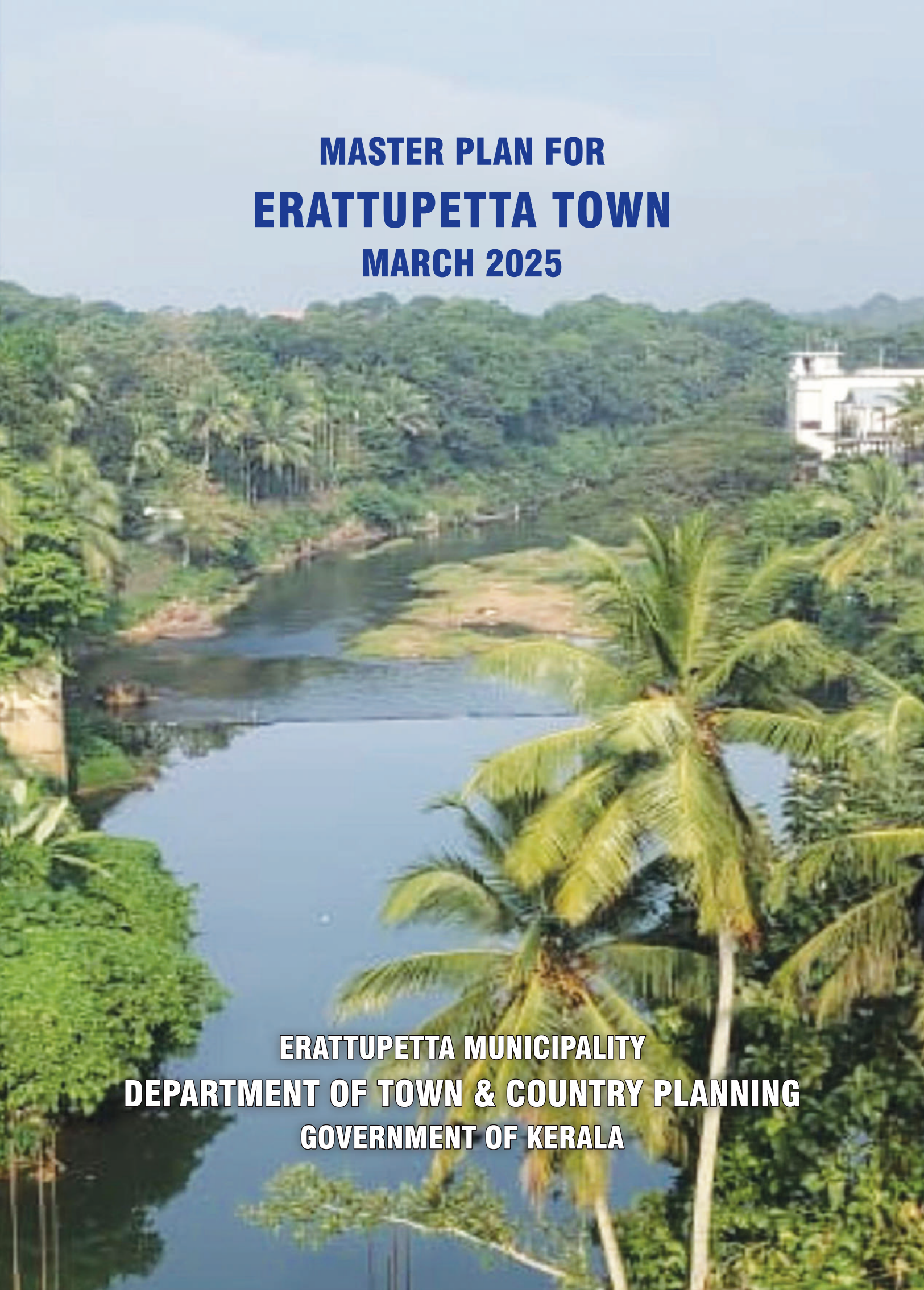
# MASTER PLAN FOR
# ERATTUPETTA TOWN - 2031

***ERATTUPETTA MUNCIPALITY & LSGD PLANNING***
***GOVERNMENT OF KERALA***

# MASTER PLAN FOR
# ERATTUPETTA TOWN
## MARCH 2025



ERATTUPETTA MUNICIPALITY

DEPARTMENT OF TOWN & COUNTRY PLANNING

GOVERNMENT OF KERALA

## FOREWARD

Erattupetta being a new municipality is in its threshold of development. It is the most densely populated local body in Kottayam district and hence needs a well laid plan for the future developments. This Master plan will work as a guide for the future development of Erattupetta town by regulating the development of the town spatially. The preparation of the Master plan for Erattupetta was a joint effort by the Municipal Council, Erattupetta and by the District Town Planning Office, LSGD Planning Kottayam under the guidance and supervision from the office of the Chief Town Planner, LSGD Planning, Thiruvananthapuram.

The Master plan aims at enhancing the livability of the planning area, along with equipping the municipality to accommodate the challenges of growth that too fast paced and to guide the planning area for a sustainable growth pattern with a boost on the economic base.

First and foremost, I would like to extend my profound gratitude to the Council members who had participated with their valuable views and suggestions in the preparation of the Master plan. I also express my sincere gratitude to the Chief Town Planner for the worthy contribution in the preparation of this work. The staff of the office of the Town Planner, LSGD Planning, Kottayam wholeheartedly involved in the successful completion of Master Plan under the leadership of the District Town Planner. Their hard work and commitment is specially acknowledged.

I also express my sincere gratitude to the Municipal Secretary and employees for their momentous support in the preparation of the Master plan.

I hope that this Master plan for Erattupetta can act as catalyst to the development of Erattupetta in a sustainable manner and will ensure the planned future development of the town.

Suhara Abdul Khader

Chairperson

Erattupetta Municipality

Erattupetta

MUNICIPAL OFFICE ★ ERATTUPETTA ★ KOTTAYAM (DT) PIN 686121

# PREFACE

Planning is a prerequisite for effective development. Development becomes comprehensive when the physical, social and economic variables of an area are planned in an integrated manner. Many functions that the town performs as seats of industry, trade and business and as providers of various services, including higher education, specialized health care services, communication etc have impact on the development and welfare of not only the resident population but on people of a wider service area. Hence planned development of our urban areas is a matter of priority.

Erattupetta town on the banks of Meenachil river, is located about 42 km north - east of the district headquarters Kottayam. There is a need for a long term plan for the development of Erattupetta Town considering the growth trends, resource potential, location aspects etc.

74th Constitution Amendment Act envisages empowerment of the Urban Local Bodies with planning functions, which is enshrined in the twelfth schedule of Article 243(W) of 74th amendment. The Kerala Town and Country Planning Act 2016, mandates the Municipal Councils to prepare Master plans for the area under their jurisdiction, through a participatory process. The Master plan shall generally indicate the manner in which development shall be carried out and also the manner in which the use of land shall be regulated. In view of this, Government of Kerala has undertaken the preparation of the Master plans for all towns in the state in a phased manner, under the 'Scheme of Preparation of Master Plans and Detailed Town Planning Schemes'. The preparation of Master plan for Erattupetta town is included under this scheme in the third phase vide GO (Rt) 2955/2015/LSGD dated 29-09-2015.

The Municipal Council, Erattupetta vide resolution No: 1/1 dated 21st Feb 2023 has decided to republish the Master plan, that was already published on 23rd Feb2021 considering the present development scenario and also incorporating new views of the council in this matter. The Municipal Council of Erattupetta extended all support and played crucial role in the time bound preparation of the Master plan. Draft Master plan was approved by the Municipal Council of Erattupetta and the same is being forwarded to Government for getting, approval for publication as per section 36(3) of the Kerala Town and Country Planning Act 2016. For the preparation of Master plan, a systematic process, comprising of extensive data collection and analysis, identification of development issues and setting of goals and objectives, formulation of development concept and carving out policies and strategies followed by detailed sectoral proposals is adopted.

I would like to appreciate the leadership provided by Smt. Suhara Abdul Khader, the chairperson of the Erattupetta Municipality for this endeavor I also appreciate the consistent effort of officials of the office of the Chief Town Planner (Planning) in processing the Draft Master plan. The efforts put in by all staff of LSGD Planning Office, Kottayam under the leadership of Town Planner for completing this plan successfully is well appreciated. I hope that this Master plan will provide the frame work for planned development of Erattupetta.

Thiruvananthapuram

Sheeba Rani Y
Chief Town Planner (Planning)

# ACKNOWLEDGMENT

Located in the eastern region of Kottayam district at the foothill of Western Ghats, Erattupetta is a major urban centre in the district. The word Erattupetta is said to have been derived from the name "Eraaru" where the two rivers (*aru*) merge as single one there by flow as Meenachil river. Erattupetta also known as the gateway of Malanadu, is the gateway to the famous tourist centres like Vagamon and Ilaveezhapoonchira.

Erattupetta has a rich culture and heritage tradition amassed through thousands of years. In olden days, the people of Erattupetta had established commercial relationship with the traders and trade centres in Tamil Nadu. Educational institutions started functioning in Erattupetta in the beginning of 20th century itself. The service activities, commercial establishments and location of the town indicate the special character of the town. As any other town Erattupetta is also going through a fast paced change scenario. In this context, it is necessary to identify various development requirements that can ensure a healthy, physical development and a progressive economic growth in the years to come. Erattupetta Master plan visualises a planned spatial development which can improve aesthetics of city, convenience of people, healthy living condition of the citizens and sustainable growth with a foothold on a strong economic base.

The preparation of Master plan for Erattupetta was started as a joint effort of Erattupetta Municipality and LSGD Planning office, Kottayam under the guidance and supervision of the office of the Chief Town Planner, LSGD Planning Thiruvananthapuram.

The dynamic leadership rendered by Smt. Suhara, Chairperson of Erattupetta Municipality and the Council members were of great help and encouragement for completing this Master plan. The invaluable, insights, feedback and support rendered by the council in all the workshops and discussions conducted as part of preparation of this plan and their commitment to excellence is truly commendable. I thankfully, acknowledge the contributions of each and every stakeholder of Erattupetta Municipality.

I acknowledge, with sincere thanks, the advice and technical support given by Sri.H Prasanth, former Chief Town Planner (Planning) & Smt. Sheeba Rani Y, Chief Town Planner (Planning). The timely guidance, technical support, intervention and motivation given by

Senior Town Planner, the Technical team in the Office of the Chief Town Planner LSGD Planning Thiruvananthapuram helped us in vetting the Master plan and was instrumental in shaping this plan to the present form.

The efforts put in by the Deputy Town Planner of this office Sri. Sudheer P Sukumar, in co-ordinating the whole process of preparation, the unparalleled dedication by the Assistant Town Planner Sri. Sanish S.A, the focused efforts by the team of surveyors under the guidance of Assistant Town Planner Sri. Rajan M Joseph, and the remarkable contribution by Town Planning surveyor Sri. Saifudeen P.A, and Planner associate Smt. Dona Ann John are gratefully acknowledged. I also acknowledge thankfully, the support and inputs given by each and every one among the staff of this office for their contribution in bringing out this plan successfully.

I hope this Master plan will stand as a testament to the power of collaboration and collective action and also as a foundation for a brighter future of the town. Extending my deepest gratitude to all those who have contributed their time, expertise and dedication to the preparation of this plan, I hope to realise the goals and objectives outlined in this document.

Kottayam
01.03.2025

LOCAL SELF GOVERNMENT PLANNING
OFFICE OF THE KOTTAYAM DISTRICT TOWN & CNTP
PIN-686 001

Jinumole Varghese
Town Planner

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# PART. I

## STUDY AND ANALYSIS

# 1. INTRODUCTION

## 1.1 GENERAL

Erattupetta is one among the newly formed Municipality in Kottayam district of Kerala state and was formed vide GO (Rt) 10782/2015/FN dated 10. 12. 2015. It lies 38 km east of Kottayam town, the district Centre. Erattupetta was known as Erappili and Erappuzha in the ancient period. The word Erattupetta is said to have been derived from the name "Eraaru" that arose from the geographical location, where the two rivers Thekkanar and Vadakkanar merges as single one and flows as Meenachil river. Erattupetta is situated on the foothills of High Ranges. It was the commercial capital of the Poonjar principality until 1949.

Erattupetta panchayat was formed in 1954 as a result of strong demand from the residents of Erattupetta and surrounding areas. It was officially declared as a panchayat only in 1962 and formed by including part area of Poonjar, Thidanadu and Thalappalam Grama panchayats. In 1973 it was upgraded as special grade panchayat and again upgraded as Municipality in 1988. It was then degraded as panchayat in 1992 due to some administrative matters. Erattupetta possessed a high position in trade and commerce until Alappuzha emerged as a port during 18th century. 92% of the population is engaged in nonagricultural activities.

### Planning Area

Erattupetta is a municipality with highest population density in the district. The impact of growth of town is comparatively less than that of other towns of Kottayam

district and major portion of the town area comes under residential occupancy. Majority of the population belongs to Muslim community. The influence of the municipal area to the neighboring Grama Panchayats is very low. Erattupetta Grama Panchayat is upgraded as Municipality and the infrastructure required for catering the need of the residents of municipality is much higher. By examining the land use also it was concluded that there is no necessity of extending administrative boundary of municipality for delineating planning area. Hence the planning area is fixed as the Muncipal area only.

## 1.2 NEED FOR A NEW PLAN

Erattupetta municipality is one of the highly dense towns among the newly formed municipalites in Kerala state. It has a population density of about 3968 persons/Sq km. Since the population growth rate is high and without planned development town is facing a vivacious development culture. The proximity of this town to pilgrim centers and other tourist spots give more importance to the town. The regional network connects major centers of the Kottayam district. Therefore a planned development is essential for a better future of this town thus reducing haphazard development.

With the decentralized and participatory planning through the constitutional backup of 73 and 74 Amendments, local bodies acquire the momentum of planning process. The importance of spatial planning was more realized and it became established that an actual assessment of potentials and issues is required and only through a definite planning strategy the development of the town can be ensured.

The scheme of 'Preparation of Master Plans and Detailed Town Planning Schemes' was announced in the Budget Speech of 2008-2009. The scheme aims to prepare statutory Town Planning Schemes for towns in the State in a time bound manner, under Town Planning Acts so as to ensure planned development. Erattupetta is one of the towns included in this scheme in the third phase vide GO (Rt) 2955/2015/LSGD dated 29.09.2015. The Municipal Council, Erattupetta vide resolution No: 01 dated 02-03-2016 has decided to prepare a new Master plan considering the changed development scenario and also resolved to prepare the plan in re-survey map.

## 1.3 METHODOLOGY

The methodology adopted for preparation of the Master Plan is discussed in this paragraph. The plan preparation process consists of collection of data (both primary

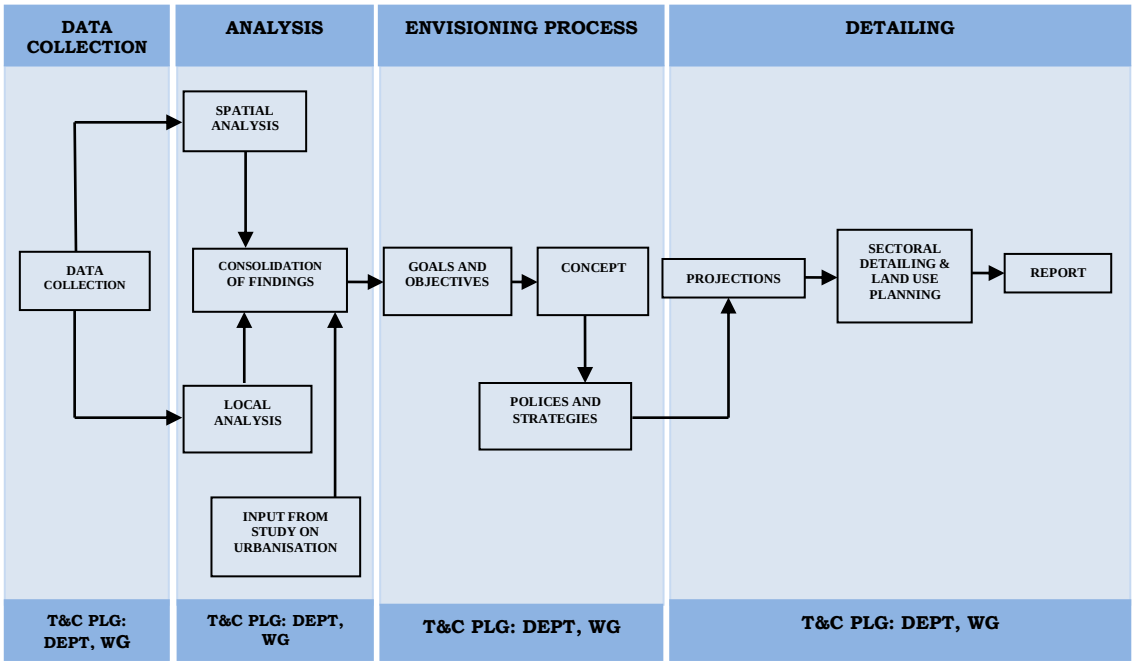



***Fig 1.1 Methodology of Plan Preparation***

and secondary), analysis (both spatial analysis and local level analysis), consolidation of findings, envisioning process (including setting up of goals and objectives, arriving development concepts and framing policies and strategies), and detailing (including the projection of requirements, sectoral detailing and land use planning). Different steps involved in the plan preparation process, agencies involved etc. are shown in Figure 1.1.

The plan was prepared jointly by the Municipal council, Erattupetta and Department of Town and Country Planning, Kerala State. The Councilors and other Resource persons in various sectors have been actively participated in the collection of data and analysis especially local level analysis. All 28 Municipal Councilors also provided information regarding their wards and their views and vision on future development of Erattupetta. The plan has been presented and discussed in detail in various Council meetings, including Special Committee. Detailed regional setting study was carried out in this connection which is documented as the District Urbanization Report (DUR) of Kottayam.

Identification of the problems and potentials of the municipal area was followed by an assessment of the future requirements. From a cloud of possible development alternatives, an appropriate development strategy was selected. After the development strategies were formulated, the policies, development controls and regulations, project identification etc. were derived at and the same was presented before the Municipal council.

## 1.4 COMMUNITY INVOLVEMENT

The more acceptable and sustainable planning process should respond to the need of the end user and not just provisions for future. The activity of community participation is based on the principle that the built and natural environments works better if citizens are active and involved in its creation and management instead of being treated as passive consumers. The community participation is a source of wisdom and information about local conditions, needs and attitudes, and therefore improves the effectiveness of decision making. Before the commencement of major works of Master Plan preparation a development seminar was conducted on behalf of Erattupetta municipality at Vyapara Bhavan Erattupetta on 29$^{th}$ September 2017. The peoples aspiration is ensured through detailed discussions and presentations at various level of meeting held at municipal council and other venues. Lensfed and other retired resource persons were also taken into consideration while preparing the master plan. People's participation is entrusted through detailed discussions and presentations at various levels of meetings held at Municipal council and other venues.

## 1.5 SUMMARY OF THE REPORT

This report on Master Plan for Erattupetta Municipality consists of 32 chapters and these chapters are grouped into four parts. Part I consist of 23 chapters, containing study and analysis of various sectors giving detailed information about the existing status of the municipality. Part II comprises of 5 chapters about integrated development vision. Part III comprises of 3 Chapters about Land use, Transportation and Sectoral proposals. The development regulations are included part IV. The maps of Existing land use and Proposed land use are attached separately.

# 2. HISTORY & PHYSICAL CHARACTERISTICS

## 2.1 GENERAL

Erattupetta is situated on the banks of two rivers there by dividing the town into three landmasses Thekkekara, Vadakkekara and Kizhakkekara. Erattupetta lies in an ancient route from Athirampuzha to Tamil Nadu Hill produces from the Cardamom hills were brought down by the Muthuvans for trade. Major generation of economy is from the rubber cultivation, trade activities of spices, hill commodities and the wood furniture industries.

## 2.2 LOCATION AND LINKAGES

Erattupetta is accessible from North Kerala via Angamali-Muvattupuzha-Thodupuzha-Muttom route. It is well connected to Tamil Nadu via Kottayam-Kumali road (KK Road) to Madurai through the nearest town Kanjirappally which is 16 Kilometers from Erattupetta.

Erattupetta- Peerumedu road (SH14), Ettumanoor- Erattupetta- Poonjar road (SH32) and Kanjirapally- Erattupetta- Muttom road (SH44) are the major roads passing through the town. Town is well connected to the nearby urban centres namely Thodupuzha (30 km), Pala (12 km), Kanjirappally (16 km), Kottayam (40 km), Ernakulam (80 km), and Pathanamthitta (60 km) through road.

There is no rail route connections to the town. The nearest major railway station Kottayam lies 38 km from Erattupetta. Nedumbassery, International Airport, lying at a distance of 75 km from Erattupetta is the nearest Airport followed by Thiruvananthapuram (151 km), Madurai (160 km), and Coimbatore (169 km). Though Meenachil River was used for passenger and goods traffic during the early period of 20th century, water transport is not used nowadays.

The geographical location of the town is between 9 degree 43 minutes to 9 degree 39 minutes North latitudes and between 76 degree 45 minutes and 76 degree 48 minutes East longitudes. The location of the town is shown in Figure 2.1.

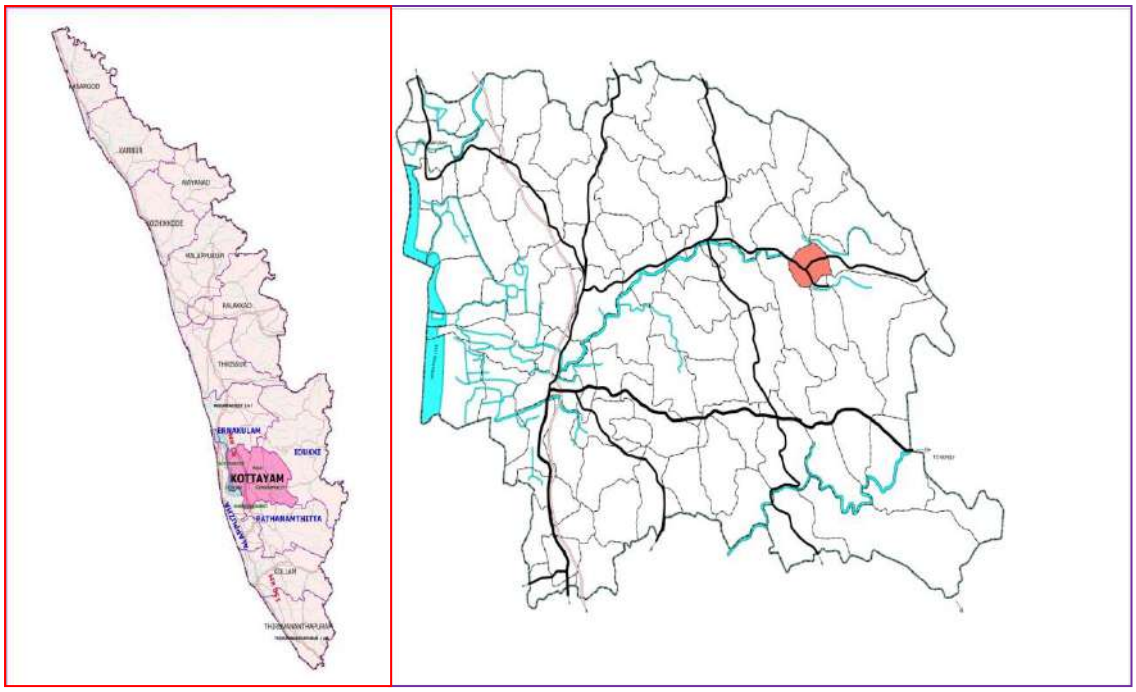



***Fig 2.1 Location of Erattupetta Municipality***

The municipality has an extent of 7.5 sqkm and has 28 wards. Pala municipality is the nearest town and is about 12 km west of Erattupetta town. The municipality is surrounded by Thalappalam Grama Panchayat in the west and north, Theekoy Grama Panchayat and Poonjar Grama panchayath in the east while the Thidanadu Grama Panchayat shares boundary with Erattupetta in the western and southern part of the town.

## 2.3 HISTORY

Erattupetta was known as Erappili and Erappuzha before. The "Eraaru" part in all the variation of the names arose from the geographical location, where the two rivers merge as single one. The Former royal family of Madurai came here in 11th century from Tamil Nadu. This place, which was under the control of the Thekkumkur king, transferred his power to the royal family of Madurai. For the stability of government they greeted sincere and able Muslim Nobles. Their next generations are known by the name as "KHAN". Today, the Khan family is a prominent Muslim family in Erattupetta. 'Lebbas are another Muslim family in Erattupetta and are claimed to be descendants of Shaikh Saeed Bava (a descendant of Ukasha bin Mihsan, a companion of Prophet Muhammed).

During Seventh Century AD Poonjar King donated 6 Acre 40 cent land to Muslims and Puthupally, Puthenpally and PMC Hospital were established in that land. During Thirteenth Century AD Syed Baba has reached from Androth Island and muslim community was established here.

Aruvithura St.George's Church an old famous pilgrim centre is situated in the centre of Erattupetta town. The Church is believed to be the oldest Church in eastern Kerala, and is the mother church of the ancient Syrian Christian community of both the Meenachil and the Kanjirapally Taluks. It is believed to be built by an early wave of migrant Christians from Nilackal (Chayal), who settled in the region for trade, commerce and agriculture. Nilackal, located in the Sabarimala hills, miles Southeast of Erattupetta, is known to be one of the 7 centers in Kerala, where Saint Thomas founded Christian communities and established Churches. There's also a popular belief that the St.George's Church was established by Saint Thomas the apostle himself. Valiyachan mala church which is situated in the suburbs of Erattupetta is also a famous pilgrim center in the region.

## 2.4 AREA

Erattupetta Municipal town comprises of Erattupetta village having survey block numbers 47, 48, 67 and 69. Total extent of town is 7.50 sq.km and is divided into 28 municipal wards.

## 2.5 PHYSIOGRAPHY

The natural drains from the hilly area of Northeast, Northwest and Southwest parts of town form the Thekkanar and Vadakkanar river and it merges in the valley point to form Meenachil river. The town developed in this valley where water transport facilities were available in ancient period. Trading flourished from the Meenachil River valley and thus the town centre became the merging point of these rivers. There is no forest or other natural diversity available in this town. It has an average elevation of 36 meters (118 feet).

## 2.6 CLIMATE AND RAIN FALL

The major contribution of rainfall in Kottayam District is during South West monsoon followed by the North East monsoon. The analysis of rainfall data reveals that the distribution of rainfall increases from west to east. The highest rainfall recorded at Pala while the lowest recorded at Ettumanoor. The annual rainfall ranges from 2435.9 to 3755.2 mm and the average annual rainfall of the district is 3169.28

mm. In general the district has wet type of climate and four seasons are seen in this district. The hot summer season from March to May, the South West monsoon season from June to September, the North East monsoon season from October to November and cool climate prevails during December to February. The South West monsoon contributes nearly 59 % of the total rainfall and 21 % from North East monsoon.

The temperature is more during the months of March to May and less during November, December and January. The minimum temperature ranges from 23.8° C to 26.0° C during winter. The average annual maximum temperature is 29.8° C and the minimum temperature is 24.4° C. The average mean monthly maximum temperature ranges from 29.2 to 33.4° C and minimum temperature ranges from 19.7 to 25° C. Erattupetta's climate is classified as tropical. Most months of the year are marked by significant rainfall. The short dry season has little impact. The average annual temperature is 27.7 °C in Erattupetta. (About 3049 mm of precipitation falls annually.)

**2.6.1 FLOOD 2018**

The incessant rains and overflow of rivers like Meenachil, Vadakkanar and Thekkanar in August 2018, many parts of the town especially the areas adjoining the river were inundated. Even though flood hit this local body, severe destruction or damages were not reported.

Public places affected include places near Kaduvamoozhi private bus stand, Thottumukk cause way, Al Manar School. Flooding is a recurring event in Erattupetta due to heavy rainfall exceeding flow capacity of streams and rivers especially in area like Kaduvamoozhi, Thottumukk, Mathakkal Thodu and Nadakkal. Traffic flow has been disrupted due to the flooding in the roads near Thekkanar and Vadakkanar rivers. Relief camps were not required in Erattupetta since the duration of inundation was very low. The encroachment of the banks of Meenachil,

***Fig 2.2 Flood 2018 Erattupetta***

Vadakkanar, Thekkanar river and other streams has to be prevented and enforcement of strict rules has to be implemented for the protection of these river banks.

## 2.7 SOIL CONDITION

The soil types occurring in Kottayam district can be broadly grouped into four types on the basis of their physiochemical properties and morphological features. They are (a) Lateritic soil. (b) Riverine alluvium, (c) Brown hydromorphic, and (d) Forest loams. The lateritic soil is the pre-dominant soil type, which covers almost the entire midland areas of the Kottayam district. The surface soil is mostly reddish brown to yellowish red in colour and the texture ranges from gravelly loam to gravelly clay loam. Heavy rainfall and high temperature prevalent in the area are conducive to the process of formation of this soil type. It is well drained and the presence of organic content is low. This soil is poor in nitrogen, phosphorous and potassium. It is acidic in nature with a pH value ranging from 5.0 to 6.2.

The occurrence of Riverine alluvium soils is restricted along the river courses and their tributaries. They show wide variation in their physical and chemical properties depending on the nature of the alluvium that is deposited and the characteristics of the catchments area drained by the river. They are very deep soils with surface textures ranging from sandy loam to clay loam. Presence of mica flakes has been observed in the alluvial soils.

## 2.8 BIO-DIVERSITY

Rubber is the main crop of Erattupetta town. Other crops like plantains, pepper, areca nut, tapioca, mango trees, jackfruits, and cashew trees are also grown here. Homestead cultivation is promoted in these area for daily use of vegetables as far as possible.

## 2.9 NATURAL RESOURCES

Erattupetta is blessed with rivers merging in the town centre. There rivers has been exploited over years and the aesthetics of the town has been deteriorated due to the haphazard development happening in the town.

## 2.10 CONCLUSION

*Erattupetta is located in the eastern region of Kottayam district at the foothills of High ranges and is well connected to major centers of the state by road way. Initially the town was under the control of Thekkumkoor king and later, descendants of Sheikh*

*Saied Bava established Muslim community here. Erattupetta has an undulating topography with central area plain land sloping up towards the periphery of town. The highest point in elevation situates at western side, at Valiachanmala.*

# 3. REGIONAL SETTINGS

## 3.1 REGIONAL SETTINGS

The regional setting of a town spells out the hierarchy of settlement in the regional scenario, the activity which the town has to perform and its connectivity with different settlements. Extensive regional setting study has been carried out in connection with the preparation of Development plan for municipalities in Kottayam district. The study was documented as District Urbanization report of Kottayam. The District Urbanisation report defines the spatial structure of the district which is arrived by integration of hierarchy of settlements, function of settlements and the connectivity between settlements.

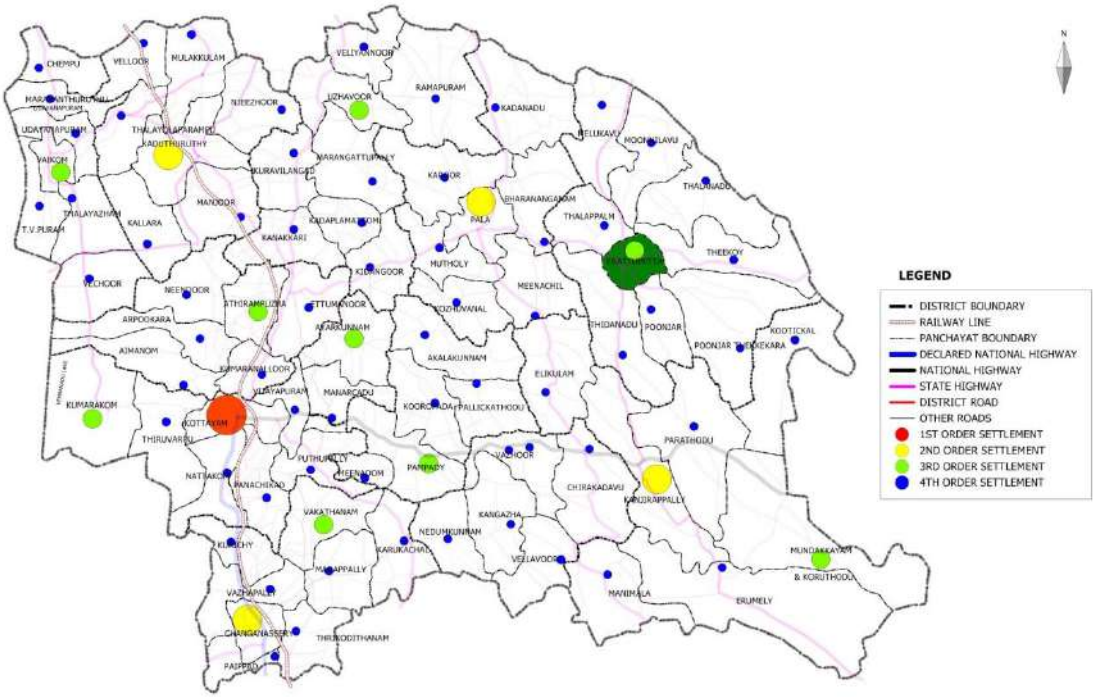



***Fig 3.1 Hierarchy of settlements of Kottayam District***

The hierarchy of settlements of Kottayam as revealed from regional setting study is shown in Figure 3.1. Kottayam is suggested as first order settlement of the district. Erattupetta is suggested as third order settlement of the district. The Activity pattern of Kottayam district is shown in Figure 3.2.

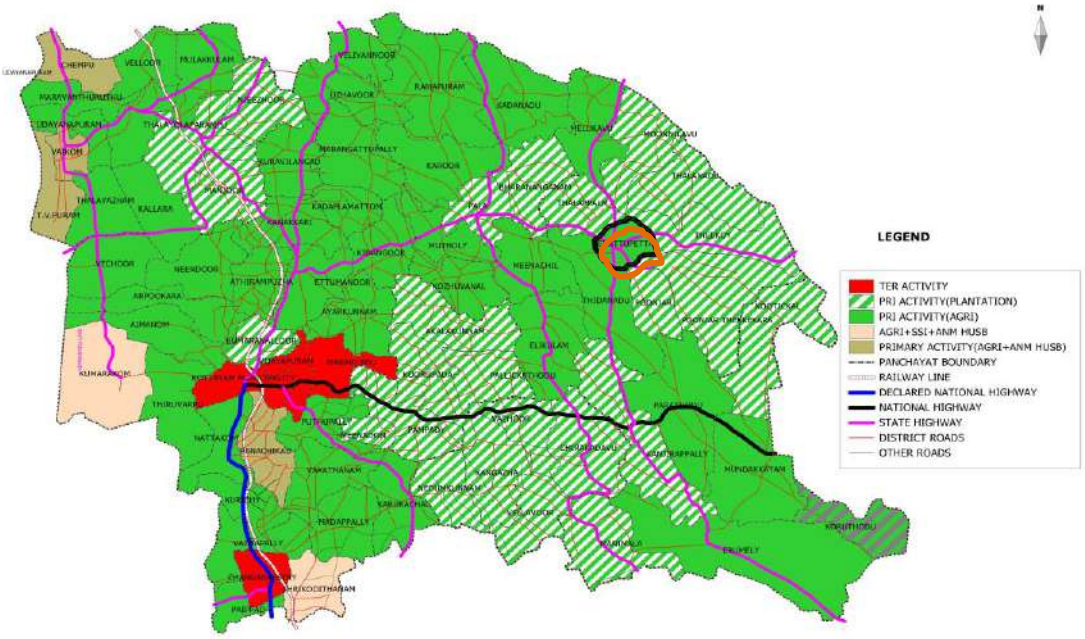



***Fig 3.2 Activity pattern of Kottayam district***

In this study primary activity (agriculture), has been identified as the activity of Erattupetta town.

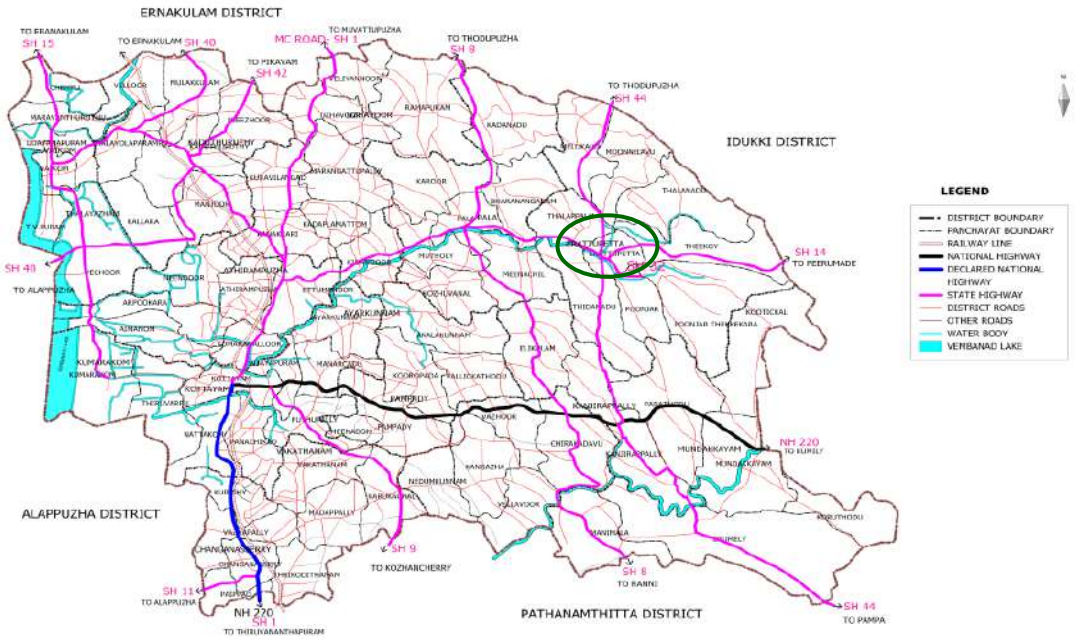



***Fig 3.3 Connectivity of the Town***

The connectivity network of Kottayam district is revealed from regional studies of the Study on urbanization of the district.

In the study Kanjirapally – Erattupetta - Muttom Road (SH44) , Ettumanoor-Erattupetta- Poonjar road (SH32), Erattupetta – Peermadu road (SH14) are identified as the major roads passing through Erattupetta town. The connectivity of the town is shown in Figure 3.3.

## 3.2. PLANNING AREA

The Planning Area of a Development Plan for Erattupetta strictly adheres to the administrative boundary of Erattupetta municipality boundary limits. The regional setting study of District Urbanisation Report has been considered for delineation of planning area. Planning Area has been delineated by studying the character of the Grama Panchayats lying adjacent to Erattupetta town. Three characters viz, urban profile, functional character and land use concentration has been studied based on District Urbanisation Report. The character of seven adjacent Grama Panchayaths namely Thalappalam, Thalanadu, Thidanadu, Teekoy, Poonjar, Moonnilavu, and Poonjar Thekkekara were studied and it is shown in Table 3.1.

***Table 3.1 Character of Adjacent settlements of Erattupetta Municipality***

| Settlements | Urban Profile | Functional Character | Land use concentration |
|---|---|---|---|
| Erattupetta | Urban | Rural | Agriculture |
| Thalappalam | Non -Urban | Rural | Plantation |
| Thalanadu | Non-Urban | Rural | Agriculture |
| Thidanadu | Non-Urban | Rural | Plantation |
| Teekoy | Non-Urban | Rural | Plantation |
| Poonjar | Non-Urban | Rural | Plantation |
| Poonjar Thekkekara | Non-Urban | Rural | Plantation |
| Moonnilavu | Non-Urban | Rural | Plantation |

*Source: District Urbanization report, Kottayam district.*

From the above table, it is clear that none of the adjacent Grama Panchayats is showing urban character and they are predominantly rural in nature. The functional character of Municipality shows rural nature and agriculture land use concentration while it has an urban profile (statutory urban area). Neighboring Grama Panchayats outside the municipal limit exhibits a rural character and plantation and agriculture

area predominate in all of these local bodies and hence the planning area is taken as the administrative boundary of Municipality for easy implementation of Plan proposals.

### 3.3 INFLUENCE AREA OF THE TOWN

Erattupetta Municipality is centrally located to many other third order towns with very high regional connectivity linkages. This central location enhances the importance of town and it acts as the major service centre of the region. This centrality effect of the town influences surrounding Grama Panchayats in many ways.

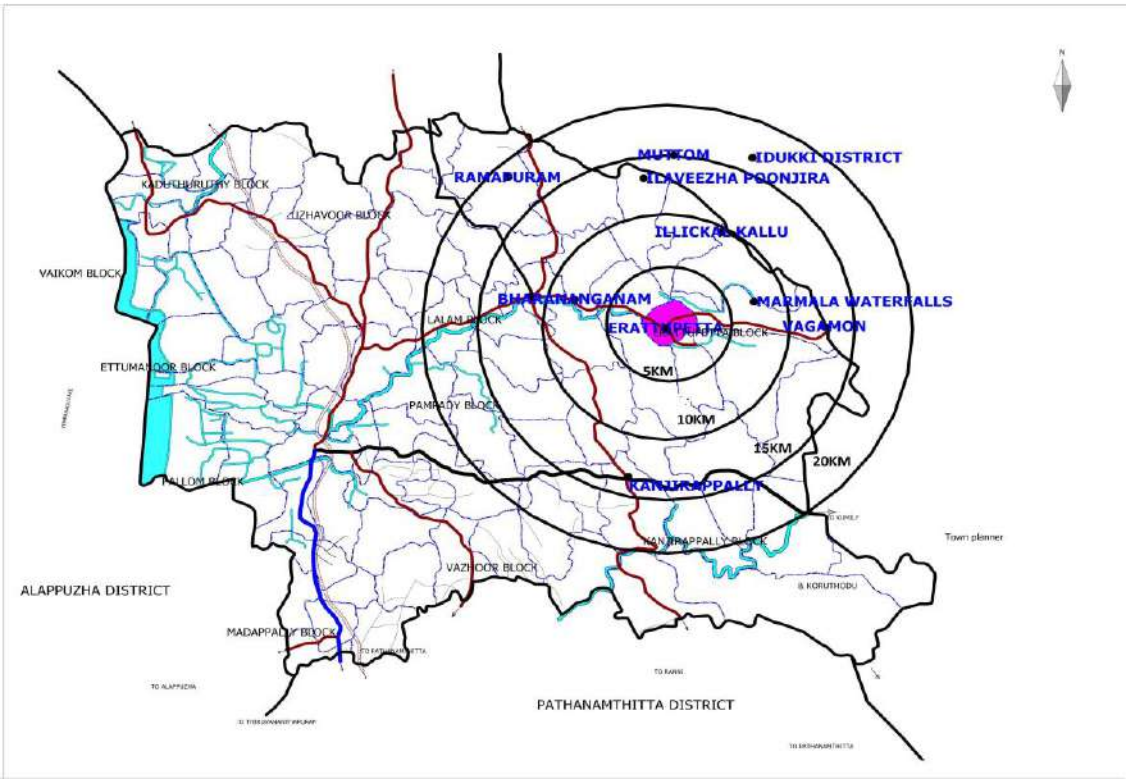



***Fig. 3.4 Location with respect to other neighbouring centres***

Erattupetta is centrally located with respect to many of the third order towns namely Muttom, Kanjirapally, Ramapuram, Bharananganam and Vagamon as shown in Figure 3.4. It is also proposed as a third order settlement for catering the need of North-East part of the district. Erattupetta possess second position in trade and commerce in Kottayam District during ancient period and on emerging Alappuzha as a major port during 18$^{th}$ century its importance gets nullified. People from entire eastern area of the district still depend on Erattupetta for their shopping needs.

Erattupetta- Peerumedu road (SH14), Ettumanoor- Erattupetta- Poonjar road (SH32) and Kanjirapally- Erattupetta- Muttom road (SH44) are the major roads

passing through Erattupetta. Town is well connected to the nearby urban centres through road – Thodupuzha (30 km), Pala (12 km), Kanjirappally (16 km), Kottayam (40 km), Ernakulam (80 km), and Pathanamthitta (60 km).

Erattupetta is the meeting point of two major highways, Ettumanoor –Poonjar Road (SH32) and Erattupetta- Muttom road (SH44). It is also acting as a regional transportation node as a number of KSRTC and Private Buses are operating to various part of the state from Erattupetta. Considering the above facts, the Erattupetta block has been considered as the influence area of Erattupetta town.

### 3.4 CHARACTERISTICS OF THE INFLUENCE REGION

The constituent LSGIs of the influence area are shown in Figure 3.5.

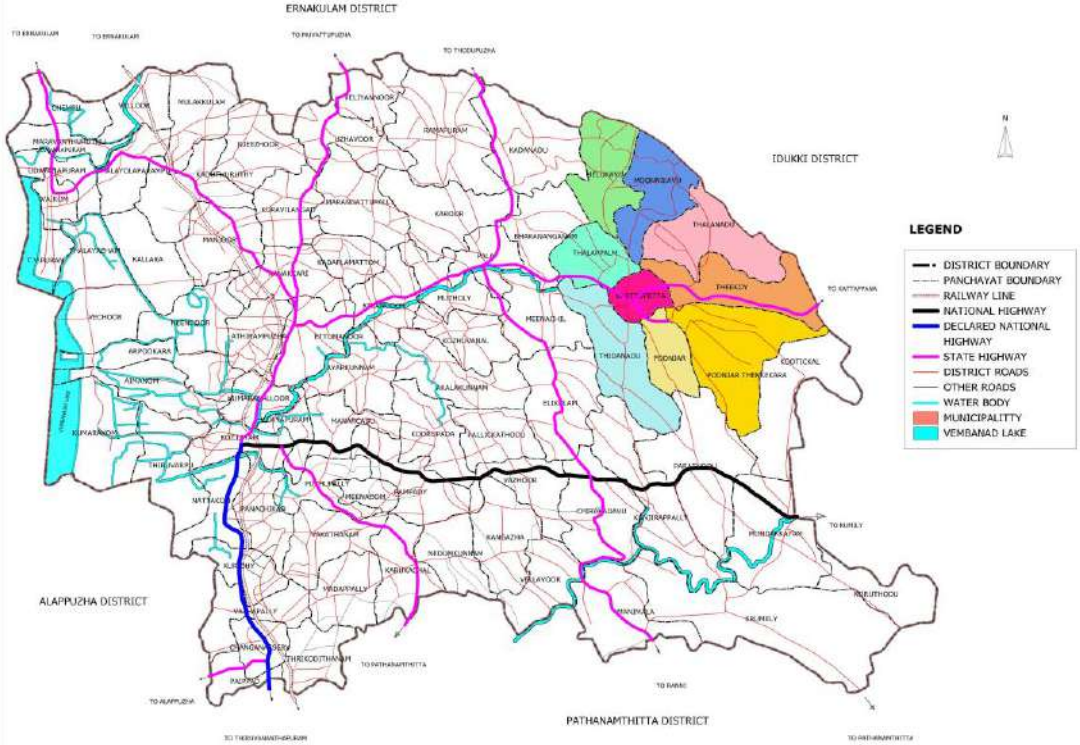



***Fig. 3.5 Constituent LSGIs of the Influence Area***

The table 3.1 describes the characteristics of the influence region. The conversion of Erattupetta from Grama panchayat to Municipality happened in 2015. This municipality is still in its childhood stage of becoming urban centre for the neighbouring rural areas. The population density of Erattupetta municipality is the major reason for its conversion and facilities required for catering the need of this town is still in the threshold of development.

### 3.4.1 Population

Seven Grama Panchayats falls within the influence region of Erattupetta town. The area and population details of the concerned Local Governments (LGs) in the influence area of town are shown in Table 3.2 The total area of the region is 245.28 Sq: km. Erattupetta is the smallest municipality with an area of 7.50 Sq.Km and Poonjar Thekkekara is the largest Grama Panchayat with an area of 60.86 Sq.Km. Erattupetta is a census town as per 2011 census. It is a trading and service centre and it also has an influence area of its own. Erattupetta is proposed as a third order settlement in the District Urbanisation Report, Kottayam and it is elevated as a Municipality in the Budget of the State Government for the year 2013-14.

Pala and Erattupetta have almost same facilities except Medical facilities concerned. Pala has the status of taluk headquarters. Within the influence zone of Pala, Erattupetta is serving the needs of the eastern part of the Meenachil taluk.

***Table 3.2 Area and Population details of Influence region***

| SL. No. | Name of the LSGIs | Area in sq.km. | Population 2011 | Population 2001 | Population density 2011(Persons / Sq:km) | Population growth rate 2001-11 (%) |
|---|---|---|---|---|---|---|
| 1 | Erattupetta | 7.50 | 29705 | 25103 | 3960 | 18.33 |
| 2 | Thidanad | 37.19 | 20752 | 19880 | 558 | 4.38 |
| 3 | Thalappalam | 22.73 | 13361 | 12740 | 588 | 4.87 |
| 4 | Thalanadu | 32.24 | 7029 | 7337 | 218 | -4.19 |
| 5 | Moonilavu | 33.41 | 8731 | 9065 | 261 | -3.68 |
| 6 | Poonjar | 24.16 | 12649 | 12260 | 523 | 3.17 |
| 7 | Teekoy | 27.19 | 10852 | 10947 | 399 | -0.86 |
| 8 | Poonjar Thekkekara | 60.86 | 17588 | 18623 | 289 | -5.55 |
| **TOTAL** | | **245.28** | **120667** | **115955** | | |

*Source: Census Reports*

The total population of the region as per 2001 census was 115955 and it is increased to 120667 in 2011. Among the constituent local governments, Thidanad Grama Panchayat has the highest population of 20752 and Thalanad Grama Panchayat has the least population of 7029 as per 2011 census.

Population density of surrounding LSGs is very low compared to the density of Erattupetta municipality. Surrounding LSGs are mainly comprised of plantation area and hence the habitation area is limited. It is varying from 218 persons per sq: km in

Thalanad Grama Panchayat to 3960 persons per Sq.Km in Erattupetta municipality. Average population density of the region is 849 persons per Sq.Km which is lower than the district population density of 895 persons per Sq.Km. The population density of Erattupetta municipality is 3960 persons per Sq.Km and it is more than double the population density of Pala Town (1409persons per Sq.Km). Moonilavu, Thalanad and Poonjar Thekkakara and Teekoy Grama Panchayats have comparatively low population density.

The average decadal (1991-2001) population growth rate of the region is 2.05%. It is greater than the population growth rate of the district (1.07%). This is due to the high growth rate of Erattupetta (18.33%), In the region the growth rate is high in Grama Panchayat of Thidanad (4.38%), Poonjar (3.17%) and Thalappalam (4.80%) The population growth rate is negative in Moonilavu (-3.68%) and Thaland (-4.19%) Grama Panchayats and except these two Grama Panchayats the other Grama Panchayats have more or less uniform population growth rate.

The literacy rate of the influence region as per 2011 census is 96.77%, which is better than the district rate of 95.82%. The literacy rate is in the range of 95.22% to 97.97%

### 3.4.2 Occupational structure

The occupational structure of the influence region is analyzed in this paragraph. The total workers of the region are 46569 and out of that, 39280 is main workers and 7248 is marginal workers. Out of 39280 main workers of the influence region Cultivators, agriculture labours, house hold industrial workers and other workers are 2603, 1972, 478, 34188 respectively as per 2011 census. plantation labourers are included in the other workers category. The occupational structure of the region is shown in Figure 3.6. From the above analysis based on occupational structure it can be found that the economy of the region is characterized by primary sector activities.

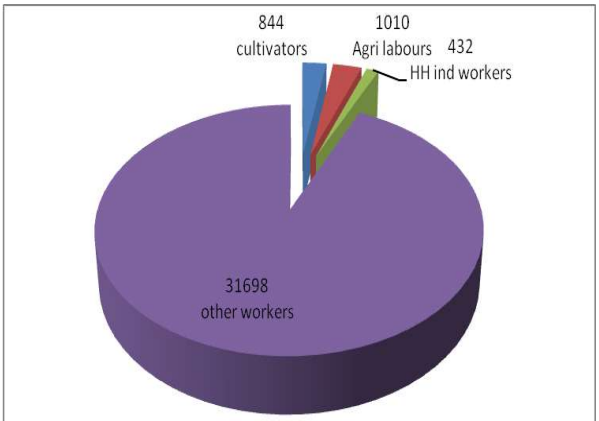



***Fig. 3.6 occupational structure of the influence region***

### 3.4.3 Land use of the region

The land use of the region is another parameter taken for analysis. The source of the data for analysis of land use is SATELLITE DATA FROM IRS-P6, LISS-IV, AND MX/LISS/ PANS 2003-04 (India Satellite Data). The data form part of the Natural Resources and Environmental Data base (NREDB). The land use of the region is given in Figure 3.7

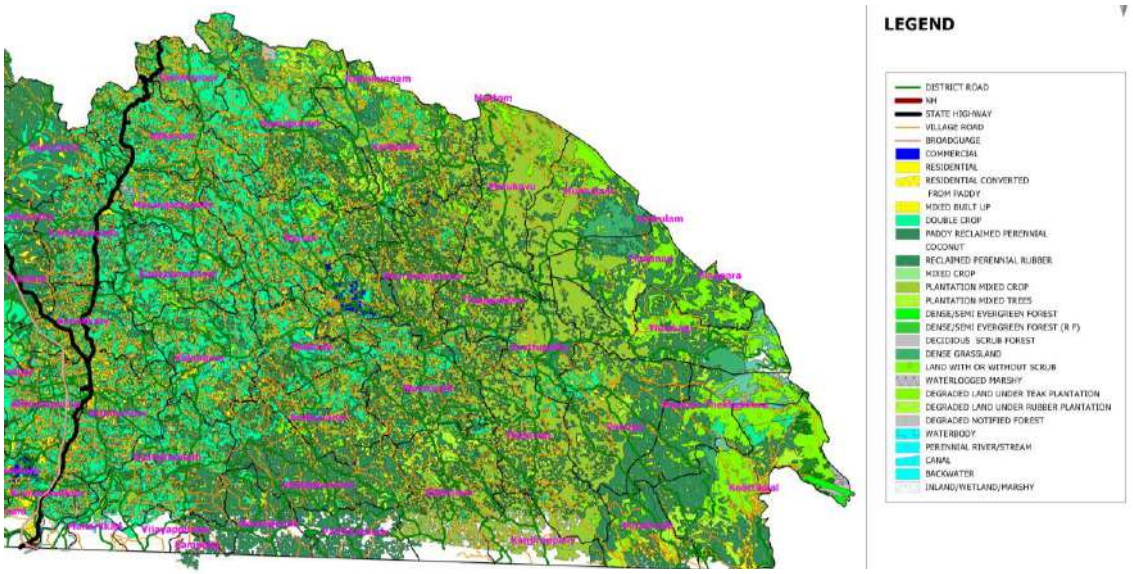



***Fig3.7 Land use of the Region***

### 3.4.4 Industrialization

No industrial establishments in the category of Large and Medium category are functioning in the region. The number of small scale industrial units in LSGs wise is shown in Table 3.3. The highest number of industrial units is seen in Erattupetta Municipality and the lowest number of industries is seen in Moonilavu Panchayat.

***Table 3.3 Number of SSI Units in the region***

| Sl. No | Name of the LSGs | No. of SSI units |
|---|---|---|
| 1 | Erattupetta | 143 |
| 2 | Thidanad | 25 |
| 3 | Thalappalam | 38 |
| 4 | Moonilavu | 6 |
| 5 | Poonjar | 30 |
| 6 | Thalanad | 35 |
| 7 | Teekoy | 21 |
| 8 | Poonjar Thekkekara | 38 |

*Source: District Industries*

### 3.4.5 Facilities

The details of facilities available in the region are shown in Table 3.5. Lower order facilities are available almost uniformly in the Planning area.

***Table 3.4 Facilities available in the region***

| Sl.No | Name of Panchayats/ Municipalities | LP and UP | HS | HSS | Arts & Science College | BEd College | Teachers Training Institute | Engineering College/ College of Science and Technology/Poly Technic | Banks(National/scheduled/ cooperative bank) | Seed Farm | Market -Weekly | ITC/ITI | Taluk Hospital /FHC | PHC | Veteriinary Hospital | Krishi Bhavan | Fire station | Bus stand | *Cinema theatre* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ERATTUPETTA | 5 | 2 | 4 | 1 | 1 | 0 | 0 | 10 | | | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 2 |
| 2 | POONJAR-THEKKEKARA | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | | 1 | 0 | 1 | 0 | | 1 | | 0 | |
| 3 | POONJAR | 5 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | | | 0 | | 1 | | 1 | | 0 | 1 |
| 4 | THIDANAD | 6 | 1 | 1 | 1 | 0 | 0 | 0 | 7 | | | 0 | | 1 | | 1 | | 0 | |
| 5 | TEEKOY | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | | | 0 | | 1 | 1 | 1 | | 0 | |
| 6 | MOONNILAVU | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | | | 0 | | 1 | | 1 | | 0 | |
| 7 | THALAPPALAM | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | | | 0 | | 1 | | 1 | | 0 | |
| 8 | THALANAD | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | | | 0 | | 1 | | 1 | | 0 | |

Erattupetta scores highest rank in the availability of facilities in the region. But these facilities are not enough to cater the need of the residents of Erattupetta.

### 3.4.6 Resources

The resources mainly available in the region are the Agro based products especially cash crops. Granite is the major mineral available in the region.

## 3.5 TRANSPORT LINKAGES

Erattupetta is connected to almost all the Grama Panchayats of the influence region by State Highways/ Major District roads. In addition to this the neighboring areas are well connected to Erattupetta by other minor roads also. A good public transport system is available connecting Erattupetta with these settlements.

## 3.6 CONCLUSION

*In the regional context of the district, Erattupetta is proposed as a third order settlement as per District urbanization Report, Kottayam. In the district level analysis Primary activity (agriculture) is identified as the activity of the town. Three major roads included in the regional road network passes through Erattupetta town. The economy of the region is agriculture oriented and primary sector activity is the character of the region. The agro based products are the major resource of the region and the level of industrialization is low. Grama Panchayats in the region are more or less plantation areas with no urban character. Erattupetta has very good transportation linkage with the settlements in the influence region. For higher order functions people are depending more on Kottayam town.*

# 4. DEMOGRAPHY

## 4.1 INTRODUCTION

The knowledge of basic demographic trends and details are essential to sort out the problems and exact needs of the area. It provides ideas regarding the habitation of people and other basic requirements which should be considered while planning the area. The population parameter serves as the basis of all planning process. The estimation of future population is needed for the assessment of various needs and distribution of activities in the available land. This chapter explains the population and demographical characteristics of Erattupetta town. Comparative study is also made with Kottayam district, Kerala state, similar towns and other local self-Government institutions etc. The study is based on the census reports.

## 4.2 POPULATION SIZE

Population of Kerala as per 2011 census is 3, 33,87,677 and that of Kottayam district is 19,79,384. Kottayam district with 5.68% of total geographical area of the state accommodate 5.93% of total population of the state. Erattupetta has highest population density among the six urban centers of the district namely Kottayam, Changanassery, Pala, Vaikom and Ettumanoor.

***Table 4.1 Population size of Erattupetta town***

| Year | 1981 | 1991 | 2001 | 2011 |
|---|---|---|---|---|
| **Population** | 16505 | 21226 | 25103 | 29705 |

*Source: Census Reports*

The population of Erattupetta town as per 2011 census is 29705. It was 16505 as per 1981 census and there after showing an increasing trend up to 2011 and reached the figure of 29705 in 2011.

The population size of the town since 1981 is shown in Table 4.1. It is also represented in Figure 4.1.

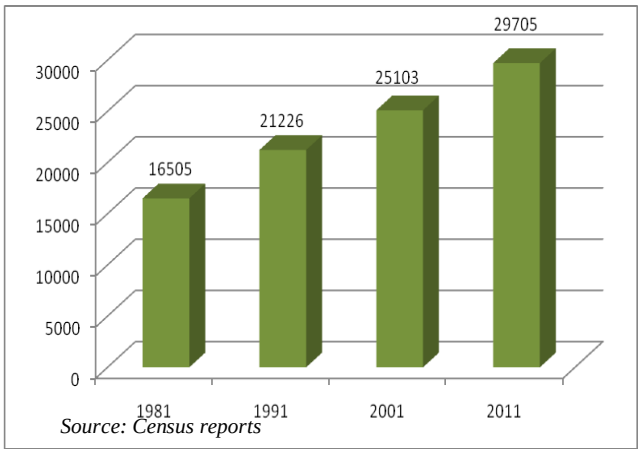



***Fig 4.1 Population size from 1981***

Erattupetta shares 1.50% of District Population as per 2011 census. When comparing the population of Erattupetta with other five Municipal towns of Kottayam district, Erattupetta is in the fourth position. As per 2011 census the six Municipalities in the district, ie. Kottayam (old municipal limit), Changanassery, Erattupetta, Vaikom, Ettumanoor and Pala have population size of 55374, 47685, 29705, 23234, 45837 and 22056 respectively. Among the six urban centers Vaikom, Ettumanoor and Erattupetta Municipalities recorded an increase in population size during the period 2001-2011 and it is represented in Figure 4.2. Old municipalities except Vaikom municipality shows decreasing trend of population size which shows the saturation level of population and new municipalities shows an increasing trend which shows their capacity to cater to more population.

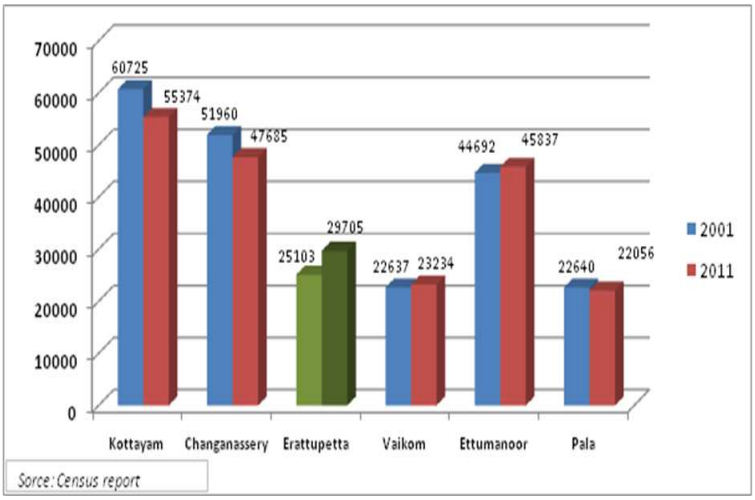



***Fig 4.2 Population size of municipalities***

## 4.3 POPULATION GROWTH RATE

The decennial population growth rate of Erattupetta town from 1981-91 to 2001-2011 is shown in Figure 4.3. The growth rate of Erattupetta during 1981-91 was 28.60 % and then it was reduced to 18.26 % during 1991-2001 and further a little increase to 18.33 % during 2001-11. The population growth rate is stable during the decade from 2001 -2011 which shows the level reaching saturation. Comparison of population growth rate of Erattupetta town with that of Kottayam district, State (total) and state (urban) is shown in Table 4.2 and it indicates that growth rate of Erattupetta is greater than the district growth rate and state growth rate. Since the Gramapanchayaths are

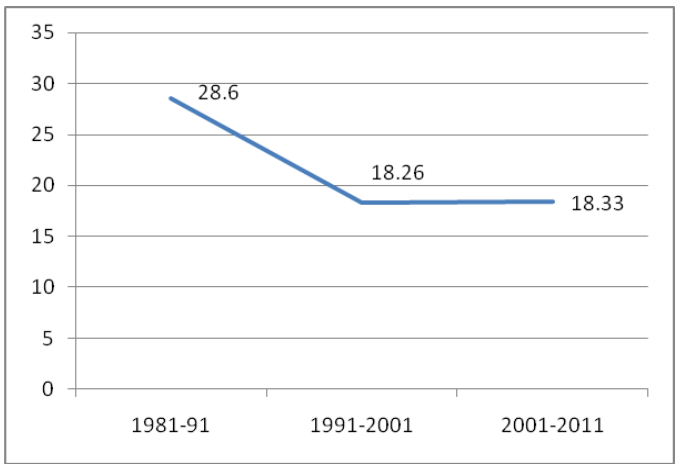



***Fig 4.3 Decadal Population Growth Rate***

upgraded to Municipalities, Kerala state rural growth rate is decreasing. The decrease in rural growth rate reflects in the increase in urban growth rate.

***Table 4.2 Population Growth rate Comparison***

| | 1981-91 | 1991-2001 | 2001-11 |
|---|---|---|---|
| **Erattupetta** | 28.60 | 18.26 | 18.33 |
| **Kottayam District** | 7.71 | 6.86 | 1.07 |
| **Kerala State** | 14.32 | 9.43 | 4.91 |
| **Kerala State(urban)** | 60.97 | 7.64 | 92.76 |

*Source: Census Reports*

Table 4.3 and Figure 4.4 gives the comparison of decadal population growth rate of Erattupetta town with other five towns of the district Kottayam, Changanassery, Pala, Vaikom and Ettumanoor.

***Table 4.3 Population growth rate Comparison with other towns in the district***.

| Town | Growth Rate (in %) | | |
|---|---|---|---|
| | 1981-91 | 1991-01 | 2001-11 |
| **Kottayam (Old Municipal limit)** | -1.98 | -3.84 | -8.82 |
| **Changanassery** | 0.94 | -0.91 | -0.08 |
| **Vaikom** | 3.28 | 3.91 | 2.64 |
| **Pala** | 1.18 | 3.42 | -0.03 |
| **Ettumanoor** | 12.60 | 8.43 | 2.56 |
| **Erattupetta** | 28.60 | 18.26 | 18.33 |

During the decades 1981-91, 1991-2001, 2001-11 Erattupetta has shown the highest population growth rate compared to Kottayam, Changanassery, Vaikom, Pala and Ettumanoor towns. The growth rate was higher during 1981-91 and it was reduced during 1991-01 and there was a mere increase in growth rate during 2001-11. It shows that all urban centers of the district are showing a decreasing trend in decennial population growth rate and recording even negative population growth rate.

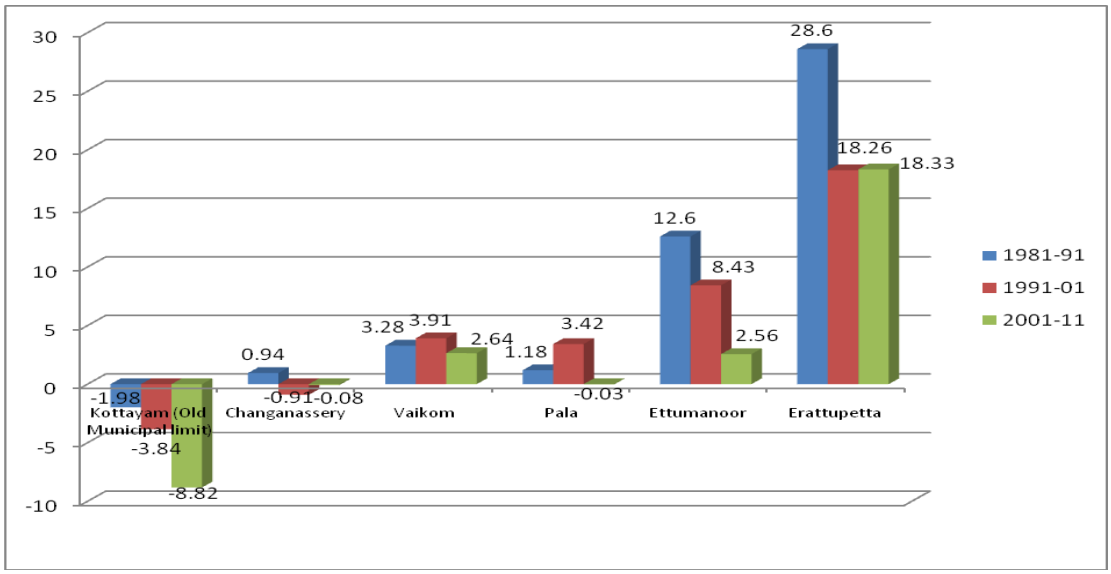



***Fig 4.4 Comparison of Population growth rate***

The population growth rate of the period 2001-2011 of the Grama Panchayats in the immediate surroundings is shown in Figure 4.5. Teekoy Grama panchayath recorded negative growth rate whereas other Three Grama Panchayats, Thalappalam, Poonjar and Thidanad recorded less population growth rate than Erattupetta. This shows the high density of population in Erattupetta municipality when compared to surrounding Grama Panchayats. The terrain and plantation land use of the surrounding panchayaths is one of the reasons for people to reside in the town area without disbursing to neighboring Grama Panchayats. The social bonding and culture of the people also results in the high density of Erattupetta municipality.

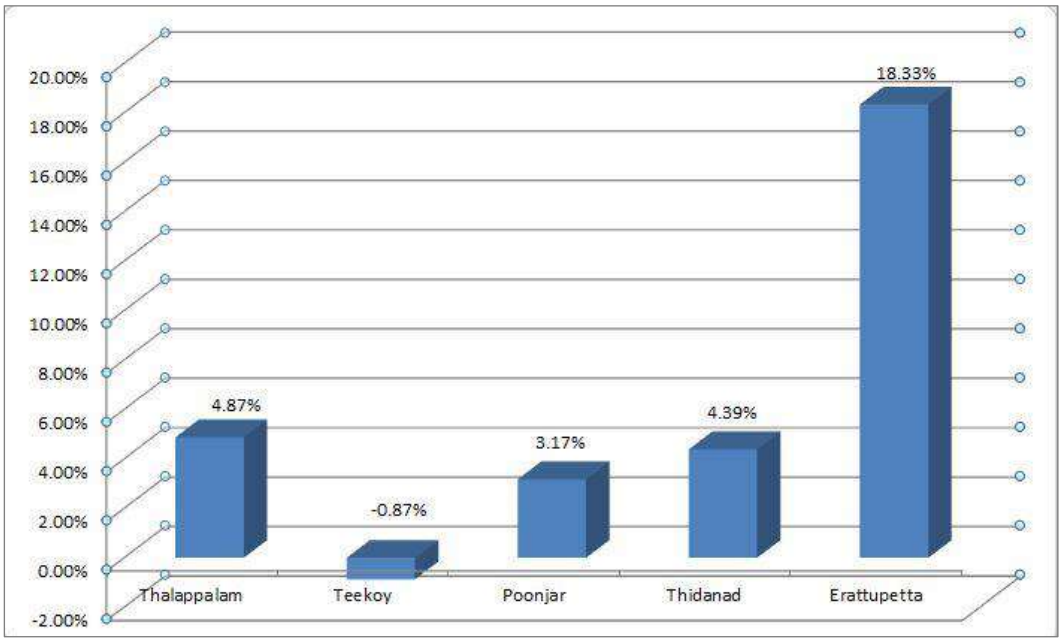



***Fig 4.5 Comparison of population growth rate of Grama Panchayats***

## 4.4 POPULATION DENSITY

Population density of Kerala is 860 persons/sq. km and that of Kottayam district is 895 persons/sq. km. Kottayam ranks eighth among the districts of the state as per density of population as per 2011 census.

The population density of Erattupetta town as per 2011 census is 3960 persons/sq.km. It is higher than the population density of other five towns in the district, viz Kottayam (old municipal limit), Changanassery, Vaikom, Pala and Ettumanoor which have density of 3561 persons/sq.km, 3532 persons / Sq. Km 2661 persons/Sq. Km, 1373 persons /Sq.km and 1648 persons/ Sq. Km respectively. The details are furnished in Figure 4.6.

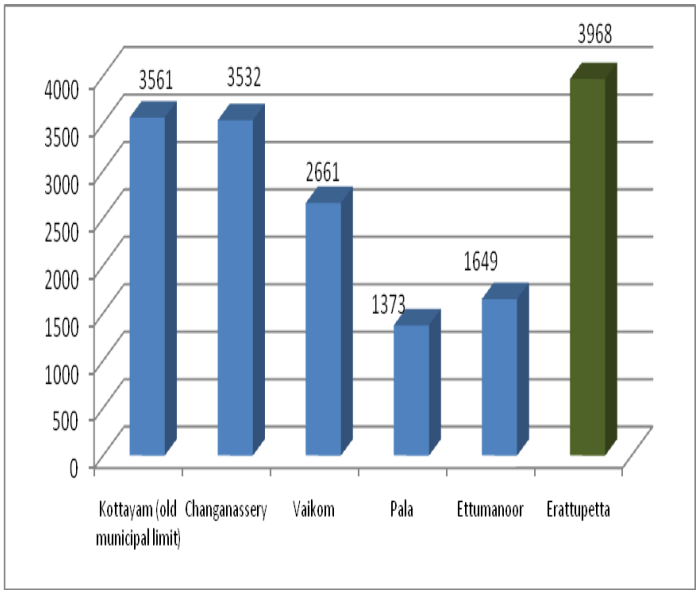



***Fig 4.6 Comparison of density of population with other urban centres***

In the district scenario also, the population density of Erattupetta is higher. While comparing with the density of surrounding Grama Panchayaths of Erattupetta Town ie, Thalapalam, Thidanadu, Theekoi and Poonjar Grama Panchayats it is seen that population density of these panchayats are lesser than that of Erattupetta. Figure 4.7 reveals the less population density in the surrounding Grama Panchayats

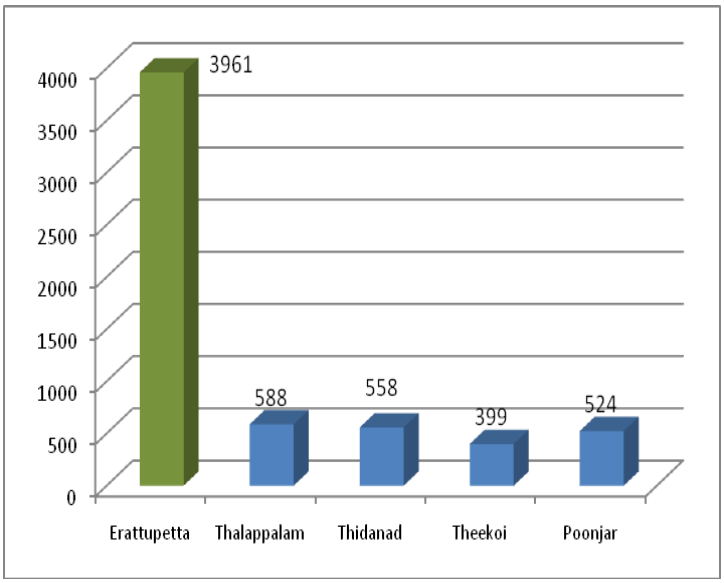



***Fig 4.7 Comparison of density of population (2011) with surrounding Grama Panchayats***

## 4.5 WARD WISE POPULATION DENSITY

### 4.5.1 Gross Population Density

The variation in density of population among different wards of the town is shown in Table 4.4. As per 2011 census it is seen that the density of Population of the town is 3960 persons per Sq km and in wards it varies from 1415 to 10144 persons per Sq Km. Generally the population density is higher. Murikkolil ward is the highly dense ward in Erattupetta municipality. The presence of agriculture land is very less in this area compared to other wards. The low density indicates the availability of agriculture land mainly rubber plantation where residential buildings are not thickly concentrated. Aruvithura ward is the low density ward.

***Table 4.4 Ward wise Gross Population Density***

| Ward no. | Name of ward | Area (Sq.km) | Population | Gross density (Persons/Sq.km) |
|---|---|---|---|---|
| 1 | Idathumkunnu | 0.184668 | 1130 | 6119 |
| 2 | Kalluthazham | 0.256842 | 1029 | 4006 |
| 3 | Vattakayam | 0.232721 | 1037 | 4456 |
| 4 | Nadooparambu | 0.161778 | 1046 | 6466 |
| 5 | Murikkolil | 0.098481 | 999 | 10144 |
| 6 | Mathakkal | 0.418039 | 1062 | 2540 |
| 7 | Kattamala | 0.267359 | 1109 | 4148 |
| 8 | Eelakkayam | 0.197307 | 1041 | 5276 |
| 9 | Karackadu | 0.272466 | 1045 | 3835 |
| 10 | Thevarupara | 0.305318 | 1012 | 3315 |
| 11 | Kuttimaramparambu | 0.197652 | 1152 | 5828 |
| 12 | Pathazhappadi | 0.152618 | 1139 | 7463 |
| 13 | Mulanthanam | 0.171033 | 1020 | 5964 |
| 14 | Kollamparambu | 0.186031 | 1080 | 5805 |
| 15 | Safa Nagar | 0.180780 | 1080 | 5974 |
| 16 | Kuzhiveli | 0.367950 | 1071 | 2911 |
| 17 | Sasthamkunnu | 0.352824 | 1041 | 2950 |
| 18 | Mattackadu | 0.241901 | 1071 | 4427 |
| 19 | Vanchankal | 0.290036 | 1105 | 3810 |
| 20 | Town Ward | 0.354899 | 1147 | 3232 |
| 21 | Thadavanal | 0.234307 | 1067 | 4554 |
| 22 | Mutharamkunnu | 0.156082 | 1037 | 6644 |
| 23 | Aanippadi | 0.181074 | 1007 | 5561 |
| 24 | Chirappara | 0.204192 | 982 | 4809 |

| | | | | |
|---|---|---|---|---|
| 25 | Kallolil | 0.168874 | 1058 | 6265 |
| 26 | Kondoormala | 0.421896 | 1003 | 2377 |
| 27 | Block Office | 0.448183 | 1030 | 2298 |
| 28 | Aruvithura | 0.780682 | 1105 | 1415 |
| **Total** | | **7.485989** | **29705** | **3968** |

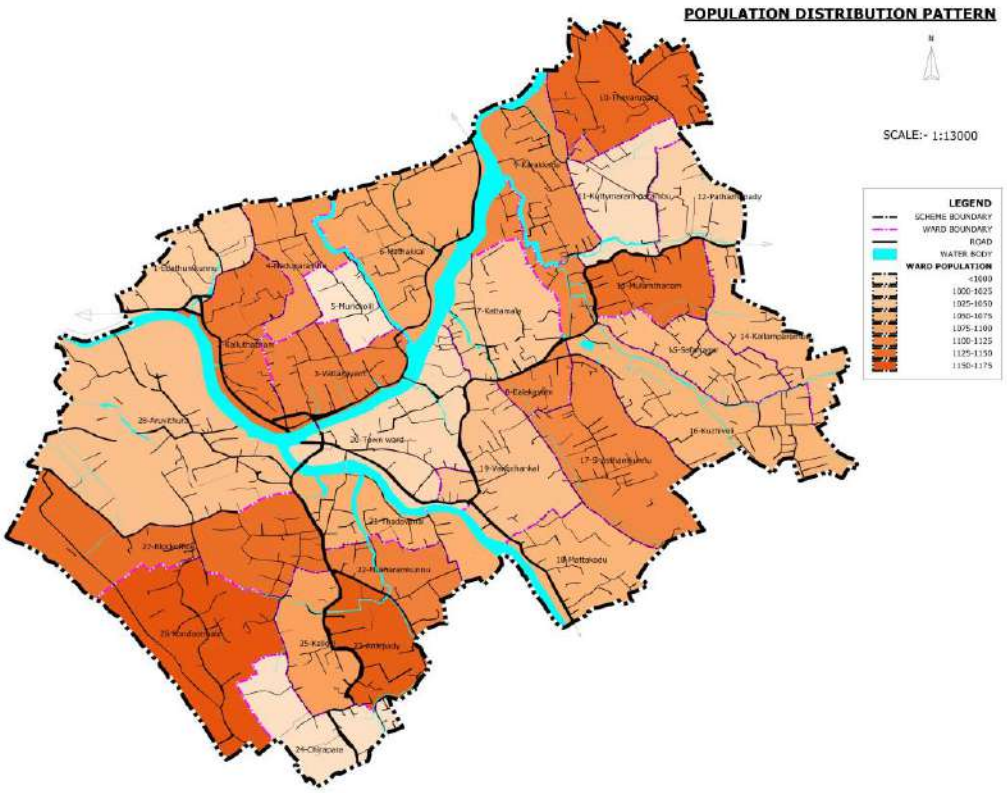



***Fig 4.8 Ward wise Population density***

The distribution of Ward wise population density is shown in Figure 4.8. It shows the spatial distribution of wards with different ranges of population densities.

### 4.5.2 Net Population Density

The net population density of the planning area is shown in Figure 4.9. The net population density is high in Mutharamkunnu with 15638 persons per sq:km followed by Nadooparambu ward with 14356 persons per sq;km. Idathumkunnu (12623 persons per sq;km) and Murikkolil (12294 persons per sq:km) are the other wards with high net density. The lower net population density recorded in Aruvithura and Mathakkal wards, where the net population density are 6014 and 6661 persons per sq;km respectively. The ward wise net population density is shown in Table 4.5.

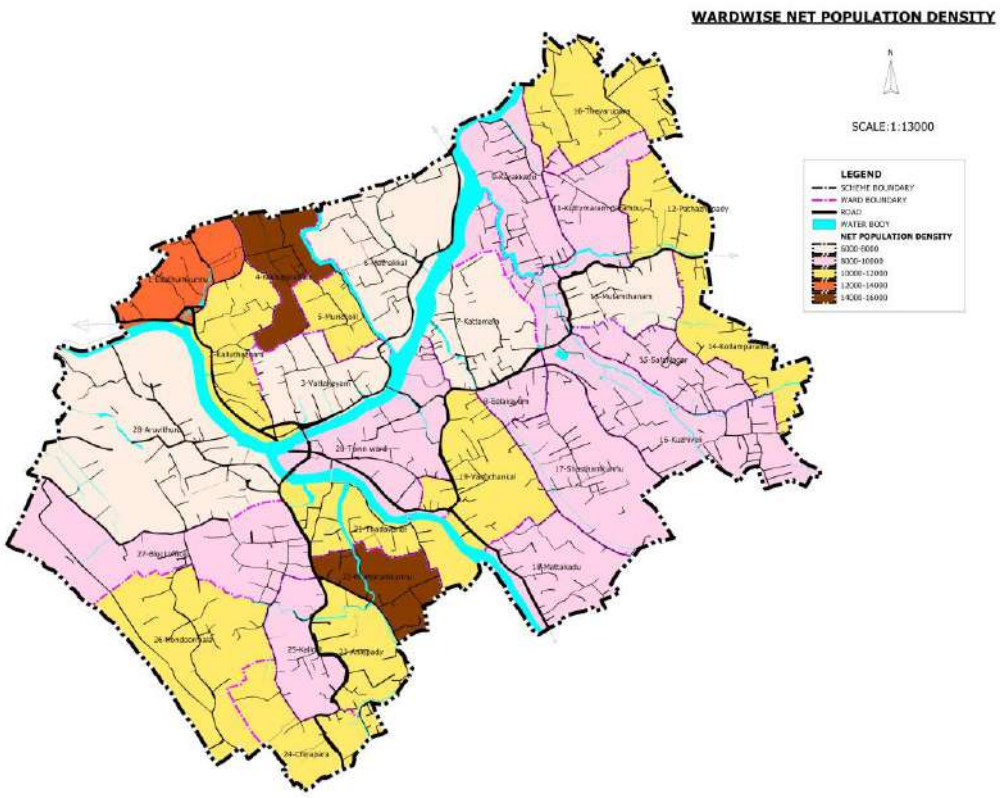



***Fig 4.9 Ward wise net Population density***

***Table 4.5 Ward wise Net density of population***

| Ward no. | Ward | Residential area | Population | Net density (Persons/Sq.km) |
|---|---|---|---|---|
| 1 | Idathumkunnu | 0.089517 | 1130 | 12623 |
| 2 | Kalluthazham | 0.09783 | 1029 | 10518 |
| 3 | Vattakayam | 0.148861 | 1037 | 6966 |
| 4 | Nadooparambu | 0.072862 | 1046 | 14356 |
| 5 | Murikkolil | 0.081256 | 999 | 12294 |
| 6 | Mathakkal | 0.159425 | 1062 | 6661 |
| 7 | Kattamala | 0.139781 | 1109 | 7934 |
| 8 | Eelakkayam | 0.126156 | 1041 | 8252 |
| 9 | Karackadu | 0.115237 | 1045 | 9068 |
| 10 | Thevarupara | 0.100689 | 1012 | 10051 |
| 11 | Kuttimaramparambu | 0.118468 | 1152 | 9724 |
| 12 | Pathazhappadi | 0.108806 | 1139 | 10468 |
| 13 | Mulanthanam | 0.12848 | 1020 | 7939 |
| 14 | Kollamparambu | 0.102055 | 1080 | 10583 |
| 15 | Safa Nagar | 0.126376 | 1080 | 8546 |
| 16 | Kuzhiveli | 0.12376 | 1071 | 8654 |

| | | | | |
|---|---|---|---|---|
| 17 | Sasthamkunnu | 0.126231 | 1041 | 8247 |
| 18 | Mattackadu | 0.11402 | 1071 | 9393 |
| 19 | Vanchankal | 0.109422 | 1105 | 10099 |
| 20 | Town Ward | 0.134971 | 1147 | 8498 |
| 21 | Thadavanal | 0.093118 | 1067 | 11459 |
| 22 | Mutharamkunnu | 0.066313 | 1037 | 15638 |
| 23 | Aanippadi | 0.09843 | 1007 | 10231 |
| 24 | Chirappara | 0.082318 | 982 | 11929 |
| 25 | Kallolil | 0.115676 | 1058 | 9146 |
| 26 | Kondoormala | 0.099109 | 1003 | 10120 |
| 27 | Block Office | 0.123573 | 1030 | 8335 |
| 28 | Aruvithura | 0.183727 | 1105 | 6014 |
| **Total** | | **3.186467** | **29705** | **9322** |

## 4.6 POPULATION CONCENTRATION PATTERN

The population concentration pattern of the town is derived by arriving at the cumulative population after arranging the wards in the descending order of density.

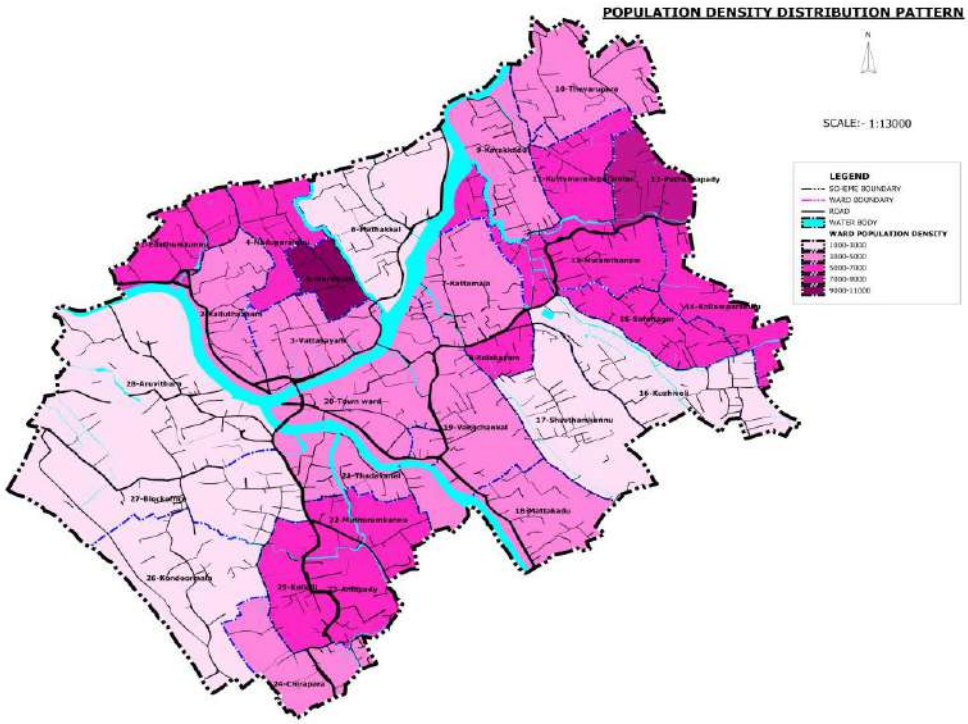



***Fig 4.10 Population concentration pattern***

The population concentration pattern of Erattupetta (2011) is shown in Figure 4.10. It shows that 2/3 population of the town is concentrated in 18 wards, with an area of 3.74 sq. Km. which comprising of 50% of total town area. The rest of population of the town

is concentrated in 10 wards with total area of 3.76 sq. km. in the remaining 50% of total area.

## 4.7 AGE – SEX PYRAMID

Graphically there are different ways to present population data. The most significant demographic characteristic of a population is its age-sex structure and the use of an age-sex pyramid, also known as a population pyramid, is considered as the best way to graphically illustrate the age and sex distribution of a given population.

An age-sex pyramid consists of two horizontal histograms joined together. It displays the percentage or actual amount of a population broken down by gender and age. The five-year age increments on the y-axis allow the pyramid to reflect the long-term trends in the birth and death rates.

The Age – sex pyramid of Erattupetta Town was derived from the Socio-Economic survey (2016) data and percentage of male and female population in different age group which is shown in Table 4.6 and in Figure 4.11.

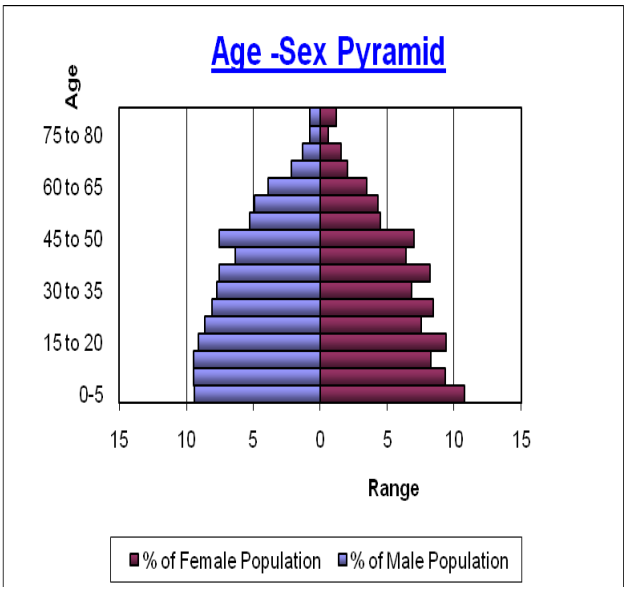



***Fig 4.11 Age –sex pyramid of Erattupetta Municipality***

***Table 4.6 Age –Sex Pyramid % male female population in different ranges***

| Age range | % of Male Population | % of Female Population | Age range | % of Male Population | % of Female Population |
|---|---|---|---|---|---|
| **00 to 05** | 9.41 | 10.8 | **45 to 50** | 7.54 | 7.03 |
| **05 to 10** | 9.44 | 9.34 | **50 to 55** | 5.27 | 4.49 |
| **10 to 15** | 9.44 | 8.25 | **55 to 60** | 4.89 | 4.32 |
| **15 to 20** | 9.09 | 9.41 | **60 to 65** | 3.85 | 3.47 |
| **20 to 25** | 8.62 | 7.56 | **65 to 70** | 2.15 | 2.05 |
| **25 to 30** | 8.08 | 8.45 | **70 to 75** | 1.29 | 1.55 |
| **30 to 35** | 7.73 | 6.8 | **75 to 80** | 0.79 | 0.59 |
| **35 to 40** | 7.51 | 8.22 | **> 80** | 0.79 | 1.22 |
| **40 to 45** | 6.31 | 6.44 | | | |

Except a small increase of female percentage below 5 years, generally the percentage of age groups below 20 years remains almost same. This implies a decrease the population growth rate. The number of male and female varies in different age group. The table shows that above 50% of the population are below 30 years which indicates abundant human resource available in the city which could contribute to the development in future. In the case of child population, the age group below 5 years female domination is seen.

## 4.8 SEX RATIO

The total male and female population of Erattupetta as per 2011 census is 15062 and 14643 respectively and the sex ratio of the town is 972. The variation in sex ratio of the town from 1981 and comparison with the district figures is shown in Table 4.7. It shows that, the sex ratio of the town has gradually increased from 932 to 973 in 2011.

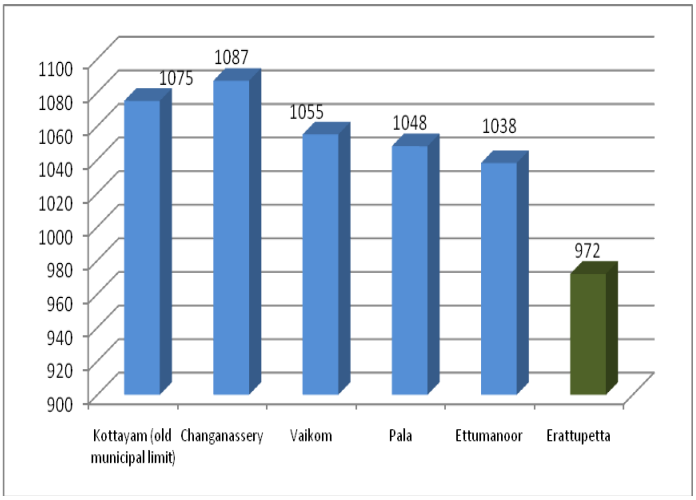



***Fig 4.12 Comparison of Sex Ratio with other urban centres***

***Table 4.7 Sex Ratio – Comparison with District figures***

| | 1991 | 2001 | 2011 |
|---|---|---|---|
| **Kottayam District** | 1011 | 1029 | 1075 |
| **Erattupetta** | 932 | 963 | 973 |

*Source: Census Reports*

The sex ratio of the district and state (2011) are 1040 and 1084 respectively and the sex ratio of Erattupetta is less than these figures. While comparing with other three towns in the district, as shown in Figure 4.12 Erattupetta has the least sex ratio.

## 4.9 LITERACY RATE

Literacy rate of Erattupetta town as per 2011 census is 95.22%, with male literacy rate of 97.30% and female literacy rate of 93.10%. Table 4.8 gives a comparison of literacy rate of Erattupetta with corresponding values of state, district and other four Municipalities of the district. All the five municipalities in the district,

stands above state literacy percentage. Table 4.9 gives a comparison of literacy rate of Erattupetta town with nearby LSGS. All the five nearby LSGS have the similar literacy rate.

***Table 4.8 Comparison of Literacy rates (2011)***

| | Literacy rate (in percentage) |
|---|---|
| **Kerala state** | 94.00 |
| **Kottayam district** | 97.20 |
| **Kottayam Municipality** | 97.69 |
| **Pala Municipality** | 97.63 |
| **Changanassery Municipality** | 97.19 |
| **Vaikom Municipality** | 96.84 |
| **Erattupetta Municipality** | 95.22 |

*Source: Census Reports*

***Table 4.9 Comparison of Literacy rates (2011) with nearby LSGS***

| LSGS | Literacy rate (in percentage) |
|---|---|
| **Teekoy** | 97.01 |
| **Thalappalam** | 97.97 |
| **Thidanad** | 97.54 |
| **Poonjar Thekkekara** | 97.71 |
| **Poonjar** | 95.22 |
| **Erattupetta** | 95.22 |

## 4.10 HOUSEHOLD SIZE

The household size of Erattupetta town as per the 1991 census is 5.89. The corresponding figure for the district is 5.05. The number of occupied households and household size from 1991 is given in Table 4.10. It shows that the household size, which was 5.89 in 1991, has been reduced to 5.26 in 2001and reduced further to 4.58 in 2011.

***Table 4.10 Variation in household size***

| | 1991 | 2001 | 2011 |
|---|---|---|---|
| **No. of households** | 3604 | 4769 | 6486 |
| **Household size** | 5.89 | 5.26 | 4.58 |

*Source: Census Reports*

## 4.11 CONCLUSION

*Among the six towns of the district, three towns Kottayam, Changanassery and Pala recorded negative decadal growth rate during 2001-2011. The growth rate of population in the surrounding Grama Panchayats during 1991-2011 is less compared to Erattupetta Municipality. The population density of Erattupetta is higher when compared with other towns in the district and the neighboring Grama Panchayats. The population density of different wards in the town is varying from 982 to 1152. Highest population density is seen in Murikkolil ward. The age sex pyramid of the town shows the availability of human resource in the youth stage are more than old people and children which will help in the progress of the town. The sex ratio of Erattupetta is less than state and district figures. Among the urban areas in Kottayam district, Erattupetta has the largest population density.*

# 5. OCCUPATIONAL STRUCTURE

## 5.1 INTRODUCTION

The occupational structure is described and analysed by means of various classificatory schemes, which group similar occupations together according to specific criteria such as skill, employment status, or function. In this chapter the existing economic base of the town based on the occupational structure is studied. Work participation rate and its temporal variation, the occupational structure and the change that has happened over the decades are analysed.

## 5.2 WORK FORCE OF THE TOWN

The work force of a place is usually indicated by work participation rate (WPR) which is the ratio of total workers (main and marginal) to the population of the place and it is generally expressed as a percentage. As per 2011 census the work participation rate of Erattupetta Town is 32%. It means, out of total population of 29705 persons, 9442 people are workers. Out of 9442 total workers, 8137 workers are male workers and 1305 workers are female workers. The remaining 20263 persons are non-workers which is 68% of total population, 6925 male and 13338 female. The percentage of workers and non-workers are shown in Figure 5.1.

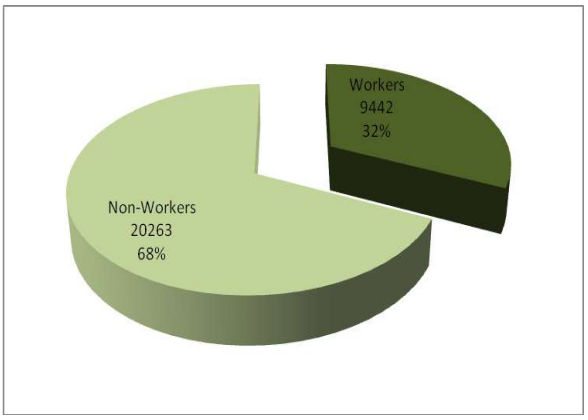



***Fig 5.1 Workers and non workers of Erattupetta town in 2011***

The temporal variation of work participation rate of Erattupetta is shown in Table 5.1 and Figure 5.2. The number of total workers and work participation rate of Erattupetta is steadily increasing from 1981 to 2011. The rate of increase in work participation is less during 1981- 91. But there is a variation in work participation during 2001 and 2011. It indicates that new job opportunities came from the developments.

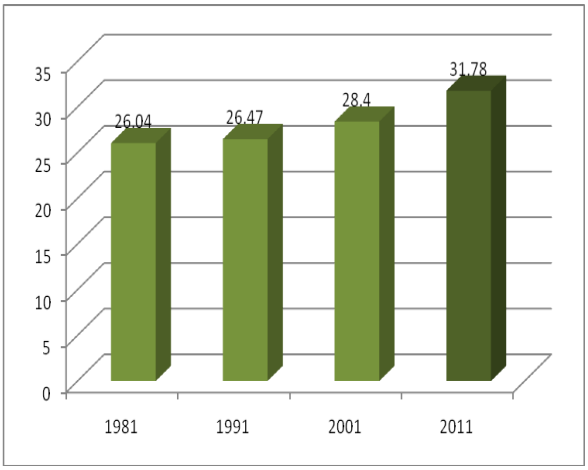



***Fig 5.2 Temporal Variation of WPR in Erattupetta Municipality***

***Table 5.1 Temporal variation in Work Participation Rate***

| Year | 1981 | 1991 | 2001 | 2011 |
|---|---|---|---|---|
| **Population** | 16505 | 21226 | 25103 | 29705 |
| **Total workers** | 4298 | 5619 | 7128 | 9442 |
| **Work participation rate** | 26.04 | 26.47 | 28.40 | 31.78 |

*Source: Census 1981, 1991, 2001 and 2011*

The growth rate of population and the growth rate of workers from 1981-2011 are shown in Table 5.2 and Figure 5.3. Growth rate of population is decreased from 1981-91 to 1991-01. But there is a nominal increase in population in 2001-11 compared to 1991-01. The growth rate of workers was decreased in 1991-01 compared to 1981-91. But during 2001-11 the growth rate of workers is increased from 1991-01 period. By comparing the growth rates it is clear that the growth rate of workers is more than the growth rate of population. It is interesting to note that there is considerable increase in the number of workers, even though the population is reduced during the period 1991-01 and 2001-2011. It indicates the enhancement of the economic base of the town and creation of new opportunities.

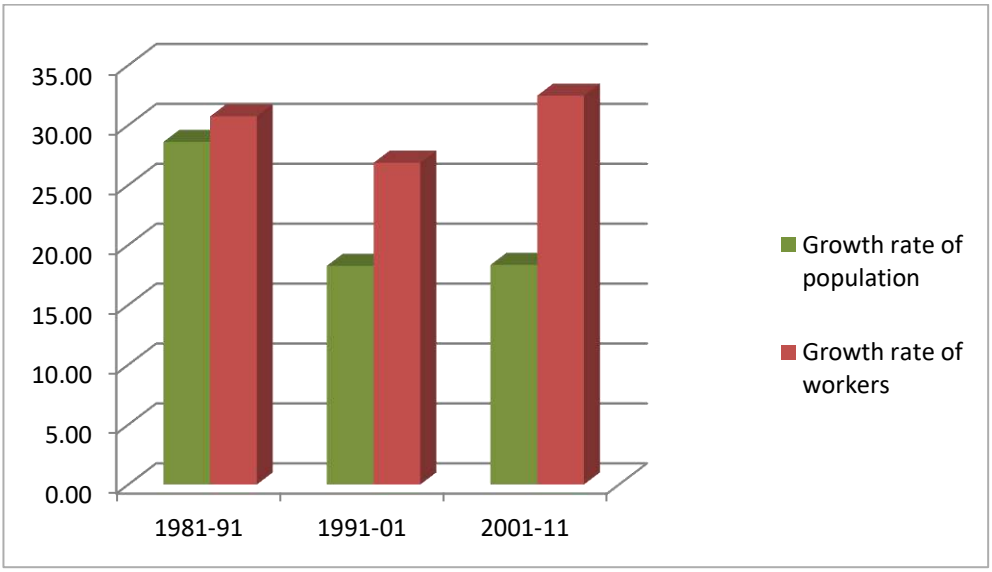



***Fig 5.3 Comparison of Growth Rate of Population and Workers***

***Table 5.2 Comparison of Growth Rate of Population and Workers***

| | 1981-91 | 1991-01 | 2001-11 |
|---|---|---|---|
| **Growth rate of population** | 28.60% | 18.26% | 18.33% |
| **Growth rate of workers** | 30.73% | 26.86% | 32.46% |

*Source: Census 1981, 1991, 2001 and 2011*

Comparison of work participation rate of Erattupetta is made with corresponding figures of other urban centers of the district (as per 2011 census) and surrounding Grama Panchayats (as per 2011 census). The work participation rate of Erattupetta is lesser than other municipalities. The comparison is shown in figure 5.4.

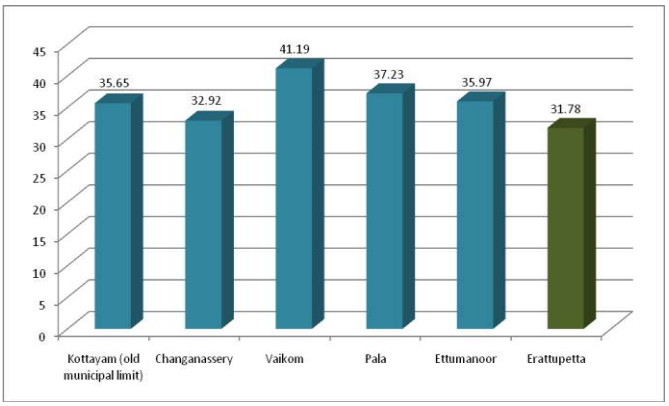



***Fig 5.4 Work Force Participation Rate –comparison***

Comparison of work participation rate of Erattupetta with surrounding Grama Panchayats is shown in Figure 5.5 and it shows that work participation rate of all surrounding Grama panchayats are higher than that of Municipal area. By comparing the work force participation rate it is clear that the WPR is increasing in all the panchayaths and in the municipality.

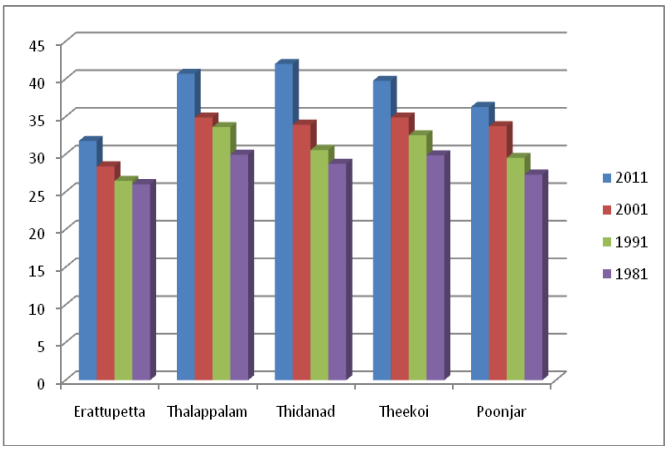



***Fig 5.5 Work Force Participation Rate – a comparison with adjacent local bodies***

## 5.3 OCCUPATIONAL STRUCTURE

In the 2011 census, the main workers are classified into four categories viz. Cultivators, Agricultural labourers, Household industrial workers and other workers. The Other workers category includes the primary sector workers like fishermen and workers engaged in mining and plantation work. Occupational structure of Erattupetta (2011) is shown in Figure 5.6. In the town,

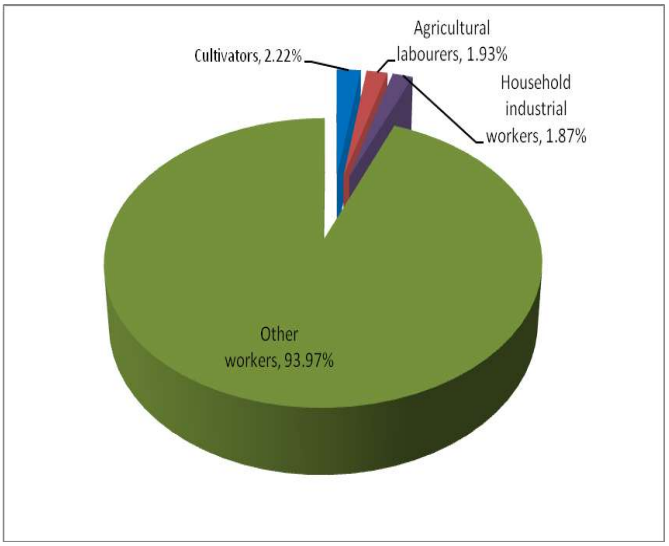



***Fig 5.6 Occupational Structure of Erattupetta 2011***

93.97 % of workers belong to other workers category, 1.93% of workers are Agricultural laborers, 2.22 % of workers are cultivators, and 1.87% Household industrial workers.

The temporal variation of occupational structure of Erattupetta is shown in Table 5.3 and figure 5.7. It shows that number of laborers engaged in primary sector (cultivators and agriculture labors) is showing a decreasing trend over the years and not much changed after 2001, there is good increase in other workers category.

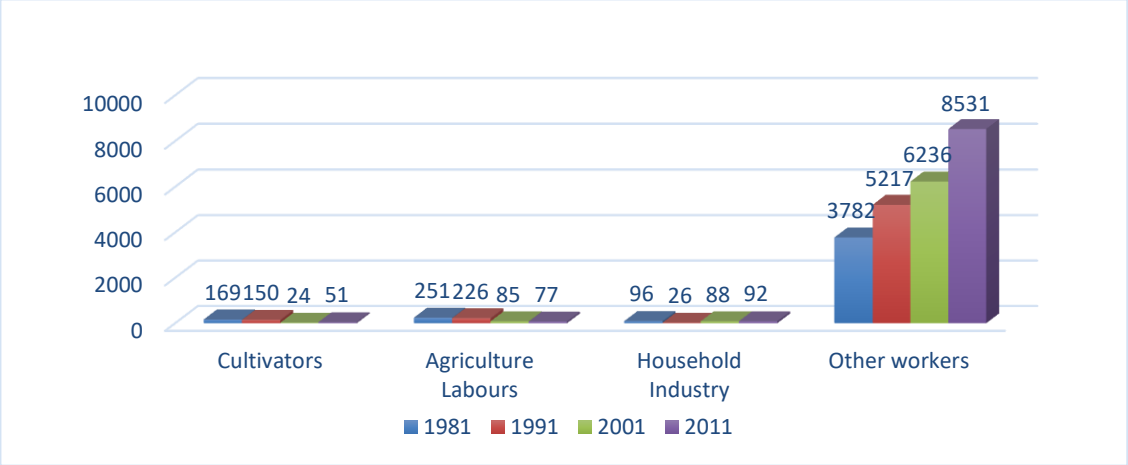



***Fig 5.7 Occupational Structure of Erattupetta – Temporal variation***

***Table 5.3 Occupational Structure of Erattupetta - Temporal variation***

| Year | Cultivators | Agriculture laborers | Household industrial workers | Other workers |
|---|---|---|---|---|
| 1981 | 169 | 251 | 96 | 3782 |
| 1991 | 150 | 226 | 26 | 5217 |
| 2001 | 24 | 85 | 88 | 6236 |
| 2011 | 51 | 77 | 92 | 8531 |

*Source: Census 1981, 1991, 2001*

More detailed composition of workers is available from the socio-economic survey 2016 and it is given in Table 5.4 and Figure 5.8. The survey reveals that, only 6.98% of workers are Government employee and 6.67% of workers are doing works related to business. Workers engaged in agriculture and animal husbandry sector constitute 5.91%. 5.39% of workers are working outside the country. The workers doing other types of works are 48.42% which is having the highest priority.

***Table 5.4 Composition of Workers- 2016***

| Category | Percentage | Category | Percentage |
|---|---|---|---|
| Government Employee, teachers, pensioners | 6.38 | Hotel Workers | 1.76 |
| Agriculture and AH | 5.91 | Driver | 9.78 |
| Working in abroad | 5.39 | Traders | 1.70 |
| Daily wages workers | 2.58 | Plantation Workers | 0.29 |
| Construction Workers | 3.51 | Other major industrial worker | 4.74 |
| House hold industrial worker | 1.87 | Other workers | 48.42 |
| Venders | 0.99 | | |
| Business | 6.67 | | |

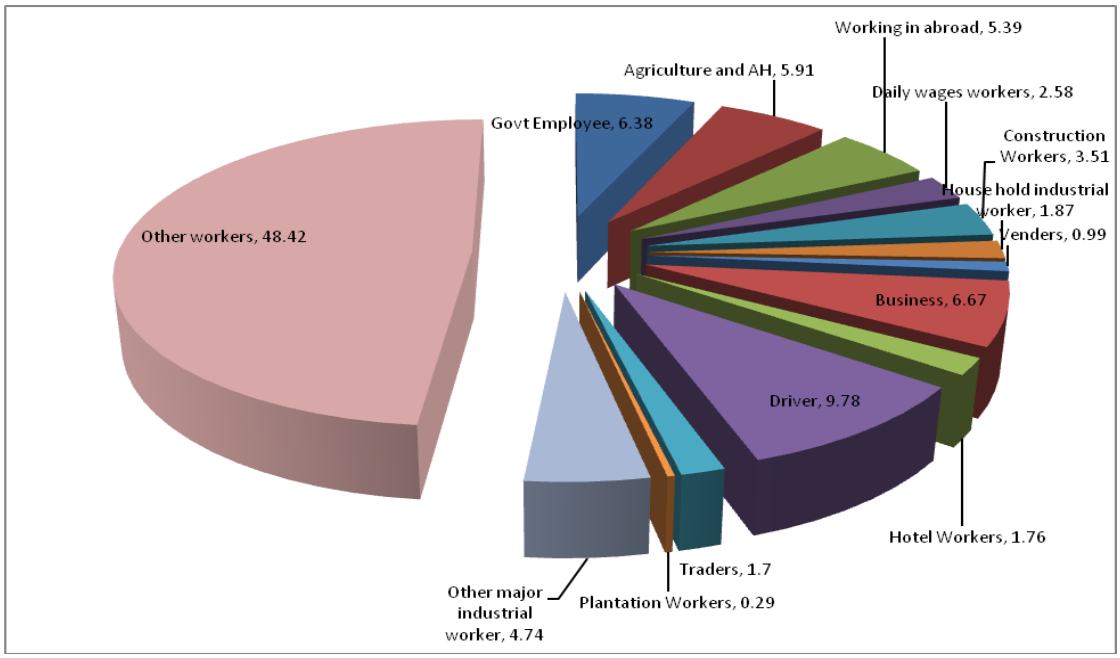



***Fig 5.8 Composition of workers as per Socio-Economic survey 2016***

## 5.4 CONCLUSION

*The work participation rate of Erattupetta town is less compared to the district and other urban centers of the district and less than that of surrounding Grama panchayats. However the growth rate of workers is more compared to the population growth rate. The occupational structure shows that majority of workers belong to the other workers category. The work participation rate is growing but new ventures have to be identified to engage the young human resource available in the municipality.*

# 6. LAND USE

## 6.1 INTRODUCTION

The structure of any city is best understood through the study of the extent and distribution of various existing land uses. The land use of an area is indicated by the predominant activity of that area, be it residential, commercial, public and semi-public, transportation, agriculture, park and open spaces and industrial. Hence the analysis of existing land use is inevitable to understand the predominant economic activity of the area and to assess the availability of suitable land for the future urban development activities of the town. From this it is possible to draw the future requirement of land for various uses in the town as per the sectoral analysis. The Department of Town and Country Planning conducted detailed land use survey in the year 2016, as part of preparation of Development Plan for Erattupetta, and updated the land use in 2023.

## 6.2 GROWTH OF THE TOWN

Erattupetta was one of the main commercial towns in Kottayam district in the past. The commercial activities diminished as Alapuzha harbour lost its glory. Aruvithura church is one of the oldest pilgrim centre at Erattupetta. In 1887 Erattupetta- Kanjirappally road was built for The John Daniel Manro for horse racing. P.T.M.S (Poonjar, Theekoy motor service) is the first motor service in Erattupetta. Very large land sliding happened in 1958 which changed the face of Erattupetta.

The major travel corridor from Erattupetta town is to Pala, Teekoy, Kanjirappally and Poonjar. As its name indicates Erattupetta is the junction of two waterbodies. Erattupetta was declared as a panchayat in 1962 which was established by Sri. Pattom Thanu pilla. Valiachan mala , a catholic pilgrim hill station near the town is a major pilgrim destination

## 6.3 EXISTING LAND USE 2023

The existing land use survey was conducted during the year 2016 and updated in the year 2023. Residential, Agriculture, Commercial, Public land uses are the major land use of the town and 58% of the total town area is coming under developed land.

The land use break up of Erattupetta is given in Table 6.1. Residential (42.68%) land dominates Erattupetta town followed by Dry agriculture (36.36%) land use. Public and Semi public (3.71%), water body (4.90%) and Commercial (3.53%) has significant area. Road networks and transportation facilities occupies 6.58% of

land in Municipal area. Land area of 0.91% occupies industrial use. Other land uses like open spaces, Quarry have only nominal area in Erattupetta Town. The land use break up of Erattupetta town is also shown in Figure. 6.1. The Figure 6.2 shows the Existing land use map of Erattupetta 2023.

***Table 6.1 Existing Land use break up of Erattupetta Municipality 2023***

| Sl. No. | Land use | Area in Sq. km. | Percentage |
|---|---|---|---|
| 1 | Commercial | 0.264755 | 3.53 |
| 2 | Dry Agricultural | 2.729006 | 36.36 |
| 3 | Industrial | 0.068518 | 0.91 |
| 4 | Park & Open Spaces | 0.024599 | 0.33 |
| 5 | Public and Semipublic | 0.278763 | 3.71 |
| 6 | Quarry Pond | 0.022097 | 0.29 |
| 7 | Residential | 3.203631 | 42.68 |
| 8 | Traffic & Transportation | 0.494112 | 6.58 |
| 9 | Vacant Land | 0.034636 | 0.46 |
| 10 | Water Body | 0.367793 | 4.90 |
| 11 | Rocky area | 0.018094 | 0.24 |
| **Total** | | **7.506004** | **100** |

*Source: - Land use Survey 2016 updated in 2023*

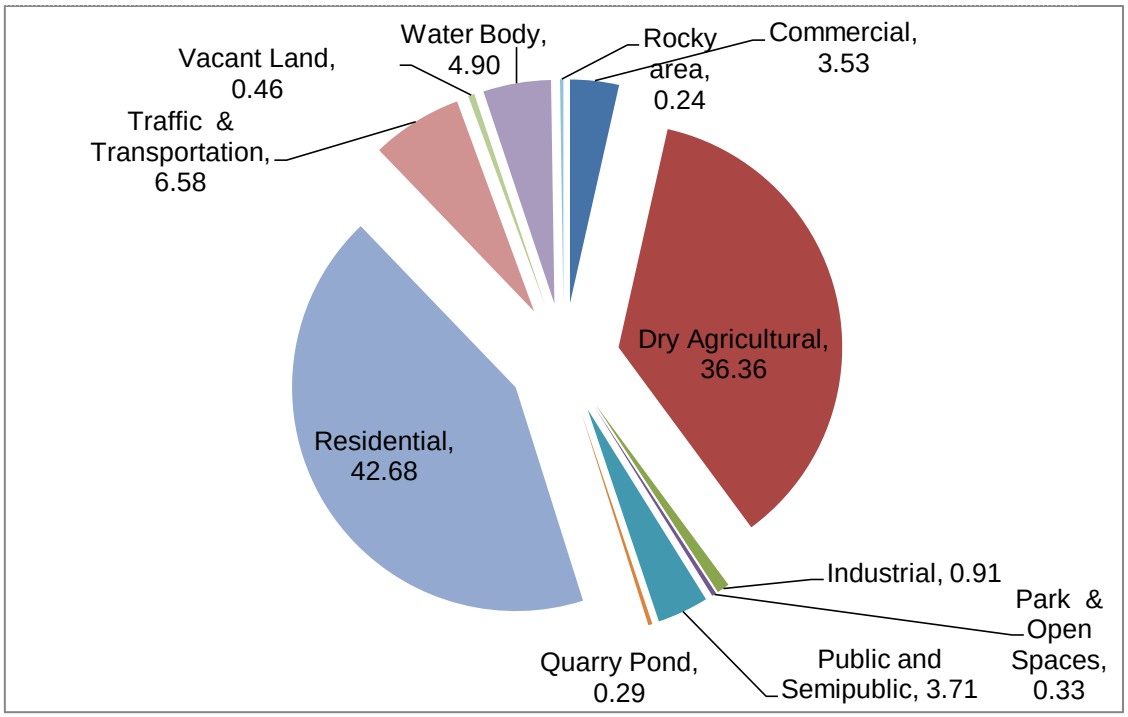



***Fig. 6.1 Existing Land use break up of planning area***

It is clearly seen from the chart and the table that the residential and dry agriculture land use dominates in Erattupetta Municipality. Rubber plantation is the major cultivation of the town. The presence of Public and Semipublic land use shows the existence of social infrastructure like educational and Health institutions and other public and religious institutions.

The total extent of land coming under residential use is 320.20 hectares which accounts 42.68% of the total town area. 36.36% agriculture land is under dry cultivation area. It is represented in Figure 6.1

**Residential Area** occupies the major area of Erattupetta town. Residential density is comparatively high in this municipality. 320.20 hectare of land which is 42.68% of land occupies residential activity.

**Dry Agricultural area** occupies second position in land use with 2.73 Sq. km which is 36.36 % of the total town area. It is distributed in almost all parts of the town and is mixed up with the agriculture land.

**Commercial area** is mainly concentrated in the town centre along major travel corridors of the town. The concentration of commercial activity is mainly there in Pala - Poonjar road, central area of town and Nadakkal area. Few pockets of commercial land use are distributed in other parts of the town also.

**Public and Semi-public areas** includes land where Government and semi-Government establishments, religious centers, educational institutions, health facilities etc are functioning. It is distributed in almost all wards of the town and 0.28 Sq. km. of land which is 3.71% is under this use in the Erattupetta Town.

Only 0.07 Sq. km of land, which constitutes 0.91% of total municipal area comes under **Industrial land use**. Wood based furniture making industry is one of the major industries in Erattupetta.

The **Traffic and Transportation use** of the town mainly consists of roads and terminal areas. 0.49 Sq. km of land, which is 6.58% of total land use comes under transportation use.

36.56 hectares of land which is 4.90% of total area comes under **Water bodies**. Mainly the Meenachil river and its tributaries constitute the water bodies in the town. Only 2.5 hectares of land, which accounts for 0.33% town area comes under the category of **Parks and open spaces.** Lack of leisure places are seen in the Town. **Rocky Area** in the town has only nominal area which is 0.24% of total area.

Comparison of land use with other similar municipalities is shown in Figure 6.2. Muvattupuzha municipality shows maximum percentage of Residential land use among other Municipalities. The percentage of Agriculture land is high in Thodupuzha and Pala Municipalities. The percentage of commercial land use is high in Changanassery and it is followed by Pala Municipality showing the high Trade and Commercial activities of the town.

In the case of Public and Semi Public land use Thiruvalla has the highest percentage followed by Changanassery and Pala. The percentage of industrial land use is nominal in almost all Municipalities. Along with Pala and Thodupuzha, Erattupetta is an agriculture dominant town. Muvattupuzha, Changanassery and Thiruvalla have more percentage of developed area.

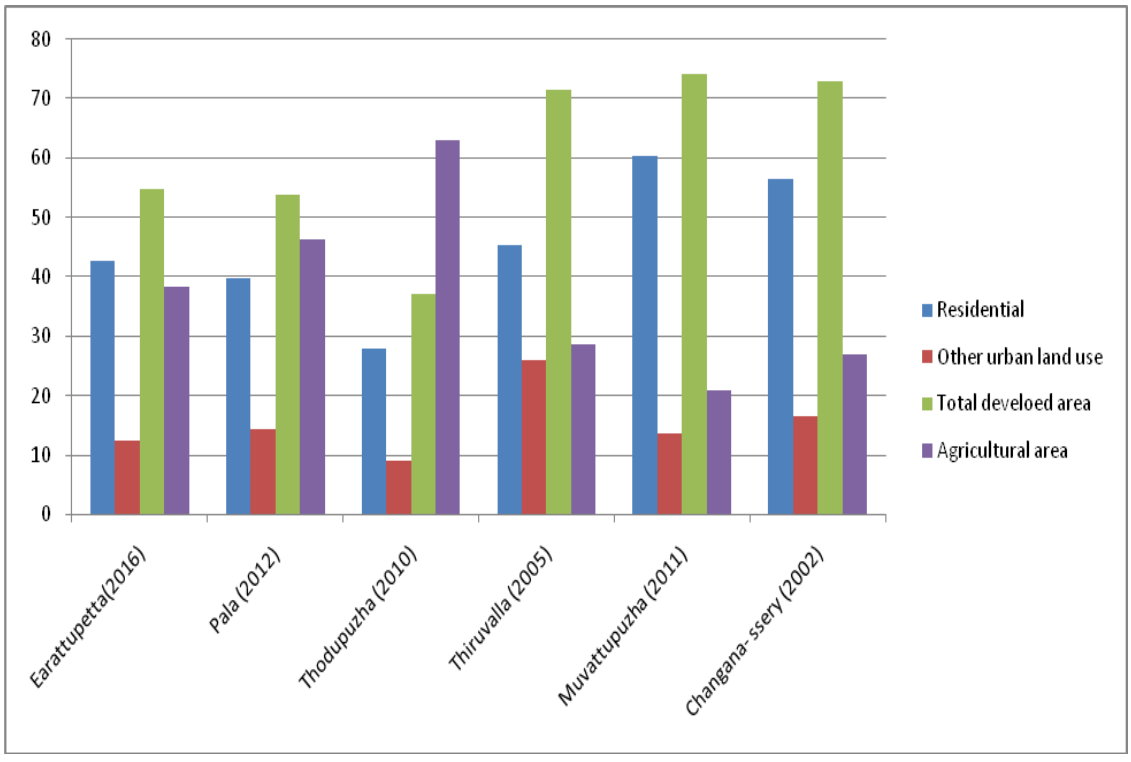



***Fig. 6.2 Comparison of percentage of developed land of similar towns***

***Table 6.2 Comparison of percentage of developed land of similar towns***

| Land use | Erattupetta (2023) | Pala (2012) | Thodupuzha (2010) | Thiruvalla (2005) | Muvattupuzha (2011) | Changanassery (2002) |
|---|---|---|---|---|---|---|
| **Residential** | 42.68 | 39.77 | 27.92 | 45.45 | 60.44 | 56.52 |
| **Other urban land use** | 15.06 | 14.25 | 9.06 | 26.06 | 13.63 | 16.41 |
| **Total developed area** | 57.74 | 53.81 | 36.98 | 71.51 | 74.07 | 72.93 |
| **Agriculture and water body** | 42.26 | 46.19 | 63.02 | 28.49 | 20.93 | 27.03 |

## 6.4 CONCENTRATION PATTERN OF LAND USES

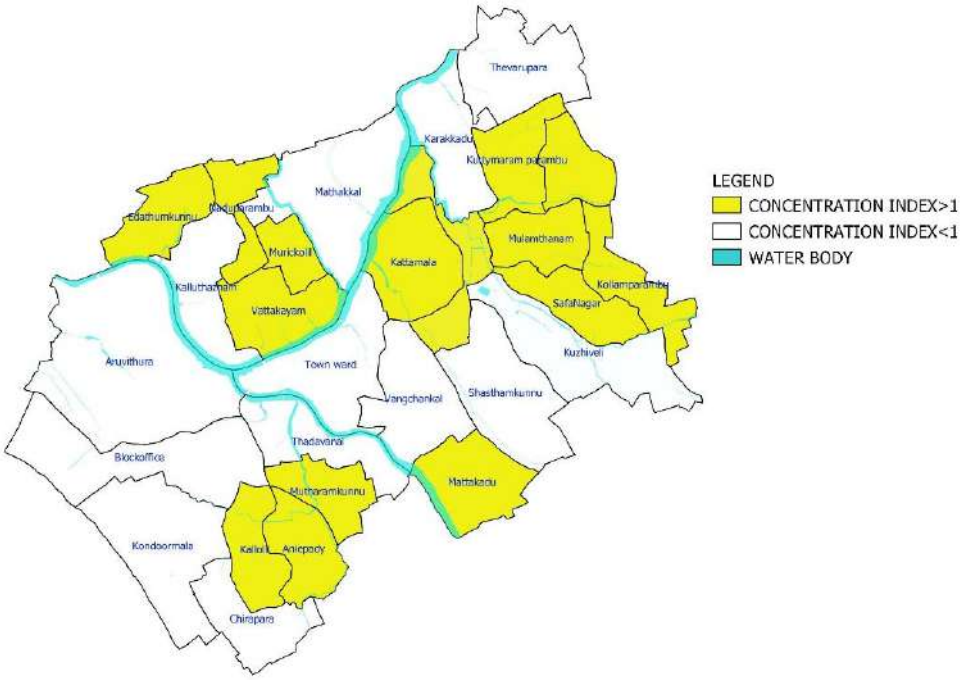
### 6.4.1 Introduction

The concentration pattern of a particular land use gives an idea about where that particular land use is concentrated within the town. The concentration pattern of a land use can be ascertained by the concentration index (CI) of that land use. The concentration index (CI) of a particular land use = ((Area of that land use in a ward) / (Total area of the ward)) / ((Area of that land use in the town) / (Total area of the town)). The concentration index values may be greater than one, equal to one or less than one. The CI greater than one for a particular land use indicates that the land use under consideration is concentrated more in that ward than other wards of the town. Using the above method, concentration pattern of major land use categories - Residential, Agriculture, Commercial, Public and Semi Public land uses are analysing in the subsequent paragraphs.

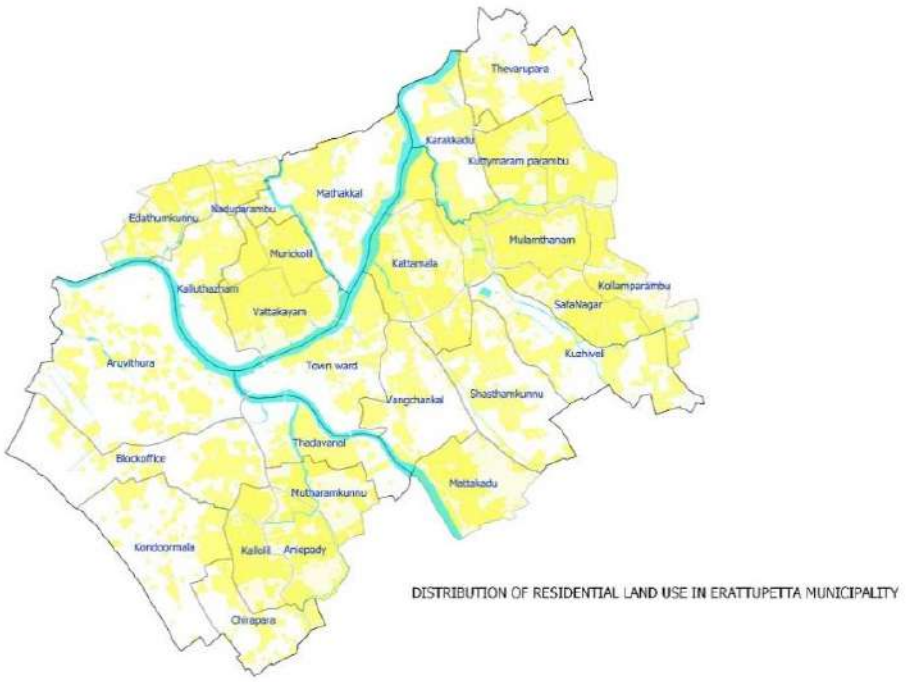
### 6.4.2 Concentration pattern of Residential land use.

The concentration pattern of residential land use is shown in figure 6.3. The concentration index of residential land use varies from 0.56 to 1.92 and the residential area is spread in all wards of the town.

The ward with higher value of Concentration index is Murikolil ward. Generally wards along major travel corridor have high Residential use concentration. The wards with low value of concentration index of residential land use are seen in areas where dry agriculture is predominant, ie in Kondoor mala and Aruvithura where the index is 0.59




**CONCENTRATION PATTERN OF RESIDENTIAL LAND USE**

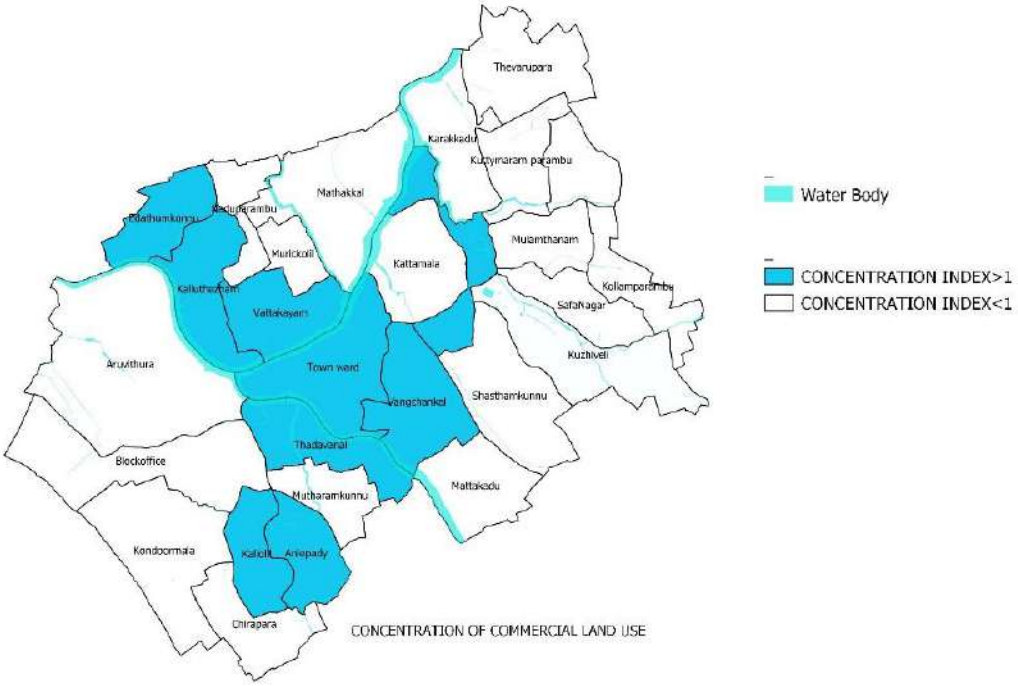



DISTRIBUTION OF RESIDENTIAL LAND USE IN ERATTUPETTA MUNICIPALITY

***Fig. 6.3 Concentration pattern and spatial distribution of Residential land use***

### 6.4.3 Concentration pattern of Commercial land use.

The concentration pattern of commercial land use is shown in figure 6.4. The concentration index of commercial land use varies from 0.02 to 5.83. High concentration of commercial land use is seen in, Town ward. Lowest concentration index is seen in Thevarupara Ward.



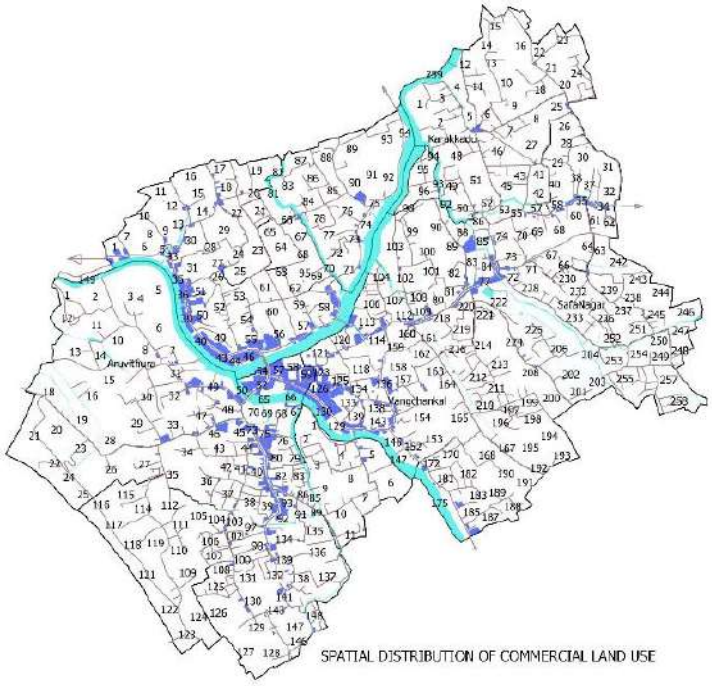




***Fig. 6.4 Concentration pattern & spatial distribution of Commercial land use***

### 6.4.4 Concentration Pattern of Public and Semi-Public land use.

The concentration pattern of public and semi-public land use, which includes Government institutions, educational facilities, health facilities, social institutions and religious institutions are shown in Figure 6.5. The concentration index is varying from 0.0001 to 3.63 and is high in Kalluthazham. Thadavanal and Aruvithura are also shown with higher concentration index in Figure 6.6. The pattern shows in wards with more concentration of public land use, concentration of commercial land use is also

high except in Aruvithura ward. This indicates the development of Commercial land use in and around the public land use which was existing from ancient period. This category of land use is concentrated more along sides of major travel corridors**.**

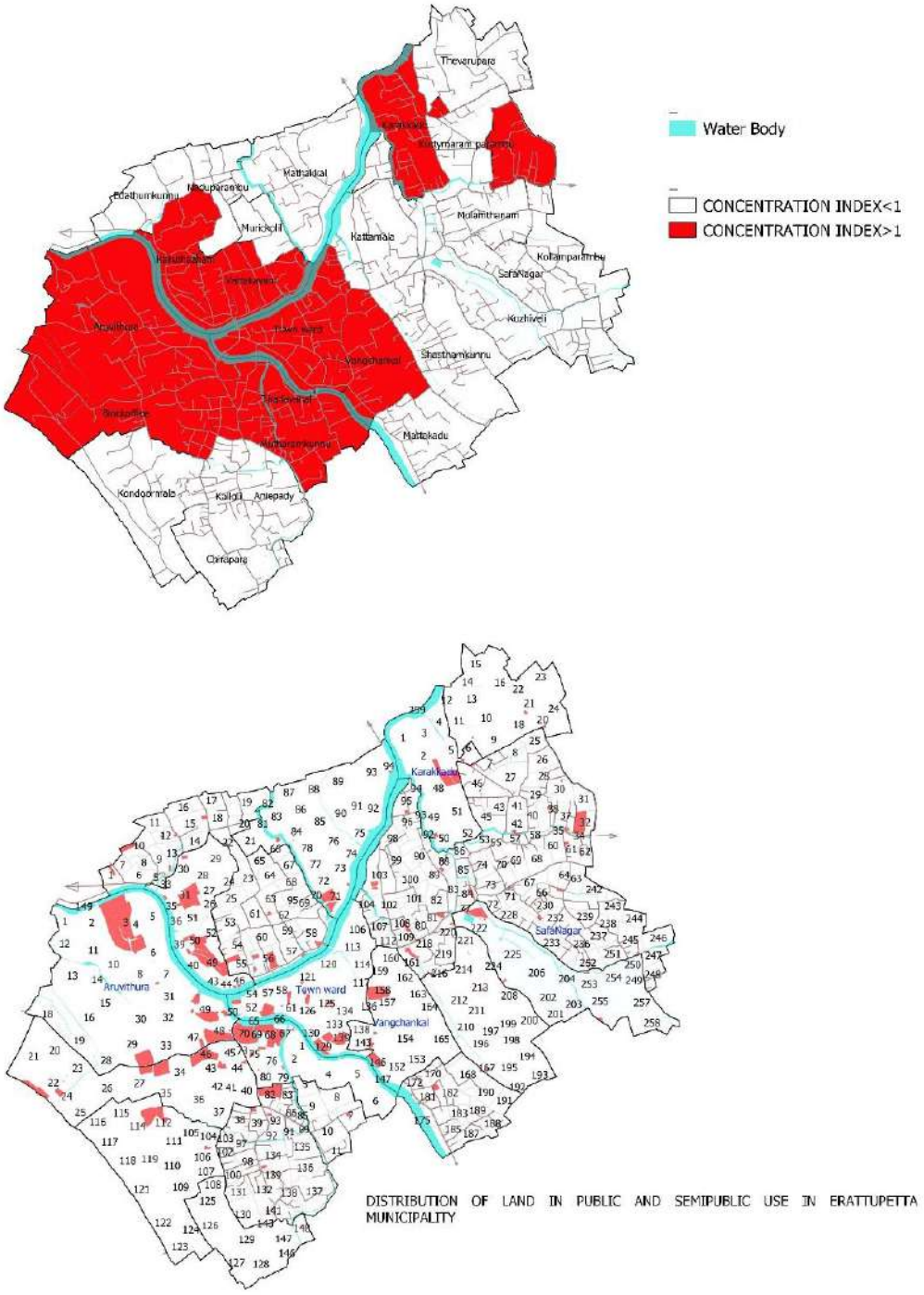



***Fig. 6.5 Concentration pattern and Spatial distribution of Public & semi-public land use***

### 6.4.5 Concentration pattern of Dry Agriculture land use.

The agriculture land in Erattupetta town is broadly classified into dry cultivation (rubber plantation, mixed crops etc). As mentioned in previous paragraphs major

portion of the agriculture land is coming under dry cultivation and share of Paddy field is very nominal.

Dry Agriculture is the major land use of Erattupetta town and 275 hectors of land which is 36.36% of total town area in coming under dry cultivation. Figure 6.6 shows the concentration pattern of dry Agriculture land use of the town. The Dry Agriculture land is distributed in all wards of the municipality.

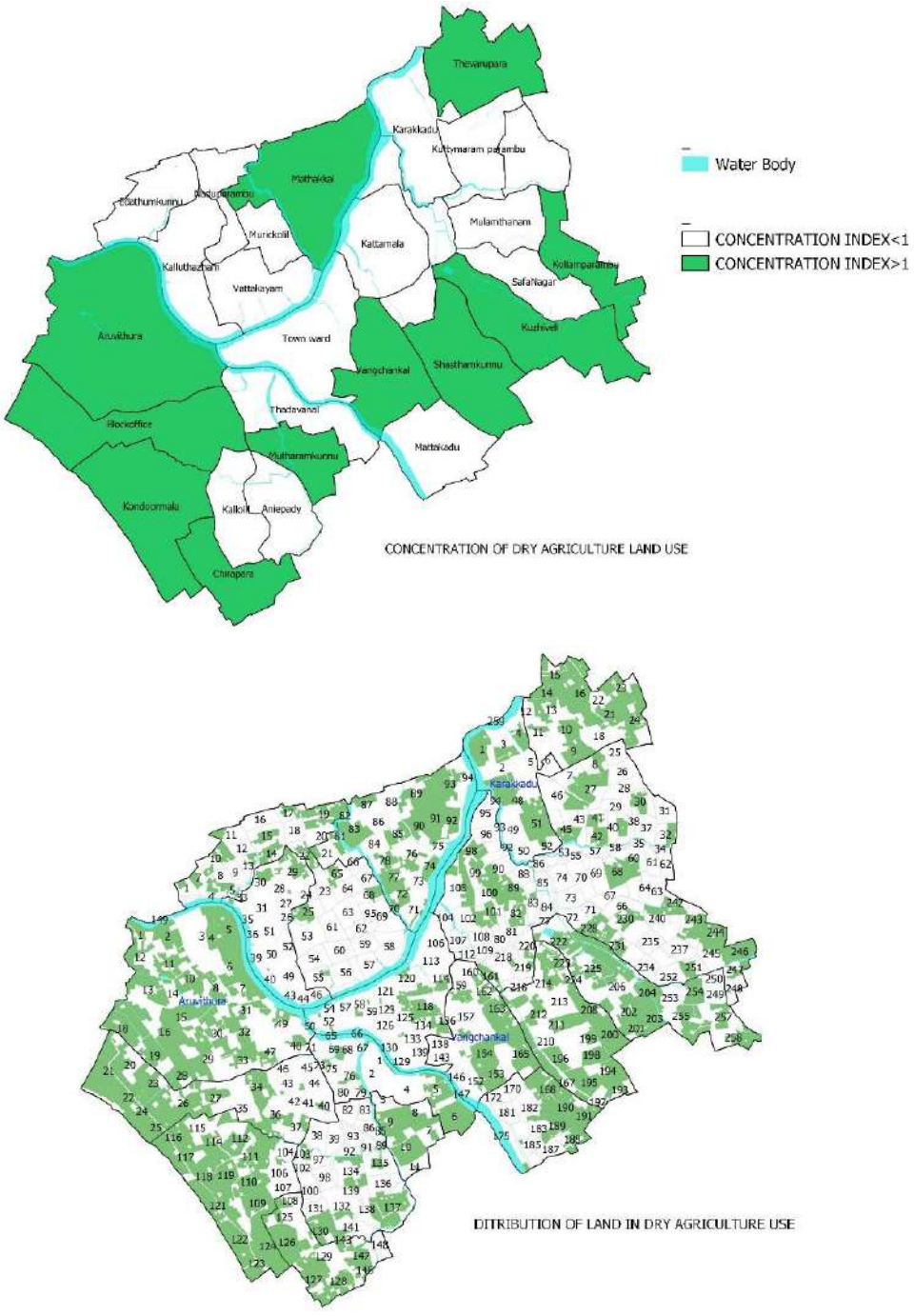



***Fig. 6.6 Concentration pattern and spatial distribution of Dry agricultural land use***

Concentration index of dry cultivation is low in Town ward. These wards are located at the town centre and it is having high Commercial and Public land use Concentration. Small extent of Paddy field is there in Kuzhiveli which is of an area to 2000 Sq. m only.

### 6.4.6 Traffic and Transportation

The land coming under Traffic and Transportation land use, mainly consist of roads and it is distributed in all wards of the town. In addition to the roads the land coming under the transportation use is the bus terminal which is located in Town ward. The concentration pattern of transportation land use is shown in Figures 6.7. In wards where the transport terminals are located have high concentration index for transportation use.

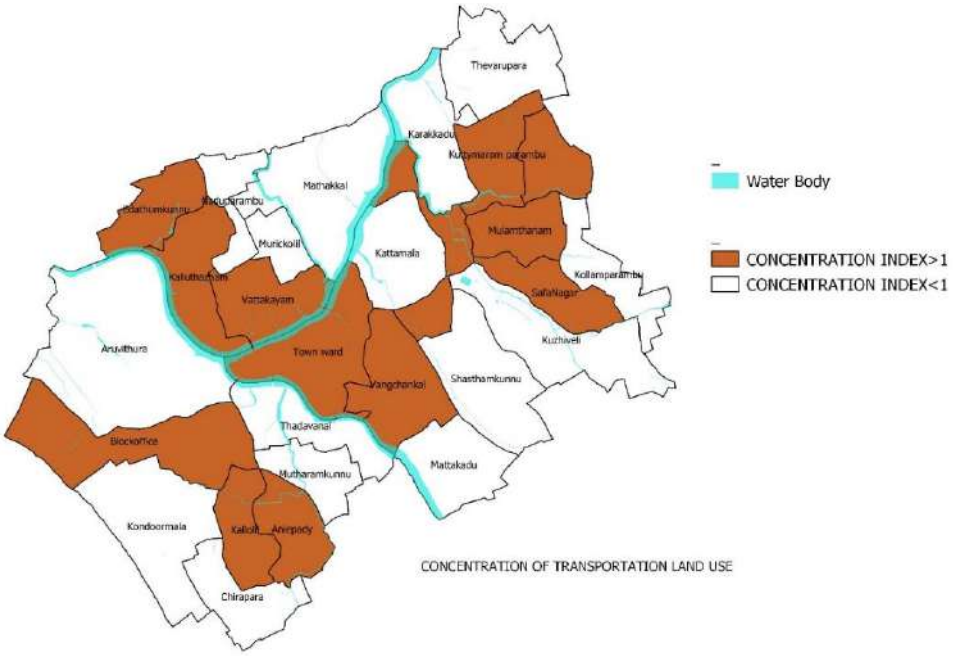



***Fig. 6.7 Concentration pattern of Traffic and Transportation***

### 6.4.7 Park and Open Spaces

Land coming under park and open space category includes few small parks and a stadium whose extent is also very small. The concentration pattern of park and open spaces are shown in Figures 6.8. Park and Open space is seen only in two wards which is located at the central area of the town. Concentration index is high in Block office ward.

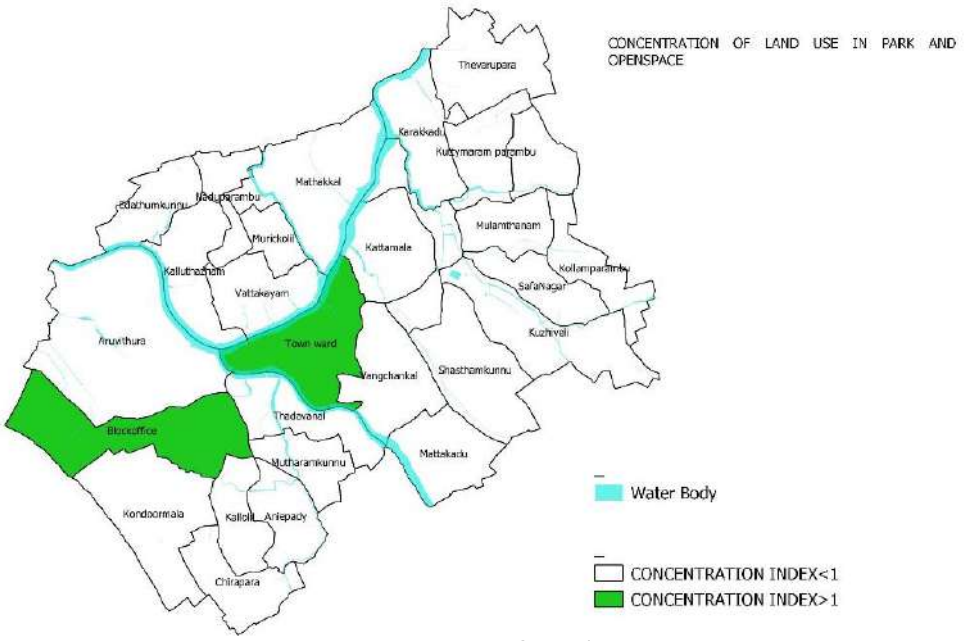



***Fig. 6.8 Concentration pattern of Parks & Open spaces***

## 6.5 COMPARISON OF EXISTING LAND USE WITH PLANNING STANDARDS

Comparison of land use breakup of planning area with the proposed land use structure as per URDPFI Guide line has been made and it is shown in Table 6.3. The percentage of residential use is far above the suggested standard as per URDPFI guide lines. The percentage of park and open space and industrial use are far below the suggested URDPFI standard.

***Table 6.3 Comparison of existing and proposed land use structure as per URDPFI Guide line***

| Sl No | Land use | Planning Area | | | Proposed land use structure as per URDPFI Guide line (for small towns) |
|---|---|---|---|---|---|
| | | Area of existing land use (in Sqkm) | % of total (existing) developed area | % Total area (7.5 sq km) | % of Developed area |
| **A** | Developed Area | | | | |
| 1 | Residential | 3.20 | 73.90 | 42.67 | 45.00- 50.00 |
| 2 | Commercial | 0.26 | 6.00 | 3.47 | 02.00- 03.00 |
| 3 | Public and Semi public | 0.28 | 6.47 | 3.73 | 06.00- 08.00 |
| 4 | Industrial | 0.07 | 1.62 | 0.93 | 08.00- 10.00 |
| 5 | Traffic & Transportation | 0.49 | 11.32 | 6.53 | 10.00- 12.00 |
| 6 | Park & Open space | 0.03 | 0.69 | 0.40 | 12.00- 14.00 |
| | **Total Developed Area** | **4.33** | **100.00** | | |
| **B** | Agriculture Land, Water bodies & Special areas | 3.17 (balance) | 42.27 (balance) | 42.27 | (balance) |

*Source: Land use survey, URDPFI Guide line*

## 6.6 LAND USE ACTIVITY PATTERN

As per the Regional studies the activity identified for Erattupetta town is Agriculture. The activity pattern of Erattupetta municipality based on land use is derived here and municipal wards are adopted as the units in the analysis. Only three major categories of land uses, viz residential, commercial, agriculture use are considered in this study. The concentration index of the above three category of land use is shown in Table 6.4. The activity pattern of the town based on the land use is shown in Figure 6.9.

***Table 6.4 Activity Pattern based on land use***

| Ward no. | Ward | Commercial | Dry Cultivation | Residential | Major Activity |
|---|---|---|---|---|---|
| 1 | Idathumkunnu | 1.149 | 0.687 | 1.179 | Residential/Commercial |
| 2 | Kalluthazham | 4.764 | 0.208 | 0.909 | Commercial |
| 3 | Vattakayam | 2.628 | 0.019 | 1.424 | Commercial |
| 4 | Nadooparambu | 0.572 | 0.908 | 1.385 | Residential |
| 5 | Murikkolil | 0.201 | 0.309 | 1.920 | Residential |
| 6 | Mathakkal | 0.282 | 1.113 | 0.864 | Dry cultivation |
| 7 | Kattamala | 0.436 | 0.862 | 1.216 | Residential |
| 8 | Eelakkayam | 1.462 | 0.232 | 1.503 | Residential/Commercial |
| 9 | Karackadu | 0.164 | 0.923 | 0.990 | Residential/ Dry cultivation |
| 10 | Thevarupara | 0.020 | 1.543 | 0.769 | Dry cultivation |
| 11 | Kuttimaramparambu | 0.276 | 0.826 | 1.381 | Residential |
| 12 | Pathazhappadi | 0.557 | 0.376 | 1.652 | Residential |
| 13 | Mulanthanam | 0.483 | 0.384 | 1.750 | Residential |
| 14 | Kollamparambu | 0.263 | 1.070 | 1.280 | Residential/ Dry cultivation |
| 15 | Safa Nagar | 0.194 | 0.596 | 1.626 | Residential |
| 16 | Kuzhiveli | 0.356 | 1.401 | 0.847 | Dry cultivation |
| 17 | Sasthamkunnu | 0.057 | 1.456 | 0.949 | Dry cultivation |
| 18 | Mattackadu | 0.514 | 0.997 | 1.078 | Residential/Dry cultivation |
| 19 | Vanchankal | 1.055 | 1.207 | 0.858 | Dry cultivation |
| 20 | Town Ward | 5.823 | 0.355 | 0.801 | Commercial |
| 21 | Thadavanal | 1.630 | 0.641 | 0.925 | Commercial |
| 22 | Mutharamkunnu | 0.571 | 1.126 | 1.007 | Residential/Dry cultivation |
| 23 | Aanippadi | 1.384 | 0.752 | 1.244 | Residential /Commercial |
| 24 | Chirappara | 0.351 | 1.438 | 0.943 | Dry cultivation |
| 25 | Kallolil | 1.385 | 0.484 | 1.593 | Residential /Commercial |
| 26 | Kondoormala | 0.045 | 1.893 | 0.561 | Dry cultivation |
| 27 | Block Office | 0.802 | 1.310 | 0.634 | Dry cultivation |
| 28 | Aruvithura | 0.516 | 1.396 | 0.567 | Dry cultivation |

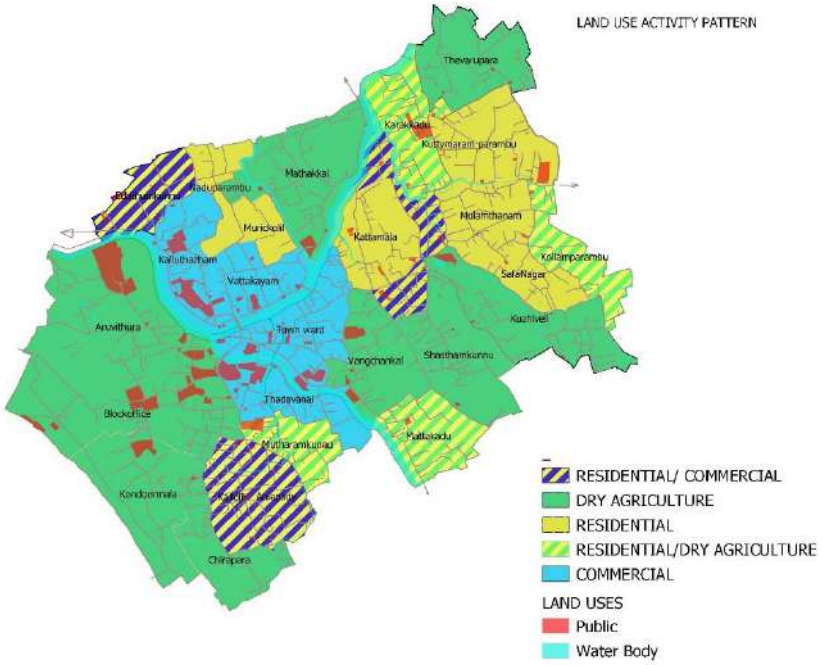



***Fig. 6.9 Activity pattern based on land use***

Existing Public and semi public use are overlaid on activity pattern map. Activity Pattern based on Land use clearly shows that the Commercial activity of the town is concentrated at the central part of the town along major roads. Mixed activities, ie. Residential cum Commercial, Residential cum Agriculture, are there in the circle around the town centre. The Public activities are concentrated at the western end of the town. The Northwest part of the town is predominantly under agriculture activity.

## 6.7 FUNCTIONAL CHARACTER OF THE TOWN

The functional character of wards of the town is determined based on population distribution, average plot size and land use. As per the regional studies in the District urbanization report, Erattupetta has rural character. In the ward wise analysis for functional character of Erattupetta municipality, six wards belong to urban category, five wards near to the town centre shows the semi urban nature and 3 wards show semi rural nature. All the remaining wards belong to rural category. The functional character of the town is shown in Table 6.5 and Figure 6.10.

***Table 6.5 Functional Character of Wards***

| Ward no. | Name of Ward | Functional character | Ward no. | Name of Ward | Functional character |
|---|---|---|---|---|---|
| 1 | Edathumkunnu | Semi rural | 15 | SafaNagar | Semi rural |
| 2 | Kalluthazham | Urban | 16 | Kuzhiveli | Rural |
| 3 | Vattakayam | urban | 17 | Shasthamkunnu | Rural |

| | | | | | |
|---|---|---|---|---|---|
| 4 | Naduparambu | Semi urban | 18 | Mattakadu | Semi rural |
| 5 | Murickolil | Urban | 19 | Vangchankal | Semi rural |
| 6 | Mathakkal | rural | 20 | Town ward | Urban |
| 7 | Kattamala | Semi rural | 21 | Thadavanal | Urban |
| 8 | Ealakayam | Semi urban | 22 | Mutharamkunnu | Semi urban |
| 9 | Karakkadu | Semi rural | 23 | Aniepady | Semi urban |
| 10 | Thevarupara | Rural | 24 | Chirapara | Rural |
| 11 | Kuttymaram parambu | Semi rural | 25 | Kallolil | Semi urban |
| 12 | Pathazhapady | Semi urban | 26 | Kondoormala | Rural |
| 13 | Mulamthanam | Semi urban | 27 | Blockoffice | Semi urban |
| 14 | Kollamparambu | Semi urban | 28 | Aruvithura | Semi rural |

The transition from rural to urban is seen from boundaries to the Town centre. This is mainly because of the topography, availability of better connectivity to the Town centre and accumulation of Commercial activities. Being a trade centre from ancient times the banks of Meenachil River developed very faster than the out skirts of the Town.

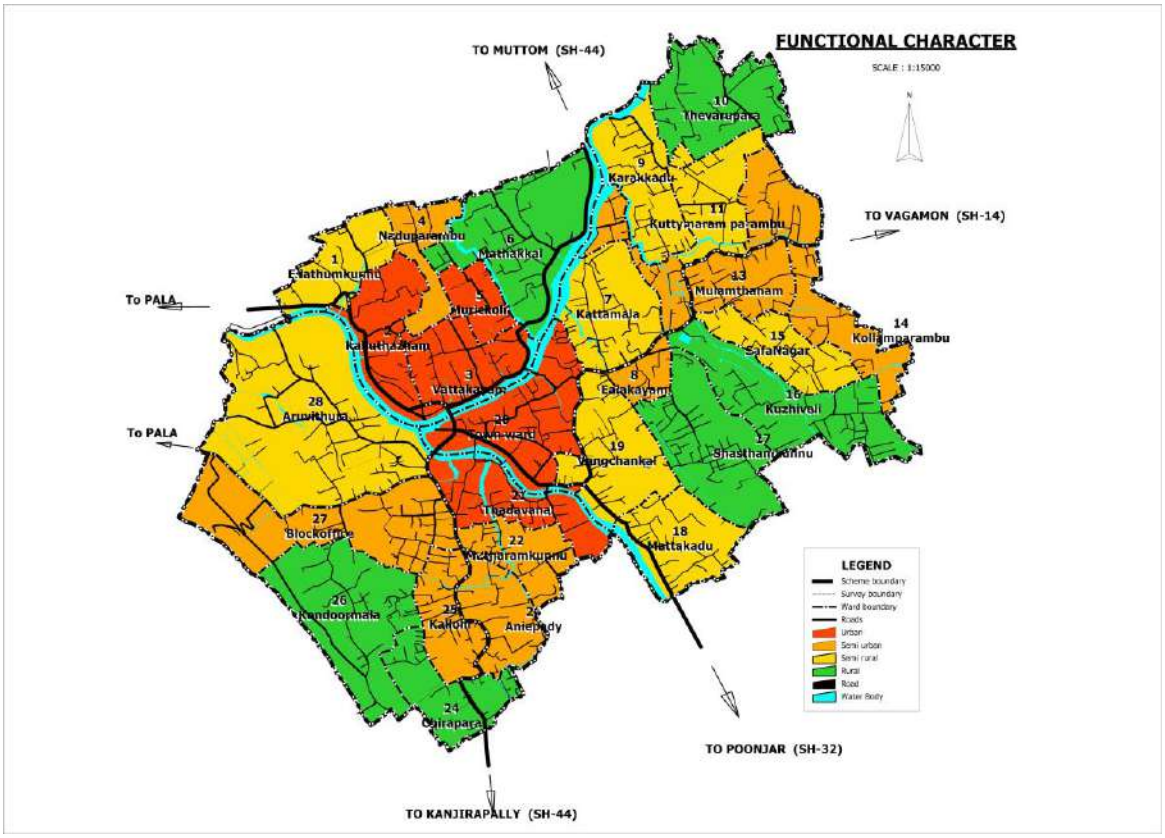



***Fig. 6.10 Functional Character of the Town***

## 6.8 CENTRAL AREA OF THE TOWN

Central area of the town is the area where major activities of the town like commercial, civic transport, educational, administrative, recreational etc. are located with population in the surrounding residential area supporting the C.B.D. functions. Based on the above criteria the twelve Municipal wards of the town including Kalluthazham, Vattakkayam and Town ward wards are included in the delineated central area. The central area of the town is shown in Figure 6.11.

## 6.9 TOWN CENTRE (C.B.D)

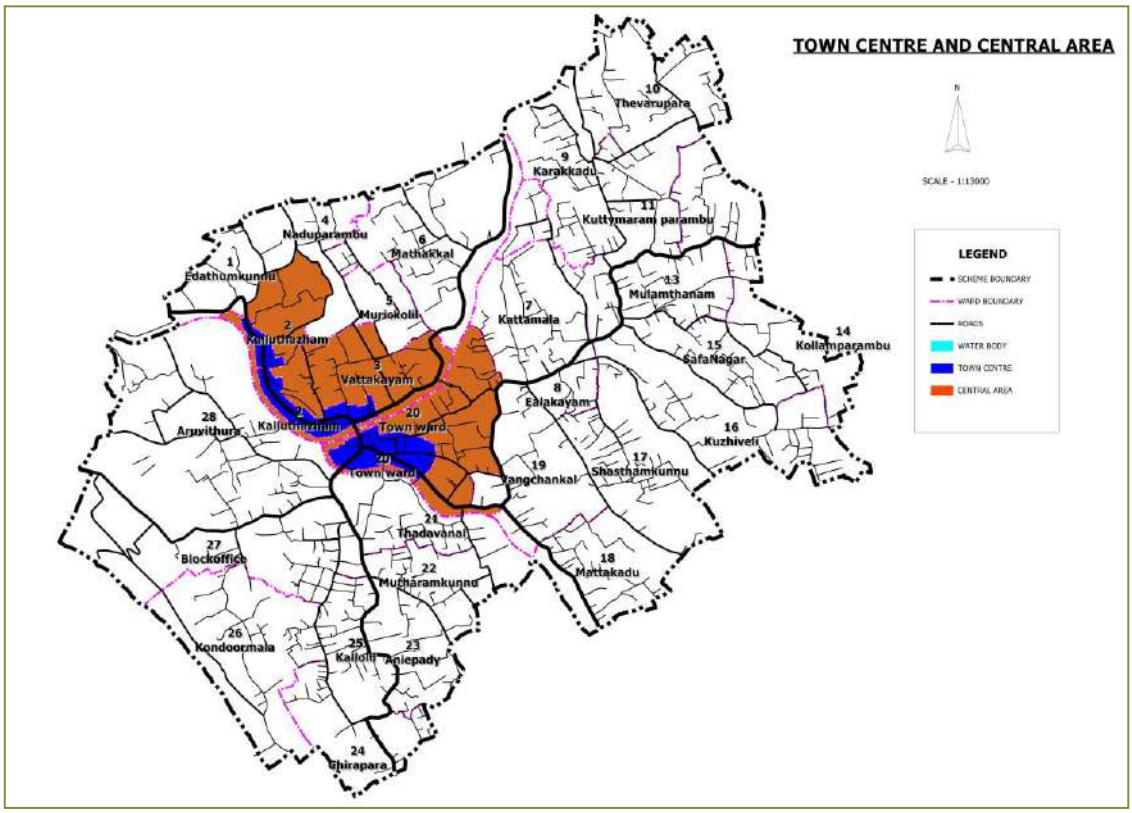



***Fig. 6.11 Town centre and Central area***

A town centre is a meeting place for the population as a whole. It is the focus of a radial system of roads and either in or near to the central bus terminus. It is the main administrative business, entertainment and cultural centre of the town. For Erattupetta town the area identified as the CBD includes areas in Kallumthazham, Vattakayam, Town ward. SH14 and SH 32 crosses here and the two rivers also crosses here. In the block office ward Government offices, commercial establishments etc are located. The total area of the town centre is 15.55 hectare, which is 2.07 percentage of the total town area. The town centre is shown in the Map 6.12. Central area is of 68.88 Hectares, which is 9.2%.

## 6.10 CONCLUSION

*The land use pattern of Erattupetta shows that 42.68% of the town area is coming under Residential land. The commercial activities have taken place along the major road corridors. Agriculture activities are concentrated in the northern and western part of the* town*. Even though agriculture activity is concentrated in the Northern part the residential land uses is seen scattered all over the town area and mixed with agriculture land uses. As per the regional setting study the activity identified for Erattupetta town is Residential. Non agriculture activities are concentrated around the central part of the town and the agriculture activities in the periphery of the town. The study on functional character of the town shows majority of wards have urban or semi urban character.*

*The study on land use shows that Erattupetta Town consists of very limited lands for development purpose and capacity to hold population is almost saturated. Proper planning and introduction of new innovative projects can enhance the development of Erattupetta Municipality.*

# 7. TRADE AND COMMERCE

## 7.1 INTRODUCTION

Erattupetta by its name itself is a good fertile land as it has vast area of river banks. Even though agricultural land is available, trading is the main financial sector in Erattupetta. Major activities are based on wood and wood furniture units. Collecting and selling of agricultural produce like areca nut, nutmeg, rubber and pepper are also carried out in a large scale.

## 7.2 LAND USE UNDER COMMERCIAL USE

The total land under commercial use of Erattupetta Municipality was only 20.1 hectares (2.69%) in 2016. A comparative study with similar adjacent town in the region has been made and the percentage share of commercial area to the total land area of the towns Erattupetta, Pala, Kottayam, Vaikom, Thodupuzha and Changanassery are 2.69%, 2.87%, 2.12%, 0.97%, 1.50% and 2.74% respectively and it is shown in Figure 7.1. It shows that Pala is in the first position and Changanassery in second position and Erattupetta in third position as far as the percentage of commercial land use is concerned.

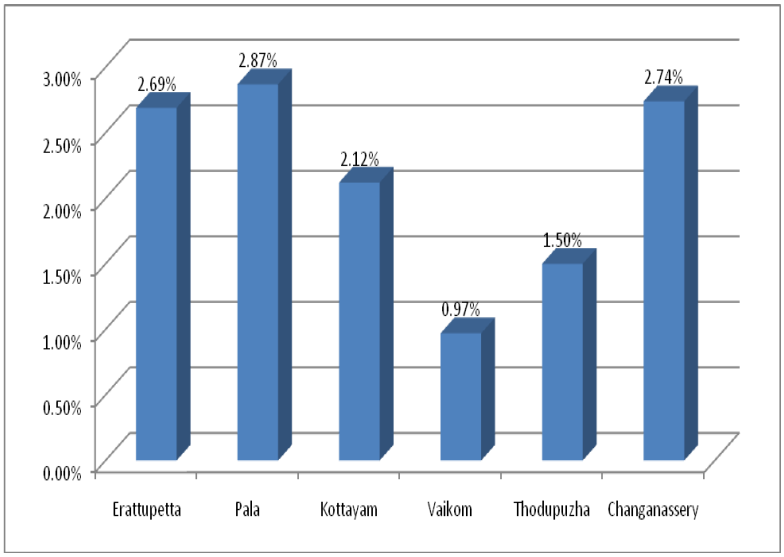



***Fig. 7.1 Comparision of % share of commercial land use with similar towns***

But as per land use survey update on 2023, 26.5 hectares (3.5% ) of land is in commercial use. This indicates the growth of commercial sector in Erattupetta along with other similar municipalities.

The commercial area of the Erattupetta town is mainly developed along Pala-Poonjar (SH-32) road from College junction to MES Junction and along Kanjirappally road up to Chennad junction and along Thodupuzha road up to Thottumukku and along Vagamon road up to Nadakal Aman junction.

## 7.3 COMMERCIAL NODES

A detailed survey regarding the commercial nodes in the town was conducted by the department. Based on the preliminary survey, 10 commercial nodes in the planning area was identified for the detailed study. The facilities at various nodes was generally grouped into Retail shops, Whole sale shops, Commercial Offices, Small Scale Industries, Other facilities and Higher order facilities. The number of shops/units of different categories coming under the above catagories was counted. For comparison total scores for each node were calculated after assigning weightage to each facility. The total score obtained for each node is given in Figure 7.2. Based on the score obtained, the following 3 types of commercial nodes were identified.

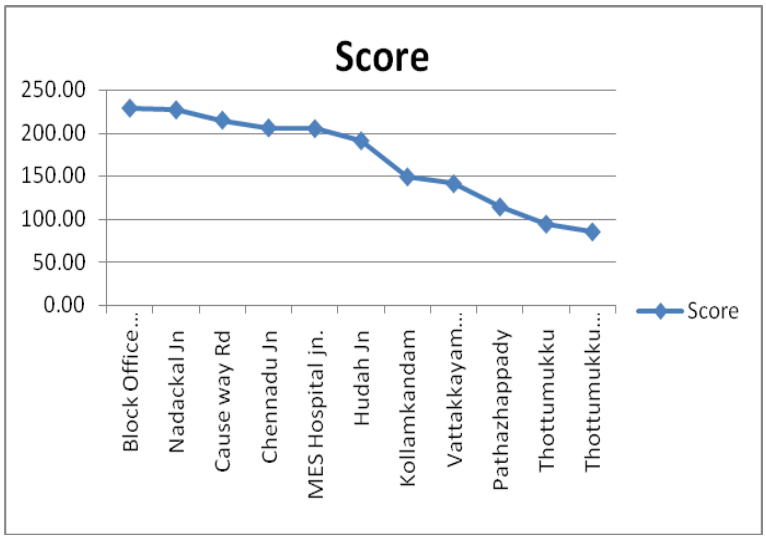



***Fig. 7.2 Total score obtained for each node***

- **FIRST ORDER**: Block office junction
- **SECOND ORDER**: Causeway road junction, Huda jn., Chennadu jn., MES Junction, Nadakkal, Aruvithura College junction, Aruvithura Church junction.
- **THIRD ORDER**: Pathazhappady, Kollamkandam jn, Thottumukku jn,Thottumukku new bridge jn, Vattakkayam jn.

The location of the existing nodes is shown in Figure 7.3. Higher order nodes are formed along SH -32. With the expansion of nodes the space between nodes were reduced considerably and it appears like Corridor development.

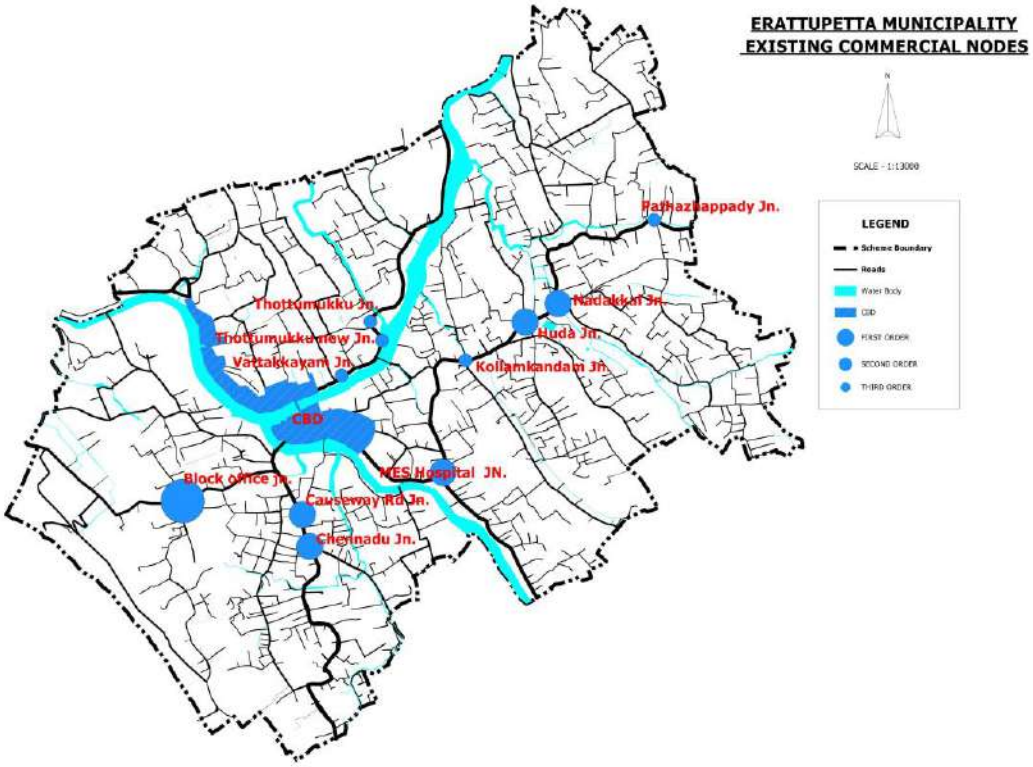



***Fig. 7.3 Spatial distribution of the existing nodes***

## 7.4 MARKETS

Main market building was rebuilt recently near market road but not yet occupied. A number of shopping complexes are functioning with in the town. Commodities are brought to this market from Tamilnadu state and other districts of Kerala.

Vegetables are mainly brought from Tamilnadu and other districts in Kerala.

The details of commodity movement through the Erattupetta Market are shown in Table 7.1. Commodities, places of arrival of commodities, places of distribution of commodities etc are included in the tables.

***Table 7.1 Details of Commodity transaction – Erattupetta Market***

| Sl No. | Commodity | Arrived from | Distributed to |
|---|---|---|---|
| 1 | Banana | Local,Tamilnadu & High range | Surroundings |
| 2 | Rice | Ankamaly, Kaladi, Tamilnadu | Surroundings |
| 3 | Sugar | Tamilnadu | Surroundings |
| 4 | Pulses | Tamilnadu | Surroundings |
| 5 | Beetel | | |
| 6 | Jaggery | Tamilnadu | Surroundings |
| 7 | Arecanut | Kottayam (Dist) & Pathanamthitta | Tamilnadu, North Indian |
| 8 | Cattle feed | Near District | Surroundings |
| 9 | Fish | Alappuzha, Kollam | Surroundings |
| 10 | Maidha, Rava | Tamilnadu | Surroundings |
| 11 | Onion, Potato etc | Tamilnadu | Surroundings |
| 12 | Cooking oil | Near District | Surroundings |
| 13 | Tapioca | Kottayam (Dist) & Ernakulam | Surroundings |
| 14 | Nutmeg | From Kerala State | North India |
| 15 | Latex of Rubber | From Kerala State | Tyre Companies |
| 16 | Coffee | High range, Local | Other states of India, |

## 7.5 OTHER SHOPPING FACILITIES

In addition to markets, there are shopping complexes in various part parts of the town. Textiles, electronics goods, stationary, building materials, super markets etc. are functioning in these shopping complexes. Shopping complexes are developed along all the sides of main roads.


## 7.6 INFORMAL SECTOR

Hawkers and vendors have long been a common feature of sidewalks and markets of urban centers. Hawkers contribute substantially in meeting the needs of the community. They indirectly support the local artisans and poorer sections of the community, by making available commodities at a comparatively

cheaper rate. Even though their activities can be justified socially, it is conflicting with the management of traffic and pedestrian movement on street and in many cases affects the environmental quality.

Even though in a small scale, the informal sector activity is there in Erattupetta town also. There is no organized space for hawkers in the town and they are mainly utilizing road margins and footpaths. Though there are attempts to address this through National Urban Livelihood Mission, it is still in an early stage.

## 7.7 BANKING

Details of different category of banks functioning in Erattupetta Municipal area is shown in table 7.2. 26 branches of various category banks are functioning in the town. Sufficient number of branches is available for the need of the people.


Kerala bank at Muttom jn, Meenachil East urban co-operative Bank near KSRTC, Erattupetta block urban co-operative society near Central junction, Service co-operative bank near municipal office, Kerala Bank, State bank of india,Kerala gramin bank opposite Manakkal complex Federal bank near Aruvithura Pally, Union bank near Aruvithura College road, IOB near Kaduvamuzhy, South Indian bank and CSB bank, State bank of india are the major banks functioning in Municipal area.

***Table 7.2 Details of banks functioning in Erattupetta Municipal area***

| Banks | SBI and Associates | Nationalized Commercial Banks | Scheduled Commercial Banks | District Co-operative Banks Branches | Service Co-operative Banks& Credit Societies | Urban Co-operative Bank |
|---|---|---|---|---|---|---|
| No. of Branches | 2 | 2 | 4 | 1 | 2 | 1 |

## 7.8 CONCLUSION

*Commercial developments are mainly concentrated in the town centre and along the major road corridors. Rubber marketing and trading has very much importance in Erattupetta. Activity of informal sector in small scale is there in the town. Sufficient numbers of banks for financial transactions are functioning in Erattupetta town.*

# 8. INDUSTRY

## 8.1 INTRODUCTION

Industrial sector is not developed due to the lack of infrastructure facilities and sufficient land availability. No major types of industrial units are functioning in the town and the industrial sector is limited to few industries in the category of MSME. There are two major rice flour production units in the neighboring panchayath next to municipal boundary.

In this chapter the present scenario of industrial sector of the Erattupetta is analyzed. Industrial units in the manufacturing sector are very less and majority of units are in service sector. Secondary sector has no major role in the occupational sector or in the economy of the town. One of the main reasons for the slow economic growth of the town can be attributed to the lack of industrialization.

## 8.2 INDUSTRIAL LAND USE

As per the land use analysis, 6.85 hectares of land which is just 0.91% of total land area is coming under industrial land use. The land under industrial use is shown in Figure 8.1. It is scattered in different part of the town.

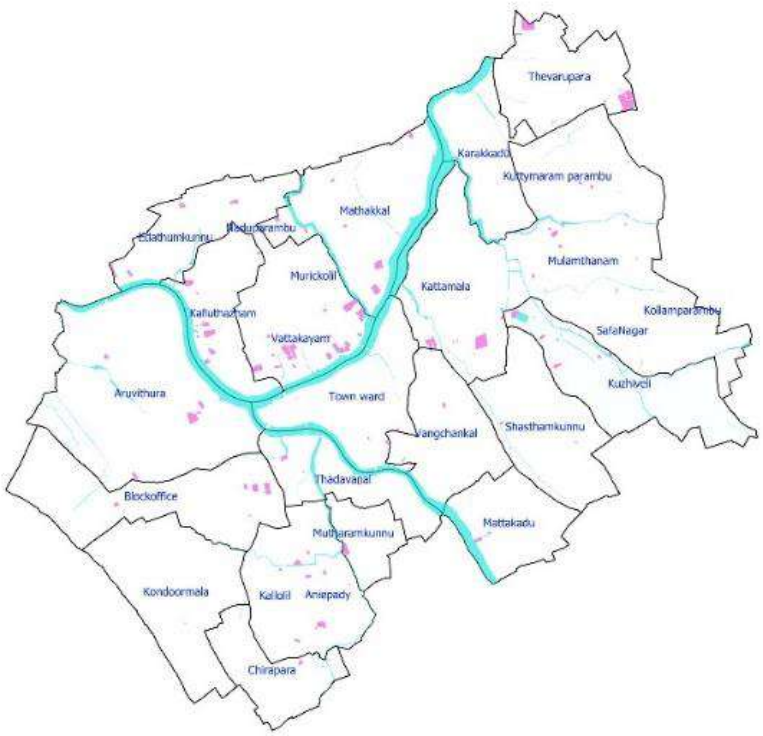



***Fig.8.1 Spatial distribution of Land under Industrial use***

## 8.3 OCCUPATIONAL STRUCTURE

As per the census 1981, 1991, 2001 and 2011, the number of workers in House Hold industrial sector are 187, 227, 222 and 122 respectively. It shows that the number of workers in this sector is not recording any growth. Secondary sector is not having a major role in providing employment opportunities in the town. 94.41 % of workers belong to other workers category, 2.63 % of workers are Agricultural laborers, 1.63 % of workers are cultivators and only 1.31% Household industrial workers. Though majority of land is used for rubber cultivation, occupational potential is very limited. In this circumstance industrialization is a solution for the creation of the employment and economic development of the town.

## 8.4 RAW MATERIALS

Agro based raw materials such as Nutmeg, Pepper, Cocoa and Coffee are widely traded in Thekkekara market from Idukki and Kottayam region and people are mainly engaged in the business of these spice items, which can be utilized as industrial raw material. Latex which is a major industrial raw material available at Erattupetta is not fully utilized for industrial purpose. But no major industries utilizing the raw materials of the region is functioning in the town or in the adjacent Grama panchayats. There is ample scope for starting food processing units in the town.

## 8.5 INDUSTRIAL UNITS

A mini industrial park with 10 units including wooden furniture making unit, Aluminium vessel unit, Polythene sheet unit, Polymer pipe, glass painting etc is functioning on the Erattupetta – Theekoy road at Nadakkal. The industrial unit Parvin Pardhas & Hijab is a major textile unit with 88 labourers established along Erattupetta–Thodupuzha road at Mathakkal ward. Pleasant Coffees and Exporters under CCM group is another unit making coffee powder which is supplied to major companies and sold locally in the brand name CCM coffees. Small scale wood furniture units of 20 numbers, sawmills -5 numbers, one metal crusher unit and 5 Hollow brick unit and some food processing units are functioning within the Municipal area.

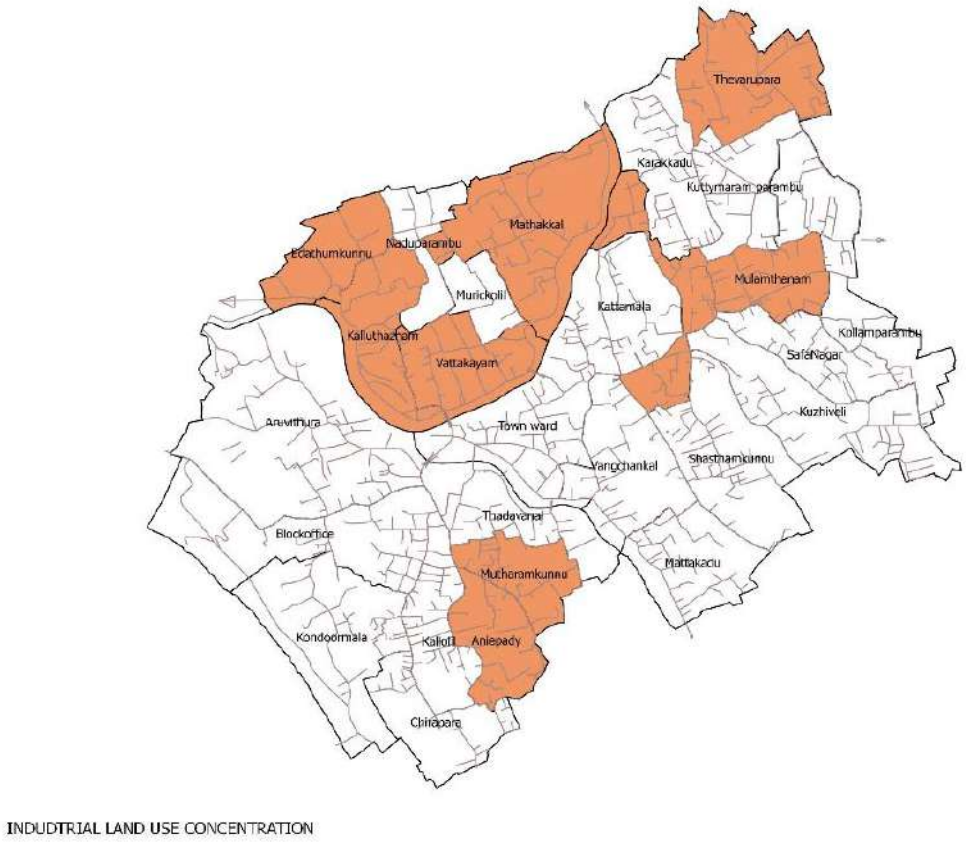



***Fig.8.2 Concentration Pattern of Industrial Land Use***

## 8.6 CONCLUSION

*Only MSME units are functioning within town limit and there are no major industries. Erattupetta has no specialization of particular category of industries. Agro based raw materials like nutmeg, cocoa, rubber, coconut, coffee, pepper which can be utilized as industrial raw material. Industrial growth in Erattupetta town is very low whereas there is enough scope for the introduction of food processing, textile based industries and latex based industries also.*

# 9. HERITAGE & TOURISM

## 9.1 INTRODUCTION

Changes accompanying urban growth causes the destruction of distinctive and meaningful built and natural elements, eradicating the physical expression of former indigenous ways of life that are very much part of the settlement culture. Since the architecture is a long-term and large scale physical witness to the past, future generations will continue to refer to it as a reflection of the spirit of the historic culture.

During the recent decades, the rehabilitation and regeneration of historic centers has been increasingly recognized as an efficient tool for urban development synthesizing cultural values with economic opportunities. Maintaining and enhancing historic buildings and historic areas can be economically rewarding, and in long term, increase the value of private and public property.

## 9.2 HERITAGE

Ninar Masjid is one of the oldest Mosques. As far as Erattupetta town is concerned there are only a few religious buildings with heritage value. Detailed description of important buildings is given in the subsequent paragraphs.

- **St. George Church, Aruvithura**

The first edifice of the church at Irapeli (now Aruvithura) was made of granite stones in the manner of Hindu temples. As it is traditionally believed that St. Thomas, the apostle of India who preached the Christian faith in the important and popular villages of Malabar. It is believed that St. Thomas visited Irapeli and converted a prominent Jewish trader family named "Thengummoottil" to Christianity and laid a cross on the banks of the Meenachil River. Local traditions also support this belief. This is the first church in the Palai diocese and was built in the 1st century.

- **Valiachan mala, Erattupetta**

This is a very high altitude place in Erattupetta town from where we can see all around of Erattupetta town including Aruvithura church. The cross in this place is about 2000 ft above sea level and about 107 ft high. It is developing as a pilgrim tourism place.

- **Illikal Kallu**

This place is a major tourist attraction spot in Kottayam district near to Erattupetta town. Situated about 3400 feet above sea level, it is also one of the well known peaks in the Western ghats. Illikal Kallu is a rock situated above Illikal Mala. The thing that makes this rock unique is that half of the rock has fallen off, and only the other half remains. This supplements the beautiful mountains which surrounds the rock. The nearest Panchayat is Teekoy. Ayyampara Hill is another tourist place which is located in Thalanadu panchayat nearby to this municipality. Angalamman Kovil is one the Edathavalam for Sabarimala pilgrims.

- **Buildings of heritage value in the influence area of the town**

Pilgrim centre of Blessed Alphonsa is located in Bharananganam Grama Panchayat about 8 Km from Erattupetta and it is located in Pala– Erattupettah Road (SH 32). It is believed that this church was constructed about 1000 years back and reconstructed about 90 years back. This is one of the largest churches in Kerala. The church has ancillary structures such as Kalvilakku, Silalikhithangal etc. Blessed Sr. Alphonsa was buried here and in her name Bharananganam became a famous pilgrim centre.

Holy Cross Forane Church, Cherpunkal, Puliyannur Temple, Kadappattoor temple, Ramapuram church is the other important buildings with heritage value.

## 9.3 TOURISM

At present tourism sector is not playing a substantial role in the economy of Erattupetta. Being a hill land and middle region of Kerala this municipality is beautiful with hills and valleys. Valiachan mala hillsides and Earattupetta riversides are very beautiful for sightseeing.

## 9.4 GATE WAY TO TOURIST AND PILGRIM CENTERS

Erattupetta is the ideal take-off point for visits to Bharananganam, Vagamon, Elaveezhapoonchira, Peerumadu, Munnar, Idukki etc. Earattupetta is well linked by road to other prominent centers of the state. The nearest airport is Cochin International Airport which is about 80 kilometers away.

St. Alphonsamma's Tomb Bharananganm, Vagamon hill station, Kurisumala Ashramam, Kolahalamedu, Elaveezhapoonchira and Poonjar Palace are the stations with tourism potential and well connected with Erattupetta. Gramaphone museum is 3 km from Erattupetta which is in Thalappalam Panchayat.

## 9.5 AESTHETICS

The visual ill effects of parking due to the absence of off street parking areas are being experienced at many parts of the town. Numerous advertisement boards set up all along the street; obstruct the beauty of the surrounding landscape.

The roads of the town and road junctions and road furniture do not have a geometry or uniform standard. In almost all roads, the buildings are abutting the road without adequate setback from the road margin. This together with the insufficient right of way of roads and poor road geometrics is degrading the aesthetic beauty of the town. In addition to this there is the problem of road encroachment.

## 9.6 CONCLUSION

*Buildings/ precincts of heritage importance are very limited in the town. There is limited potential for tourism within the town. But utilizing the nearness location advantage of the town, Erattupetta can be developed as a tourist transit center. The aesthetic appearance of the town needs to be improved.*

# 10. AGRICULTURE & ANIMAL HUSBANDRY

## 10.1 INTRODUCTION

The Functional character of the town shows that out of 28 wards, 6 wards are rural and 8 wards are semi - rural. Only 5 wards are urban and the remaining 9 wards are Semi-urban. As this town is a combination of river side and high lands, cultivation of many type of agriculture can be done here. Major crops in this municipality are rubber, coconut, pepper, tapioca etc. The topography, soil and climate of the town are more suitable for cultivation of rubber. 0.03% of paddy land is available here but there is no paddy cultivation.

## 10.2 AGRICULTURAL LAND USE

As per the land use survey 2023, dry agriculture land dominates in the Town and consists of 2.75 Sq. km. of land which is 36.36 % of total area of the municipality.

## 10.3 CONCENTRATION OF AGRICULTURE LAND USE

As mentioned in paragraph 10.2, the agriculture area is distributed in all parts of the town. In fact it is mixed up with other urban land uses especially the residential land use. The concentration pattern of Agriculture land use was discussed in chapter 6. More concentration of Agriculture land is seen in Kondoormala ward, Sasthamkunnu ward and Thevarupara ward of the Municipality. Distribution of agricultural land use is shown in figure 10.1 and the concentration pattern of Agriculture land use is shown in figure 10.2.

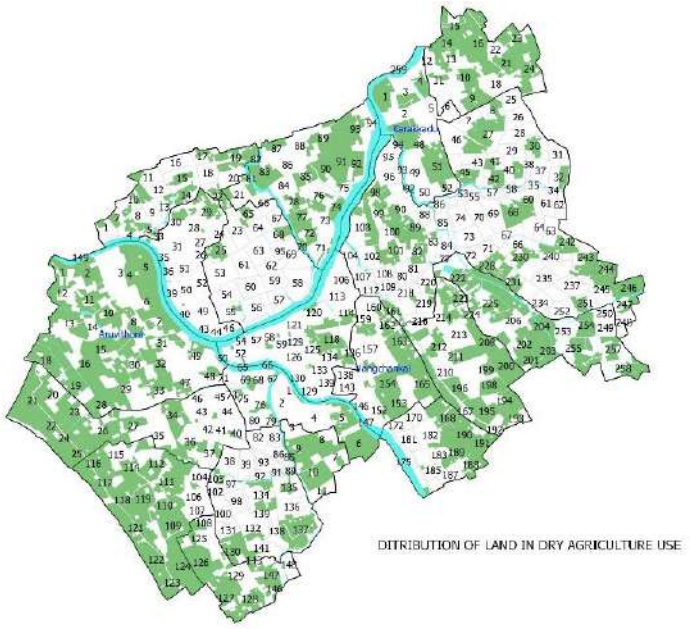



***Fig 10.1 Distribution of Agricultural land***

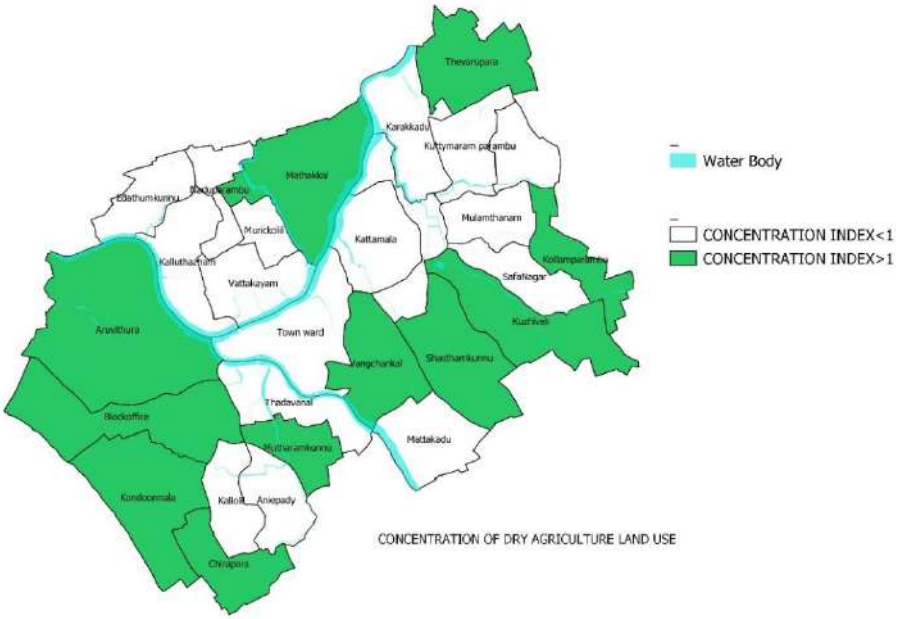



***Fig.10.2 Concentration pattern of Agricultural land use***

## 10.4 LAND UNDER DIFFERENT CROPS

Land under different crops is shown in Table 10.1. Rubber is the major crop of the town and 310 Hectares of land which is 64.98 % of total agriculture land is under rubber cultivation. Coconut is the second major agricultural crop of this area.

***Table 10.1 Breakup of agriculture land***

| Sl.No. | Crops | % of Agriculture land |
|---|---|---|
| 1 | Banana plantain | 5.26 |
| 2 | Tapioca | 3.77 |
| 3 | Coconut | 8.80 |
| 4 | Other crops | 17.19 |
| 5 | Rubber | 64.98 |
| **TOTAL** | | **100.00** |

*Source: Krishi Bhavan, Erattupetta*

## 10.5 MAJOR CROPS OF THE TOWN

Major crops, their area of cultivation and productivity of these crops in Erattupetta town is shown in Table 10.1 and Table 10.2. Rubber is the major crop of the town as far as the area of cultivation concerned, followed by Coconut. Most of the hilly land is under rubber cultivation. Vegetables, pepper, areca nut, pulses, fruits and spices are the other crops.

Availability of good quality and chemical free vegetables can be ensured only by promoting homestead cultivation of vegetables. Efficient and economic use of water is ensured with the implementation of schemes such as promotion of micro irrigation. Drip and sprinkler irrigation systems can reduce the wastage of water.

Poly houses and roof garden plantation are more encouraged here as there is shortage of availability of land for cultivation. Agriculture department is encouraging this type of cultivation and more funding are given for this purpose.

Increase in use of organic manures, compost, biological agents, bio fertilizers and bio pesticides can be utilized for increasing productivity in the available agriculture land.

***Table 10.2 Productivity of Major crops per year***

| Crops | Productivity | Crops | Productivity |
|---|---|---|---|
| Coconut | 4800 Nuts/ha | Pineapple | 30T/ 1 Ha |
| Tapioca | 25M T/1 Ha | Nutmeg | 4.5T/ 1 Ha |
| Vegetables | 12T/ 1 Ha | Coffee | 400 T/ 1 Ha |
| Banana | 10 MT/ 1 Ha | Spices | 400Kg/1 Ha |
| Rubber | 3.47T/ 1 Ha | Plantains | 8T/ 1 Ha |
| Pepper | 450 kg/ 1 Ha | Other crops | 21T/Ha |
| Coco | 1500Kg/ 1 Ha | | |

*Source: Krishi Bhavan, Erattupetta*

## 10.6 TRADING FACILITIES

Erattupetta municipality does not have modern organized market facilities for the trading of agriculture produce. Even though there is a Karshaka Market, its facilities are limited.

## 10.7 ANIMAL HUSBANDRY

In olden days most of the people depended on agriculture as their main source of income. Hence cattle were reared for milk, ploughing in field, pulling the bullock carts and as a source of bio fertilizer. The decrease in area of cultivating lands, modernization of cultivation methods, non-availability of workers etc. resulted in the degradation of cattle rearing. Now cattle are used only for milk and meat. Animal husbandry sector provides milk, meat, egg, manure. Table 10.3 gives the details of Livestock population in Erattupetta town.

***Table: 10.3 Livestock Population of Erattupetta***

| Animals | 2007 | 2012 | 2019 |
|---|---|---|---|
| Cattle | 188 | 177 | 139 |
| Buffalo | Nil | 8 | 17 |
| Pig | 14 | Nil | Nil |
| Poultry | 3127 | 3888 | 4963 |
| Duck | 61 | 30 | 227 |
| Goat | 428 | 407 | 347 |
| Rabbit | 56 | 91 | 147 |
| Quail | 54 | 19 | 457 |
| Turkey | Nil | 18 | 23 |
| Guinea | | | 11 |
| Emu | | | 2 |
| Geese | | | 6 |

*Source: Veterinary Polyclinic, Erattupetta*

Cattle, buffalo, pigs, poultry, ducks, goats, rabbits, quail, and other animals from 2007 to 2019 are included in the table. It indicates that between 2007 and 2019, the number of cattle and goats is gradually declining. The number of poultry, ducks, and quail increased between 2007, 2012 and 2019. According to data from the Veterinary Polyclinic, turkey and buffalo were introduced between 2012, while guinea, emu and geese were introduced in 2019.

Milk societies are functioning for collection of milk from local people. The production of milk and egg in the municipal area is negligible compared to the consumption. The Veterinary Polyclinic is the major institution in this sector functioning in the town. As this is a small municipality with high density of population, most of the produces for the uses in municipality is sourced from nearby panchayats.

## 10.8 CONCLUSION

*The conversion of agricultural land for development purpose due to rising land value is a hurdle in agriculture area. Kerala being a consumer state is vulnerable to sporadic price rise since we are depending on other states for agricultural produce. Animal Husbandry sector has a vital role to play in this scenario. Livestock production has to be improved as a step to food security. Animal husbandry sector now encompasses not only food security but also nutritional security and income security. This sector is important in alleviating rural poverty and unemployment. It is possible to attain self-sufficiency in egg production through the introduction of concepts such as the student poultry club in the municipal area.*

# 11. HOUSING

## 11.1 INTRODUCTION

Kerala has an urban population of 47% according to 2011 census. As per 2011 census there is an estimated shortage of houses. Housing is one of the basic needs of human being and it is important next to food and clothing. The quality of housing reflects the quality of life. When compared to other towns in the neighboring areas Erattupetta municipality is experiencing highest population growth rate and the assessment of housing need is essential.

## 11.2 RESIDIENTIAL AREAS

A major part of the developed area of Erattupetta town has residential land use, presently there are only few multi storied residential apartments in the town. Residential areas in the municipal limit are scattered in all part of the town. But the density of population is varying and residential areas are concentrated more along the sides of major travel corridors of the town. The ward wise population density of Erattupetta town is shown in Figure 11.1 and residential concentration is shown in Figure 11.2.

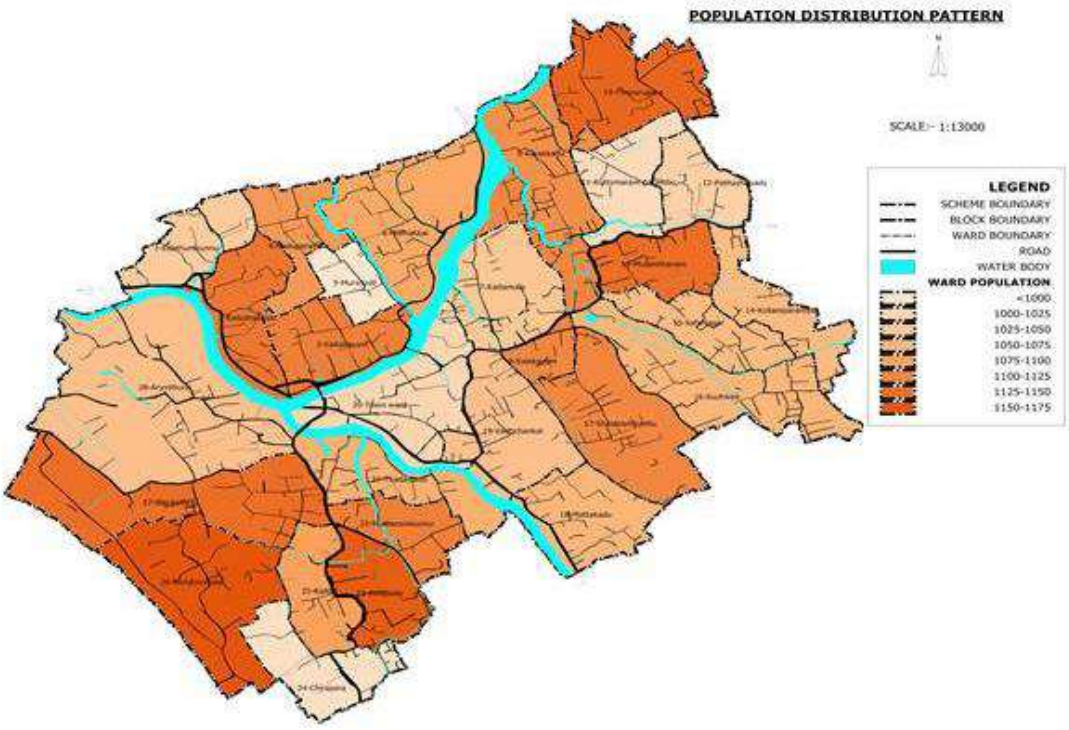



***Fig 11.1 Ward wise population density***

## 11.3 HOUSING STOCK

The number of households and number of houses available from 1991 onwards is shown in Table 11.1.

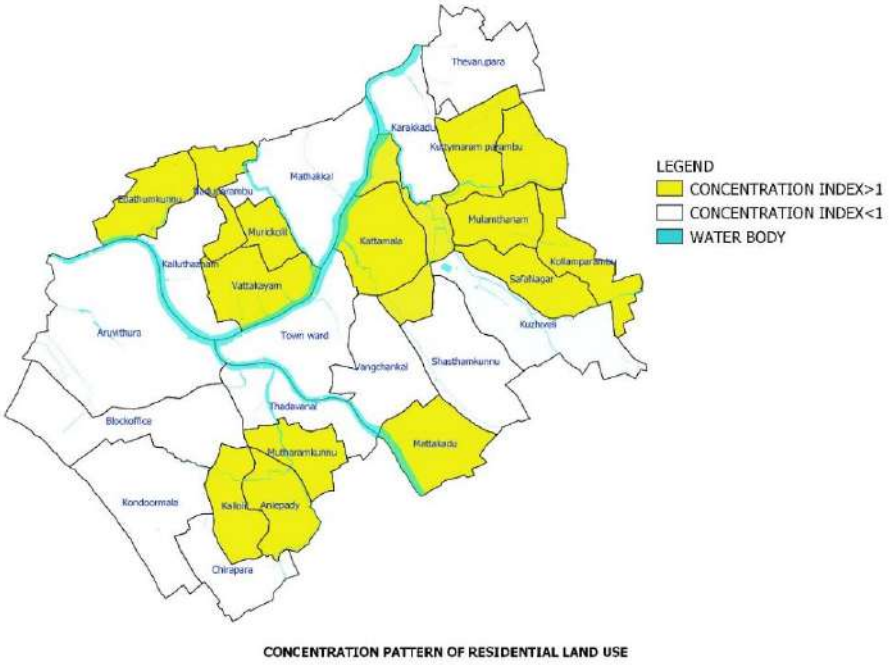



***Fig 11.2 Concentration index of Residential Land Use***

***Table 11.1 Number of houses and households***

| Sl No | Year | Population | No. of houses | No. of households |
|---|---|---|---|---|
| 1 | 1991 | 21226 | 3545 | 3604 |
| 2 | 2001 | 25103 | 7435 | 4769 |
| 3 | 2011 | 29705 | | 6486 |

*Source: Census reports, Panchayat level statistics*

## 11.4 RESIDENTIAL PLOTS

### 11.4.1 Plot size

Details regarding the size of plots and ownership of plots were collected from the Socio Economic survey 2016. As per the survey average size of residential plots in Erattupetta Municipality is 11.7 cents. In ward 11 (Kuttimaramparambu) average plot size is 6.67 cent and in ward 28 (Aruvithara) it is 24.58 cent.

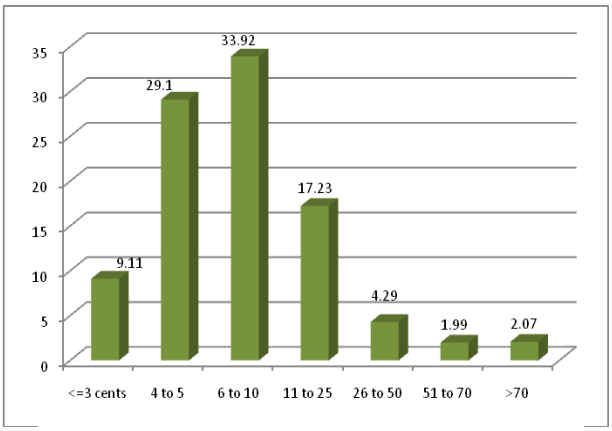



***Fig 11.3 Average plot size***

The percentage of plot in different ranges of plot size as per Socio-economic survey (2016) is shown in figure 11.3. It shows that comparatively small size plots are more in the town in residential use. 33.92 % of the plots are in the range of 6 to 10 cents and 29.1 % of plots are in the range of 4 to 5 cents.

### 11.4.2 Ownership of plot

In the Socio Economic Survey it is revealed that majority of households in the town, i.e. 87.83% have their own land, 0.61% of household have lease land and the remaining 11.56% have other type of land ownership. It is shown in Figure 11.4 and Table 11.2

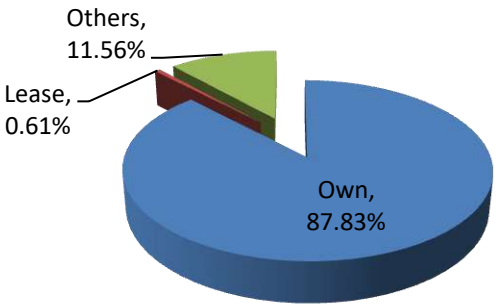



***Fig 11.4 Land Ownership Details***

***Table 11.2 Land Ownership details***

| Land Owner ship | Own | Lease | Others |
|---|---|---|---|
| Average % for the LSGI | 87.83 | 0.61 | 11.56 |

## 11.5 SIZE AND STRUCTURAL CONDITION OF HOUSES

Average plinth area of building with in the Municipality is 94.24 sqm and majority of plinth area of residences (63%) belongs in between 50-150 sqm range. In Erattupetta Town, highest percentage of plinth area of houses are in the range of 75-150 sqm which is 32.46%, followed by 30.86% houses with area in the range of 50-75 sqm plinth area. The houses having plinth area in the range 150-250 sq.m is 12.79%. It is shown in the Table 11.3 and Figure 11.5.

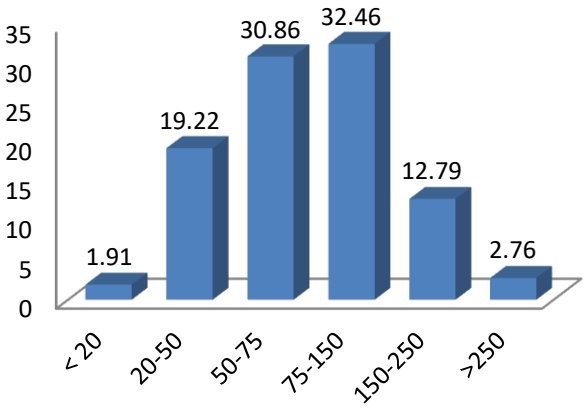



***Fig 11.5 Variations of houses in each Range of plinth area***

***Table 11.3 Percentage of House in each range of plinth area***

| Range of plinth area | < 20 | 20-50 | 50-75 | 75-150 | 150-250 | >250 |
|---|---|---|---|---|---|---|
| Percentage | 1.91 | 19.22 | 30.86 | 32.46 | 12.79 | 2.76 |

A study of the structural condition of houses shows that 54.14% of houses are pucca building, 31.24% of buildings are moderate buildings, 14.47% of buildings are kutcha buildings and 0.15% of buildings are huts. It is represented in Table 11.4 and Figure 11.6.

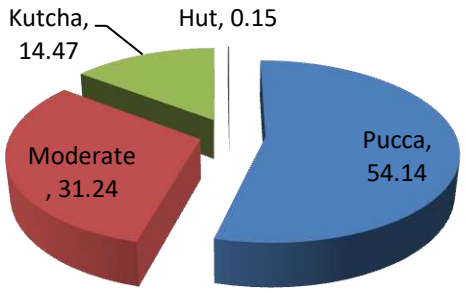



***Fig 11.6 Structural conditions of houses***

***Table 11.4 Structural condition of Building***

| Type of Building | Pucca | Moderate | Kutcha | Hut |
|---|---|---|---|---|
| Percentage | 54.14 | 31.24 | 14.47 | 0.15 |

Distribution of houses with types of floor material, types of walls and types of roof are shown in figures 11.7, 11.8 and 11.9 respectively. It indicates that structural condition of houses in Erattupetta Town is much better for nearly 80% of housing.

Study results of types of flooring used in the houses are given in the Table 11.5 and Figure 11.7. From the figure 11.7 it can be seen that 45.48% of houses are with ordinary tiles and 21.90% of houses are with Mosaic and Marble tiles and 32.62% of houses are with other flooring materials.

***Table 11.5 Percentage Variation for Different Types of Floor***

| Type of floor | Ordinary tiles and cement | Mosaic and Marble | Others |
|---|---|---|---|
| Percentage | 45.48 | 21.90 | 32.62 |

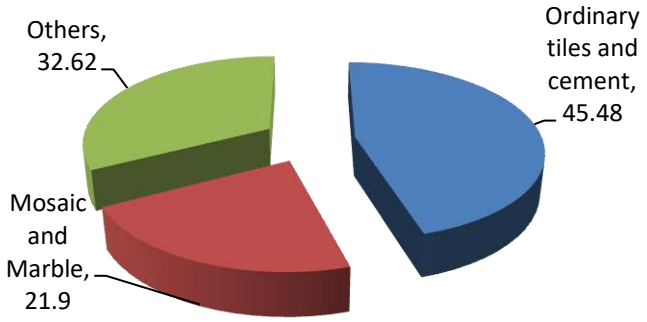



***Fig 11.7 Types of floors of houses***

The different type of materials used for the construction of the wall has been studied. The results are shown in Table 11.6 and Figure 11.8. It can be seen that 25.27% of houses are constructed with brick wall and 73.89% of houses are

constructed with brick plastered walls. The remaining buildings are with other type wall materials like coconut leaves, earth blocks etc. and their percentages are very less.

***Table 11.6 Percentage Variation for Different Types of Wall***

| Type of wall | Thatched | Earth blocks | Earth blocks plastered | Brick | Brick plastered |
|---|---|---|---|---|---|
| Percentage | 0.08 | 0.38 | 0.38 | 25.27 | 73.89 |

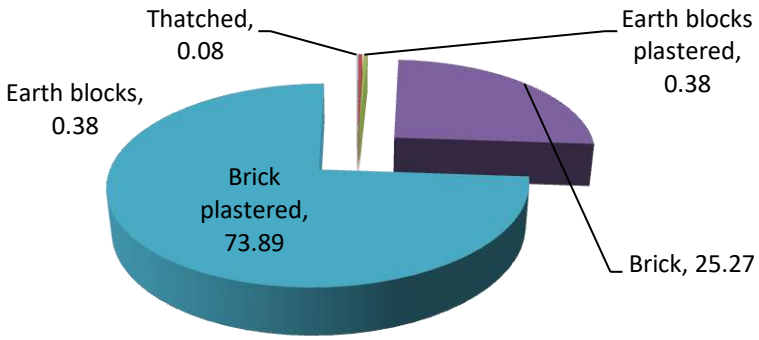



***Fig 11.8 Materials used for walls***

Table 11.7 and Figure 11.9 show the percentage of houses with different types of roof. From the Figure 11.9, it can be observed that 61.48% of houses are with concrete roof, 38.21% of houses are with moderate quality roofing materials like tin sheet, asbestos sheet and tiled roof. Only 0.31% of houses are with plastic and perishable materials like grass, coconut leaves etc.

***Table 11.7 Percentage Variation for Different Types of Roof***

| Type of roof | Plastic, Grass and coconut leaves | Tin, Asbestos and Tiles | Concrete |
|---|---|---|---|
| Percentage | 0.31 | 38.21 | 61.48 |

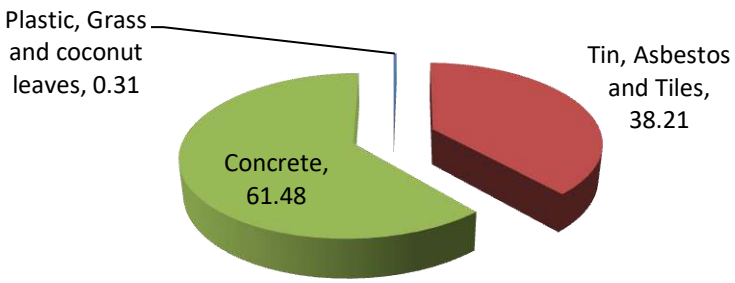



***Fig 11.9 Type of roofing materials***

Table 11.7 and figure 11.9 reveals that only 0.31% of houses are to be made safe and secure.

## 11.6 SANITARY SYSTEM AND SOLID WASTE DISPOSAL SYSTEM

As per the Socio-Economic Survey 2016, almost 100% of houses in Erattupetta Town area have some sort of sanitary system. No public sewerage system is there in the town. Leach Pit latrine is the major form of sanitary waste disposal system and rest is septic tank. Percentage wise usage of different sanitary waste disposal systems of the town is shown in Figure 11.10.

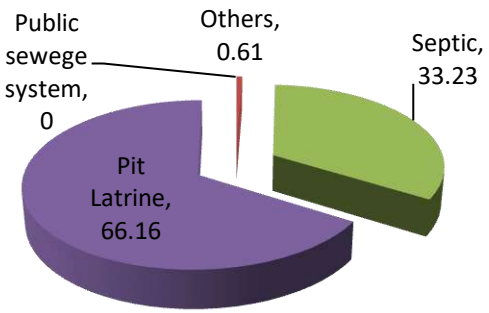



***Fig 11.10 Method of sanitary waste disposal***

Socio-economic survey also reveals that 82.16% of wastes from the houses are disposed in their own compound. Streets, garbage bin etc. are the other places of disposal. The percentage of disposal at different places is shown in Figure 11.11. In Thadavanal ward nearly 50% houses disposes solid waste in other category and survey indicates the probabilities of dumping waste in to the meenachil river.

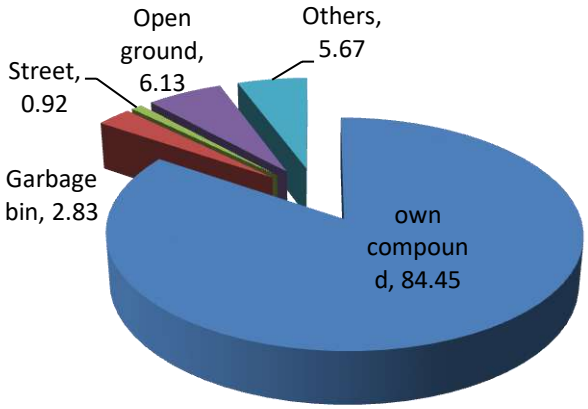



***Fig 11.11 Method of solid waste disposal***

Better Sanitation system is available for the houses in the town and nearly 33.23 % of houses have septic tanks. But the systems for collection of wastes from the houses are very poor. A system for treating wastes has to be evolved especially in high density wards.

## 11.7 ELECTRIFICATION OF HOUSES

As per the Socio-economic survey (2016) conducted by the Town and Country Planning Department shows that 100% electrification is achieved in Erattupetta town. This shows the improvement of life style in this sector, but complaints of variation in voltage used to occur rarely.

## 11.8 AVAILABILITY OF SERVICES

The average distance in kilometer as per the Socio-Economic survey 2016 from houses to facilities like motorable roads, bus stops, schools, Post offices, health

facilities, hospitals, ration shops, play grounds etc are shown in Figure 11.12. The Socio-Economic survey data is also analyzed by comparing the distance to various facilities with certain standard. The average distance to various services and comparison with adopted standards are shown in Table 11.8.

The analysis shows that when compared with the adopted standards, the facilities like motorable roads, high school, Post office, health facilities, ration shops, play ground are available at a close distance to the residential areas. But facilities like bus stops and schools other than primary schools are not available nearby.. The disance to LP school seems to be higher than 0.5 km for about 68% of the people.

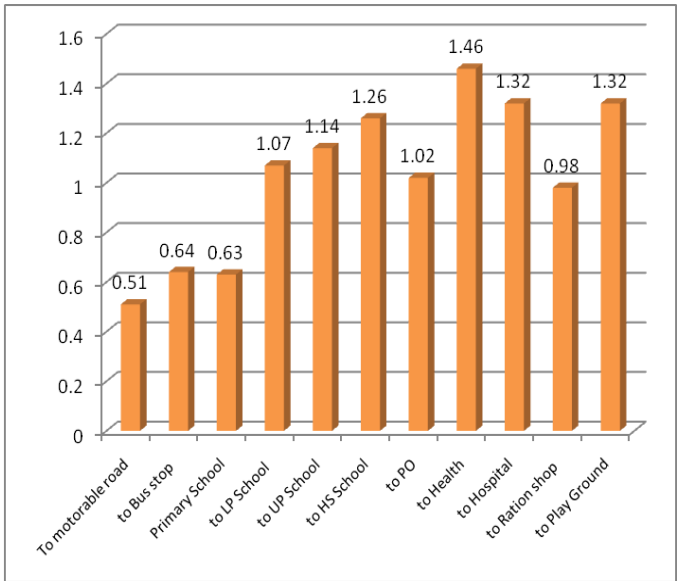



***Fig 11.12 Average distance to various services***

***Table 11.8 Distance to facilities***

| Sl No | Facilities and standard | Percentage of people having distance to facilities higher than standard |
|---|---|---|
| 1 | Distance to motorable road greater than 0.5 km | 1.38 |
| 2 | Distance to bus stop greater than 0.5 km | 35.6 |
| 3 | Distance to Primary school greater than 0.5 km | 35.15 |
| 4 | Distance to LP school greater than 0.5 km | 68.84 |
| 5 | Distance to UP school greater than 1 km | 32.16 |
| 6 | Distance to HS school greater than 3 km | 5.21 |
| 7 | Distance to Post Office is greater than 3 km | 0.61 |
| 8 | Distance to Health greater than 5 km | 0.54 |
| 9 | Distance to Hospital greater than 5 km | 0.61 |
| 10 | Distance to Ration shop greater than 5 km | 0.46 |
| 11 | Distance to Play Ground greater than 5 km | 0.92 |

*Source: Socio –Economic Survey 2016*

## 11.9 SQUATTER SETTLEMENTS

There are no approved slums in Erattupetta Town.

## 11.10 CONCLUSION

*Erattupetta town has comparatively better housing condition. The residential density is high and the average size of the plot is comparatively less and 87.83% of people have their own houses. The number of the residences belonging to medium range of area is also high and its structural condition is fairly good. Better sanitary system is available. Waste disposal to river bank and also to the river itself is noted at many points and remedial measures are to be suggested for saving the major water source of Kottayam district from pollution. The facilities are available at a reasonable distance when compared with adopted standards.*

# 12. DRINKING WATER

## 12.1 INTRODUCTION

Water is an important and life sustaining drinks to human being and is essential to the survival of all organisms. But only less than 1% of the whole water on earth is accessible to man and other living beings in the form of fresh water formed in lakes, rivers and underground aquifers. Erattupetta town has got good water resources. The town is divided in to three parts by the water bodies mainly Meenachil river and the tributaries. The details like water supply scheme, consumption of water, source of water, scarcity of water etc. are discussed in the subsequent paragraphs.

## 12.2 WATER SUPPLY SCHEME

Various schemes are operating for supply of Drinking water to Erattupetta and adjacent Grama Panchayaths. Nearly 23 water supply schemes are there in the Municipality. Water authority is operating three schemes and the balance 20 schemes are managed by municipality which is maintained by different societies. The three Water supply schemes by Water authority were established in the year 1967, 1968 and 1974. They are namely Erattupetta water supply scheme, Thidanadu water supply scheme and Thevarupara water supply scheme.

***Table 12.1 Details of water supply schemes by KWA***

| Sl. No | Name of the scheme | Year of establishment | Location/ Ward No | Established by | Maintained by | Source of water | Yield (in MLD/ day) |
|---|---|---|---|---|---|---|---|
| 1 | Erattupetta Water Supply Scheme | 1967 | Near Town Check Dam | KWA | KWA | Well | 0.46 |
| 2 | Thevarupara Water Supply Scheme | 1974 | Near Eettillakayam | KWA | KWA | Well | 0.14 |
| 3 | Thidanadu Water Supply Scheme | 1968 | Thidanadu | KWA | KWA | Bore well | 0.04 |

*Source: Primary survey 2016*

The source of water is open well and bore well. Open wells are located on the bank of Meenachil River. The distribution to various part of the town is made from the overhead storage reservoir tanks located at various locations. All the 28 wards of Erattupetta municipality are covered under the water supply schemes. Name of the scheme, year of establishment, location, and agency which established the scheme, agency maintaining the scheme, source of water, yield from source etc. are given in Table 12.1.and 12.2

***Table 12.2 Details of water supply schemes by Janakeeya Jalasechana Padthathi (J.J.P)***

| Sl.No | Name of the scheme | Year of establishment | Location/ Ward No | Established by | Maintained by | Source of water | Number of Households | Yield (in Liters/ day) |
|---|---|---|---|---|---|---|---|---|
| 1 | SULABHA J.J.P | 2012 | 2, 3 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (town chek dam) | 100 | 50,000 |
| 2 | KATTAMALA-SHASTHAM KUNNU J.J.P | 2002 | 7, 8, 16,17 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Eettilakayam) | 158 | 85,000 |
| 3 | KUTTIMARAM PARAMBU J.J.P | – | 9, 11 | PANCHAYATH | SOCIETY | RIVER SIDE WELL varavalachikayam | 202 | 1,00,000 |
| 4 | KARACKADU J.J.P | – | 9, 10,11 | PANCHAYATH | SOCIETY | RIVER SIDE WELL varavalachikayam | 161 | 85,000 |
| 5 | KOLLAM PARAMBU J.J.P | 2003 | 13,14 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Eettilakayam) | 190 | 1,00,000 |
| 6 | CHIRAPPARA J.J.P | 2008 | 23,24,25 | PANCHAYATH | SOCIETY | BORE WELL (Road side) | 110 | 55,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 | MAHATHMA J.J.P | 2003 | 26,27 | PANCHAYATH | SOCIETY | BORE WELL (Near Stadium) | 140 | 70,000 |
| 8 | THEKKEKARA J.J.P | 1996 | 24,25,26 | PANCHAYATH | SOCIETY | BORE WELL (Road side) | 240 | 1,00,000 |
| 9 | MATTACKADU J.J.P | 2001 | 18 & Poonjar panchayat | PANCHAYATH | SOCIETY | RIVER SIDE WELL (MunicipalBounary) | 106 | 60,000 |
| 10 | THEVARUPARA J.J.P | 2000 | 11, 12& Teekoy Panch. | PANCHAYATH | SOCIETY | BORE WELL (Valavanarkuzhy) | 150 | 50,000 |
| 11 | PATHAZHAPADI-THEVARUPARA-VALAVANARKUZHY J.J.P | 2004 | 10,11,12 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Opp.elappunkal Masjid) | 350 | 1,50,000 |
| 12 | MALIACKAL J.J.P | – | 18,19 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Nedunkeethi kayam) | 206 | 1,00,000 |
| 13 | PALLIPARA J.J.P | – | 19,20 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Kunnappalli kadavu) | 210 | 1,00,000 |
| 14 | KADUVAMUZHY J.J.P | – | 2,4,5 | PANCHAYATH | SOCIETY | BORE WELL (Vazhamattam road side) | 120 | 30,000 |
| 15 | KEERIYATHOTTAM J.J.P | – | 13,14,15 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Eettilakayam) | 280 | 1,25,000 |
| 16 | MULLOOPARA J.J.P | 2008 | 14,15,16 | PANCHAYATH | SOCIETY | BORE WELL (Old paddy land Nadackal) | 170 | 1,00,000 |
| 17 | PEZHUMKADU-MATHACKAL J.J.P | 2004 | 2,3,4,5,6 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Eettilakayam) | 108 | 55,000 |
| 18 | ZAM ZAM J.J.P | 1998 | 1,2,3,4 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Opp:Aruvithura collage) | 350 | 1,75,000 |

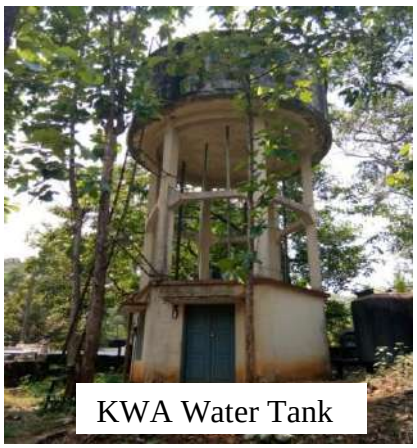
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | THADAVANAL J.J.P | 2006 | 21,22 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Puthenpally kayam) | 158+22 well recharge | 1,00,000 |
| 20 | ARUVITHURA J.J.P | 2008 | 26,27,28 | PANCHAYATH | SOCIETY | RIVER SIDE WELL (Near Town check dam) | 200 | Maintenance, progressing |

*Source: Primary survey 2016*

Another Water supply project by the water authority to supply water from the Malankara dam to the residents in the municipality is in the planning stage

## 12.3 CONSUMPTION OF WATER

The water supply for the municipality is made by Jankeeya Jalasechana Padthathi (JJP) schemes and KWA. Major portion of the water supply is made by JJP through domestic connection and that of KWA is by public tap, domestic connection and non domestic connection.



KWA Water Tank

## 12.4 SOURCE OF WATER

In the Socio-Economic survey 2016, 54.29% of people reported that well is the major source of water and 19.98% of people reported that water supplied by KWA is the main source of water. Community well (6.28%), Public bore well (5.05%), River (6.2%) other sources (7.43%) are the other sources of water as per the socio-economic survey. It is shown in Table 12.3 and also in Figure 12.1.

***Table 12.3 Source of Drinking Water***

| Source of water | Well | Mlty/KWA | Community well | Public bore well | River | Own pond | Community pond | Others |
|---|---|---|---|---|---|---|---|---|
| Average % for the LSGI | 54.29 | 19.98 | 6.28 | 5.05 | 6.2 | 0.46 | 0.31 | 7.43 |

*Source: Socio economic survey 2016*

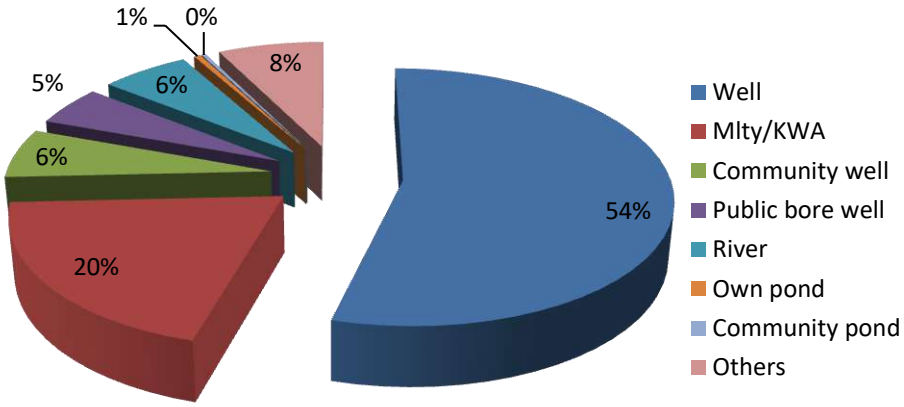



***Figure 12.1 Source of Water***

## 12.5 SCARCITY OF WATER

As per the socio-economic Survey (2016) conducted by Town and Country Planning Department, 65.08% of the households reported that there is no scarcity of water, 8.65% reported that there is scarcity for 1-2 months, 16.39% reported that there is scarcity for 2-3 months, 7.2% reported that there is scarcity for 3-6 months and 2.68% reported that there is scarcity for more than 6 months. The scarcity details are shown in and Table 12.4

***Table 12.4 Availability of Drinking Water***

| Category of scarcity | No scarcity | 1-2 Months | 2-3 Months | 3-6 Months | more than 6 months |
|---|---|---|---|---|---|
| Percentage | 65.08 | 8.65 | 16.39 | 7.2 | 2.68 |

*Source: Socio Economic Survey 2016*

## 12.6 WATER CONSERVATION

The major source of drinking water in Erattupetta Town is Meenachil river and its tributaries. Even though there is sufficient quantity of water in the river and flooding occurs during rainy season, the river will be dried up suddenly with the beginning of summer. The depth of river has been lowered due to accumulation of sand from the river and the available water is also contaminated by draining out of waste water and by the deposits of waste into the river. Effort has to be


Meenachil River

made to prevent contamination of water and also to improve the storage of water. Proper maintenance of check dams and construction of a regulator can improve the availability of water during summer. Protection of Meenachil River has to be done at regional level. The town has an undulating terrain and the rain water drains out immediately after the rain and recharging of ground water is not taking place properly. Efforts are to be made for ground water recharging.

## 12.7 CONCLUSION

*Water supply schemes are provided in all wards of the town which provides enough water supply for the town. 64.85% of the households reported that there is no scarcity of water (as per Socio-Economic Survey 2016). Undulating topography is a major hurdle in providing piped water supply. For 58% of the households, well is the main source of water. Certain areas of the town need special attention as there is more scarcity of water. More attention is required to preserve river water and to protect the rivers. Existing water resources have to be protected from pollution so that water can be made available for the future needs. The encroachment of water bodies for other uses has to be strictly prohibited and it can be protected providing green strip around them. Authorities must ensure that water bodies are not affected by any form of construction in an area so that encroachment is reduced.*

# 13. TRANSPORTATION

## 13.1 INTRODUCTION

For the balanced development of an urban centre planned growth of spatial activities, coupled with provision of adequate infrastructural facilities like transport system, a well-defined hierarchy of road network, drainage, water supply, power supply etc. are required. The fast development of socio-economic and commercial activities coupled with inadequate supporting facilities and ever increasing demand due to centralization of employment centres to one place caused a perpetual vicious circle of traffic problems.

Among the various urban infrastructure facilities transportation is the one, which shapes the structure and growth of the city. A workable circulation plan ensuring efficient operation of the transportation system facilitates economic growth of the town. With progressive urbanization travel demand in towns has increased tremendously. This is evident from the long delays and traffic congestion observed on urban roads in most of the towns. In order to make the transport system efficient, there is a continuous need to maintain a balance between demand and supply of facilities within the town and its environs.

As part of preparation of Master Plan for Erattupetta Town various studies related to Traffic and Transportation were conducted. Study about vehicle population, road network, speed and delay, traffic volume, parking, pedestrian movement etc. were carried out.

## 13.2 TRANSPORTATION SYSTEM

The transportation system of Erattupetta town is road ways. No railway or water way is passing through the town. The existing road network of Erattupetta consist of State Highways, Major District Roads under Kerala Public Work Department and other roads under Municipality.

The town is located 40 km east of Kottayam, the district headquarters and is well connected to other major centres of the state by a network of State High ways and other PWD roads.

There is no railway linkage to Erattupetta Town. Ettumanoor and Kottayam are the nearest railway stations and these stations are located at a distance of 28 km and 40km respectively from Erattupetta town. As per the preliminary alignment of the proposed Angamali- Azhutha Sabari Railway line is adjacent to Erattupetta town.

Nearest airport is Cochin International Airport located at a distance of 75 km from Erattupetta Town. Another International Airport Thiruvananthapuram is 151 km away from the town. The proposed new airport at Erumely is about 25 km from Erattupetta.

**Road Transport**

Road transport is the most important mode of transport in Erattupetta. Public transport in the town is largely dependent on buses, run by both private operators and the Kerala State Road Transport Corporation (KSRTC) buses.

There are three bus stations serving Erattupetta town and out of that two of them are used for the operation of private buses and the third one is exclusively for KSRTC buses which is located at Erattupetta -Kanjirapppally road. The Town bus stand located on the Poonjar road is the major operating centre of private buses and the second bus stand is located at Kaduvamuzhy on the Pala road. Erattupetta is well-connected to the rest of Kerala through the services operated by KSRTC.

## 13.3 ROAD NETWORK

Erattupetta is accessible from North Kerala through Angamaly- Muvattupuzha-Thodupuzha- Muttom route. It is well connected to Tamil Nadu through Kottayam-Kumaly Road to Madurai, via Kanjirappally, which is 16km from Erattupetta. Erattupetta lies in an ancient route from Athirampuzha to Tamil Nadu.

Erattupetta town has good network of roads, maintained by both PWD and Erattupetta Municipality. Road network of Erattupetta town comprises of State Highways, Major District Roads, other PWD and municipal roads. Roads in the study area are congested due to narrow width, narrow bridges, unauthorized parking, absence of segregated bus bays etc. Poor enforcement and road user behavior deteriorates the road safety scenario of the town. Meenachil River passes through the centre of the town and in the earlier days this river was used for water transportation. Major roads passing through and within Erattupetta town consists of the following:

i. Erattupetta-Peermadu Road (State Highway 14)
ii. Ettumanoor - Erattupetta-Poonjar Road (State Highway 32)
iii. Kanjirapally - Erattupetta-Muttom Road (State Highway 44)
iv. Aruvithura college road (Major District Road)
v. Chennad Road (Major District Road)

Ettumanoor- Poonjar Road (SH 32) has a length of nearly 2.8 km within the municipal area connecting Panackapalam and Mattackadu. Carriageway width of the SH-32 in Erattupetta varies between 7 m and 10.5 m.

Kanjirappally- Thodupuzha Road (SH 44) has a length of nearly 4.0 km within the municipal area passing through hilly-rolling terrain conditions connecting Ilappunirappu and Velikanampara. Carriageway width of the SH -44 in Erattupetta varies between5.5 m and 11.5 m.

Erattupetta- Peermadu Road, commonly known as Wagamon Road (SH 14), originating from Erattupetta has a length of 2.3 km within the municipal limits connecting MES junction and Aniyilappu. Width of carriageway in Erattupetta is 6.8 m.

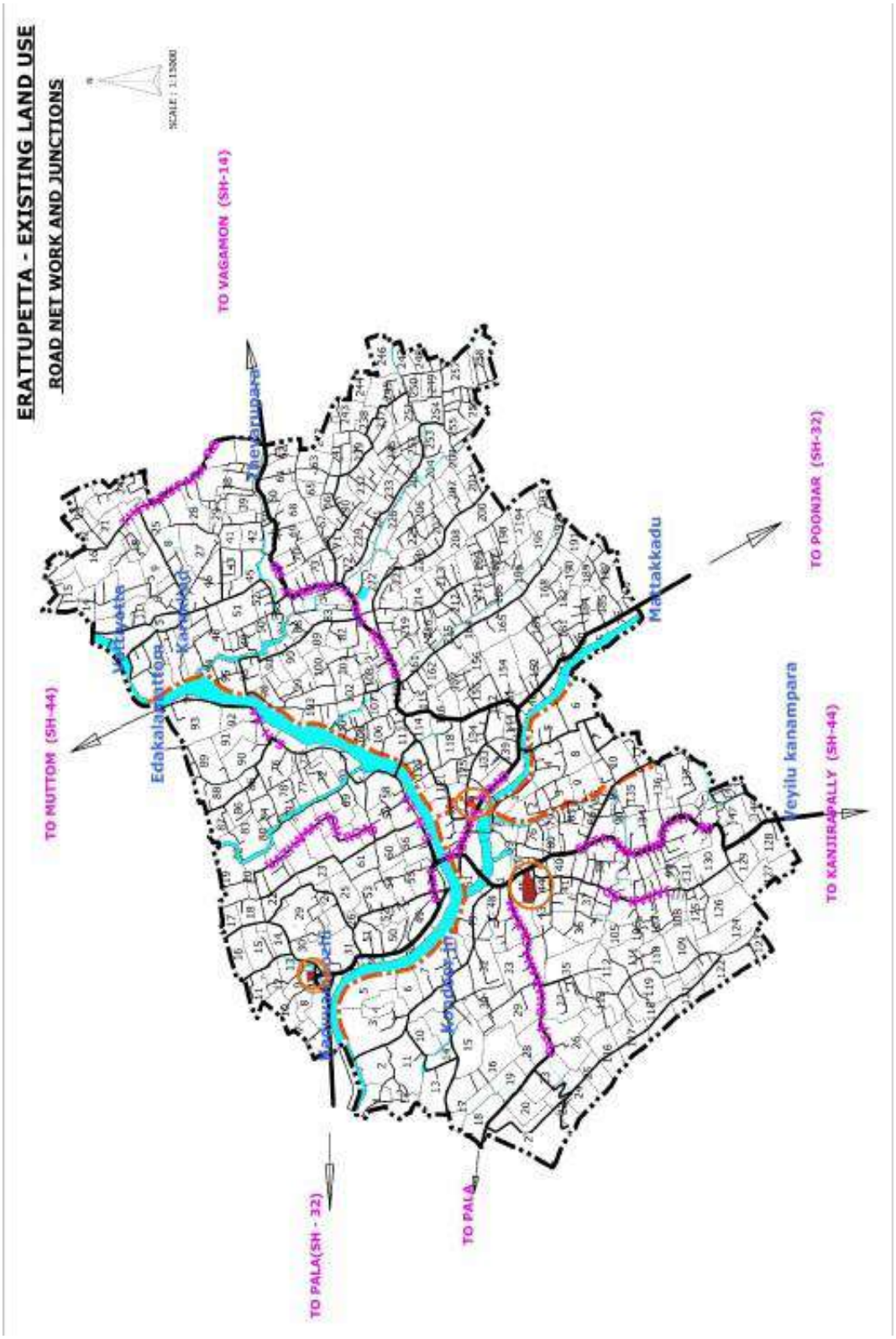



***Fig 13.1 Existing Road Network of Erattupetta***

## 13.4 ROAD INVENTORY

An understanding of the extent and quality of road network is very important to formulate plans for the future. Road inventory survey was carried out on all the major roads of the study area to obtain information like road length, cross-sections, hierarchical pattern of roads, surface condition, intersections, street furniture, parking area, bus bays etc.

## 13.5 ROAD NETWORK CHARACTERISTICS

Major arterial roads in Erattupetta study region are;

i. State Highway 14 (Erattupetta – Wagamon – Peerumedu road) between MES Junction and Aniyilappu (2.3km)
ii. State Highway 32 (Ettumanoor – Erattupetta – Poonjar road) between Panackapalam and Mattackadu (2.8km)
iii. State Highway 44 (Kanjirappally – Erattupetta – Thodupuzha road) between Ilappunirappu and Velikanampara (4.0km)

Ettumanoor- Poonjar Road (SH 32) has a length of nearly 2.8 km within the municipal area connecting Panackapalam and Mattackadu. Carriageway width of the SH-32 in Erattupetta varies between 7 m and 10.5 m. Kanjirappally- Thodupuzha Road (SH 44) has a length of nearly 4.0 km within the municipal area passing through hilly-rolling terrain conditions connecting Ilappunirappu and Velikanampara. Carriageway width of the SH -44 in Erattupetta varies between 5.5 m and 11.5 m. Erattupetta - Peermadu Road, commonly known as Wagamon Road (SH 14), originating from Erattupetta has a length of 2.3 km within the municipal limits connecting MES junction and Aniyilappu. Width of carriageway in Erattupetta is 6.8 m. Major sub-arterial roads in the study region are the

i. Aruvithura to College Road (1.2 km)
ii. Aruvithura to Poovathodu Road (1.6 km)
iii. Erattupetta to Chennad Road (0.5 km)

These roads have their carriageway ranging between 5 m and 7.5 m.There are many other roads in the town, which provide inter connectivity to these major roads and growth centers in the town. These roads together have a length of around 4.1 km with the CW width ranging between 4 m and 6 m.

## 13.6 VEHICLE POPULATION

Details regarding the number of registered motor vehicles in planning area are difficult to delineate as there is very high level of integration with regard to vehicle flow and traffic from adjoining areas. But the data regarding the number of motor vehicles at district level is available and it is considered for the analysis. Vehicle population growth of Kottayam district has shown a robust growth of 1.6 times during the last decade. The growth of motor vehicles in Kottayam district during the period from 2008 to 2015 is given in Table 13.1.

***Table 13.1: Growth of Motor Vehicles in Kottayam District***

| Year | No. of vehicles | Growth index |
|---|---|---|
| 2008-09 | 371203 | 100.00 |
| 2009-10 | 404109 | 108.87 |
| 2010-11 | 445940 | 120.14 |
| 2011-12 | 497638 | 134.07 |
| 2012-13 | 551517 | 148.58 |
| 2013-14 | 550237 | 148.24 |
| 2014-15 | 606121 | 163.29 |
| 2015-16 | 639616 | 172.31 |
| 2016-17 | 690309 | 185.96 |
| 2017-18 | 744817 | 200.65 |
| 2018-19 | 814649 | 219.46 |
| 2019-20 | 864689 | 232.93 |
| 2020-21 | 903171 | 243.31 |
| 2021-22 | 945185 | 254.63 |

*Source: Economic Review*

The number of motor vehicles having valid registration in Kottayam district as on 2015 is given in Table 13.2. An analysis of the vehicle population as on 2015 shows that the major share of 58.4 per cent of the total vehicle population in the district continued to be two-wheelers (3,53,944) followed by 18.20 per cent of cars/Taxis/Jeeps (1,10,340).

***Table 13.2: Number of Vehicles having Registration as on 31.03.2015 in Kottayam Dist.***

| Sl. No. | Type of Vehicle | Number |
|---|---|---|
| 1 | **Goods Vehicles** | |
| | i. Four wheelers and above | 31010 |
| | ii. Three wheelers and Tempos | 12263 |
| 2 | **Buses** | |
| | i. Stage carriages | 1793 |
| | ii. Contract carriages/Omni-buses | 14565 |
| 3 | **Four wheelers** | |
| | i. Cars | 84588 |
| | ii. Taxis | 19996 |
| | iii. Jeeps | 5756 |
| 4 | **Three wheelers** | |
| | i. Auto rickshaws | 80149 |
| | ii. Motorised cycle rickshaws | 0 |
| 5 | **Two wheelers** | |
| | i. Scooters and Motor cycles | 353944 |
| 6 | **Tractors** | |
| | i. Tractors | 524 |
| | ii. Tillers | 609 |
| | iii. Trailers | 226 |
| | iv. Others | 698 |
| | **Total** | **606121** |

## 13.7 LINK VOLUME AND CAPACITY UTILIZATION

Knowledge of the traffic volume using a particular road network is important to understand the efficiency at which the system works and the general quality of service offered to road users. Data pertaining to traffic volume and its composition was collected for all major roads through link volume survey. Link volume survey was conducted at identified mid block sections by manual traffic volume count classified by the type of vehicle moving in opposite direction. Roads carrying very low traffic were not considered for this survey. Data collected from the field has been scrutinized and was converted to Passenger Car Units (PCU) by adopting equivalent PCUs.

On Ettumanoor - Poonjar Road (SH 32), the peak hour traffic on the links varied from 400 PCUs to 1,600 PCUs. Ahmed Kurickal to Private Stand recorded 1,600 PCU/hr with significant bus traffic due to the presence of Private Bus Stand. This is followed by Central Junction to Ahmed Kurickal Junction which has recorded 1568 PCUs/hr and Muttom to Central Junction with 1520 PCUs/hr.

On SH-44, the peak hour traffic on the links varied between 600 to1600 PCUs. Aruvithura Bank Junction to Aruvithura Church Junction arm recorded 1561 PCUs/hr with considerable bus traffic due to KSRTC Bus Terminal. This is followed by Causeway Road Junction to Chennad Junction arm, which recorded around 1,451 PCU/hr and Central to Bank Junction arm with 1393 PCU/hr.

On Vagamon Road (SH-14), the intensity of peak hour traffic varied between 300 PCUs to 1400 PCUs. Link Volume between MES Junction to Thazhathu Nadakkal and Thazhathu Nadakkal to Nadakkal recorded around 978 PCU/hr and 1350 PCU/hr respectively.

Peak hour Traffic on the MDR varied from 250 PCUs to 900 PCUs, whereas on other Roads, peak traffic varied in between 150 PCUs to 800 PCUs.

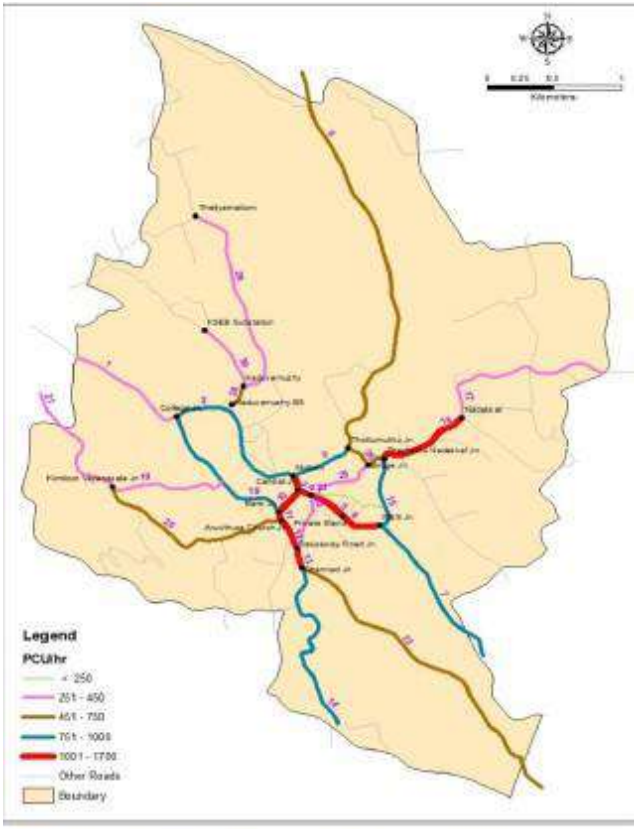



*Figure 13.2: Map showing density of traffic in Erattupetta study area*

**Capacity utilization**

Capacity utilization of the road stretches was measured by volume-to-capacity ratio (V/C Ratio). It is the ratio of volume of peak hour traffic plying on the road stretch to the capacity of the road stretch.

For working out the capacity of different road sections, the information compiled during the road inventory survey was compared with the specifications of IRC-106-1990(Guidelines for capacity on urban roads). While working out the capacities due consideration was given to carriage- way width, junctions, parking, lateral clearance, shoulder, surface condition etc. The traffic volume observed at different road stretches were compared with the capacity of road sections, to calculate the volume - capacity ratio (V/C ratio) of different road sections within the study area. Road stretches within the study area were over-utilized to the extent of more than their carrying capacity. Major road stretches which had their volume exceeded their capacity are given in Table 13.3**.**


*Figure 13.3: Map showing capacity utilization of roads in Erattupetta*

***Table 13.3 Volume – Capacity Ratio on Major Road Links in Erattupetta***

| No. | Name of Road | Road Link | Volume-Capacity Ratio |
|---|---|---|---|
| 1 | SH-32 | Ahammed Kurickal- Private Bust stand | 1.07 |
| 2 | SH-32 | Central Jn- Ahammed Kurickal Jn | 1.05 |
| 3 | SH-44 | Central Jn – Aruvithura church | 1.04 |
| 4 | SH-32 | Muttom Jn - Central Jn | 1.01 |

*Source: NATPAC Study Report 2017*

## 13.8 TRAFFIC VOLUME AT MAJOR INTERSECTIONS

Based on the reconnaissance survey, turning movement surveys at 11major/ minor intersections in the study area were conducted to ascertain the peak hour demands. Major intersections selected for volume count survey are given in Table 13.4

The summarized traffic flow in PCU at these intersections is given in Table 5.9. It could be seen that Muttom Junction witnessed the highest peak hour traffic flow of 2,716 PCU, closely followed by Ahmed Kurickal Junction of 2,691 PCUs. Aruvithura Bank Junction, Central junction and Aruvithura Church junction handled peak hour traffic flow above 2,000 PCU during peak hours. At Causeway road junction, MES junction, Chennad junction, Thazhathu Nadakkal Junction, Thottamukku junction and College junction, the traffic flow during peak hours varied between 1,000 to 2,000 PCU.

***Table 13.4: List of intersections selected for turning movement***

| Sl. No. | Name of road | Name of Intersection |
|---|---|---|
| 1 | Ettumanoor - Erattupetta - Poonjar Road (SH – 32) | College Junction |
| | | Muttom Junction |
| | | Central Junction |
| | | Ahmed Kurickal Junction |
| | | MES Junction |
| 2 | Kanjirapally - Erattupetta - Muttom Road (SH – 44) | Chennad Junction |
| | | Causeway Road Junction |
| | | Aruvithura Church Junction |
| | | Central Junction |
| | | Thottumukku Junction |
| 3 | Erattupetta - Peermadu Road (SH-14) | Thazhathu Nadakkal Junction |

***Table 13.5: Peak hour traffic flow at major intersections***

| Sl. No. | Name of intersection | Peak hour | Peak hour Traffic (PCU) |
|---|---|---|---|
| 1 | College Jn | 10.15 AM - 11.15 AM | 1045 |
| 2 | Muttom Jn | 05.00 PM - 06.00 PM | 2716 |
| 3 | Central Jn | 10.00 AM - 11.00 AM | 2241 |
| 4 | MES Jn | 05.00 PM - 06.00 PM | 1758 |
| 5 | Ahmed Kurickal Jn | 04.45 PM - 05.45 PM | 2691 |
| 6 | Chennad Jn | 09.15 AM - 10.15 AM | 1346 |
| 7 | Causeway Road Jn | 11.30 AM - 12.30 PM | 1567 |
| 8 | Aruvithura Church Jn | 03.00 PM - 04.00 PM | 2170 |
| 9 | Aruvithura Bank Jn | 03.45 PM - 04.45 PM | 2304 |
| 10 | Thottumukku Jn | 08.30 AM - 09.30 AM | 1084 |
| 11 | Thazhathu Nadakkal Jn | 08.45 AM - 09.45 AM | 1497 |

## 13.9 PARKING CHARACTERISTICS

Parking surveys were carried out on major road sections of Erattupetta town to obtain the peak parking demand and parking duration of various categories of vehicles on these road sections. The parking area near the Aruvithura church is the major off-street parking place for both two wheelers and four wheelers.

Of the four major parking corridors where parking accumulation survey was conducted, it was found that the road stretch between Muttom Junction and Kaduvamuzhy Bus Station had the highest parking accumulation of 164 vehicles parked at a time on a normal working day. 46% of the vehicles were found to be two wheelers, followed by cars (28%) and passenger autos (23%). Central Junction - Chennad Junction had peak parking accumulation of 128 vehicles at a time whereas Central Junction - MES Junction had 109 vehicles.

Majority of the vehicles parked at most of parking corridors were found to be for short duration of less than 30 minutes. About 74 per cent of the vehicles parked on selected parking corridors were found to be parked for duration of less than 30 minutes.15 percent of these vehicles were parked for a period ranging between 30 minutes and one hour. Around 11 percent of the vehicles parked for more than one hour in the selected corridors.

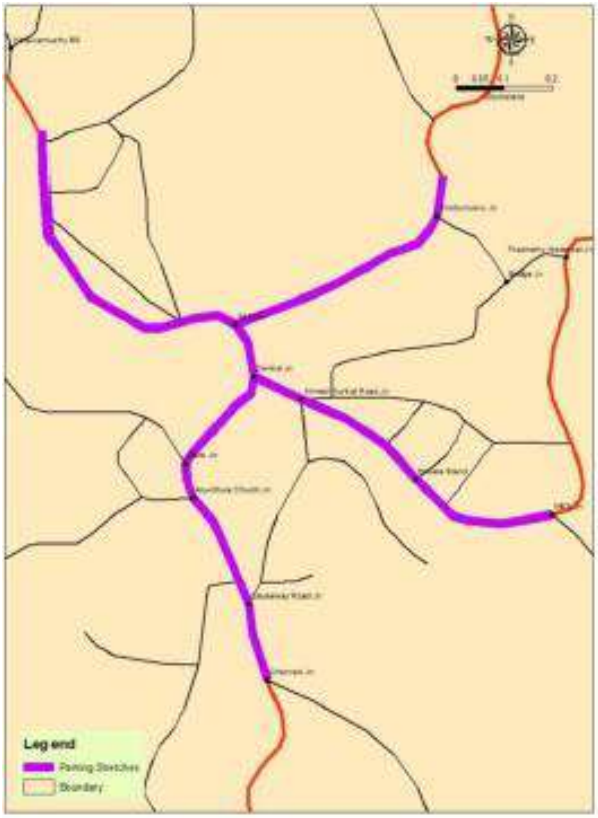



*Figure 13.4: Map showing road stretches selected for parking surveys*

## 13.10 PEDESTRIAN VOLUME

Pedestrian surveys were conducted at important intersections and road sections where the lateral and cross movements of pedestrians were found to be substantial. List of road sections identified for this survey are given in Table 13.5.

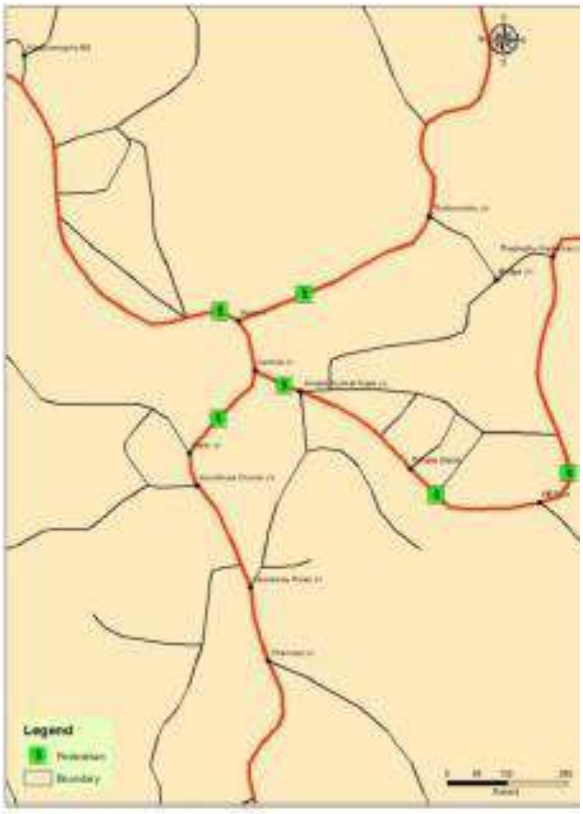



*Figure 13.5: Map showing Pedestrian survey locations*

Analysis of the pedestrian cross movement at major activity/traffic generation areas within Erattupetta town revealed that a high volume of pedestrian cross movements of 1050 pedestrians/hour were recorded on Ahmed Kurikal Junction - Central Junction arm on SH-32. Peak hour pedestrian cross movement at Muttom Junction towards Kaduvamuzhy on SH 32 recorded 785 Pedestrians followed by Aruvithura Church Junction towards Chennad Junction among SH 44 which recorded 691 pedestrians.

***Table 13.6 Road stretches identified for Pedestrian Survey***

| Sl.No. | Name of Road | Name of Road stretch |
|---|---|---|
| 1 | Ettumanoor - Erattupetta - Poonjar Road (SH – 32) | Muttam Junction - Kaduvamuzhy |
| | | Central Junction - Private Bus Stand |
| | | Private Bus Stand – MES Junction |
| 2 | Kanjirapally - Erattupetta - Muttom Road (SH – 44) | KSRTC Bus Station - Central Junction |
| | | Muttam Junction - Thottamukku |
| 3 | Erattupetta-Peermadu Road (SH-14) | MES Junction - Thazhathu Nadakkal Junction |

Highest peak hour pedestrian lateral movements of 1197 pedestrians were observed at Ahmed Kurickal- Private Stand arm on SH 321, followed by Thottamukku-Muttom Junction (810) on SH-44 and Central Junction towards Muttom Junction (802).

## 13.11 TRANSPORT TERMINALS

Erattupetta town has three bus terminals, one at town center on Poonjar road where Private buses are halting and starting the trips, new bus stand at Kaduvamoozhi which is not functioning properly. The KSRTC bus stand and depot is located on the Kanjirappally road near Aruvithura church Jn. At present there is no terminal for goods vehicles in the town.

## 13.12 CONCLUSION

*The configuration of the existing road network within Erattupetta town does not reflect any regular form, although it resembles more or less like ring and radial type having radial roads connected with partial ring roads. The road inventory shows that majority of roads are with inadequate right of way and carriage way width. The local road network system needed to be improved.*

*Traffic congestion, location of bus stops, narrow road, on-street parking and bad road conditions were the major causes of delay for traffic flow on major roads in Erattupetta town. It could be seen that the major causes of delay on the SH 32 was traffic congestion, narrow bridge, inadequate road width, unscientific design of junctions, pedestrian movement, on-street parking and locations of bus stops. Road stretches within Erattupetta town area were over-utilized to the extent of more than their carrying capacity. The road stretch "Muttom junction-Central junction - Ahammed Kurukkal junction - Private bus stand" is the major road stretches which had their volume exceeding their capacity.*

*From parking survey it is found that the road stretch between Muttom Junction and Kaduvamuzhy Bus Station had the highest parking accumulation of vehicles parked at a time on a normal working day. The pedestrian cross movement at major activity/traffic generation areas within Erattupetta town revealed that a high volume of pedestrian cross movements occurs at Ahmed Kurikal Junction - Central Junction arm on SH-32.*

# 14. ENERGY

## 14.1 INTRODUCTION

Electricity is a basic part of nature and one of the most widely used forms of energy. Electric supplies to Erattupetta town and nearby places are under KSEB Erattupetta sub divisional office. The Circle office and Division office are functioning at Pala. Erattupetta, Pala and Ramapuram sub divisional offices are coming under Pala divisional office. Erattupetta, Pinnakkanadu, Teekoy, and Poonjar section offices are coming under Erattupetta subdivision office. Erattupetta 110 KV substation is providing the electric supply for the municipal area and nearby places.


***KSEB office Erattupetta***

## 14.2 POWER DISTRIBUTION

Power distribution is the final stage in the delivery of electric power, it carries electricity from the transmission system to individual consumers. Electric power to Erattupetta subdivision is distributed from Erattupetta 110 KV Sub-Station located at Erattupetta- Thalappalam road. Three transformers are installed in the Sub-Station, 12.5 Mega Volt Ampere transformer (2 nos) and 250 KV transformer (1 no) which makes the smooth functioning of the substation.

***110 KV Substation Erattupetta***

Supply to Erattupetta substation is coming from Pala and Udumbannoor substations. Line in- line out method is followed at Erattupetta substation, if there is any power failure at Pala substation or Udumbannoor substation supply will be given via Erattupetta substation.

Electric supply to Erattupetta Town, Bharananganam, Vellikkulam, Adivaram and Moonnilavu sections are given from Erattupetta substation via 5 feeder lines of 11 KV. Also one feeder line is used for the auxiliary purpose of the substation. Power supply to Thidanadu, Teekoy, Poonjar, Poonjar Thekkekkara, Moonilavu, Bharananganam, Thalappalam panchayath are given from Erattupetta.

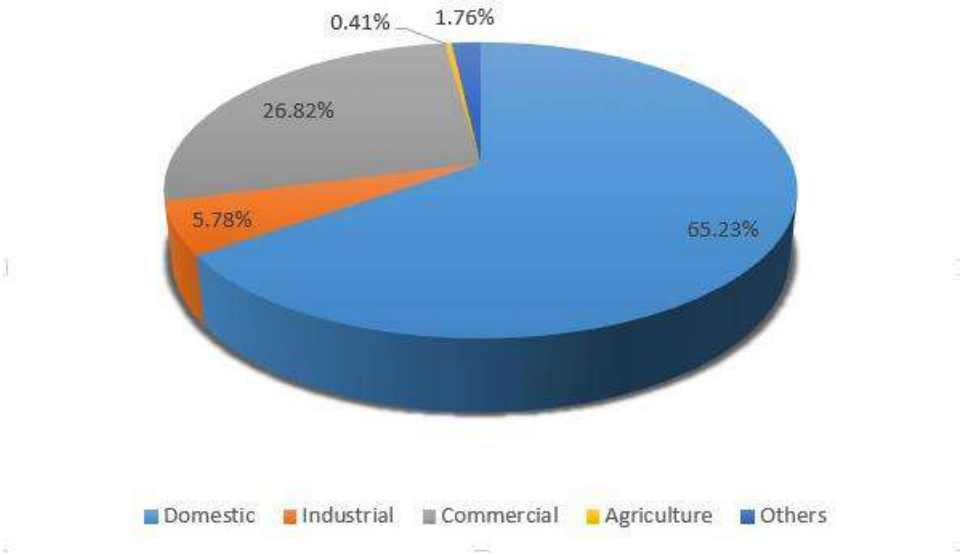



***Figure 14.1 Category wise electricity Consumption***

Erattupetta town is coming under the Electrical Section Erattupetta and Teekoy. Teekoy section is providing supply to the municipality as well as to the panchayath. So the total of both sections are collected for calculating the category wise consumption details. So category wise consumption details of Erattupetta and Teekoy Electrical Sections are discussed here.

***Table 14.1 Category wise electricity Consumption (in KWH) details / Month as on May 2023***

| Sl. No. | Name of office | Domestic | Industrial | Commercial | Agriculture | Others | Total KWAh |
|---|---|---|---|---|---|---|---|
| 1. | Erattupetta | 1341891 | 170828 | 757347 | 6143 | 45583 | 2321792 |
| 2 | Teekoy | 872070 | 25248 | 153100 | 7821 | 14298 | 1072537 |

*Source: KSEB*

More percentage of electric power is used for domestic purpose. Consumption for Industrials is coming next at Erattupetta section but consumption for commercial purpose is coming at Teekoy section. Commercial consumption is very less compared to domestic usage. The agricultural usage is very less compared to others.

A small Hydro electric project is started near the town, which is located at one of the main branch of Meenachil river. A mini gravity dam of 12 m height is proposed by KSEB to construct at Marmala waterfalls near the boundary of Teekoy and Thalanadu Panchayath. About 7 Mega Watt electric power can be generated from Marmala Hydro electric project. 7.5 Hector land is accured for the project. Construction works are already started and the survey works for the catchment area is completed. The cost of the project is about 70.18 crores. Approximately 23.02 million unit power can be generated in a year with the completion of the project.

***Hydro electric project Office***

## 14.3 CONCLUSION

*After the installation of the 110 KV substations there is no voltage problem in the municipality. Since the feeder lines are passing through the rubber plantations, in monsoon season the electric failure is a main problem which is caused by the heavy wind and rain. By clearing the branches of trees regularly can be controlled the power failure. For the better power supply at town centre Aerial Bunched Cable (ABC Cable) system is being implemented at 7.5 km town center roads. Also Street light should be provided at all municipal roads. Similar steps should be taken to maximize the non-conventional energy sources to generate electricity such as from bio- waste, wind energy, solar energy where ever it is possible. Effective utilization of available resources could build up a better environment to cater to the future demand.*

# 15. SOLID WASTE MANAGEMENT AND SANITATION

## 15.1 INTRODUCTION

Better hygienic and health conditions for any society can be achieved by proper sanitation facilities. The majority of municipal solid waste is produced by households. One of the main issues that every municipality faces is the frequent failure of their solid waste management efforts. It appears that many households in municipal areas dispose of their garbage carelessly. Rapid urbanization and a more affluent lifestyle are the main causes of the rise in solid waste volume. Responsible behavior towards management of depleting natural resources with care, increased productivity and sustainability are indeed important for keeping the environment unaffected and safe for the future generation. Unprocessed solid waste pollutes air, water and other natural resources. Efforts are needed to make people realize that 'waste is wealth'. It is high time that authorities formulated and implemented planned procedures to handle the ever-increasing solid waste issues.

## 15.2 SOLID WASTE COLLECTION & DISPOSAL SYSTEM

Erattupetta municipality own dumping yard near municipal boundary located at Thevarupara. The solid wastes from market and town are collected by employees working under contract basis. Plastic wastes from houses and institutions are collected by Haritha karma sena. Presently the solid wastes from public places are dumped at different locations of the main roads which is collected in tractor and shifted to the dumping yard by the contract staff. Thumboormuzhi model disposal system is installed there.

***Dumping yard at Thevarupara***

The present dumping system is making many problems for the people residing at nearby places. Since the yard is located on the top of hill in rainy season the waste water coming from the dumping yard will flow to the river and wells near the place. Since most of the drinking water sources are located on the bank of the Meenachil River it pollutes the water in that area which makes serious health issues.

Kerala state solid waste management project (KSWMP) included Erattupetta in the list of municipalities to implement proper solid waste management system. Studies and Consultation with people as part of the program is undergoing. The project is meant to address the solid waste disposal problems in the municipality.

In the Socio-Economic Survey (2016) conducted by the Town and Country Planning Department, 82.16% households reported that they are disposing the solid waste in their own compound, 6.13% disposing in open ground, 2.83% at garbage bin and 0.62% at street. It is shown in Figure 15.1. Nearly 72% of the residential buildings are situated in plots of area less than 10 cents. Proper waste collection system has to be provided by the municipality. More facility is needed for the solid waste management. The present system of sewage disposal and treatment is septic tank, which is a cost effective solution. De-sledging of septic tanks is not carried out on a regular basis.

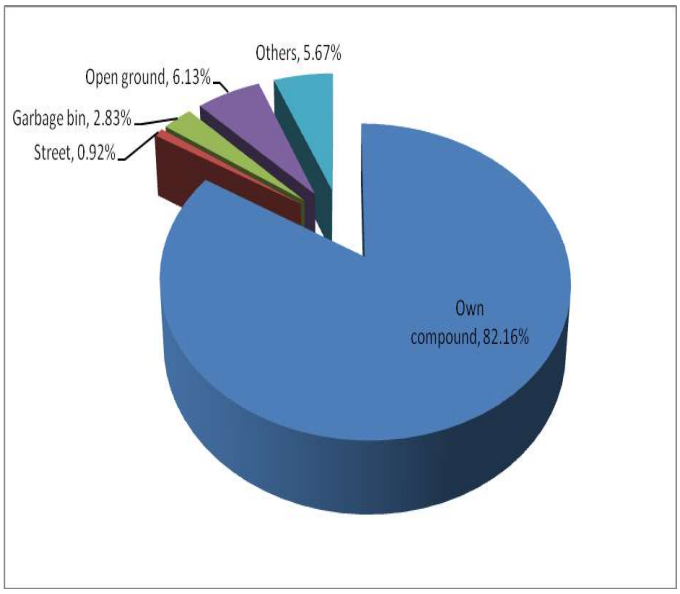



***Figure 15.1 Place of disposal of Solid Waste***

## 15.3 DISPOSAL OF BIO MEDICAL WASTES

Biomedical waste is being collected by IMAGE from Erattupetta municipality's healthcare facilities. IMAGE (IMA Goes Eco friendly) is the scheme of Indian Medical Association, Kerala is designed to dispose of biomedical waste in a systematic manner. The plant, IMAGE- CBWTF (Common Biomedical Waste Treatment Facility), was commissioned in 2003 for the scientific management of biomedical waste from healthcare establishments.

## 15.4 SANITARY WASTES

Presently there is no sewage system for Erattupetta Municipality. As per the Socio-economic survey conducted by the Town and Country Planning Department (2016) almost all houses have some sort of sanitation system. In the survey it is also inferred that 33.23% of houses have septic tank, 64.55% of houses have Leach pit latrine. It is represented in Figure 15.2 and the analysis shows that better Sanitation system is available for the houses in the town.

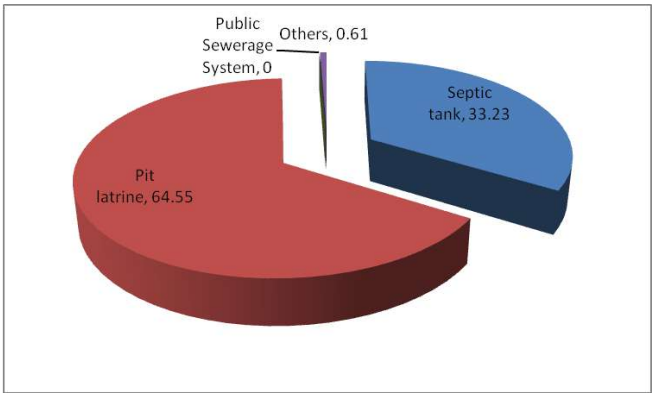



***Figure 15.2 Disposal of Sanitary wastes***

A centralised sewage management system is on the planning stage by the sewage wing of Kerala water authority.

## 15.5 DRAINS

Thekkanaar and Vadakkanar forms Meenachil River which flows through the town and these natural drains divide the town into three parts. The town has a natural slope towards these drains and major portion of surface run off drains into these rivers and its tributaries. For tracking the surface run off, no proper drainage systems are available along the major roads. Proper drainage system is required for the surface run off. The topographical features of the Erattupetta town suggest that the peripheral elevated points converge to valley which is located at the town centre. Polluting the river by dumping wastes and also by encroaching its banks makes the core of the town worse. Sloping terrain and the existing water channels facilitates natural drainage of storm water runoff from the city. However unplanned encroachment and seeping of wastes results in water logging in certain areas during monsoon.

## 15.6 MEENACHIL RIVER

Meenachil River formed by intersecting the Vadakkanar and Thekkanar is the major source of drinking water for major portion of Kottayam district and is starting from Erattupetta town. During the rainy season the river is flooded with water. But during the summer season sufficient quantity of water is not available in the river. The drainage pattern of the town and the other settlements on the bank of the river is in

such a way that the runoff of waste water is draining into the river. In addition to that service stations, workshops and hotels are also depositing waste materials and waste water in to the river making the river polluted. Pollution of river is one of the major issues in the town.

Meenachil River

## 15.7 PUBLIC COMFORT STATIONS

Presently there are only few number of public Toilet/comfort stations in Erattupetta municipality. At Private bus stand an old comfort station is functioning. Another one is functioning at Thodupuzha road on the bank of Meenachil River. KSRTC bus station does not have a proper comfort station facility. More number of public comfort stations are to be provided at different parts of the town. Public comfort stations have to be installed at major public places.

## 15.8 CONCLUSION

*The existing city drainage system lacks proper maintenance and connectivity for a free flow of polluted water. Citizens should be made aware of the fact that indiscriminate disposal of wastes in to water way not only create drainage problems, but also detrimental to their health and hygiene. Solid wastes are deposited at open land which is creating unhygienic conditions for the people. Facilities for collecting biomedical wastes are by IMAGE. From the socio economic survey it is found that about 98% of the houses is having some sort of sanitation disposal system in their own property. Proper drainage system should be provided in town. The pollution of Meenachil River is another issue to be considered. More number of public comfort stations should be provided in the town.*

# 16 EDUCATION

## 16.1 INTRODUCTION

The general education status is assessed based on the literacy rate, number of educational institutions per 1 lakhs population and educational status. The literacy rate of Erattupetta town as per 2011 census is 95.22 %. The literacy rate of Kottayam district and Kerala state are 96.40% and 93.99 %. The literacy rate of the town is at par with that of the district and the state. As per the socio economic survey the number of primary educational institutions existing within the town is adequate and higher order educational facilities are available in the nearby localities of the town.

## 16.2 GENERAL EDUCATION STATUS

Aruvithura St. George College and some other educational institutions are functioning in Erattupetta town. Aruvithura St. George College was established in the year 1965 and in 1978 it was upgraded as senior college. Another B.Ed college was established in the year 1993. A few numbers of higher secondary schools and high schools are also functioning here. The Govt. UP school established in Kuttippara in 1910 was later upgraded as Higher Secondary School in 1997 and now situated at Thekkekara. St. George Higher Secondary School established in 1952 as high school was upgraded in 1997. Muslim Girls Higher Secondary School established Erattupetta in 1964 was upgraded in 1991. MES College situated in the outskirts of town serves as a higher order educational institution. Higher order educational institutions are very limited in number in comparison to surrounding towns.

The educational status of the town is assessed by comparing the percentage of qualification of the people recorded as per the socio economic survey 2016. It is shown in table 16.1 and figure 16.1

**Table16.1 Educational status of town**

| Type | Illiterate | Primary | High School | Plus Two | Degree | Post Graduate | Technical | Professional Graduate | Others |
|---|---|---|---|---|---|---|---|---|---|
| **Percentage** | 2.76 | 34.24 | 30.64 | 15.31 | 9.53 | 2.51 | 2.11 | 2.47 | 0.43 |

*Source: Socio Economic Survey 2016*

The above figure shows that 34.24% of people have only Primary Education, 30.64% of people have high school education and 15.31 % people have Plus Two qualification. The remaining 9.53% possess degree and 2.51% post graduate qualification.

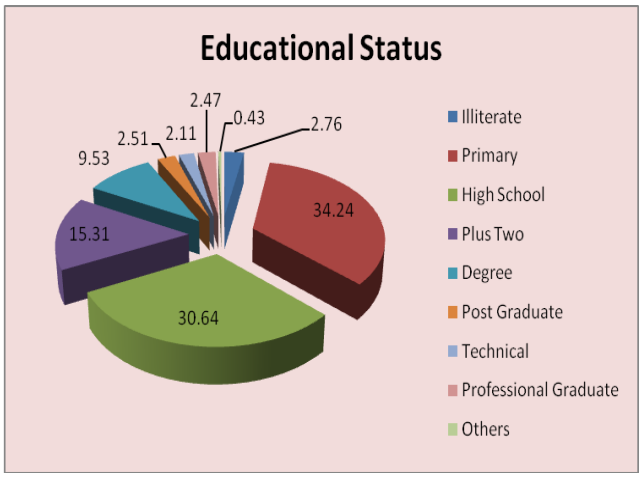



***Fig 16.1- Educational Status***

## 16.3 SCHOOL EDUCATION

The details of schools in the town, i.e. number of students, number of teachers, syllabus, Category, facilities available, medium of instruction, established year etc are collected. There are 13 schools functioning in Erattupetta town limit. The number of schools in various categories is shown in table 16.3

**Table 16.2 Number of schools in various categories**

| Category | Govt. | Aided | Unaided | Total |
|---|---|---|---|---|
| Primary | 1 | 3 | 1 | 5 |
| High School | - | 1 | 2 | 3 |
| Higher Secondary | 1 | 2 | 2 | 5 |
| VHSS | - | - | - | - |
| ITI | - | - | - | - |

*Source: Primary Survey 2016*

**Table 16.3 Details of schools in various categories**

| SL. NO. | NAME OF SCHOOL | Number of Students | | | | | Number of Teachers | | | | Students_Teachers ratio | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CATEGORY | PRE-PRIMARY | PRIMARY | HIGH SCHOOL | HSS | PRE-PRIMARY | PRIMARY | HIGH SCHOOL | HSS | PRE-PRIMARY | PRIMARY | HIGH SCHOOL | H.S.S | SYLLABUS(up to HS) | Gov/Aided/Unaided/Unrecognised |
| 1 | St.George H.S | 3 | _ | 119 | 216 | _ | _ | 6 | 12 | _ | _ | 20;1 | 18;1 | _ | Kerala | Aided |
| 2 | St.George H.S.S | 4 | _ | _ | _ | 315 | _ | _ | _ | 16 | _ | _ | _ | 20;1 | Kerala | Aided |
| 3 | Gov. H.S.S | 4 | _ | 64 | 63 | 420 | _ | 7 | 6 | 23 | _ | 9;1 | 11;1 | 18;1 | Kerala | Gov. |
| 4 | Muslim Girls, H.S.S | 4 | _ | 452 | 710 | 762 | _ | 20 | 27 | 29 | _ | 23;1 | 26;1 | 26;1 | Kerala | Aided |
| 5 | St.Marys L.P.S | 1 | _ | 322 | _ | _ | _ | 13 | _ | 16 | _ | 25;1 | _ | _ | Kerala | Aided |
| 6 | M.M.M.M.U.P.S | 2 | 126 | 786 | _ | _ | 4 | 31 | _ | _ | 32;1 | 25;1 | _ | _ | Kerala | Aided |
| 7 | Gov.Muslim.L.P.S | 1 | 181 | 311 | _ | _ | 4 | 14 | _ | _ | 45;1 | 22;1 | _ | _ | Kerala | Gov. |
| 8 | P.M.S.A.P.T.M.L.P.S | 1 | 14 | 28 | _ | _ | 1 | 5 | _ | _ | 14;1 | 6;1 | _ | _ | Kerala | Aided |
| 9 | Karimsahib boysH.S | 3 | _ | _ | 171 | _ | _ | _ | 9 | _ | _ | 19;1 | _ | _ | Kerala | Unaided |
| 10 | St.Alphonsa H.S.S | 4 | 294 | 508 | 287 | 26 | 9 | 23 | 12 | H.S T | 33;1 | 22;1 | 24;1 | _ | C.B.S.E | Unaided |
| 11 | AL Manar H.S.S | 4 | 229 | 410 | 418 | 50 | 9 | 22 | 16 | 4 | 33;1 | 22;1 | 24;1 | _ | C.B.S.E | Unaided |
| 12 | Hayathudeen H.S | 3 | 195 | 503 | 43 | _ | 5 | 18 | 5 | _ | 39;1 | 28;1 | 9;1 | _ | Kerala | Unaided |
| 13 | Thanmiya School | 1 | 91 | 146 | _ | _ | 5 | 7 | | | 18;1 | 21;1 | _ | _ | C.B.S.E | Un recognised |

The ownership of schools i.e. in Government sector or private sector of various categories is shown in table 16.2. All schools in High School level in municipal limit are functioning in private sector. But in the case of Higher Secondary one school in Government sector and four schools in private sector. Only one UP school is functioning in private sector. In the case of L.P School, one school functioning in government and two in private sector. This shows the predominance of private sector in the primary and higher education of the town.

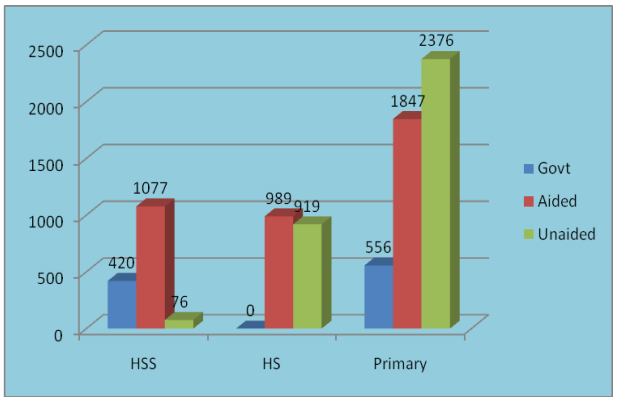



**Fig 16.2 Number of Students in various categories of Schools**

In High school and Higher secondary section, one Government school is available and nearly 500 students got admission there. Maximum number of students engaged in aided sector nearly 4000 and second position for unaided sector 3371 and only 1000 students in Government sector. Number of students in three categories of school in primary, High school and Higher Secondary categories is shown in Figure 16.3. CBSE syllabus is followed in three schools and Kerala syllabus is followed in all other institutions.

The student –teacher ratio of Government Schools, Aided schools and unaided schools of the town in Higher Secondary school, High school and primary school is shown in figure 16.3. It can be observed that the ratio is almost same in aided school and unaided school level. But in higher secondary school level the ratio for unaided school is half that of aided school. In High school level the ratio for Government school is half that of Aided and unaided schools.

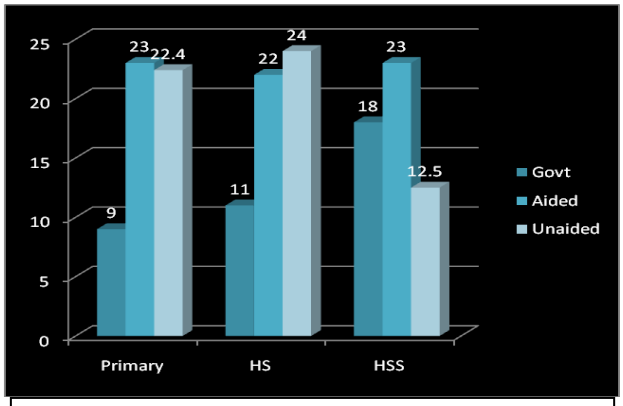



**Fig 16.3 Students Teacher Ratio of schools**

Regarding facilities available at school, the parameters like play ground, separate toilets for girls, computer labs, internet facilities, drinking water, good road etc were considered and are shown in fig 16.4. It shows that except internet facilities and transportation facilities (school vehicles) most of the facilities are available in all schools. Almost all the facilities are available in Government school. Basic facilities and advance facilities especially computer lab and Internet facilities are available in almost all the schools. Vehicle conveyance is not available in most of the school.

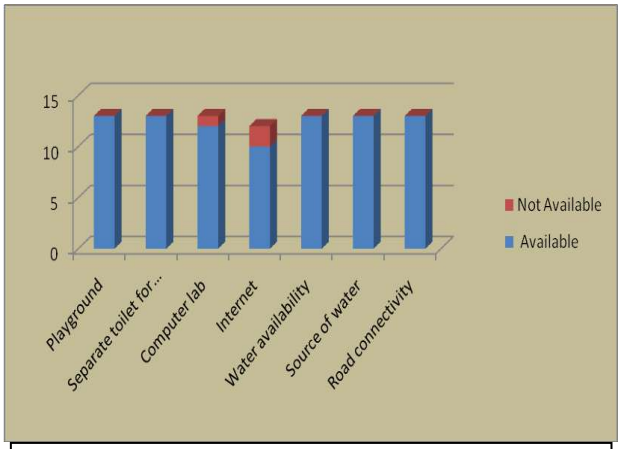



**Fig 16.4 Facilities available at schools**

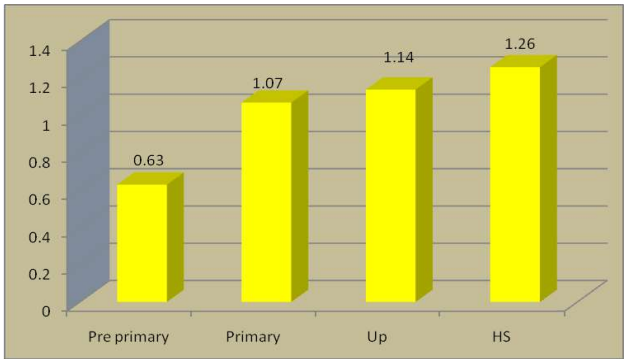



**Fig 16.5 Average distance to schools**

The availability of institutions (distance to educational institutions) various category of schools are analyzed. As per the socio-economic survey of 2016, the average distances to Pre-primary school, primary school, UP school and high school are 0.63 km, 1.07 km, 1.14 km, and 1.26 km respectively. It is represented in

Figure16.5. It is realized that educational institutions are available at a reasonable distance for the people of the town.

Certain standards are adopted for comparing the travelling distance to different schools. The adopted standards based on studies related to preparation of Integrated District Development Plan and Local Development Plans, are that the preprimary school, primary schools upper primary schools and high schools shall be available within a distance of 0.50, 0.50, 1.00 and 3.00 km respectively. The percentage of people saying that distance to different category of schools greater than the standard is shown in Figure16.6.The figure shows that in the case of primary schools 68.84% of students travel more than 0.5km distance and for primary school, 35.15%of students travel more than 0.5 km distance. Even though there are sufficient number of schools in the town there is concentration in certain part of the town and it implies that primary schools are not evenly distributed. The selection of school by the society is based on the standard and the syllabus followed in the schools. This may the reason for increase in travelling distance. Survey reveals that high schools are available at a reasonable distance.

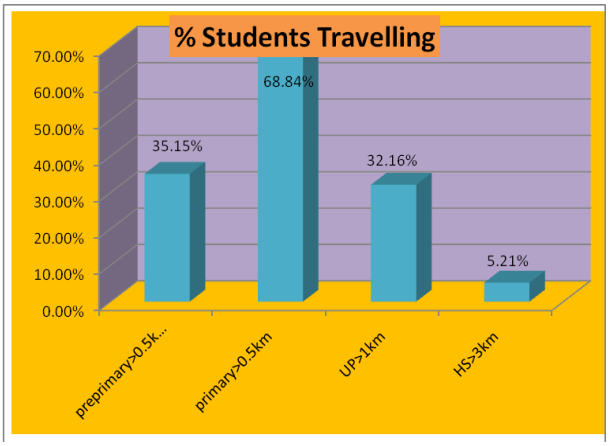



**Figure 16.6 Percentage of Students travelling**

## 16.4 HIGHER EDUCATION

St. George College Aruvithura situated on the strands of the river Meenachil, was established in 1965 under the auspices of St. George Forane Church, Aruvithura. St. George's College is an educational institution affiliated to Mahatma Gandhi University, Kottayam. It started as a Junior College in 1965 with five batches of students in the first pre-degree class. The college was upgraded to the status of a fully-


**Fig. 16.7 St. George College**

fledged degree college in 1978 with a significant increase in the number of students and faculty. B.Sc Computer Science, Microbiology, Biotechnology, Bio Chemistry, Chemistry, Zoology and BA are the courses offered here. A total of 16 UG courses and 7 PG courses are administered there.

MES College Erattupetta situated on the outskirts of municipality provides better educational facilities to the natives of high range region. The prime objective of the institution is to equip the youth with the skills necessary for meeting every challenge in the technological age. The college has been shifted from Erattupetta to its own campus at Vettikulam, Thidanadu.B.Com Computer Application, B.Com Finance and Taxation, BBA and BCA are the courses offered here.

Manbaul – Khairath Arabic College established in 1923 is situated at Nainar juma masjid with a total of 16 students and 3 teachers. Noorul islam womens college is another educational institution

## 16.5 TECHNICAL EDUCATION

One B.Ed centre of MG University is functioning within the campus of Govt. Higher Secondary School which is the only technical institution available at Erattupetta. One BUDS School first of its kind in Kerala established as a special school is situated in Erattupetta. School is functioning at Nadackal in Municipal building. Out of 43 students studying, 15 were in prevocational class with technical training.

**Fig. 16.8 B. Ed Centre**

## 16.6 SPATIAL DISTRIBUTION OF SCHOOLS

The ward wise average distance to L.P.School, U.P.School and High School and its comparison with the adopted standards were taken. The average distance to L.P.School varies from 0.51 to 4 Km, the average distance to U.P.School varies from 0.50 to 4 km and for High School it varies from 0.50 to 3.93 km. The average distance to L.P.School and U.P.School is more in Vattakayam,Thevarupara, Kuttimaramparambu, Safanagar, Kuzhiveli, Naduparambu and Kondoormala wards. In the case of High Schools the average distance to school is more in Vattakayam, Thevarupara and Naduparambu wards. The average distance to L.P.School, U.P.School and High School is shown in Figures 16.9, 16.10 and 16.11 respectively.

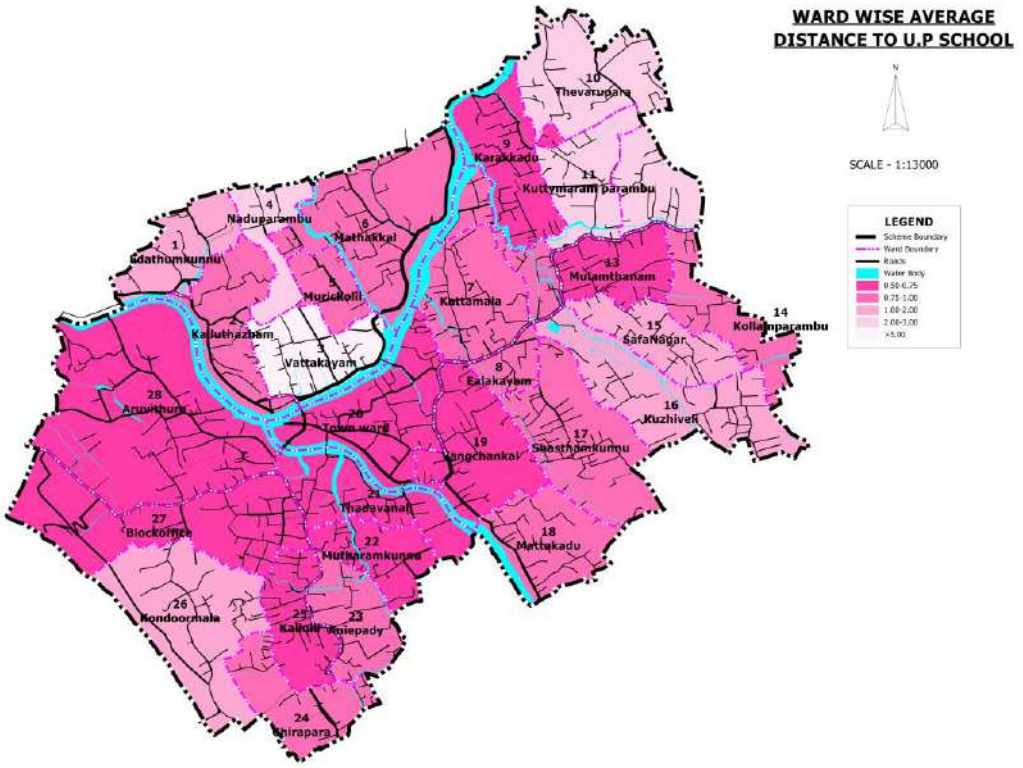



**Fig. 16.9 Average Distance to LP School**

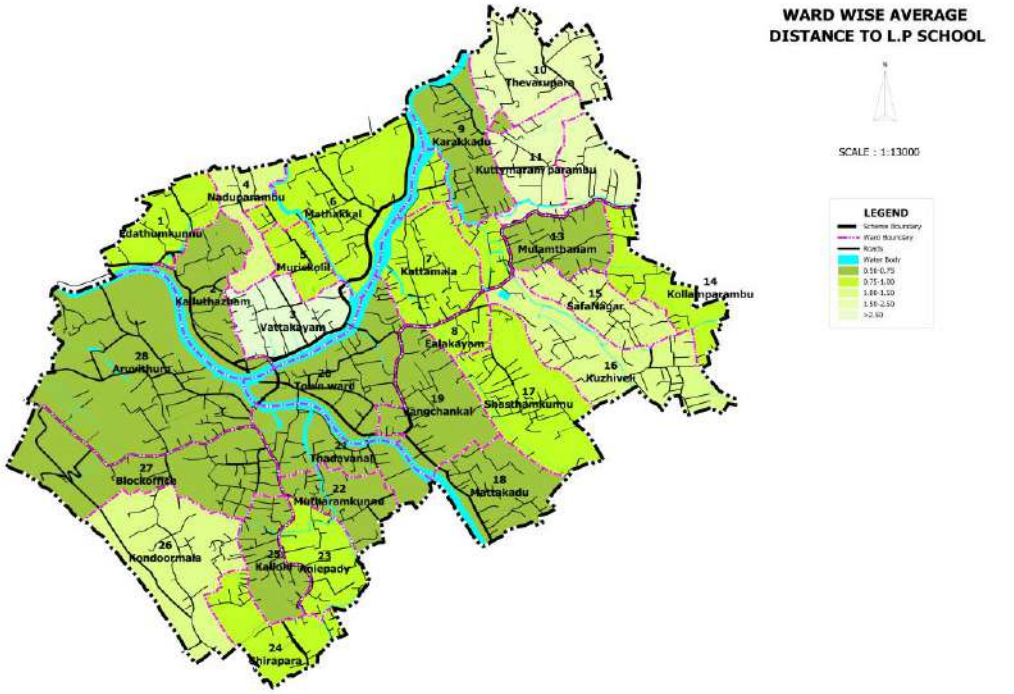



**Fig. 16.10 Avg. Distance to UP School**

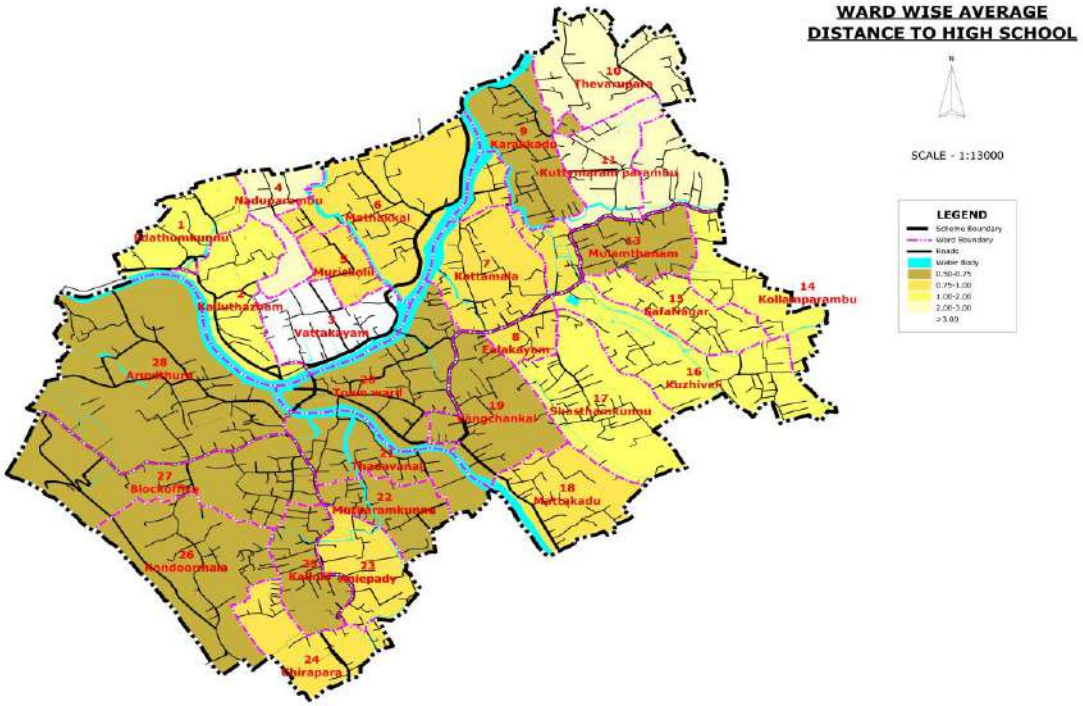



**Fig. 16.11 Avg. Distance to High School**

## 16.7 CONCLUSION

*The town has better literacy rate and educational standard.. Up to high school section number of students is very less in Government Higher secondary school and the Higher secondary section is engaged with 420 students. Infrastructure facilities are not satisfactory at Government HSS. More number of students are studying in Aided school and unaided schools. Travel distance to the schools in primary level is higher than standards. Skill development programmes should be introduced in Government schools so that educationally backward students can attain better job opportunities and thereby attract more number of students to Government schools. BUDS School needs upgradation and better facilities are to be provided.*

# 17 HEALTH

## 17.1 INTRODUCTION

Kerala's achievement in the field of health care is well appreciated, as its health standards are almost comparable to those of the developed countries in the World. Kerala is considered as a model to be emulated not only by the rest of the country but also by other developing countries of the world for maintaining high health standards with low levels of per capita income. Kerala's high health status is reflected through low birth, death and infant mortality rates, and the long life expectancy.

The Government of Kerala has recognized and institutionalized the three major systems of Medicine that are popular in the state-Allopathic, Ayurveda and Homeopathy. The three systems are under three parallel organizational structures in terms of training, research or functioning. The allopathic system of medicine under the government encompasses both the rural and the urban areas. The rural public health care sector provides preventive and curative care. Hospitals at the urban areas comprise Medical College Hospitals, district/general hospitals and taluk hospitals which provide outpatient and in-patient treatment. Rural health services are provided through Primary Health Care Centers, Sub-Health Centers, Maternal and Child Welfare Centers, Maternity Homes, Community Welfare Centers and Family Planning Centers. The Ayurveda and Homeo systems of medicines under the Government consist of dispensaries at the primary level and hospitals at the secondary level.

## 17.2 EXISTING SCENARIO

Institutions in Allopathic and Homeo are functioning in Erattupetta town. The existing status of medical facilities, spatial distribution of medical facilities, major diseases reported in the town etc. are discussed below. Erattupetta Municipality has health institutions in government sector and in private sector.

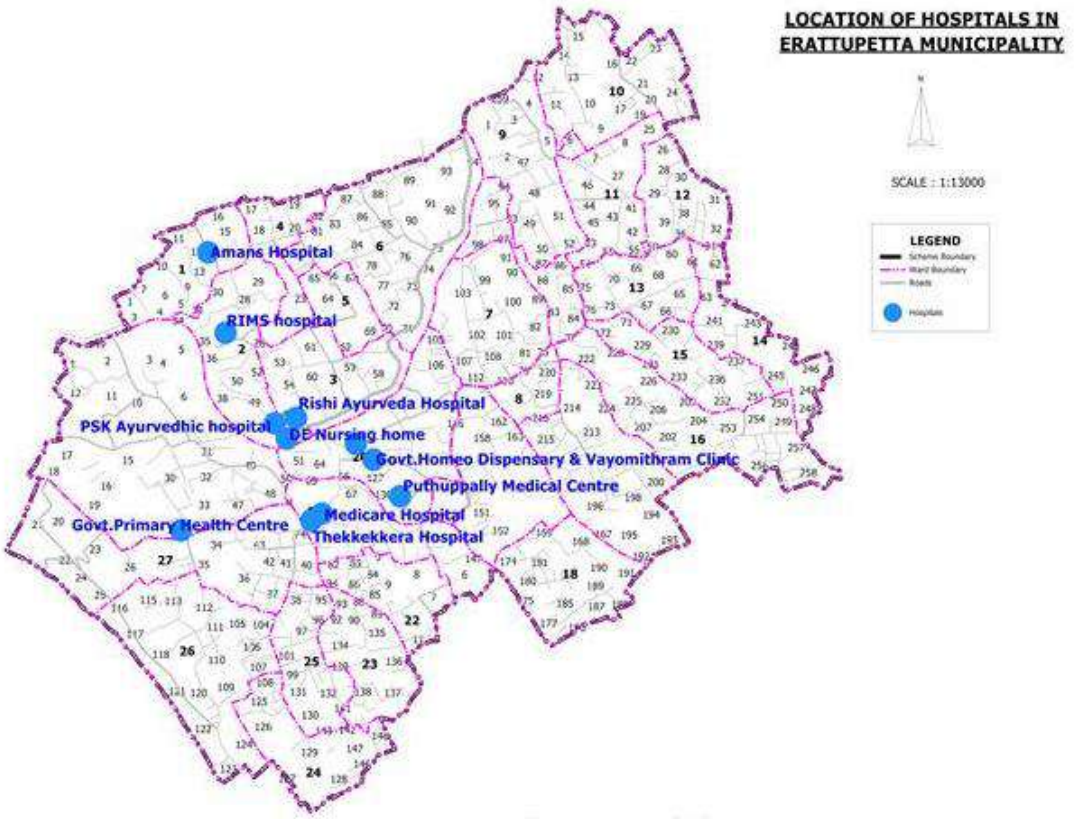



**Fig 17.1 Location of Hospitals**

### 17.2.1 Allopathic system of medicine

List of hospitals in allopathic system of medicine functioning in the town is shown in Table 17.1 and Figure 17.1. Allopathic hospitals are functioning both in government and private sector. In public sector only a family health centre is functioning which is located at Ambaranirappel - Bharananganam road with two permanent doctors and two temporary doctors. On an average 350 outpatients visit here and 12 inpatients are admitted here. Higher order infrastructure facilities are not available proportionate to the population density of the town. Primary Health Centers are multipurpose units established at the peripheral level to render preventive and curative medical facilities to the rural population.

**Table 17.1 Details of Allopathic Hospitals**

| Sl: No | Hospitals | No. of beds | No. of Doctors |
|---|---|---|---|
| 1 | Govt.Family Health centre | 12 | 4 |
| 2 | Medicare Hospital | 18 | 2 |
| 3 | Puthupally Medical centre | 150 | 16 |
| 4 | D E Nursing Home | - | 3 |
| 5 | Thekkekara Hospital | - | 1 |

*Source: Socio economic survey 2016*

Puthupally medical centre situated near Poonjar highway deals with 100 inpatients and 120 outpatients. Another one DE Nursing home situated near Muttom junction accommodates 75 outpatients daily and General Medicine, Skin, Dental units only are Functioning here.

Thekekara Hospital situated opposite to KSRTC bus station admits 80 OP daily in General Medicine unit.

A comparison of bed strength in government and private sector is shown in Figure 17.2 and it shows that 93 % of beds are in private sector and 7 % of beds are in government sector. The facilities in the hospitals like number of beds, number of doctors, departments etc. are given in Table 17.1

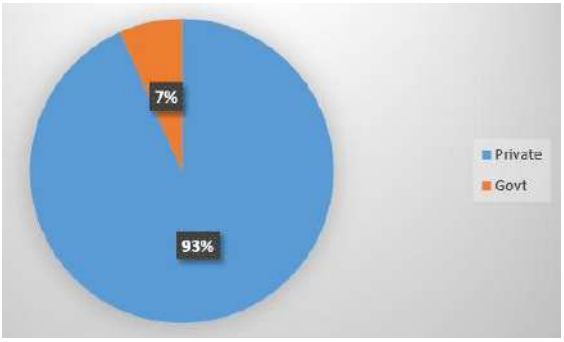



**Fig 17.2 Comparison of bed strength in Govt and Private**

The Government Health centre deserves an upgradation considering the population in the influence area.

Pala Government General Hospital and Kanjirappally Taluk Hospital are at a distance of 12 km and 20 km respectively from the town. Kottayam Government medical college is at a distance of 35 km. Few Dental clinics are also functioning within the town limit.

### 17.2.2 Homoeopathic system of medicine

Government Homeo Dispensary functioning in the Municipal building near Private bus stand reports with 120 OP daily. A few private homeo clinics are also functioning.

### 17.2.3 Ayurvedic system of medicine

Government Ayurvedic dispensary is functioning with less infrastructure facilities and only few doctors available. Nearly 40 to 60 patients reported at OP daily. Another P.S.K Ayurveda Vaidyasala situated near Erattupetta Police Circle office is also functioning. Rishi research ayurvedic centre is also functioning in this sector here.

## 17.3 SPATIAL DISTRIBUTION OF MEDICAL FACILITIES

Distances to a Medical facility and hospital have been assessed in the Socio-Economic Survey conducted in 2016. In the survey, it is found that the average distance to a medical facility is 1.46 km and a hospital is 1.32 km. The distance to the hospital is further analyzed by assessing the percentage of households with travel distance more than 5.00 km and less than 5.00 km. It is found that for 99% of households has hospital facility within 5.00 km distance and only 1.0% have to travel more than 5.00 km for hospital facility.

## 17.4 MAJOR DISEASES ( 2016)

Major diseases reported in the primary health centre and its number is shown in Table 17.2. (The numbers given in the table includes patients from the surrounding area of the town also). Acute Diarrheal diseases, Measles, Acute Respiratory Infection, Pneumonia, Typhoid, Hepatitis, Leptospirosis, and T.B are the diseases reported. Acute Diarrheal diseases are the major disease showing the intensity of unhygienic condition in the area.

| | |
|---|---|
| Acute Diarrheal diseases | 360 |
| Measles | 2 |
| Chicken pox | 6 |
| Pneumonia | 0 |
| Typhoid | 0 |
| Hepatitis A | 3 |
| Malaria | 2 |
| T.B | 6 |
| Dengue fever | 2 |

**Table 17.2 Major diseases**

*Source: Primary Health Centre (2016)*

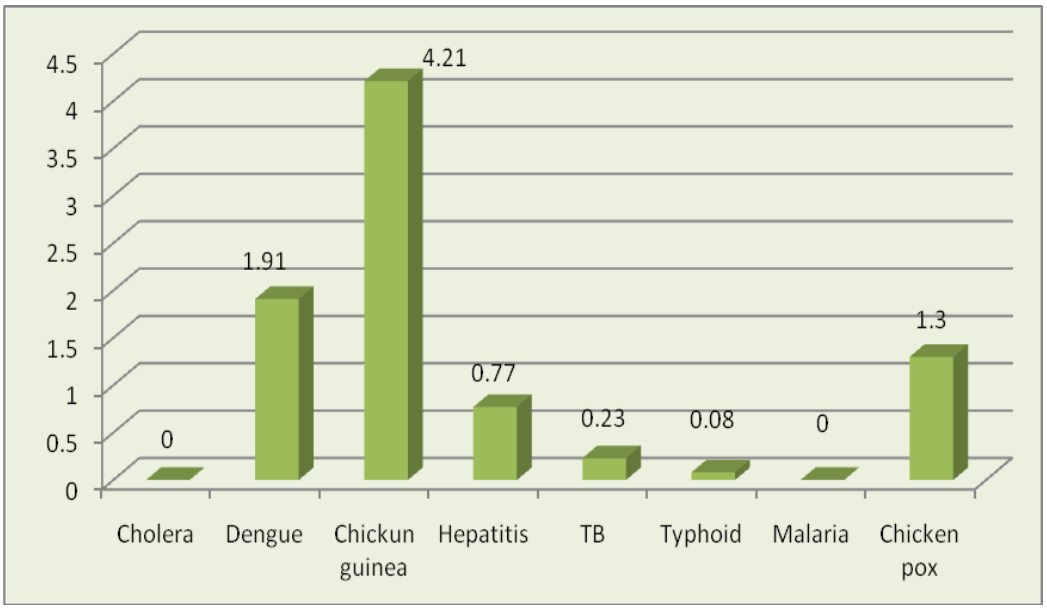



**Fig 17.3 Percentage of houses diagonised with diseases within 5 years (Source:Socio economic survey 2016)**

In the Socio Economic Survey conducted in the year 2016 details regarding major diseases occurred in the town during the past five years have been collected. Major diseases occurred and percentage of Houses diagnosed with diseases is shown in Figure 17.3. Chickunguinea was reported as the major disease of the town during the last five years, which is spread through mosquitoes.

## 17.5 CONCLUSION

*Family Health centre lacks essential facilities like canteen, comfort station etc. Higher order medical facilities are to be established in government sector. The private health care sector has outgrown the public health care sector and private expenditure on health care has increased, particularly in the past few decades. Since mosquitoes are also known to transmit dengue fever, it is imperative to eradicate water-logging areas in order to prevent mosquito breeding and disease transmission.*

# 18. RECREATIONAL FACILITIES AND CULTURE

## 18.1 INTRODUCTION

Recreation is an essential part of human life and finds many different forms which are shaped naturally by individual interests but also by the surrounding social construction. Public spaces such as Parks are essential venues for many recreational activities. In support of recreational activities government has taken an important role in their creation, maintenance and organization. Recreation-related business is an important factor in the economy as well.

## 18.2 PARKS AND OPEN SPACES

Presently there is no major Parks in Erattupetta town. Although there were proposals for parks earlier, they did not materialize.

## 18.3 STADIUM AND GROUNDS

Erattupetta Municipality is not having stadiums and grounds. The available grounds are private. One of the biggest stadiums in the district is located in the municipality which is named St. George stadium owned by Aruvithura St. George church.

## 18.4 TOWN HALL, AUDITORIUMS

Erattupetta municipality does not have any town hall and auditorium. Few auditoriums under the ownership of different institutions are available for conducting different functions and other institutional purposes. Mainly these private auditoriums are fulfilling the requirement of public gatherings in Erattupetta Town.

## 18.5 THEATRES

There are two cinema Theatres namely Metro and Surya in Erattupetta Town. These two theatres are catering to the needs of large population of town and surrounding area.

## 18.6 RELIGION, CULTURE

The number of religious institutions in Erattupetta municipal area is very high. Town has a mixed population of Christians, Hindus and Muslims living together.

Famous Aruvithura Church (Aruvithura Palli) is a Syro-Malabar Catholic church located at Erattupetta. This is the first church in the Palai diocese and was built in the 1st century. All these religious institutions have their own festivals and related cultural activities. Fine Arts Club Erattupetta (FACE) is the famous Arts and Cultural Society in Erattupetta.

Nainar masjid, Puthenpalli Juma Masjid and Muhiyideen juma masjid are famous mosques located at Erattupetta. Puthuppally is also a famous pilgrim centre near by Puthenpalli Juma Masjid.

Believed to be one of the seven churches established by St. Thomas, St.George's Forane Church at Aruvithura, popularly known as Aruvithura Church is one of the churches in Kerala. The annual feast of St. George is celebrated from 22nd to 24th of April. Valiachan Mala is a catholic pilgrim hill station located near Erattupetta. The main attraction is the presence of a 170 feet height kurishu, made in concrete. This is considered to be the highest cross in Asia. Valiachan Mala is managed by St George Forane Church, Aruvithura. Name of this mountain (Valiachan in Malayalam) is dedicated to St. George apostolate of Jesus Christ. Valiachan Mala attracts devotees with many built attractions.

## 18.7 PUBLIC LIBRARIES AND READING ROOMS

There are 2 libraries/ reading rooms in Erattupetta Town. Municipal Library and Ideal Library are the two libraries of the town. Therefore modernization of these libraries or introduction of a new library is essential.

## 18.8 CONCLUSION

*Erattupetta is having natural beauty with Rivers passing through the middle of the municipal area. But the beauty of land is not fully utilized for recreational purpose. The existing facilities are not enough for future generation. The beautification work of river and its surroundings will enhance the tourism sector also. The recreational facility in the town has to be improved considering the people of the town and its influence area. A stadium for sports, open ground and a town hall for conducting different cultural activities and fairs are also needed. Small grounds at neighborhood level are also needed. A cultural centre is also needed in the town. The provision of more open spaces for common gathering will uplift the healthy living and environmental condition.*

# 19. ENVIRONMENT

## 19.1 INTRODUCTION

Environmental protection is a practice of protecting the environment, on individual, organizational or governmental level, for the benefit of the natural environment as well as people. Due to the pressure of population and our technology the biophysical environment is being degraded, sometimes permanently. This has been recognized and government began placing restraints on activities that causes environmental degradation.

Increase in population, excessive farming, use of chemicals and pesticides and excessive use of ground water are affecting the natural resources. Water resources are badly polluted and emission of toxic fumes from industry and vehicles has deprived us of clean air. Industrialization and a growing consumer economy have led to the problem of undisposed garbage and uncontrolled sewage.

Localized environmental health problems such as inadequate house hold water and sanitation and indoor air pollution, town level environmental problems such as air pollution, noise pollution, inadequate waste management and pollution of water bodies, degradation of natural areas and infrastructure deficit are major factors affecting our urban areas. Environmental problems specifically affecting Erattupetta Town is discussed in this chapter.

## 19.2 MUNICIPAL SOLID WASTE

Presently the solid wastes are dumped on the road sides and it is collected in a tractor and transported to the dumping yard. A permanent solution for disposing the solid waste has to be introduced for the pollution free environment and healthy living condition. The available dumping yard must be used with modern equipment's to dispose the solid waste and convert into usable fertilizers or any other value added products.

## 19.3 INDUSTRIAL POLLUTION

No large scale industrial units are functioning in the town. Industries are categorized as Red, Orange and Green according to the nature of pollution. Red category having the highest pollution potential is not present in the Town. There is a mini industrial park at Nadakkal which is located in the residential area. Also there are

small wooden furniture making units along the road side at different locations of the town, which is making dust and noise pollution.

## 19.4 AIR POLLUTION

Air pollution is not a serious issue in Erattupetta town at present. Usually emission from industries and vehicles are the main cause for air pollution in urban area. The wooden furniture making units along the road side at different locations of the town is making air pollution.

## 19.5 NOISE POLLUTION.

There is no major industry in the town producing noise pollution. The important source of noise pollution is motor vehicles. Such pollution is experienced during day and night in two major Roads Pala –Poonjar (SH 32) and Kanjirapally –Muttom (SH-44). Also wooden furniture making units along the road side at different locations of the town is making noise pollution

## 19.6 MEENACHIL RIVER

Meenachil river, which is the major source of drinking water for major portion of Kottayam district flows through the town. During the rainy season, the river is flooded with water but sufficient quantity of water is not available during the summer season. The drainage pattern of the town and other settlements on the bank of the river are in such way that the water is drained into the river. In addition to that public is disposing wastes into the river. Traces of metals have been found at different locations of the river. So the pollution and non availability of water during the rainy season are the major issues to be addressed urgently.

## 19.7 SOIL EROSION

The municipal limit of Erattupetta has an undulating terrain with hills and low lying land and rivers in between the hills. Certain areas with steep slope are also there in the town and these areas need special attention. The vegetation and green cover of

these areas are to be protected and other preventive measures are to be taken to prevent soil erosion.

## 19.8 DRAINAGE PATTERN

The topography of Erattupetta town is undulating nature. Vadakkanar and Thekkanar that joins to form the Meenachil River are the major water bodies and that collects run-off from the adjacent elevated areas also. Only few roads have side drains. Detailed drainage plan has to be prepared for conserving the existing drain and protecting rivers from pollution after sanctioning of the plan.

## 19.9 FLOODING

Flooding of Erattupetta town due to overflowing of Meenachil River is a repetitive phenomenon. This can be addressed by removing the silt from the river and streams and by implementing a proper regulator to control silting. The drainage facilities are not so capable to hold the over flow of running water. A proper storm water drainage system is essential for addressing the flood problem.

## 19.10 CONCLUSION

*The town is experiencing various environmental issues, but in different magnitude. Priority has to be given for protection of environmentally sensitive areas, waste disposal, and protection of water bodies. Since Erattupetta is a growing town the environmental issues need to be addressed at this stage itself and planned growth of the town also has to be ensured.Measures to prevent river pollution needs immediate attention.*

# 20. SOCIAL WELFARE & SECURITY

## 20.1 INTRODUCTION

The security of the weaker section of the society ie, children, women and aged people have emerged as a major sector in the planning process. In the changed social structure of the society, these sections of the society need special attention.

## 20.2 WOMEN

Female population of town is 14643 and the sex ratio of the town as per 2011 census is 983. Literacy rate of Municipality is at par with that of Kottayam district. The literacy rate of male and female of the town is 97.30% and 93.10% respectively. The work participation of female (8.91%) is far below the work participation of male (54.02%). A total of 155 Kudumbasree units are functioning in Erattupetta Municipality with 2745 workers. Computer training, Front office management, Tailoring, ornament making, Aqua culture, catering, pickle making and vegetable cultivation are some fields in which training is given for developing self employment groups.

## 20.3 CHILD DEVELOPMENT

Those who under the age of eighteen are categorised as children. Children are the most valuable resource for any country. As per the socio economic survey 2016, 19.83 % male population and 19.29% of female population are in the child group. Anganawadies are the grass root level delivery point of social welfare activities. 25 Anganawadies are functioning in the Town and out of these, 9 are functioning in own buildings, 14 are functioning in rented building. For wards 8, 15 and 28 no Anganawadies are there. In almost all the units drinking water and toilet facilities are available. Nutrition programmes for pregnant ladies, feeding mothers, adolescent girls and children below 6 are delivered by Social welfare department. Awareness programmes and counseling and health check

up and vaccination are also administered through Anganawadies. Sexual exploitation and physical abuse of children are alarmingly increasing in the society and jagratha samithy with ward member as convener and Anganawady teacher as member secretary is functioning.

## 20.4 AGED PEOPLE

The people above 60 years are considered as the old age people. As per the socio-economic survey 2016, 1.58 % of male population and 1.81 % of female population is coming under this group. At present no old age homes or other special care facilities required for old age people are functioning in the town. In the local level analysis major suggestion in this sector is to construct old age homes and providing necessary medical facilities for old age people.

## 20.5 SC & ST DEVELOPMENT

The Scheduled Caste population of town as per 2011 census is 121. The total number of Scheduled Tribe population in the town is only 166. Comparing to the district population, SC&ST population of Erattupetta town is very low.

In the local level analysis, the major suggestion related to this sector was for improvement of housing condition, improvement of infrastructural facilities of S.C Colonies and programmes for improving the educational standards and job opportunities for them.

## 20.6 FIRE AND SAFETY

The main objective of the fire and rescue service is to protect the people and their properties from fire and other calamities, which include both natural and incidental. Department provides different services like Ambulance service, removing road blocks, saving victims from accidents etc. Office of the fire and rescue service is currently functioning near municipal boundary in Erattupetta –Poonjar road

## 20.7 POLICE STATION

There is a Police station and Office of the Circle Inspector of Police functioning in Erattupetta Vadakkekara and it consist of office buildings in government land.

## 20.8 POST OFFICE

There are three post offices located in Erattupetta Municipality. Main Post office is located at Vadakkekara in its own land, second one at Aruvithara in a rented building and the third one at Nadakkal in a rented building. BSNL is located near main post office and it is serving the whole Erattupetta Municipality.

## 20.9 CONCLUSION

*For the welfare of weaker section of the town more attention is needed. There are a number of programs for the welfare of the society and these programs are to be implemented more effectively. Work participation rate of women is very low and programs for creating employment for the women are to be improved and economic upliftment shall be ensured. As the number of senior citizens is rapidly increasing and with the emergence of nuclear families more attention is needed for the welfare of Old age people. More projects have to be evolved for the economic development of women, Scheduled Caste and Scheduled Tribe people.*

# 21. DISASTER MANAGEMENT – RISK ASSESSMENT

## 21.1 INTRODUCTION

Disaster risk management is a comprehensive approach aimed at minimizing the impact of natural or man-made disasters on communities, infrastructure, and the environment. It involves a series of systematic measures designed to identify, assess, and mitigate the potential risks associated with various hazards such as earthquakes, floods, landslides industrial accidents etc. This multifaceted strategy encompasses preparedness, response, recovery, and mitigation efforts, emphasizing the importance of proactive planning and collaboration among government agencies, non-governmental organizations, communities, and other stakeholders. Effective disaster risk management involves developing early warning systems, implementing resilient infrastructure, conducting risk assessments, and promoting community engagement to enhance overall resilience. By integrating these components, disaster risk management seeks to save lives, protect livelihoods, and safeguard the well-being of people in the face of unpredictable and potentially devastating events.

Erattupetta is a town situated in the Kottayam district of Kerala, India. Nestled amidst the picturesque Western Ghats, Erattupetta is surrounded by lush greenery, rolling hills, and vibrant landscapes. Erattupetta is blessed with a network of rivers that weave through its verdant landscape. The region is known for its abundant water bodies, with several streams contributing to the natural beauty and fertility of the land. The Meenachil River, a prominent watercourse in the area, flows through Erattupetta. The two main tributaries of Meenachil river, ie Thekkanar and Vadakkanar joins at the centre of the town. Apart from that there are many other smaller streams that flow into this tributaries.

## 21.2 HAZARDS IN ERATTUPETTA

### 21.2.1 FLOOD AND LANDSLIDE

Floods in Erattupetta, as in many parts of Kerala, are often associated with heavy monsoon rains, hilly terrain, and the interconnected river systems. The state has experienced devastating floods in recent years, including the severe floods in 2018 that affected various districts including Kottayam. Floods can lead to widespread damage to infrastructure, displacement of communities, loss of agricultural land, and

pose significant challenges to relief and recovery efforts. Local authorities, along with national and international agencies, typically coordinate rescue operations and provide assistance to those affected. The aftermath of a flood often underscores the importance of implementing effective disaster preparedness and management strategies, including early warning systems, resilient infrastructure, and community engagement, to mitigate the impact of such natural disasters in the future.

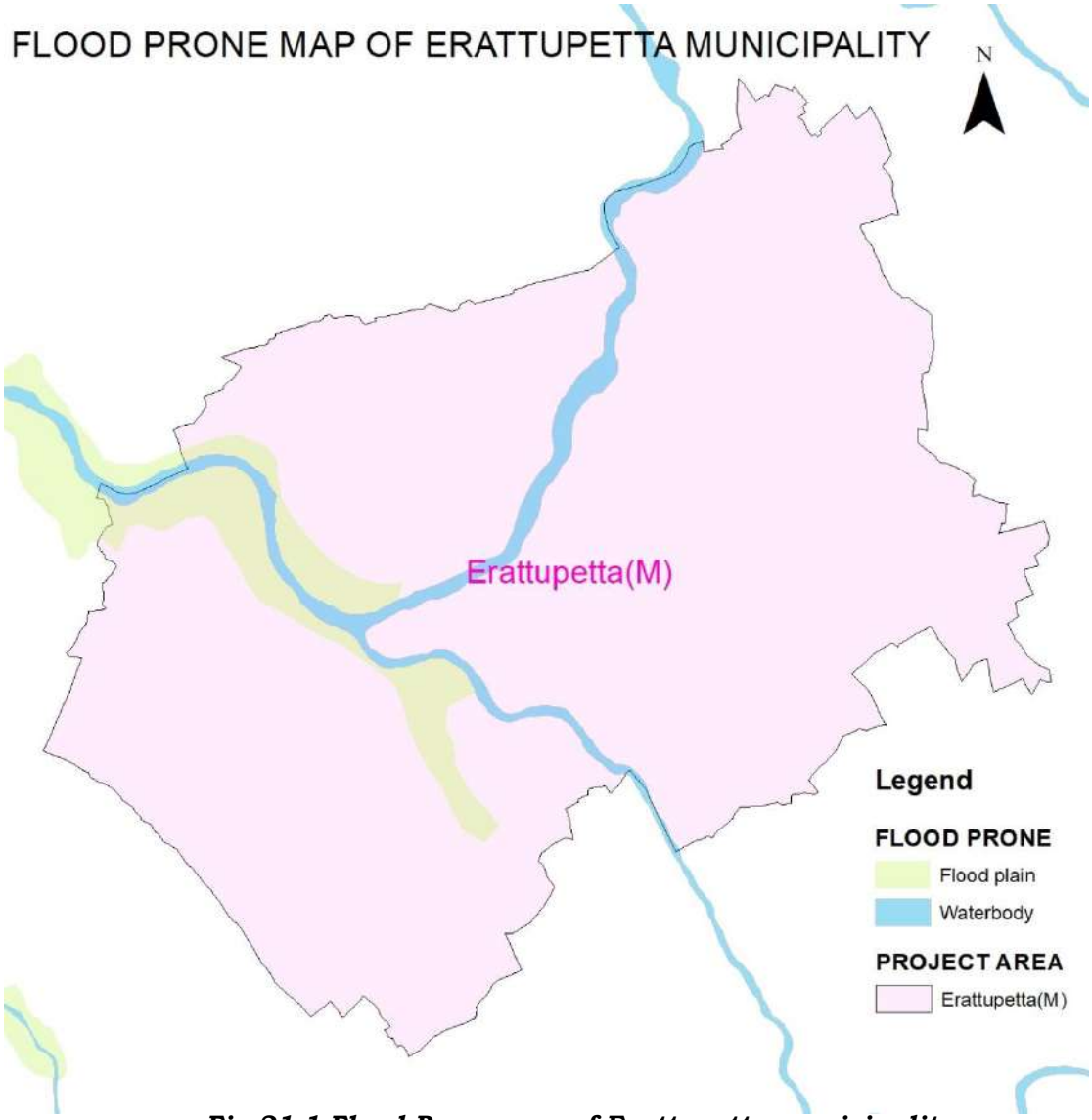



***Fig 21.1 Flood Prone map of Erattupetta municipality***

The map illustrates the flood prone areas within the Erattupetta municipality. It shows water bodies and flood plains based on the data from the Kerala State Disaster Management Authority (KSDMA) website. The flood plains are marked in green colour which is located along the Meenachil river and Thekkanar areas. These flood plains are mainly identified along the wards 1, 2, 21, 22 and 28.


***Fig 21.2 Flood Prone map of Influence area***

The map depicts the flood prone areas of influence area of Erattupetta municipality. It includes eight nearby panchayats around the Erattupetta municipality. In the Influence area, flood plain is marked in Thidanad and Thalappalam panchayats.

Erattupetta, like many regions with river systems, faces the challenge of silting in its water bodies. Silting refers to the accumulation of sediment, sand, and debris in rivers and water channels over time. The Meenachil River, which flows through the region experience silting, affecting its water quality, depth, and overall condition.

The upstream of these rivers outside the municipal area have many areas susceptible to landslides and erosion. So in heavy rainfall the river water carries large quantity of debris and sand. There are three check dams in rivers in the municipal area. Sedimentation in the rivers reduces the water carrying capacity of the river to a large extent. This causes flash floods and back flow to the streams in heavy rainfall.

Even though it happens repeatedly, flood in Erattupetta town last for only a few hours, and the water level goes down as soon as the intensity of rain decreases. Apart from a few houses getting affected on the side of streams, and causing interruption to traffic for a few hours, not much causality is reported.

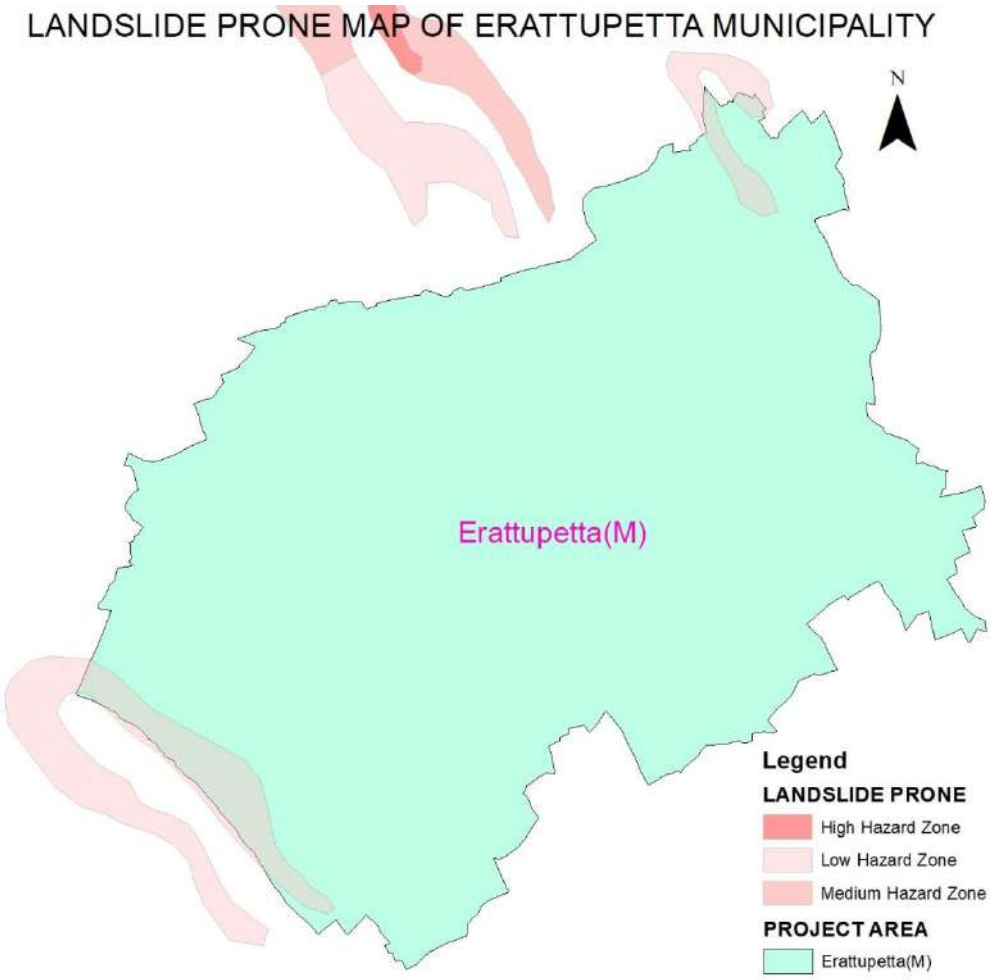



***Fig 21.3 Landslide prone map of Erattupetta municipality***

The map illustrates the landslide prone areas within the Erattupetta municipality. It shows various hazard zones based on the data from the Kerala State Disaster Management Authority (KSDMA) website. The hazard zones are marked in varying shades of red colour, indicating the intensity of the hazard. There are only low hazard landslide prone areas, at Valiyachan mala and Thevarupara in the municipality.

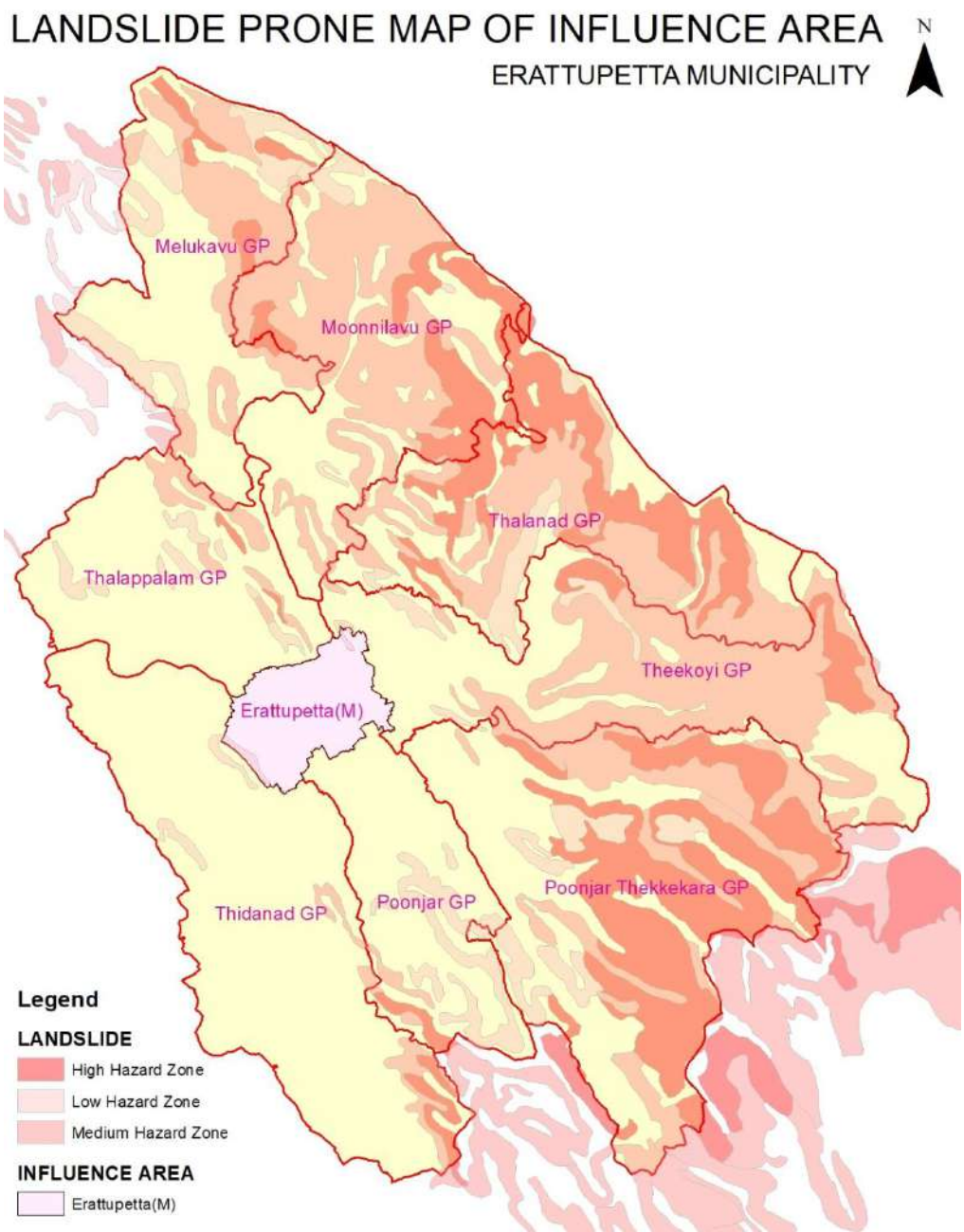



***Fig 21.4 Landslide prone map of Influence area***

The map depicts the landslide prone areas of influence area of Erattupetta municipality. It includes eight nearby panchayats around the Erattupetta municipality. In the Influence area, a significant portion is marked as a landslide prone zone, particularly in the northeast, east, and southeast local bodies. Thidanad, Thalappalam and Poonjar are relatively less prone to landslides within the Erattupetta municipality's influence area.

## 21.2.2 EARTHQUAKE PRONENESS

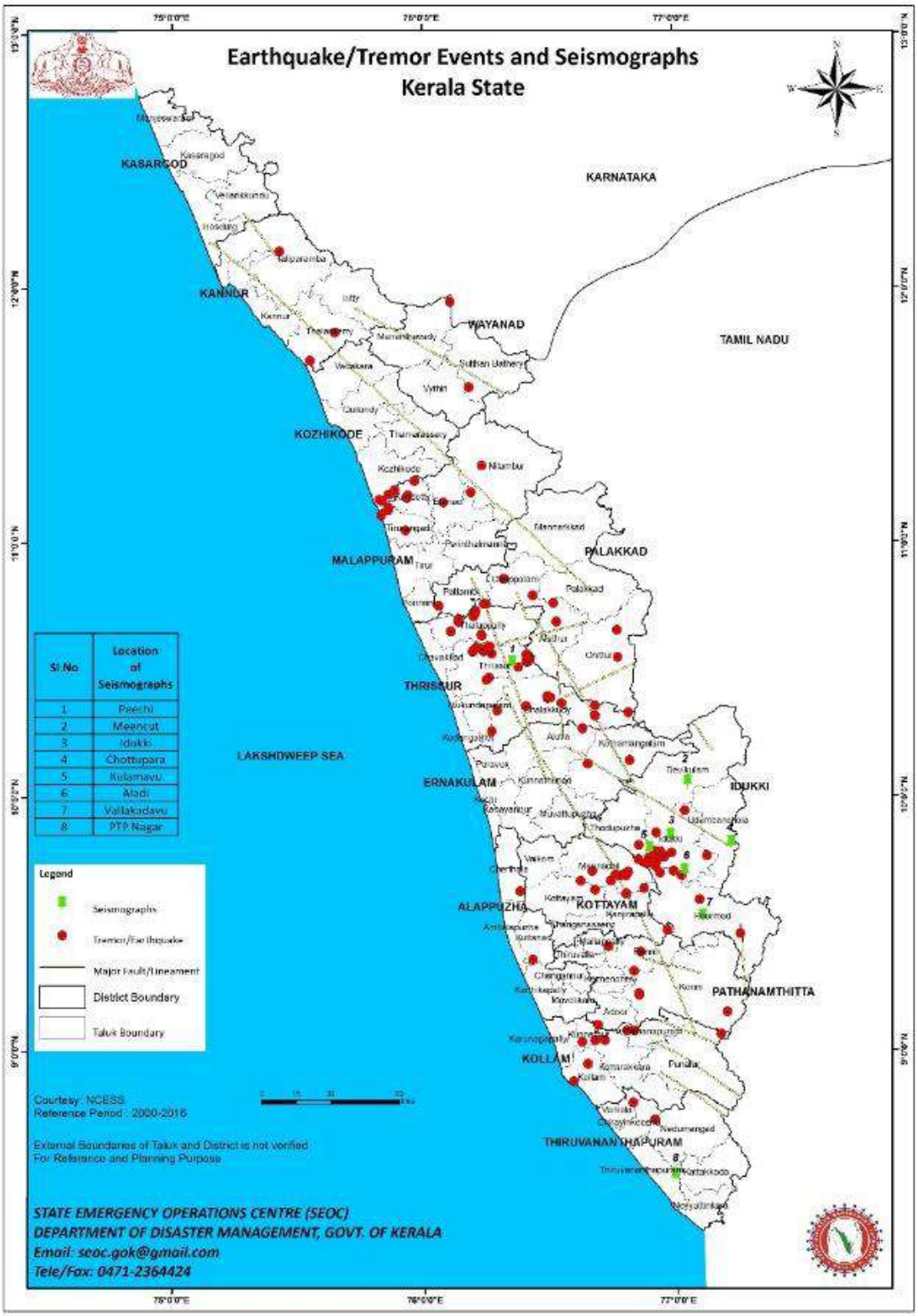



***Fig 21.5 Earthquake event map of Kerala***
*Source-KSDMA*

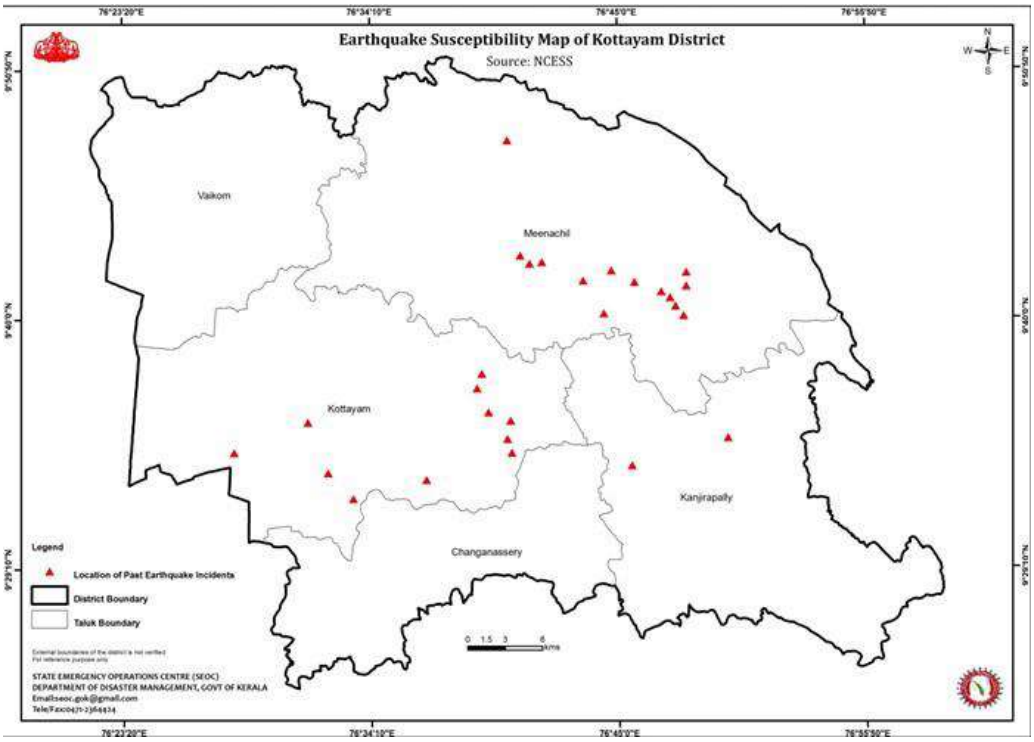



***Fig 21.6 Earthquake susceptibility map of Kottayam District***

*Source-DDMP*

As per earth quake event map prepared by KSDMA, there are few tremors reported in the locality. Also a lineament fault line passes through the area.

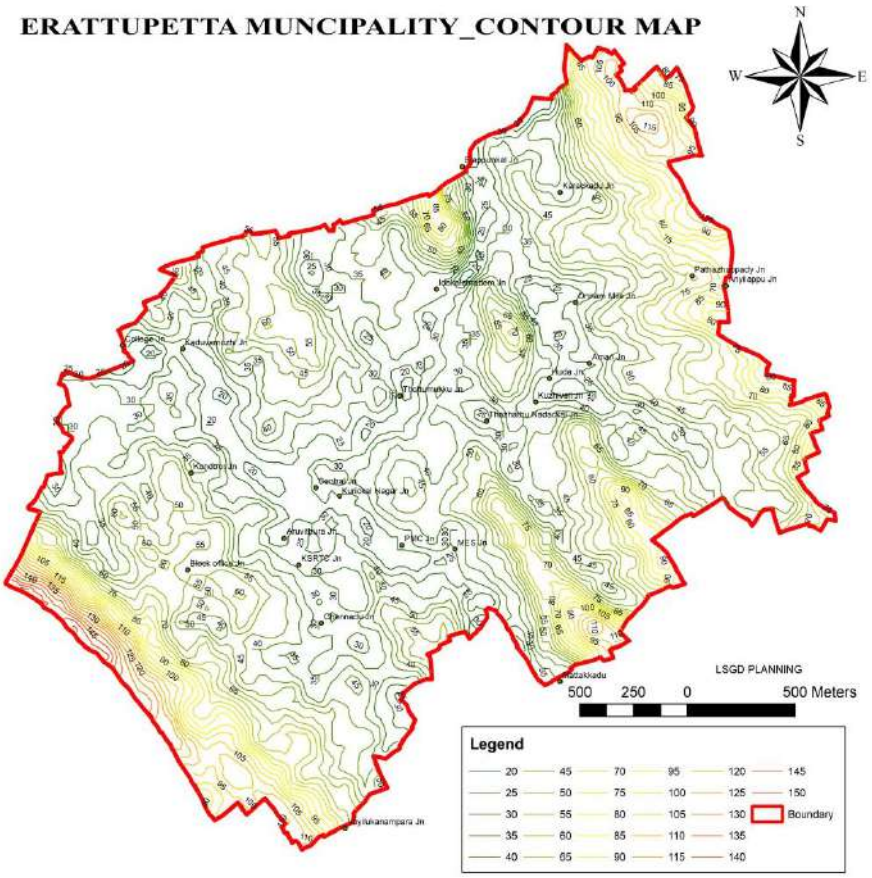



***Fig 21.7 Contour map of Erattupetta municipality***

## 21.3 FLOOD 2018

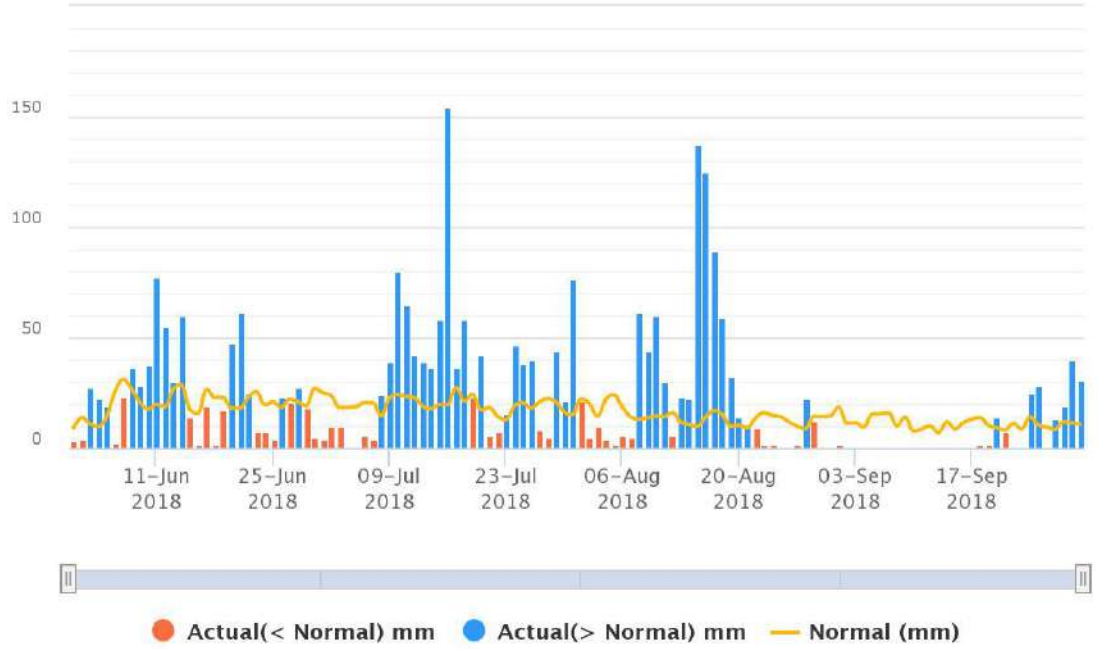



***Fig 21.8 Rainfall in Kottayam between 1st June 2018 and 30th Sept 2018***
*Source: Kerala WRIS*

The devastating floods that struck Kerala in 2018 marked one of the worst natural disasters in the history of the state. Beginning in late May and continuing through August, heavy monsoon rains triggered widespread flooding and landslides, affecting almost all districts of the region. The relentless downpour led to overflowing rivers, inundating homes, displacing hundreds of thousands of people, and causing significant loss of life. The state's infrastructure, including roads, bridges, and communication networks, suffered severe damage, hampering rescue and relief operations. The unprecedented scale of the disaster prompted a massive response from the government, non-governmental organizations, and the general public, with efforts focused on evacuations, providing shelter, and delivering essential supplies to those affected. The resilience of the people of Kerala, combined with the collaborative efforts of various agencies, played a crucial role in the recovery and rebuilding process that followed, emphasizing the importance of disaster preparedness and community solidarity in the face of such calamities.

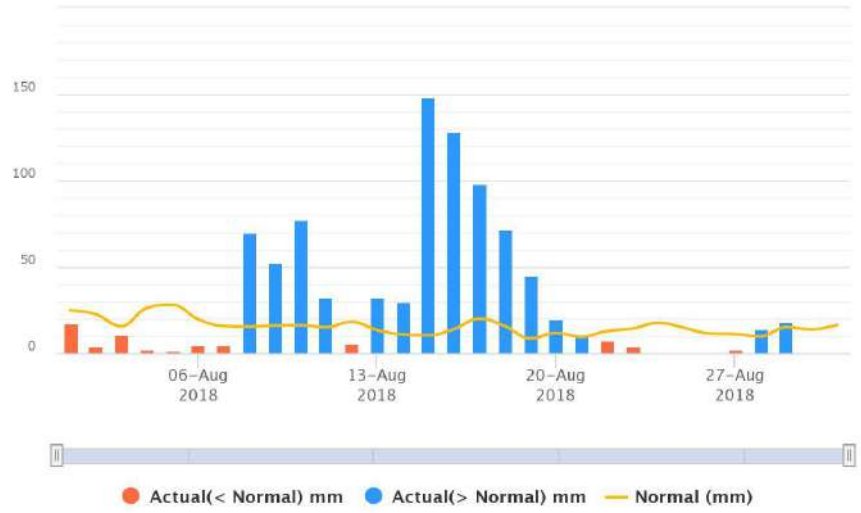



***Fig 21.9 Rainfall in Erattupetta Block during August 2018***

*Source: Kerala WRIS*

The incessant rains and overflow of rivers like Meenachil, Vadakkanar and Thekkanar in August 2018, caused inundation in many parts of the town especially the areas adjoining the river were inundated. Even though flood hit this local body, severe destruction or damage were not reported. Public places that were affected includes places near Kaduvamoozhi private bus stand, Thottumukk cause way, Al Manar School, etc. Flooding is a recurring event in Erattupetta due to heavy rainfall exceeding flow capacity of streams and rivers especially in area like Kaduvamoozhi, Thottumukk, Mathakkal Thodu and Nadakkal. Traffic flow has been disrupted due to flooding in the roads near Thekkanar and Vadakkanar rivers. Relief camps were not required in Erattupetta since the duration of inundation was very low. The encroachment of the banks of Meenachil, Vadakkanar, Thekkanar river and other streams has to be prevented and enforcement of strict rules has to be implemented for the protection of these river banks.

## 21.4 FIELD STUDY

Field study data of 2018 and 2021 reveals that flood prone areas slightly differ from the zonation map of KSDMA. The river overflow cause obstruction to traffic in Kaduvamuzhy and Thottumukku areas, flooding of basement floor of few buildings along river side took place. The flood affected the sides of streams like Mathakkal thodu and Irappankuzhi thodu, Mundakkal parambu thodu flowing into the river.

The upstream of these rivers outside municipality has many steep terrains and some landslide susceptible areas, which causes sudden heavy flow in rivers with sand and debris during heavy rain falls. Silting on river bed reduced the carrying capacity of the river and the river tend to overflow in such heavy rainfalls. This heavy flow obstructs the free flow from streams to rivers and the sides of streams get flooded due to back flow.

But this normally last for only few hours and the water level goes down as the rainfall intensity reduces. As the terrain of the area is such that the level of land goes up steep away from streams, the effect of flood limits to the streams sides. As the town itself is situated at starting end of the river, duration of flood normally last till end of intensive rainfall only.

## 21.5 ANALYSIS OF RESCUE RELATED INFRASTRUCTURE

Municipality prepared a draft disaster management document as part of 'Nammal Namukkai' initiative which contains the necessary information for immediate response in the event of disaster.

The document meticulously lists public buildings designated as safe relief camps in the event of a disaster, providing a structured and organized response system. Additionally, the document features an array of essential contact information, including the contact numbers of NGOs, social organizations, and clubs ready to extend a helping hand during emergencies. Helpline numbers, crucial for immediate assistance, are prominently featured, ensuring a swift response to any crisis. To facilitate efficient coordination, the document includes contact details for supply chains and drinking water providers. Furthermore, a robust network of support is outlined, encompassing contact numbers for elected members, volunteers, doctors, health support teams, and various professionals, including skilled and trained individuals capable of rendering aid during emergencies. This comprehensive approach aims to foster a resilient and well-coordinated community response to unforeseen challenges.

## 21.6 CONCLUSION

*Erattupetta town is susceptible to flood in almost all monsoon seasons. But the duration of flood normally last for a few hours only. The flooding is limited to the sides of streams and rivers. severe destruction or damages were not reported .The reason for flooding to an extent is the reducing carrying capacity of river due to silting .There is heavy sedimentation near the three check dams in the town which reduces the holding capacity of river to a large extent .Clearing of silt in the river and installation of a regulator in place of check dam could help prevent flooding in town. There are many natural streams flowing into the river within the town. But width of most of them are reduced as a result of silting and encroachments. Regaining the streams to its original width through desilting and strict action against encroachments can address the flooding problem on the sides.*

*Even now the duration of flood is not very high. So ensuring a free and natural flow of river and streams can reduce the frequency and intensity of flood in the town without any strict regulation in construction*

# 22. RESOURCES

## 22.1 INTRODUCTION

Money, man power and land are the main resources for planning and development of urban centres. Among these resources, land is limited and its availability differs from place to place. As a basic principle, allocation of these resources among various competing land use must be such that it helps in achieving a high level of economic efficiency.

## 22.2 FISCAL RESOURCES

The main source of income of Erattupetta Municipality is municipal taxes, fees for various services, income from properties, government grant (plan fund), deposits and cess. The total receipts for the financial year 2019-2020 was Rs. 93,750,089/-. But only a small share of the total income is available for capital improvement programme and it is inadequate to provide infrastructural facilities and services at par with demand.

In addition to the above, various programmes including infrastructure development projects are being implemented through various State Government Departments and also under various centrally sponsored schemes. Procuring funds for implementation of urban development plans and services delivery system from alternate sources shall be thought of.

## 22.3 HUMAN RESOURCES

The details of human resources have already been discussed in the chapter 5. Steps are to be taken for the effective utilization of the human resources for the development of local economy and in the provision of infrastructure and services.

## 22.4 LAND

Urban land is emerging as a new area for local resources generation. There already exist innovative examples of generation of substantial funds using urban land as a resource in many parts of the country. No steps in this direction have been adopted in Erattupetta, even though there is enough potential for utilizing land as a major resource.

## 22.5 MINERAL RESOURCES

Hardly any mineral resources are available in Erattupetta Municipal town limit. But in the influence area of the town there is enough deposit of granite.

## 22.6 AGRICULTURE RESOURCES

Rubber is the major crop in the region. As per many collected data it can be seen that this municipality is having a good share of agriculture area and it was found that this land use contributes to the economy of the area as well.

## 22.7 CONCLUSION

*Still conventional method of resource mobilization is adopted in the Town. Human resources which are available in plenty have to be utilized properly. The land resources can also be used more effectively. The major resource of the area is agro based. Innovative approaches have to be adopted for resource mobilization and to provide better services to the people.*

# 23. DEVELOPMENT ADMINISTRATION & MUNICIPAL FINANCE

## 23.1 INTRODUCTION

The role of different departments involved in the development activities of Erattupetta Municipality is discussed in this chapter. The municipality has major role in the development activity of the town. In addition to the Municipality, Public Works Department, Kerala Water Authority, Kerala State Electricity Board, Agriculture Department etc are the major departments involved in the development activities. According to the Kerala Municipal Act, 1994, the Municipal Corporation/ local self-government is responsible for;

**Civic service delivery that consists of**

- Preparing and implementing a water supply and sewage disposal scheme
- Providing adequate sanitation through solid waste collection and disposal (including biomedical and hazardous waste), low cost sanitation and surface drainage
- Providing street lighting facilities
- Constructing and maintaining roads
- Providing facilities for public conveniences

**Administrative services that consist of**

- Issuing various certificates
- Maintaining public amenities
- Maintaining public utility services
- Providing ambulance services

**Regulatory services that consist of**

- Issuing licenses and permits
- Registering births, deaths, marriages, and private hospitals and tutorials
- Issuing notices and other certificates for taxation purposes
- Maintaining records and registers of all municipal transactions
- Abating nuisances

**Transferred services that consist of undertaking**

- Maintenance and operations of health and educational institutions
- Economic development in the LSGI jurisdiction
- Social welfare programs
- Social security schemes

State-level Departments, Programs and Missions and Institutions also govern urban management and basic service delivery in the State's urban local bodies.

## 23.2 ERATTUPETTA MUNICIPALITY

### 23.2.1 Introduction

The historical adoption of 74th Constitutional Amendment Act by the Central Government in 1992 has paved the way for independent functioning of local bodies. This act makes election to the urban local Government mandatory, in addition to greater devolution of administrative and financial powers.

***Municipal Office, Erattupetta***

### 23.2.2 The Elected Council

The elected council consists of 28 members, which includes 14 women members. The Chairman who is the head of the council is elected from the elected members of the council. The Vice-chairperson, to assist the chairman and also to discharge the duties of chairman in absence is also elected by the members of the municipal council. There are six standing committees, ie, for finance, works, development, health, education, welfare and education arts sports & culture to assist the municipal council in respective fields. Each Standing committee consists of four members except finance committee where there are five members. The vice-chairperson is the chairman of the finance standing committee and the members of the council will elect the chairpersons of other standing committees.

### 23.2.3 Administrative Structure of the Municipality

The municipal secretary is the executive head of the Municipality and he is supported by the following six sections of staff.

i. General Administration section
ii. Revenue section
iii. Engineering section
iv. Public health section and
v. Peoples planning section and
vi. Accounts and Auditing.

**General Administration section**

The General Administration section is headed by the Junior Superintendent and consists of three sub-divisions i.e. Establishment, accounts and other general matters.

**Revenue Section**

Revenue section is headed by the Revenue Officer. The section deals with the revenue of the Municipality.

**Engineering section**

The Engineering section has Municipal Engineer in the cadre of Assistant Engineer and Public works overseers. This section is responsible for the project planning, execution and maintenance of basic services and other infrastructure within the town. This section looks after the implementation of the development plans and other town planning schemes, approval of building plan and lay out plans, detection of unauthorized construction, eviction of encroachments etc.

**Public Health section**

This section is headed by the public health officer Grade I. This section attends works like collection and disposal of solid wastes, cleaning of drains and work related to public health, mother and child care, C.D.S works etc.

**People's Planning section**

This section co-ordinates the plan formation under decentralized planning process. Annual plans and five year plans for the municipality are being prepared under decentralized planning process.

**23.2.4 Functions of the Municipal Council**

Erattupetta Municipality is the major agency implementing development works in Erattupetta. The development works under the responsibility of Erattupetta Municipal Council include, the construction of Municipal roads and their maintenance, Public health - Primary health centre, Community health centre, Solid waste disposal, Construction of public market and their maintenance, Public cremation ground and its construction procedures, Open spaces, parks and their construction works, Providing infrastructure in slums, Protection of common ponds, The maintenance of the institutions transferred to the Municipal Council such as Schools, Hospitals and other institutions

## 23.3 MUNICIPAL FINANCE

### 23.3.1 Introduction

The 74th Constitution Amendment Act 1992 paved the way for devolution of financial and administrative powers to urban local bodies in a large way. By this amendment the financial position of the urban local bodies improved and a sizeable share of the total plan fund of the state Government has devolved to the local bodies for plan implementation. The financial position of the municipality is discussed in the subsequent paragraphs.

### 23.3.2 Receipts of Municipality

The receipts of the municipality are grouped into, three categories i.e. Revenue, Capital and debt. The receipts under **revenue** include income from taxes, income from other laws, income from the municipal properties, municipal fees, grant in aid from Government, Grand in aid from Government for the maintenance of assets transferred from Government etc. The receipts under **capital** includes Government Grants, government loans, income from municipal institutions, income from deposits, endowment Grant for implementing the programmes of the departments transferred to the municipality, Government Grant for decentralized planning etc. The receipts under **debt** include deposits, provident fund, pension fund, return from advances, sinking funds, library cess, surcharges, sale tax, income tax, labour welfare fund etc. The Table 23.1 and Figure 23.1 present an abstract of total receipts from the financial year 2016-17 onwards.

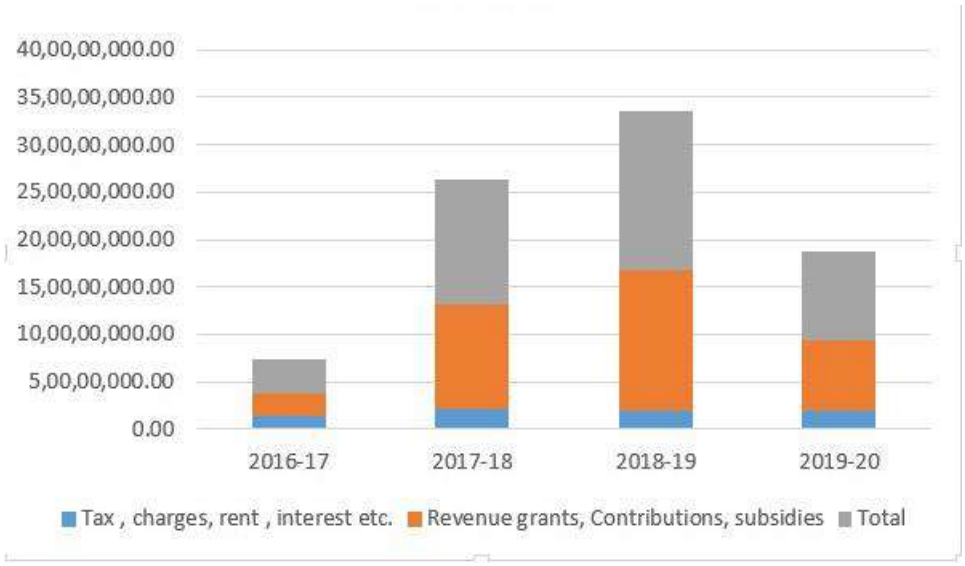



***Fig 23.1 Receipts of the Municipality from 2016-17***

***Table 23.1 Abstract of Municipal Income***

| Sl.No | Item | 2016 - 17 | 2017 - 18 | 2018 - 19 | 2019 - 20 |
|---|---|---|---|---|---|
| 1 | Tax , charges, rent, interest etc. | 1,37,76,944 | 2,04,07,040 | 1,97,46,049 | 1,97,46,049 |
| 2 | Revenue grants, Contributions, subsidies | 2,31,39,101 | 11,12,53,389 | 14,80,50,457 | 7,45,24,147 |
| 3 | Total | 3,69,16,045 | 13,16,60,429 | 16,77,96,506 | 9,37,50,089 |

*Source: Municipality Website*

### 23.3.3 Expenditure of the Municipality

Like the receipts, the expenditure of the Municipality is also classified into three accounts revenue account, capital account and debts account. The expenditure under revenue account includes the expenditure for administration and tax collection, public works, town planning, education, water supply and drainage, public health, street light, maintenance of municipal properties, Grant for maintenance of transferred assets etc.

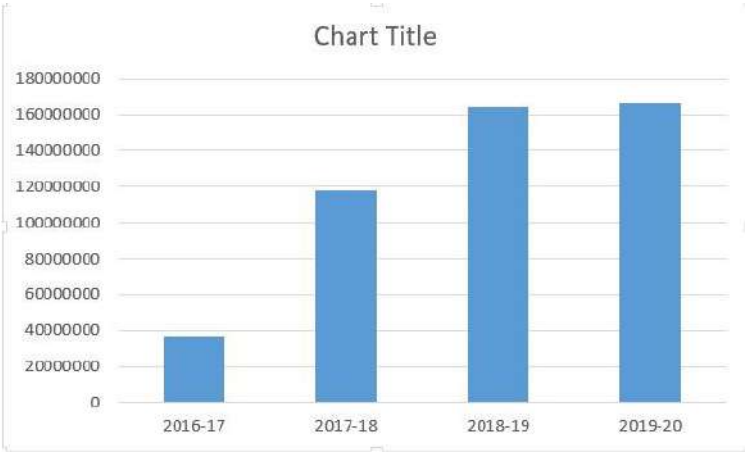



***Fig 23.2 Expenditure of the Municipality***

## 23.4 GOOD GOVERNANCE

The office building now available for Erattupetta Municipality does not have sufficient space for efficient functioning. A new building complex with modern facilities considering the next 50 years demand is required. The computerization of the Municipal office with network facilities has not been completed. Collection of taxes and other revenues, issue of certificates, accounting etc. are computerized. A Janasevanakendram is also functioning at the Municipal Office for providing various services to the people. The front office is also functioning in the Municipal office.

## 23.5 OTHER DEPARTMENTS

Kerala Water Authority is dealing with the distribution of drinking water in Municipal area. Office of the Assistant Engineer is functioning at Erattupetta. The Electricity distribution system is maintained by the Kerala State Electricity Board. The Electrical major section and sub-division are functioning in the municipal limit. The Kerala State Public Works Department (Roads) is in charge of construction and maintenance of roads other than those roads owned by the Municipal Council. The Kerala State Public Works Department (Buildings) is constructing major buildings. Assistant Education Office, Sub Treasury Office, Excise Office, Agriculture department office, Block industrial office are also functioning in municipal area.

## 23.6 PUBLIC OFFICES FUNCTIONING IN THE TOWN

Block Panchayath Office and Village Office are functioning in Erattupetta Town. Nearly half of the other Government offices are functioning in rented building.

## 23.7 CONCLUSION

*Erattupetta municipality has major role in providing various infrastructure facilities and civic amenities to the people. It is a third grade municipality and the present staff pattern is inadequate considering the responsibilities, powers and assets transferred to the Municipality. The total receipt of the Municipality is showing an increasing trend but it is inadequate to meet the demands. Most of all department offices are functioning in municipal area and nearly half of them are functioning in rented building and a new mini civil station is needed for those offices which are functioning in rented building. More reforms are to be introduced for providing better services to the people and a co-ordination committee has to be constituted for monitoring and co-ordination of various developmental activities.*

# PART. II

# INTEGRATED DEVELOPMENT VISION

# 24. FINDINGS

## 24.1 INTRODUCTION

The word Erattupetta is said to have been derived from the word Eraaru which means two rivers Thekkanar and Vadakkanar that merge to form Meenachil River. The Erattupetta town was developed on the bank of these rivers. The town was developed as a trade centre on the bank of Meenachil River when water transport was the predominant mode of transportation. With the downfall of Alappuzha as port, importance of Erattupetta got nullified. The extent of the town is 7.5 sq km and the population as per 2011 census is 29705.

## 24.2 LOCATION

Erattupetta is located in the North East quarter of Kottayam district. The geographical location of the town is between 9 degree 43 minutes to 9 degree 39 minutes North latitudes and between 76 degree 45 minutes to 76 degree 48 minutes East longitudes. Poonjar road (SH32), Kanjirappally road (SH44) and Peerumedu road (SH14) are the major roads of regional importance passing through Erattupetta.

## 24.3 PHYSIOGRAPHY

The town is located on the bank of Meenachil River and Meenachil River divides town into 3 natural zones, Thekkekara, Vadakkekara and Kizhakkekara. Generally the topography of the town is undulating at south end and all other region remains plain.

## 24.4 REGIONAL SETTING

As per District Urbanisation Report, Kottayam is suggested as first order settlement of the district. Erattupetta suggested as a third order settlement of the district. Primary activity (agriculture) has been identified as the activity of Erattupetta town.

## 24.5 PLANNING AREA

The Planning Area of Master Plan for Erattupetta is the administrative boundary of Erattupetta municipality.

## 24.6 INFLUENCE REGION OF THE TOWN

The Erattupetta block has been identified as the influence area of Erattupetta town. In addition to Erattupetta Municipality 7 Grama Panchayats are included in the Influence area of the town. The total area of the region is 245.28 Sq: km and 120667 population as per 2011 census. Though agriculture activity is the character of the region economy of the region is mainly commercial based.

## 24.7 LAND USE

Residential, Agriculture, Commercial, Public land uses are the major land use of the town and 53% of the total town area is coming under developed land.

Residential (42.68%) land dominates in Erattupetta town followed by Dry agriculture (36.36 %) land uses. Transportation (6.58%), Public and Semi public (3.71%), water body (4.87%) and Commercial (3.53%) has significant area. Agriculture activities are concentrated in the southern and eastern part of the Municipality. The study on functional character of the town shows majority of wards have rural or semi rural character.

## 24.8 DEMOGRAPHY

The population of town as per 2011 census is 29705. It was 16505 as per 1981 census and there after steadily increasing up to 2011. The growth rate of the town is showing an increasing trend. The population density of town as per 2011 census is 3960 persons/sq.km. And it is highest among the six urban centers of the district. The gross population density of different wards in the municipality (2011) is varying from 1415 to 10144 persons per Sq:Km.

## 24.9 OCCUPATIONAL STRUCTURE

Work participation rate of Erattupetta Municipality is 32% as per 2011 census. The temporal variation of work participation rate shows that work participation rate of Erattupetta is showing an increasing trend. The work participation rate of Erattupetta town is less compared to the district and other urban centers of the district and less than that of surrounding Grama panchayats. The occupational structure shows that majority of workers belong to the other workers category. There is reduction in the number of workers engaged in agriculture. The production sector and agriculture sector show a declining trend and the service sector show an increasing trend.

## 24.10 TRADE AND COMMERCE

Main market situated near SH 32 is under renovation. Commercial developments are mainly concentrated at town centre and along the major travel corridor sides. Commercial nodes are developed at major road intersections. Trading of rubber, rubber scrap and nutmeg are the major activities of the town. Activity of informal sector in small scale is there in the town. Sufficient number of banks is functioning in Erattupetta town.

## 24.11 INDUSTRY

Only SSI units are functioning within town limit and there are no major industries. One industrial park at Nadakkal, Meenachil plywood, Parvin Pardha are the main industries within the town. Erattupetta being the main trade centre of spices there is potential for developing food processing and agro based industries. Non availability of land and very high population density is a hindrance to major industrial development. Agro based raw materials like rubber, coconut, coffee, pepper which can be utilized as industrial raw material is a potential in this regard.

## 24.12 HERITAGE AND TOURISM

At present tourism sector is not playing a substantial role in the economy of Erattupetta. Being hill and located in the middle region of Kerala, town is beautifully arranged with hills and valleys. Valiachan mala hillsides and Erattupetta riversides can be developed as tourism centres. Buildings/precincts of heritage importance are very limited in the town. There is limited potential for tourism within the town. But utilizing the location advantage of the town, Erattupetta can be developed as a tourist transit center. The aesthetic appearance of the town is to be improved.

## 24.13 AGRICULTURE AND ANIMAL HUSBANDRY

The land under agricultural purposes and workers engaged in agriculture sector are consistently decreasing. The agriculture land is converted for various development needs. More percentage of agriculture land of town is used for cultivation of cash crops and cultivation of food crops are very nominal. Even though there is high demand for meat and egg which necessitate the development of animal husbandry sector, the high residential density of the town make a hindrance. More percentage of land under agriculture use and high demand for meat and egg etc provide enough opportunity to develop animal husbandry as a significant economic activity of the town.

## 24.14 HOUSING

The town has high residential density and the average size of the plot is comparatively less and 87.83% of people have their own houses. The sizes of the residences are average and its structural condition also good. Better sanitary system is available but a system has to be evolved for the disposal of solid waste. The facilities are available at a reasonable distance when compared with adopted standards. There are no approved slums within the Municipal limit.

## 24.15 DRINKING WATER

Undulating topography is a major hurdle in providing piped water supply. Only 20% of households are getting water from KWA/Municipality. For 58% of the households well is the main source of water. Certain areas of the town needed special attention as there is more scarcity of water.

## 24.16 TRANSPORTATION

The configuration of the existing road network within Erattupetta town does not reflect any regular form, although it resembles more or less like ring and radial type having radial roads connected with partial ring roads. The road inventory shows that majority of roads are with inadequate right of way and carriage way width. The most important aspect of traffic and transportation problem of Erattupetta town is the congested central core with limited scope for road widening. Hence, emphasis has been given to develop alternative linkages so as to divert the traffic passing through the CBD area. This would also help to reduce the unwanted inter-mix of intra-city and inter-city traffic on urban roads within the central part of the town. The pedestrian, parking and terminal facilities need to be improved.

## 24.17 ENERGY

Electric power to Erattupetta subdivision is distributed from Erattupetta 110 KV Sub-Station located at Erattupetta- Thalappalam road. More percentage of electric power (in terms of connection and consumption) is used for domestic purpose. 7 mega watt electric power can be generated from the proposed Marmala Hydro electric project.

## 24.18 EDUCATION

Erattupetta town is benefitting from 13 schools and lacks higher educational institution and more institutions are to be established. The facilities of many government schools are not fully utilized.

## 24.19 HEALTH

The Family Health centre Erattupetta is the only Medical Institution in the town in Govt. sector with fewer infrastructure facilities. Hospitals in private sector with almost all facilities provide necessary medical aid to the residents as well as people from the neighboring local bodies. More concentration is needed on public health and Family Health centre needs up gradation.

## 24.20 RECREATIONAL AND CIVIC AMENITIES

Only lower order recreational facilities are available in the town. Being a transit point to many tourist centres, the recreational facility in the town has to be improved considering the people of the town and its influence area. The provision of more open spaces for common gathering will uplift the healthy living and environmental condition.

## 24.21 ENVIRONMENT

As density of population is very high and the major commercial activities abut the Meenachil River flowing through the core area of town, environmental degradation of the town is highly noted. River banks are highly contaminated with the urban waste of the town thereby polluting the potable water. Proper intervention is needed in the sector. As the number of industries are limited air pollution and sound pollution is less in the town. The protection of Meenachil River which is the major source of drinking water of the district need special attention.

## 24.22 RESOURCES

Still conventional method of resource mobilization is adopted in the municipality. Human resources which is available in plenty has to be utilized properly. The land resources can also be used more effectively. The major resource of the area is agro based.

# 25. DEVELOPMENT GOALS & OBJECTIVES

## 25.1 INTRODUCTION

This Chapter describes the future direction, or vision, that the Erattupetta town should follow as a result of the Master Plan. These vision principles described as goals is the general target to be reached through completing a series of tasks. These tasks named as objectives are designed to meet the goal.

The development goals are formulated from the observations and findings derived from the analysis of the sectors. The Development Plan Goals will drive development alternatives and serve as the ultimate criteria for the selection of the preferred development option and other major decisions throughout the plan process. The goals of a plan not only direct the focus of the actual plan preparation, they are also the basis for regulation changes, for capital improvements program funding, and for future planning priorities. The goal of new Master Plan is to provide a comprehensive framework for physical Master Planning within the Municipal area.

## 25.2 DEVELOPMENT GOALS

The analysis shows that, Erattupetta has developed as a small service town. Pala - Thodupuzha state Highway corridor traversing Erattupetta town exhibits spatial concentration of secondary and tertiary activities in the town centre and acts as a major generator of economy. The major corridors connecting Erattupetta to Poonjar, Kanjirappally and Vagamon are the other developing areas. The proximity to Tourist centres like Vagamon, Elaveezhapoonchira, the major tourism spots of the region, and pilgrim centres like Bharananganam church, Sabarimala etc can develop Erattupetta as the satellite service centres for these areas. The lack of Physical infra-structure facilities is the major drawback in the town area. To develop Erattupetta as a service contributor the major emphasis must be given to the development of infrastructure facilities for a healthy living condition ensuring richer and happier life to the people, to make the city green, secure, hygienic and elegant for living. Provision of better transportation facilities, drinking water, solid waste disposal, etc. can enhance the development of the area.

The population density in the area is very much higher and the scattered development of housing makes land a scarce resource in the area. The abundance in

human resource can be tapped properly for the economy generation purposes. The provision of accommodation facilities to the tourists can increase the economy generation of the town. New infrastructural facilities and economic background leads to better living conditions and change in mind set and it necessitates the creation of high rise buildings. Available land can be conserved for other economy generation purposes**.** The optimum utilization of the available potential can promote the economic growth of the area. Trade and commerce has been identified as the notable economic activities of the town. The hinter land of the town has agriculture resources especially cash crops. There is scope for developing agro based industries in the planning area. Tourism especially pilgrim tourism has developed as a major economic activity of the town due to its location, adjacent to the major pilgrim destination of the state like Bharananganam and Sabarimala. Optimum utilization of resources for diversification and strengthening the economy of the town is the second goal.

Conservation of geography, hydrology and biodiversity are crucial for the sustenance of our ecological balance. Issues like solid waste disposal, air and water pollution, encroachment of public property mainly in river areas have to be considered and proper measures has to be adopted for the protection of our environment. Environmental protection is another urgent need of the town. The town is located in the mid land region of the state. The natural drains and river, hills etc are the environmentally sensitive areas of the planning area. So the conservation of environmentally sensitive area is another goal.

***The major development goals are;***

- ***To Develop Erattupetta as a second order Service contributor of regional importance.***
- ***Ensure healthy living condition with the provision of excellent integrated infrastructure facilities.***
- ***Optimum utilization of resources and potentials for strengthening the economic growth of the town.***
- ***Conservation of environmentally sensitive areas.***

## 25.3 DEVELOPMENT OBJECTIVES

The Development Plan objectives represent policy and planning guidelines for identifying and evaluating the development alternatives by more clearly defining the future needs of various sectors and maintaining focus throughout the planning effort.

The optimum utilization of potentials and resources creates new economic base for Erattupetta. This will ultimately improve the quality of life of the people. Development based on available potentials and resources is the action towards achieving the development goal. The development objectives for Erattupetta town are summarized below.

In connection with the *first goal***,** the objectives set are

- *To develop various higher order facilities to cater to the service demands of the region.*
- *To develop trade and commercial activities of the town.*
- *To develop the regional road network of the town so as to ensure better connectivity with influence areas.*
- *To improve the traffic and transportation facilities of central area of the town aiming at the decongestion of central area and to ensure the free flow of traffic.*
- *Provision of accommodation facilities, traffic and transportation, sanitation etc.*
- *Renovate the existing Trade and Commerce centers of Erattupetta town.*
- *Promote the trading of selected produces specific to the region.*

The *second goal* of Ensuring healthy living condition with the provision of excellent integrated infrastructure facilities can be achieved by planning over space and time considering resources and new technologies to achieve development

- *To improve the traffic and transportation facilities of central area of the town, aiming at the decongestion of central area and to ensure the free flow of traffic.*
- *To ensure clean atmosphere and environment by empowering the citizen by proper management and monitoring by the authorities.*
- *To make Erattupetta a clean city by proper solid waste management and proper drainage system.*
- *To decentralise the urban activities from inner core to other areas of the town.*
- *To improve other infrastructure facilities like drinking water, waste disposal, housing etc.*
- *To develop Erattupetta to cater to the higher order requirements regarding health and education of the people of the town and the region.*
- *To create more recreational facilities and open spaces for recreation and other social activities.*

The *third goal* is aimed to be achieved through the following objectives.

- *To promote value added products under agriculture especially cash crops.*
- *To promote small scale industry based on the resources of the region.*
- *To develop tourism activities utilising existing potentials and develop Erattupetta as a tourist transit centre.*
- *To develop the agriculture and animal husbandry sector.*
- *To promote agricultural activities at local level through the introduction of model farms and awareness programme.*
- *To increase the economic growth by enhancing job opportunities and better socio economic environment.*
- *To promote industrial activities by using the available potentials*.

The last but most important goal is to *conserve the environmentally important areas of the town.* The following are the objectives to achieve the goal

- *To rejuvenate and protect all sensitive natural drains, ponds and other water bodies etc.*
- *To conserve ecologically sensitive areas and minimize environmental pollution.*
- *To ensure protection of Meenachil river.*
- *To achieve optimum use of resources for a sustainable development.*
- *To encourage uses and activities those are compatible with the fragile river banks and foster conservation.*
- *To provide opportunities for enjoyment of a quality natural experience to the present and future generations.*
- *To identify, reduce and eliminate all forms of pollution, including air, noise, soil and water.*
- *To protect and improve quality and quantity of water in the water bodies within the town.*
- *To decentralise urban activities from the riverside to other areas of the town.*

# 26. DEVELOPMENT CONCEPT

## 26.1 INTRODUCTION

The development concept evolved out from the development objectives formulated from the findings of sectoral analysis based on the problems and potentials existing in the area are explained in this chapter. By inducing developmental proposals, providing new infrastructure and appropriate economic activities to the proposed spatial structure a development concept is evolved.

The problems and potentials existing in the area, the conclusions and recommendations of sectoral studies are also considered for the formulation of development concept. The development concept is derived by integration of the spatial particulars of the area and the above factors. The proposed spatial structure for the area has to be evolved for formulation of the concept plan. Analysis of various sectors clearly points out the development of Erattupetta municipality as a service contributor, with an aspiration to develop as the major commercial educational and tourism service centre of the district with the enhancement of infrastructure facility. The potential for development of industrial sector due to the presence of major corridors and also the trend scene in the area has to be encouraged for better economic growth. Eco-friendly development without affecting the sensitive areas has to be considered. The development impact of other sectors must not affect the environmental perspective of the area. But the suitable change in land use has to be implemented for the developmental demand after evaluating the existing spatial structure of the Erattupetta town.

## 26.2 SPATIAL DISTRIBUTION OF EXISTING DEVELOPMENT

The core area of Erattupetta town lies near the junction of the tributaries of the river. Like the river valley civilization in ancient period the development of trade and commerce developed from the river valley basin of Erattupetta municipal area. May be the trade activities are promoted through water transport systems during ancient period. The central area of the town is a multi-functional zone, equally carrying all major land use activities. This leads to the gathering of people for various purposes to town centre, creating more traffic congestion. Therefore the development in this area has to be regulated in a way to decongest the town centre and introduction of various infrastructure facilities. Decentralization of commercial activity in the town centre can prevent the congestion in the core area. Figure 26.1 shows the existing land use map.

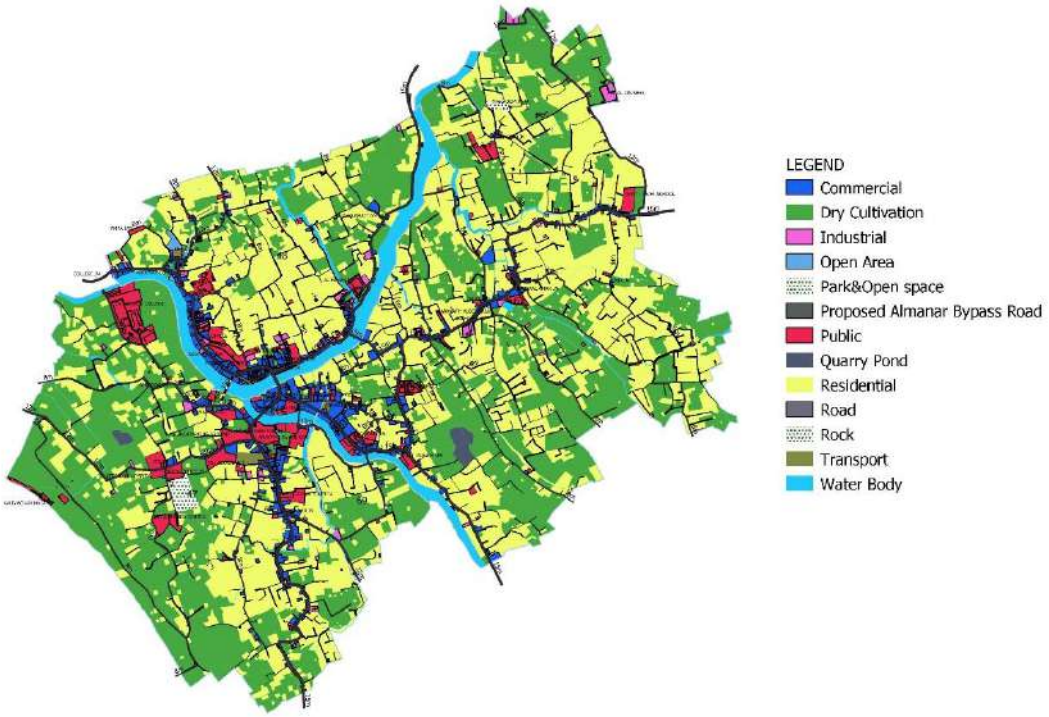



***Fig 26.1 Existing land use map***

Figure 26.2 shows the distribution of concentration of commercial land use. Commercial and residential activities are equally spread over the core area of the town. Demographic studies pointed out that the population is more concentrated along the major road sides and it is less dense in western and south eastern

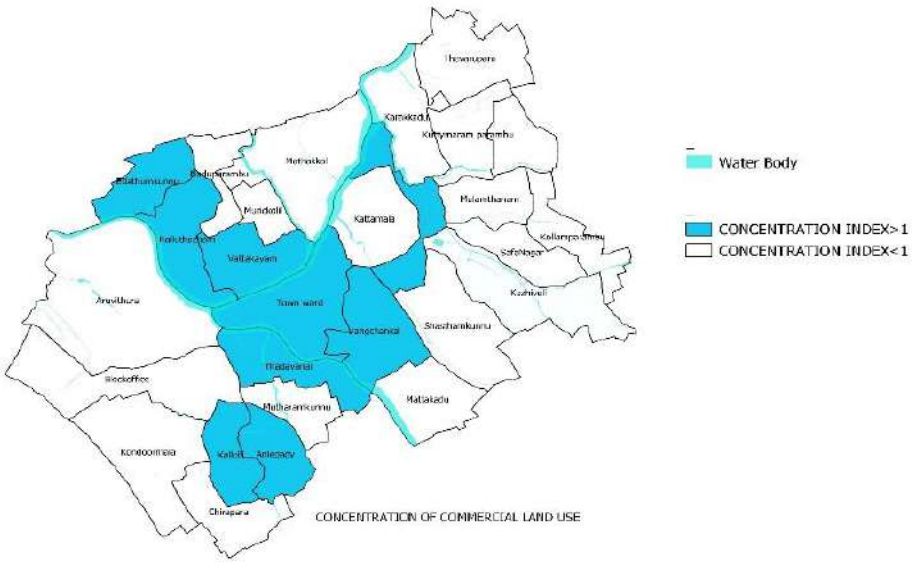



***Fig 26.2 Commercial land use concentration***

part of the town. Population is increasing in municipal area rather than the neighboring local bodies. The difference in culture make people concentrate in the town itself and people are reluctant to move outside the municipal area. This will increase the

population density in the core area. Their per capita income is low to build multi level buildings, thus causing horizontal growth leading to the scarcity of land for the development in the town centre.

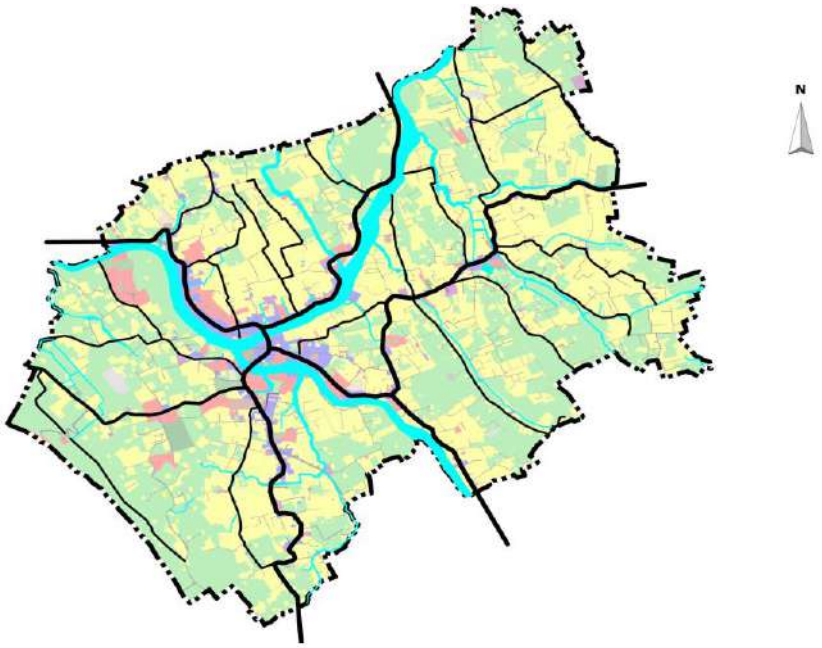



***Fig 26.3 Environmentally sensitive areas***

The Meenachil River and its tributaries can be considered as the most environmentally sensitive area which is on the threshold of encroachment. Majority of land is used for residential developments. But river Meenachil is flowing a distance of 4.56 km through the town and is one of the main tributaries of the river, Thekkanar also is flowing through the town. Dry agricultural land use is found in the western and eastern borders of the town. The high terrain Valiyachan mala lying near the town boundary, one of the major pilgrim centres in the Kottayam district is also considered as one of the major sensitive areas which are under threat of environmental pollution. Figure 26.3 shows the environmentally sensitive areas.

***Spatial distribution of population*** is seen in such a way that the densification of the area around immediate surroundings of CBD area, area adjacent to State Highways and other major roads passing through the municipal area. Dense development is not recommended in those areas of the town where agriculture is more predominant and land is with steep slope.

The residential and commercial areas are concentrated along the major roads and town centre. Whereas intense agricultural areas are seen away from the major road and it is concentrated along the high terrain areas.

Figure 26.4 shows the distribution of concentration of density of population. Industrial land uses are concentrated on the north eastern corner. The trenching ground at Thevarupara is creating problems to the authorities. Spatial distribution of all these activities influences the development concept of Erattupetta town.

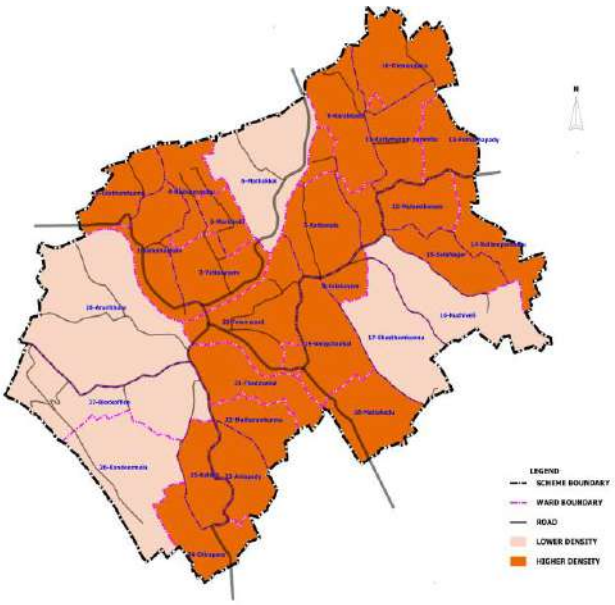



***Fig 26.4 Spatial Distribution of Population***

***Major Road pattern-*** Road transport is the most important and only one mode of transport in Erattupetta town. It is mainly in radial pattern with small roads

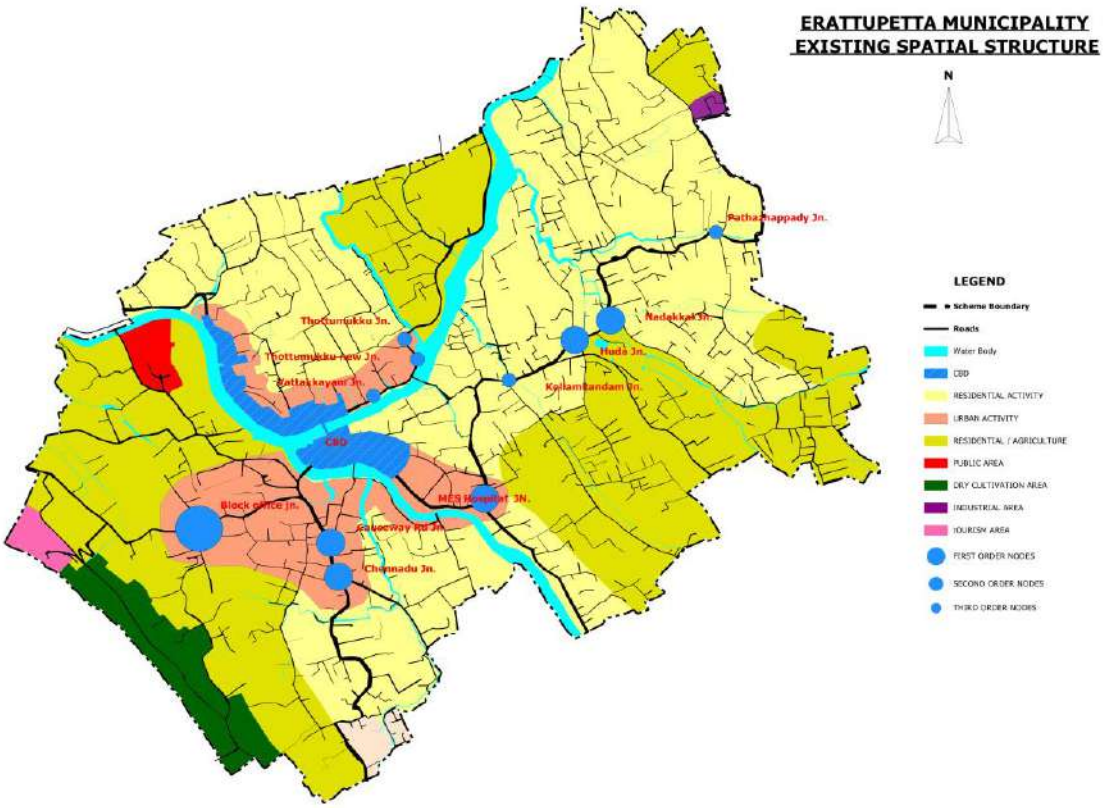



***Fig 26.5 Existing Spatial Structure***

connecting these roads. Due to terrain variation the connection of these radial roads with major ring roads are impossible. The traffic and transportation problem is in the congested central core with limited scope of road widening. Hence emphasis is given to develop alternative linkages and traffic management, so as to divert the traffic passing through the central area. This would also help to reduce the congestion caused by inter and intra city traffic within the central part of the town. The ***Spatial distribution of existing development*** (shown in figure 26.5) is the haphazard development occurred due to encroachment of roads for various purposes, building constructions without following building rules etc. It is also influenced by the topographical features like undulating terrain of the town, physical barriers like rivers and canals etc. The existing town centre (CBD) is located near the merging points of two rivers. Corridor development of urban activities like commercial and public land use mixed with residential development is taking place along the sides of state highways passing through the area. Commercial nodes are developed along major road intersections. Thickly populated residential areas, residential areas with homestead cultivation, agricultural land are in the remaining part of the town. Even though Agriculture land is available, residential developments are seen in between. Large pockets of agriculture land are available in the peripheral areas only. The residential developments are seen as only horizontal developments of houses with in small plots clustered together in some areas without proper setbacks or infrastructure facilities. This affects the hygienic condition of the area. This can be improved only by changing the mindset of the residents.

The existing spatial structure of the planning area is shown in Figure 26.5. This shows that the spread of urban activity is increasing from the town centre to its peripheral areas. The land with combined residential and agriculture land use is gradually getting converted to residential use alone due to the demand arising for residential purpose. There are only few high rise buildings or apartments within the town, instead horizontal growth of buildings are found throughout the town. This is one of the reasons for the shortage of land resource for public purpose.

## 26.3 PROPOSED SPATIAL STRUCTURE

After evaluating existing spatial structure of Erattupetta town, the proposed spatial structure is evolved out by considering the factors like spatial distribution of existing developments, proposed population distribution, proposed road networks, proposed commercial nodes, and the environmentally sensitive areas. Methodology is represented in Figure 26.6.

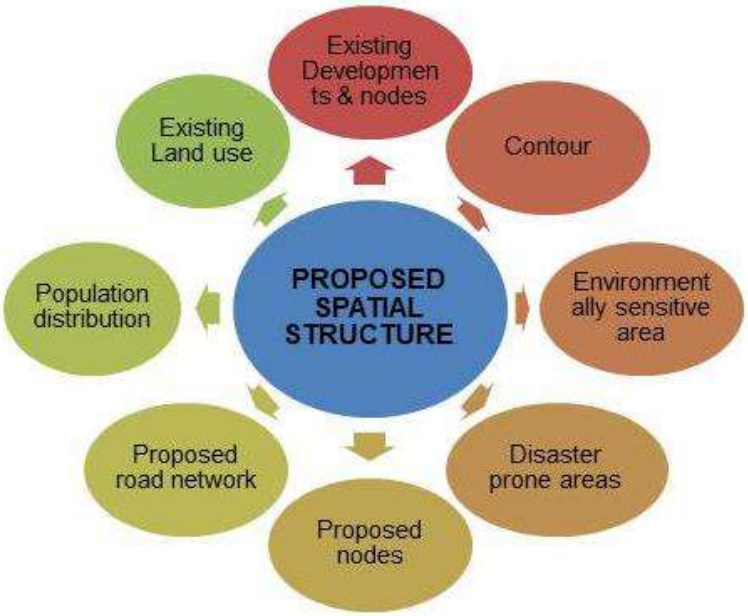



**Fig 26.6 Methodology of Proposed Spatial Structure**

***Proposed transportation network*** is planned based on the study conducted by NATPAC. The topography of the town is also a deciding factor. Existing network is radial pattern and diverging from the central area to various directions of Erattupetta town. No major ring roads are there and the radial roads are connected by few roads in the category of collector road only. The density of roads as per land use study is also high. The widening of existing major roads in view of peoples aspiration and also connecting the inner road with a new bridge at the town centre is proposed for the

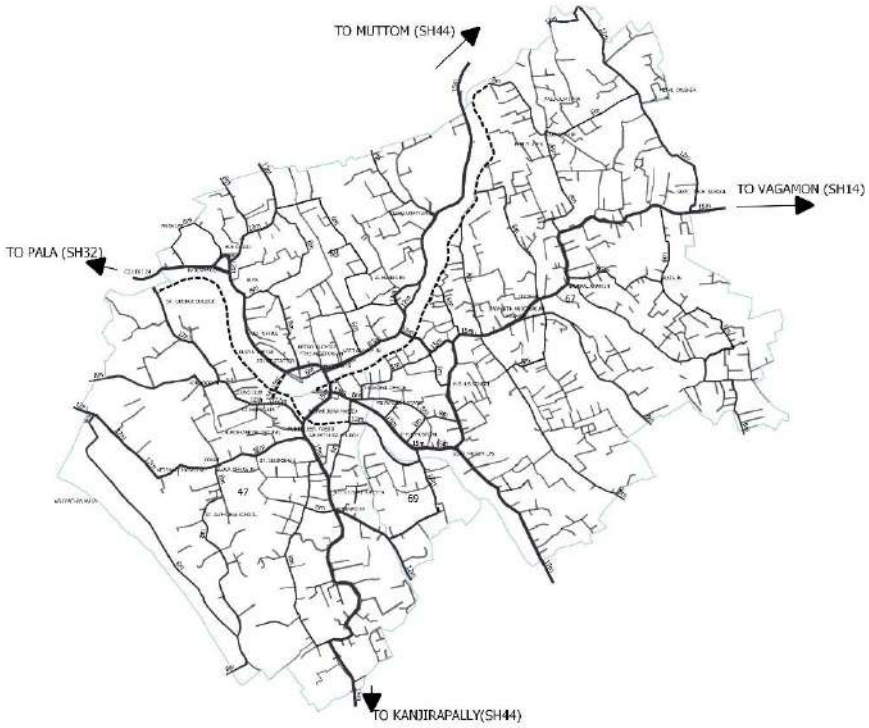



**Fig 26.7 Proposed road network**

congestion free traffic. Introduction of new bridge in the central area for connecting two roads and making a ring road can avoid the congestion in the central area by diverting the traffic from the town centre. The management of traffic movement by providing one-way traffic can also remedy the traffic problem in the Town. The Figure 26.7 shows the proposed road network. There are existing small roads to each and every corner of the town, but without proper width for easy movement of two vehicles. As per NATPAC study it is seen that the volume capacity ratio is higher at Town centres,like Ahammed Kurickal- Private Buststand, Central Jn- Ahammed Kurickal Jn, Central Jn – Aruvithura church, Muttom Jn - Central Jn and in all other areas V/C ratio is less than one. Therefore in the Town centre a bridge is proposed to connect both sides of the river and thus introduce smooth flow of traffic in the town centre.

Also two river view roads are proposed which run parallel to the existing roads on the opposite bank of river, which could carry the excess traffic in main roads, and adds to the scenic beauty of town.

Proposed **Commercial nodes** of the town are shown in Figure 26.8. In addition to the CBD area commercial nodes are proposed at different part of the town considering the future distribution of population and proposed road network. Block office junction, Nadackal junction, MES Hospital Junction etc. can be considered for

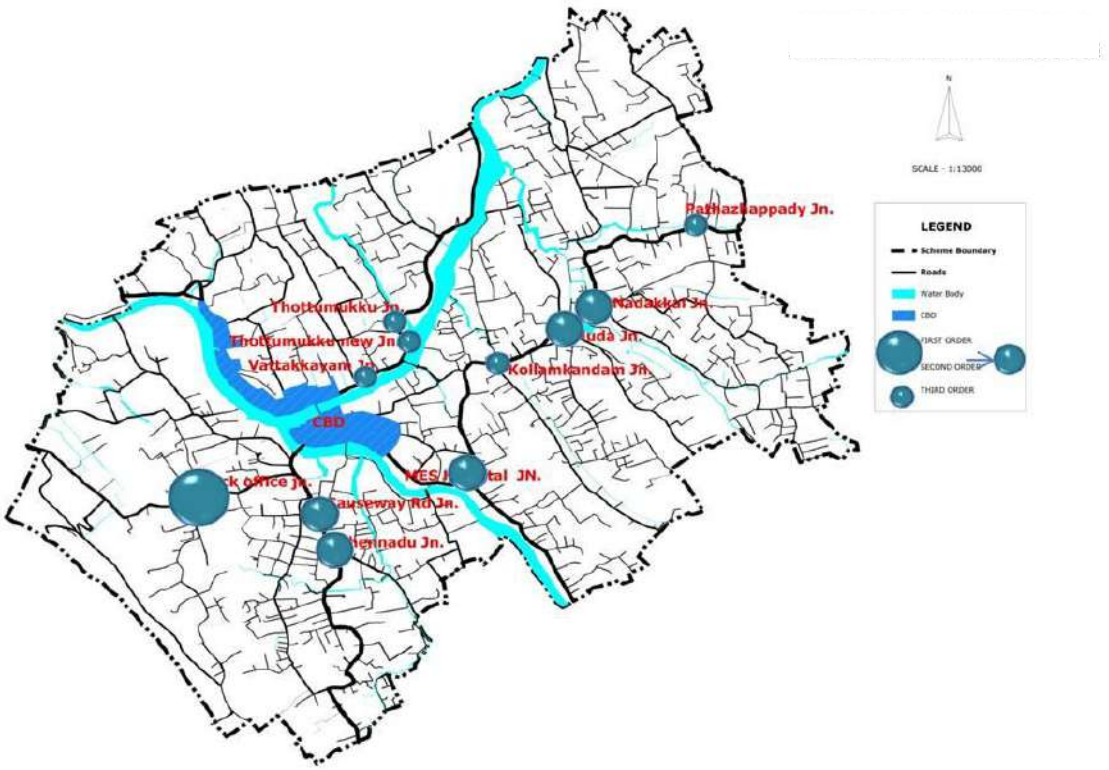



***Fig 26.8 Proposed Commercial Nodes***

the development purpose of urban activities. Considering all the above factors and superimposing all these indicators proposed spatial structure is evolved. Town centre (CBD area), commercial public activity dominated area, residential activity dominated area, agricultural activity dominated area, environmentally sensitive area, commercial node etc. are the features of proposed spatial structure.

## 26.4 DEVELOPMENT CONCEPT

Based on the evaluation of spatial distribution of land uses, major road pattern and spatial structure, development concept is evolved. Along with the spatial structure of the town, those factors influencing the development of the town have to be considered for the formulation of development concept. Trade and Commerce has gained major upper hand from ancient time and attracted many number of commercial activities towards the Town area. Erattupetta is acting as a service centre for the pilgrim Tourists and also is a major trading centre for spices.

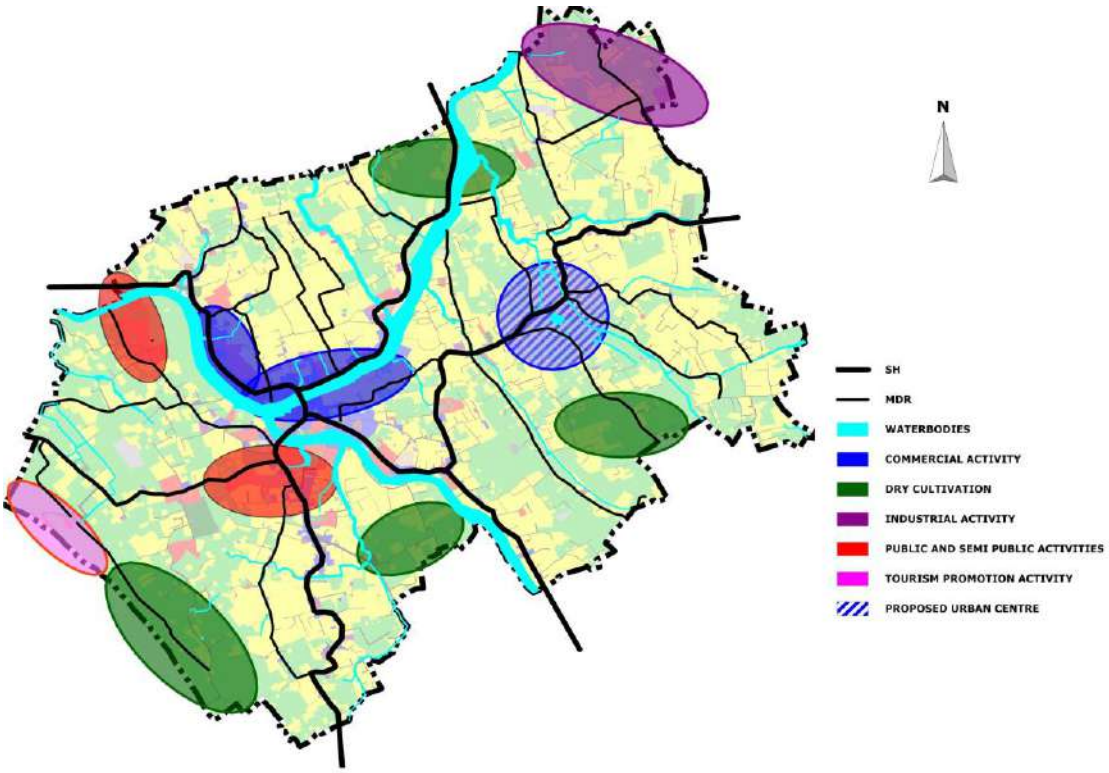



***Fig 26.9 Proposed Spatial Structure - Concept***

The various studies and analysis indicates that the municipality of Erattupetta has potential for becoming a major service contributor to the region. The prospect for the development of the above sectors has to be utilized maximum for the economic growth of the region. Tourism is an important tool for the development on account of its potentials for generating income and employment. The ancillary development sector like SSI sector is to be considered for finalizing development concept.

As far as Erattupetta town is considered the sectors having significant influence in the formulation of development concept are Trade and Commerce, Committed Projects, SSI and IT, Promotion of agriculture sector and Tourism Promotion.

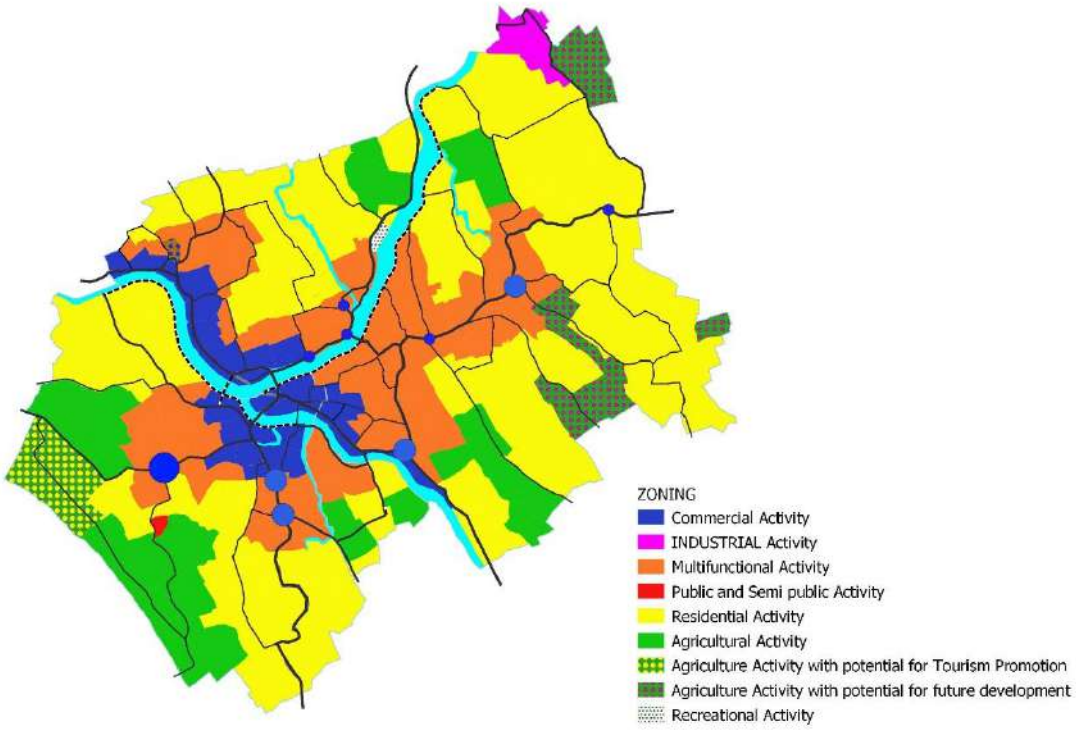



***Fig 26.10 Development Concept***

*Major feature of the development concept is the expansion of present town centre towards west to Block Office Junction and up to Nadackal junction towards east and towards south up to MES Hospital Junction and it is expected to decongest the town centre by decentralizing the activities in the core area.*

*Mixed activities like Commercial, Public & Semi public and residential are allowed along the major road sides for more developments. First order and second order nodes shall meet the local needs with sub urban activities. Small scale industrial development in residential area and the shifting of other industries to industrial zone located at Thevarupara. Provision of I.T. establishments, Small Apparel parks, as large area has open up for development in the mixed use zone.*

*Providing Tourism facilities at Valliachanmala located in the municipal area can promote pilgrim tourism by connecting neighbouring pilgrim centres like Bharananganam, Cherpunkal church, Murugan mala, Thangal para etc. Proximity to*

*Ettumanoor temple, Sabarimala is also a constructive circuit for tourism. Nearest site seeing Tourist places can also be linked with this circuit.*

*Promoting intense Agriculture activities in available Agriculture areas of the town and Promoting home stead cultivation in residential area for achieving food sustainability to an extent.*

*Conservation of environmentally sensitive areas mainly water bodies from encroachments and also by providing green strips for its protection.*

*Provision of Recreational facilities near the river and using water body for water theme parks, boating and other such exciting entertainment programs for attracting people.*

*Economic activities can be improved by introducing new developmental programs.*

# 27. POLICIES AND STRATEGIES

## 27.1 INTRODUCTION

A development concept has been evolved based on the studies and analysis on various physical features and economic factors affecting the planning area. This chapter details out the development policies and strategies evolved for the implementation of the development concept formulated for a period of 20 years. The general development policy and sectoral development policies are included in this chapter.

## 27.2 GENERAL DEVELOPMENT POLICIES

The general development policies adopted for implementation of development concept is furnished below.

- *Commerce and shopping are major activities of the town. Develop Erattupetta as a major Market and shopping centre of the region. Also develop Erattupetta as a market centre of cash crops of the planning region.*
- *Develop the economy of the planning area utilizing the resources available in the influence region. It includes utilizing the raw materials especially, the locally available cash crops, tourism potentials, human resources etc.*
- *Develop Erattupetta as a second order center of the district with required facilities especially infrastructure facilities.*
- *Provide better service facilities to the people by provision of better health services, quality education, quality power, water and various infrastructure facilities and ensure the welfare of economically weaker sections of the society.*
- *Carry out future development of the town with due consideration to the environment, with protection of all existing environmentally sensitive areas.*

The sector wise policies and strategies for the major sectors identified for Erattupetta town are furnished below.

## 27.3 TRADE AND COMMERCE

**Policy:**

*Strengthen the economy of the town by developing and diversifying the Trade and Commerce activities and to develop the town as a commercial centre*.

**Strategies:**

- Opening up of new areas for commercial activities with easy access.
- Establishment of commercial complexes of International standards.
- Renewal of existing commercial areas which are in dilapidated condition.
- Extension of Commercial area and providing connected facilities like parking place, drainage, waste disposal system etc.
- Provision of facilities for informal sector.
- Establishment of new commercial complexes by Municipality and other agencies.
- Provision of Parking areas in Market Places and Commercial areas.
- Provide market facilities for locally produced value added products and agriculture products.

## 27.4 INDUSTRIAL SECTOR

**Policy:**

*The development Policy is to set apart a specific area for new industry and new units for value addition of products available in the hinterland and diversification of industrial activities.*

**Strategies:**

- Expansion of industrial estates and starting of new units.
- Promotion of small I.T. establishments.
- Provision of infrastructure facilities like road, telecommunication facilities.
- Marketing facilities for the value added products.
- Industrial units for socially and economically weaker sections and industrial units under social organizations like Kudumbasree.
- Promotion of cottage industry.

## 27.5 HERITAGE AND TOURISM

**Policy:**

*Total utilization of tourism potentials – rivers, hill locks, rich culture, heritage, festivals, famous pilgrim centers, locational advantage etc. is aimed at to develop tourism as one of major economic activities of the town.*

**Strategies:**

- Develop as a tourist transit centre considering the location of the town between tourist centers like Vagamon, Ilaveezhapoonchira, Bharananganam and provide support facilities for pilgrims visiting Sabarimala.
- Increasing connectivity of the town with neighbouring centers with roads of highways standard.
- Utilizing the tourism potentials of religious festivals, cultural festivals, fares.

## 27.6 AGRICULTURE AND ANIMAL HUSBANDRY

**Policy:**

*Strengthen the economic base and self sufficiency of the town to an extent by strengthening the agricultural & animal husbandry activities. Proper integration of agriculture & animal husbandry activities to increase productivity in this sector.*

**Strategies:**

- Promotion of homestead cultivation in low density residential area and intense cultivation in the area identified for agriculture. Priority for cultivation of vegetables.
- Promoting organic farming and usage of bio fertilizer in agriculture activity, the solid waste may be converted in to bio fertilizer and reduce the quantity of solid waste at disposal point.
- Promotion of units for the value addition of agriculture products.
- Establish more dairy, goat, poultry farms and increase productivity through scientific methods.

## 27.7 TRANSPORTATION.

***Policy:***

*Provide an efficient road network, considering the traffic need of the town, connecting the various activities and nodes of the town.*

***Strategies:***

- Developing a hierarchical system of road network within the planning area.
- Establish connections for missing links and new roads.
- Providing new road links for diverting traffic in the central area and decongesting the town center.
- Improvement of transport infrastructures like terminal facilities, parking facilities, pedestrian facilities.

## 27.8 HOUSING

**Policy:**

*Provision for housing activities for the newly added population, improvement of structural condition of houses of economically weaker sections and improvement of housing quality.*

**Strategies:**

- Provide adequate residential areas in land use plan.
- Promotion of planned development of residential activities.
- Improvement / provision of basic infrastructure like quality roads, street light, recreational facilities, drainage etc. in residential areas.

## 27.9 DRINKING WATER

**Policy:**

*Ensure drinking water of required standard throughout the day for all households of the town. Increase the coverage of protected water supply system. Also provide sufficient water to the commercial and industrial establishments.*

**Strategies:**

- Conservation and protection of water sources within the planning area. Protection of conventional water sources.
- Augmentation and extension of protected water supply system to more areas.
- New schemes for uncovered area.
- Provision of separate water distribution system for elevated area.
- Replacement of damaged pipe lines and fittings.
- Conservation of ponds for recharging the ground water sources.
- Promote Rain Water Harvesting.

## 27.10 ENERGY

**Policy:**

*Provide quality power to the existing consumers and ensure quality power for the new establishments. Provide a good street light system for the town.*

**Strategies:**

- Provide system for uninterrupted power supply.
- Provide a good street light system for the town.
- Electrification of the houses of socially and economically weaker section.
- Adoption of non-conventional source of energy to the extent possible.

## 27.11 WASTE DISPOSAL AND DRAINAGE

**Policy:**

*Improve the system of collection, conveyance and disposal of generated waste with participation of people and provide a hygienic environment. Promotion of a system of disposal of wastes at source itself. Maintain the habitable area free from flooding.*

**Strategies:**

- Strengthening the present collection system with additional labours, vehicles etc.
- Effective mechanism for waste disposal at the existing dumping yard.
- Promoting the system of waste disposal at source itself. Extension of waste collection system to more public area with people's participation and adoption of decentralized disposal system. Also sorting and shredding facility to be introduced.
- Popularizing Bio fertilizer manufacturing units.
- New public comfort stations.
- Maintenance of existing road side drains and natural drains to avoid flooding.

## 27.12 EDUCATION

**Policy:**

*Establishing institution with new generation courses, diversification of courses in the existing institutions and improve the general education status of the town.*

**Strategies:**

- Provision of adequate infrastructural facilities for General education institutions in Government and Aided sector.
- Modernization of educational institutions with facilities like smart classes, language labs etc.
- Utilize the unutilized potentials, including land for starting new institutions/courses.
- Supporting facilities like hostels, libraries, sports complexes and career development centers.

## 27.13 HEALTH

**Policy:**

*Improve the general health condition of the people by preventive measures and maintaining a healthy and hygienic environment. Provide modern health facilities to cater the needs of people of Erattupetta and its influence region. Provide quality treatment through three systems of medicines.*

**Strategies:**

- Further advancement of Supper Specialty facilities at hospitals.
- Providing infrastructure facilities for Indian System of Medicine and Homeopathic Medicine System.
- Promotion of health tourism linking with other tourist activities.
- Creation of a healthy and hygienic environment.
- Centre for care of Aged people, disabled persons, children etc.
- Provision for proper disposal of bio medical waste.

## 27.14 CIVIC AMENITIES AND RECREATION FACILITIES

**Policy:**

*Provide higher order civic amenities and recreational facilities as per standard considering the resident as well as population of the region.*

**Strategies:**

- Provide new Parks, Fair ground and Open spaces.
- Provision of water front recreational areas.
- Improvement of existing recreational facilities.
- Improvement to the existing libraries and provision of modern facilities.

## 27.15 ENVIRONMENT

**Policy:**

*To make Erattupetta as an eco-friendly, hygienic and aesthetically pleasing town by reducing pollution, improving and protecting environmentally sensitive areas.*

**Strategies:**

- Conservation of water bodies.
- Effective solid waste management.
- Improving aesthetics of the town through various efforts like planned street scape, town squares, organized open space etc.

# 28. PROJECTED REQUIREMENTS

## 28.1 INTRODUCTION

The developments envisaged in the town through the Development concept will increase the Job opportunities and migrant population of town. *Trade and Commerce, Service center activities, Agriculture and Animal Husbandry, Small Scale Industries and Tourism Related Activities* etc. are envisaged in the development concept. In addition to that Erattupetta is proposed as a third order settlement in the district and the facilities in this regard has to be provided and this will create job opportunities especially in service sector.

## 28.2 PERSPECTIVE POPULATION FOR THE YEAR 2021 AND 2031

Population projection is usually done by understanding the pattern of population growth in the past and assuming that the same pattern will continue in the future also. The present population is projected to the desired future period by using various projection methods. Population growth of an area depends on number of births, deaths, in migrants and out migrants over a time period and these factors are also taken for the population projection.

Mathematical population projection methods are used for finding out the projected population. Arithmetic increase method, Geometric increase method incremental increase method and Decrease rate of growth method are used for calculation purpose and the average of it is considered as the projected population for the horizon period. The mathematical methods of projection show that the population of the town will decrease in future.

The perspective population is arrived by taking average of all population projection by various mathematical methods and factors like migration also taken into consideration. The projected population by mathematical methods and perspective population of town arrived using different methods is shown in Table 28.1.

***Table.28.1 Projected Populations***

| Sl No: | Method | Projected Population | |
|---|---|---|---|
| | | 2021 | 2031 |
| 1 | Arithmetic Increase Method | 31105 | 32505 |
| 2 | Incremental Increase Method | 34045 | 38385 |
| 3 | Geometric Increase Method | 30893 | 32129 |
| 4 | Decrease rate of growth Method | 33602 | 37960 |
| | **Average** | **32411** | **35245** |
| | **Migration** | **1000** | **2000** |
| | **Rounded to** | **33500** | **37300** |

The expected population of Erattupetta Town is shown in the Table 28.1; Population is expected to reach 33500 by 2021 and 37300 by 2031. It is expected that more developmental activities will lead the town to the status of a fully-fledged urban centre.

## 28.3 CHANGES IN OCCUPATIONAL STRUCTURE

The economic activities govern the occupational structure of the area. The expected population by 2031 is 37300. The work participation rate for Erattupetta is 32% during the Census 2011. As per URDPFI Guide lines, for a Municipal Area, the minimum work participation rate shall be 33%. The work participation rate of the town is lower than the standard. With the introduction of new development projects as per the new Master Plan, economic base will be increased which will further result in the increase of job opportunities in Planning area. Based on this it is assumed that the work participation rate for Erattupetta will maintain the higher ratio and for the year 2031 also it is adopted as 38%. The Working force during 2031 will be 14174 (38% of 37300).

## 28.4 AREA REQUIREMENT FOR VARIOUS URBAN USES

Erattupetta town can be considered as a small town as per URDPFI guidelines (population less than 50,000). The requirements for the small town as per URDPFI guidelines are worked out in the following paragraphs.

### Residential Areas

At present an area of 3.20 Sq.km which is 42.67% of the whole area and 73.90% of developed area is being occupied for residential purpose. As per URDPFI guidelines an area of 45-50% is to be provided under residential land use category. It

is revealed that residential activity is seen scattered over the whole area mixed with dry cultivation areas and the thickly congested habitation point out to the need for vertical development. Hence no additional land has to be identified for residential land use as residences can accommodate in the dry cultivation zones also.

**Commercial Uses**

According to existing land use survey, only 0.26 Sq km (6.00% of developed area) of land is under commercial use in Erattupetta. URDPFI guidelines propose an area of 2-3% for commercial uses and the city already satisfies it. Hence not much increase in commercial area is needed.

**Industrial Area**

As per URDPFI guidelines, for small and medium towns, industrial workers are taken to be about 20% of total working population. Thus it is estimated that there will be around 2000 industrial workers in Erattupetta by 2031. As per URDPFI guidelines, density of industrial workers must be in the range of 100 pph to 125 pph. Assuming employment density as 100 pph, the extent of industrial area will be 20 ha. Thus about 0.20 sq.km of town area can be estimated to be occupied by industries by 2031.

**Public & Semi-public Use**

As per land use survey 0.28 sq.km (3.73%) of land area or 6.47% of developed area is under public and semipublic use in Erattupetta town. As per URDPFI guidelines area of 6-8% of developed area must be provided for public and semi-public uses for a small town. Land under public and semi-public land use almost matches the standards mentioned in URDPFI guidelines.

**Transport & Communication**

As per URDPFI guidelines, an area of 10-12% of developed area should be allotted for transport and communication purposes in the case of small town. It can be found that 6.53% of total area or 11.32% of developed area is used for this purpose in Erattupetta. Yet Erattupetta is a congested town with narrow roads and bridges and unauthorized parking and absence of segregated bus bays. In order to accommodate the fast growing traffic in the town and to reduce the traffic problems existing here, alternative solutions like flyovers and bye passes have to be introduced.

**Recreational Uses**

Land uses coming under this category are stadium, parks and open maidans, gardens etc. Current area available for recreational uses is less than 1% of developed area which is found to be very less. According to URDPFI guidelines, 12-14% of developed area must be used for recreational purposes for the case of a small town. But while considering the current unavailability of land, this guideline cannot be followed. Recreational open spaces shall be provided at the rate of 1.4 -1.6 ha/ 1000 persons. By taking this provision, the area to be provided comes around 0.52 sq.km for this purpose i.e. about 6.9% of total town area.

**Agricultural land & Water Bodies**

As per land use survey, 3.17 sq.km of area is coming under agricultural, water bodies and other undeveloped areas. In order to meet the demand for developmental activities in the coming years, uncultivated land will have to be converted to other land uses. 2.73 sq.km of area comes under dry agricultural sector. At present 0.37 sq.km of land area is used by water bodies. This area has to be retained as such from encroachment and waste dumping by providing buffer zones for water bodies and also to reduce the water scarcity in future.

## 28.5 HOUSING AND SHELTER

As per socio economic survey 14.47% residential buildings in the town are kutcha buildings and 0.15% belongs to hut category which require immediate up gradation. About 31.24% of buildings are moderate & 52.45% of houses are pucca buildings.

The projected population of Erattupetta town by 2031 is 37300. So an additional population of 3800 has to be accommodated in the town. Approximately additional 400 new houses need to be constructed in the next ten years. Provision for housing areas shall be provided

## 28.6 DRINKING WATER

The steps adopted for the estimation of requirement of drinking water for the year 2031 is furnished below:-

*Projected Population (2031)* *= 37300*

*Per capita domestic water demand as per standards* *= 135 lpcd*

As per socio-Economic survey, well is the main source of water for 57.58% of houses. On the assumption that part of requirement of drinking water is met from the domestic well also, it is assuming that 100 lpcd is to be supplied through pipe line for domestic purpose. It is also assumed that 50 lpcd is required for non-domestic purposes.

*Total lpcd required* *=150*

*Water to be distributed through pipe line is 37300X150* *=5595000 lakh liters or*

*= 5.595 MLD*

## 28.7 SOLID WASTE

As per socio economic survey 82.16 % of houses are disposing their wastes in their own compound. Considering the town as a high density residential area it can be assumed that 50 % of the waste needs to be collected. The waste to be collected from the town is estimated as follows.

*Projected population* *= 37300*

*Half of projected population* *= 18650*

*Waste to be collected* *= 18650X0.25 Kg/day*

*= 4.662 tons/day.*

So a system has to be evolved for collection and disposals of a quantity equal to 5 tons/day by 2031.

# PART. III

# LAND USE AND SECTORAL PROPOSALS

# 29. PROPOSED LAND USE PLAN

## 29.1 INTRODUCTION

Land use plays a major role in the process of evolving better environment for the town. Better management and distribution of activities in the town will reduce many problems relating to traffic and provision of service. The land use plan for the horizon year is proposed in tune with the policies and strategies mentioned in previous chapters, the present trend of land development, ongoing and committed projects, projected requirements and based on the development concept evolved.

In the proposed land use plan, the town is divided into various zones. Commercial use zone, Multi functional use zone, Residential use zone, Public and Semi-Public use zone, Industrial use zone, Traffic and Transportation use zone, Proposed Transport zone, Parks and open space use zone, Proposed Parks and open space, Dry Agriculture use zones 1, 2 and 3, Water bodies, Green strip, Aqua Activity Zone, Water re use zone are the zones proposed. The proposed land use of the town is shown in Figure 29.1.

## 29.2 LAND USE BREAK UP

The proposed land use break up in hectare and percentage of different land uses of the planning area is shown in Table 29.1. The residential zone occupies 46.87 % of planning area followed by multifunctional zone with 19.43 % of the Planning area.

***Table 29.1 Proposed Land use break up***

| Sl.No | Land Use | Area (In Ha) | Percentage |
|---|---|---|---|
| 1 | Residential use zone | 351.52 | 46.87% |
| 2 | Commercial use zone | 25.8 | 3.44% |
| 3 | Multi Functional use zone | 145.72 | 19.43% |
| 4 | Industrial use zone | 10.2 | 1.36% |
| 5 | Public and Semi-Public use zone | 27.3 | 3.64% |
| 6 | Dry Agriculture use zone 1 | 86.25 | 11.50% |
| 7 | Dry Agriculture use zone 2 | 25.05 | 3.34% |
| 8 | Dry Agriculture use zone 3 | 16.2 | 2.16% |
| 9 | Parks and Open Space use zone | 2.05 | 0.35% |
| 10 | Proposed Parks and Open Space | 1.17 | 0.10% |
| 11 | Traffic and Transportation zone | 15.375 | 2.05% |
| 12 | Proposed Transportation zone | 0.675 | 0.09% |
| 13 | Aqua Activity Zone | 3.75 | 0.5% |
| 14 | Water re use zone | 1.2 | 0.16% |
| 15 | Water Bodies | 37.87 | 5.05% |
| | **Grand Total** | **750** | **100%** |

### 29.3 COMMERCIAL USE ZONE

All major commercial and business activities of the planning area are concentrated along the Pala- Poonjar road from college junction to central junction and this area is proposed as commercial zone and other commercial activities scattered throughout the planning area are also marked as commercial zone.

### 29.4 MULTI FUNCTIONAL USE ZONE

The Pala-Poonjar road, Erattupetta–Kanjirappally road and Erattupetta-Vagamon road are the major roads emanating from the town centre which acts as the development corridors of the town. The existing land use shows the mixed use development along these corridors. In order to regulate the development along these corridors and provide adequate land for future urban development a mixed zone named as multifunctional zone has been proposed.

### 29.5 RESIDENTIAL USE ZONE

Residential areas are scattered along the length and breadth of the town and hence residential zones are proposed throughout the town area. In addition to that residential uses are permissible in zones like Dry cultivation, Multi functional zone etc. with certain condition.

### 29.6 PUBLIC AND SEMI PUBLIC USE ZONE

The existing public and semi-public uses are proposed to retain as such. The public and Semi-Public zones are scattered all over the Planning area. In addition to that there are provisions for Public and Semi-Public uses in other zones also.

### 29.7 INDUSTRIAL USE ZONE

All the existing industrial land uses which are prohibited in other zones are proposed as exclusive Industrial Zone and an additional area proposed for Industrial development in Thevarupara. In the above zone, an area of 0.9 hectare is proposed as a project for land to be acquired for shifting the mini industrial estate located near Nadakkal junction. In addition to that there is provision for setting up industrial units in other zones also with certain restrictions.

### 29.8 TRAFFIC AND TRANSPORTATION USE ZONE

The proposed road network of the Planning area consists of roads of width 15.00 m, 12.00 m, 8.00 m and 6.00 m. The existing Bus stations have been included in

the transportation zone.

### 29.9 PROPOSED TRANSPORTATION ZONE

An area of 0.40 hectare is reserved as transport development zone for the expansion of Kaduvamuzhy bus stand and proposed truck terminal. Another 0.27 hectare is reserved near Vagamon road for transportation facilities.

### 29.10 PARKS AND OPEN SPACE USE ZONE

An extent of 2.05 hectares of land comprising of existing stadium comes under this zone.

### 29.11 PROPOSED PARKS AND OPEN SPACE

An extent of 0.74 hectare is reserved on the river side for developing a municipal park. Also an extent of 0.43 hectare is zoned at Mailadumpara for developing a happiness park.

### 29.12 DRY AGRICULTURE USE ZONE 1

86.25 hectares of land scattered throughout the planning area has been proposed as Dry agriculture zone 1. This area mainly consists of rubber plantations and mixed cultivation.

### 29.13 DRY AGRICULTURE USE ZONE 2

25.05 hectares of land spread in three locations in planning area has been proposed as Dry agriculture zone 2. This area is identified to be having potential for development in industrial use in future. Future developments in industrial sector in the town can be planned here.

### 29.14 DRY AGRICULTURE USE ZONE 3

An area of 16.20 hectares of land is proposed as Dry Agriculture Zone 3 in Valiyachan mala with ample scope for development in tourism sector located at the south west corner of the town.

### 29.15 WATER BODIES

Thekkanar, Vadakkanar and Meenachil River constituting the major water bodies in the Planning area. Zone also include other existing streams and ponds.

### 29.16 GREEN STRIP

A green strip of 3.00 m width shall be provided along the sides of Thekkanar, Vadakkanar and Meenachil river.

### 29.17 AQUA ACTIVITY USE ZONE

An area of 3.75 hectares which includes an abandoned quarry and surroundings is zoned as aqua activity zone, which has the potential to develop aquaculture and aqua tourism activities in future.

### 29.18 WATER RE USE ZONE

An area of 1.20 hectares which includes another abandoned quarry and surroundings is zoned as water re use zone, which has the potential to serve as a water source for irrigation if equipped with proper treatment facilities.

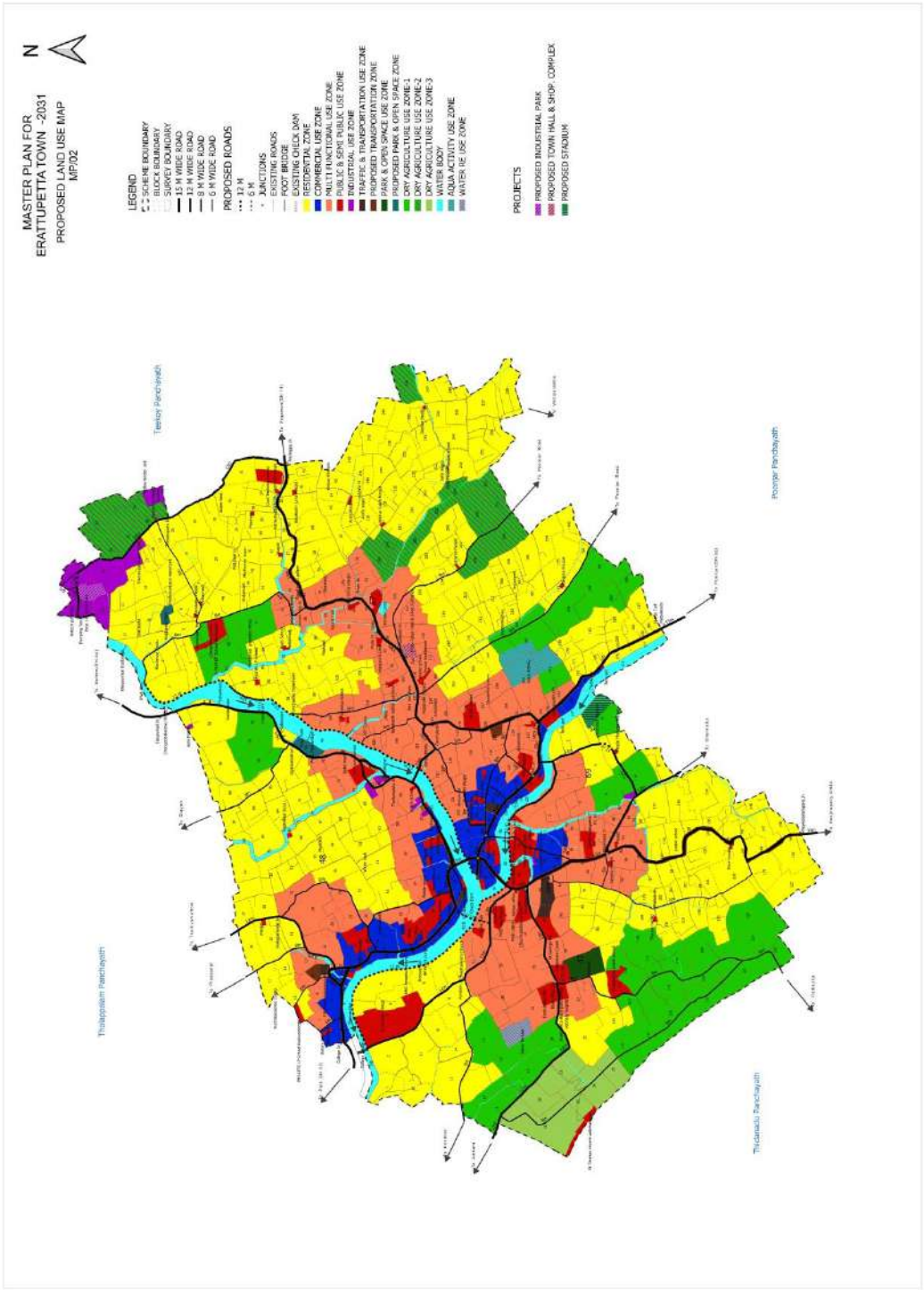



***Fig 29.1 Proposed land use map of Erattupetta Municipality***

# 30. TRANSPORTATION PLAN

## 30.1 INTRODUCTION

Transportation is one of the major sectors as far as an urban area is concerned and this chapter details the development proposals to be implemented in the transport sector within the plan period of 20 years in the Planning area. Due importance has been given for providing an efficient transportation system considering the future traffic also. Proposals for an efficient road network, terminal facilities, parking facilities and pedestrian facilities are included in this chapter.

Transport development plan for Erattupetta Municipality is prepared taking into account the existing traffic scenario and based on an evaluation of the future traffic on the base year network. Transport development schemes cover all the available modes of travel and are formulated so as to reduce the severe strain put on the existing road network. All committed development schemes were taken into account while formulating the transport development plan.

## 30.2 DEVELOPMENT STRATEGY FOR THE HORIZON YEAR

A well defined hierarchy of roads is totally absent for Erattupetta town. However, it can be said that the town has a partial ring and radial type of road network with missing links. Roads in the study area are congested due to narrow roads, narrow bridges, unauthorized parking, absence of segregated bus bays, absence of pedestrian facilities etc.

Even though there are no well defined ring and radial roads for the city as a whole, roads connecting Central Junction, Ahmed Kurickal Junction, Causeway Rd Junction, Aruvithura Church Junction, Aruvithura Bank Junction and back to Central Junction, act as existing short ring road network in Erattupetta. The roads which act as radial roads are College Junction–Muttom Junction Road, Ahmed Kurikal–MES Junction Road, Ahmed Kurikal–Market Road, Causeway Road Junction–Chennad Road Junction Road, Aruvithura College Road and Aruvithura–Poovarthodu Road.

The above links can be said to serve the purpose of ring roads, but have partially insulated the CBD areas of the city from the influence of local traffic. Roads pass

through short stretches which have built up areas on both sides, which make difficulty in further widening of road.

The SH-32 road passing through the heart of the town is the spinal cord of the town road network. SH-44 and SH-14 are the other important roads carrying heavy traffic. These roads carry major share of intra-city and inter-city traffic. These roads carries the traffic of its capacity at present and it will be very difficult to accommodate additional traffic in future. The traffic in the CBD area, especially from Muttom Junction to MES Jn. is very high and the traffic volume exceeds its capacity on this road stretch. The major reasons of the high traffic volume are concentration of activities like commercial, educational institutions, public and semi-public activities, location of bus station etc. Also in Sabarimala season the town has to carry additional traffic volume. The existing problems as well as the future projected traffic volume also considered for formulating the long term transportation plan for the horizon year.

The most important problem in the traffic and transportation sector of Erattupetta town is the congested central core with limited scope for road widening. Hence, emphasis has been given to develop alternative linkages so as to divert the traffic passing through the CBD area. This would also help to reduce the unwanted inter-mix of intra-city and inter-city traffic on urban roads within the central part of the town.

As the level of service of urban roads depend to a great extent by the capacity of intersections, the development proposals should give importance to increase the capacity of major intersections by proper planning and design of these junctions. Special emphasis should also be given to improve the pedestrian facilities and in developing off-street parking lots.

## 30.3 ROAD NETWORK

The widening of SH-14, SH-32 and SH-44 roads taking in to account of the anticipated traffic volume is to be given in the first priority and the proposed width of these roads are 15 m. A hierarchy of roads of 15 m, 12 m, 8 m and 6 m has been prepared in the road network plan and it is shown in fig 30.1. The lists of proposed roads with proposed widths are shown in Table 30.1.

The road network proposed will be implemented when the local body or concerned department take necessary action for acquiring land and constructing new roads.

***Table 30.1 List of Proposed roads***

| Sl. No | From | To | Avg Existing Width (in M) | Proposed Width (in m) | Name of the Road |
|---|---|---|---|---|---|
| **15.00m WIDE ROAD** | | | | | |
| 1 | Erattupetta jn. | Muttom | 12 | 15.00 | SH-44 (Muttom Road) |
| 2 | Erattupetta jn. | Pala | 12 | 15.00 | SH-32 (Pala Road) |
| 3 | Erattupetta | Kanjirapally Road | 12 | 15.00 | SH-44, Kanjirappally Road |
| 4 | Erattupetta jn. | Poonjar Road | 12 | 15.00 | SH-32, Poonjar Road |
| 5 | Erattupetta MES jn. | Vagamon | 12 | 15.00 | SH-14 Vagamon Road |
| 6 | Thottumukku cause way | Vagamon road connection | 9 | 15.00 | Nadakkal-Thottumukku causeway |
| **12.00 m WIDE ROAD** | | | | | |
| 7 | Aruvithura JN., | College Jn | 8 | 12.00 | College road |
| 8 | Aruvithura JN., | Ampara nirappel | 8 | 12.00 | Block office Road |
| 9 | Thekkekkara Cosway Jn | Thadavanal Bridge | 7 | 12.00 | Thadavanal river side road |
| 10 | Puthen pally jn | Chennadu road | 7.30 | 12.00 | Thadavanal bypass road |
| 11 | Thottumukku | Almanar School | 12 | 12.00 | Muttom road |
| 12 | Thottumukku | Almanar School | 3.5 | 12.00 | River side road |
| 13 | Kaduvamuzhy bus stand jn. | Thelliamattam | 8.5 | 12.00 | Thelliamattam road |
| 14 | Aniyilappu | Thevarupara road | 8.5 | 12.00 | Thevarupara road |
| 15 | Thekkekara | Chennad road | 8.5 | 12.00 | Chenad road |
| 16 | Kaduvamuzhy bus stand jn | Pala road | 9 | 12.00 | Old pala road |
| 17 | Lions club Jn | Pala Road | 2.5 | 12.00 | Proposed RCB link road |
| 18 | Ankalamman kovil | Karakkad Changadakadavu | New Road | 12.00 | Proposed RiverView Road 1 |
| 19 | Thekkekkara Cosway | College jn | New Road | 12.00 | Proposed RiverView Road 2 |
| 20 | Eettilakayam. | Mundakkaparambu | 3.5 | 12.00 | River side road |

| | | | | | |
|---|---|---|---|---|---|
| 21 | Thevarupara | | 3.50 | 12.00 | Thevarupara proposed link road |
| 22 | Changadakadavu | Municipal boundary | 6 | 8.00 | Proposed bridge |
| **8.00 m WIDE ROAD** | | | | | |
| 23 | Thazathu nadakkal | Panachikappara road | 6 | 8.00 | Kottukappally road |
| 24 | Kurikkal nagar | Thekkekkara | 8.6 | 8.00 | Thekkekkara causeway |
| 25 | Block office | Valiyachan mala | 4.9 | 8.00 | Stadium-mantha road |
| 26 | Lion's club jn. | Kondoor road | 8.2 | 8.00 | Kondoor road |
| 27 | Onnam mile | Karakad jn | 6 | 8.00 | Karakkad road |
| 28 | Kurikkal nagar | Thottumukku causeway | 6 | 8.00 | Municipal office road |
| 29 | Kurikkal nagar | Wagamon road | 8 | 8.00 | Market road |
| 30 | Market road | P.M.C Junction | 5 | 8.00 | PMC road |
| 31 | Ambara nirappel road | Valiyachan mala | 4.9 | 8.00 | Valiyachan mala road |
| 32 | Kaduvamuzhy | Thalappalam | 9 | 8.00 | Substation road |
| 33 | Rims Jn. | Vackaparambu | 5 | 8.00 | Vackaparambu road |
| 34 | Police Stn Jn | Rims Jn. | 5 | 8.00 | Police Stn road |
| 35 | Idakalamattom | Olayam Jn | 5 | 8.00 | Mathakkal road |
| 36 | Karakkad jn | Changadakadavu | 6 | 8.00 | Kocharuvi road |
| **6.00 m WIDE ROADS** | | | | | |
| 37 | Kaduvamozhy Bus stand | Rotary club jn | 3.3 | 6.00 | Idathumkunnu School road |
| 38 | Market road | Poonjar Road | 3.8 | 6.00 | Padippurakkal road |
| 39 | Chennadu Jn | Jawan Road | 6 | 6.00 | Sahaba road |
| 40 | Karakkad Jn | Thevarupara | 3.5 | 6.00 | Thevarupara link road |
| 41 | Aman Jn. | Arafa Jn | 3.6 | 6.00 | Arafa nagar road |
| 42 | Aman Jn. | Safa road | 4.8 | 6.00 | Safa nagar road |
| 43 | Thazathu nadakkal | Eattilakkayam | 4.5 | 6.00 | Eattilakkayam road |
| 44 | KSRTC Bus stand | Ettupank jn. | 5.6 | 6.00 | Jawan road |
| 45 | Wagamon road | Thottumukku causeway | 3 | 6.00 | Pamanthodu road |
| 46 | Thevarupara | | 5 | 6.00 | Part of Dumping yard road |
| 47 | Thadavanal byepass road | Proposed municipal stadium | New road | 6.00 | Proposed stadium road |

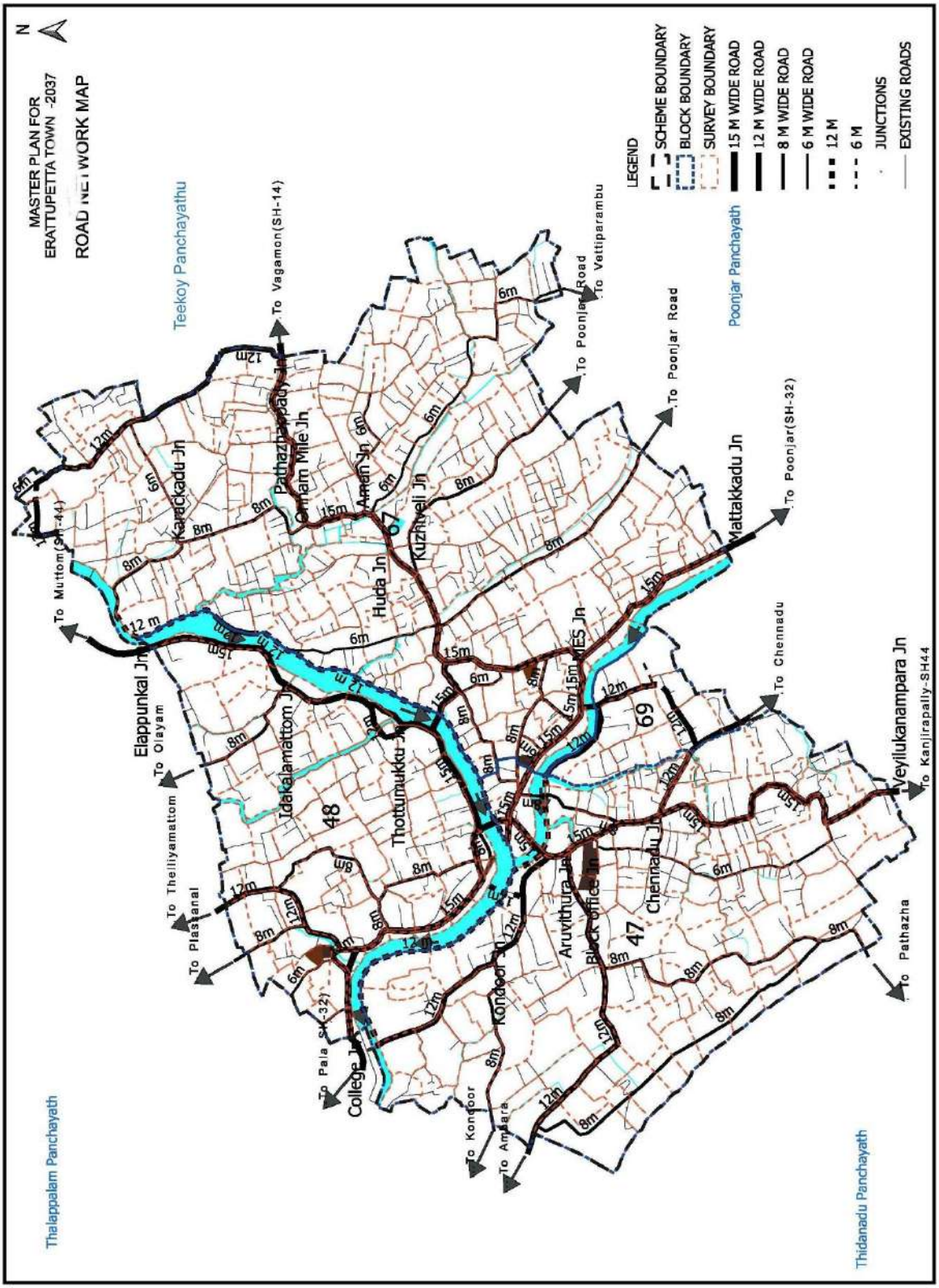
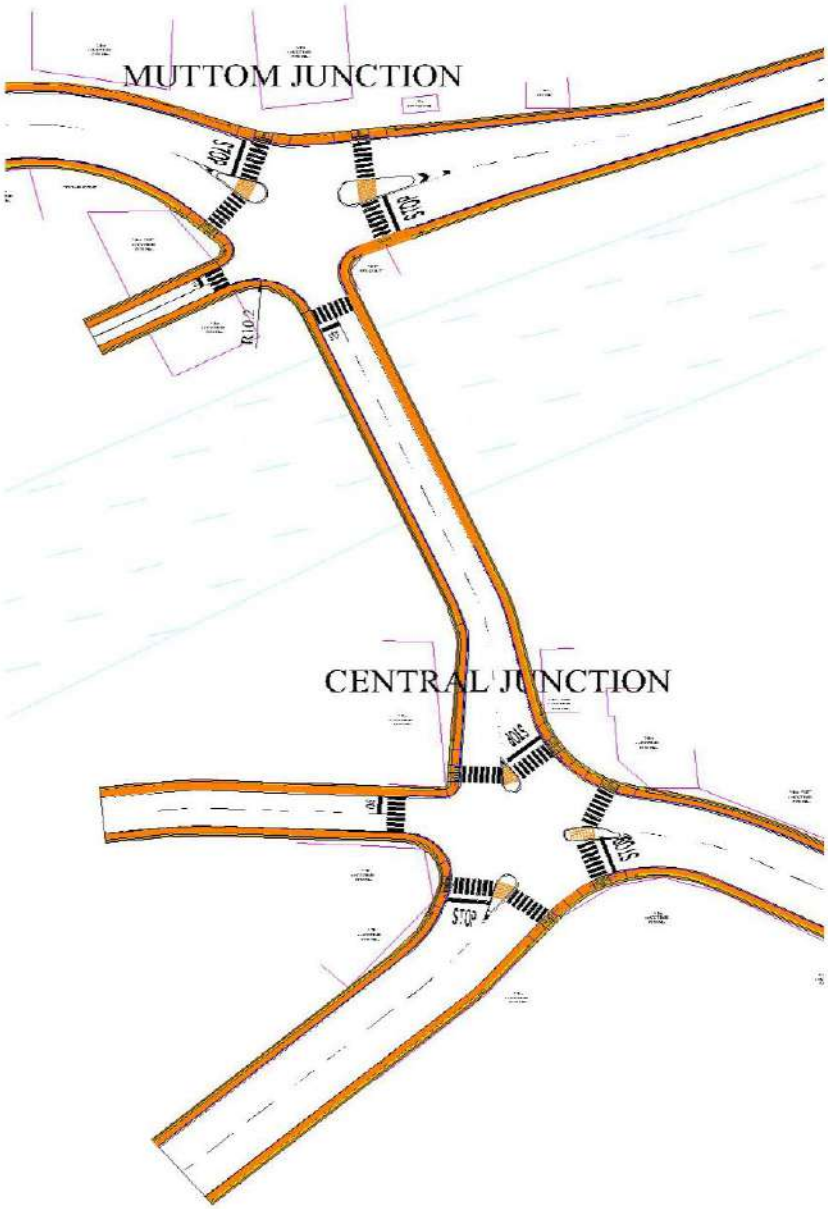



***Fig.30.1 Proposed Road Network Plan***

**Junction Improvements-** Adequate improvements are immediately warranted for the intersections *viz,* College Junction, Muttom Junction, Central Junction, Ahmed Kurickal Junction, Puthenpally Bypass Junction, MES Junction, Veilukanampara, Chennad Junction, Causeway Road Junction, Aruvithura Church Junction, Aruvithura Bank Junction, Thottamukku Jn, Illakayam, Kalathukadavu, Thazhathu Nadakkal, Nadakkal Junction, Aniyillappu, Aradhana Madom Junction




*Designed by NATPAC*

***Fig.30.2 Conceptual typical intersection design for Muttom and Central Jn***

## 30.4 OTHER PROPOSALS

### 30.4.1 Parking Facilities

As most of the roads in the CBD area do not have adequate width to accommodate on street parking, it is proposed to develop off street parking facilities at the following locations.

(i) As the existing private stand is proposed to be relocated, mild commercial cum multilevel off-street parking facility is proposed at the existing private stand near Puthenpally. This multilevel facility will cater to the needs of Market and other commercial centres.

(ii) KSRTC Bus Station, Proposed New Private Station near Thazhathu Nadakkal and Kaduvamuzhy Municipal Bus Station should be scientifically designed with adequate parking facilities. It will result in integration between different modes and the use of bus transport system will get a leap.

(iii) Developing an off-street parking space in the open space and Municipal vacant lands near Vadakkekara and Muttom Junction will reduce the on-street parking.

(iv) Pick up points and convenient parking for intermediate public transport (Passenger Auto rickshaw, Taxis) shall be provided within the city/town. Parking for light freight vehicles (Goods Auto Rickshaw, Goods Pickup) shall be provided at appropriate locations within the city/town.

(v) Developing an off-street parking space for light vehicles in the open space near mukkada.

(vi) Developing a parallel parking space along proposed river view roads.

### 20.4.2 Pedestrian Facilities

The pedestrian facilities that need to be considered are:

(i) Sidewalks or walkways: Sidewalks and walkways are “pedestrian lanes” that provide people with space to travel within the public right-of-way that is separated from roadway vehicles. Sidewalks are associated with significant reductions in pedestrian collisions with motor vehicles. For Erattupetta town, considering the scarcity of land availability, sidewalks with a width of 1.8 m to 2.5 m is proposed for all types of roads including state highways, major district roads and other district roads. It is proposed to provide pedestrian walkway from Kaduvamuzhy Bus Station to MES Junction on SH32, Thottamukku to Chennad Junction on SH44, MES Junction to Nadakkal on SH14.

(ii) Marked crosswalks and enhancements: Marked crosswalks indicate optimal or preferred locations for pedestrians to cross and help designate right-of way for motorists to yield to pedestrians. Crosswalks are often installed at signalized intersections and other selected locations. Marked crosswalks are desirable at some high pedestrian volume locations (often in conjunction with other measures) to guide pedestrians along a preferred walking path. For Erattupetta town, cross walk markings are desirable at all arms of the major intersections. Apart from these intersections, cross walk markings are proposed at major high pedestrian volume locations like educational institutions, transport terminals, hospitals and commercial centre's.

Detailed engineering surveys need to be carried out before finalizing the exact location and design of the pedestrian facilities at the proposed sites. Pedestrian facilities should be designed and implemented based on IRC 103:2012.

# 31. SECTORAL PROPOSALS

## 31.1 INTRODUCTION

The sector wise proposals are derived based on the development concept and development issues pertaining to the sector. Various aspects like economic feasibility, environmental feasibility etc. is considered for finalizing the proposals. The sector wise proposals are furnished below:

## 31.2 TRANSPORTATION

The analysis of this sector is included in chapter 13.

### 31.2.1 River view Roads

***Visualization of proposed River view road 1***

The masterplan for Erattupetta unveils an ambitious vision for enhancing the town's charm, particularly through the establishment of two river-view roads. The first of these roads stretches from Ankalamman Kovil near central jn to Karakkad Changadakadavu, tracing the scenic eastern shore of Vadakkanar. Envisioned as a 12-meter wide thoroughfare, the road not only prioritizes efficient transportation but also integrates parallel parking spaces to accommodate the needs of both residents and visitors. Along the river side, a cantilever walkway is proposed, providing a captivating riverside experience for pedestrians.

To ensure that the road remains a picturesque and well-maintained asset, the plan incorporates well-kept trees lining its length. Notably, the road plays a strategic role as it connects to Thodupuzha Road via a proposed bridge at its eastern end. This connectivity establishes the road as a convenient exit route for transit tourists traveling from Vagamon to Thodupuzha, alleviating congestion in the town's core area.

Beyond its utilitarian function, the road is poised to evolve into a vibrant and dynamic space for both locals and visitors. The land flanking the road holds the potential for commercial development, creating a bustling business area. On weekends, the road could transform into a lively hub, featuring food streets and retail business centers. To facilitate this transformation, ample parking and recreation areas are proposed, ensuring that the street becomes a destination for community gatherings and a source of economic vitality for the town. The strategic planning of this river-view road not only enhances the town's connectivity but also contributes to its economic and recreational vibrancy.

***Visualization of proposed River view road 2***

The second river-view road, elegantly linking Thadavanal Bridge to College Junction Bridge along the scenic shores of Thekkanar and Meenachil River, emerges as a pivotal element in the masterplan for Erattupetta. Conceptualized as a 12-meter-wide thoroughfare, this road not only ensures smooth vehicular flow but also incorporates parallel parking spaces to address the needs of commuters. To enhance

the pedestrian experience, a cantilevered footpath is proposed along the river side, allowing residents and visitors to enjoy the picturesque surroundings.

One of the key advantages of this road lies in its potential to serve as a bypass, seamlessly connecting Poonjar Road near Thadavanal to Pala Road near College Junction. By strategically avoiding the town's core area, this road offers a convenient and efficient route for commuters, alleviating congestion in the bustling center. The project envisions a proposed road connecting Kanjirappally Road to this river-view road, further enhancing accessibility and connectivity in the region.

Given its significance as a bypass connecting two state highways, it is suggested that the Public Works Department undertake the project. This not only ensures professional management but also emphasizes the road's importance in facilitating smoother transit through the busy town.

In a thoughtful touch, both river-view roads are designed to pass under Muttom Bridge and Aruvithura Bridge, preserving the aesthetic integrity of these structures and ensuring a seamless flow of traffic. Furthermore, these river-side roads play a crucial role in maintaining the cleanliness of the rivers, as buildings facing the water tend to uphold environmental consciousness. Altogether, the second river-view road emerges as a strategic and well-conceived addition to Erattupetta's infrastructure, harmonizing convenience, aesthetics, and environmental stewardship.

The alignment of the river view roads is such as to make use of the 'puramboke' land available along the river side along with private lands. The area to be reserved in private land for the roads will be to a depth of 6 m from boundary on that side.

The alignment of the road suggested are shown in Figure 31.1 and 31.2

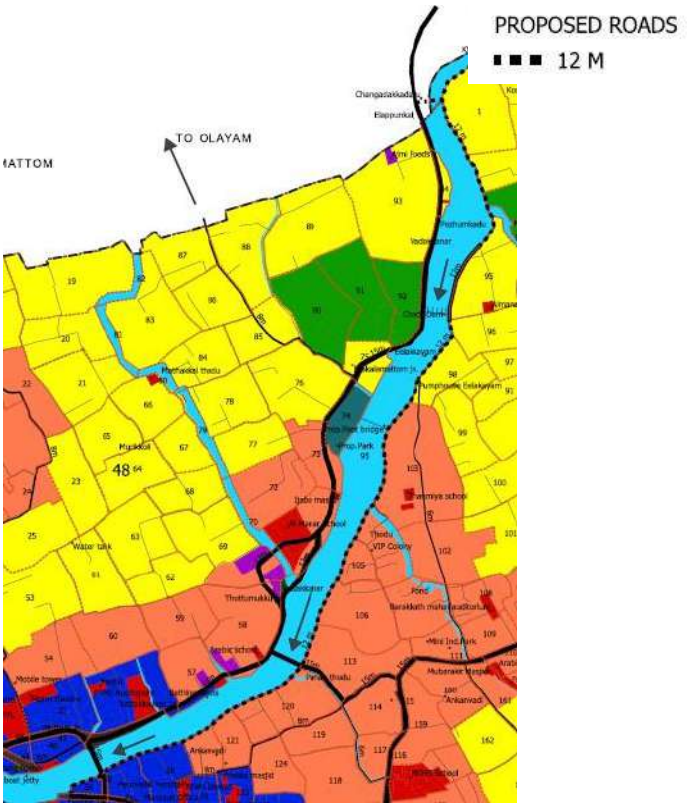



***Fig.31.1 Proposed alignment of river view road 1***

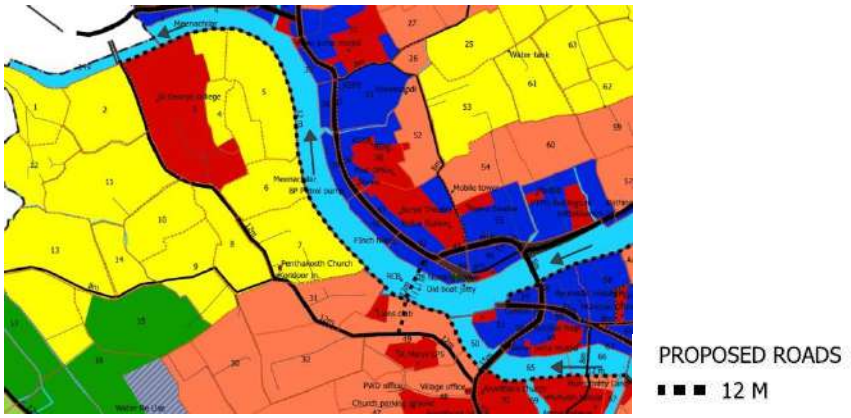



***Fig.31.2 Proposed alignment of river view road 2***

### 31.2.2 New Bridge at Changadakadavu

An impactful development proposal for the Changadakatav area envisioned is the construction of a new bridge across the Vadakkanar River. This strategic bridge is strategically positioned to connect the Thodupuzha Road to the envisaged River View Road on the opposite shore. The integration of this bridge, complemented by the proposed road, serves as a pivotal infrastructure project facilitating the seamless movement of vehicles from the Vagamon Road to the Thodupuzha direction.

Importantly, this new bridge and road combination is designed to optimize traffic flow without disrupting the core areas, ensuring a smooth and efficient transportation corridor.

In addition to its instrumental role in facilitating smoother vehicular movement, the proposed bridge at Changadakatav across the Vadakkanar River is expected to catalyze significant commercial development along the River View Road. As a critical link connecting Thodupuzha Road to the opposite shore, the bridge becomes a gateway to increased accessibility for businesses and commercial ventures. The improved connectivity provided by the bridge will likely attract investments, encouraging the establishment of shops, restaurants, and other commercial establishments along the River View Road. The location of the bridge is shown in Figure 31.3.

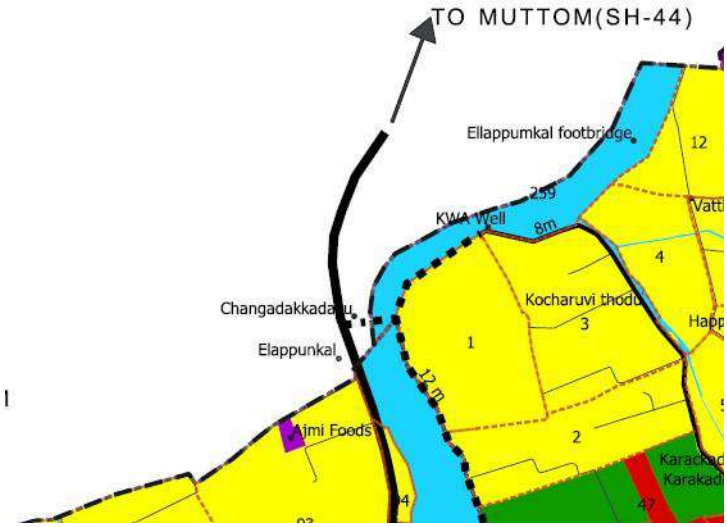



***Fig.31.3 Proposed location of bridge at Changadakadavu***

### 31.2.3 REGULATOR CUM BRIDGE

A regulator cum bridge in place of the Mukkada check dam is proposed. This innovative infrastructure would not only assist in controlling the water flow but also contribute to reducing silting in future.

The proposed bridge spanning the Meenachil River, connecting Pala Road to College Road, is poised to be a pivotal addition to the towns infrastructure. This strategic link promises to contribute significantly to the establishment of a complete inner circle of roads within the town. By seamlessly connecting two key arteries, Pala road and College road, the bridge not only enhances local connectivity but also

facilitates smoother and more efficient transportation throughout the town .The location of the Regulator cum bridge is shown in Figure 31.4.

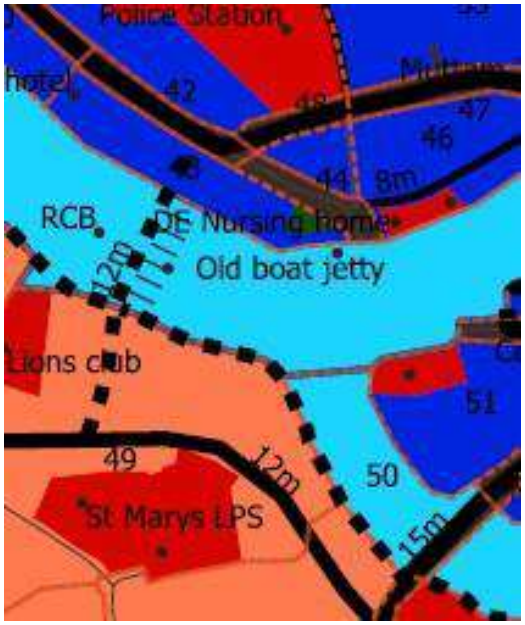



***Fig.31.4 Proposed location of regulator cum bridge***

### 31.2.4 PARKING SPACES

As Erattupetta experiences growth and urbanization, the challenge of parking availability will become a pressing concern. Currently, the only designated pay-and-park facility is situated in the church parking ground, leaving the rest of the city grappling with a lack of organized parking spaces. The consequence is evident, with cars lining the sides of busy roads, exacerbating congestion and hampering the smooth flow of traffic.

To address this issue, it is proposed to utilize available spaces for providing parking facilities. The wide stretch of the old road, extending from Pala Road to Mukkada, presents a promising opportunity to create designated parking spaces for a few vehicles. This initiative aims not only to alleviate the strain on existing parking areas but also to enhance traffic management and reduce road congestion.

The open space along the riverside near Cosway Bridge emerges as another viable location for additional parking spaces. By transforming this area into a designated parking zone, the city can efficiently utilize the available space and accommodate a number of vehicles. This not only contributes to organized urban planning but also serves to enhance the overall aesthetic appeal of the riverside area.

Furthermore, the proposed river-view roads, designed to facilitate parallel parking, offer a practical solution to the parking challenge. These roads, running parallel to the core area of the town, provide convenient access for commuters to reach business places. By strategically integrating parking spaces along these river-view roads, the city can capitalize on its infrastructure development to address the growing parking needs effectively.

## 31.3 TRADE AND COMMERCE

Erattupetta was a major trade centre of Kottayam District in olden days and it declined as Pala emerged as a market town. For rejuvenating Erattupetta as a market town some projects are proposed.

The local retail trade stands to experience a significant upswing if efforts are directed towards attracting transiting tourists to spend time in the town. The envisioned river view roads, along with strategically placed foot bridges and a proposed park, emerge as key elements that could play a pivotal role in achieving this objective. These infrastructural developments not only enhance the towns aesthetic appeal but also create inviting spaces for visitors. The river view roads offer scenic routes, the foot bridges provide unique vantage points and the park serves as a recreational hub all of which contribute in making the town more attractive to tourists, as well as people of Erattupetta and surroundings. As a result a heightened tourist presence is likely to boost the local retail sector, as visitors explore and engage with the offerings of the town's businesses, fostering economic growth and community development.

### 31.3.1 SHOPPING AREAS

The current land use pattern in the town highlights commercial development around Central junction, Muttom junction and along the side of state highways however interior areas remain as under developed. To address this, future urban planning is suggested to focus on Nadakkal and Block office junction designating them as multifunctional zones. These zones are envisioned to host various urban activities with a proposal for international level shopping complexes. These complexes are anticipated to include comprehensive facilities such as loading and unloading areas, storage spaces and waste management systems. Additionally Nadakkal being a part of the multifunctional zone is poised to serve as a crucial transit point for tourists heading to 'Wagamon' and 'illikkal kallu'. This presents an opportunity for the simultaneous development of tourism related facilities in Nadakkal, contributing to the overall growth and diversification of the towns urban landscape.

Shopping centres in private sector may also be welcomed in Muttom junction, Aruvithura junction and Kaduvamuzhy junction.

### 31.3.2 Market

Markets with modern facilities are to be included in the new market complex. Mini markets are proposed at Kaduvamuzhi and Aruvithura.

### 31.3.3 Vendors and Hawkers

The sides of proposed walkway along the side of thekkanar can be identified and designated as a prime street vending zone, providing a structured and conducive space for informal economic activities

Designating street vending zones will help the coexistence of urban development and informal economic activities. By allocating specific areas for street vending, cities can strike a balance between fostering economic opportunities for vendors and maintaining a structured urban environment. These designated zones can be strategically chosen to minimize conflicts with pedestrian traffic, to ensure public safety, and to be in harmony with existing businesses. Such an approach not only acknowledges the importance of street vending in providing livelihoods but also enables municipalities to regulate and manage these activities more effectively. The integration of street vending zones into urban planning, as facilitated by initiatives like the National Urban Livelihood Mission, contributes to a more inclusive and vibrant cityscape where informal businesses can thrive without compromising the overall urban development goals.

The location suggested for street vending is shown in fig 31.5

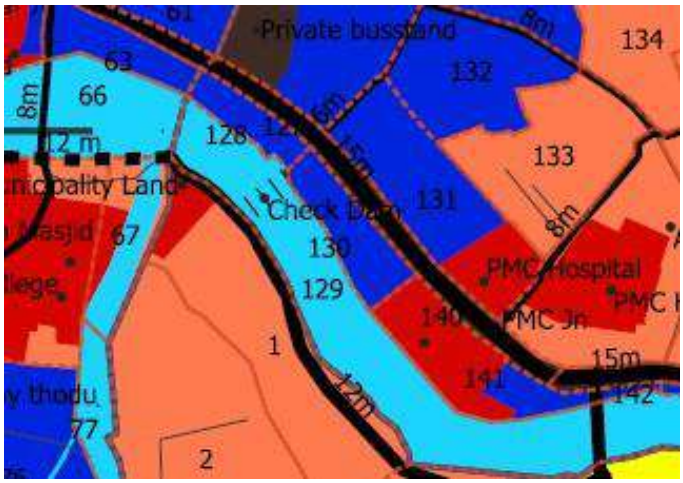



***Fig.31.5 Proposed location for street vending along north side of Thekkanar***

### 31.3.4 Truck Terminal

A truck terminal is proposed near Kaduvamuzhi by acquiring land behind the bus stand. Kaduvamuzhi is the ideal location for a truck terminal in the town, owing to its strategic geographical advantage. Situated away from the town's central core, Kaduvamozhy offers a prime solution to the persistent issue of congestion. Allocating space for trucks in this locale not only ensures smooth traffic flow within the town but also contributes to a safer and more efficient transportation system. The accessibility of Kaduvamozhy from the state highway further strengthens its appeal, facilitating easier movement of trucks to and from the terminal. This location possesses the potential to evolve into a regional terminal, serving not only Erattupetta, but also the surrounding areas. Such development holds the promise of generating numerous job opportunities

A dedicated truck terminal serves as a critical hub for providing a centralized location for loading, unloading, and distribution. Beyond its logistical advantages, a truck terminal contributes significantly to reducing traffic congestion on local roads, enhancing overall road safety for both drivers and pedestrians. Moreover, the establishment of such a facility promotes environmental sustainability by optimizing transportation routes and minimizing the environmental impact associated with freight movement through residential areas.

The location for the proposed truck terminal is shown in Figure 31.6.

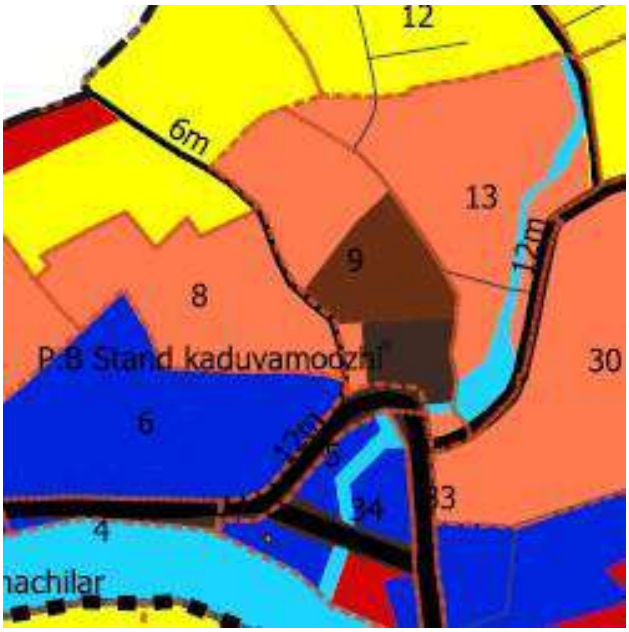



***Fig.31.6 Proposed location for truck terminal***

## 31.4 INDUSTRY

There are no major industries within the town and a few small scale furniture industries are functioning around Nadakkal area. Industrial zone is proposed near Thevarupara for shifting small industrial units spread around Nadakkal to this region.

The current mini industrial estate situated near Nadakkal along the roadside in a bustling area is slated for relocation to Thevarupara where an industrial zone has been proposed. An area of 2 hectares is marked at Thevarupara as a project for this purpose This move holds significant promise for the optimisation and expansion of industrial activities in a more suitable and designated setting. Thevarupara, being earmarked as Industrial zone, offers strategic location that is conducive to such endeavors, providing the necessary infrastructure and space for businesses to thrive. The location of the industrial zone is shown in Figure 31.7.

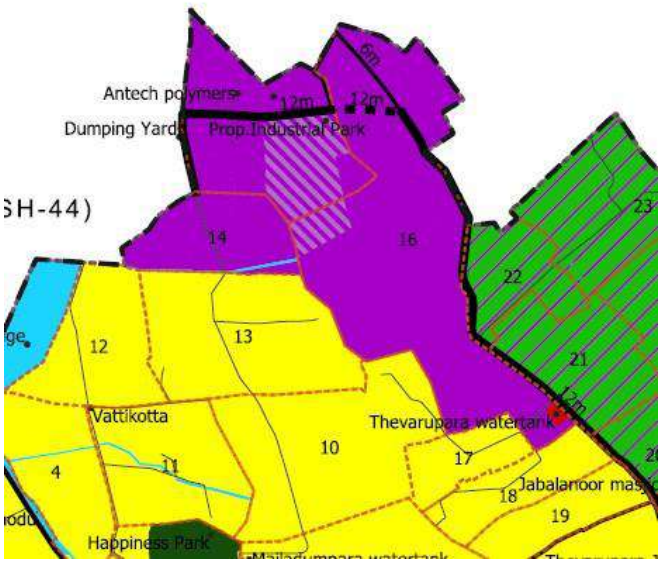



***Fig.31.7 Proposed location for industrial zone and proposed industrial park***

### 31.4.1 Spices Trading Centre

The proposal for a spices park in the town presents a strategic opportunity for economic development, and an ideal location for its establishment is the current site of the municipal office. As plans are underway to relocate the municipal office to a more convenient location, the vacated space becomes an excellent prospect for the spices park. The central location of the municipal office provides easy access and visibility, crucial factors for the success of the spices park. This relocation strategy not only optimizes the use of existing infrastructure but also transforms an administrative space into a hub of economic activity.

The introduction of a spices park in the town is a pressing necessity that can significantly contribute to the economic and agricultural development of the region. The town, with its rich agricultural heritage and proximity to spice-producing areas, is well-suited to host a dedicated spices park. Such a park would serve as a centralized facility for the processing, packaging, and distribution of a variety of spices, thereby streamlining the supply chain and ensuring the efficient utilization of local agricultural produce. Beyond its economic implications, the park would play a crucial role in creating employment opportunities, benefiting local farmers, entrepreneurs, and skilled workers. Moreover, it has the potential to attract investments and promote the town as a hub for the spice industry, fostering both regional and national economic growth.The location of the industrial zone is shown in Figure 31.8.

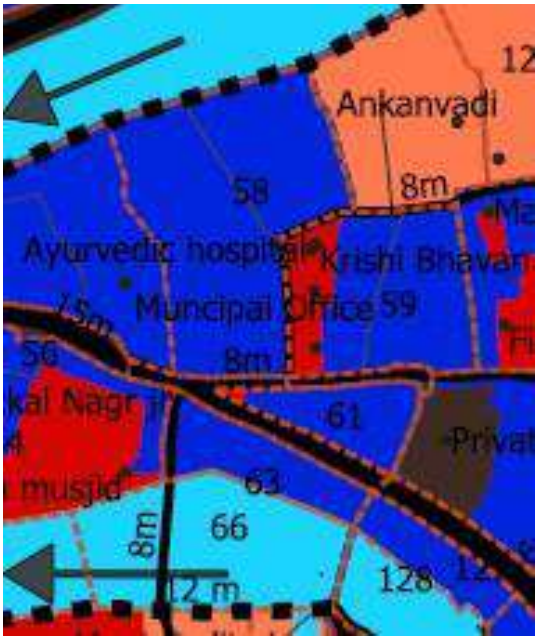



***Fig.31.8 Proposed location for spices trade centre***

### 31.4.2 Labour bank

The town area is facing lack of supply of labourers and hence one labour bank is proposed to meet this problem. The details of the labourers may be kept in a register in the municipality and the labourers can be supplied from the labour bank based on demand. This programme can be implemented through the Municipality.

## 31.5 AGRICULTURE AND ANIMAL HUSBANDRY

### 31.5.1 Terrace cultivation

Even though 36% of town area is under dry cultivation zone and ample scope for irrigation facilities are existing, vegetable production is very limited in town area. By

promoting terrace cultivation and grow bag cultivation, self sufficiency in the production of commonly used vegetable can be attained to some extent.

### 31.5.2 Floriculture

Floriculture can be promoted to meet the local demands utilizing the irrigation facilities available.

### 31.5.3 Poultry and broiler farm

Even though demand for meat products are very high in municipal area poultry farms are very limited in number due to the high residential density nature of the town. More Poultry farms may open out in nearby Panchayats like Teekoy, Poonjar etc for meeting the demand of the municipality.

### 31.5.4 Slaughter house

Slaughter house is presently functioning near to high density residential area is to be shifted from there. Fund for land acquisition at Thevarupara is included in the budget of Municipality for establishing a new slaughter house with modern facilities at Thevarupara.

## 31.6 HOUSING

Even though structural condition of 40% of houses are good, some areas are identified with dwellings of poor condition. These can be included in LIFE project for renovation works. Nearly 400 applications are received under LIFE project and suitable locations have to be identified.

### 31.6.1 Slum Area

Kadaplakkal colony, Haji colony, Vazhamattom colony, Myladumpaara colony, Kottukappally colony Chirappara colony, Aasary colony, Vanjankal colony etc are the colonies in Erattupetta. These include dwellings with area less than 3 cent and basic facilities are lacking. Apartments can be proposed to rehabilitate these families under LIFE project.

### 31.6.2 New houses

As per 2011 census, population density of Erattupetta town is 3960 and it is assumed that density may reach above 6000 in next ten year period. Hence it is necessary to control the horizontal development of housing sector and promote vertical development.

## 31.7 DRINKING WATER

Most of the water demand of Erattupetta town is satisfied with many small scale drinking water schemes. KWA had started 3 projects in 1970 but are not functioning properly. Projected population for 2037 is 37300 and demand is 5.595 lpcd. Planning proposals are very needful for the future high water demand.

### 31.7.1 Projects Identified

1. Augmentation of existing water supply schemes and formation of new ones.
2. A new Intake well is proposed near Nedunkeethi Kayam and overhead tank at Mattakkadu kunnu for meeting the water demand from Mattakkadu kunnu, Vanchankal, Kottukappally draught affected areas.
3. The existing three projects under KWA need augmentation. The intake well for Erattupetta town scheme is located near Town check dam and the tank exists near Govt PHC compound. A new tank of large carrying capacity is to be constructed for benefitting the areas of Aruvithura, Thekkekkara, and Town area. All the damaged pipes are to be replaced and new distribution line to be installed for Thekkekara region.
4. Thevarupara Scheme under KWA also needs renovation.
5. Thidanadu scheme under KWA needs new source.
6. 20 other small water supply schemes functioning under (JJP) meet the demand of the town to certain extent. These water supply schemes are functioning without any treatment works. Proper treatment plants are to be installed with these schemes.
7. The implementation of the water authorities project, channeling water supply to the municipal area from the Malankara dam through the Amrut project, marks significance stride towards augmenting the availability of water in the town. This strategic initiative not only ensures a more reliable and sustainable water source but also addresses the growing demands of the municipal area. Drawing water from ‘Malankara dam’, a key reservoir signifies a commitment to modern and efficient water management practices. As a result, residents and businesses and the town stand to benefit from the increased access to clean and plentiful water resources promoting both public health and economic development.

### 31.7.2 Rainwater Harvesting

Municipality can take up water harvesting techniques.

## 31.8 ENERGY

Power sector has major role in Town development.

### 31.8.1 Improvement of Production and Distribution

With the commissioning of Marmala Mini Hydro electric project, power distribution in municipal area will be improved. Electricity shortage problem can be met with Areal bunched cable (ABC). More transformers are to be placed.

### 31.8.2 Street Lighting

High mast lights are to be installed at major junctions of the town area.

### 31.8.3 Non Conventional Energy

Solar energy, Bio gas plant, green building concept etc to be introduced.

### 31.8.4 Electrification of Houses

Electrification of all houses especially the houses of economically weaker section.

## 31.9 WASTE DISPOSAL

It is estimated that the total generation of solid waste of the town by the year 2031 is 5 tonnes / day and proper treatment plant to be installed for handling this.

### 31.9.1 Solid Waste Collection

Presently waste collection is carried out from major road side only by municipality which is to be extended to the whole municipal area.

### 31.9.2 Solid Waste Disposal

Existing plant at Thevarupara Dumping yard to be completed and new modern treatment plant to be introduced at Thevarupara dumping yard.

Erattupetta is included in the list of municipalities to implement solid waste management system by Kerala state solid waste management project. A proper utilization of the above project can address the solid waste problems in the town.

### 31.9.3 Household disposal Units

Pipe compost, portable biogas units etc. to be introduced for processing the wastes at the generating points itself.

### 31.9.4 Septic tanks

Provide subsidy to economically weaker sections for constructing septic tanks. Septic sewage management project by sewage wing of KWA is also under planning stage.

### 31.9.5 Public comfort station / E- Toilets

In response to the escalating commercial activities in areas like Thekkekkara and along Kanjirappalli Road, the establishment of neat public comfort stations becomes imperative. Recognizing the surge in economic activities, these comfort stations will cater to the needs of both residents and the increasing number of visitors, ensuring a clean and convenient environment. Moreover, with the realization of the proposed River View Road project, it is prudent to foresee and plan for public comfort stations along this route.

In light of prospects in the city as a tourism transit station, the need for well-maintained and neat public comfort stations becomes paramount. As the city becomes a transit hub for tourists, providing clean and accessible public facilities is not only a matter of convenience but also an integral aspect of enhancing the overall visitor experience. Neat comfort stations play a crucial role in catering to the basic needs of travelers, ensuring their comfort and satisfaction during their stay. Additionally, these facilities contribute to the city's image and reputation as a tourist-friendly destination, fostering positive impressions among visitors. Recognizing the significance of clean and well-equipped public comfort stations aligns with the city's commitment to offering a welcoming and enjoyable environment for both residents and tourists, ultimately boosting the city's appeal and economic prospects.

## 31.10 EDUCATION

More Higher education centers are needed considering the young population of the town.

### 31.10.1 Finishing School

Finishing schools giving training in Arabic and English language are to be introduced.

### 31.10.2 Study Centers

Study centers are to be introduced on subjects like agriculture, tourism, spice research etc. in existing colleges.

### 31.10.3 Government ITI and Technical School

Erattupetta Technical School is under construction. An industrial training institute is proposed near the land where technical school is functioning. The successful establishment of the project hinges on the collaborative efforts and cooperation of various government departments.

The establishment of an Industrial Training Institute (ITI) in Erattupetta is imperative to address the growing demand for skilled workforce in the industrial sector and to promote local economic development. Such an institute would play a pivotal role in bridging the gap between industry requirements and the skill set of the local workforce. By offering specialized training programs in various trades and technical skills, the ITI can empower individuals with the expertise needed for employment in local industries. This not only enhances employability but also contributes to the overall industrial growth of the region.

### 31.10.4 Research centre

Advanced research centers can be established in the existing colleges.

### 31.10.5 Improvement of Infrastructural facilities and modernization of Government and aided schools

New buildings to be constructed for Government High school Erattupetta and Government Muslim L.P School. Ensure that all the schools are provided with playground, toilets, computer lab, Language lab, Internet facilities, vehicle, drinking water etc.

## 31.11 TOURISM

There is limited potential for tourism within the town. But the town has location advantage and proposals in the nature of supporting facilities are included.

The proposed river view road alongside of Vadakkanar can be developed as a happening street in evenings to tap transit tourists from Vagamon. The river side walking paths, footbridge across river could attract transit tourists, if provided with sufficient refreshing and parking facility and food streets.

### 31.11.1 Farm / Pilgrim tourism

The rambuttan plantation near Valiachan mala and the church and the cross which is the highest cross in Asia attracts so many tourists and the area can be developed as a pilgrim cum farm tourism centre.

### 31.11.2 Tourism Circuit

Pilgrim centers like Murugan mala, Thangal para, Valiachan mala and Bharananganam Alphonsa church and tourist places like Wagamon, Elaveezhapoonchira, Illikkal kallu, Marmala waterfalls are also situated near to this municipality. A tourism circuit can be developed connecting all these places.

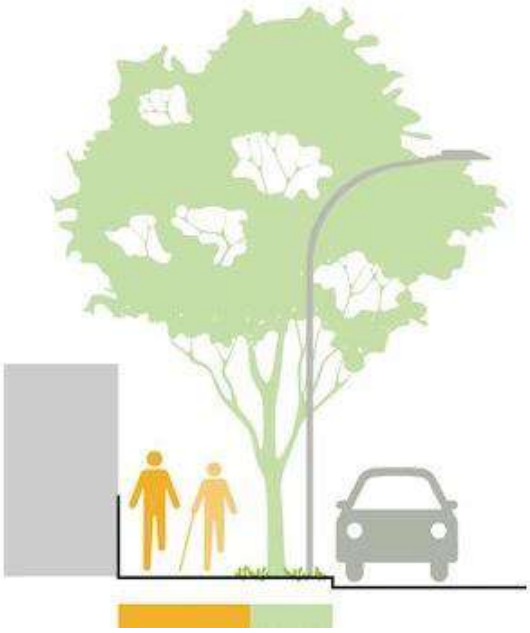
### 31.11.3 River Tourism

Explore the potential of Meenachil River by providing supporting facilities

### 31.11.4 Aesthetic beauty of the town

**FOOT PATHS**

The need for accessible footpaths in the city is indisputable, considering the fundamental role they play in fostering inclusivity and ensuring the well-being of all residents. Accessible footpaths are essential for people with mobility challenges, parents with strollers, and the elderly, enabling them to navigate urban spaces safely and independently. Moreover, well-designed footpaths contribute to a more walkable and pedestrian-friendly environment, promoting active lifestyles and reducing reliance on vehicular transportation. By investing in accessible footpaths, the city not only addresses the needs of its diverse population but also enhances its overall urban infrastructure, creating a more welcoming and inclusive community for everyone. This proactive approach aligns with the principles of sustainable urban development and promotes a city that prioritizes the accessibility and comfort of its residents.



Introducing a model stretch of road with expansive pedestrian paths from the entrance of the city on the Pala Road to the Kaduvamozhy region is a visionary initiative that can set a standard for urban development. This strategically chosen area offers ample space to incorporate pedestrian-friendly facilities, providing a safe and aesthetically pleasing environment. By focusing on this gateway portion of the town, the model stretch can serve as an exemplar for the rest of the city, showcasing the importance of prioritizing pedestrian infrastructure. Furthermore, extending this approach to the proposed River View Road underscores a commitment to comprehensive urban planning, ensuring that even new developments incorporate ample pedestrian facilities. Such initiatives not only enhance safety and accessibility but also contribute to the overall charm and functionality of the city, fostering a sense of community and well-being among its residents.

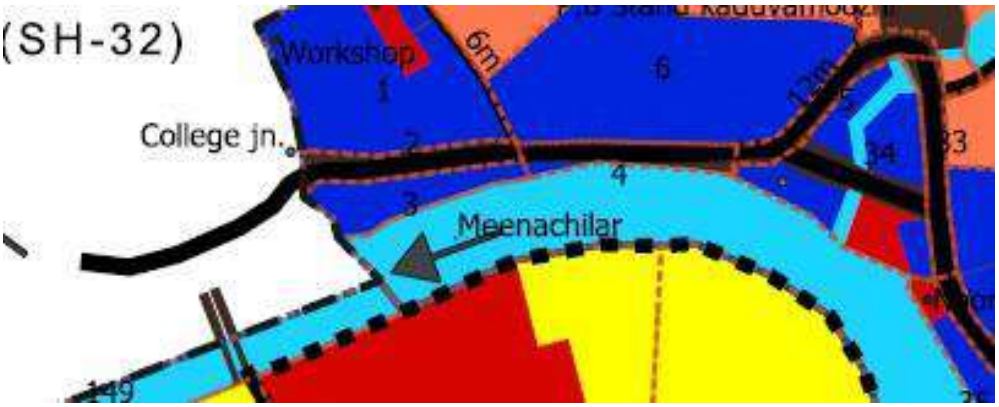



***Fig.31.9 Proposed location for model foot path***

## WALKWAYS

Walkways are proposed along the side of river. The proposal for cantilever walkways along the east side of Thekkanar and the north side of the Meenachil River, spanning from Mukkada to the municipal boundary, holds great promise for Erattupetta. These elevated pathways not only offer scenic vistas but also introduce a new business opportunity for buildings facing the rear of the river. The integration of walkways along these riverbanks is poised to not only enhance the aesthetic appeal of the town but also foster responsible waste management. As pedestrians frequent these walkways, the visual aspect of the riverside will naturally improve over time, discouraging the dumping of wastes. To further support this initiative, it is imperative to provide strategically placed dustbins along the walkways, ensuring easy access for residents and visitors alike. This comprehensive approach not only promotes business prospects but also contributes to the town's overall cleanliness and visual charm, aligning with the vision of a vibrant and aesthetically pleasing Erattupetta.

Preserving the aesthetic charm of a densely populated town while facilitating development poses a unique challenge, but a series of thoughtful measures can be implemented to reclaim the beauty and heritage of Erattupetta. A paramount concern is ensuring clean footpaths and unobstructed pedestrian walkways in the bustling business area. By prioritizing the upkeep of footpaths, pedestrians can navigate the town seamlessly, enhancing both safety and convenience.

To further enhance the visual appeal of the town, periodic checks on billboards and other displays obstructing pedestrian ways are essential. Regular monitoring and removal of such obstructions not only contribute to a clutter-free environment but also promote a more visually pleasing and organized urban landscape. Directions and signage can be displayed in an aesthetically pleasing manner, contributing not only to functionality but also leaving a positive impression on commuters and visitors.

One distinctive feature of Erattupetta is the presence of buildings with rear sides facing the river. Unfortunately, these aspects of the structures are often neglected, affecting the overall appearance of the town. An innovative initiative can be undertaken, fostering collaboration between merchants, landowners, and the community to ensure a pleasing and well-maintained appearance for the river-facing sides of buildings. By collectively investing in the upkeep of these areas, the town can rejuvenate its visual allure and showcase its unique heritage.

This multifaceted approach, focusing on clean pedestrian pathways, periodic checks on obstructions, aesthetically pleasing signage, and collaborative efforts to enhance the appearance of river-facing buildings, offers a comprehensive strategy to balance development with the preservation of Erattupetta's aesthetic character. By integrating these initiatives into urban planning, the town can celebrate its heritage while embracing progress, creating a harmonious and visually appealing environment for both residents and visitors alike.

## 31.12 HEALTH

A health facility as per standard for the population of the town is not available in Erattupetta.

### 31.12.1 Up gradation of F.H Centre

Upgrading the Family Health centre by constructing new blocks to a specialty hospital.

### 31.12.2 Emergency Medical services

An emergency Medical service with all necessary equipments with priority for aged people.

### 31.12.3 Ayurveda Hospital

Existing Hospital has no proper infrastructure and hence it may be renovated or a new building may be constructed as per the standards to meet the needs of the people in the town.

### 31.12.4 Homeopathic Hospital

Up gradation of the existing building and additional facilities to be introduced.

### 31.12.5 Centre for Aged and disabled people

One Bud’s school is functioning at Nadakkal and clinic to be started for the care of Aged people, disabled children, mentally retarded person etc.

### 31.12.6 Health Tourism

Explore the chances of health tourism.

## 31.13 CIVIC FACILITIES, CULTURE

Recreational and other civic facilities are inadequate in the town.

### 31.13.1 Parks

**RIVER SIDE PARK**

A visionary project is proposed to establish a picturesque riverside park, adjacent to the Thodupuzha road along the banks of the Vadakkanar River. The proposed park at Edakkalamattam, near Thodupuzha road, promises to be picturesque addition to the city's landscaps, Nestled along the riverside, the park will benefit from the natural beauty of the surroundings, creating a serene and calming environment for visitors. Its strategic location near the road ensures excellent accessibility, making it convenient for both locals and tourists to enjoy the park's amenities. An exciting feature of the project is the proposed hanging foot bridge that will connect the park to the other shore, providing a unique and immersive experience for visitors. This bridge will extend towards the envisioned river view road, further enhancing connectivity and allowing individuals to explore the scenic beauty of the area. Additionally, the provision of ample parking along the river view road ensures that the park remains easily accessible, encouraging community engagement and fostering a vibrant public space for recreation and relaxation.

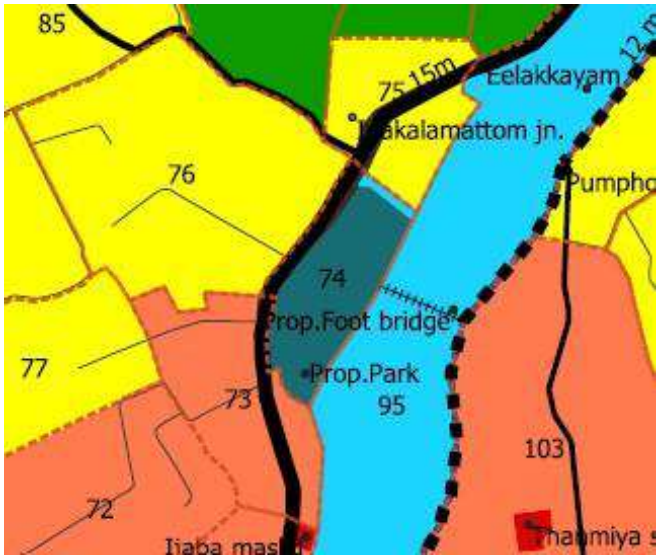



***Fig.31.10 Proposed location for river side park***

## HAPPINESS PARK

A happiness park is proposed at Mailadumpara. The proposed park at Mailadumpara, situated atop the eastern hills of Erattupetta, promises to be a haven of tranquility and scenic beauty for the local residents. Perched upon a rocky landscape, the park will offer panoramic views, showcasing the natural splendor of the surrounding area. The inclusion of a small garden, strategically placed sitting areas, and an open-air stage will transform Mailadumpara into a vibrant recreation area. With the focus on creating a communal space, the park aims to become a cherished meeting place for local residents. As the sun sets over the hills, casting its warm hues upon the landscape, the park will provide an ideal setting for gatherings, fostering a sense of community and shared

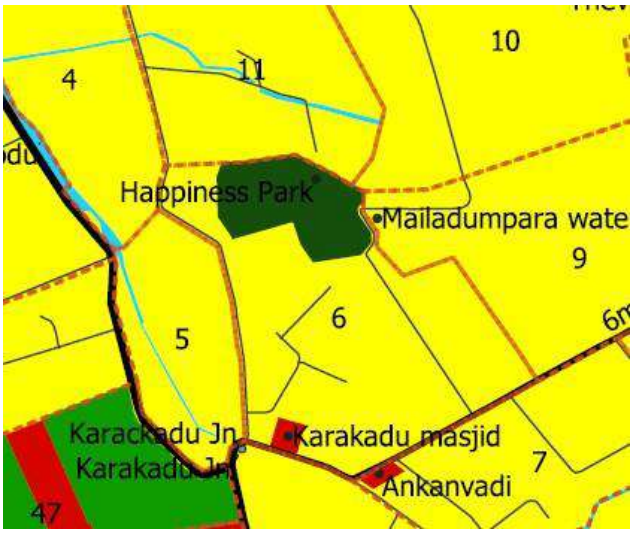



***Fig.31.11 Proposed location for happiness park***

enjoyment of the stunning vistas. This proposed park not only accentuates the natural beauty of Mailadumpara but also serves as a thoughtful initiative to enhance the quality of life for the residents of Erattupetta.

### 31.13.2 Stadium

Renovation of Aruvithura stadium.

**Proposed municipal stadium**

An area of 2 hectare is marked in the proposed land use map as a project for new municipal stadium near Thadavanal area.

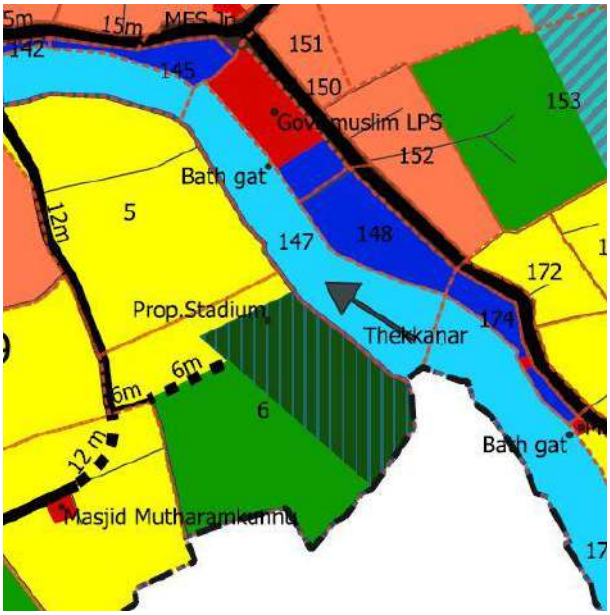



***Fig.31.12 Proposed location for municipal stadium***

### 31.13.3 Sports Complex

A sports complex adjacent to stadium with modern facilities for gymnasium, play ground for different games etc. is also proposed.

### 31.13.4 Town Hall/ Library

A Town hall and shopping complex is proposed near Nadakkal facing Vagamon road. Establishing a town hall to the current site of the mini industrial estate emerges as a judicious decision with several advantageous factors. The proposed shift of the mini industrial estate to Thevarupara, aligning with the proposed industrial zone, frees up a prime location for the establishment of the town hall. Positioned near the state highway, this site not only ensures easy accessibility for residents but also

enhances the town hall's visibility and prominence. Moreover, the available spacious land provides ample room for the development of parking facilities, addressing a crucial aspect of accommodating visitors during community events and town meetings.

The need for a town hall is essential for fostering civic engagement, community cohesion, and effective governance. A town hall serves as a central hub for local government activities, providing a dedicated space for public meetings, town forums, and community events. It acts as a symbolic representation of our collective identity and shared values, reinforcing a sense of belonging among residents. Furthermore, a town hall serves as a platform for open dialogue between local authorities and community members, facilitating discussions on important issues, policies, and initiatives. The establishment of a town hall not only promotes transparency in local governance but also strengthens the democratic fabric of the community by encouraging active participation and collaboration among its residents

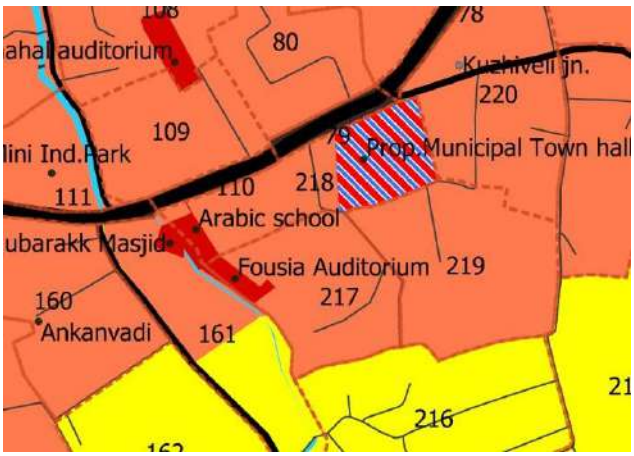



***Fig 31.13 Proposed location for Town hall***

### 31.13.5 Hanging Foot bridge

As part of the comprehensive development plan for the area, an innovative proposal introduces a hanging footbridge near Edakkalamattam, linking the proposed park with the envisioned River View Road on the opposite side. This visionary project not only seeks to enhance accessibility but also contributes significantly to the aesthetic charm of the location. The hanging footbridge, spanning across the Vadakkanar River, not only serves as a scenic pathway but also addresses practical aspects of commuting. In addition to promoting a seamless connection between the park and the River View Road, the bridge allows for the incorporation of parking spaces along the proposed road, ensuring convenient access for visitors. This thoughtful integration of infrastructure not only elevates the visual appeal of the Mathakkal area but also emphasizes the importance of creating well-connected and user-friendly public spaces for the community to enjoy.

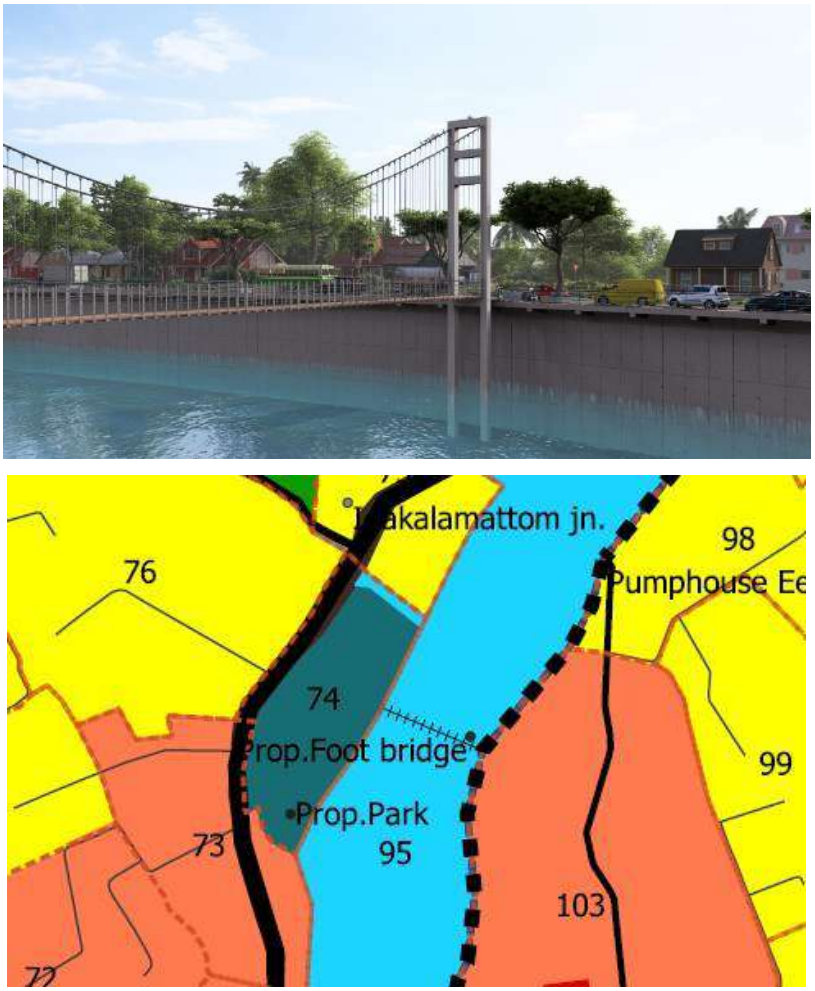



***Fig 31.14 Proposed location for Hanging foot Bridge***

## 31.14 SOCIAL WELFARE, SECURITY

For the welfare of children, women and weaker section of the town and for the security of the people the following proposals are included in the plan.

### 31.14.1 Community halls

One community hall is proposed along the side of Thekkenar near Manchadithuruth.

### 31.14.2 Own building for Anganvadies

New buildings for Anganvadies which are now functioning in rented building shall be constructed.

### 31.14.3 Equipments to all Anganvadies

Provision of modern playing equipments for all Anganvadies

### 31.14.4 Women Development

Small industrial units in all wards of the town with the help of Kudumbasree or similar social groups. Necessary training programme for starting the units and a centralized market facilities for selling the products.

### 31.14.5 SC / ST Development

Training programme for personality development for attending test and interviews of competitive examinations. Training for servicing of mobile phones, computer, umbrella etc and food processing. Subsidy for starting industrial units.

## 31.15 ENVIRONMENT

Strict regulation has been included in the zoning regulation for the protection of the Meenachil River. A 3 meter wide green strip is proposed along the sides of Meenachil river, Thekkanar and Vadakkanar.

Control the digging of bore wells, releasing encroachments on river, enhancing pisci culture, proper waste management techniques etc. to be practiced.

### 31.15.1 Protection of natural water sources, natural drains

The increasing frequency of flooding in the town can be attributed, to a significant extent, to the diminishing carrying capacity of the river caused by excessive silting. The presence of heavy sedimentation near the check dams exacerbates the issue by substantially reducing the river's holding capacity. This sediment buildup restricts the natural flow of water and increases the likelihood of overflow during heavy rainfall, leading to flooding in the surrounding areas. Recognizing the urgency of the situation, prioritizing the desilting of water bodies, especially near the check dams, becomes crucial. By implementing effective desilting measures, the town can enhance the river's ability to accommodate water, mitigate the risk of flooding, and promote a more resilient and sustainable water management system for the community.

The imperative task of desilting water bodies, particularly the Meenachil River, requires a strategic and phased approach for effective and sustainable results. In the initial phase, the focus should be on desilting and removing obstructions in streams that flow into the Meenachil River, such as Mathakkal Thodu. Addressing these upstream areas is essential to restore the original capacity of the streams, preventing frequent flooding on the riverbanks. By clearing sedimentation and obstructions in these smaller tributaries, the water flow into the Meenachil River can be optimized.

In the subsequent phase, attention should shift towards desilting the river portions near the check dams. This is critical for maintaining the river's carrying capacity and preventing excessive sedimentation. Communicating the importance of this endeavor to the relevant authorities and concerned departments is vital. Assessing the technical feasibility and execution of this work is to be done by the irrigation department.

Moreover, proposing the construction of a regulator cum bridge in place of the Erattupetta check dam is a forward-thinking solution. This innovative infrastructure would not only assist in controlling the water flow but also contribute to reducing silting in the future. Collaborative efforts involving local authorities, environmental agencies, and community engagement will be essential for the successful implementation of these phased desilting measures, ensuring the long-term resilience of the Meenachil River ecosystem.

## 31.16 RISK INFORMED PLANNING

A regulator cum bridge in place of the Erattupetta check dam is proposed. This infrastructure would not only assist in controlling the water flow but also contribute to reduce silting in future.

The increasing frequency of flooding in the town can be attributed to a significant extent to the diminishing carrying capacity of the river caused by excessive silting. The imperative task of desilting water bodies, particularly the Meenachil river, requires a strategic and phased approach for effective and sustainable results.

Collaborative efforts involving local authorities, environmental agencies and community engagement will be essential for the successful implementation of these phased de silting measures, ensuring the long term resilience of the Meenachil river ecosystem.

# PART. IV

# DEVELOPMENT REGULATIONS

# 32. ZONING REGULATION

## 32.1 INTRODUCTION

Zoning is a device of land use planning used in a Master Plan. The word is derived from the practice of designating permitted uses of land based on mapped zones which separate one set of land uses from another. Zoning Regulations are the means to achieve development of a use zone as envisaged in the Master Plan. In other words Zoning Regulations are laws that define and restrict how to use a particular property coming under a Master Plan. Thus it is the public regulation of land and building use to regulate the character of a place.

The development suggestions of a Master plan will be spatially located in the proposed land use plan. Areas will be zoned under various categories such as *Residential use Zone, Commercial use zone, Multi Functional use Zone, Public and Semi public use zone, Industrial use zone, Dry Agriculture use zone–1, Dry Agriculture use zone –2, Dry Agriculture use zone –3, Traffic and Transportation use zone, Proposed Transportation zone, Park and open space, Proposed Park and open space, Water body, Green strip*, *Water reuse zone, Aqua activity zone* for securing the most efficient and effective use of land in public interest. Therefore, a set of zoning regulations for the implementation and enforcement of the proposals envisaged in the Development Plan will also be part of the Master Plan. Zoning regulations will specify the details regarding the nature of uses *'permitted'*, uses *'restricted'* and uses *'prohibited'* in each zone.

## 32.2 ZONING REGULATIONS

**32.2.1** All future developments shall be in conformity with the provisions of the Master plan for Erattupetta Town and future construction shall conform to the Kerala Municipality Building Rules in force unless otherwise specified in this regulations.

**32.2.2** For the implementation and enforcement of the proposals envisaged in the Master plan for Erattupetta Town, areas have been zoned under various uses such as *Residential use Zone, Commercial zone, Multi Functional use Zone, Public and Semi public use zone, Industrial use zone, Dry Agriculture use zone–I, Dry Agriculture use zone–II, Dry Agriculture use zone–III, Traffic and Transportation use zone, Proposed Transportation zone, Park and open space, Proposed Park and open space, Water body, Green strip, Water reuse zone, Aqua activity zone.* Details regarding the nature

of uses “permitted”, uses “restricted” and uses “prohibited” in each zone are given in subsequent paragraphs

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, Erattupetta 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 studied based on their performance characteristics and special location factors. Such cases which come under this category are classified as “Uses Restricted”.

Uses **Restricted Category** deals with the uses that shall be restricted by the Secretary with the concurrence of the Town Planner of the District office of the Local Self Government Department (Planning) having jurisdiction over the area.

**“Used prohibited”** enlists the various objectionable uses in each zone which shall not be permitted under normal circumstances.

**32.2.3** Zoning regulations are not intended to prohibit existing uses that have been lawfully established prior to the enforcement of these regulations. They are essentially intended to help the competent authority in decisions regarding granting or refusal of planning permissions for land use conversions and construction of buildings/ structures or any other matter specifically mentioned in these regulations.

**32.2.4** If any portion in a zone is put to a “**Use Prohibited**” as stated in Para 31.2.2, before the sanctioning of the scheme, 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 create 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 concerned. The total built up area of such non-confirming use shall not exceed 1.5 times the existing built up area.

**32.2.5** Existing areas and structures of archaeological importance, agriculture uses and religious uses may be permitted to continue in all the zones and shall not constitute non conforming uses.

**32.2.6** Regulation of constructions and land developments on the sides of new roads/ roads proposed for widening as per the scheme shall be governed by the distance from the centre of the road, unless otherwise specified in the Master Plan or Detailed Town Planning Scheme in force or any Detailed Road Alignment approved by Government. If widening on one side of any stretch of the road is constrained due to the Meenachil river, Thekkanar, Vadakkanar the road widening in that stretch shall be accounted from the other side.

**32.2.7** In the event of change in alignment of 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.

**32.2.8** Provisions/regulations under the Kerala Conservation of Paddy Land & Wetland Act 2008, Disaster Management Act, Archaeological Sites and Remains Act, Coastal Zone Regulations, Aircraft Act 1934, Environment Protection Act 1986 and any other applicable statutes as amended from time to time shall prevail over the respective provisions of this Master Plan.

**32.2.9** The provisions of Noise Pollution (Regulation and Control) Rules 2000, at places notified as ‘silent zones’ by respective government orders shall be applicable to the area under this scheme.

**32.2.10** Operational constructions as defined in the Kerala Town & Country Planning Act 2016 shall be treated as permitted use in the Master Plan Area.

**32.2.11** Central/ state/ local government offices and institutions. Transmission towers, telecommunication towers, Wireless stations, Library and reading rooms, public utility buildings, storage of agricultural produces and seeds, Plant Nursery, Agriculture, Seed Farms, Radio and TV station, ATM, water tanks, waste management units and Electric charging stations shall be treated as permitted use in all zones the Master Plan Area.

**32.2.12**. 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).

**32.2.13** Any use not specified either in the 'uses permitted' or 'uses restricted' category of a particular use zone, but which is of a similar nature to any use permitted or restricted in that particular use zone, may be permitted by the Secretary, with the concurrence of the Chief Town Planner concerned.

**32.2.14**. If public activity ceases or do not exists in a private land, uses permitted/ restricted in the surrounding land use zone shall be allowed in the plot with the concurrence of the Town Planner, if no records are available with Municipality regarding any proposal for acquiring that particular land for any public use at the time of application for building construction or land development.

**32.2.15**. Expansion of existing Public and Semi Public Institutions and existing Industrial units including their incidental uses to adjacent plots shall be treated as permitted use irrespective of the zone in which such adjacent plot lies, except in water body zone

**32.2.16** The zoning regulation of Master Plan for Erattupetta Town is given in the subsequent table.

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **1** | **2** | **3** | **4** |
| **32.2.16.1** | **RESIDENTIAL USE ZONE** | | |
| 1 | All residences, Residential Flats/ Apartments and its incidental uses, special residential uses like convents, hostels, hotels, lodges and similar uses, Farm Houses, Residential plot development. | | Any other uses not specified in columns 2, 3 |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 2 | Shops and commercial establishments, offices, Restaurants/ Canteen, Banking and Financial institutions, Movie hall all the above subject to the condition that floor area shall be limited to 1000 sq.m. | Parking buildings except those incidental to main use | Any other uses not specified in columns 2,3 |
| 3 | Auditorium/ Convention centres/ Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres all the above subject to the condition that floor area shall be limited to 1000 sq.m., Places of Worship with floor area upto 150sq.m | Places of Worship with floor area above 150sq.m | |
| 4 | Playing turfs/ park/ play ground, Open air Theatre, other recreational and fitness related uses | Outdoor/ Indoor games stadium with gallery | |
| 5 | All educational institutions up to Higher Secondary School, Day Care, madrassas/ Sunday schools.<br>Other educational institutions with floor area upto 200sq.m | | |
| 6 | Clinics (Outpatient) and Diagnostic centres with floor area limited to 300sq.m. | Nursing Home / Clinics (Outpatient) subject to the condition that floor area shall be above 300 sqm upto 1000 sq. m, Hospitals upto 10 beds | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 7 | Cottage industries, service industries of non- nuisance nature, Food processing units all the above subject to the condition that floor area shall be limited to 200 Sq:m, Water Treatment Plants below 5 MLD.<br>IT/Software units with area limited to 1000 sqm.<br><br>IT hardware/ Electronic Industries subject to the condition that floor area shall be limited to 300 sq. m<br><br>Light vehicle workshops with area limited to 300 sq.m | Non–obnoxious and non-nuisance manufacturing type industries all the above subject to the condition that floor area shall be limited to 300 sqm. | Any other uses not specified in columns 2,3 |
| 8 | Godowns, Warehouses storing non polluting materials except cement, fertilizer & explosives with floor area limited to 300 sq.m | Crematorium, burial ground, vault | |
| **32.2.16.2** | **COMMERCIAL USE ZONE** | | |
| 1 | All residences, special residential uses like convents, hostels, hotels, lodges and similar uses, Residential Quarters all the above upto 300 sqm | Residential apartments with ground & first floor for commercial uses. | Any other uses not specified in columns 2 & 3 |
| 2 | Shops and commercial establishments, Multiplex, Automobile show rooms, Restaurants and Markets , Offices, Banking and financial institutions | | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 3 | Auditorium/Convention centres/Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres, Places of worship.– all the above uses subject to the condition that floor area shall be limited to 1500 sq.m, Library and Reading Rooms, Movie Halls | Auditorium/Convention centres/Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres , Places of worship all the above uses with floor area above 1500 sq.m. | Any other uses not specified in columns 2 & 3 |
| 4 | Playing turfs/Parks/Play Grounds, open air theatre, other recreational and fitness related uses<br><br>Indoor/Outdoor game stadiums with gallery | | |
| 5 | All Educational institutions subject to the condition that floor area shall be limited to 1500 sq.m, day care, creche | All Educational institutions with floor area above 1500 sq.m | |
| 6 | Clinics, Diagnostic Centres and hospitals up to 50 beds | Hospitals with more than 50 beds. | |
| 7 | Non–obnoxious and non-nuisance Service and manufacturing type of Industries with floor area up to 1500 sqm, Light vehicle Automobile workshops, Automobile Service Stations, IT software units | Water treatment plants, IT Hardware/ Electronic Industries | |
| 8 | Godowns, ware houses, Storage of non-hazardous materials, Stacking yard. | Burial ground vault | |
| 9 | Parking Buildings | Bus terminal, Fuel filling stations | |
| 10 | Dairy, poultry farm floor area upto 1500 sqm | Dairy, poultry farm floor area above 1500 sqm | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.3** | **MULTI FUNCTIONAL USE ZONE** | | |
| 1 | All residences including apartments, special residential uses like convents, hostels, hotels, lodges and similar uses, Residential plot development. | | Any other uses not specified in columns 2 & 3 |
| 2 | Shops and commercial establishments, Automobile show rooms, Restaurants/ canteen, Markets, Professional offices, Banking and financial institutions, all the above uses with floor area up to 8000 sqm.<br>IT/ software units. | Shops and commercial establishments, multiplex, Restaurants/canteen, Markets, Professional offices, Banking and financial institutions, multiplex complex all the above uses with floor area above 8000 sq.m | |
| 3 | Auditorium/ Convention centres/Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres, Places of worship, movie halls all the above with subject to the condition that floor area shall be limited to 1500 sq. m | Auditorium/ Convention centres/ Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres, movie halls, Places of worship all the above with floor area above 1500 sq. m | |
| 4 | Playing turfs/Parks/Play Grounds, open air theatre, other recreational and fitness related uses, Indoor game stadium/ Outdoor game stadium with gallery | | |
| 5 | All educational institutions with floor area up to 1500 sq. m, Day Care, Creche | All educational institutions with floor area above 1500 sq. m | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 6 | Hospitals upto 100 beds, Clinics, Diagnostic Centres | Hospitals with more than 100 beds | Any other uses not specified in columns 2 & 3 |
| 7 | IT hardware/Electronic industries, Cottage industries, Automobile service stations, workshops and wash stalls, Manufacturing and Service Industries of non-nuisance nature all the above with floor area limited to 1500 sqm.<br>Water treatment plants below 5 MLD | IT hardware/ Electronic industries with floor area above 1500 sqm. ,<br>Automobile service stations, workshops and wash stalls with floor area above 1500 sqm.<br>Saw mill, Cement products manufacturing units | |
| 8 | Dairy Farms, Poultry Farms with floor area upto 1500 sqm | Dairy farm/ Poultry farm with floor area above 1500 sqm | |
| 9 | Godown, warehouses, storage, all the above uses subject to the condition that floor area shall be limited to 6000 sq.m | Godown, warehouses, storage, all the above uses subject to the condition that floor area above 6000 sq. m | |
| 10 | Parking Buildings | Bus terminals/stand | |
| 11 | . | Fuel Filling Stations.<br>Cremation ground/ crematorium, Burial Ground/ Common Vault. | |
| **32.2.16.4** | **PUBLIC AND SEMI PUBLIC USE ZONE** | | |
| 1 | All Residences - floor area up to 300 sqm, Residential uses incidental to the public and semi pubic uses.<br>Special residential uses like convents, hostels, hotels, lodges and similar uses. | | Any other uses not specified in columns 2 & 3. |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 2 | Shops and commercial establishments, Restaurant/ Canteen, Offices, Banking and Financial institutions- all the above uses subject to the condition that floor area shall be limited to 500 sq.m,<br><br>Playing turfs/Parks/Play Grounds, open air theatre, other recreational and fitness related uses | Shops and commercial establishments, Offices, Banking and Financial institutions Restaurant/ Canteen, - all the above uses with floor area above 500 sq.m, | Any other uses not specified in columns 2 & 3 |
| 3 | Auditorium/ Convention centres/ Exhibition Centres Art Gallery, Cultural and information Centre, Museum, social welfare centres, subject to the condition that floor area shall be limited to 1500 sq. m, movie halls, Places of worship/ religious institutions | Auditorium/ Convention centres with floor area above 1500 sq. m | |
| 4 | All educational institutions/medical institutions/ Hospitals of area up to 1500 Sq;m | All educational institutions/ medical institutions/ Hospitals above 1500 Sq;m | |
| 5 | IT Hardware/ Software, Electronic Industries, Automobile workshops and wash stalls all the above with floor area upto 1500 sqm.<br>Water treatment plant below 5 MLD, Radio and TV station | Water treatment plant above 5 MLD | |
| 6 | Public utility buildings, Parking Buildings | Indoor and Outdoor game stadiums with gallery<br><br>Fuel filling stations.<br><br>Cremation ground/ crematorium, Burial Ground/ Common Vault. | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.5** | **INDUSTRIAL USE ZONE** | | |
| 1 | Residences with floor area up to 500 sq. m, Residential uses incidental to industrial use, Residential Quarters | | Any other uses not specified in columns 2 & 3. |
| 2 | Restaurant/ Canteen with floor area up to 200 sq. m.<br><br>Shops and commercial establishments upto 150 sq.m<br><br>Offices, Banking and Financial institutions with floor area up to 300 sqm.<br><br>Restaurants/canteen with floor area upto 100 sq.m | | |
| 3 | Clinics, Diagnostic Centres incidental to main use<br><br>Madrassas/Sunday schools | | |
| 4 | All type of Industries, Automobile Workshops, Service Stations and wash stalls, IT Software/ hardware units<br><br>Water Treatment Plants, solid waste management activities, sewage treatment plants<br><br>Fish and Meat Processing Centre, Junk Yards, Dairy related industries, slaughter houses | Industrial Estates and Industrial Parks, Saw mills, Timber Yards. Metal crusher/ M.Sand units | |
| 5 | Godown and warehouses, storage | | |
| 6 | Dairy Farm, Poultry farms,<br><br>All uses incidental to industrial use | Fuel filling station | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.6** | **TRAFFIC AND TRANSPORTATION USE ZONE** | | |
| 1 | All buildings and uses connected with transport and communication such as Bus Terminal / Lorry / Car/ Jeep stand, truck terminal, Auto Rickshaw stand, essential repair and service shops related to the transport and communication use, Parking buildings, Container terminal, Residential uses incidental to main use including lodging rooms | Fuel filling stations | Any other uses not specified in columns 2, 3 |
| 2 | Restaurants/ canteen up to 300sqm, Weigh bridges, shops and commercial establishments, offices | | |
| 3 | Parks | | |
| **32.2.16.7** | **PROPOSED TRANSPORTATION ZONE** | | |
| 1 | All buildings and uses connected with transport and communication such as Bus Terminal/ Lorry/ Car/ Jeep stand, truck terminal, Auto Rickshaw stand, essential repair and service shops related to the transport and communication use, Parking buildings, Container terminal, Residential uses incidental to main use including lodging rooms | | Any other uses not specified in columns 2, 3 |
| **32.2.16.8** | **PARK AND OPEN SPACE USE ZONE** | | |
| 1 | Any construction for the development/improvement of park and open space like gallery, pavilion, changing rooms with area limited to 150 sq.m, Game court. | | Any other uses not specified in columns 2 & 3. |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.9** | **PROPOSED PARK AND OPEN SPACE** | | |
| 1 | Park, open stage, sanitation facilities incidental to park | | Any other uses not specified in columns 2,3 |
| **32.2.16.10** | **DRY AGRICULTURE USE ZONE -1** | | |
| 1 | Residences, special residential uses like convents, hostels, hotels, lodges and similar uses – all the above uses subject to the condition that floor area shall be limited to 500 sq. m | | Any other uses not specified in columns 2,3 |
| 2 | Shops and commercial establishments with floor area limited to 150sq. m Agricultural produce Markets subject to the condition that floor area shall be limited to 500 sqm. | | |
| 3 | Places of Worship subject to the condition that floor area shall be limited to 100 sq. m | | |
| 4 | Playing turfs/Parks/Play Grounds, Open air theatre, other recreational and fitness related uses | | |
| 5 | Day Care Primary & Upper primary schools, madrassas/Sunday schools. | | |
| 6 | Hospitals, clinics, diagnostic centres - all the above uses subject to the condition that floor area shall be limited to 500 sq.m | | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 7 | Fodder cultivation, Pastures, Grazing grounds, Fish Farms, Seed Farms, poultry farm, cattle farm | | Any other uses not specified in columns 2,3 |
| **32.2.16.11** | **DRY AGRICULTURE USE ZONE -2** | | |
| 1 | Residences special residential uses like convents, hostels, hotels, lodges and similar uses – all the above uses subject to the condition that floor area shall be limited to 500 sq. m | Residences, special residential uses like convents, hostels, hotels, lodges and similar uses above 500 Sq.m, residential apartments. | Any other uses not specified in columns 2,3 |
| 2 | Shops and commercial establishments, Offices, Banking and Financial institutions, Restaurants/ Canteens, markets – all the above uses subject to the condition that floor area shall be limited to 500 sq. m. | | |
| 3 | Auditorium/ Convention centres, Social Welfare centers – all the above uses subject to the condition that floor area shall be limited to 1000 sq.m<br>Places of Worship subject to the condition that floor area limited to 100 sq.m | | |
| 4 | Playing turfs/Parks/Play Grounds, Open air theatre, other recreational and fitness related uses | | |
| 5 | Day Care, Primary & Upper primary schools, madrassas/Sunday schools. | Other educational institutions with floor area upto 1500 sq. m | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| 6 | Hospitals, clinics and diagnostic centres – all the above uses subject to the condition that floor area shall be limited to 500 sq.m | Hospitals with floor area above 500 sq. m and below 1500 sq. m | Any other uses not specified in columns 2,3 |
| 7 | Service and manufacturing type industries with floor area less than 1500 sq.m. Automobile workshops for 2/3 Wheelers | Sewage Treatment plants. Automobile workshops service stations, wash stalls for four wheelers | |
| 8 | Fodder cultivation, Pastures, Fish Farms, Seed Farms, poultry farms, cattle farms | | |
| 9 | Godowns/ Warehouses/ Storage - non-hazardous -all the above uses subject to the condition that floor area shall be limited to 500sq.m, Storage of Agricultural Produces and Seeds, | Stacking Yards, Godowns/ Warehouses/ Storage - non-hazardous, - all the above uses subject to the condition that floor area above 500 sq.m. Slaughter houses, Storage of explosive and fireworks, Gas Godowns, Saw mills, Timber yard, Dumping yards, Fish/ Meat processing centers | |
| 10 | | Fuel Filling Stations. Junk yards, Cremation Ground/ Crematorium, Burial Ground/ Common Vault | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.12** | **DRY AGRICULTURE USE ZONE -3** | | |
| 1 | Residences, special residential uses like convents, hostels, hotels, lodges and similar uses, residential uses incidental to the main use – all the above uses subject to the condition that floor area shall be limited to 500 sq.m | Residences, special residential uses like convents, hostels, hotels, lodges and similar uses with floor area above 500 Sq.m., residential apartments with floor area upto 1500 sq. m | Any other uses not specified in columns 2,3 |
| 2 | Retail shops up to 100 sqm | | |
| 3 | Places of Worship subject to the condition that floor area limited to 100 sq.m | | |
| 4 | Playing turfs/Parks/Play Grounds, Open air theatre, | | |
| 5 | Day Care Primary & Upper primary schools, madrassas/ Sunday schools. | | |
| 6 | Clinics (Outpatient) and Diagnostic centers – floor area up to 200 sq. m. | | |
| 7 | Fodder cultivation, Pastures, Grazing grounds, Fish Farms, Seed Farms, poultry farm, cattle farm | Buildings related to Tourism Activities. Restaurant all the above with floor area up to 500 sqm, Parking buildings | |

| Para No. | Uses Permitted | Uses Restricted | Uses Prohibited |
|---|---|---|---|
| **32.2.16.13** | **WATER BODY** | | |
| 1 | Water landings, Boat jetties, Terminals, Bridges, side protection walls, Fish landing centers, Fish farms. Irrigation/ water supply structures | | Any other uses not specified in columns 2 & 3. |
| **32.2.16.14** | **WATER RE USE ZONE** | | |
| 1 | All uses permitted in Dry agriculture zone 1 | All uses restricted in Dry agriculture zone 1 | Any other uses not specified in columns 2 & 3. |
| 2 | Structures related to water treatment and supply | | |
| **32.2.16.15** | **AQUA ACTIVITY ZONE** | | |
| 1 | All uses permitted in Dry agriculture zone 1 | All uses restricted in Dry agriculture zone 1 | Any other uses not specified in columns 2 & 3. |
| 2 | Structures related to aqua culture, water related recreation tourism facilities | | |

**32.2.16** A green strip of 3.00 m width shall be provided along the sides of Meenachil River, Thekkanar and Vadakkanar excluding those areas where river bank roads are proposed. It is permitted to be used only for planting trees in order to retain as green areas, parks, pump houses, foot paths with paving tiles, roads, seating arrangements wells and irrigation ponds, storage of agricultural products and seeds, green house having single floors with a coverage not exceeding 30.00%, Irrigation/ water supply structures. Construction of compound wall and retaining walls to protect the existing ground level shall be undertaken only with concurrence of the District Town Planner.

**32.2.17** If a plot under a particular survey number/numbers falls under two different zones, the applicant shall be eligible for the zoning regulation of major portion, ie.

(more than 50%) for the entire plot. It is also possible to follow the zoning regulation of the respective zones.

**32.2.18** In case of uncertainty in identifying the alignment and boundary of thodu, canal, river, existing public road and in the absence of survey boundaries for the same in the Proposed Land Use Maps, 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.

**32.2.19** Subject to zoning regulations of the respective use zones, more than one uses 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 regulation for the respective zone.

**32.2.20** All future developments shall also be in conformity with the provisions of Kerala Municipality Building Rules, unless otherwise specified in these regulations or in any Detailed Town Planning Scheme in force.

**32.2.21** Land to a depth of 50 m in Residential, Public and Semi public, Commercial, *Dry Agriculture zone–I, Dry Agriculture zone–II and Dry Agriculture zone–III*, along the sides of the roads with existing or proposed width 8 meter and above, shall be treated as Multifunctional zone.

**32.2.22** Land to a depth of 100 m in Residential, Public and Semi public, Commercial, *Dry Agriculture zone–I, Dry Agriculture zone–II and Dry Agriculture zone–III* along the sides of roads with existing or proposed width 12 meter shall be treated as Multifunctional zone, provided minimum access width of 7 m is available to the plot.

**32.2.23** The provisions of the Detailed Town Planning schemes or Area Development Plans will prevail over the regulations mentioned above.

**32.2.24** Only the existing public and semi-public areas (as on the date of publishing the plan) has been included in the public and semi-public use zone of the proposed land use Map and no new plots has been included in this zone. The public and semi public zones are limited to the boundary of the plot with existing public and semi-public uses. In case any adjacent plots which are marked as public and semi-public zone in the map but not under the public and semi public use will be considered to be included

in the adjacent zone as per proposed land use map. In these cases, each case has to be studied individually and concurrence of the Town Planner shall be obtained.

**32.2.25** The area reserved for park and open space at Edakkalamattom Transport promotion zone at Kaduvamoozhy and Proposed transportation zone near MES junction on Vagamon road, proposed park at mailadumpara shall be reserved for the purpose for a period of 5 years only. If the responsible authority could not develop the land for above said purpose within a period of 5 years from the date of sanctioning of the plan, the zoning regulation may be treated as for the uses in the adjacent zone.

**32.2.26** Large Scale development proposals in an area not less than 2 hectares, exceeding an investment of Rs.50 crores, which provide direct employment (after commissioning of the project) to the tune of not less than 500 may be permitted in all zones other than Park & Open space, Major government Institution and Higher education and Research Centers may be permitted in all zones except following zones namely park and open spaces zones, water body and green strips provided on either side of rivers if not already included under 'uses permitted' or 'uses restricted' category as per these regulations, subject to the satisfaction of relevant Acts and rules in force and also subject to the recommendation of a committee to be constituted by the Government for this purpose, under the chairmanship of the Secretary, Local Self Government Department, consisting of the Chief Town Planner of Kerala State, the Town Planner of District office of the Kerala State, the Secretary, Erattupetta Municipality and satisfying the following conditions. The Chief town planner will be the Convener of the Committee.

i. The developer shall produce project-cum-feasibility report and Environmental Impact Assessment Report, if required, of the project to the convener of the committee, 15 days in advance of the committee meeting.
ii. The developer shall produce before the committee all required clearances from the State and Central Government agencies concerned.
iii. Adequate provision shall be made for supporting infrastructure such as parking, water supply, sewerage, solid waste management etc. Separate sewage treatment plant and solid waste management measures shall be provided and maintained by the developer at his cost.
iv. Adequate MOU between the developer and the Secretary Erattupetta Municipality shall be undertaken to bring this into effect.
v. The permissible FAR shall be maximum of 2.00 or as permitted in the Building Rules whichever is less and minimum access width shall be 12.00 m.

vi. The project shall be completed within a period of 3 years if not specified otherwise

**32.2.27** If different land use zones fall within a single plot, all uses permitted as per zoning regulations of all such land use zones may be permitted by the Secretary in the plot. If application submitted includes any of the restricted uses and not included in such permitted uses, the Secretary shall issue permit with the concurrence of the Town Planner/ Chief Town Planner, as the case may be. However, for the part of the plot which comes under water body zone this provision shall not be applicable.

**32.2.28** The clause in Building Rules for the area exclusively zoned for commercial use shall be applicable for plot in commercial zone only if the regulations of commercial zone is followed and not applicable for the plot for which provision for applying multifunctional zone is used.

**32.2.29** Building line for buildings on the side of river will be the landward side of green strip.

**32.2.30** The secretary of the municipality, with the concurrence of the district town planner, shall permit in land uses such as water body, such uses that are 'permitted'/ 'restricted' in adjacent land use zone, if that particular land in the water body zone is not classified as paddy land or water body as per revenue records.

**32.2.31** Land to be reserved in private land for the proposed river view roads will be upto a depth of 6m from the boundary of the plot on that side**.**

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