes, state plan assistance, or CSR support. The implementation may be taken up in phases, starting with a few kadavu as pilot sites, and expanded gradually to all seven, ensuring technical, environmental, and community alignment at each stage.

39.4.2.6 Other Associated Issues to be addressed

Several important issues must be addressed for the success and sustainability of the project. Environmental sensitivity is crucial, as kadavu are often located along ecologically fragile riverbanks prone to flooding and erosion. Design interventions should use low-impact, locally sourced materials, and avoid disrupting natural flows or habitats. Land ownership and encroachment around kadavu areas may pose challenges and should be resolved in advance through proper surveys and community engagement. Additionally, provisions for universal access, safety (especially near water), waste management, and ongoing maintenance should be built into both the DPR and final execution plan.

39.4.2.7 Project Cost & Period

Component	Estimated Cost (INR)*
Construction of Structures	₹ 7 Cr
Landscaping, Pathways & Lighting	₹1 Cr
Riverfront Trail & Connectivity	₹1 Cr
Floating Jetties & Boating Infrastructure	₹1 Cr
Recreational & Interpretation Facilities	₹1 Cr

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 11 crore

The priority of the project is coming under 2nd phase. The approximate estimated project period will be 2 years.

39.4.3 Destination Wedding Centre

39.4.3.1 Project Brief

Need for the Project

With increasing demand for unique and nature-integrated wedding experiences, destination weddings have become a growing segment in the tourism and events industry. However, the town currently lacks dedicated, well-equipped venues that can accommodate such high-value functions in scenic, culturally rich environments. Two destination wedding centre project is proposed in the town. These two (Riverside Destination Wedding & Wetland Destination Wedding) strategically located destination wedding centres will give branding the town which helps to turns the town into a wedding hotspot (like Udaipur or Goa). This project will boost tourism and generate local employment.

Project Aim

To develop two eco-sensitive, culturally enriched Destination Wedding Centres that capitalize on the town's natural beauty while promoting tourism, economic activity, and sustainable infrastructure development. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To create premium, nature-based venues for destination weddings and related events.
2. To enhance the town's profile as a wedding and event tourism destination.
3. To integrate local art, architecture, and cuisine into the design and operation of the centres.
4. To ensure environmental sustainability through eco-friendly construction and wetland/riverside conservation.
5. To generate employment for local communities and promote small businesses through event-linked services.

39.4.3.2 Location and Ownership

Riverside destination wedding centre project is proposed near Azhoor Kadavu area and Wetland destination wedding centre project is proposed near Edahavalam multi-functional open space.

Land Ownership	Municipality
Ward Number	11, 27
Project Area	2.21 Acre
Survey Numbers	263(p), 160(p)

39.4.3.3 Project Components

1. Wedding Pavilion / Mandapam: Aesthetically designed traditional structure, open-air and weather-protected
2. Viewing Deck / Water-facing Platform: Especially for the riverbank location; offers scenic photo zones
3. Infrastructure development like road, Solar, Rainwater & Waste Management Renewable energy, water recycling, and green waste handling.



Figure 39-34 River side destination wedding project concept



Figure 39-35 Wetland destination wedding centre project concept

39.4.3.4 Responsible Agencies

Role	Agencies likey to be involved
Project Owner	Municipality
DPR & Technical Support	Department of Tourism
Design & Architecture	Tourism-approved architects, landscape planners
Infrastructure Development	PWD, LSGD, Irrigation Department
Eco-tourism Activities	DTPC, Kerala Tourism Development Corporation (KTDC)
Possible Funding Options	Ministry of Tourism, Plan Funds, CSR, PPP

39.4.3.5 Suggested Implementation Mechanism

The project should be implemented through a Municipality – Tourism Department collaboration, with a dedicated project team or Special Purpose Vehicle (SPV) to oversee design, construction, and early operations. The DPR should be prepared with guidance from certified architects, tourism consultants, and environmental planners. Wetland destination wedding centre should be in platform or stilt for smooth flow of water. Riverside destination

wedding center should preserve existing nature beauty of bamboo and green landscape. Based on DPR approval, the municipality can seek funding from central/state schemes, CSR initiatives, or PPP investment, especially from the events and hospitality industry. Operation and maintenance may be outsourced through a lease or concession model to experienced event managers, with a mandate to include local employment and cultural elements.

39.4.3.6 Other Associated Issues to be addressed

Both sites—especially the wetland—require strict compliance with conservation norms. Construction should use low-impact, modular techniques. Ensure last-mile connectivity, universal access, and adequate parking without disturbing the natural setting. A transparent, sustainable operational model must be developed, including tariffs, booking protocols, and reinvestment in maintenance. Local SHGs and artisans should be involved in decoration, catering, and guest services to create inclusive growth.

39.4.3.7 Project Cost & Period

Component	Estimated Cost (INR)*
Wedding Pavilion & Mandapam	₹ 1 Cr
Viewing Deck / Wetland Walkway	₹1 Cr
Landscaping & Garden Features	₹20 lakh
Renewable Energy & Waste Infra	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 2.3 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.4.4 Integrated Farm Tourism

39.4.4.1 Project Brief

Need for the Project

The integration of agriculture, animal husbandry and tourism presents a significant opportunity for rural and peri-urban areas of town. Pathanamthitta town have untapped agricultural land, livestock-based activities, and natural landscapes that can be developed into sustainable farm tourism destinations. This project leverages local farming, animal husbandry, and cultural assets to boost rural income, promote local produce, preserve traditional knowledge, and create jobs. It aligns with sustainable development goals and enhances urban-rural economic integration.

Project Aim

To integrate animal husbandry with tourism in a sustainable, educational, and economically beneficial model, to provide urban and school populations with first-hand exposure to livestock farming, to increase income for local farmers through value-added services and to preserve traditional livestock practices. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. Integrate underutilized agricultural land with livestock farms as tourism attractions.
2. Generate supplementary income for farmers and rural households.
3. Create employment opportunities in agriculture-linked services (homestays, guides, etc.).
4. Promote local food and cultural experiences.
5. Strengthen rural araes through eco-friendly land use and rural revitalization.
6. Educate visitors on sustainable farming, food systems and animal care.

39.4.4.2 Location and Ownership

Integrated farm tourism project is proposed in the northern part of the town near Mundukottakkal abutting municipal boundary.



Figure 39-36 Location of Integrated Farm tourism project

Land Ownership	Private
Ward Number	6
Project Area	35.80 Acre
Survey Numbers	123 (p), 124(p), 125(p), 126(p),127(p), & 128(p)

39.4.4.3 Project Components

1. Agri-Tourism areas: Designated farm areas for visitor interaction and guided tours
2. Animal Interaction Spaces: Safe enclosures for dairy, poultry, and petting farms
3. Demonstration Plots: Organic farming, horticulture, floriculture, medicinal plants
4. Cultural Activity Areas: Folk shows, craft workshops, local cuisine demos
5. Food & Farm Product Outlets: Sales of fresh produce, dairy, honey, and crafts
6. Recreational Spaces: Nature trails, boating, cycling paths, rural games
7. Infrastructure & Utilities: Roads, power, water supply, signage, toilets
8. Promotion & Digital Integration : Marketing, booking systems, website, QR codes



Figure 39-37 Integrated Farm Tourism Project concept

39.4.4.4 Responsible Agencies

Role	Agencies likey to be involved
permits, infrastructure provision	Municipality
Tourism promotion, training, branding	Department of Tourism
Technical support, crop planning	Department of Agriculture
Livestock care, veterinary assistance	Department of Animal Husbandry
Support to SHGs, artisans, and local entrepreneurs	Municipality
Investment in Farm, branding, and tech support	Private Partners / CSR Units

39.4.4.5 Suggested Implementation Mechanism

The project is proposed in private ownership lands as special project. So municipality may take action to fulfil the project with in seven years. This project can also successfully implemented with the formation of a Special Purpose Vehicle (SPV) or Cooperative Society include representatives from Landowners, Municipality, Tourism Department and Local entrepreneurs. This entity will manage planning,

operations, revenue sharing, and conflict resolution.

Land Pooling or Voluntary Participation Mechanism can be also used. Land pooling models similar to those in urban development can be used with the help of LSGD Planning Department. Landowners can also contribute land voluntarily to the project while retaining ownership. This may be done by Lease-based revenue sharing model (annual/seasonal) or Equity participation (land as investment) or fixed lease with buy-back clauses. Government support can be seek for funding with scheme of Central and State government. Municipality may allocate budget for enabling infrastructure (roads, parking, lighting)

A Detailed Project Report (DPR) must be prepared to outline farm tourism zones, infrastructure, community involvement, and cost estimates. Stakeholder consultations with farmers, tourism operators, local artisans, and agencies should guide design and operations. Pilot projects can be implemented in selected clusters or farms to test visitor response and refine operations. Training programs should equip local families in hospitality, hygiene, storytelling, and food safety. A dedicated management body or public-private partnership can oversee day-to-day operations. Promotion through websites, eco-tourism platforms, social media, and collaborations with travel agencies will drive visibility and visitor footfall.

39.4.4.6 Other Associated Issues to be addressed

Taking lands with multiple ownership may face community resistance. Not all farmers may be immediately receptive to the concept, necessitating awareness-building and continuous training. Infrastructure gaps such as poor road access, inconsistent electricity, and limited digital connectivity can hinder tourist experience and operational efficiency. Additionally, ensuring animal welfare and visitor safety in livestock interaction areas is essential to prevent health or ethical concerns. Managing waste—especially organic and animal waste—requires efficient composting and sanitation systems to maintain hygiene. The project may also face seasonal fluctuations in tourist footfall, which can affect income stability, making year-round programming and marketing critical. Cultural sensitivity is another key factor, as uncontrolled tourism could disrupt rural lifestyles; hence, codes of conduct and visitor education must be enforced.

39.4.4.7 Project Cost & Period

Component	Estimated Cost (INR)*
Site Development & Zoning (roads, fencing, utilities)	₹30–40 lakh
Farm Stay Construction (cottages, tents, toilets)	₹50–60 lakh
Animal Husbandry Spaces (sheds, petting farms)	₹20–30 lakh
Demonstration Plots & Greenhouses	₹15–20 lakh
Cultural & Activity Zones (stage, crafts area)	₹10–15 lakh
Food & Product Outlets	₹5–10 lakh
Training & Capacity Building	₹5–8 lakh
Marketing & Branding (digital, brochures, signage)	₹5–10 lakh
IT Infrastructure (booking system, website)	₹3–5 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹1.5 crore – ₹2.2 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 years.

39.4.5 Quarry Park and Viewpoint

39.4.5.1 Project Brief

Need for the Project

Quarry Park and Viewpoint Project, designed to transform an abandoned quarry into a safe, scenic, and ecologically enriched public space. The identified quarry site at Myladumpara area currently remains unused, potentially hazardous, and contributes little to the town's quality of life or landscape. However, its natural depression, existing water body, unique rock formations, and elevation make it a strong candidate for transformation into a scenic viewpoint and eco-recreation park. Repurposing the quarry will not only address environmental degradation and public safety issues but also offer the community an open green space for nature-based recreation, eco-tourism, and relaxation.

Project Aim

To reclaim and transform an abandoned quarry into a safe, ecologically sustainable, and publicly accessible Quarry Park and Viewpoint that supports recreation, nature appreciation, and tourism. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To eliminate safety hazards and prevent further environmental degradation of the quarry site.
2. To provide a unique recreational and tourist destination within the town through viewpoint development.
3. To enhance the site's ecological value through landscape restoration and native planting.
4. To promote eco-tourism and nature-based activities such as walking, and rock climbing.
5. To create inclusive, family-friendly spaces like picnic shelters and walking paths.

39.4.5.2 Location and Ownership

Quarry Park and Viewpoint Project is located near Myladumpara area.



Figure 39-38 Location of Quarry Park and Viewpoint project

Land Ownership	Municipality
Ward Number	17
Project Area	1.20 Acre
Survey Numbers	150(p)

39.4.5.3 Project Components

Component	Description
Viewpoints / Observation Decks	Elevated wooden or steel platforms with safety railings (glass or steel), scenic photo points.
Nature Walks & Trails	Stone-paved or gravel pathways around the quarry edges, safe for walking, jogging
Picnic & Resting Zones	Shaded, benches, seating decks, family zones
Adventure Activity Zones	Designated rock climbing walls, zip-lining, rope bridges for youth engagement.
Water Feature Restoration	Clean-up of water body, aquatic vegetation introduction, biofencing or railing for safety.
Landscape & Lighting	Native plant landscaping, step planting on quarry slopes, LED solar pathway lighting, signage.



Figure 39-39 Quarry Park & view point project concept at Myladumpara

39.4.5.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Planning & Design	Town and Country Planning Department
Execution	Accredited NGOs, LSGD Engineering Wing, SHG federations
Possible Funding Options	Plan Fund, KIIFB, AMRUT (Recreational Spaces), Tourism Department, CSR (environmental restoration), MLA/MP Funds

39.4.5.5 Suggested Implementation Mechanism

The project will begin with a technical and geotechnical survey to assess slope stability, water quality, and access conditions. A Detailed Project Report (DPR) will include phased development, safety precautions, and ecological planning. Phase 1 will include trail development, fencing, and safety infrastructure. Phase 2 will implement view decks, picnic areas, and adventure components, if viable. Public-private partnerships (PPP) may be explored for managing adventure sports or cafe kiosks.

39.4.5.6 Other Issues to consider

Quarry slopes may be unstable, and water bodies can pose drowning risks—so fencing, signboards, CCTVs, and limited access zones are vital. Must use native, drought-resistant species to stabilize soil and support biodiversity. Accessibility for senior citizens, children, and persons with disabilities should be considered, including ramped pathways and rest shelters.

39.4.5.7 Project Cost & Period

Component	Estimated Cost (INR)*
Geotechnical Survey, DPR & Safety Study	₹ 20 lakh
Viewpoints / Observation Decks	₹ 40 lakh
Nature Trails & Pathways	₹ 25 lakh
Adventure Activities Setup (rock climbing, zip-lining)	₹ 30 lakh
Water Restoration (cleaning, fencing, planting)	₹ 20 lakh
Landscaping & Native Plantation	₹ 10 lakh
Lighting, Signage & Public Amenities	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 1.5 crore – 1.6 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4.6 Butterfly Park/Blossom Garden

39.4.6.1 Project Brief

Need for the Project

A Butterfly Park, designed as an urban biodiversity hub, offers an opportunity to create an ecologically rich, visually appealing, and educational green space. It supports urban pollinator conservation, provides microclimate

regulation, and offers mental well-being and leisure opportunities to residents. Moreover, it aligns with climate-resilient urban planning and environmental education goals, especially for schools and tourists.

Project Aim

To develop an ecologically sustainable and educational Butterfly Park that enhances urban biodiversity, promotes environmental awareness, and offers a nature-based recreational space in the town. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To create a natural refuge and micro-habitat supporting a range of flora and fauna.
2. To raise awareness among residents, especially students, about ecological balance and conservation.
3. To provide a serene, educational, and aesthetically appealing public space for leisure and recreation.
4. To integrate green infrastructure into urban development for improved climate adaptation and air quality.

39.4.6.2 Location and Ownership

Butterfly park project is proposed near Melevettipuram Junction in ring road

Land Ownership	Municipality
Ward Number	7, 14
Project Area	1.24 Acre
Survey Numbers	141(p), 274(p)

.



Figure 39-40 Location of Modern Municipal Market project



Figure 39-41 Butterfly park project concept

39.4.6.3 Project Cost & Period

Component	Estimated Cost (INR)*
Habitat Design and Native Landscaping	₹ 25 lakh
Pathways, Signage, and Viewing Decks	₹ 15 lakh
Butterfly Interpretation Centre	₹ 20 lakh
Water Features & Moist Zones	₹ 10 lakh
Seating & Natural Structures	₹ 10 lakh
Solar Lighting & Boundary Fencing	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 1.0 crore

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4.7 Sponge Parks

39.4.7.1 Project Brief

Need for the Project

Urbanization in the town has led to increased surface runoff, reduced groundwater recharge, and localized flooding, especially during monsoon. Hard paving, unplanned construction, and loss of permeable green

cover have made urban areas more vulnerable to waterlogging and heat island effects. In this context, Sponge Parks act as nature-based urban infrastructure that absorb, filter, store, and slowly release rainwater to natural water cycle. These parks also serve as recreational spaces, improving both ecological resilience and urban liveability. Four sponge parks projects are in the central urban zone and three in the Kumbazha region, the project will help decentralize flood mitigation while promoting green public spaces town-wide.

Project Aim

To develop a network of seven Sponge Parks that function as decentralized green stormwater management systems while providing recreational and ecological benefits to the town. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To mitigate urban flooding and manage stormwater sustainably.
2. To enhance groundwater recharge and improve urban microclimate.
3. To repurpose low-lying or underused land for dual-purpose ecological parks.
4. To integrate climate-resilient urban infrastructure into the public realm.
5. To create multi-use green spaces that support biodiversity and community interaction.

39.4.7.2 Location and Ownership

Seven sponge parks are proposed in various part of town. (land near Aban Junction, Stadium Junction, Municipal Office complex, and Kumbazha region)

Land Ownership	Municipality
Ward Number	15,16,20,10,13,25,30,29
Project Area	27.86 Acre
Survey Numbers	52, 53(p) & 54(p), 40(p),56(p), 259(p),260(p),265(p), 164(p),168(p),219(p),221(p),223(p) &228(p), 151(p),169(p), 150(p)

39.4.7.3 Project Components

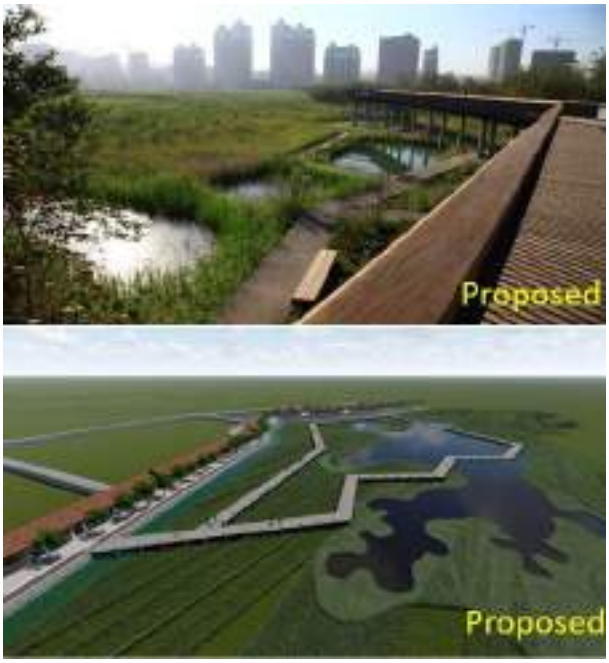


Figure 39-42 Sponge park project concepts

Component	Description
Rain Gardens & Bioswales	Vegetated depressions that absorb and filter stormwater, reduce runoff.
Permeable Pathways	Walking and jogging trails made of permeable pavers or gravel for infiltration.
Retention Ponds	Small seasonal or permanent ponds that hold excess water and support biodiversity.
Native Landscaping	Use of drought- and flood-tolerant native species to support water absorption..
Urban Furniture	Seating, viewing decks, shaded pavilions for public use.

39.4.7.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Planning & Design	Town and Country Planning Department
Execution	LSGD Engineering Wing, KITCO, NGOs in water or urban ecology
Possible Funding Options	AMRUT 2.0 (Green Infrastructure), KIIFB, Plan Fund, District Disaster Mitigation Fund, CSR (climate resilience or water sector)

39.4.7.5 Suggested Implementation Mechanism

Each of the seven Sponge Parks will be designed to suit its specific topography, soil conditions, and runoff patterns.

Phase 1: DPR preparation.

Phase 2: Excavation, formation of rain gardens, construction of bioswales and pathways.

Phase 3: Planting, infrastructure installation (furniture, lighting), and public engagement programs.

39.4.7.6 Other Issues to consider

Local residents must be educated on the ecological benefits and responsible use of sponge parks. Routine de-silting of swales, weeding, replanting of native species, and waste management must be budgeted and assigned to trained personnel. Parks must be clearly demarcated and managed to prevent dumping or unauthorized use. Parks should be designed as prototypes to replicate in other vulnerable areas later.

39.4.7.7 Project Cost & Period

Component	Estimated Cost (INR)*
Site preparation, excavation, grading	₹ 20 lakh
Rain gardens, swales, retention ponds	₹ 20 lakh
Permeable paths and viewing decks	₹ 10 lakh
Landscaping with native plants	₹ 60 lakh
Urban furniture	₹ 10 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 4.9 crore (7 Parks)

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4.8 Green Islet/ Pachathuruth/ Miyawaki forest

39.4.8.1 Project Brief

Need for the Project

Urban Areas of town suffer from the Urban Heat Island (UHI) effect, in the summer season where built-up surfaces absorb and re-radiate heat, leading to higher temperatures than surrounding rural areas. In towns with dense development, reduced tree cover, this exacerbates discomfort, energy demand, and health risks. The creation of Urban Islets—compact, high-density urban forests—within public or underused spaces offers a climate-resilient solution. These islets act as green lungs, regulate microclimate, reduce ambient temperature, improve air quality, recharge groundwater, and provide biodiversity habitats. In addition, they offer visual and psychological relief for residents, especially in congested town centres.

Project Aim

To create small but dense Urban Forest Islets within the urban fabric to counter urban heat, enhance ecological balance, and provide climate resilience and community well-being. The location, existing and proposed images of the project area are shown in Chapter 37.

Project Objectives

1. To reduce surface and air temperatures in heat-prone parts of the town.
2. To create self-sustaining, compact forests using native tree species.
3. To increase urban green cover and carbon sequestration capacity.
4. To provide passive cooling, improve air quality, and recharge groundwater.
5. To serve as biodiversity hotspots and nature access points for residents

39.4.8.2 Location and Ownership

Two Urban Islet are proposed in town. One is inside the ring road near Municipal Bus Stand and other is at Kumbazha near proposed industrial estate project as special project.

Land Ownership	Municipality, Private
Ward Number	19
Project Area	4.83 Acre
Survey Numbers	91(p),93(p) &94(p)

39.4.8.3 Project Components

Component	Description
Urban Forest Plot Preparation	Soil decompaction, mulching, organic enrichment, fencing of site.
Native Tree Plantation (Miyawaki / layered method)	Dense planting of indigenous species—shrubs, understorey trees, canopy trees in close succession.
Perimeter Footpaths & Seating	Small pathways and resting areas around the forest without disturbing core.
Rainwater Harvesting	Percolation pits, trenches, or tanks to ensure long-term water security
Interpretation Boards	Signage for species identification, ecological functions, and awareness.
Green Fencing & Bio-barriers	Bamboo or living fences to prevent encroachment and ensure ecological integrity.



Figure 39-43 Miyawaki project concept

39.4.8.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Technical Support	Kerala Forest Research Institute (KFRI), Kerala State Biodiversity Board, Haritha Kerala Mission, KSDMA
Execution	Accredited Landscape Contractors / NGOs, Kudumbashree or local SHGs for planting and maintenance
Possible Funding Options	Central/ State Scheme, Plan Fund, Green Climate Fund, KIIFB, CSR (for afforestation/climate resilience

39.4.8.5 Suggested Implementation Mechanism

Phase 1: DPR preparation.

Phase 2: Land preparation, fencing, and soil health restoration.

Phase 3: intensive planting using Miyawaki or equivalent method

Phase 4: Installation of signage, irrigation, and compost systems.

First 3 years of care is crucial. Maintenance assigned to SHGs, eco clubs, or local NGOs Post-establishment, the forest is largely self-sustaining.

39.4.8.6 Other Issues to consider

Rainwater harvesting systems must be integrated to reduce irrigation dependence. Only native species must be used to avoid introducing invasive plants. Involving residents and schools in planting drives enhances protection and ownership.

39.4.8.7 Project Cost & Period

Component	Estimated Cost (INR)*
Land preparation, fencing, soil work	₹ 3 lakh
Dense planting with native species	₹ 5 lakh
Perimeter pathway and seating	₹ 5 lakh
Rainwater harvesting and irrigation setup	₹ 4 lakh
Maintenance (3 years)	₹ 3 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 20 lakh

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4.9 Detention/Retention Basin

39.4.9.1 Project Brief

Need for the Project

Detention basins are needed in the northern part of the town to reduce the risk of flash flood and water logging by lowering peak flows and protecting downstream areas near Achankovil river from flooding.

Project Aim

To protect residential areas near Achankovil river and alongside drains from flash flooding and water logging.

Project Objectives

1. Flood mitigation
2. Storm water management
3. Groundwater recharge
4. Improve quality of water
5. Multi use potential of land (parks or sports fileds during dry and basin during rains)

39.4.9.2 Location and Ownership

Detention/Retention basins are proposed in various locations where natural waterlogging occurs during rains.

Land Ownership	Government & Private
Ward Number	
Project Area	43.47 Acre
Survey Numbers	3, 5, 12, 26, 70, 71, 85, 93, 97,124,130,150,155,161,164,185,223,243, 331

39.4.9.3 Project Components

Component	Description
Fore bay	A shallow silt trapping zone to capture debris before water entering pond
Ponding area	Low lying depression formed by natural topography
Vegetated slopes, Footpaths & Seating	Small pathways covered with native plants and grass and resting areas around the area without disturbing core.
Interpretation Boards	Signage for species identification, ecological

	functions, and awareness.
Green Fencing & Bio-barriers	Bamboo or living fences to prevent encroachment and ensure ecological integrity.



Figure 39-44 Retention Basin project concept

39.4.9.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Technical Support	Kerala State Biodiversity Board, Haritha Kerala Mission, KSDMA
Execution	Accredited Landscape Contractors / NGOs, Kudumbashree or local SHGs for planting and maintenance
Possible Funding Options	Central/ State Scheme, Plan Fund, Green Climate Fund, KIIFB, CSR (for afforestation/climate resilience

39.4.9.5 Suggested Implementation Mechanism

Phase 1: DPR preparation.

Phase 2: Land preparation, fencing, and soil health restoration.

Phase 3: intensive planting using Miyawaki or equivalent method

Phase 4: Installation of signage, irrigation, and compost systems.

First 3 years of care is crucial. Maintenance assigned to SHGs, eco clubs, or local NGOs Post-establishment, the forest is largely self-sustaining.

39.4.9.6 Other Issues to consider

Rainwater harvesting systems must be integrated to reduce irrigation dependence. Only native species must be used to avoid introducing invasive plants. Involving residents and schools in planting drives enhances protection and ownership.

39.4.9.7 Project Cost & Period

Component	Estimated Cost (INR)*
Land preparation, fencing, soil work	₹ 3 lakh
Dense planting with native species	₹ 5 lakh
Perimeter pathway and seating	₹ 5 lakh
Forebay maintenance	₹ 4 lakh
Maintenance of pond(3 years)	₹ 3 lakh

**Note: cost calculations are only approximate figures.*

Total Estimated Cost: ₹ 20 lakh

The priority of the project is coming under 1st phase. The approximate estimated project period will be 2 year.

39.4.10 Restoration of streams & channels/ Flood plain protection, Riparian buffer zone & Riverbank stabilisation and preparation of Drainage Plan

39.4.10.1 Project Brief

Need for the Project

Many of the natural drainage paths and minor streams in Pathanamthitta have been encroached upon or degraded due to unplanned urbanization. Restoring these watercourses by removing encroachments, clearing blockages, and reconnecting fragmented channels can significantly improve the drainage capacity of the town. This will reduce localized flooding and allow smoother flow of water during high-intensity rainfall events.

Project Aim

To ensure the efficient and safe conveyance of storm water through the town, a range of natural canal widths of 3 m to 20 m has been proposed by widening of existing canals in the town and to prepare a Drainage plan for entire town.

Project Objectives

1. Ensure proper drainage
2. Flood mitigation
3. Storm water management
4. Groundwater recharge
5. Improve quality of water
6. Improve ground water table
7. Drainage plan

39.4.10.2 Location and Ownership

Land Ownership	Government /Irrigation Department
Ward Number	1,2,5,8,10,11,15,16,20,22,25,26,28,29,30,31,32
Project Area	10.52 Acre

39.4.10.3 Project Components

Component	Description
Stream bank stabilisation	Using engineering techniques
Re vegetation and riparian buffer creation	Planting native trees, shrubs
Channel re naturalisation	Creating natural flow paths
Flood plain protection	Regulations in flood plain
Drainage plan preparation	Drainage master plan preparation

39.4.10.4 Responsible Agencies

Role	Agencies likey to be involved
Nodal Agency	Municipality
Technical Support	Irrigation department, Kerala State Biodiversity Board, Haritha Kerala Mission, KSDMA, specialised agencies
Execution	Accredited Contractors /Municipality, Irrigation Department, PWD, specialised agencies
Possible Funding Options	Central/ State Scheme, Plan Fund, Green Climate Fund, KIIFB, CSR (for afforestation/climate resilience)

39.4.10.5 Suggested Implementation Mechanism

Phase 1: Preparation of Drainage plan, Preliminary assessment and planning

Phase 2: Cleaning and De silting

Phase 3: Shoreline and ecosystem restoration

Phase 4: Pollution control measures

Phase 5: Habitat and biodiversity enhancement

Phase 6: Infrastructure and recreational development

Phase 7: Monitoring and maintenance

39.4.10.6 Other Issues to consider

Land ownership disputes, encroachments, pollution, protection of natural inflow and outflow are crucial. Community participation, awareness campaigns and protection of local bio diversity are essential.



Figure 39-45 Drain Protection Work

39.4.10.7 Project Cost & Period

Component	Estimated Cost (INR)*
Drainage Plan preparation	₹150 lakh
Survey, Desilting and cleaning	₹ 70 lakh
Bank strengthening	₹ 40 lakh
Pollution control	₹ 60lakh
Habitat and biodiversity enhancement	₹ 15 lakh
Recreational infrastructure	₹ 40 lakh
Community awareness	₹ 5 lakh

Total Estimated Cost: ₹ 380 lakh

The priority of the project is coming under 1st phase. The approximate estimated project period will be 5 years.

**Note: cost calculations are only approximate figures.*

PART IV
DEVELOPMENT REGULATIONS



40. Zoning Regulations



40. ZONING REGULATIONS

Zoning regulation refers to the set of rules and guidelines that govern how land in different parts of the town can be used and developed. These regulations are designed to promote orderly growth, manage urban sprawl, and ensure that land use aligns with the community's vision for development. Land use zoning divides the area into zones (like residential, commercial, industrial, agricultural etc.), and each zone has specific rules. Zoning includes rules to protect natural resources and ensure sustainable and resilient development.

Contents

1. General Guide Lines
2. Zone wise Land use Regulations
3. Zoning Regulations for Flood Prone Zones
4. Regulations Recommended for Low Land Slide Prone Zones

40.1 General Guide Lines

1) All future developments/ constructions shall be in conformity with the provisions of the Master Plan for Pathanamthitta Town and the Kerala Municipality Building Rules in force, unless otherwise specified in these regulations or in any Detailed Town Planning Scheme in force.
2) For the implementation and enforcement of the proposals envisaged in this Master Plan, Pathanamthitta Municipal area has been zoned under various categories as shown below.

I.BUILT-UP ZONE

1. Residential Use Zone
   1.1. Proposed Housing Scheme Area
2. Commercial Use Zone
   2.1 Central Square
   2.2 Modern Municipal Market
   2.3 Multi-functional market
   2.4 Proposed Food Street
3. Mixed Use Zone
4. Multi-functional Zone
5. Proposed Innovation Village
6. Public & Semi-public Use Zone
   6.1. Town Square
   6.2. Proposed Government Office Complex
   6.3. Proposed District Court Complex
   6.4. Municipal Office Complex Expansion &Redevelopment
   6.5. Holistic Neighbourhood Hub
   6.6. Ward Bhavan Mayiladumpara
   6.7. Proposed Chuttippara Adventure Tourism Base Camp
   6.8. Proposed Municipal Convention Centre & Tourist Home
   6.9. Proposed Happy Home &Harmony Centre
   6.10. Proposed Fitness hub
   6.11. Proposed Empowerment Centre
7. Industrial Promotion Zone
8. Agro Industrial Promotion Zone
9. Traffic & Transportation Use Zone
   9.1. Proposed Municipal Bus Stand Complex Renovation
   9.2. Proposed Transport Terminal Interface
   9.3. Proposed Municipal Shopping Complex & Parking Plaza
10. Recreational Built-Up Zone
    10.1. District Stadium & Sports Complex Redevelopment
    10.2. Subala Park Expansion &Redevelopment
    10.3. Happiness Park
    10.4. Proposed Urban Central Park
    10.5. Proposed Aqua Rock Adventure Park
    10.6. Proposed Museum & Art Gallery
    10.7. Kottappara Hill View Park
    10.8. Proposed Wellness Park

10.9. Proposed Neighbourhood Park
10.10. Proposed Mannaramala view point

II. GREEN-BLUE ZONE

11. Dry Agricultural Use Zone
12. Environmentally Sensitive Zone
13. Sacred Groves
14. Rocky Area
15. Recreational open space Zone
    15.1. Proposed Quarry Park &View Point
    15.2. Vanchipoyka Waterfalls Project
    15.3. Valamchuzhi Riverside Recreation Zone
    15.4. Chuttippara Adventure Tourism Park
    15.5. River Side Twilight Rock Ridge Park
    15.6. Proposed Destination Wedding Centre
    15.7. Proposed Infinity Rock Park
    15.8. Proposed Butterfly Park /Blossom Garden
    15.9. Proposed Kadavu Restoration
    15.10. Proposed Sponge Park
    15.11. Proposed Wetland Park (Room for River)
16. Proposed Green Strip
17. Proposed Green Islet/ Pachathuruthu/ Urban Forestry /Miyawaki Forest
18. Detention /Retention Basin
19. Widening of Existing/Proposed Water Body
20. Riparian Buffer Zone (50 Meter)
21. Existing Water Body

III. SPECIAL ZONES

22. Integrated Living Hub
23. Thykkavu GH School Expansion
24. Civil Station Expansion
25. Mini Civil Station Expansion
26. General Hospital Expansion
27. Proposed Industrial Estate
28. Proposed Satellite Bus Station
29. Proposed Truck Terminal
30. Proposed Highway Travel Plaza
31. Proposed Parking Area
32. Proposed Urban Pulse Hub
33. Children's Park Expansion
34. Proposed Vanchipoyka Waterfalls Viewing Deck
35. Proposed Riverview Cornish Park
36. Proposed Workation Farm Tourism Zone
37. Proposed Integrated Farm Tourism Zone

38. Proposed Fair Ground
39. Proposed Green Islet/ Pachathuruthu/ Urban Forestry /Miyawaki Forest
40. Proposed Echo Quarry Water Garden Park

Details regarding the nature of uses 'Permitted', uses 'Restricted' in each zone are given in Table 40.1. These regulations shall be enforced in conjunction with other specific provisions if any elsewhere in the Master Plan.

3) Uses 'permitted' in a zone cover the uses that can be normally accommodated in the relevant zone. Such uses may be permitted by the Secretary, Pathanamthitta Municipality (hereinafter referred to as Secretary). In some cases, it may be possible to permit some other uses also, which are not likely to affect the quality and environment in a zone specified for a particular use. Such cases have to be individually examined based on their performance characteristics and special locational factors. Such cases which come under this category are classified as 'Uses Restricted 1' and 'Uses Restricted 2'.
   a) Uses **Restricted- 1** Category deals with the restricted uses that may be permitted by the Secretary, Pathanamthitta Municipality with the concurrence of the Town Planner of the District Office of the Local Self Government Department (Planning), Pathanamthitta. (herein after referred to as Town Planner).
   b) Uses **Restricted- 2** Category deals with the restricted uses that may be permitted by the Secretary, Pathanamthitta Municipality with the concurrence of the Chief Town Planner concerned of the Local Self Government Department (Planning).
4) **"Uses prohibited"** are various objectionable uses in each zone which shall not be permitted under normal circumstances. All uses which does not come under 'Uses Permitted' or 'Uses Restricted' will be considered as 'Uses prohibited'.
5) Any use not specified either in the 'uses permitted' or 'uses restricted 1' or 'uses restricted 2' category of a particular use zone but which is of a similar nature to any use 'permitted' or 'restricted 1' or 'uses restricted 2' in that particular use zone, may be permitted by the Secretary with the concurrence of the Town Planner.
6) Zoning regulations are not intended to prohibit existing uses that have been lawfully established prior to the enforcement of these regulations, unless otherwise specifically mentioned in this Master Plan. Zoning Regulations are essentially intended to help the competent authority in taking decision regarding granting or refusal of permits for land development and construction of buildings/structures.
7) If any portion of a zone is put to a 'Use Prohibited' as stated in Para 4, before coming into operation of this Master Plan, such use shall be termed as non-conforming use. A non-conforming use may be allowed to continue in its existing location and essential repairs and maintenance for the structure may be permitted by the Secretary, provided that the said use creates no adverse environmental influence in the zone. Addition, alteration or reconstruction, if found necessary as part of any mitigation measures may be permitted for such uses by the Secretary with the concurrence of the Town Planner. The total built up area of such non-conforming use shall not exceed 1.5 times the existing built-up area.
8) Existing areas and structures of archaeological importance and religious uses may be permitted to continue in all the zones and shall be treated as permitted uses.
9) Subject to the zoning regulations of the respective use zones, more than one use may be combined in a building/ plot, provided that the area of individual uses shall be limited to that

prescribed for each such use in the zoning regulations of the respective zone.

10) Provisions under the Disaster Management Act 2005 and Environment Protection Act 1986 and any other applicable statutes as amended from time to time will prevail over the respective provisions of this Master Plan unless otherwise specified in the Master plan.
11) Silence Zone, as prescribed by the Noise Pollution (Regulation and Control) Rules, 2000 as amended from time to time, shall be applicable to such areas under this Master Plan.
12) Regulation of constructions and land developments on the sides of new roads / roads proposed for widening as per the Master plan shall be governed by the distance from the centerline of the existing road unless otherwise specified in the Master Plan or Detailed Town Planning Scheme in force or any Detailed Road Alignment approved by the Government/Government agencies. If widening on one side of any stretch of the road is constrained due to the physical barriers such as Water body, or any protected archaeological monuments/sites, the whole road widening required in that stretch shall be towards the other side. Constructions of retaining wall, compound wall, fence and gate may be permitted within the area reserved for road widening if the implementation of such road widening has not been initiated by concerned agency.
13) In the event of change in alignment of new road proposal in the Master Plan, after the commencement of land acquisition of the new alignment, the land parcels in stretches excluded from the original alignment may be changed to adjacent suitable land use zone with the concurrence of the Town Planner. This provision is applicable only to new road development proposals and not to widening proposal.
14) Operational constructions as defined in section 2(w) of Kerala Town & Country Planning Act 2016 shall be treated as permitted use in the Master Plan Area.
15) The Government shall have the power to issue clarifications in respect of technical Interpretations, if any, required on any of the provisions of the Master Plan in consultation with the Chief Town Planner concerned of the Local Self Government Department (Planning).
16) Expansion/modification of existing Public and Semi Public Institutions and their incidental uses to adjacent plots shall be treated as permitted use irrespective of the zone in which such adjacent plot lies, except in ‘Existing Water body’, ‘Environmentally Sensitive Zone’, ‘Widening of Existing/Proposed Water Body’, ‘Detention / Retention Basin’, ‘Sacred Groove’, ‘Proposed Sponge Park’, ‘Proposed Wetland Park’, ‘Existing roads to be widened’, and ‘Proposed New Roads’ and the development regulations imposed by such Zoning.
17) Disaster mitigation projects by competent authorities shall be treated as permitted uses in all zones and agricultural uses may be permitted in all the zones.
18) Transmission / telecommunication towers, wireless stations, ATMs, water tanks, public utility buildings/structures, Electric charging stations for vehicles shall be treated as permitted uses in all zones except in land zoned as ‘Existing Water body’, ‘Environmentally Sensitive Zone’, ‘Widening of Existing/ Proposed Water Body’, ‘Detention / Retention Basin’, ‘Sacred Groove’, ‘Proposed Sponge Park’ and ‘Proposed Wetland Park’,
19) Local/ State/ Central Government or Public Sector Offices & Establishments, Projects of Central/ State Government, Local Self Government Institutions, Public Sector Undertakings and other Government Institutions may be permitted with concurrence of the Town Planner in all zones, except in ‘Existing Water body’, and ‘Widening of Existing/Proposed Water Body’, irrespective of the zoning regulations, if such uses are not included in the permitted uses or uses restricted 1 or uses restricted 2 as per the zoning regulations applicable.

20) In land up to depth of 100 m, on either side of the road, having an existing or proposed width of 12 m or more (as per the Master Plan for Pathanamthitta Town-2045), uses permitted under Commercial Use Zone, Public & Semi-public Use Zone and Mixed Use zone may be also permitted by Municipal Secretary in Residential use zone, Dry Agricultural Use zone, Agro industrial promotion Zone, Riparian Buffer Zone (50 Meter) and Industrial Promotion Zone if not allowed otherwise by these zoning regulations. Provided that if a plot of land extends beyond this boundary, uses permitted as above may be provided for the entire plot.
21) In land up to depth of 250 m, on either side of the road, having an existing or proposed width of 18 m or more (as per the Master Plan for Pathanamthitta Town-2045), uses permitted under Commercial Use Zone, Public & Semi-public Use Zone and Mixed Use zone may be also permitted by Municipal Secretary in Residential Use zone, Dry Agricultural Use zone, Agro industrial promotion Zone, Riparian Buffer Zone (50 Meter) and Industrial Promotion Zone if not allowed otherwise by these zoning regulations. Provided that if a plot of land extends beyond this boundary, uses permitted as above may be provided for the entire plot.
22) In case of uncertainty in identifying the alignment and boundary of water body, Thodu, River, Existing public road, and in the absence of survey boundaries for the same in the Proposed Land Use Map, it shall be referred to the actual position on ground as well as revenue records and decision taken by the Secretary in this regard shall be final.
23) If different land use zones fall within a single plot, all uses permitted as per zoning regulations of such land use zones may be permitted by the Secretary in the plot. If application submitted includes any of the restricted uses, the Secretary shall issue permit with the concurrence of the Town Planner/Chief Town Planner concerned as the case may be. However, for the part of the plot which comes under 'Existing Water Body', 'Environmentally Sensitive Zone', 'Widening of Existing/Proposed Water Body', 'Detention / Retention Basin', 'Sacred Groove', 'Proposed Sponge Park' and 'Proposed Wetland Park', this provision shall not be applicable.
24) If public activities ceased or do not exists in a private land marked as public & Semipublic use zone, uses permitted/restricted in the surrounding land use zone as per the proposed land use map may be allowed in the plot with the concurrence of the Town Planner, if no records are available with the Municipality regarding any proposals for acquiring the particular land for any public use at the time of application of building construction or land development.
25) Survey detail as provided in the Master Plan is obtained from the Department of Survey and Land Records. During the preparation of the plan, Litho maps (cadastral survey) are compiled and geo-referenced by standard procedure. However, the survey number details, survey boundary and areas as available in the revenue records shall be final.
26) Every building should be provided with an appropriate technique such as Pipe composting/ Biogas plants/ vermicomposting etc. for processing organic waste at the source itself. Proper drawings should be supplemented with the building permit applications.
27) Solid Waste Management Unit, Sewage/ Septage Treatment Plant, Material Collection Facility (MCF), Resource Recovery Facilities (RRFs) and Waste water Treatment Plant shall be treated as permitted uses in all zones except in 'Existing Water body', 'Environmentally Sensitive Zone', 'Widening of Existing/Proposed Water Body', 'Detention / Retention Basin', 'Sacred Groove', 'Proposed Sponge Park' and 'Proposed Wetland Park' unless otherwise specified anywhere in the Master Plan.
28) No constructions other than side protection, drain covers and essential protection works are permitted in water bodies in the Master Plan. Also, no constructions obstructing the flow of

water course are permitted in the Master Plan Area.

29) The government may in any particular case and subject to any condition as they may impose and in consultation with the Chief Town Planner dispense with or modify any of the requirements made obligatory by any law and their decision shall be final.
30) All existing ponds shall be preserved considering its infiltration characteristics, ground water recharging, environmental significance and aesthetic value.
31) Construction and/ or land development, in Environmentally Sensitive Zone coming under any of the flood prone zones, shall not be permitted.
32) No construction/land development shall obstruct/ reduce storm water drainage capacity in the area.
33) Constructions of new critical infrastructural facilities such as hospitals, Bus terminals, railway Station and institutions of critical importance such as offices of district administration, Police stations, Fire stations, etc. shall not be permitted in Flood prone areas. However, Reconstruction or maintenance of existing authorized uses/ buildings/ addition of new blocks shall be permitted with adequate flood resilient measures with the concurrence of the Town Planner in a case-to-case basis.
34) Large scale development projects in an area of 1 hectare or more, exceeding an investment of Rs.100 Crores, which provide direct employment (after commissioning of the project) to the tune of not less than 500 may be permitted in Built-up zone and dry agriculture zone if not included in the permitted uses or restricted uses as per zoning regulation applicable. In such cases, the recommendation of a committee with constitution as below shall be obtained, subject to satisfying the procedures laid out here under and the Secretary shall comply the same while issuing permit.

    Also, adequate provision shall be made for supporting infrastructure such as water supply, sewerage, solid waste management, power supply etc. Separate systems for management of solid waste and sewage shall be provided and maintained by the developer at his cost. The project shall be completed within a period of 5 years or as suggested by the Committee.

Procedure to be followed

a) The developer shall submit the project report, detailing the demand, feasibility and Environment Impact Assessment aspect of the project, together with the approval, if necessary, obtained from the Ministry of Environment and Forests, Government of India to the Convener of the committee and the convener shall make all arrangements for convening meeting of the committee at the earliest and the committee shall consider and dispose of the application within a period of one month from the date of receipt of the same.
b) The constitution of the committee shall be as given under:

i.	Principal Secretary/ Secretary to Government, Local Self Government Department	- Chairperson
ii.	The Director, Local Self Government Department (Urban)	- Member
iii.	The Chief Town Planner, Local Self Government Department (Planning)	-Convener
iv.	Town Planner	-Member
v.	Secretary, Pathanamthitta Municipality	- Member

c) The Convener shall fix the venue, date and time of the meeting in consultation with chairperson and shall be responsible for safe custody of records and communications thereof.
d) The meeting shall be presided over by the Chairperson or in his absence by a member to be authorised by him.
e) The quorum of the meeting shall be majority of the total number of members of the committee for the project.
f) The developer shall also produce before the committee, all required clearances from the State and Central Government agencies concerned.

35) As per Pathanamthitta Municipality council decision No. 1 dated 06/03/2026, All uses permitted in Mixed Use Zone shall be permitted in land upto a depth of 25m, beyond the proposed width of road/water body adjacent to road on the either side of roads, having an existing/proposed width of 15m or more in Environmentally Sensitive Zone/ Proposed Sponge Park/Proposed Wetland Park (Room for River) by the Municipal Secretary subject to the following regulations.

1. Uses permitted in Mixed Use Zone shall be permitted here.
2. The plot should have direct access from the above mentioned road having an existing/proposed width of 15m or more.
3. All new buildings constructing in plots abutting either sides of above said roads should be on stilts with the floor level of building at a minimum height of 90cm from the average centre line level of the same road.
4. Construction of compound walls, Ground concreting, Surface Interlocking/paving, Ramps, Drive ways and all such constructions other than piles are restricted in ground to ensure water recharging and free flow of water under the building.
5. The land shall not be filled for any uses such as access, parking, open spaces etc.
6. Septic tanks with proper anchoring, regulatory/ control valves and inspection chambers should be made mandatory before issuing occupancy to new buildings to prevent diffusion of septic wastes into Open wells and Ground water. Regular Pumping, Cleaning and Periodic maintenance of septic tanks by the owner shall be ensured by the local body.
7. Coverage shall be limited to 60% for buildings having footprint area above 100sq.m.
8. These buildings shall be levied double tax rates and are ineligible for any relief or compensation from Government in the event of Natural Hazards.
9. All the buildings shall be insured.
10. Constructions should be in land, which is converted as dry land (Purayidam) in BTR as per Kerala Conservation of Paddy land and Wet Land Act, 2008 as on the date of publication of this scheme.

11. All new constructions shall have an open balcony / open passage/ a terrace in the upper floors or an open stair connecting the upper floors to the ground facing the yard abutting the adjoining street to facilitate easy evacuation.
12. All new buildings or addition of upper floors shall have a minimum of 50% of the roof terrace kept open to sky, which shall be accessible to facilitate easy evacuation.
13. Proper drainage facilities should be ensured by the plot owner to drain out the excess storm water and prevent flooding in the plot.
14. Addition or reconstruction of all existing buildings in the above said zones shall also comply with these regulations.
15. All existing/ Proposed water bodies including small drains not mentioned in the map should be conserved.
16. Zoning regulations for flood prone zones should be complied.

40.2 Zone wise Land use Regulations

Table 40-1 Zone wise Land Use Regulations

Sl. No	Uses Permitted	Uses Restricted 1	Uses Restricted 2
I	**BUILT-UP-ZONE**		
1	**Residential Use Zone**		
(a)	All Residential buildings including single or multifamily dwelling units, Residential Flats & Apartments, Residential quarters, Lodging houses, Orphanages/Old Age Homes, Night Shelter, Hostels & Boarding Houses, Places of Worship, Crematorium, Seminaries/ Convents / Ashram/ Mutt/Madrassa. Educational institutions essentially serving the needs of residential community such as Day Care, Crèche, Nursery Schools, Kindergartens and schools offering general education (up to Higher Secondary School level), Technical schools. Health institutions essentially serving the needs of residential community such as dispensaries, clinics (Out Patient), Diagnostic Centres, Rehabilitation centres, pain and palliative, Dialysis units etc. having a Built-up area **limited up to 200m²** Community facilities such as Community Halls, Auditorium/ Wedding halls/ Convention centre /Recreational Clubs, Social Welfare Centres, Fuel Filling Stations Gymnasium /Yoga Centers/ Sports Centers, Indoor Court, Swimming Pool, Libraries, Reading Room etc. having a Built-up area **limited up to 200m².**	Cremation Ground/ Crematorium, Burial Ground/ Common Vault.	

	Information Technology or Information Technology Enabled Service Building/ uses and their Ancillary Buildings - Built-up area **limited up to 200m^2.** Shops, Professional Offices, Commercial Offices, Banks & other Financial Institutions, Restaurants, Hotel, Canteen etc. having Built-up area **limited Up to 200m^2**. Utility Installations and Civic Amenities essentially serving the needs of residential community such as Post office, Police station, Telephone exchange, Fire station, Tot lots, parks, Play grounds, Water treatment plants Plant Nurseries, Pump House, Smoke House, Fish farms, Dairy & Dairy Farm, Poultry Farm, Zoological and Botanical Gardens / Bird Sanctuary, Camping Site, Wells and Irrigation Ponds incidental to residential community needs. Cottage Industries, House hold industries, Service Industries of non-nuisance Nature (See Annexure 40.1), Automobile workshops and service centre - Built-up area **limited Up to 100m^2**. Turf Courts, Open Air Theatre, Outdoor Court, Open stage , Amphitheatre		
(b)	**Provided that the access road has an existing or proposed width of 7 m minimum**		
	Hospitals / Auditorium/ Wedding Halls/ Community halls/ Convention centre, Exhibition Centers and Art Gallery-Built-up area **all up to 500 m2.** Cottage Industries, House hold industries, Service Industries of non-nuisance Nature (See Annexure 40.1), Automobile workshops and service centre with Built-up area **limited up to 200m^2**.	Higher Educational Institution	

	Shops, Godowns/weighbridges/ Stacking Yards / Storage of Non-Hazardous materials, Professional offices, Hotels, banks & other financial institutions, Restaurants - Built-up area **limited up to** 500 Sq.m		
(c)	**Provided that the access road has an existing or proposed width of 10 m minimum**		
	Auditorium / Wedding Halls / Community halls /Convention centre Exhibition Centers and Art Gallery Shops, Godowns/weighbridges/ Stacking Yards / Storage of Non-Hazardous materials, Professional offices, Hospital, Hotels, banks & other financial institutions, Restaurants - Built-up area **limited up to 1000** Sq.m Cottage Industries, Service Industries of non-nuisance Nature (See Annexure 40.1), Automobile workshops and service centre - Built-up area **limited to 500m²**.	IT/ ITES parks	
1.1	**Proposed Housing Scheme Area**		
(a)	Any construction/land development essential for the development/ improvement of Housing projects for Economically Weaker Session. All Residential buildings including Residential Flats & Apartments, Residential quarters, Lodging houses, Orphanages /Old Age Homes, Night Shelter, Hostels & Boarding Houses. Cultural Institutions, Club, Reading Room & Libraries, Nurseries/ Day Care and Crèche/ Anganwadis. Alteration, essential repairs and maintenance of existing authorised structure without change in use and area.		
2	**Commercial Use Zone**		

(a)	All Commercial Shops, Commercial establishment, Show Rooms, Shopping Complexes, Shopping Malls, Super or Hyper Markets, Commercial Offices, Professional Offices & Establishments, Banking and Financial Institutions, Business Houses, Restaurants etc,. Fuel Filling Station Single family residential buildings, Residential flats/Apartments. Lodge & Lodging Houses and Special Residential, Dormitories, Hotels, Canteen, Hostel, Boarding Houses, Tourist Resorts. Educational Institutions, Training centers Built-up area **limited to 200m²**. Day care, Creche, Nursery/ Kindergarten, Expansion of existing educational institutions. Hospitals, Clinics, Health centers, diagnostic centres, pain and palliative center, Medical Lab, Dispensaries Nursing Home, Palliative Care Centres - Built-up area **limited to 200m²**. Social Welfare Institution, Library & Reading Rooms, Clubs, Turf and Cultural Institutions - Built-up area **limited to 200m²**. Auditorium/ Wedding halls/convention centres, Theatres, Movie halls, Parks & Open Spaces, Stadiums & Exhibition Grounds, Gymnasium / Yoga Centers / Sports Centers & Indoor Games. Cottage industries, automobile workshops, automobile service stations, cold storage, service industries of non- nuisance nature (See Annexe- I), weigh bridges, printing press, IT hardware / electronic industries - Built-up area **limited up to 200m²**. Parking Buildings, Mechanised Parking, Parking Plazas etc., Public Utility areas &buildings, Plant Nursery, storage of agricultural	Places of Worship Hospitals, Clinics, Health centers, diagnostic centres, pain and palliative center –Built up area up to **500 Sq.m.** Higher Educational Institutions, Training centers Built-up area **limited to 500m²**. Sewage / Solid Waste Treatment plants, Modern Slaughter Houses, Modern Meat Processing Unit Cottage industries, automobile workshops, automobile service stations, cold storage, service industries of non- nuisance nature (See Annexe- I), weigh bridges, printing press, IT hardware / electronic industries - Built-up area **limited to 500m²**. .	Multiplex Complex

	produces and seeds, Fair Grounds, Markets, Park, Playgrounds, Open-air Theatre		
(b)	**Provided that the access road has an Existing or Proposed width of 10 m Minimum**		
	Cottage industries, automobile workshops, automobile service stations, cold storage, service industries of non- nuisance nature (See Annexe- I), weigh bridges, printing press, IT hardware / electronic industries - Built-up area **limited up to 1000m²**. Hospitals & Health centres - Built-up area **limited to 1000m²**. Hospitals, Clinics, Health centers, diagnostic centres, pain and palliative center –Built up area up to **1000 Sq.m.**	Outdoor games stadium Transport terminals, Truck terminal	
2.1	**Central Square**		
(a)	All shops including shopping complexes, shopping malls, hypermarkets, restaurants, hotels, Canteens, Multiplex, Auditorium, Community Halls Social welfare centres, library and reading rooms, Exhibition centres, Gymnasium, yoga centre, recreation club. Professional offices, commercial offices & establishments, banking and financial institutions and its Incidental uses which will not affect the character of the area.		
2.2	**Modern Municipal Market**		
(a)	All commercial shops, Vending shops, Loading and unloading platforms Any construction/land development essential for the development/ improvement of Modern Municipal Market. Expansion or modernization of existing market and its ancillary uses Such as Modern Slaughter house, Modern Meat processing unit, Cold storage,	Transport terminals, Truck terminal	

	Ice plant etc. Storage building including processing, repairing, warehouses, transit sheds, handling & stacking of risk free objects/products Mechanised parking, Parking yard, Public Utility Areas and Public Utility Buildings. Solid waste treatment plants including MCF, RRF, Shredding units, Composting units, Segregations units. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area without altering the use.		
2.3	**Multi- Functional Market**		
(a)	Expansion or modernization of existing market and its ancillary uses Such as Modern Slaughter house, Modern Meat processing unit, Cold storage, Ice plant etc. Any construction/land development essential for the development/ improvement of Multi-Functional Market. Street Vending shops, Loading and unloading platforms, weigh bridges, parking, Temporary structures for assembly activity, sewage treatment plants, water storage and treatment plants etc. Public Utility Areas and Public Utility Buildings. Solid waste treatment plants including MCF, RRF, Shredding units, Composting units, segregation units. Storage building including processing, repairing, warehouses, transit sheds, handling & stacking of risk free objects/products – All uses upto	Transport terminals, Truck terminal	

	5000 sq.m. total Built-up area.		
2.4	**Proposed Food Street**		
(a)	Food truck, Vending on wheels, Street furniture's, and other such Incidental uses for the main use. Storage Building, Food waste Composting units.		
3	**Mixed Use Zone**		
(a)	All Uses permitted in Residential Use Zone and Commercial Use Zone	All Uses Restricted-I in Residential Use Zone and Commercial Use Zone.	All Uses Restricted-2 in Residential Use Zone and Commercial Use Zone.
(b)	Multispecialty Hospitals ,Higher Educational Institutions. Cottage industries, automobile workshops, automobile service stations, cold storage, service industries of non- nuisance nature (See Annexe- I), weigh bridges, printing press, IT hardware / electronic industries	IT/ ITES parks	
(c)	**Provided that the access road has an Existing or Proposed width of 7m Minimum**		
	Marble and Granite Storage Centres, Industrial Estates & Industrial Parks Godowns/Warehouses/Storage of non-hazardous material, stacking yards, weigh bridge.	LPG distribution centres (excluding bottling plants and bulk storage) the Built-up area limited up to 200 m2. Bus Terminals, Truck Terminals	
4	**Multifunctional Zone**		
(a)	All uses permitted in Mixed Use zone ,Public and semi-public use zone, Traffic & transportation use zone	All uses restricted-1 in Mixed Use zone, Public and semi-public use zone, Traffic & transportation use zone.	All uses restricted-2 in Mixed Use zone, Public and semi-public use zone,

			Traffic & transportation use zone
5	**Proposed Innovation Village**		
(a)	IT/ITES software units, Information technology Enabled Service Building /ITES buildings and information technology/, IT parks, Professional Offices, Commercial Offices, Banks & other Financial Institutions Research Institutions and their Ancillary Buildings Any supporting uses like Residential Buildings, Commercial buildings, Recreational buildings, Educational buildings, Convention Centers, Hospitals, Hotels, Other Social Infrastructure and Utility buildings meant to support the activities in the Proposed Innovation Village. Single family residential buildings Other buildings like Shops, Restaurants, Canteen, Hotels, Libraries, Reading Rooms, Educational institutions, Health institutions etc.- Built-up area **limited up to 200 sq.m.** Auditorium/ Wedding halls/ convention center, Community halls, Gymnasium /Yoga Centers / Sports Centers Parking Yard, Parking Building, Mechanised Parking, Parking Plaza. Turf, Park & Open space, Swimming Pools, Playground, Open stages, Green houses Museum, Exhibition Centers and Art Gallery, Open-air Theatre, Amusement Parks, Stadium ,Fair Ground, Tot Lots/Parks/ Community facilities such as recreational clubs, Reading Rooms, libraries etc. Any incidental uses may be permitted with the main use.	De-centralised waste treatment Plant	Multiplex Complex

6	**Public & Semi-public Use Zone**		
(a)	Local/State/Central Government/Public Sector Offices and Other Related Public Buildings, Additions and alterations to the existing authorised buildings including addition of new blocks without altering the use. Residential Building/Quarters/other buildings incidental to public and semi-public use Zone Dharmashala, Ashram, Mutt, Seminaries, Convents, Hostels Educational institutions (including professional education/collegiate education /higher education institutions) Day Care, Crèche, Nursery Schools, Kindergartens, Secondary/Higher Secondary Schools, Higher education and professional educational institutions, Training Centres, library and reading rooms, social welfare centres, museum, swimming pools, Auditorium, Open stage, Exhibition centres and art gallery, convention centres, indoor/ outdoor games stadium. Clinics, diagnostic centres and hospitals. Public Utility Areas and Buildings Government Offices/ Public Buildings/Utility Installations and Civic Amenities essentially serving the needs of residential community such as post office, police station, telephone exchange, fire station, tot lots, parks, play grounds, water treatment plants, and electric substations. Shops, Restaurants, Canteens, hotels – Built-up area **limited up to 200 sq.m.** Parking plazas, auto rickshaw/ taxi/jeep stands. Auditorium / wedding halls / community halls incidental to public and semi-public uses. Tot lots/parks/playgrounds, open air theatre, camping sites. Places of worship and Religious buildings Solid waste management units, Water Treatment Plant, Sewage / Septage Treatment Plant	Cremation Ground / Crematorium, Burial Ground, Common Vault. Slaughter house	
6.1	**Town Square**		

(a)	Open air Auditorium, Open Stage, Open Gym, Parks & Open Spaces, Exhibition Grounds, Garden, Landscaping, Statue, Tot lots, Street Furniture, Vending kiosk, Information Kiosk and other Incidental uses which will not affect the character of the area. Any incidental uses may be permitted with the main use.		
6.2	**Proposed Government Office Complex**		
(a)	Public buildings/ Government (Local/ State/ Central) or Public Sector Offices, Buildings for public purposes/ Public amenities & services/ Public Utility Areas, Staff Quarters ,Parking Plaza, Sewage Treatment Plan, Water treatment Plant. Hostels, Night shelters, Guest houses /Lodges, Restaurants, Canteen, Turf Courts, Open Air Theater, Indoor and Outdoor Courts, Swimming pool, Tot lots/Parks/Fair grounds, other recreational facilities, Open Gym, Yoga centre, Health club, Indoor Courts, Auditorium / Community halls and Convention Centers, Meeting halls, conference rooms, Guest House, Canteen, Libraries and Reading Room, Day Care, Creche, Nursery Schools, Kindergartens and Anganwadis All incidental to Government Office Complex.	Residential Buildings, Commercial establishments, Professional offices, Auditoriums Solid waste treatment plants including MCF, RRF, Composting units, segregation units	
6.3	**Proposed District Court Complex**		
(a)	District court complex and all other construction/land development essential for the development/ improvement of District Court Complex. Park, Turf Courts, Gymnaseum, Health club, Indoor Courts		
6.4	**Municipal Office Complex Expansion &Redevelopment**		
(a)	Municipal Office Complex, Municipal Shopping Complex and all other construction/land development essential for the development/ improvement of Municipal Office Complex.		
6.5	**Holistic Neighbourhood Hub**		

(a)	Recreational parks/Fair grounds, Open Air theatre, open grounds, walk ways, Wellness centers, Holistic centers, Health club, Indoor Courts, Tot lots/Parks other recreational facilities, Gymnaseum, Yoga centre, Health Centre, Counselling centers, Community hall, Anganwadi, Open Air Stadium, Any construction/ land development essential for the development/ improvement of open air recreational facilities. Incidental uses which will not affect the character of the Zone. All Construction/ development in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone		
6.6	**Ward Bhavan Myladumpara**		
(a)	Multifunctional Office building, Health Centre, Community hall, Anganwadi, Open Air Theater, Indoor and, Tot lots/Parks/Fair grounds, other recreational facilities, Gymnasiums, Yoga centre, Health club, Incidental uses which will not affect the character of the Zone. All Construction/ development in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone		
6.7	**Proposed Chuttippara Adventure Tourism Base Camp**		
(a)	Tourism information centre, Art gallery, Exhibition Centres, museum, souvenir shop, retail outlet of handy crafts, comfort station, clock room all other such incidental uses Guest Houses, Camping Sites, night shelters, Dharma Sala, hostels and boarding houses, Dormitories, Lodges, and other incidental uses Parking grounds, Parking plaza, etc.		
6.8	**Proposed Municipal Convention Centre & Tourist Home**		
(a)	Tourist Accommodation centres, Tourist information centres, Tourist facilitation centres, Tourist homes, Resorts, Ayurvedic resorts, Lodges, Hotels, Guest houses		

	Auditorium, Community hall, Convention centers, Wedding hall, Parking Plaza Swimming pool, Tot lots/Parks/Fair grounds, Open Air theatre, other recreational facilities, Gymnasium, Yoga centre, Health club, Indoor Courts. Any incidental uses may be permitted with the main use.		
6.9	**Proposed Happy Home &Harmony Centre**		
(a)	Park and open spaces, Tot lots, open air auditorium, Walkways, cycling tracks. Parking grounds, Parking plaza, etc., Water Tank Fish Farms/ Seed Farms/ Pump House/ Wells and Irrigation Ponds. Old age care centers, Old age friendly park, Old age homes etc. Pain and Palliative care centres. Anganwadies, Buds school and rehabilitation enters, Rescue home, Health club, One day home or “She” lodge for ladies Indoor /Outdoor Stadium. Any incidental uses may be permitted with the main use.		
6.10	**Proposed Fitness Hub**		
(a)	Gymnasiums & health clubs, Yoga and pilates studios, Martial arts and self-defense academies, Indoor sports courts, Cross Fit, Zumba, and group training spaces, Parks and green belt, Meditation and wellness gardens, Nutrition and diet counselling centres, Sports medicine clinics, Spa and massage therapy, Diagnostic labs, Health food cafes, Co-working spaces for fitness professionals, Retail areas for sports equipment and incidental to Fitness Hub.		

	Addition, alteration or reconstruction of existing authorised buildings. Any incidental uses may be permitted with the main use.		
6.11	**Proposed Empowerment Center**		
	Empowerment center, Gymnasiums & health clubs, Yoga and pilates studios, Wellness Center, Therapy Center, Cultural Center, Open Stage, Skill development Center, Rehabilitation Center. Old age care center, Old age friendly park, Old age homes etc.		
7	**Industrial Promotion Zone**		
(a)	All industries other than obnoxious and nuisance type industries (see Annexure-40.1), Automobile Workshops & Automobile Service Stations, Spray Painting Workshops, Saw Mills, Timber Yard, Plywood, Ice Factory, Cold Storage, Fish and Meat Processing Units, Printing Press, Water Treatment Plants, Marble and Granite Storage and Cutting Centres, Industrial Estates & Industrial Parks, IT/ITES software units. Godowns/Warehouses/Storage of non-hazardous material, stacking yards, weighs bridge, Fuel Filling Stations. Marble and Granite Storage Centres, Industrial Estates & Industrial Parks Dairy and Dairy Farms, Dairy related Industries, Poultry Farms, Piggery Farm, Smoke House. Dry Cleaning Plants, Power Plants, Sub Stations Residential Ues incidental to the Industrial Use including Hostels, Dormitories etc. Any other buildings essentially incidental to Industrial use. Tot lots, Parks and Play Grounds attached to incidental residential use. Single family residential buildings, Shops, Professional Offices,	Cremation Ground / Crematorium, Burial Ground, Common Vault. Obnoxious and nuisance type industries (See Annexure-40.2), Storage of Explosives and Fire Works, Gas Godowns, Crusher Units. Dharmashala, Ashram, Seminaries Mutt, Madrasa, Places of worship. Truck Terminal Crusher unit, stone crushing, stone carving, Hot Mixing Plant	

	Commercial Offices, Banks & other Financial Institutions, Restaurants, Canteen, Hotels, Libraries, Reading Rooms etc.- Built-up area **limited up to 200 sq.m** Education, Health institutions essentially serving the needs of residential community such as dispensaries, clinics (Out Patient), Diagnostic Centres, Community facilities such as Community Halls, Recreational Clubs, Social Welfare Centres, Gymnasium /Yoga Centers, Swimming Pool- Built-up area **limited to 300 m2.** Other Public Utility Areas and Public Buildings. Parking yards, Parking plazas, Parking lots, mechanised Parking. Solid waste management units, Water Treatment Plant, Sewage / Septage Treatment Plant, Slaughter House		
8	**Agro Industrial Promotion Zone**		
(a)	Agricultural processing unit, godowns, Agro industrial buildings. Dairy farms, fish farms, seed farms, poultry farms, plant nursery, pump house, wells and irrigation ponds, Storage of agricultural produces and seeds Smoke houses, Farm house, farm stay. Single family residential buildings. Residential flats/ apartments up to 3 stories or 12 dwelling units, Orphanages, old age homes, places of worships, dharmasalas, ashrams, mutts, madrasas, seminaries, convent, Dormitory, hostels. Clinics (Outpatient) and diagnostic, Hospitals centres - Built up area limited up to 200 m 2	Saw Mills and Timber yard Higher Educational Buildings	

	Shops, professional offices, commercial offices and establishments, banking and financial institutions, gymnasium, yoga centres, restaurants, canteens – Built up area limited up to 200 m2. Public Utility areas &buildings such as Police post/police station, post and telegraph office, fire post / fire station, telephone exchange and wireless stations Place of worship, Library and Reading Rooms Auditorium/Communality hall/Convention Centre, –Built up area limited up to 200 m2. Day care and creche, nursery / kinder garten / primary & upper primary schools. Godowns/ Stacking yards/ warehouses/ storage – non-hazardous, Cottage industries of non-nuisance nature. Agro-based industries, House hold industries, Weigh Bridge, Bio gas plant, composting plant, Slaughter house Tot Lots/Parks/Play Grounds, Zoological and Botanical Gardens / Bird Sanctuary, Camping Site Agricultural related business, Processing, storing and packing units. Any other buildings essentially incidental to Agro industries.		
9	**Traffic & Transportation Use Zone**		
(a)	Transport terminals including constructions that form an integral or essential part of the terminal. Any remunerative uses attached to the transport terminals as value capture mechanism such as commercial buildings, malls, retails shops, hotels,	Sewage Treatment Plant	

	restaurants, canteens, convention halls, movie halls, lodges and dormitories, Quarters, Office Spaces, Educational Training centers, Professional, Medical Lab, Clinics &Diagnostic Centers, Dispensaries, Neigh shelter, Health Club, IT Parks, Commercial Establishments, Library & Reading rooms, Club, Nurseries/ Day Care and Crèche/ Anganwadis, Coaching Centres etc. Fuel Filling Stations Solid waste management units, Water Treatment Plant Parking yards, Parking plazas. Public Utility Areas and Buildings Weigh Bridge, Automobile Service Station.		
9.1	**Proposed Municipal Bus Stand Complex Renovation**		
(a)	All buildings and uses connected with Transportation and Communication such as Transport Terminals/ Bus Terminals/ Truck Terminals and Ancillary Structures Social & Cultural Establishments Gymnasium/ Yoga Centers/ Sports Centers & Indoor Games, Parks & Open Spaces. Parking Building, Mechanised Parking, Parking Plaza, Multi-Level car parking, Weighbridges, Fuel Filling Stations Auto / Taxi stands, Bus Bays, Information Kiosk, Electric Vehicle Charging Station, Public Utility Areas and Public Utility Buildings or Establishments. Any remunerative uses attached to the transport terminals as value capture mechanism such as commercial buildings, malls, retails shops, hotels, restaurants, canteens, convention halls, movie halls, lodges and dormitories, Quarters, Office Spaces, Educational Training centers,	Sewage Treatment Plant	

	Professional, Medical Lab, Clinics &Diagnostic Centers, Dispensaries, Neigh shelter, Health Club, IT Parks, Commercial Establishments, Library & Reading rooms, Club, Nurseries/ Day Care and Crèche/ Anganwadis, Coaching Centres etc.		
9.2	**Proposed Transport Terminal Interface**		
(a)	Any construction/land development essential for the development/ improvement of Transport Terminal Interface Such as Restrooms, cafeterias, Lodging and dormitories, visiting lounges, Travel plaza, parking plaza, Travel Agencies, Online Ticket booking Centers. Mechanised Parking, Parking Yard, Auto / Taxi stands, Bus Bays, Public Utility Areas and Public Utility Buildings or Establishments. Fuel Filling Stations Open air Auditorium, Open Stage, Open Gym, Parks & Open Spaces, Exhibition Grounds, Garden, Landscaping, Statue, Tot lots, Street Furniture, Vending kiosk, Information Kiosk, Comfort station, EV Charging.		
9.3	**Proposed Municipal Shopping Complex & Parking Plaza**		
(a)	Information Technology Park, Information Technology or Information Technology Enabled Service Building/Uses and their Ancillary Buildings, Auditorium, Cinema Theatre, Indoor Games, Parks & Open Spaces, All Commercial Shops, Restaurants, Professional Offices, Banking and Financial Institutions – All above permitted with minimum two floors exclusively for parking of vehicles. Parking yard, Multi-level car parking, Mechanized parking, Parking buildings/ parking plazas/ building used exclusively for parking of vehicles, Information kiosk, Electric Vehicle Charging Station Auto / Taxi stands, Public Utility Areas and Public Utility Buildings or Establishments		

	Any incidental uses which may be permitted with the main use.		
10	**Recreational Built Up Zone**		
(a)	Single Family Residential buildings, All commercial shops with Built-up area **limited upto 150 m2.** Tot Lots, Park, Play Grounds, Walk ways, recreational spaces, Open stage etc.	Addition, alteration or reconstruction of existing authorised buildings	
10.1	**District Stadium & Sports Complex Redevelopment**		
(a)	Stadium, Jogging track, sports complex, Clock Room, Locker Room Facility, Training centers, LED Board , Parking lots ,Parking Yard All Indoor and Outdoor sports and games infrastructure facilities including Hostels, dormitories, boarding houses, swimming pools, Gymnasium/ Yoga Centers/ Open Gym, assembly halls, auditoriums, Library, Reading rooms and all other such incidental uses Parking lot/ multi-level car parking, Parking plaza. Any incidental uses may be permitted with the main use.	De-centralised waste treatment Plant	
10.2	**Subala Park Expansion &Redevelopment**		
(a)	Green spaces, Garden, Landscaping, Tot lots, Street Furniture, Vending kiosk, Information Kiosk, Comfort station Eco Walk Way, Amphitheatre, Fair Grounds, Fish Landings, Guided Boat Rides, Watch Towers, Facilities, Retention basins, water treatment facilities etc. and similar uses. Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone. Any incidental uses may be permitted with the main use.	Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area.	
10.3	**Happiness Park**		

(a)	Open air Auditorium, Open Stage, Open Gym, Yoga centers, Parks & Open Spaces, Exhibition Grounds, Garden, Landscaping, Statue, Tot lots, Street Furniture, Vending kiosk, Information Kiosk, Comfort station. Solid waste management units, Water Treatment Plant. Any incidental uses may be permitted with the main use.		
10.4	**Proposed Urban Central Park**		
(a)	Eco Walk Ways, Fair Grounds. Park, Play Grounds, Swimming Pools, Open Air Stadium, Open Air Theatre, Amphitheatre, Zoological and Botanical Garden, Pavilions, Bridges, Comfort station, Rain Garden, Pond/ Lakes, Green Infrastructure & Landscaping, Garden, Tot lots, Children's play area Retention ponds, water treatment facilities etc., Any construction/land development essential for the development/ improvement in this zone shall be carried out with minimum disturbance to the terrain and ecology of the zone.		
10.5	**Proposed Aqua Rock Adventure Park**		
(a)	Planned Green space, Walk ways, recreational spaces, Quarry park, open stage, Rock garden, Rock Park. Swimming pool, Open Air theatre, Amphitheatre, comfort station, clock room, Dressing rooms, Training centre, Equipment's and record rooms, clinics/first aid stations, Office room, Cafeteria, Guide room, Guardroom, information centre, art gallery, Ticket counter, Fair Grounds, Fish farm, Fish hooking platforms etc. and similar uses Mechanised Parking, Parking Yard, Parking lots, Parking Plaza, Comfort station Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		

	Any incidental uses which may be permitted with the main use.		
10.6	**Proposed Museum & Art Gallery**		
(a)	Museum, Exhibition Centres , Art Gallery, Planetarium, Open-air Theatre, open stage , cultural centres, Cultural training centres, performing art theatres. Heritage awareness centers, Tourism facilitation centres, Fairground, Community Center, Amphitheatre, Movie hall, souvenir shop, retail outlet of handy crafts, comfort station, Library, reading room, Fish farm, Fish hooking platforms, Swimming pool, Pond, Bridges. Parking area. Restaurants/cafeteria incidental to main use. Any incidental uses which may be permitted with the main use. Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		Multiplex Theater
10.7	**Kottappara Hill View Park**		
(a)	Planned Green space, Walk ways, recreational spaces , Hill park, watch tower, viewing gallery, open stage Hill garden, Childrens play area, Eco-tourism activities, Open Gym, Yoga centers, Open Stage, Holistic center, and any incidental to the main use. Tourism information centre, souvenir shop, retail outlet of handy crafts, comfort station, clinics/first aid stations, clock room. Museum, Exhibition Centres , Art Gallery, Planetarium, Open-air Theatre, open stage , cultural centres, Cultural training centres, performing art theatres		

	Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		
10.8	**Proposed Wellness Park**		
(a)	Recreational parks/Fair grounds, Open Air theatre, open grounds, walk ways, Wellness centers, Holistic centers, Yoga centre, Health club, Indoor Courts, Tot lots/Parks other recreational facilities, Gymnaseum, Yoga centre, Health Centre, Counselling centers, Community hall, Anganwadi, Open Air Stadium Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		
10.9	**Proposed Neighbourhood Park**		
(a)	Park, Playground, open air theatre, Garden, Landscaping,Bamboo Park, Butterfly Park, Rock garden, Rock Park, Walk Ways, Pond, and all other incidental recreational facilities. Open Air theatre, open grounds, Wellness centers, Holistic centers, Yoga centre, Health club, Indoor Courts, Turf, Tot lots/Parks other recreational facilities, Gymnaseum, Health Centre, Counselling centers, Community hall, Anganwadi. Community center, Swimming Pools, Fish Spa, Recreational clubs, Reading Rooms, Libraries etc. Any incidental uses which may be permitted with the main use. Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		

10.10	**Proposed Mannaramala view Point**		
(a)	Watch tower, Viewing gallery, Viewing deck and any incidental to the main use. Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone.		
II	**Green-Blue Zone**		
11	**Dry Agricultural Use Zone**		
(a)	Agriculture, Horticulture and fodder cultivation, Pastures, Grazing ground, and other types of cultivation including social forestry and its Ancillary Buildings. Dairy/Piggery Farms, Fish farms, Seed farms, Poultry farms, Plant Nursery, pump house, wells and irrigation ponds. Tot Lots/Parks/Play Grounds, Zoological and Botanical Gardens / Bird Sanctuary, Camping Site Single Family Residential Buildings, Residential flats/ Apartments , Residential quarters, Lodges ,Hostels, Orphanages, Night shelters, old age homes, Retirement homes, Dharmasala, Ashrams, Mutts, madrasa, Seminaries, Convent. Day Care and Crèche, Anganwadi, Nursery / Kindergarten, Educational Institution up to higher secondary. Fuel Filling Stations Clinics (Outpatient) and diagnostic centres, Hospitals – Built-up Area limited up to 1000 m2. Place of worship, Auditorium/Communality hall/Convention Center,	Cremation ground/ crematorium, burial ground, common vault.	

	Library and Reading Rooms, Godowns/ Stacking yards/ warehouses/Storage – non-hazardous. Shops, professional offices, commercial offices and establishments, banking and financial institutions, Gymnasium, Yoga Centres, restaurants, canteens- Built-up area **limited up to500 m2.** Public Utility areas &buildings such as Police Post/Police Station, Post and Telegraph office, Fire Post / Fire station, Telephone Exchange, and wireless Stations. Cottage Industries, Agro-based industries, House hold industries, plywood industries, Brick industries, Service Industries of non-nuisance Nature (See Annexure 40.1), Automobile workshops and service centre, Weigh Bridge, Bio gas plant, composting plant, Slaughter house		
(b)	**Provided that the access road has an existing or proposed width of 7 m minimum**		
	Hospitals , Health Centres and Higher Educational Institutions Shops, professional offices, commercial offices and establishments, banking and financial institutions, Gymnasium, Yoga Centres, restaurants, canteens. Marble and Granite Storage Centres, Industrial Estates & Industrial Parks Residential flats/ apartments/ studio apartments, home stays, Resorts.	Saw Mills and Timber yard Industrial park Storage of explosive and fireworks, Gas godowns, Dumping yard, Sewage treatment plant, Solid waste treatment plant. Truck terminal. Crusher unit, stone crushing, stone carving, Hot Mixing unit	Multiplex Complex
12	**Environmentally Sensitive Zone**		
(a)	Paddy cultivation/ Agriculture/ Horticulture/ floriculture/ Fodder cultivation, Fish Farms/ Seed Farms/ Wells and Irrigation Ponds without any building construction, Pump House. Sponge park, wetland park, Detention/Retention pond.	Minor Public Utility areas & Public utility buildings which will not affect the character of the area	

	Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area without change in use.	Non-built Recreational projects.	
13	**Sacred Groves**		
(a)	Planting of saplings, afforestation and maintenance activities for the sacred groves		
14	**Rocky Area**		
(a)	Rock park, Rock garden, Eco-walk way, Pond, Fish farms, seed farms, Water tank, pump house, wells and irrigation ponds, Water treatment plants, water storage/distribution tanks. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area without change in use. Any development in these zones shall be carried out with minimum disturbance to the terrain and ecology without changing the nature.	Public utility areas and buildings essentially serving the need of the local community	
15	**Recreational Open Space Zone**		
(a)	Tot Lots, Park, Play Grounds, Walk ways , recreational spaces , Open stage, Fair Grounds, Open Air Stadium, Open Air Theatre etc.		
15.1	**Proposed Quarry Park &View Point**		
(a)	Any construction/land development essential for the development/ improvement in this zone shall be are carried out with minimum disturbance to the terrain and ecology of the zone. Planned Green space, Walk ways , recreational spaces , Quarry park, watch tower, Tree house, viewing gallery, first aid stations ,open stage, Rock garden Rock Park, Pond, Fish farm, Seed farm, Garden, Water tank, pump house, wells and irrigation ponds, Water treatment plants, water storage/distribution tanks, Planned Garden and incidental to the main use		

	without changing the character of the zone. Any development in these zones shall be carried out with minimum disturbance to the terrain and ecology without changing the nature.		
15.2	**Vanchipoyka Waterfalls Project**		
(a)	Eco tourism Infrastructure, children's play area, adult adventures ride/activities , Rock garden, Rock park, Eco-walk ways, lighting and beatification structures, selfie point, safety measures, Gabion walls, Restrooms, Tree house, Walking Trails , first aid stations ,Visitor Interpretation Centres, clock room, Restaurants/cafeteria incidental to main use without changing the character of the zone.		
15.3	**Valamchuzhi Riverside Recreation Zone**		
(a)	Eco tourism infrastructure like Eco-walk way, Open library, Open air theatre, and open stages for performing arts, Open stages, Parking, Children's park, and first aid stations. Boating and ticket counter, facilitation centers, food kiosk and refreshment kiosk, Amphitheatre , food court, Comfort station, clock room, Dressing rooms, Swimming training centre, Equipment's and record rooms, Office room, Guide room, Guard room, information centre , souvenir shop, retail outlet of handy crafts, Open gym, Yoga centre. Boat jetties, bridges, suspension bridges, retaining walls, fish landing centres, water landings, Bathing Ghats, fish farms and protective works. Incidental uses to main use without changing the character of the zone.	Turf court	
15.4	**Chuttippara Adventure Tourism Park**		
(a)	Adaptive adventure activities like Zip line, Rock climbing with harness support, rope training center, Eco tourism infrastructures, children's play area, adult adventures ride/activities , Rock garden, Rock park, Eco-walk		

	ways , lighting and beautification structures, selfie point, safety measures, Walking Trails , first aid stations , Food kiosk incidental to main use not changing the character of the zone. Planned Green space, recreational spaces , Amphitheatre, Hill park, watch tower, viewing gallery, open stage, Hill garden, Open yoga centers		
15.5	**River Side Twilight Rock Ridge Park**		
(a)	Planned Green space, Walk ways, recreational spaces, Rock park, watch tower, viewing gallery, Rock garden, Open-air Theatre, Amphitheatre, Open stage, Children's play area, Yoga centers, and uses incidental to the main use. Eco tourism Infrastructure, Eco-walk way, Open library, Parking, Children's park, first aid stations, water landing, hooking platform, pump house, side protection walls, fish farm, Parking and any incidental uses to the main use like cafeteria and food court without changing the character of the zone. Boat jetties, bridges, suspension bridges, retaining walls, fish landing centres, water landings, Bathing Ghats.		
15.6	**Proposed Destination Wedding Cetre**		
(a)	Open Stage, Eco-walk way, / Planned Garden/Garden/ Zoological and Botanical Garden, Bird statuary. Wooden walk ways on stilts, Hooking platform, Selfie point, Bamboo walkway, Bamboo huts, Bamboo watch tower, Lotus Pond and any incidental to main use without changing the character of the zone.		
15.7	**Proposed Infinity rock Park**		
	Planned Green space, Walk ways , recreational spaces , Rock park, watch tower, viewing gallery, Rock garden, Open-air Theatre, Amphitheatre , Open stage , Eco-tourism activities, Yoga centers, and incidental to the main use. Eco tourism Infrastructure, Open library, Parking, Children's park, and any		

	incidental uses to the main use like cafeteria and food court without changing the character of the zone.		
15.8	**Proposed Butterfly Park/Blossom Garden**		
(a)	Eco-walk way, / Planned Garden/Garden/ Zoological and Botanical Garden, Bird statuary, Bridge, Pond, Selfie point. Anganwadi Nectar Plants Garden, Butterfly Breeding / Rearing Station, Interpretation Centre / Educational Kiosk, Walkways and Trails, Resting and Observation Zones without changing the character of the zone. Seasonal Garden, Rotating plantings etc.		
15.9	**Proposed Kadavu Restoration**		
(a)	Eco tourism Infrastructure, Eco-walk way, Open library, water landing, hooking platform, pump house, side protection walls, fish farm, Parking, Bridge, and any incidental to main use without changing the character of the zone.		
15.10	**Proposed Sponge Park**		
(a)	Sponge Parks – Walk ways on pier , Garden/ Eco-tourism Infrastructure facilities, Pump house, Detention/Retention basin, Watch Tower, ponds Zoological and Botanical Garden, Bird statuary. Hooking platform, Selfie point, Bridge, Lotus Pond and any incidental to main use without changing the character of the zone.		
15.11	**Proposed Wetland Park (Room for River)**		
(a)	Fish Landings, Boat Jetties, Guided Boat Rides, Watch Towers, Eco Walk Ways, Retention basins, water treatment facilities. Park, Play Grounds, Swimming Pools, Zoological and Botanical Garden. Wooden walk ways on stilts, wooden viewing platforms, Fish Spa, wooden		

	viewing deck, floating bridges. Storage shed for horticulture on stilts, wetland awareness and conservation centres made of sustainable materials and designed on stilts, bridges for essential connectivity.		
16	**Proposed Green Strip**		
(a)	Agriculture/ Horticulture/ vegetable/ fodder cultivation, Vending on wheels, Eco walk way, Hooking platform, wooden view in deck, Fish farms, River Training Works , Shops on wheels and any uses incidental to main use without changing the character of the zone.	Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area without change in use.	
17	**Proposed Green Islet/ Pachathuruthu/ Urban Forestry /Miyawaki Forest**		
(a)	Urban Forests / Mini Forests, Parks and Open Green Spaces, Native Plantation Garden, Rain Gardens / Bioswales, Eco-Trails and Nature Walks, Natural or artificial ponds, lakes, Biodiversity Parks or Eco-Islands, Buffer Zones / Green Buffers, Tree Preservation Areas, Recreational Forest Zones, Organic Garden or Herbal Garden Plots, Carbon Sequestration Zones, Gazebos, watchtowers, Man-made mini-forests, eco-toilets, or information kiosks made from sustainable materials without changing the character of the zone.		
18	**Detention /Retention Basin**		
(a)	Water-holding basins, Side protection walls, wet agriculture, aquaculture, Pisciculture, Pond, Fish Farms/ Seed Farms/ Pump House/ Wells and Irrigation Ponds, Water Treatment Plant without any building construction incidental to main use without changing the character of the zone.	Water based non built Recreational activities. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area	
19	**Widening of Existing/Proposed Water Body**		

(a)	Foot over Bridges, Side protection wall/ Retaining wall, Hooking Platforms, fish farms, aquaculture without affecting and altering the natural environment, River training works		
20	**Riparian Buffer Zone (50 Meter)**		
(a)	Fish Landings, Boat Jetties, Guided Boat Rides, Eco Walk Ways, water treatment facilities, Park, Tree house, Play Grounds, Swimming Pools, Zoological and Botanical Garden. Wooden walk ways on stilts, wooden viewing platforms, Fish Spa, floating bridges. Single Family Residential buildings, All commercial shops with Built-up area **limited upto 150 m2.** Open library, Children's park, Park/Playground, Fair ground, Turf, First aid stations, water landing, and Hooking platform, Pump house, Side protection walls and any incidental to main use without changing the character of the zone. Water landings, Pump houses/ Wells & Irrigation Ponds, Agriculture/ Horticulture/ Fodder Cultivation/ Pastures/ Grazing Grounds/ Seed farms and protective works. Eco- Walk ways, Bamboo park Open Gym, Fair grounds, Parks/ Maidans/ grounds without any building constructions may be permitted.	Addition, alteration or reconstruction of existing authorised buildings. Minor Public Utility areas & Public utility buildings which will not affect the character of the area	
21	**Existing Water Body**		
(a)	Restoration and rejuvenation of water bodies. Bridges, side protection walls, bathing ghats, floating jetty based on community level requirements. Fishing and allied activities undertaken by local communities.		
III	**Special Zone**		
	The land specially demarcated for certain projects as Special Zones such as Integrated Living Hub, Thykkavu GH School Expansion, Civil		

	Station Expansion, Mini Civil Station Expansion, General Hospital Expansion, Proposed Industrial Estate, Proposed Satellite Bus Station, Proposed Truck Terminal, Proposed Highway Travel Plaza, Proposed Parking Area, Proposed Urban Pulse Hub, Children's Park Expansion, Proposed Vanchipoyka Waterfalls Viewing Deck, Proposed Riverview Cornish Park, Proposed Workation Farm Tourism Zone , Proposed Integrated Farm Tourism Zone, Proposed Fair Ground, Proposed Green Islet/Pachathuruthu /Urban Forestry/Miyawaki Forest, Proposed Echo Quarry Water Garden Park are to be acquired by Municipality or other agencies concerned within a period of 7 years from the sanctioning of the plan. If the acquisition proceeding has not been initiated within this stipulated period, these lands may be released and returned to that land use zone which may be deemed appropriate, based on the surrounding land uses and developments, with the concurrence of the Town Planner concerned.		
22	**Integrated Living hub**		
	Survey no 236(p),246(p) in Pathanamthitta Village		
(a)	Residential apartments, single family residential houses or dwelling units for employees, Rental building, Lodging houses, Hostels, Park and recreational facilities, nursery schools and other incidental uses. Housing project for economically weaker section Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area. Any incidental uses which may be permitted with the main use.		
23	**Thykkavu GH School Expansion**		
	Survey no 197(p) in Pathanamthitta Village		
(a)	All educational buildings including Higher Educational Institutions including Technical Institutions such as VHSC, ITI, ITC, etc., Coaching centres, Science Parks, Laboratories, Cultural Institutions, Club, Reading Room & Libraries, Nurseries/ Day Care and Crèche/ Anganwadis and Hostels and other incidental uses to the main use. Social welfare centres, Museum, Exhibition centres and art gallery, convention centres, indoor/ outdoor games stadium. Turf, Park & Open	De-centralised waste treatment Plant	

	space, Swimming Pools, Playground, Open stages, Green houses Tot lots, Parks & playgrounds, fair grounds, open air theatres. Addition, alteration or reconstruction of existing authorised buildings other than main use, with total built up area not exceeding 1.5 times the existing built up area without altering the use.		
24	**Civil Station Expansion**		
	Survey no 34(p),104(p)&105(p) in Pathanamthitta Village		
(a)	Local/State/Central Government/ Public Sector Offices and Other Related Public Buildings. Additions and alterations to the existing buildings including addition of new blocks without altering the use. Public buildings/ Government (Local/ State/ Central) or Public Sector Offices, Buildings for public purposes/ Public amenities & services/ Public Utility Areas, Staff Quarters ,Parking Plaza, Sewage Treatment Plan, Water treatment Plant. Meeting halls, Conference rooms, and all other such incidental uses. Public and Semi-public use, Hostels, Night shelters, Guest houses /lodges, Restaurants, Canteen. Turf Courts, Open Air Theater, Indoor and Outdoor Courts, Swimming pool, Tot lots/Parks/Fair grounds, Open Air theatre, other recreational facilities, Gymnaseum, Yoga centre, Health club, Indoor Courts. Libraries, Reading Room, Day Care, Creche, Nursery Schools, Kindergartens. Any incidental uses which may be permitted with the main use. Addition, alteration or reconstruction of existing authorised buildings other than main use with total built up area not exceeding 1.5 times the existing		

	built up area without altering the use.		
25	**Mini Civil Station Expansion**		
	Survey no 218(p) in Pathanamthitta Village		
(a)	All Local/ State/ Central Government or Public Sector Offices & Establishments, Public amenities & services and Public Utility Areas. Parking Plaza, Sewage Treatment Plant, Water treatment Plant Day Care, Creche, Nursery Schools, Kindergartens. Addition, Alteration, Reconstruction, Essential Repairs, Maintenance of existing structures including Construction of New Blocks without change in use. Auditorium, Meeting halls, conference rooms, Guest House, Canteen, Library & Reading rooms , Open Gym , Nurseries/ Day Care and Crèche/ Anganwadis, Parks & Open Spaces, Parking Building, Public Utility Areas and Public Utility Buildings or Establishments. Any incidental uses which may be permitted with the main use.		
26	**General Hospital Expansion**		
	Survey no 32(p),149(p) in Pathanamthitta Village		
(a)	Local/ State/ Central Government or Public Sector Offices & Establishments. Diagnostic Centres, Hospitals, Geriatric & Palliative care centres Nurseries/ Day Care and Crèche/ Anganwadis, Library & Reading rooms, Auditorium, Open Gym Parks & Open Spaces, Parking Building, Parking plaza, Public Utility Areas and Public Utility Buildings or Establishments.		

	Addition, alteration or reconstruction of existing authorised buildings other than main use with total built up area not exceeding 1.5 times the existing built up area. Any incidental uses which may be permitted with the main use.		
27	**Proposed Industrial Estate**		
	Survey no 91(p) in Pathanamthitta Village		
(a)	Industrial estates & industrial parks, IT/ITES software units IT/ITES software units, Information technology/ ITES buildings and information technology/ITES parks Residential buildings, Residential quarters, Health, Education and any other buildings essentially incidental to Industrial Estate. Parking yards, Parking plazas, Parking lots, mechanised Parking. Solid waste management units, Water Treatment Plant, Sewage Treatment Plant, Slaughter House Other Public Utility Areas and Public Buildings. Addition, alteration or reconstruction of existing buildings with total built up area not exceeding 1.5 times the existing authorised built up area. Any incidental uses which may be permitted with the main use.		
28	**Proposed Satellite Bus Station**		
	Survey no 39(p),101(p) in Pathanamthitta Village		
(a)	All buildings and uses connected with Transportation and Communication such as Transport Terminals/ Bus Terminals/ Truck Terminals and Ancillary Structures. Bus parking area with all incidental uses such as repairing shops, Restrooms, commercial establishments, cafeterias, Restaurant,		

	Information centers, Travel plaza, Parking plaza, Travel Agencies, Online Ticket booking centers ,Ticket counter, Auto Taxi, EV Charging Station, Fuel Filling Station. Public Utility Areas Any remunerative uses attached to the transport terminals as value capture mechanism such as commercial buildings, malls, retail shops, hotels, Nurseries/ Day Care and Crèche/ Anganwadis, Coaching Centres, office spaces, Community Halls, Recreation club, auditorium, Movie halls, Exhibition halls, Art galleries, Museums, Gymnasiums, Library, Reading rooms, Lodging and dormitories, visiting lounges, One day home or "She" lodge for ladies, Offices, Night Shelters etc. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area. Any incidental uses which may be permitted with the main use.		
29	**Proposed Truck Terminal**		
	Survey no 31(p) in Pathanamthitta Village		
(a)	Truck parking area with all incidental uses such as repairing shops, restrooms, commercial establishments, cafeterias, restaurant, Lodging and dormitories, visiting lounges, Weigh bridge. Fuel Filling Station Parking plaza. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area. Any incidental uses which may be permitted with the main use.		
30	**Proposed Highway Travel Plaza**		

	Survey no 53(p) in Pathanamthitta Village		
(a)	Vehicle repairing shops, Restrooms, Commercial establishments, Cafeterias, Restaurant, Lodging and dormitories, night shelters, Visiting lounges, Automobile Workshops & Automobile Service Stations, Library, Reading rooms, Open Gym, Parks & Open Spaces, Garden, Landscaping. Parking yard, Multi-level car parking, Mechanized parking, Parking buildings/ parking plazas, Information kiosk, Electric Vehicle Charging Station. Fuel Filling Station Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area		
31	**Proposed Parking Area**		
	Survey no 35(p),41(p), 196(p), 229(p), 150(p) in Pathanamthitta Village		
(a)	Area earmarked for parking of vehicles, Parking lot/ multi-level car parking, Parking plaza, and any other activity essentially incidental to Parking area. Comfort station, Electric Vehicle Charging Station. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area		
32	**Proposed Urban pulse Hub**		
	Survey no 160(p),229(p) in Pathanamthitta Village		
(a)	All Indoor and Outdoor Courts, Swimming pools, Gymnasium / Yoga Centers / Open Gym, assembly halls, auditoriums, Library, Reading rooms and any such incidental uses without changing the character of the zone. Entertainment Venues, Free Wi-Fi Zones, jogging tracks,Exhibition halls, Open air theatre, Artesian emporium, Indoor stadium, Swimming pools, Comfort station etc.		

33	**Children's Park Expansion**		
	Survey no 168(p) in Pathanamthitta Village		
(a)	Open air Auditorium, Open Stage, Open Gym, Parks & Open Spaces, children's play area, Exhibition Grounds, Garden, Landscaping, Statue, Tot lots, Street Furniture, Vending kiosk, Information Kiosk Mechanised Parking, Parking Yard, Auto/Taxi stands, Bus Bays, Public Utility Areas and Public Utility Buildings Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area		
34	**Proposed Vanchipoyka Waterfalls Viewing Deck**		
	Survey no 54(p) in Pathanamthitta Village		
(a)	Watch tower, Viewing gallery, Viewing deck and any incidental uses to Vanchipoyka Waterfalls Project. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area without change in use.		
35	**Proposed Riverview Cornish Park**		
	Survey no 39(p),40(p),56(p) &57(p) in Pathanamthitta Village		
(a)	Parks play grounds, pathways, Open space, Non-Motorised Transport (NMT) Infrastructural facilities, swimming pool, Hanging bridge, open air theatres, theme parks and parking, Garden, Eco-tourism Infrastacture Facilities, Green houses, Plant nursery, Pump House, sewage treatment plants, water storage and treatment plants, children's play area, ancillary and supporting uses related to eco-tourism. Addition, alteration or reconstruction of existing authorised buildings with		

	total built up area not exceeding 1.5 times without change in use.		
36	**Proposed Workation Farm Tourism Zone**		
	Survey no 79(p),80(p),81(p),105(p),106(p),107(p),108(p), 139(p),140(p) & 150(p) in Pathanamthitta Village		
(a)	Office space for start-up incubators, Offices, IT/ ITES Software units, Meeting halls and conference rooms, auditorium Residences, Public Utility areas and buildings, Guest Houses, Camping Sites, Residential Cottages, Homestays, Lodging and dormitories, Commercial establishments, restaurants ,parking plaza and any such incidental uses without changing the character of the zone. Tourism information centre, Souvenir shop, Retail outlet of handy crafts, Comfort station, Lodging and dormitories, visiting lounges, park, playground, open air auditorium, Farm tourism experience centers, Pond, pet station, self-point Tree house, Yoga center, meditation center, Tot Lots/Parks/Play Grounds, Fair Grounds, Zoological, and Botanical Gardens/Bird Sanctuary, Camping Site, Swimming Pools, Exhibition Centers & Art Gallery, recreational clubs. garden, eco-tourism activities, Green houses, Plant nursery, Pump House, sewage treatment plants, water storage and treatment plants, children‘s play area and any such incidental uses without changing the character of the zone. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times without change in use.		
37	**Proposed Integrated Farm Tourism Zone**		
	Survey no 123 (p),124(p),125(p),126(p),127(p), & 128 (p) in Pathanamthitta Village		
(a)	Farm tourism experience centers, Pond, pet station, Selfie points, Tree house, Yoga center, meditation center etc., and all other incidental use for the main use .		

	Tot Lots/Parks/Play Grounds, Fair Grounds, Open-air Theatre, Zoological, and Botanical Gardens/Bird Sanctuary, Camping Site, Swimming Pools, Exhibition Centers & Art Gallery, recreational clubs. garden, eco-tourism infrastructure facilities, Green houses, Plant nursery, Pump House, sewage treatment plants, water storage and treatment plants, children‘s play area, ancillary and supporting uses related to tourism. Tourism information centre, art gallery, souvenir shop, retail outlet of handy crafts, comfort station, Lodging and dormitories, visiting lounges, Clock rooms and all other incidental recreational facilities. Public Utility areas and buildings, Guest Houses, Camping Sites, Residential Cottages, Homestays. Auditorium, lodging and dormitories and all other such incidental uses. Park, Parking plaza Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area.		
38	**Proposed Fair Ground**		
	Survey no 163(p),164(p),223(p) & 224(p) in Pathanamthitta Village		
(a)	Fair Grounds, Parks & playgrounds, Open-air Theatre Weakly market, Food truck, Vending on wheels Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area.		
39	**Proposed Green Islet/ Pachathuruthu/ Urban Forestry /Miyawaki Forest**		
	Survey no 91(p),93(p) &94(p) in Pathanamthitta Village		
(a)	Urban Forests / Mini Forests, Parks and Open Green Spaces, Native Plantation Garden, Rain Gardens / Bioswales, Eco-Trails and Nature Walks, Natural or artificial ponds, lakes, Biodiversity Parks or Eco-Islands, Buffer		

	Zones / Green Buffers, Tree Preservation Areas, Recreational Forest Zones, Organic Garden or Herbal Garden Plots, Carbon Sequestration Zones, Gazebos, watchtowers, Man-made mini-forests, eco-toilets, or information kiosks made from sustainable materials without changing the character of the zone. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area.		
40	**Proposed Echo Quarry Water Garden Park**		
	Survey no 112(p) in Pathanamthitta Village		
(a)	Planned Green space, Walk ways, recreational spaces, Rock park, watch tower, viewing gallery, Rock garden, Butterfly and bird gardens, Open-air Theatre, Amphitheatre, Open stage, Children's play area, Eco-tourism Infrastacture, Yoga centers, and all other incidental use for the main use. Open library, First aid stations, hooking platform, pump house, side protection walls, fish farm, Parking and any incidental uses to the main use like cafeteria and food court without changing the character of the zone. Boat jetties, bridges, suspension bridges, retaining walls, fish landing centres, water landings, Bathing Ghats. Addition, alteration or reconstruction of existing authorised buildings with total built up area not exceeding 1.5 times the existing built up area		

40.3 Zoning Regulations for Flood Prone Zones

Flood prone Zones: These are areas which are likely to be exposed to floods and are classified into three categories (High, Medium and Low) based on the intensity of likely Floods in the design scenario of 50-year return period. As published by KSDMA Flood hazard map is part of the proposed land use map and shall be read as an overlay.

Low Flood prone zones are areas likely to be inundated to a depth up to 0.6m in the design flood scenario.

Moderate Flood prone zones are areas likely to be inundated to a depth of more than 0.6m and up to 1.5m in the design flood scenario.

High Flood prone zones are areas likely to be inundated to a depth of more than 1.5m in the design flood scenario.

For the purpose of reducing Disaster Risk, proposed land use and the developments in various flood prone zones are further modified by Flood prone zone overlay regulations in Table 40-2 and the recommendations in Table 40-3. These additional regulations are aimed at reducing damages and losses to people and assets in the hazard prone areas. The Overlay regulations have to be read in conjunction with the zoning regulations in Table 40-1 and wherever a conflict occurs the additional regulations in the Hazard prone zone overlay shall prevail.

Table 40-2 Zoning regulations for flood prone Zones

	Permitted Uses in Flood Prone Zones
1	All existing authorized uses will be permitted to continue including their maintenance and strengthening works.
2	Height of compound wall shall not exceed 1.2 meter and no sharp-edged projections shall be fixed on the compound walls or gates, to facilitate easy evacuation.
3	No portion of open space shall be paved. Only 25% of the total open space in the plot shall be paved if required, with suitable materials enabling percolation of rain water
4	Construction/ Reconstruction of toilets with Septic tanks having control valves/ non return valves and inspection chamber is mandatory for every new building, if sewerage connectivity is not available.
5	All new constructions/ additions to upper floors shall have an open balcony /open passage/a terrace in the upper floors or an open stair connecting the upper floors to the ground facing the yard abutting the adjoining street to facilitate easy evacuation.
6	All new buildings or addition of upper floors shall have a minimum of 50% of the roof terrace kept open to sky, which shall be accessible to facilitate easy evacuation.
7	Electrical points shall be provided above 1.2 m from finished floor level
8	Essential utility services with suitable flood proofing
9	Agriculture, horticulture, pisci culture, fodder cultivation, and other types of cultivation including social forestry. Ancillary structures to the above including pump house, well, irrigation pond and Granary for temporary storage.
10	Parks and other organised recreational open areas with essential ancillary structures.
	Low Flood Prone Zone: (inundation depth up to 0.6m)
i	Constructions in respective land use zones as in the Proposed Land Use Plan

ii	Basement floors are not allowed for any use other than parking.
iii	All new buildings or additions in the ground floor shall be built on a minimum plinth height of 1.2 m from the surrounding ground level.
	Moderate Flood Prone Zone: (inundation depth greater than 0.6m and up to 1.5m)
i	Constructions in respective land use zones as in the Proposed Land Use Plan.
ii	Basement floors are not allowed for any use other than parking.
ii	All new buildings or additions in the ground floor shall be built on stilt or a minimum plinth height of 2.1 m from the surrounding ground level.
iv	Coverage shall be limited to 60% for buildings having building footprint above 100sqm.
	High Flood Prone Zone: (inundation depth greater than 1.5)
i	Expansion of existing buildings to upper floors under permitted uses in Part B of the respective land use zone will be allowed.
ii	Constructions in respective land use zones as in the Proposed Land Use Plan subject to the condition that all new buildings or additions in the ground floor shall be built on stilt or a minimum plinth height of 3m from the surrounding ground level
iii	Basement floors are not allowed for any use.
iv	Coverage shall be limited to 60% for buildings having building footprint above 100sqm.

40.4 Regulations Recommended for Low Land Slide Prone Zones

Following additional Zoning regulations are recommended for landslide prone zones. These Overlay regulations have to be read in conjunction with the zoning regulations in Table 40-1.

Table 40-3 Recommendations for landslide prone zones

	Guidelines for Low Land Slide Prone Zones
1	Avoid excessive earth cutting and preserve natural ground level as much as possible. Limit cutting and filling in such a way that cutting do not exceed 1.5m vertical cut without a retaining structure
2	Build with terrain and adapt design to slope instead of fattening the land
3	Avoid construction on slopes exceeding 20^0 without proper slope stabilization techniques. Ensure safe slope angle and step cutting where unavoidable
4	Maintain natural drainage paths and never block or divert streams
5	Retain natural vegetation as far as possible and encourage deep rooted native plants on slopes
6	Align roads and paths along contours, avoid steep gradients.
7	Avoid deep basements or large underground constructions in these areas
8	No portion of open space shall be paved. Only 25% of the total open space in the plot shall be paved if required, with suitable materials enabling percolation of rain water

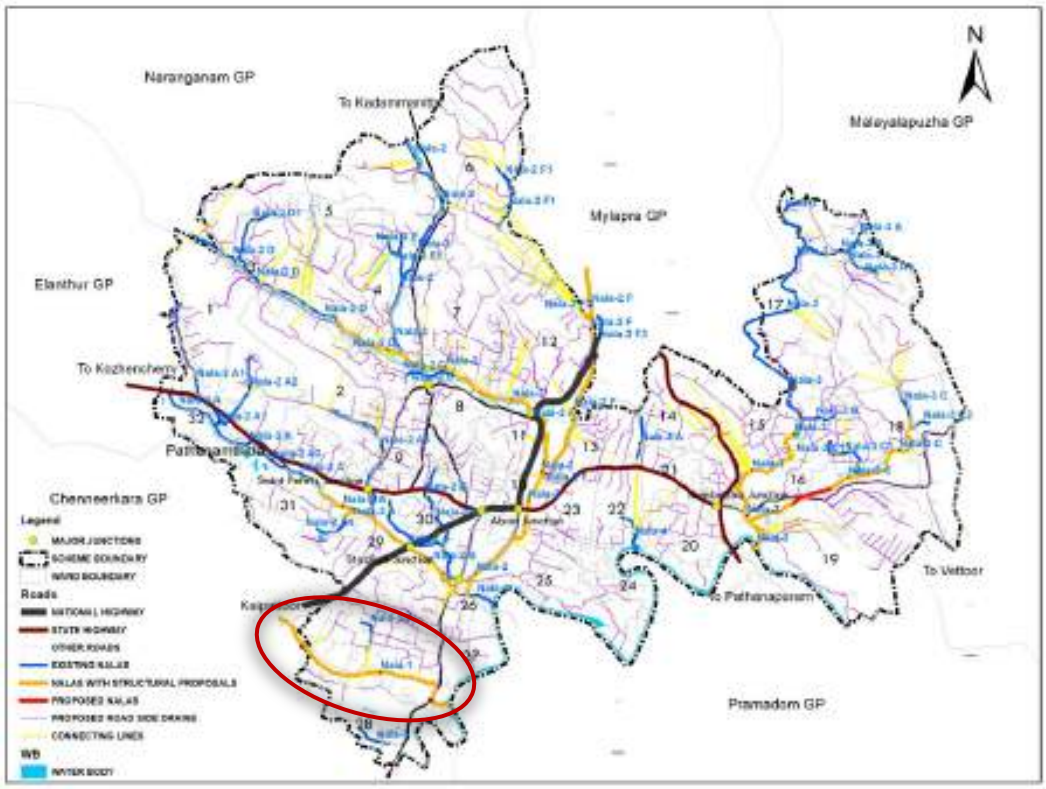
ANNEXURE 37.1
PROPOSED DRAINAGE PLAN

Restoration of Existing Nalas

Nala 1

Nala–1 is proposed to function as the principal stormwater carrier draining toward the Achankovil River. The proposed interventions focus on converting the existing channel into a uniformly engineered corridor capable of safely conveying high runoff volumes generated from upstream urban catchments. The nala will be provided with standardized rectangular sections along deficient reaches, with channel dimensions progressively increasing toward the outfall to accommodate cumulative discharge. Brick masonry lining is proposed to improve hydraulic efficiency, reduce erosion, and facilitate maintenance activities.

Special attention is given to maintaining uninterrupted hydraulic connectivity throughout the alignment. Existing constrictions and irregular transitions will be corrected through regrading and invert adjustments. The outfall zone near OF–1 will be protected against scouring and backwater impacts through suitable energy dissipation and bank protection arrangements. Provision for regular inspection and desilting access is also integrated into the proposal to support long-term operational reliability.

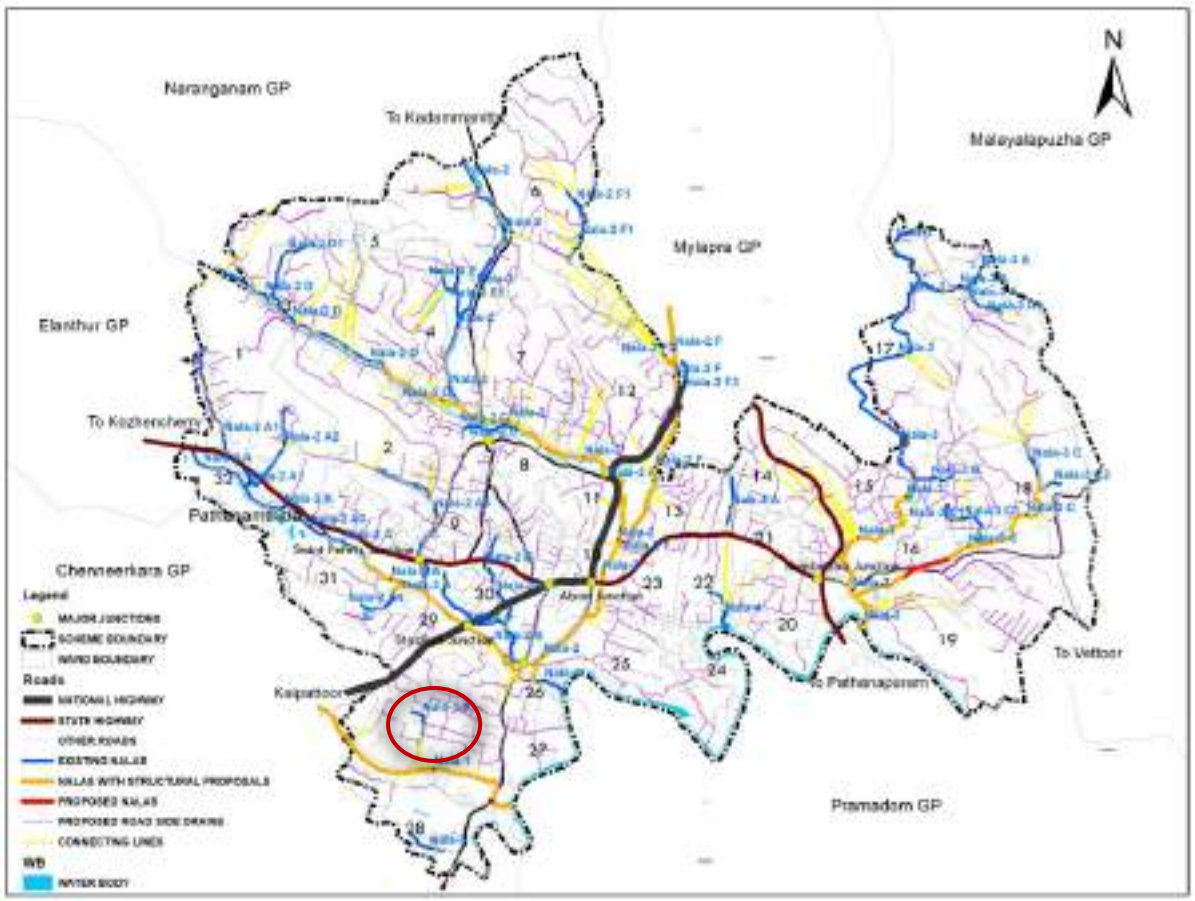


Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–583 to CB–584	99.5	5.2	1.2	Rectangular	Brick in mortar
CB–584 to CB–585	99.6	5.5	1.25	Rectangular	Brick in mortar
CB–585 to CB–586	94.3	5.5	1.25	Rectangular	Brick in mortar
CB–586 to CB–587	93.0	5.5	1.25	Rectangular	Brick in mortar
CB–587 to CB–588	93.1	5.5	1.25	Rectangular	Brick in mortar
CB–588 to CB–589	90.3	5.5	1.3	Rectangular	Brick in mortar
CB–589 to CB–590	89.9	5.5	1.3	Rectangular	Brick in mortar
CB–590 to CB–591	97.8	5.5	1.3	Rectangular	Brick in mortar
CB–591 to CB–599	98.7	5.6	1.3	Rectangular	Brick in mortar
CB–599 to CB–598	98.5	5.6	1.3	Rectangular	Brick in mortar
CB–598 to CB–597	99.6	5.6	1.3	Rectangular	Brick in mortar
CB–597 to CB–596	99.7	5.6	1.3	Rectangular	Brick in mortar
CB–596 to CB–595	99.2	7.45	1.3	Rectangular	Brick in mortar
CB–595 to CB–594	99.5	8.6	1.3	Rectangular	Brick in mortar
CB–594 to CB–618	92.5	8.6	1.3	Rectangular	Brick in mortar
CB–618 to CB–601	94.9	8.6	1.3	Rectangular	Brick in mortar
CB–601 to CB–602	97.4	8.6	1.3	Rectangular	Brick in mortar
CB–602 to CB–603	96.1	8.6	1.3	Rectangular	Brick in mortar
CB–603 to CB–605	99.8	8.6	1.3	Rectangular	Brick in mortar
CB–605 to CB–604	99.5	8.7	1.3	Rectangular	Brick in mortar
CB–604 to OF–1	21.4	8.7	1.3	Rectangular	Brick in mortar

Nala 1A

Since Nala–1A already possesses adequate carrying capacity, the proposal emphasizes preservation and operational upkeep rather than structural reconstruction. The channel will continue to function in its present form, with routine desilting and vegetation management undertaken to maintain free flow conditions. Localized cleaning and removal of accumulated debris will help prevent obstruction during intense rainfall events.

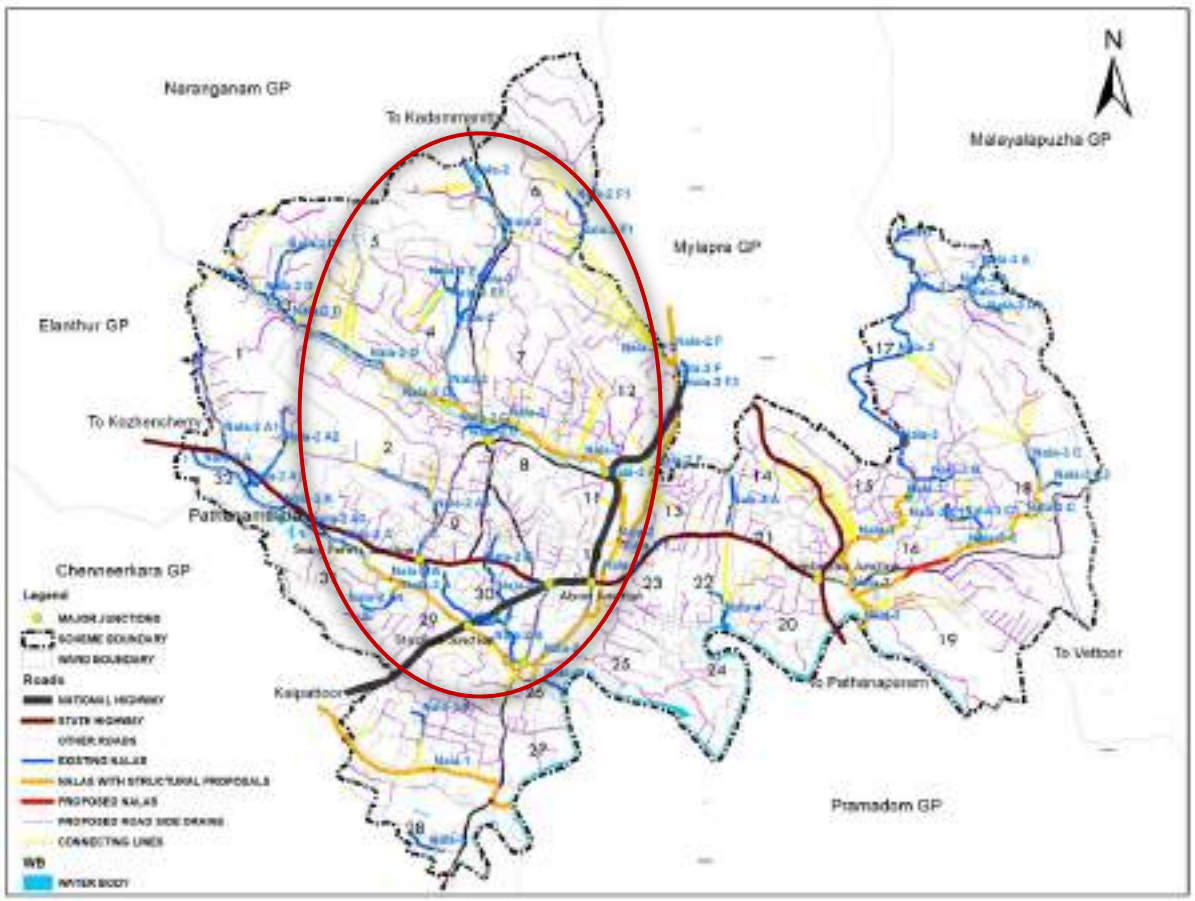
To preserve hydraulic efficiency over time, encroachment control measures and periodic monitoring of bed levels are recommended. Minor reshaping of isolated stretches may be carried out where uneven flow patterns or localized stagnation are observed.



Nala 2

Nala–2 serves as one of the major drainage spines within the town and therefore requires a combination of conservation and structural upgrading measures. Upstream reaches that presently function as stable natural streams will largely be retained in their existing condition, with only environmental maintenance and corridor protection measures proposed. Downstream reaches carrying higher runoff volumes will be upgraded into engineered rectangular channels sized according to hydraulic design requirements.

The proposal includes widening and deepening of critical stretches, replacement or upgrading of undersized cross-drainage structures, and stabilization of vulnerable banks. Near the terminal reaches, the channel transitions into larger sections to safely convey peak discharge toward the Achankovil River. The final outfall reach, which presently exhibits hydraulic stress, will require capacity enhancement and strengthening measures to prevent overflow and erosion during design storm events.



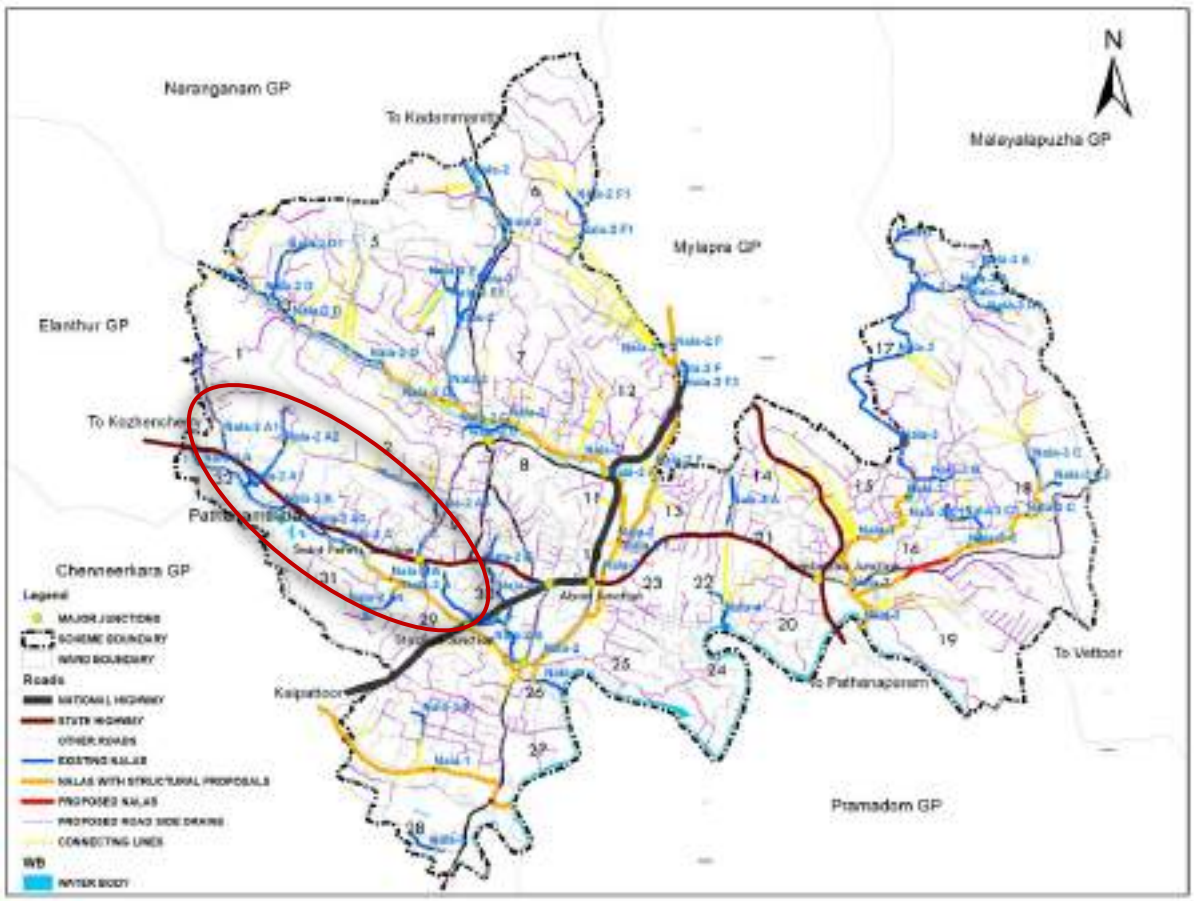
Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–328 to CB–329	0.2	—	—	Irregular Channel	Natural stream, clean
CB–329 to CB–330	1.0	—	—	Irregular Channel	Natural stream, clean
CB–330 to CB–327	0.6	—	—	Irregular Channel	Natural stream, clean
CB–327 to CB–616	2.9	—	—	Irregular Channel	Natural stream, clean
CB–616 to CB–331	11.9	—	—	Irregular Channel	Natural stream, clean
CB–331 to CB–817	7.3	—	—	Irregular Channel	Natural stream, clean
CB–817 to CB–325	3.1	—	—	Irregular Channel	Natural stream, clean
CB–325 to CB–326	3.7	—	—	Irregular Channel	Natural stream, clean
CB–326 to CB–333	5.4	—	—	Irregular Channel	Natural stream, clean
CB–333 to CB–334	11.0	—	—	Irregular Channel	Natural stream, clean
CB–334 to CB–335	21.5	—	—	Irregular Channel	Natural stream, clean
CB–335 to CB–336	10.4	—	—	Irregular Channel	Natural stream, clean
CB–336 to CB–337	34.1	—	—	Irregular Channel	Natural stream, clean
CB–337 to CB–338	44.0	—	—	Irregular Channel	Natural stream, clean
CB–338 to CB–339	1.4	—	—	Irregular Channel	Natural stream, clean
CB–339 to CB–340	47.0	—	—	Irregular Channel	Natural stream, clean
CB–340 to CB–341	18.5	—	—	Irregular Channel	Natural stream, clean
CB–341 to CB–342	83.8	—	—	Irregular Channel	Natural stream, clean
CB–342 to CB–343	72.9	—	—	Irregular Channel	Natural stream, clean
CB–343 to CB–344	89.0	—	—	Irregular Channel	Natural stream, clean
CB–344 to CB–345	78.2	—	—	Irregular Channel	Natural stream, clean
CB–345 to CB–346	6.2	—	—	Irregular Channel	Natural stream, clean
CB–346 to CB–347	74.4	—	—	Irregular Channel	Natural stream, clean
CB–347 to CB–121	48.5	—	—	Irregular Channel	Natural stream, clean
CB–121 to CB–348	99.4	6.4	1.7	Rectangular Channel	Brick in mortar
CB–348 to CB–349	99.7	6.5	1.75	Rectangular Channel	Brick in mortar
CB–349 to CB–350	99.9	6.6	1.75	Rectangular Channel	Brick in mortar
CB–350 to CB–351	99.3	6.7	1.75	Rectangular Channel	Brick in mortar
CB–351 to CB–352	99.5	6.7	1.75	Rectangular Channel	Brick in mortar

CB–352 to CB–353	96.3	6.7	1.8	Rectangular Channel	Brick in mortar
CB–353 to CB–354	99.5	6.7	1.85	Rectangular Channel	Brick in mortar
CB–354 to CB–355	96.5	6.7	1.9	Rectangular Channel	Brick in mortar
CB–355 to CB–356	97.8	6.7	1.95	Rectangular Channel	Brick in mortar
CB–356 to CB–357	94.7	6.7	2.0	Rectangular Channel	Brick in mortar
CB–357 to CB–358	94.8	6.7	2.0	Rectangular Channel	Brick in mortar
CB–358 to CB–359	95.4	6.7	2.0	Rectangular Channel	Brick in mortar
CB–359 to CB–360	95.5	6.7	2.0	Rectangular Channel	Brick in mortar
CB–360 to CB–361	97.5	6.7	2.0	Rectangular Channel	Brick in mortar
CB–361 to CB–362	99.1	6.7	2.0	Rectangular Channel	Brick in mortar
CB–362 to CB–363	97.4	6.7	2.0	Rectangular Channel	Brick in mortar
CB–363 to CB–364	99.3	7.0	2.0	Rectangular Channel	Brick in mortar
CB–364 to CB–365	94.2	7.0	2.0	Rectangular Channel	Brick in mortar
CB–365 to CB–366	97.6	7.0	2.0	Rectangular Channel	Brick in mortar
CB–366 to CB–367	97.5	7.0	2.0	Rectangular Channel	Brick in mortar
CB–367 to CB–368	97.8	7.0	2.0	Rectangular Channel	Brick in mortar
CB–368 to CB–369	98.6	11.8	2.2	Rectangular Channel	Brick in mortar
CB–369 to CB–370	98.4	11.8	2.2	Rectangular Channel	Brick in mortar
CB–370 to CB–371	99.8	11.8	2.2	Rectangular Channel	Brick in mortar
CB–371 to CB–372	98.2	11.9	2.2	Rectangular Channel	Brick in mortar
CB–372 to CB–373	66.5	11.9	2.2	Rectangular Channel	Brick in mortar
CB–373 to CB–374	99.9	14.5	2.2	Rectangular Channel	Brick in mortar
CB–374 to CB–375	82.5	14.5	2.2	Rectangular Channel	Brick in mortar
CB–375 to CB–376	82.7	14.5	2.2	Rectangular Channel	Brick in mortar
CB–376 to CB–377	83.5	14.5	2.2	Rectangular Channel	Brick in mortar
CB–377 to CB–378	82.1	14.5	2.2	Rectangular Channel	Brick in mortar
CB–378 to CB–379	53.9	14.5	2.2	Rectangular Channel	Brick in mortar
CB–379 to CB–468	22.5	14.5	2.2	Rectangular Channel	Brick in mortar
CB–468 to CB–381	22.5	—	—	Irregular Channel	Natural stream, clean
CB–381 to CB–69	13.1	—	—	Irregular Channel	Natural stream, clean
CB–69 to CB–382	29.3	—	—	Irregular Channel	Natural stream, clean
CB–382 to CB–383	59.0	—	—	Irregular Channel	Natural stream, clean
CB–383 to OF–2	116.7	—	—	Irregular Channel	Natural stream, clean

Nala 2A

The proposed measures for Nala–2A focus on correcting localized hydraulic deficiencies while retaining stable natural reaches wherever feasible. Several stretches presently exceed permissible carrying capacity and therefore require substantial channel improvement works. Rectangular lined sections are proposed in these reaches to establish dependable flow conditions and improve conveyance efficiency.

In contrast, upstream segments with low flow intensity will remain largely undisturbed except for periodic maintenance and cleaning. The proposal also includes bank strengthening and longitudinal profile correction to avoid abrupt hydraulic transitions between natural and engineered reaches.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–521 to CB–516	1.0	—	—	Irregular Channel	Natural stream, clean
CB–516 to CB–517	2.4	—	—	Irregular Channel	Natural stream, clean
CB–517 to CB–518	4.4	—	—	Irregular Channel	Natural stream, clean
CB–518 to CB–519	0.4	—	—	Irregular Channel	Natural stream, clean
CB–519 to CB–449	1.5	—	—	Irregular Channel	Natural stream, clean
CB–449 to CB–448	1.7	—	—	Irregular Channel	Natural stream, clean
CB–448 to CB–724	4.5	—	—	Irregular Channel	Natural stream, clean
CB–724 to CB–447	37.7	—	—	Irregular Channel	Natural stream, clean
CB–447 to CB–816	6.2	—	—	Irregular Channel	Natural stream, clean
CB–816 to CB–445	4.2	—	—	Irregular Channel	Natural stream, clean
CB–445 to CB–444	16.4	—	—	Irregular Channel	Natural stream, clean
CB–444 to CB–443	9.3	—	—	Irregular Channel	Natural stream, clean
CB–443 to CB–442	24.6	—	—	Irregular Channel	Natural stream, clean
CB–442 to CB–441	12.8	—	—	Irregular Channel	Natural stream, clean
CB–441 to CB–440	9.9	—	—	Irregular Channel	Natural stream, clean
CB–440 to CB–439	27.0	—	—	Irregular Channel	Natural stream, clean
CB–439 to CB–438	9.2	—	—	Irregular Channel	Natural stream, clean
CB–438 to CB–437	8.5	—	—	Irregular Channel	Natural stream, clean
CB–437 to CB–436	18.4	—	—	Irregular Channel	Natural stream, clean
CB–436 to CB–435	160.2	—	—	Rectangular Channel	Brick in mortar
CB–435 to CB–434	224.4	6.0	1.6	Rectangular Channel	Brick in mortar
CB–434 to CB–433	90.1	6.0	1.65	Rectangular Channel	Brick in mortar
CB–433 to CB–431	532.2	6.0	1.62	Rectangular Channel	Brick in mortar
CB–431 to CB–430	100.3	6.0	1.62	Rectangular Channel	Brick in mortar
CB–430 to CB–632	837.9	6.0	1.65	Rectangular Channel	Brick in mortar
CB–632 to CB–429	397.3	6.0	1.65	Rectangular Channel	Brick in mortar
CB–429 to CB–428	94.3	6.5	1.65	Rectangular Channel	Brick in mortar
CB–428 to CB–427	49.6	6.5	1.65	Irregular Channel	Natural stream, clean
CB–427 to CB–426	49.6	6.5	1.65	Irregular Channel	Natural stream, clean

CB–426 to CB–425	165.1	6.6	1.65	Rectangular Channel	Brick in mortar
CB–425 to CB–424	79.2	6.6	1.65	Rectangular Channel	Brick in mortar
CB–424 to CB–423	191.6	6.7	1.65	Rectangular Channel	Brick in mortar
CB–423 to CB–422	874.2	6.7	1.65	Rectangular Channel	Brick in mortar
CB–422 to CB–421	291.8	6.7	1.70	Rectangular Channel	Brick in mortar
CB–421 to CB–819	46.1	6.7	1.70	Irregular Channel	Natural stream, clean
CB–819 to CB–385	90.4	—	—	Irregular Channel	Natural stream, clean

Nala 2A1

Nala–2A1 functions efficiently under existing conditions and therefore requires only low-impact maintenance interventions. The proposal prioritizes sustaining uninterrupted runoff conveyance through periodic removal of deposited silt and vegetation growth. Preservation of the natural stream profile is considered important in this reach to maintain environmental compatibility and minimize unnecessary construction activity.

Nala 2A2

Nala–2A2 is proposed to be retained in its existing form as the channel presently demonstrates satisfactory hydraulic performance under the design discharge. The proposed measures therefore focus on preserving the efficiency of the drainage path through regular upkeep activities. Periodic removal of deposited silt and organic growth will be undertaken to maintain adequate flow area and avoid localized ponding during intense rainfall events. Protection of the channel margins from dumping and encroachment is also recommended to ensure uninterrupted runoff conveyance. Minor corrections to bed levels may be carried out at isolated locations where uneven flow conditions are observed.

Nala 2A3

The proposal for Nala–2A3 emphasizes sustaining the present carrying capacity of the stream without introducing major structural modifications. Since the existing section is capable of accommodating the design runoff, only maintenance-oriented interventions are considered necessary. Cleaning of accumulated debris, trimming of excessive vegetation, and monitoring of vulnerable bank sections are recommended to preserve flow continuity toward the outfall. Selective reshaping of shallow depositional pockets may also be undertaken to improve local drainage efficiency.

Nala 2A4

Nala–2A4 requires selective downstream strengthening to improve discharge conditions near the outfall. While the upper reaches are hydraulically stable and need only routine maintenance, the downstream terminal segment will be reconstructed as a concrete-lined rectangular section to eliminate localized flow restriction.

The proposed downstream improvements will enhance discharge capacity, improve bank stability, and reduce erosion risk at the outlet. Additional protection works are

recommended near the outfall to safeguard against scour and reverse flow impacts during high river stages.

Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–760 to CB–761	6.3	—	—	Irregular Channel	Natural stream, clean
CB–761 to CB–762	13.7	—	—	Irregular Channel	Natural stream, clean
CB–762 to CB–763	15.3	—	—	Irregular Channel	Natural stream, clean
CB–763 to CB–764	6.2	—	—	Irregular Channel	Natural stream, clean
CB–764 to O–401	85.5	2.0	1.0	Rectangular Channel	Concrete

Nala 2A5

Nala–2A5 is proposed to continue functioning as a natural secondary drainage corridor with interventions limited to operational maintenance. The channel alignment will be preserved while ensuring that the effective flow section remains unobstructed throughout the monsoon season. Preventive measures such as routine inspection, desilting, and removal of waste materials are recommended to maintain dependable stormwater conveyance. Attention is also proposed for maintaining smooth bed gradients in low-slope reaches where stagnant flow conditions could potentially develop.

Nala 2B

The proposed approach for Nala–2B focuses on conserving the existing drainage characteristics while improving long-term operational reliability through periodic maintenance. Since hydraulic adequacy has already been achieved, no widening or lining works are proposed. Instead, the channel will be managed through scheduled cleaning activities and continuous monitoring of obstruction-prone locations. Preservation of the natural drainage corridor and prevention of unauthorized filling or encroachment form an important component of the proposal.

Nala 2B1

Nala–2B1 is intended to function as a stable feeder channel conveying runoff toward its designated outfall without requiring structural alteration. The proposed measures are therefore centered on sustaining the current hydraulic behavior of the nala through low-impact interventions. Seasonal desilting and clearance of vegetation will help maintain free flow conditions, while localized maintenance of channel edges will reduce the possibility of bank deterioration. The proposal also recommends safeguarding the outfall reach from obstruction and erosion.

Nala 2C

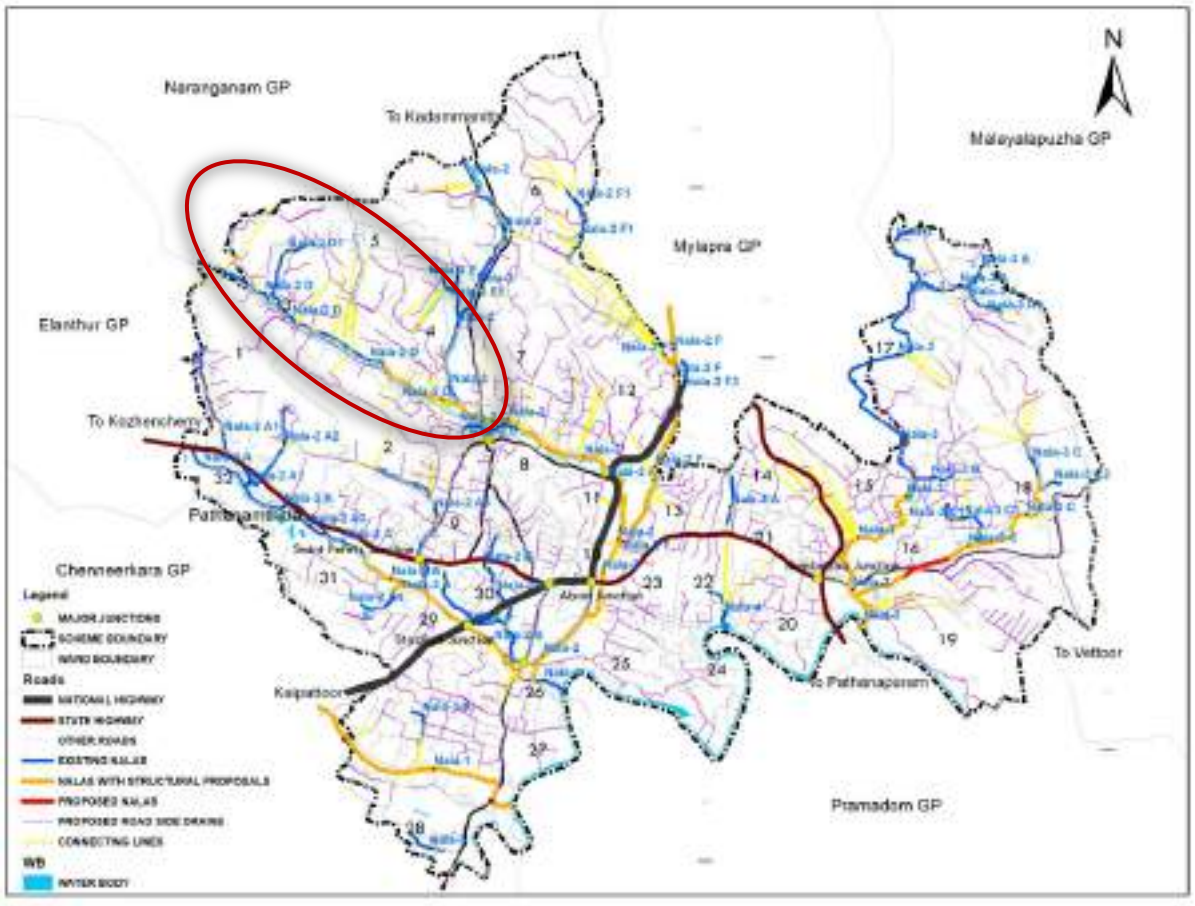
For Nala–2C, the recommended interventions are primarily preventive in nature, aimed at maintaining the present efficiency of the stream corridor. The channel will remain largely undisturbed structurally, as the existing section is adequate to carry the anticipated runoff. Maintenance measures such as debris removal, vegetation management, and periodic inspection of vulnerable stretches are proposed to ensure

continued hydraulic performance. Particular emphasis is placed on preserving unobstructed discharge conditions near the terminal outfall.

Nala 2D

Nala–2D is proposed as a partially engineered drainage corridor where structurally improved downstream reaches are integrated with relatively stable natural upstream sections. The downstream reaches beginning near CB–556 will be transformed into concrete-lined channels with standardized geometry to accommodate increasing runoff accumulation.

The proposal includes channel reshaping, sidewall stabilization, and correction of uneven invert levels to ensure smooth hydraulic transition along the full alignment. Existing natural stretches upstream will be retained with only maintenance-oriented interventions so that unnecessary alteration of stable reaches is avoided.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–580 to CB–581	0.1	—	—	Irregular Channel	Natural stream, clean
CB–581 to CB–582	97.7	—	—	Irregular Channel	Natural stream, clean
CB–582 to CB–571	44.5	—	—	Irregular Channel	Natural stream, clean
CB–571 to CB–109	16.5	—	—	Irregular Channel	Natural stream, clean

CB–109 to CB–569	72.9	—	—	Irregular Channel	Natural stream, clean
CB–569 to CB–567	93.0	—	—	Irregular Channel	Natural stream, clean
CB–567 to CB–129	90.5	—	—	Irregular Channel	Natural stream, clean
CB–129 to CB–723	15.2	—	—	Irregular Channel	Natural stream, clean
CB–723 to CB–564	35.2	—	—	Irregular Channel	Natural stream, clean
CB–564 to CB–563	74.4	—	—	Irregular Channel	Natural stream, clean
CB–563 to CB–562	32.1	—	—	Irregular Channel	Natural stream, clean
CB–562 to CB–561	22.7	—	—	Irregular Channel	Natural stream, clean
CB–561 to CB–560	33.7	—	—	Irregular Channel	Natural stream, clean
CB–560 to CB–559	83.8	—	—	Irregular Channel	Natural stream, clean
CB–559 to CB–558	47.5	—	—	Irregular Channel	Natural stream, clean
CB–558 to CB–557	75.2	—	—	Irregular Channel	Natural stream, clean
CB–557 to CB–556	75.4	—	—	Irregular Channel	Natural stream, clean
CB–556 to CB–555	80.2	4.0	1.5	Rectangular Channel	Concrete
CB–555 to CB–554	54.3	4.0	2.0	Rectangular Channel	Concrete
CB–554 to CB–553	55.9	4.0	2.0	Rectangular Channel	Concrete
CB–553 to CB–552	59.1	4.0	2.0	Rectangular Channel	Concrete
CB–552 to CB–139	58.3	4.0	2.0	Rectangular Channel	Concrete
CB–139 to CB–469	60.7	4.0	2.0	Rectangular Channel	Concrete
CB–469 to CB–121	65.6	4.0	2.0	Rectangular Channel	Concrete

Nala 2D1

Nala–2D1 is proposed to be maintained as a naturally functioning drainage reach with emphasis on preserving stable flow conditions throughout its alignment. Since the nala currently operates within acceptable hydraulic limits, the intervention strategy is limited to routine maintenance and corridor management. Accumulated silt deposits and blockages will be cleared periodically to sustain effective runoff conveyance. Minor stabilization measures may also be introduced in erosion-prone locations to protect the channel profile and adjacent land.

Nala 2E

The proposal for Nala–2E prioritizes conservation of the existing channel geometry while ensuring reliable conveyance during storm events. As hydraulic analysis indicates sufficient carrying capacity, structural reconstruction is unnecessary. Instead, maintenance operations including periodic desilting, cleaning of obstructions, and monitoring of vegetation growth are recommended to preserve channel efficiency. Localized smoothing of the bed profile may be undertaken in flatter reaches to improve flow movement.

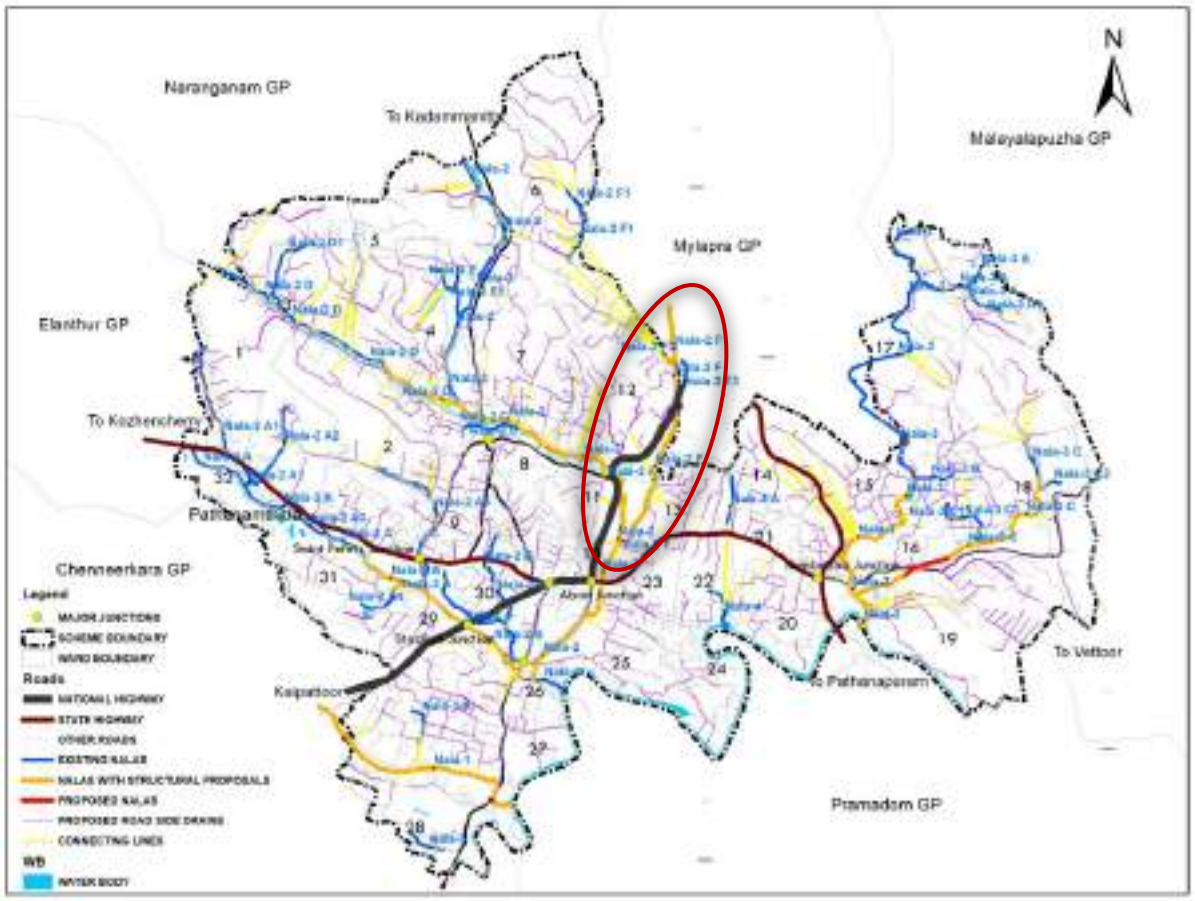
Nala 2E1

Nala–2E1 is proposed to be managed through a maintenance-based approach intended to preserve its present hydraulic adequacy. The existing natural alignment will be retained while ensuring that stormwater flow remains uninterrupted along the full length of the channel. Regular clearing of debris and protection against waste dumping are recommended to minimize flow resistance. In areas susceptible to bank instability, light stabilization measures may be introduced to prevent gradual edge erosion.

Nala 2F

Nala–2F carries significant stormwater discharge from a large urban catchment and therefore requires extensive hydraulic upgrading. The proposal introduces large rectangular lined sections through most deficient reaches, with channel widths and depths progressively adjusted according to cumulative discharge.

The upgraded system is intended to provide reliable conveyance under peak storm conditions while minimizing erosion and flow resistance. Natural stretches that presently perform adequately will remain undisturbed except for cleaning and bank protection works. The overall proposal seeks to create a continuous high-capacity drainage corridor with improved structural durability and easier maintenance access.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–495 to CB–496	99.6	8.5	1.5	Rectangular Channel	Brick in mortar
CB–496 to CB–497	99.8	8.8	1.6	Rectangular Channel	Brick in mortar
CB–497 to CB–498	98.7	8.9	1.6	Rectangular Channel	Brick in mortar
CB–498 to CB–499	98.6	8.9	1.6	Rectangular Channel	Brick in mortar
CB–499 to CB–490	95.1	9.0	1.7	Rectangular Channel	Brick in mortar
CB–490 to CB–489	49.5	9.0	2.0	Irregular Channel	Natural stream, clean
CB–489 to CB–488	49.5	9.0	2.0	Rectangular Channel	Brick in mortar
CB–488 to CB–487	49.6	9.0	2.0	Irregular Channel	Natural stream, clean
CB–487 to CB–486	56.9	9.0	2.0	Rectangular Channel	Brick in mortar
CB–486 to CB–485	62.3	9.0	2.0	Rectangular Channel	Brick in mortar
CB–485 to CB–484	63.2	9.0	2.0	Rectangular Channel	Brick in mortar
CB–484 to CB–483	63.4	9.0	2.0	Rectangular Channel	Brick in mortar
CB–483 to CB–482	64.4	9.0	2.0	Rectangular Channel	Brick in mortar
CB–482 to CB–481	65.3	9.0	2.0	Rectangular Channel	Brick in mortar

CB–481 to CB–480	88.7	9.0	2.0	Irregular Channel	Natural stream, clean
CB–480 to CB–479	91.1	9.0	2.0	Rectangular Channel	Brick in mortar
CB–479 to CB–478	90.4	9.0	2.0	Rectangular Channel	Brick in mortar
CB–478 to CB–477	93.7	9.0	2.0	Rectangular Channel	Brick in mortar
CB–477 to CB–476	94.9	9.0	2.0	Rectangular Channel	Brick in mortar
CB–476 to CB–475	92.4	9.0	2.0	Rectangular Channel	Brick in mortar
CB–475 to CB–368	94.5	9.0	2.1	Rectangular Channel	Brick in mortar

Nala 2F1

The proposed measures for Nala–2F1 focus on retaining the natural drainage function of the stream while strengthening its resilience against localized erosion. Since the channel already satisfies hydraulic requirements, no major capacity enhancement works are proposed. Maintenance activities will include periodic desilting and removal of vegetative obstructions to sustain free flow conditions. In reaches experiencing relatively higher velocities, protective treatments such as turfing or stone pitching may be introduced to improve bank stability and reduce scouring.

Nala 2F2

The improvement proposal for Nala–2F2 is limited to a short hydraulically stressed downstream reach. The upstream segment already performs satisfactorily and therefore requires only routine maintenance. The downstream reach will be reconstructed as a lined concrete channel to improve conveyance efficiency and remove localized bottlenecks.

The proposed intervention also includes slope stabilization and invert correction to ensure smooth transition between the natural upstream section and the engineered downstream portion.

Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–494 to CB–491	68.4	—	—	Irregular Channel	Natural stream, clean
CB–491 to CB–490	93.4	3.5	1.3	Rectangular Channel	Concrete

Nala 2F3

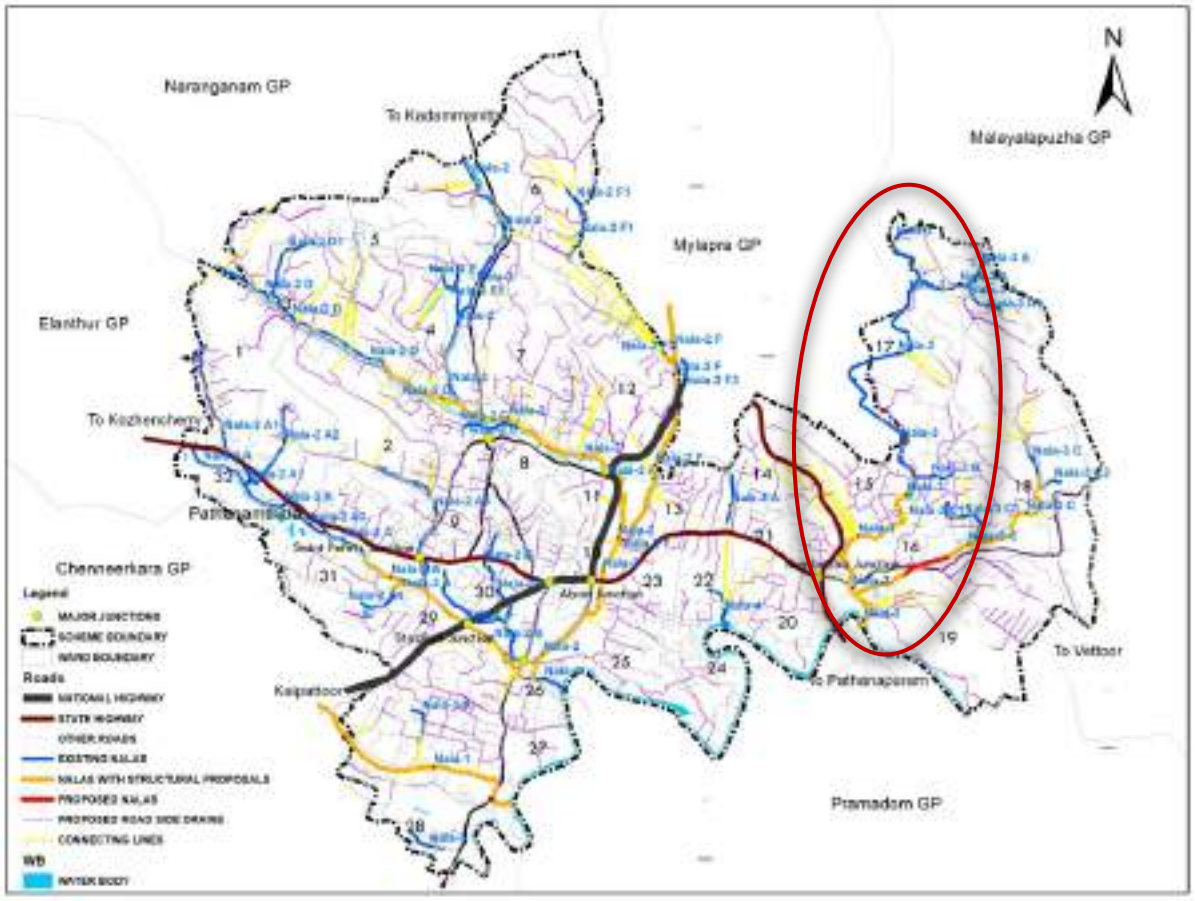
Nala–2F3 is proposed to remain as an environmentally compatible local drainage channel with interventions restricted to operational maintenance. The strategy focuses on preserving uninterrupted runoff conveyance by maintaining a clean and stable flow section. Routine inspection and removal of sediment accumulation will help sustain hydraulic efficiency, while encroachment control measures are recommended to protect the continuity of the drainage corridor. Minor maintenance of bed levels may also be carried out wherever localized stagnation is observed.

Nala 3

Nala–3 forms a major drainage outlet system discharging toward the Achankovil River and therefore requires phased upgrading along downstream reaches. Upper reaches

exhibiting satisfactory hydraulic behavior will be preserved as natural drainage channels with maintenance-based interventions only. In contrast, downstream reaches closer to the outfall will be widened and lined to safely accommodate increased runoff accumulation.

The proposal includes a combination of brick masonry and concrete-lined sections depending on site requirements, along with strengthening of banks and improvement of outfall conditions. Hydraulic continuity across cross-drainage structures will also be improved to avoid local ponding and flow obstruction.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–278 to CB–279	0.8	—	—	Irregular Channel	Natural stream, clean
CB–279 to CB–280	2.8	—	—	Irregular Channel	Natural stream, clean
CB–280 to CB–284	0.6	—	—	Irregular Channel	Natural stream, clean
CB–284 to CB–285	53.3	—	—	Irregular Channel	Natural stream, clean
CB–285 to CB–286	0.8	—	—	Irregular Channel	Natural stream, clean
CB–286 to CB–283	1.6	—	—	Irregular Channel	Natural stream, clean
CB–283 to CB–150	1.1	—	—	Irregular Channel	Natural stream, clean
CB–150 to CB–287	5.5	—	—	Irregular Channel	Natural stream, clean
CB–287 to CB–151	7.3	—	—	Irregular Channel	Natural stream, clean
CB–151 to CB–288	1.1	—	—	Irregular Channel	Natural stream, clean
CB–288 to CB–290	3.1	—	—	Irregular Channel	Natural stream, clean
CB–290 to CB–291	2.7	—	—	Irregular Channel	Natural stream, clean
CB–291 to CB–292	1.2	—	—	Irregular Channel	Natural stream, clean
CB–292 to CB–293	2.1	—	—	Irregular Channel	Natural stream, clean
CB–293 to CB–294	3.2	—	—	Irregular Channel	Natural stream, clean
CB–294 to CB–295	2.3	—	—	Irregular Channel	Natural stream, clean

CB–295 to CB–296	39.6	—	—	Irregular Channel	Natural stream, clean
CB–296 to CB–297	2.2	—	—	Irregular Channel	Natural stream, clean
CB–297 to CB–298	1.6	—	—	Irregular Channel	Natural stream, clean
CB–298 to CB–299	2.4	—	—	Irregular Channel	Natural stream, clean
CB–299 to CB–300	2.6	—	—	Irregular Channel	Natural stream, clean
CB–300 to CB–301	3.6	—	—	Irregular Channel	Natural stream, clean
CB–301 to CB–302	2.0	—	—	Irregular Channel	Natural stream, clean
CB–302 to CB–303	1.8	—	—	Irregular Channel	Natural stream, clean
CB–303 to CB–304	17.6	—	—	Irregular Channel	Natural stream, clean
CB–304 to CB–305	9.7	—	—	Irregular Channel	Natural stream, clean
CB–305 to CB–271	30.0	—	—	Irregular Channel	Natural stream, clean
CB–271 to CB–272	22.5	—	—	Irregular Channel	Natural stream, clean
CB–272 to CB–273	51.5	—	—	Irregular Channel	Natural stream, clean
CB–273 to CB–274	24.7	—	—	Irregular Channel	Natural stream, clean
CB–274 to CB–275	91.3	4.0	2.0	Rectangular Channel	Brick in mortar
CB–275 to CB–306	95.9	4.0	2.0	Rectangular Channel	Brick in mortar
CB–306 to CB–307	93.6	4.0	2.0	Rectangular Channel	Brick in mortar
CB–307 to CB–269	90.8	4.0	2.0	Rectangular Channel	Brick in mortar
CB–269 to CB–270	96.1	4.0	2.0	Rectangular Channel	Brick in mortar
CB–270 to CB–308	94.5	4.0	2.0	Rectangular Channel	Brick in mortar
CB–308 to CB–309	64.3	4.0	2.0	Rectangular Channel	Concrete
CB–309 to CB–173	58.2	4.0	2.0	Rectangular Channel	Concrete
CB–173 to CB–310	83.0	5.0	2.0	Rectangular Channel	Concrete
CB–310 to CB–311	87.4	5.0	2.0	Rectangular Channel	Concrete
CB–311 to CB–312	87.4	5.0	2.0	Rectangular Channel	Concrete
CB–312 to CB–313	83.0	5.0	2.0	Rectangular Channel	Concrete
CB–313 to CB–314	83.4	5.0	2.0	Rectangular Channel	Concrete
CB–314 to CB–315	86.0	5.0	2.0	Rectangular Channel	Concrete
CB–315 to CB–316	51.5	8.0	2.0	Rectangular Channel	Concrete
CB–316 to CB–277	72.7	8.0	2.0	Rectangular Channel	Concrete
CB–277 to CB–276	70.3	8.0	2.0	Rectangular Channel	Concrete
CB–276 to OF–3	58.3	8.0	2.0	Rectangular Channel	Concrete

Nala 3A

Nala–3A is proposed to continue functioning as a stable natural drainage link serving its contributing catchment. Since the hydraulic performance of the channel is already satisfactory, the proposal avoids unnecessary structural interventions. The recommended measures primarily include periodic cleaning of the stream bed, removal of excessive vegetation, and monitoring of low-flow reaches to prevent blockage formation. Preservation of the natural drainage environment is considered an important aspect of the proposal.

Nala 3A1

The intervention strategy for Nala–3A1 is limited to maintenance and preservation activities intended to sustain the existing flow efficiency of the channel. Routine desilting and debris removal will be undertaken to ensure uninterrupted stormwater movement during peak rainfall periods. The proposal also recommends protecting the channel edges from erosion and preventing encroachments that could reduce the effective waterway area over time.

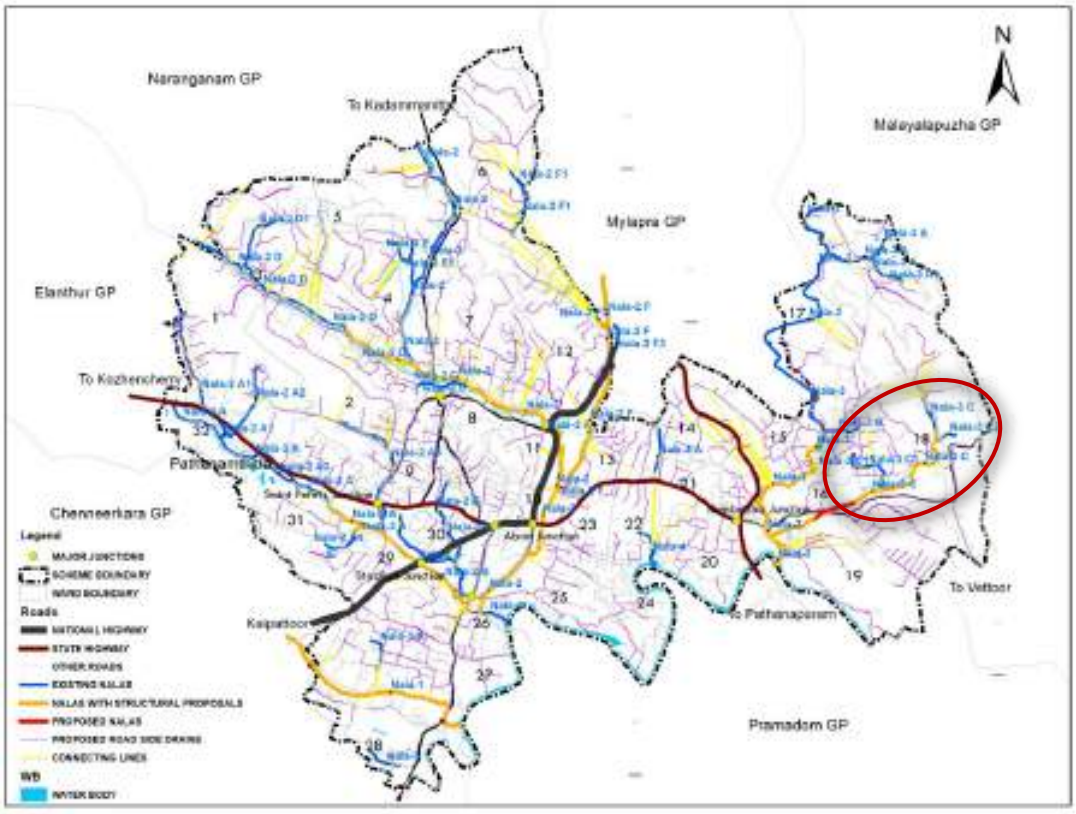
Nala 3B

Nala–3B is proposed to function as a dependable local drainage outlet with measures focused on maintaining its present hydraulic condition. Since the nala is already capable of carrying the design discharge, only maintenance-oriented activities are proposed. These include periodic cleaning, vegetation management, and inspection of the outfall zone to ensure smooth discharge. The natural channel profile will be retained to minimize disturbance to the surrounding environment.

Nala 3C

Nala–3C is proposed to operate as an intermediate drainage carrier receiving runoff from localized urban catchments. Upstream sections with low discharge intensity will continue as natural channels, while downstream reaches will be upgraded into lined concrete sections to improve carrying capacity and eliminate bottlenecks.

The proposed measures also include stabilization of channel edges and strengthening of the terminal discharge zone to ensure efficient outflow during heavy rainfall periods.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–771 to CB–772	7.8	—	—	Irregular Channel	Natural stream, clean
CB–772 to CB–773	13.7	—	—	Irregular Channel	Natural stream, clean
CB–773 to CB–774	1.2	—	—	Irregular Channel	Natural stream, clean
CB–774 to CB–775	1.4	—	—	Irregular Channel	Natural stream, clean
CB–775 to CB–815	38.8	3.0	1.0	Rectangular Channel	Concrete
CB–815 to CB–650	10.9	3.0	2.0	Rectangular Channel	Concrete
CB–650 to CB–660	18.3	3.0	2.0	Rectangular Channel	Concrete
CB–660 to CB–652	18.3	3.0	2.0	Rectangular Channel	Concrete
CB–652 to CB–651	21.3	3.0	2.0	Rectangular Channel	Concrete

CB–651 to CB–653	21.4	3.0	2.0	Rectangular Channel	Concrete
CB–653 to CB–654	21.1	3.0	2.0	Rectangular Channel	Concrete
CB–654 to CB–655	21.7	3.0	2.0	Rectangular Channel	Concrete
CB–655 to CB–656	21.6	3.0	2.0	Rectangular Channel	Concrete
CB–656 to CB–657	21.6	3.0	2.0	Rectangular Channel	Concrete
CB–657 to CB–658	27.8	3.0	2.0	Rectangular Channel	Concrete
CB–658 to CB–659	29.4	3.0	2.0	Rectangular Channel	Concrete
CB–659 to O–367	21.6	3.0	2.0	Rectangular Channel	Concrete

Nala 3C1

For Nala–3C1, the proposal emphasizes sustaining the current conveyance efficiency of the feeder channel through regular operational maintenance. The existing stream alignment will be preserved while ensuring that sediment buildup and vegetative growth do not obstruct flow. Protection of the drainage corridor from encroachment and waste disposal is also recommended to maintain uninterrupted hydraulic connectivity toward the outfall.

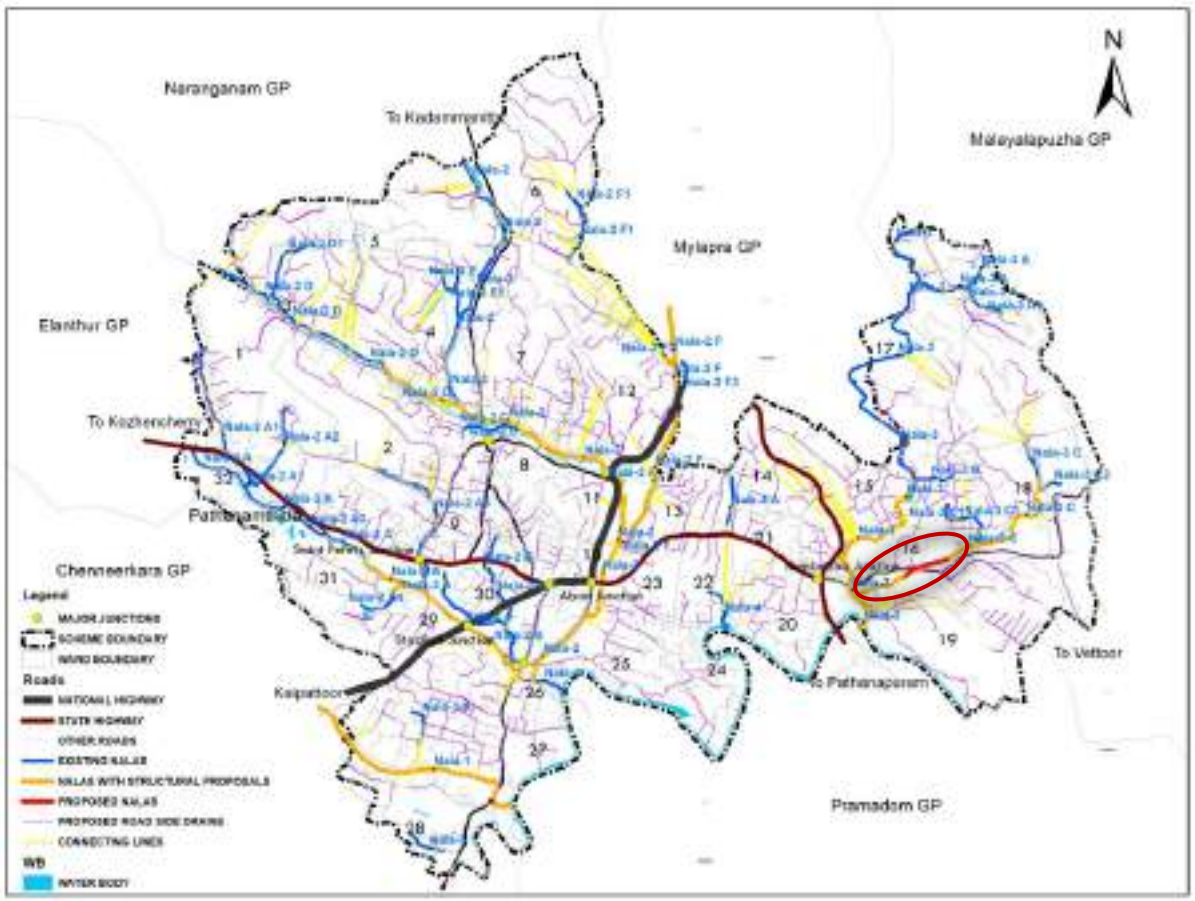
Nala 3C2

Nala–3C2 is proposed to be managed through preventive maintenance measures aimed at preserving efficient discharge conditions at the terminal reach. Since hydraulic adequacy has already been achieved, the proposal does not include structural widening or deepening. Instead, periodic desilting, debris clearance, and maintenance of the outfall section are recommended to ensure smooth conveyance of stormwater to the receiving water body.

Nala 3D

The proposal for Nala–3D involves comprehensive structural upgrading across almost the entire alignment. Existing deficient reaches will be reconstructed as standardized concrete-lined rectangular channels designed to provide uniform hydraulic performance throughout the system.

The intervention aims to eliminate localized flooding risk by improving conveyance efficiency and maintaining stable flow conditions. Outfall protection works and periodic maintenance access are incorporated into the design to support long-term operational sustainability.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–745 to CB–744	47.4	4.0	2.0	Rectangular Channel	Concrete
CB–744 to CB–743	70.1	4.0	2.0	Rectangular Channel	Concrete
CB–743 to CB–742	70.4	4.0	2.0	Rectangular Channel	Concrete
CB–742 to CB–741	70.4	4.0	2.0	Rectangular Channel	Concrete
CB–741 to O–396	68.2	4.0	2.0	Rectangular Channel	Concrete

Nala 4

Nala–4 is proposed to remain in its current natural form, with interventions confined to activities that improve long-term operational performance. The proposal includes regular inspection and cleaning of the channel to prevent obstruction during high-intensity rainfall. Vegetation growth along the flow path will be controlled where necessary to maintain adequate conveyance area. The drainage corridor will also be protected from encroachment to preserve hydraulic continuity toward the river outfall.

Nala 4A

The proposed measures for Nala–4A focus on maintaining the effectiveness of the existing local drainage route without altering its present geometry. Since the channel is hydraulically stable, the intervention strategy consists mainly of routine maintenance works such as desilting, removal of debris, and clearing of vegetative obstructions. The

proposal further recommends preserving the integrity of the channel margins and ensuring that the outfall remains free from blockage during monsoon conditions.

Nala 5

Nala–5 is proposed to be maintained as a reliable terminal drainage channel extending from CB–765 to the outfall at OF–5, ensuring efficient conveyance of stormwater from the surrounding residential and semi-urban catchments to the Achankovil River. The improvement strategy focuses on sustaining its hydraulic performance through preventive and maintenance-oriented interventions, while preserving the natural characteristics of the channel. Emphasis is placed on maintaining channel continuity, safeguarding the drainage corridor, and ensuring stable flow conditions along the entire stretch.

The design rationale is based on maintaining flow-to-capacity ratios within permissible limits (≤100%) and ensuring stable velocity conditions. As the channel is hydraulically adequate, no structural interventions such as widening, deepening, or re-sectioning are proposed. Instead, the focus is on non-structural measures, including periodic desilting to maintain effective flow area, removal of vegetation and debris that may obstruct flow, and strict prevention of encroachments along the channel margins. Minor bed regrading may be undertaken where necessary to maintain a uniform longitudinal slope and prevent localized stagnation.

Proposal for New Nala

The new nala is proposed to bridge critical gaps in the drainage network and ensure continuous stormwater flow between disconnected channel segments. It will enhance hydraulic efficiency by providing a direct and adequate conveyance path from upstream to downstream systems. This intervention improves overall network performance and reduces the risk of localized flooding during peak rainfall events.

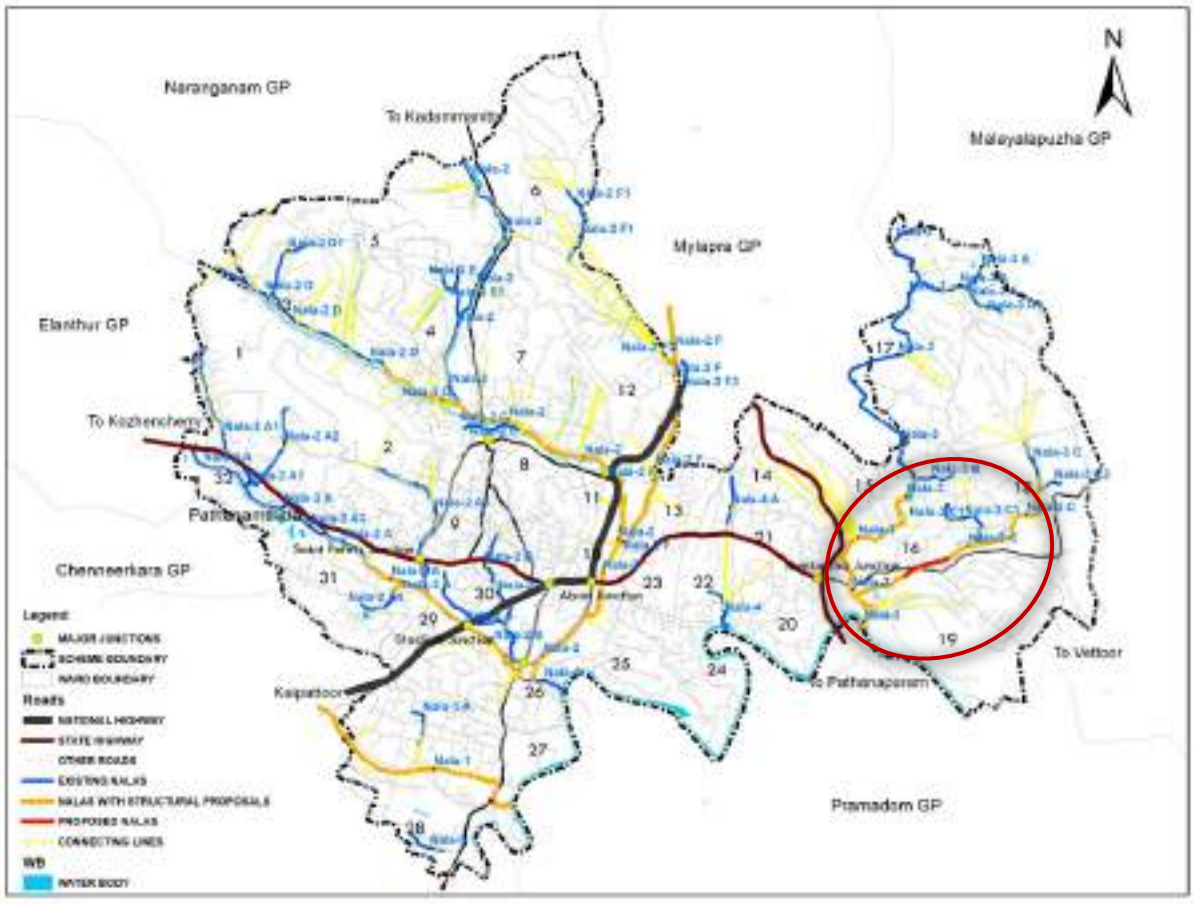
Proposed Nala - Pr - 3D

The proposed nala is planned as a continuation link between Nala–3C and Nala–3D, extending from CB–821 to CB–745, to establish hydraulic connectivity and ensure uninterrupted stormwater conveyance within the drainage network. This new nala functions as a critical missing link that integrates the upstream flows from Nala–3C with the downstream system of Nala–3D, thereby eliminating discontinuities and improving overall drainage efficiency. The alignment follows a strategically selected corridor to facilitate smooth transition of flows while minimizing disturbances to the surrounding area.

The design rationale is based on providing a uniform and hydraulically efficient section capable of safely conveying the design discharge with Flow/Capacity ratios maintained within permissible limits (<100%). The nala is proposed as a rectangular concrete-lined

channel, ensuring reduced hydraulic resistance, improved structural stability, and long-term durability. A consistent cross-section has been adopted across all reaches to maintain flow continuity and prevent energy losses or localized turbulence. The design ensures adequate capacity to accommodate peak runoff while maintaining stable flow velocities.

The proposed engineering measures include excavation and formation of the channel along the new alignment, construction of concrete bed and side walls, and provision of proper invert levels to ensure seamless integration with both Nala–3C (upstream) and Nala–3D (downstream). Special attention is given to junction transitions to avoid flow disturbances and backwater effects. The nala will also include provisions for bank protection, maintenance access, and periodic inspection. Adequate outfall connectivity and structural detailing will ensure smooth discharge and prevent erosion or structural damage. This intervention will significantly enhance the hydraulic performance of the interconnected drainage system.



Chainage	Flow / Capacity (Design) %	Width (m)	Depth (m)	Section Type	Material
CB–821 to CB–822	48.3	3.0	2.0	Rectangular Channel	Concrete
CB–822 to CB–823	80.6	3.0	2.0	Rectangular Channel	Concrete
CB–823 to CB–745	34.3	3.0	2.0	Rectangular Channel	Concrete

Restoration of Existing Road side Drains and Proposed Road Side Drains

The restoration of existing roadside drains is proposed as a systematically phased intervention, aligned with the nala restoration strategy to ensure an integrated and efficient stormwater management system. Roadside drains form an essential component of the stormwater drainage system; however, their performance is often compromised due to silt accumulation, structural deterioration, encroachments, and flow obstructions. The proposed restoration measures include comprehensive cleaning and desilting, repair and rehabilitation of damaged sections and joints, removal of obstructions and unauthorized coverings, and re-establishment of proper connectivity with primary nalas. Together, these interventions will significantly enhance the efficiency of stormwater collection and conveyance, improve hydraulic continuity within the drainage network, and contribute to reducing flood risks across the town.

The proposed roadside drainage system for Pathanamthitta town has been designed as an extensive, well-integrated network to ensure efficient collection and conveyance of stormwater across all urban corridors. Based on detailed hydraulic analysis, the system comprises a series of engineered box drains of varying sizes, strategically aligned along road networks to intercept runoff and safely discharge it into the primary nala system. The design adopts standard rectangular concrete sections with varying widths and corresponding depths, selected based on contributing catchment area, slope, and design discharge requirements. The system is planned to maintain Flow/Capacity ratios within permissible limits (<100%), ensuring adequate carrying capacity and preventing surcharge conditions under peak rainfall events.

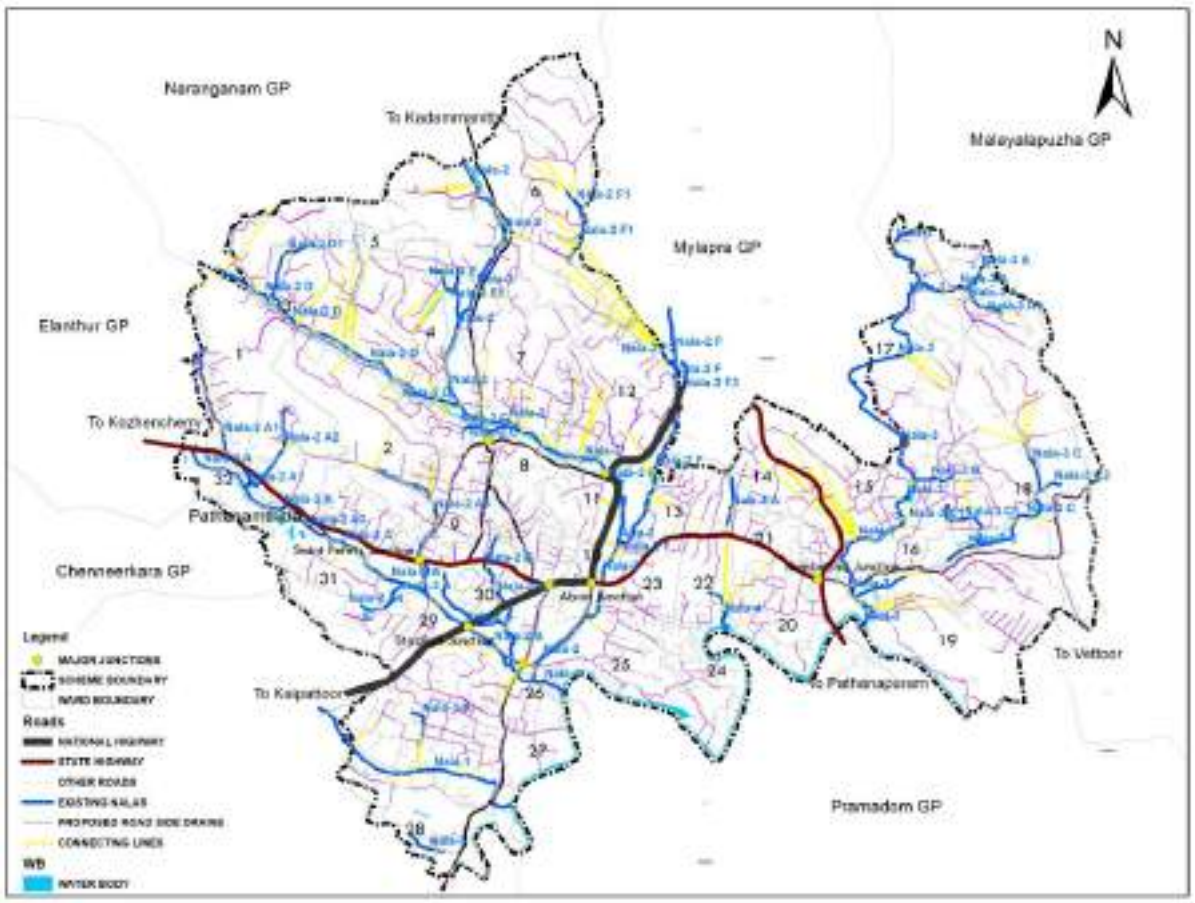
The design velocities range from approximately 0.30 m/s to 7.76 m/s, with most segments operating within an optimal range of 1.0 m/s to 3.5 m/s, ensuring stable flow conditions while minimizing risks of sedimentation or erosion. The Flow/Capacity (Design) (%) values vary from about 0.02% to 95.6%, with the majority of segments functioning within 5% to 60%, thereby providing sufficient spare capacity for peak storm events. Only a few stretches approach higher utilization levels (around 90–95%), but still remain within permissible limits.

Integration with existing nalas and outfalls has been ensured at all critical junctions, enabling seamless transfer of stormwater through the drainage hierarchy. Additionally, provisions such as proper inlet structures, junction chambers, and adequate cover slabs in urban stretches have been incorporated to enhance functionality and urban compatibility.

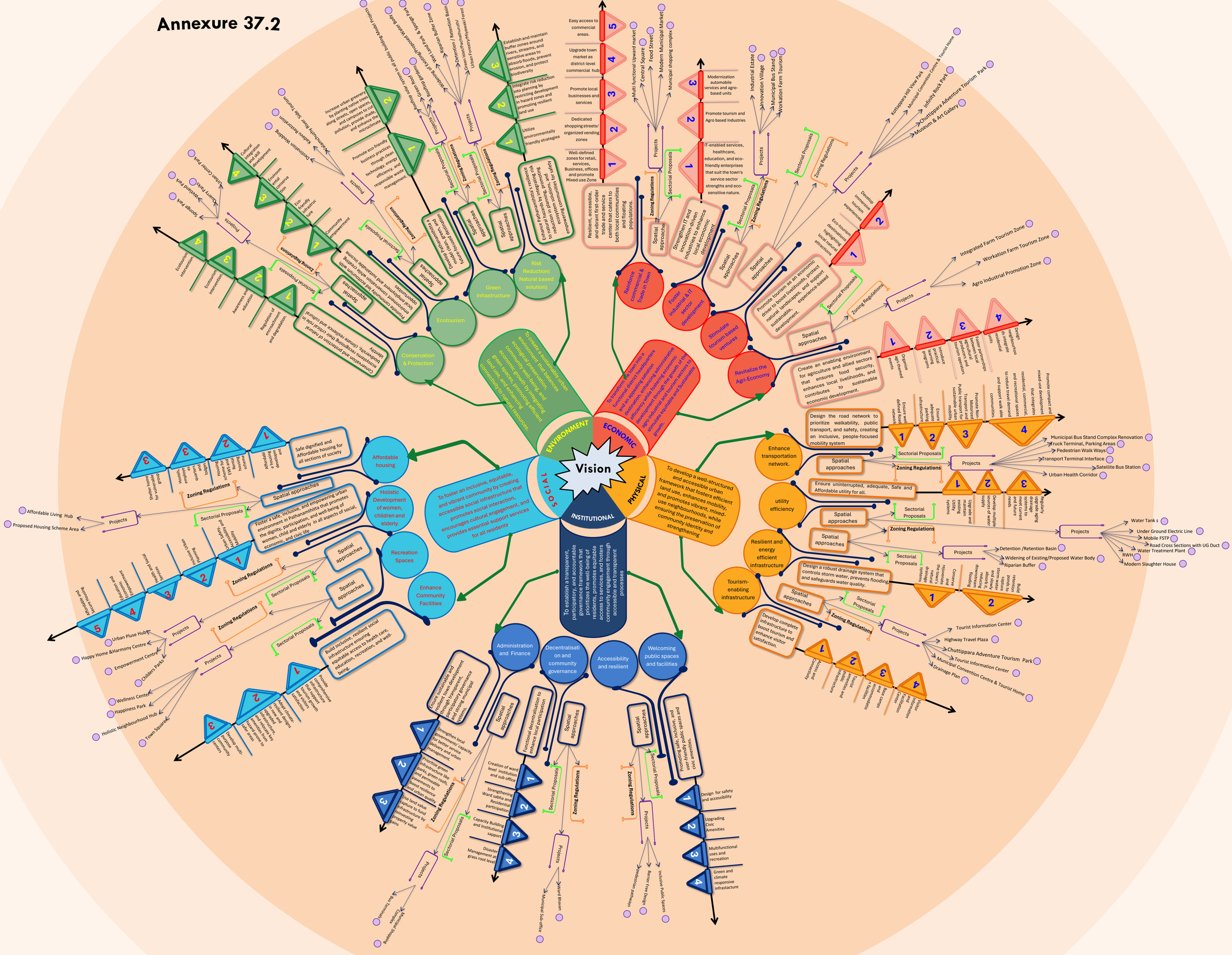
Detailed segment-wise information on the roadside drainage network is provided map, offering a comprehensive technical basis for planning, design, and implementation. Each row in the table corresponds to an individual drainage segment, identified by a unique ID and label, and captures its physical, hydraulic, and structural characteristics. The data include ground level and invert elevations, segment length,

wetted perimeter, hydraulic radius, flow velocity, and discharge capacity, enabling a clear assessment of drainage performance under design storm conditions.

In addition, the table presents key design and adequacy indicators such as the flow-to-capacity ratio and the contributing drainage area, which help identify stretches that are under-performing or at risk of surcharge during heavy rainfall. Structural details including section type (open/covered), construction material, span, rise, and cross-sectional geometry are also documented to guide standardisation, upgrading, and maintenance decisions. Collectively, this dataset serves as a critical reference for engineering evaluation, prioritisation of improvements, routine maintenance planning, and future system upgrades within Pathanamthitta's roadside drainage network.



Annexure 37.2


Vision
ENVIRONMENT
To create a sustainable urban environment that balances ecological preservation, community well-being, and economic growth by integrating green spaces, promoting efficient land use, and enhancing connectivity to natural resources.
ECONOMIC
To transform Mr. Uon into a functional district headquarters and an appealing solution destination, enhancing administrative efficiency while fostering economic development through the growth of high-value agro-industries and tourism sectors to stimulate equitable and sustainable growth.
PHYSICAL
To develop a well-structured and accessible urban framework that fosters efficient land use, enhances mobility, and promotes vibrant, mixed-use neighbourhoods, while ensuring the preservation of community identity and strengthening
SOCIAL
To foster an inclusive, equitable, and vibrant community by creating accessible social infrastructure that promotes social interaction, encourages cultural engagement, and provides essential support services for all residents.
INSTITUTIONAL
To establish a transparent, participatory, and accountable governance framework that empowers local communities, engages residents, promotes equitable access to services, and fosters community engagement through accessible and transparent processes
Ecotourism
Green Infrastructure
Risk Reduction(Natural based solution)
Conservation & Protection
Reinforce commercial & Trade in Town
Foster industrial & IT sector development
Stimulate tourism based ventures
Revitalize the Agri-Economy
Affordable housing
Holistic Development of women, children and elderly
Recreation Spaces
Enhance Community Facilities
Enhance transportation network.
utility efficiency
Resilient and energy efficient infrastructure
Tourism-enabling infrastructure
Administration and Finance
Decentralisation and community governance
Accessibility and resilient
Welcoming public spaces and facilities
Spatial approaches
Sectorial Proposals
Zoning Regulations
Projects
Zoning Regulations
Spatial approaches
Sectorial Proposals

ANNEXURE 40.1

LISTOF NON-OBNOXIOUS AND NON-NUISANCE TYPE OF SERVICE OR LIGHT INDUSTRIES PERMISSIBLE IN VARIOUS ZONES.

1	Aerated water and fruit beverages
2	Aluminium utensils from aluminium circles by pressing only (dry mechanical operations)
3	Apparel Making
4	Assembly of air coolers /conditioners, repairing and servicing
5	Assembly of bicycles, baby carriage and other small non-motorized vehicles
6	Atta – Chakkies, Flour mill, Oil mill
7	Automobile servicing (excluding repair)
8	Ayurvedic and homeopathic medicines (without boiler), Ayurvedic Medicinal Formulations
9	Bailing (hydraulic press) of waste papers
10	Bakery/confectionery/sweets products (with production capacity <1tpd (with gas or electrical oven)
11	Bamboo and cane products.
12	Bi-axially oriented PP film along with metalizing operations
13	Bio fertilizer and bio-pesticides without using inorganic chemicals
14	Biomass briquettes (sun drying) without using toxic hazardous wastes
15	Biscuits trays etc. from rolled PVC sheet (using automatic vacuum forming machines)
16	Blending and packing of tea
17	Blending of melamine resins & different powder, additives by physical mixing
18	Block making of printing without foundry (excluding wooden block making)
19	Bodybuilding of motor vehicles
20	Brass and bell metal utensils manufacturing from circles(dry mechanical operation without re-rolling facility
21	Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boilers)
22	Carpentry & wooden furniture manufacturing (excluding saw mill) with the help of electrical (motorized) machines such as electrical wood planner, steel saw cutting circular blade, etc.
23	Carpet weaving
24	Carrying and preservation of fruits and production of jam, jelly etc.
25	Cement products (without using asbestos / boiler / steam curing) like pipe, pillar, jafri, well ring, block/tiles etc. (should be done in closed covered shed to control fugitive emissions)
26	Ceramic colour manufacturing by mixing & blending only (not using boiler and waste water recycling process)

27	Chalk making from plaster of Paris (only casting without boilers etc. (sun drying / electrical oven)
28	Charging and repairing of batteries
29	Chilling plant and ice making without using ammonia
30	CO_2 recovery
31	Coir (Without bleaching/dyeing)
32	Coke briquetting (sun drying)
33	Cold Storage
34	Compressed oxygen gas from crude liquid oxygen (without use of any solvents and by maintaining pressure & temperature only for separation of other gases)
35	Concrete batching plants
36	Copper, brass and metal utensils
37	Cotton and silk printing
38	Cotton Spinning. Weaving, ginning, clearing, pressing etc.
39	Cotton weaving in handloom & power looms.
40	Cutting, sizing and polishing of marble stone
41	Dal Mills
42	Decoration of ceramic cups and plates by electric furnace
43	Diesel pump repairing and servicing (complete mechanical dry process)
44	Digital printing on PVC clothes
45	Distilled water (without boiler) with electricity as source of heat
46	Domestic electrical appliances.
47	Electric lamp (bulb) and CFL manufacturing by assembling only
48	Electrical and electronic item assembling (completely dry process)
49	Electroplating, tinplating, welding etc.
50	Embroidery and lace manufacturing.
51	Emery powder (fine dust of sand) manufacturing
52	Engineering and fabrication units (dry process without any heat treatment / metal surface finishing operations / painting)
53	Engineering workshop and general fabrication works (Without any chemical Treatment)
54	Facility of handling, storage and transportation of food grains in bulk
55	Flavored betel nuts production/ grinding (completely dry mechanical operations)
56	Fly ash bricks/ block manufacturing
57	Fly ash export, transport & disposal facilities
58	Foam bed, latex threads
59	Footwear (Rubber and PVC)
60	Fountain pen manufacturing by assembling only
61	Furniture making
62	Garment making / Tailoring.
63	Gas operated baby boiler

64	Glass ampules and vials making from glass tubes
65	Glass putty and sealant (by mixing with machine only)
66	Glass, ceramic, earthen potteries, tile and tile manufacturing using electrical kiln or not involving fossil fuel kiln
67	Glue from starch (physical mixing) with gas / electrically operated oven/boiler
68	Gold and silver smithy (purification with acid smelting operation and sulphuric acid polishing operation) (using less or equal to 1 litre of sulphuric acid/ nitric acid per month)
69	Ground nut decorticating
70	Handloom/ carpet weaving (without dying and bleaching operation)
71	Heat treatment with any of the new technology like ultrasound probe , induction hardening , ionization beam, gas carburizing etc.
72	Ice cream or ice making
73	Insulation and other coated papers (excluding paper or pipe manufacturing)
74	Ivory, carving and ivory works
75	Jobbing and machining
76	Laundry, dry cleaning and dyeing
77	Leather cutting and stitching (more than 10machine and using motor)
78	Leather foot wear and leather products (excluding tanning and hide processing except cottage scale)
79	Light engineering
80	Lubricating oil, greases or petroleum based products (only blending at normal temperature)
81	Making of paper boxes, bags, envelopes etc.
82	Manufacture and assembling of umbrellas and production of spare parts of umbrellas.
83	Manufacture and repair of musical instruments
84	Manufacture and repairing of brass and bell metal products
85	Manufacture and repairing of electric fans.
86	Manufacture of “aval” (Beaten rice) appam.
87	Manufacture of agarbathi and other cosmetics.
88	Manufacture of agricultural implements, screws etc.(blacksmith and foundry)
89	Manufacture of Beverages
90	Manufacture of byproduct from no biodegradable waste
91	Manufacture of cement products such as well-kerbs, tube, closets etc.
92	Manufacture of chinaware’s and crockery.
93	Manufacture of clay models
94	Manufacture of Cotton thread, rope twine etc.
95	Manufacture of electric meters, production of electric and allied products, repairing and servicing of electrical appliances.
96	Manufacture of electrical machinery and repairing of electric motors armature winding etc.

97	Manufacture of glass and glass products
98	Manufacture of hydrogenated oil
99	Manufacture of iron and steel furniture.
100	Manufacture of Jewelry
101	Manufacture of jute products including repairing of gunny bags.
102	Manufacture of large containers and chinaware.
103	Manufacture of lemongrass oil, candles etc.
104	Manufacture of miscellaneous wooden articles such as sticks, sandals, rules etc.
105	Manufacture of paperboard and paper hand.
106	Manufacture of quilts and mattresses.
107	Manufacture of rubber gloves.
108	Manufacture of Rubber products such as rubber sheets, nipples, rubber shoes including smoke-rubber.
109	Manufacture of sewing machine parts and assembling and repairing of sewing machine.
110	Manufacture of small machine tools and machine parts.
111	Manufacture of soaps involving process without generation of trade effluents (Saponification of fats and fatty acids only)
112	Manufacture of sports goods, balloons etc.
113	Manufacture of stone images and stone wares
114	Manufacture of structural stone goods, stone crushing, stone carving, stone dressing, etc.
115	Manufacture of structural wooden goods such as doors, beams etc.
116	Manufacture of syrup.
117	Manufacture of tin cars and copper vessels.
118	Manufacture of Tobacco products.
119	Manufacture of wood and wooden products
120	Manufacture of wooden furniture and fixtures.
121	Manufacture of wooden industrial goods
122	Manufacture of wooden utensils, photo frames, toys, etc., and photo framing.
123	Manufacturing of coir items from coconut husks
124	Manufacturing of formulated synthetic detergent products
125	Manufacturing of medical instruments
126	Manufacturing of metal caps containers etc.
127	Manufacturing of optical lenses (using electrical furnace)
128	Manufacturing of pasted veneers using gas fired boiler or thermic fluid heater and by sun drying
129	Manufacturing of shoe brush and wire brush
130	Medical oxygen
131	Mineral stack yard / Railway sidings
132	Mineralsed water

133	Miscellaneous printing works including type cutting, book binding
134	Oil and gas transportation pipe line
135	Oil ginning/expelling
136	Oil mill Ghani and extraction (no hydrogenation/refining)
137	Oil mills (vegetables)
138	Optical frames
139	Organic and inorganic nutrients (by physical mixing)
140	Organic manure (manual mixing)
141	Packing materials manufacturing from non-asbestos fiber, vegetable fiber yarn
142	Packing of powdered milk
143	Padlocks
144	Paint (by mixing process only)
145	Paper Pins and U Clips
146	Phenyl/ toilet cleaner formulation and bottling
147	Polythene and plastic processed products manufacturing (virgin plastic)
148	Poultry, Hatchery and Piggery
149	Pressure testing units
150	Printing and publishing of books, newspapers and periodicals.
151	Printing of cotton textiles
152	Printing press
153	Processing and preservation of cashew nuts
154	Processing of Cardamom, ginger, pepper etc.
155	Processing, grinding, packing and distribution of coffee and tea
156	Production of Dairy Products
157	Production of rice, flour etc., by hand pounding.
158	Production of vinegar.
159	Puffed rice (muri) (using gas or electrical heating system)
160	Pulverization of bamboo and scrap wood
161	Radio and T.V. servicing and repairing.
162	Ready mix cement concrete
163	Repairing of electric motors and generators (dry mechanical process)
164	Repairing of photographic equipment, spectacles etc.
165	Repairing of watches and clocks
166	Reprocessing of waste cotton
167	Rolling mill (gas fired) and cold rolling mill
168	Rope plastic &cotton
169	Rubber goods industry (with
170	Rubberized coir mattresses
171	Sanitary fittings and other similar industries

172	Sawing and planning of wood
173	Scientific and mathematical instrument manufacturing apparatus manufacturing unit
174	Scrap Sorting
175	Seasoning of wood in steam heated chamber
176	Slaughtering preservation of meat, fish and cleaning fish
177	Small foundries
178	Solar module non-conventional energy apparatus manufacturing unit
179	Solar power generation through solar photovoltaic cell, wind power and mini hydel power (less than 25 MW)
180	Spice grinding
181	Steel furniture without spray painting
182	Steeping and processing of grains
183	Tamarind powder manufacturing
184	Tissue culturing
185	Toy making
186	Tyres and tube retreating (without boilers)
187	Vulcanizing and repairing of tyres and tubes
188	Watch, pen and spectacles repairing
189	Water Softening and demineralization plants
190	Weaving of silk by Handloom
191	Wooden electrical accessories
192	woolen hosiers making (Dry process only without any dying / washing operation)

ANNEXURE 40.2

LIST OF OBNOXIOUS OR NUISANCE INDUSTRIES SUBJECT TO OBJECTIONABLE ODOURS, FUMES, EFFLUENTS OR PROCESSORS TO BE LOCATED IN HAZARDOUS ZONE

I	**Manufacture of Food Stuff:**
1	Slaughtering, preservation of meat and fish and canning of fish.
II	**Manufacture of Beverages:**
2	Production of distilled spirits, wines, liquor, etc., from alcoholic malt, fruits and malts in distillery and brewery.
3	Production of country liquor and indigenous liquor such as toddy, liquor form mahua, palm juice.
III	**Manufacture of Textiles:**
4	Dyeing and bleaching of cotton
IV	**Manufacture of Wood and Wooden Products:**
5	Sawing and planning of wood.
6	Wood seasoning and creosoting
7	Manufacture of veneer and plywood.
8	Paper, pulp and straw board.
V	**Manufacture of Leather and Leather Products**:
9	Currying, tanning and finishing of hides and skins and preparation of finished leather.
VI	**Manufacture of rubber, petroleum and coal products:**
10	Manufacture of tyres and tubes.
11	Manufacture of Industrial and synthetic rubber.
12	Reclamation of rubber.
13	Production of petroleum, kerosene and other petroleum products in refineries.
14	Production of chemicals and chemical products.
VII	**Manufacture of chemicals and chemical products:**
15	Manufacture of basic industrial chemicals such as acids, alkali and their salts not elsewhere specified (especially sulphurous, sulphuric, nitric, hydrochloric acids, etc.) ammonia, chorine and bleaching powder manufactures.
16	Manufacture of dyes, paint, colours and varnishes, printing ink.
17	Manufacture of fertilizers (Especially from organic materials).
18	Manufacture of disinfectants and insecticides.
19	Manufacture of ammunition, explosive and fireworks.
20	Manufacture of matches.
VIII	**Manufacture of Non-metallic mineral products other than petroleum and coal:**
21	Manufacture of cement and cement products
22	Manufacture of Lime.
23	Manufacture of Plaster of Paris.
IX	**Manufacture of basic metals and their products:**
25	Manufacture of iron and steel including smelting, refining, rolling and conversion into basic forms.
26	Manufacture including smelting, refining, etc., or nonferrous metals and alloys in basic forms.
27	Manufacture of Armaments.
X	**Manufacture of machinery (other than transport) and electrical equipment:**
28	Manufacture of all kinds of battery.
XI	**Miscellaneous items not covered above:**

29	Incineration, reduction or dumping of offal, dead animals' garbage or refuse.
30	Manufacture of gelatin and glue.
31	Fat, tallow, grease or lard refining of manufacture.
32	Bone meal, bone grist and bone powder.
33	Manufacture of cashew nut shell oil.
34	Other similar types of nuisance industries.

INDIA



KERALA

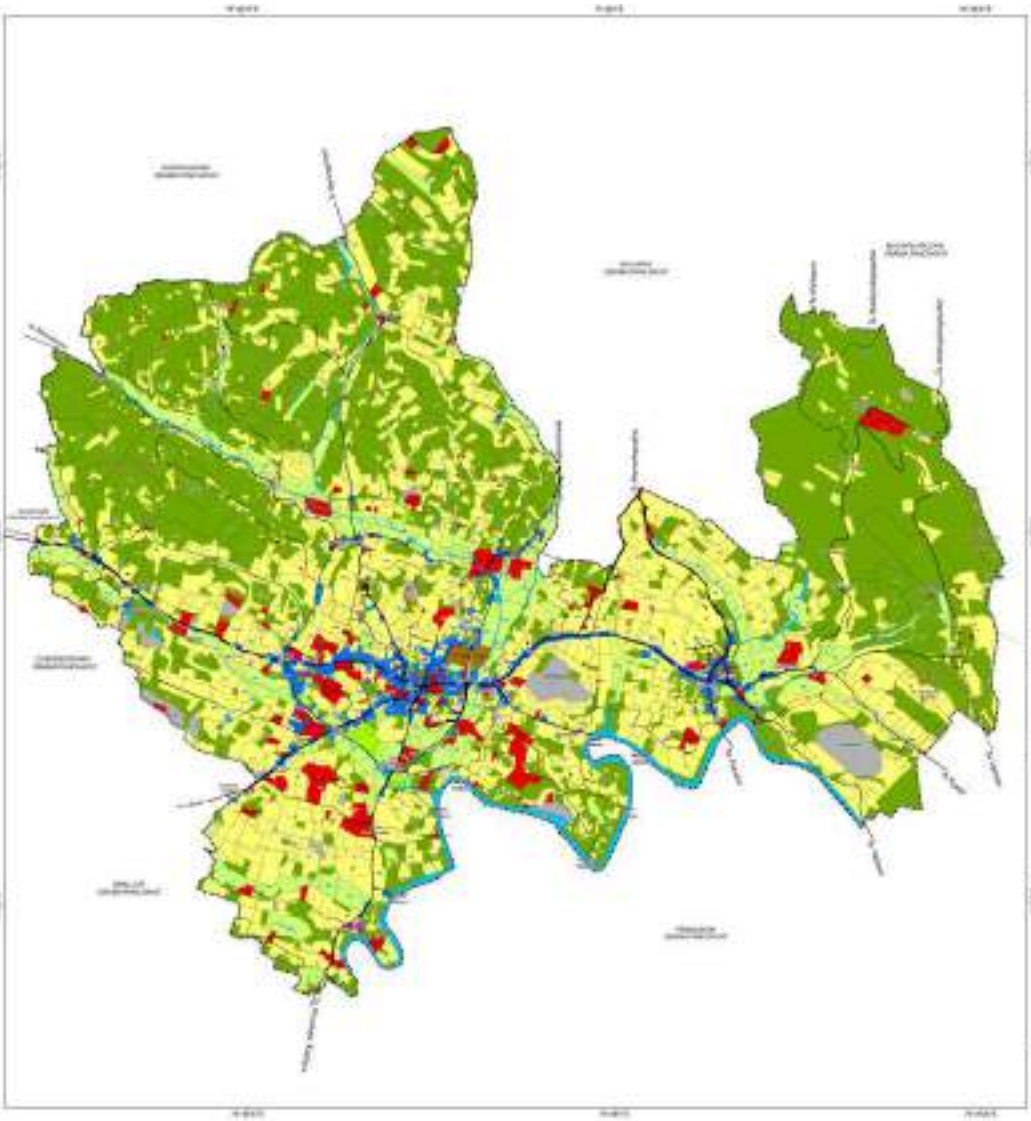


PATHANAMTHITTA DISTRICT



PATHANAMTHITTA MUNICIPALITY





MASTER PLAN FOR PATHANAMTHITTA TOWN
EXISTING LAND USE MAP 2023 (MP/01)

Legend

- Junction
- Scheme Boundary
- Village / Tribal Boundary
- Survey Boundary
- Major Road / Network
- Other Roads
- Residential Use
- Commercial Use
- Public & Semi Public Use
- Industrial Use
- Traffic & Transportation Use
- Park & Open Space
- Low Lying Wetland / Environmentally Sensitive Areas
- Dry / Agriculture Use
- Forest Covers
- Vacant / Rocky Areas
- Water body

CHAIRPERSON SECRETARY

Draftsman

Assistant Town Planner

Deputy Town Planner Town Planner

Assistant Town Planner

Deputy Town Planner

Town Planner

Senior Town Planner Chief Town Planner (Planning)

INDIA



KERALA

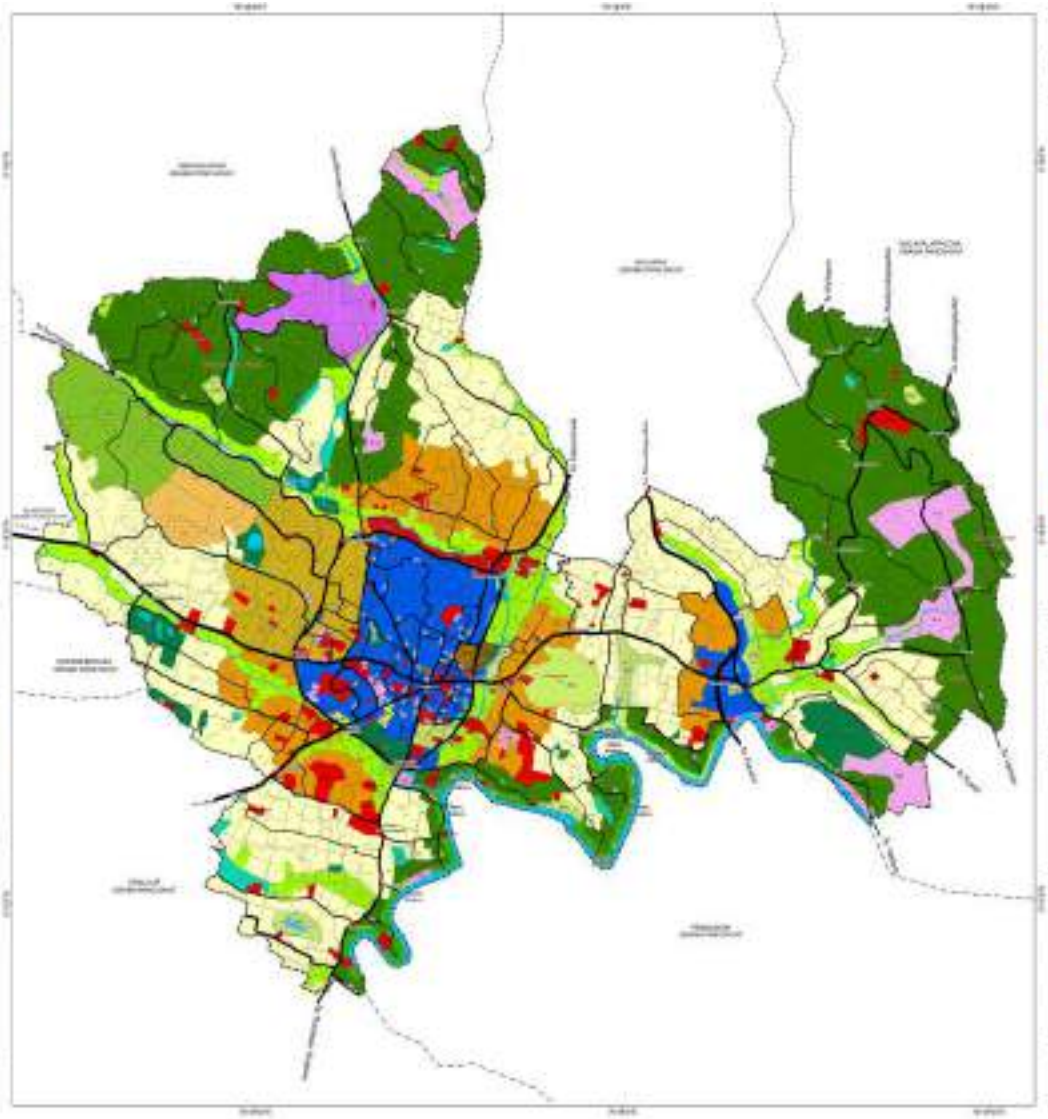


PATHANAMTHITTA DISTRICT



PATHANAMTHITTA MUNICIPALITY





MASTER PLAN FOR PATHANAMTHITTA TOWN
PROPOSED LAND USE MAP 2045
MP103/

LEGEND



CHAIRMAN SECRETARY

Draftsman

Assistant Town Planner

Deputy Town Planner Town Planner

Assistant Town Planner

Deputy Town Planner

Town Planner

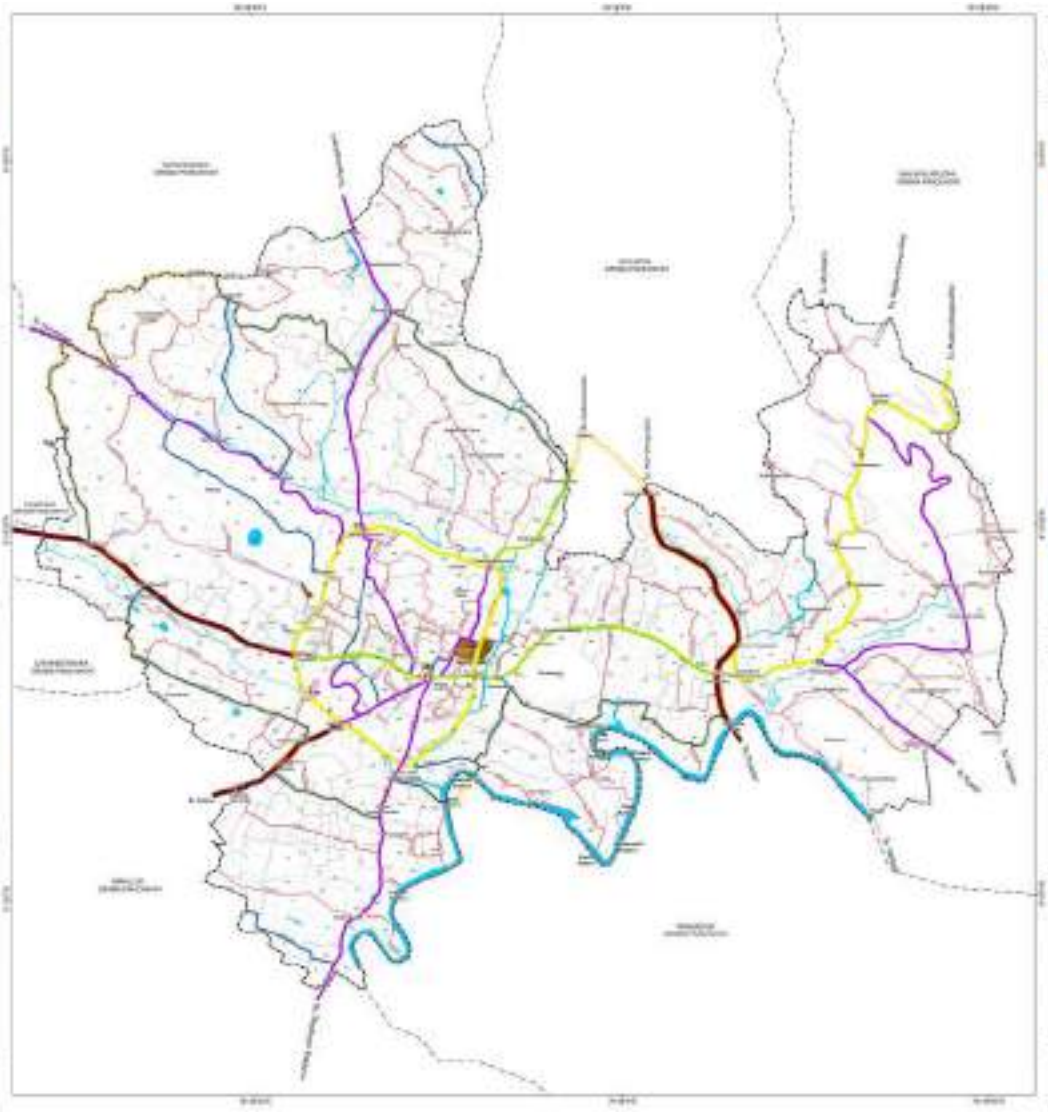
Senior Town Planner Chief Town Planner (Planning)











MASTER PLAN FOR PATHANAMTHITTA TOWN

PROPOSED TRANSPORTATION NETWORK 2041

MP(03)0

LEGEND

ROADS

PROPOSED ROADS

CHAIRPERSON SECRETARY

Draftsman

Assistant Town Planner

Deputy Town Planner Town Planner

Assistant Town Planner

Deputy Town Planner

Senior Town Planner

