MASTER PLAN

FOR

CHALAKUDY TOWN - 2031

Prepared by

CHALAKUDY MUNICIPALITY

&

LOCAL SELF GOVERNMENT PLANNING-GOVERNMENT OF KERALA

JULY 2023

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Chalakudy Municipality

Local Self Government Planning , Government of Kerala

Master Plan for Chalakudy Town -2031

FOREWORD

Chalakudy was a glorious market place and a learning centre in the olden days. There are evidences of an ancient centre of learning that existed here. The proximity of the forests in the east and the fertile riparian vegetation of the Chalakudy River contributed immensely to the development of this place in to a favoured settlement and a destination for the traders. As for any town in central Kerala, this town also owes its glory and development to Sakthan Thamburan, the raja of Cochin. Later English introduced a tramway which eventually boosted the industrial and trade growth of the town which has its significance even now. Since then the Town had been growing and eventually has become a second grade Municipality and is now a Taluk headquarter town. To face the challenges associated with the remarkable growth of the city the necessity of a Master Plan was felt and thus the council unanimously decided to prepare Master Plan. Now the plan is prepared and I am sure that this plan can definitely help to transform Chalakudy into a more livable space for the generations to come.

The various proposals in the production sectors are productive enough to strengthen the economic base of the Town and can succeed in fetching good opportunities for the well being of the people. The suggestions in the service sectors are sure shot solutions towards ensuring peaceful and healthy living atmosphere for the inmates of the Town. The calculated efforts, in this plan for protecting our mother nature are worth noting. The widening suggestions for roads and new networks will effectively decongest the core area and provide through traffic without any hindrance and delay.

All the members of the present and previous council have actively participated in the discussions for finalising the plan. I take this opportunity to appreciate the efforts put in by the former Chairpersons, Standing Committee Chairpersons, members of the Special Committee (SC) and working group members also put in considerable efforts in materializing this Plan. I also appreciate the sincere efforts put in by the officials of the LSGD Planning for materializing this Plan in its present form.

A Master Plan becomes fruitful only when the provisions and proposals envisaged in it are implemented. To fulfill the vision of this plan i.e. to ensure physical and economic growth of the Town without hampering nature and peaceful life of the inmates, I request all the development partners to own it and be part of its implementation.

Ebby George
Chairman,
Chalakudy Municipality

PREFACE

Chalakudy from the ancient times is known as a glorious trade centre and a much sought after destination by the wisdom seekers. The controlled weather and beauty imparted by the river attracted many people to this place. The Town started growing since then to this shape. An attempt to approach growth in a planned manner took place way back in 1980s when this town had Detailed Town Planning schemes prepared for two areas in this town. Now realizing the danger of the unplanned growth , Municipality has resolved to prepare a Master Plan.

Now the Master Plan for Chalakudy Town is prepared after conducting exhaustive discussions with Council members as well as Special Committee members. Many workshops and training sessions were conducted for the SC members and working groups. The participation and co-operation received from the SC and working group members were unparallel. The Vikasana Seminar conducted to include the aspirations of the people had a good response. Thus a good level of people's participation was ensured in this plan.

The process of preparation was comprehensive with land use survey, survey number based land use analysis of the area, socio economic survey conducted with a sample size of 10% of the households, secondary data collection, heritage, transportation survey, environment and slum surveys etc.

Detailed analysis, both inter and intra sector were done in modern customised computer systems. The findings of the analysis revealed the problems and potentials of the town. Based on the projected requirements for the year 2031 various proposals are carved out. These proposals are sure to streamline the tremendous developments that this town will witness in future. It also can improve the livability of the town.

I take this opportunity to express my gratitude for the initiative, co-operation and enthusiasm shown by the Council and SC towards this work. The hard work, spirit and the sincerity of the planning team in the Thrissur Office headed by District Town Planner Sri. K. R Rajeev, in bringing this draft Plan within the scheduled time is highly appreciated. The contributions of Sri V.A. Gopi , Sri. K.M. Gopakumar, the former District Town Planners is also to be mentioned at this juncture.

Certainly, the Master Plan for Chalakudy Town will provide a framework for development of the Town for years to come.

H. Prasanth
Chief Town Planner (Planning)
Thiruvanathapuram
Local Self Government Department Planning
Government of Kerala

ACKNOWLEDGEMENT

The preparation of Master Plan for Chalakudy was initiated with Municipal Council resolution No.6 in the Council dated 27th July 2012. The works for the preparation of Master Plan for Chalakudy was taken up as a joint exercise of the Chalakudy Municipality and the Local Self Government Department Planning (former Town and Country Planning dept.) under the scheme of preparation of Master Plans and DTP Schemes, as envisaged in the guideline of the scheme issued vide Government order G.O (Rt) No.1376/2012/LSGD dated17th May 2012. The draft Master Plan for Chalakudy Town got publication sanction as per G.O (Ms)No.118/2020/ LSGD dated 7th August2020, and published in gazette (Gazette no.40 dated 13th October 2020) inviting objections and suggestions from the public. The preparation of Master plan incorporating council suggested modifications is now completed. The Master Plan thus prepared is sure to stream line the growth of the town in a planned and organized manner.

First and foremost I thank, the Municipal Chairman Sri. Ebby George and former chairs Sri.V.O Pailappan and Smt.Usha Paramaeswaran and all the present and previous Council members for their immense support and co-operation to this endeavor. The effort and enthusiasm of the SC members and all the members of the working groups are highly appreciated. I take this opportunity to express my gratitude to the Conveners of all the working groups. The sincere efforts put in by the Secretary and Municipal Engineer needs special mention here.

I express my sincere gratitude to the Sri. Prasanth. H, Chief Town Planner (Planning) for his unmatched support and guidance in bringing out this plan. I also thank the timely guidance and co-operation imparted by the team in the Planning wing of the Chief Town panner for the timely completion of the Plan.

I sincerely appreciate the hard work and unequivocal sincerity of the planning team in the district office, comprising of Sri.Manoj Kumar K.B , Deputy Town Planner, Smt. Vimaja.C. R, Assistant Town Planner and Smt.P.V Lathika , Ist Grade Surveyor, in completing all the works in a time bound and organised manner and bringing out this Master plan within the stipulated time. The earlier efforts of Smt. Sumathy K.M and Smt. Jeeva Liza Xavier, Deputy Town Planners, Sri. Rajesh. M.C, Assistant Town Planner and Smt.P.M. Sugathakumari former Assistant Town Planner, is greatly appreciated. Iam also indebted to the statistical team of this office,all other members both in the technical and non-technical section for all the co-operation and timely action extended. The service of the former District Town Planners , Sri. K.M Gopakumar, Sri. V.A. Gopi is remembered with gratitude on this occasion.

Thrissur,
21.07.2023

K.R.Rajeev
TownPlanner.

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CHAPTER 1
INTRODUCTION

This chapter explains the general aspects pertaining to Chalakudy Town, like profile of the town, history etc. The methodology involved in the preparation of this plan is also detailed in this chapter.

Thrissur, the cultural capital of Kerala, located centrally in the state of Kerala has 7 municipalities and one municipal corporation. Chalakudy is a 2nd grade municipality, situated on the banks of Chalakudy River in Chalakudy Taluk. It is a transit station for travelers to destinations such as, Athirappilly waterfalls, Vazhachal waterfalls, Peringalkuth dam, Silver storm and Dream world water theme parks. As of 2011 census, Chalakudy Town had a population of 49,525 persons with a gross density of 1,963 persons/sq.km. Its geographical extend is 25.23 sq.km. It is located about 30km south of Thrissur, the cultural capital of Kerala and 54 km north to city of Kochi, the commercial capital of Kerala. It is bounded by Kodakara Panchayat in the north, Kodassery, Pariyaram and Melur Panchayats in the east, Alur Panchayat in the west and Kadukutty Panchayat in the south. National Highway 544 passes through the Town and the rail route passes through Chalakudy with a stop for many long distance trains.

1.1 Need for Master plan

Chalakudy was upgraded from a Panchayat to Municipal town in 1970. The town has not under gone any change in jurisdiction since then. The tourist spot Athirapilly waterfalls is near to this town and the important hydro-electrical projects ; Peringalkuth and Sholayar are also situated near to Chalakudy. Chalakudy is blessed with scenic beauty, refreshing weather and is well connected by national highway and railway. It is being developed as a high demand residential area and as a result the land cost is shooting up. In order to accommodate the contemporary challenges, distribution of spatial activities in a well - organized or planned manner with provision of infrastructure is essential. The intensive urban development without sufficient supporting facilities may lead to degradation of the city.

Previous planning attempts:- To take care of the growth in a planned manner, the town had two detailed Town Planning Schemes implemented here, DTP scheme for Chalakudy Market area (46 Ha) as per G.O(Ms)No.192/83 LAD dt 05/11/83 and DTP scheme for Chalakudy office complex area (55.5 Ha)as per G.O(Ms)No.193/83LAD dt 05/11/83 and its

variation as per G.O(Ms) No.139/13 /LSGD dt 02/04/13. These two sanctioned detailed town planning schemes controlled and regulated the urban growth till now. The major proposals in each DTP schemes are explained below.

DTP scheme for Chalakudy Market area

This Scheme is focused to develop the commercial land use and road network. Old NH, NH Bye pass and Market road are the major roads passing through the scheme area. Commercial developments are almost achieved. Market road and Police station road almost developed.

DTP scheme for Office complex area

The scheme covers central part of Chalakudy Town in Municipal office junction and surroundings. Major proposal are widening of roads like Railway station road and NH Bye pass. Proposal for a sector center development and mixture of all land use is seen in this scheme.

But these schemes are confined to a small area of the town, which cover an area of 1.01 sq.km. Considering the present scenario, a new master plan is required for the entire town area.

Chalakudy is administrated by Chalakudy municipality, consisting of 30 administrative wards, as per census of 2001, from which the member of the municipal council is elected for a period of 5 years. For the local self - government institution elections in 2005, the number of wards were raised to 34 and for 2010 LSGI elections, Chalakudy municipal wards have been again re-shuffled and increased to 36 wards.

1.2 Methodology

An inclusive master plan with workable and long term goals is needed for this emerging centre which will ensure sustainable economic and eco - friendly development with better living condition. Multifaceted development outlook which can support the future development in a controlled manner is called for. Present development trends in the physical, technological and scientific areas have to be incorporated in a comprehensive and translucent manner to address people's desires. Preparation of Master plan for Chalakudy town with a vast area involves tremendous work load in collection, compilation and analyzing various primary and secondary data to identify problems and potentials and to arrive at formulation of proposals for the horizon period. A clear cut methodology was adopted for accomplishing the work. The methodology is graphically depicted below.

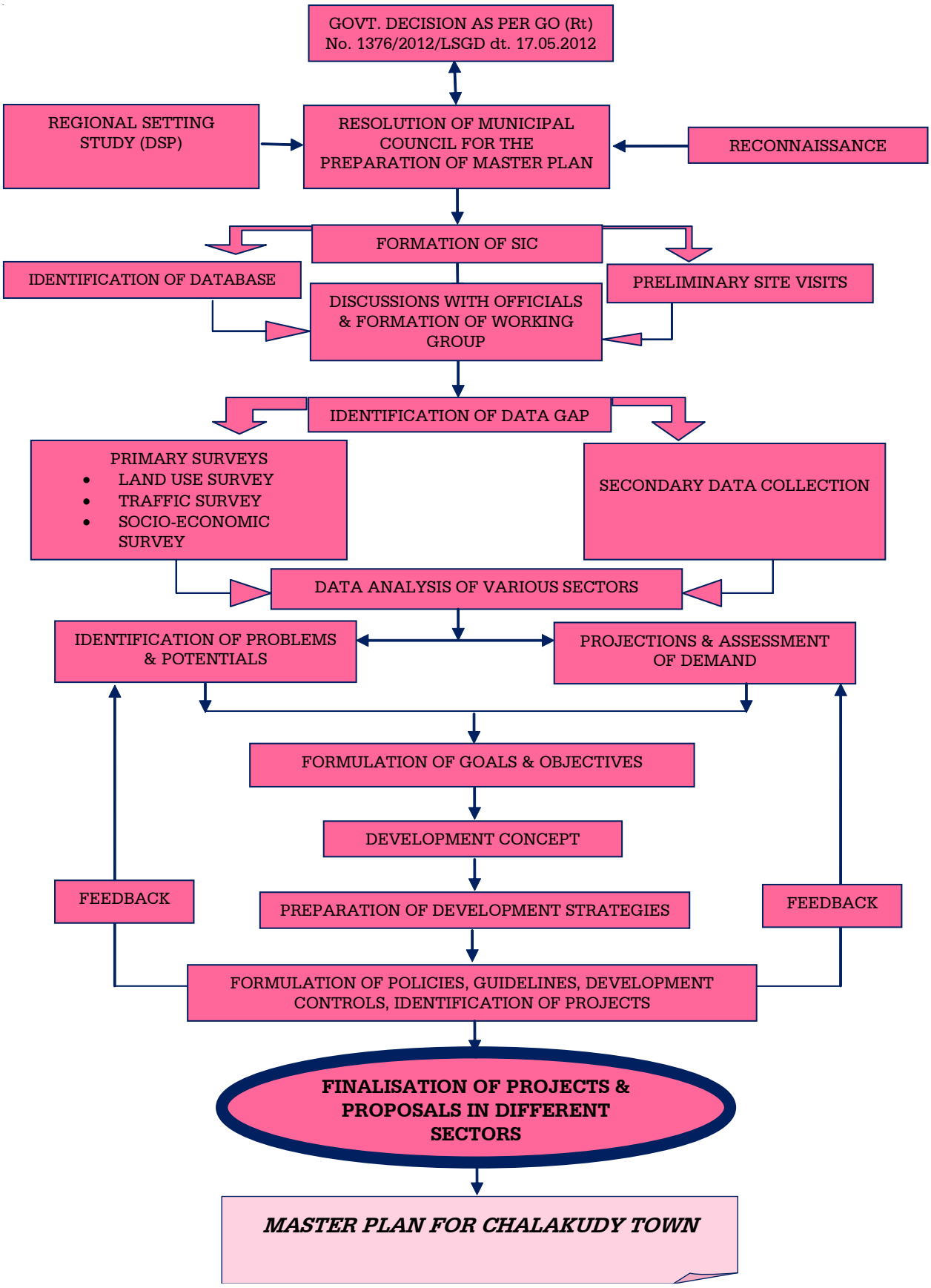


Fig.1.1 Diagrammatic representation of methodology for preparation of Master plan

1.3 Profile of the town

1.3.1 Location

Thrissur district is almost centrally located in the state of Kerala. Chalakudy Town which is 30 km away from the Thrissur town lies at latitude $10^0$30' N and $76^0$33' E longitudes. This town is located at a distance of about 250 kms from the state headquarters, Thiruvananthapuram and 54 kms from Kochi, the commercial capital of Kerala. The National Highway 544 passes centrally through the town. It is bounded by Kodakara Panchayat in the north, Kodassery, Pariyaramand Melur Panchayats in the east, Alur Panchayat in the west and Kadukutty Panchayat in the south.



Fig. 1.2 Chalakudy Town with its surrounding LSGI's

Table 1.1 Area of the revenue villages

SL NO.	REVENUE VILLAGES	AREA (Hectare)
1	Potta	523.91
2	Perambra	637.64
3	West Chalakudy	593.68
4	East Chalakudy	769.32

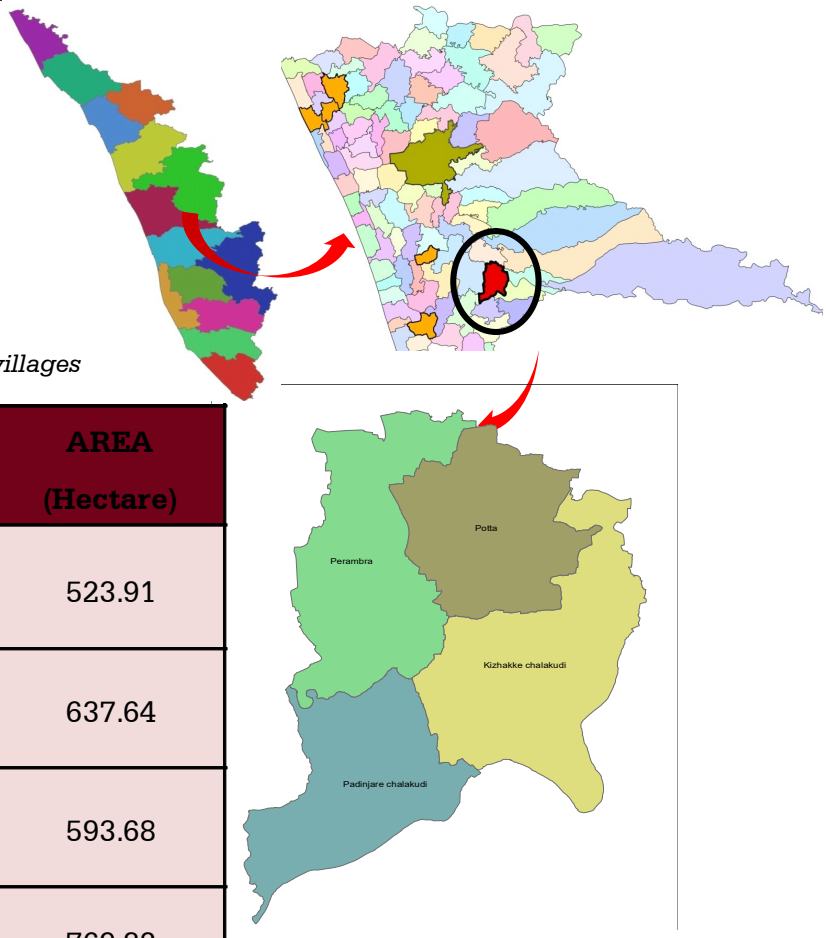


Fig 1.3 Location of Chalakudy Town

1.3.2 Physiography

Chalakudy is blessed with scenic beauty and refreshing weather, and is being developed as a high demand residential area. Athirapilly and Vazhachal falls are only 33 and 35 Kms from the town respectively. In fact the town has a gentle slope towards south and southwest. Mid land between 7.5m and 50 m is found in the municipal area prominently towards the north side. Low land (below 7.5 m) is found towards the South side as shown in the figure 1.4.

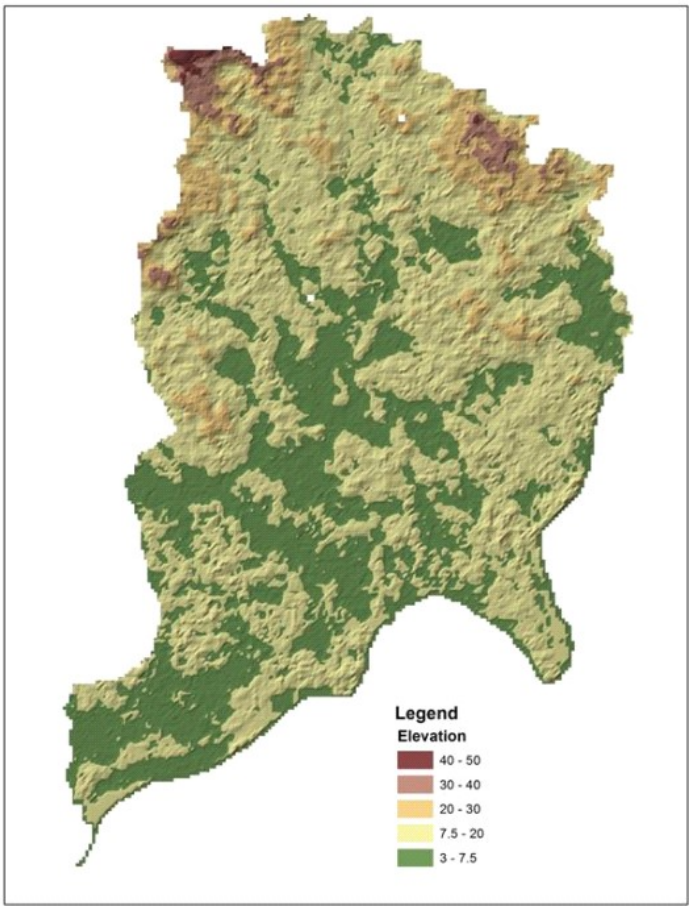


Fig. 1.4 Physiographic classification of land

1.3.3 Geology

Chalakudy is located in the midland region and geographically the area is composed mostly of Archean gneisses and crystalline schist's and the type of soil seen is laterite. The main cultivation is paddy and coconut. Paddy fields are located in almost all parts of town.

1.3.4 Climate

The average daily maximum temperature in March and April is about 36^0C. The air is highly humid through out the year, the relative humidity being generally over 70% .Wind is generally light to moderate and they strengthen in the monsoon season.

1.3.5 Area and population

According to 2011 census, the town covers an area of 25.23 km^2, with a population 49,525, and a density of 1963 person/sq.km. Males constitute 49% of the population and females constitute 51%.

1.3.6 History

The history of Chalakudy dates to ancient times. Chalakudy, a part of Adavoor village was known as Koddassery nadu, from sangam(AD 500) period to AD 16th and 17th century.



The origin of the name "Chalakudy" is mentioned in the classic literature "Jyothisha samhitha". According to this, the name Chalakudy is derived from the word "shaladwagam". "Sala" or its bigger term "padasala" means education center and "Dwajam" or "Kodi" means flag. The river banks of Chalakudy were reputed for performing "yaga". It was usual that a "yaga animal" was tied in a pole which was known as "yoopam". This yoopam was the flag pole of the yaga place. Because of the fame and holiness of this place, it was called "salakudi".

During the second Chera dynasty period (AD 800-1102) a number of students from different part of Kerala came to "Muzhikulamsala" to get education in "veda" and 'weapon practice'. These students were given shelter near the banks of Chalakudy River. The living place is known as "Kudi". Later this kudi was called as salakudi and the river is also known as"Saliyar".

From ancient times, Thrissur has played a significant role in the political history of South India. Many rulers and dynasties beginning with the Zamorins of Kozhikode, Tipu Sultan of Mysore and Europeans including the Dutch and the British have had a hand in molding the destiny of this region. The entire credit for the rise of the modern city of Thrissur goes to Raja Rama Varma, who ascended to the throne of the state of Cochin in 1790. Raja Rama Varma, who was popularly known as "Sakthan Thampuran" is said to be the architect of the present Thrissur.

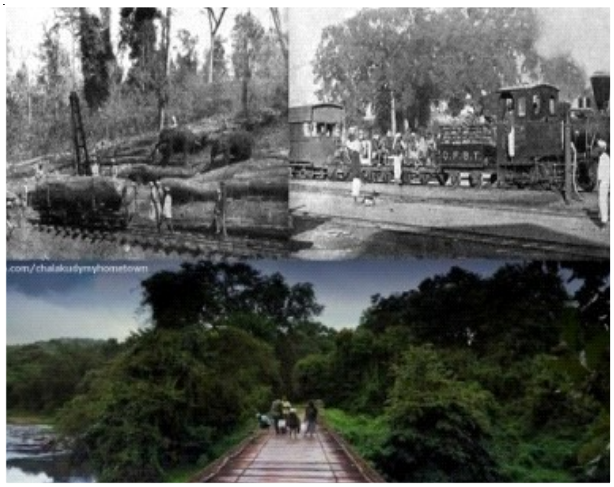
1.3.6.1 History of governance

Chalakudy was a part of Chera kingdom until 17th century. But there was no development mentioned any where else in history. The actual development of Chalakudy took place in the ruling period of Sakthan Thampuran, the king of Kochi and in British period during 17th and 19th century.

One among the five Kodassery 'kartha' of Kochi territory was the ruler of this place. During the reign of Sakthan Thampuran the king of Kochi, he stopped the power of old local rulers like"Naduvazhi or Desavazhi". Sakthan Thampuran built a business center (pandikasala) at Kunnathangadi bringing some Suriyani Christians there. Thus the development of Kochi and Thrissur was initiated.

1.3.6.2 History of development

During the time of the British (AD 1900) they introduced commercial and industrial development in Chalakudy. One among them was introduction of tramway (Cochin state tramway) & railway (1907). Introduction of tram way boosted the industrial and commercial growth of this town. Many timber and timber based industries came up and flourished in the area. Export of these products to the other parts of the country also accelerated. This in total changed the outlook of the place.



Tramway

As per Cochin village - Panchayat act 1914, two panchayat groups were formed comprising of the four villages. The villages like Annallur and Thazhekkode together formed West Chalakudy group panchayat and East Chalakudy, Potta, Perambra together formed East Chalakudy group panchayat. In 1926 Chalakudy panchayat was constituted after merging West Chalakudy, Potta and Perambra villages from these two group panchayats. In 1948 Chalakudy Panchayat was reorganized into two, Perambra (Potta - Perambra village) and Chalakudy (east and west Chalakudy villages) Panchayats. In 1950 as per Thiru-Kochi Panchayat act, Chalakudy Panchayat was formed again by merging the above two Panchayats. In 1970 Chalakudy Panchayat was upgraded to a municipal town. The town has not undergone any change in its jurisdiction since its formation.

1.3.6.3 Socio-cultural development

Chalakudy is one among the cultural centres of Thrissur district. "NADUVAM" literature, is one among the prominent literatures presented by 'Naduvath Achan Namboothiri' (1016-1088) and his son 'Mahan Namboothiri' (1043-1119). Chalakudy Narayana Swami and Chalakudy Nambeesan were the other notable artists. Panampilly Govinda Menon an important politician of independent India is a resident of Chalakudy. Earlier Chalakudy was very famous in the field of education. The first educational institution in Chalakudy was the C.M.S. English Medium School,which was started in 1890. In 1895 St.Mary's L.P School and Poothuparambu Primary School were started. Another notable development that took place is in the field of publications. In 1926 "SOPANAM" a monthly magazine was published by G.Sankarakuruppu the famous Malayalam poet. Later Sri. A.V. Menon published a weekly named 'MALANADU' also from here.

1.3.7 Biodiversity



Chalakudy River

Chalakudy river or Chalakudy puzha runs through south east boundary of Chalakudy town area. It is the fourth longest river in Kerala. The river traverses through Thrissur, Ernakulam and Palakkad districts of Kerala. The total drainage area of the river is 1704 sq.km. Out of this 1,404 sq.km lies in Kerala and 300 sq.km. in Tamil Nadu. The length of the river is 145.5 km.

Chalakudy river is one of the very few rivers of Kerala, which is having relics of riparian vegetation to a substantial level. According to a report of the National Bureau of Fish Genetic Resources, Lucknow, Chalakudy could well be the richest river in fish diversity in India with thick vegetation on both sides.

The riparian forests of the area have been found to be characterised by the presence of typical species of plants in addition to evergreen and semi-evergreen species. Out of the 319 species of flowering plants identified from the study area, 24 are endemic species of the Western Ghats and 10 are rare and endangered. Moreover, Chalakudy river is known for its diversity, as it contains 85 species of fresh water fishes out of the 152 species known from Kerala. Among these, 35 are endemic species of Western Ghats and 9 are considered to be endangered.

The river though has its orgin in the Anamalai region of Tamil Nadu is actually a collection of some major tributaries orginating from Parambikulam, Kuriyakutti, Sholayar, Karapara and Anakayam in Kerala. The famous waterfalls, Athirapilly falls and Vazhachal falls are situated on this river. The famous Hydro Electric project on Chalakudy river is 'Sholayar Hydro Electric Project'. For irrigation purposes Thumboormoozhy dam is constructed across this river. It merges with the Periyar river near Puthanvelikkara, adjacent to Manjali, North Paravur in Ernakulam district.

CHAPTER 2
REGIONAL SETTING

The regional setting of a town spells out the hierarchy of the town in the regional scenario, the activity which the town has to perform and its connectivity with different settlements in the region. This chapter deals with the details regarding the regional role of Chalakudy Town as per the State Urbanisation Report and the Integrated District Development Plan for the Thrissur District and the general development scenario of Chalakudy Town.

2.1 Location

Chalakudy Town lies in the southern part of the Thrissur district, located at 10°30' N latitude and 76°33' E longitude on the banks of Chalakudy River. Chalakudy is bounded by Kodakara panchayat in the north, Kodassery panchayat in the east, Chalakudy River in the south and Mala and Alur panchayats in the west.

As per 2011 census, population of Chalakudy is 49525 with an area of 25.23 sq.km. The location of Chalakudy in the district is shown in the figure 2.1

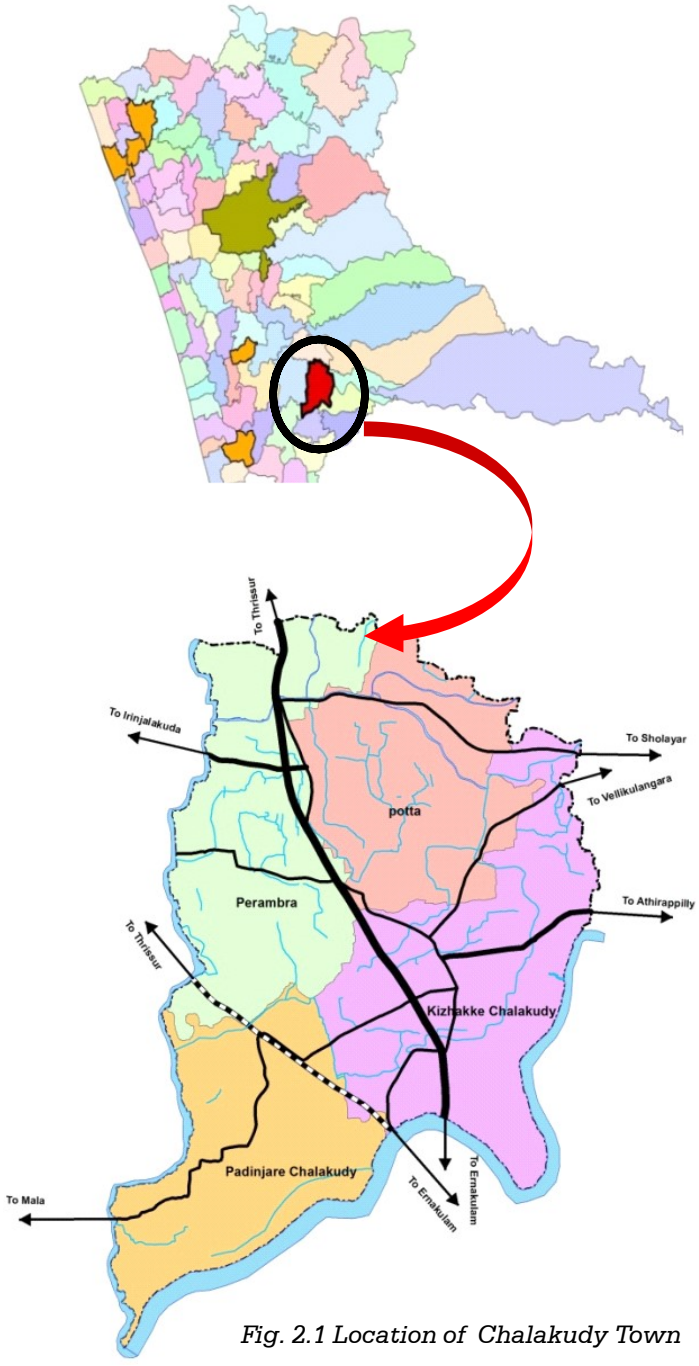


Fig. 2.1 Location of Chalakudy Town

2.2 Linkages

Chalakudy is well connected by roads and rails. Chalakudy town area has NH 544 running throughout its length. The old NH passes through the town centre and the bypass passes by the side of this road from South junction to Potta junction. Again there is SH 21 (Potta - Moonnupeedika)

running across the Town starting from Potta. These roads, along with the major roads to Mala and Athirapilly connect this place to other parts of the District, as well as the State. Chalakudy railway station is situated within the municipal limits which offer immense facilities for the travelers. Cochin international airport at Nedumbassery is only 22 km from Chalakudy. Figure 2.2 shows the linkages in Chalakudy.

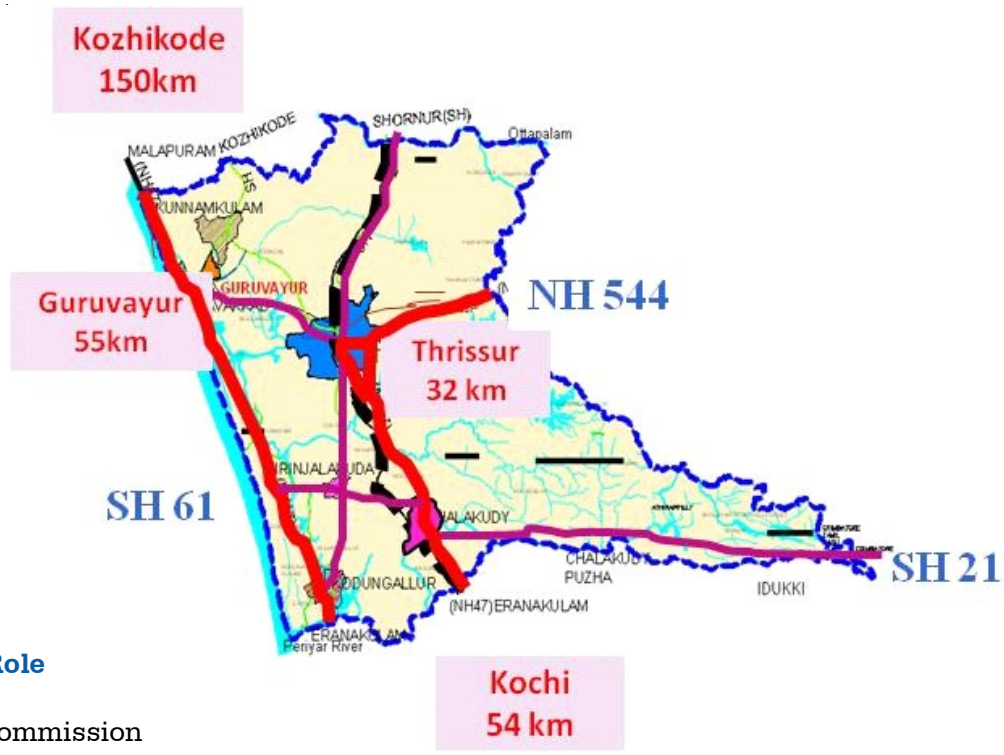


Fig. 2.2 Linkages of Chalakudy Town

2.3 Regional Role

National Commission on Urbanisation (NCU) identified Kochi region as one of the national priority cities (NPC). As per their report Kochi – Thrissur corridor is spatial priority urban region. Chalakudy is one of the townships in this corridor.

As per the future urban profile of the state delineated in the State Urbanization Report (SUR) for 2021, Chalakudy Town forms part of the delineated urban cluster as shown in figure 2.3.

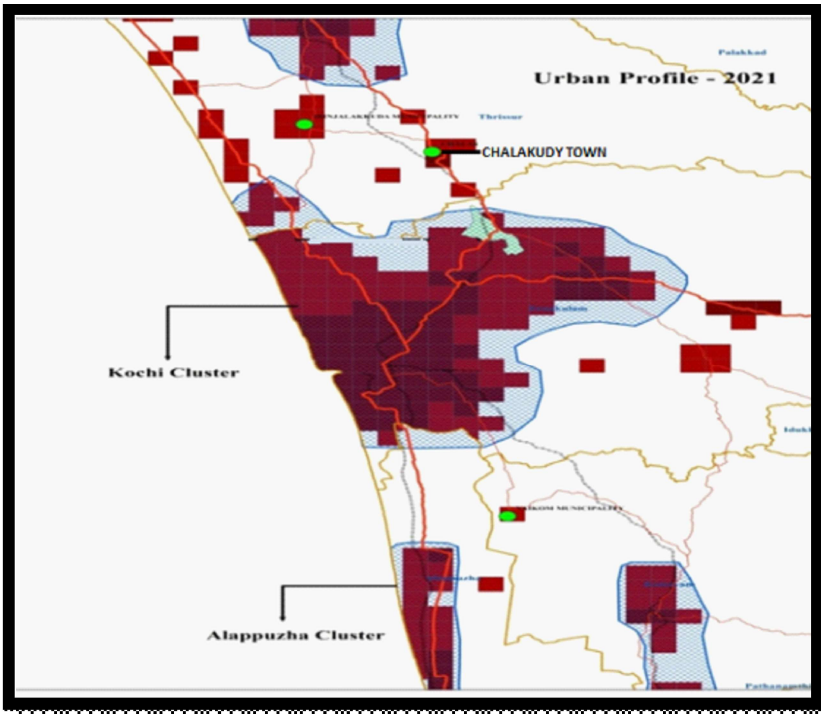


Fig: 2.3 Future Urban Profile 2021

According to the state's urbanization trend, there will be an urban corridor developing along the sides of the NH 544. The development is expected to happen in many nearby LSGIs. As per the delineated urban profile for 2031, Chalakudy forms part of the delineated urban corridor of 'Alappuzha - Ernakulam -Thrissur - Palakkad' as shown in figure 2.4. It is thus evident that the town is part of thriving urban development corridor of the state . The SUR recommends preparation of regional plans for the delineated urban cluster/ corridor and its influence area and settlement level plans for each LSG within this regional frame work.

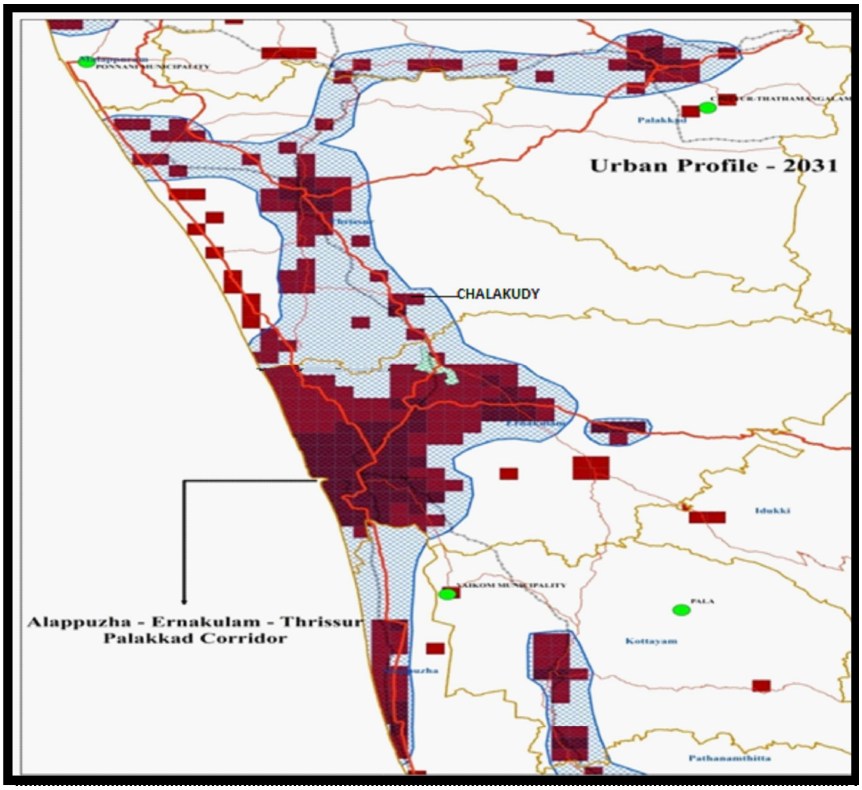


Fig: 2.4 Future Urban Profile 2031 – Alappuzha - Ernakulam– Thrissur - Palakkad Corridor

2.4 Development concept of Thrissur district

The spatial structure gives a frame work for determining the location of future development activities rationally. Spatial structure of the district is derived by integrating hierarchy of settlements and nodes, the transportation network and activity pattern as evolved in the District.

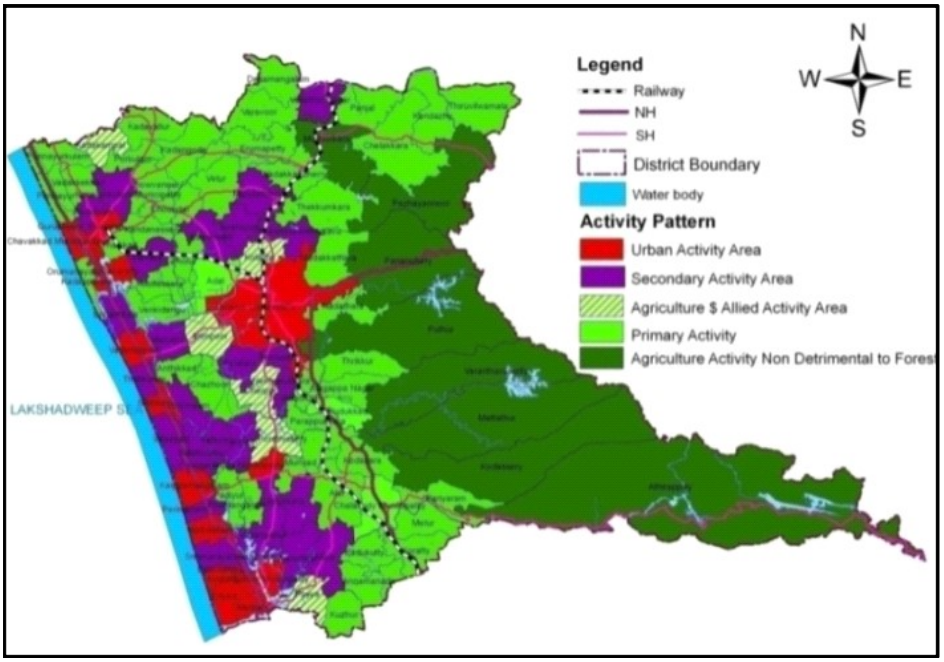


Fig.2.5 Activity pattern of the district

Spatial Plan (DSP) and the Integrated District Development Plan (IDDP) for the Thrissur District.

As per DSP and IDDP the town belongs to primary and secon dary activity area. Most parts of Chalakudy Town come under the primary activity area. In the district scenario, this place has a concen tration for agricultural activities and is expected to have a thrust for primary activities. The Functi onal character of Chala kudy Town is rural.

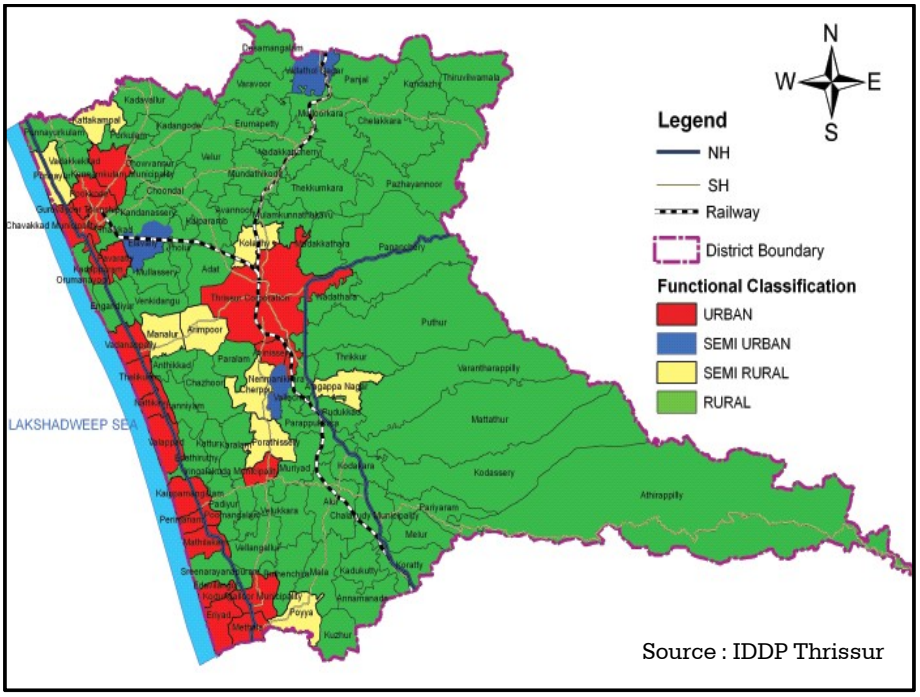


Fig. 2.6 Functional character of LSGIs in the district

Chalakudy is an existing second order settlement within the District. As per the studies conducted for DSP and IDDP the Town is a suggested second order settlement. The service area of the Town is delineated in the DSP.

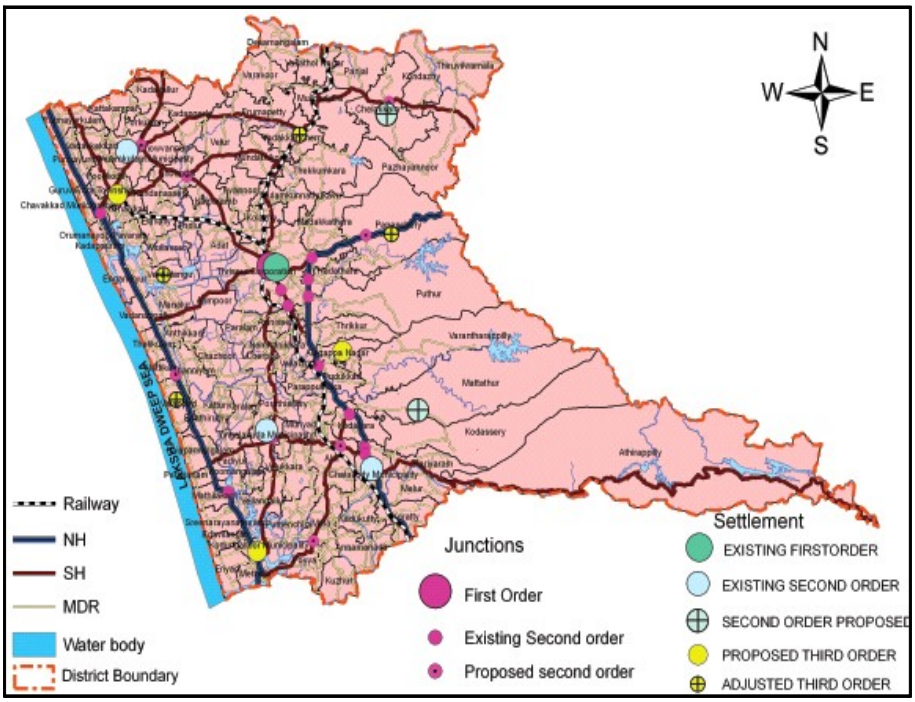


Fig. 2.7 Hierarchy of settlements

Source : IDDP Thrissur

From the development concept of the district shown in fig 2.8, it is clear that Chalakudy Town falls under the zone Economic Development Corridor (EDC). In this zone the tertiary and secondary activities (especially industrial activity that trigger economic development) are expected to flourish. This zone has to play a key role to trigger the economic growth and to generate employment opportunities. This zone is suitable for heavy/ medium scale industries, industrial parks, IT & Info parks, good quality education and health care institutions.

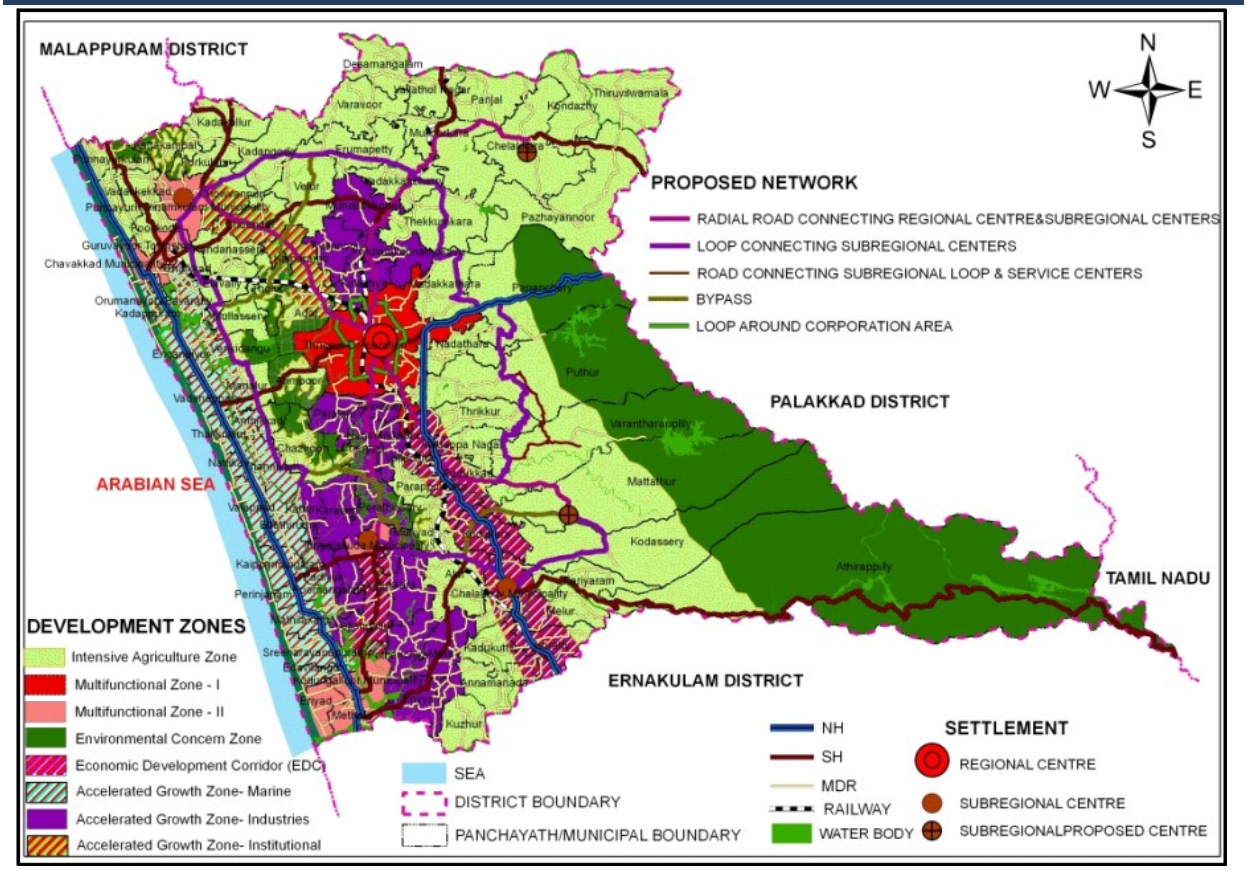


Fig. 2.8 District development concept

Source : IDDP Thrissur

2.5 DELINEATION OF PLANNING AREA

The planning area of a master plan shall be governed by the development scenario. The regional setting study has been resorted for delineation of planning area. Planning area has been delineated by studying the urban profile, functional character and land use concentration pattern of the neighbouring Panchayats of Chalakudy town, such as Kadukkutty, Melur, Pariyaram, Kodakara, Alur, Mala and Kodassery and the resultant activity pattern. The character of settlements in the service area is as given in table 2.1.

Table 2.1 Character of adjacent settlements of Chalakkudy

Settlements	Future Urban Profile	Functional Character	Land use concentration	Activity Pattern
Kadukkutty	Non Urban	Rural	Agriculture	Primary activity
Melur	Non Urban	Rural	Agriculture	
Pariyaram	Non Urban	Rural	Agriculture	
Kodakara	Non Urban	Rural	Agriculture	
Alur	Non Urban	Rural	Agriculture	
Mala	Urban	Rural	Urban	Secondary activity area
Kodassery	Non Urban	Rural	Plantation	Agricultural activity non detrimental to forest

Source : IDDP Thrissur

From the above table, it is clear that none of the adjacent panchayats are showing urban character and they are predominantly rural. The future urban trend is also non-urban for these wards except for Mala, the neighboring Panchayat outside the municipal limit which exhibits a future urban development trend. Since a smaller area, it is ignored. Functional role of urban area alone is taken for delineation, thus area within the Chalakudy town limits is taken for planning.

2.6 SERVICE AREA OF THE TOWN

Chalakudy Town is an existing second order settlement within the district as per the IDDP as well as DSP. As per these reports in the proposed hierarchy of settlements also Chalakudy holds second position. The service area of the Town as per the their studies includes the nearby LSGs of Methala, Poyya, Kuzhur, Annamanada, Puthenchira, Mala, Kadukkutty, Koratty, Melur, Pariyaram, Alur, Kodakkara, Parappukkara, Pudukkad and Alagappanagar. It should also act as a third order service provider.

Table 2.2 Area and population details of influence region

Settlement	Service Area	Area (Sq.Kms)	Population	
			2001	2021 (Projected)
Chalakudy Town	Alur	34.39	40562	44820
	Kodakara	21.36	30123	33285
	Mattathur	103.11	45919	49960
	Kodassery	93.9	33061	36354
	Chalakudy (M)	25.23	48380	53458
	Pariyaram	10.08	21972	24278
	Athirapilly	489	9643	9001
	Melur	23.3	26538	29324
	Koratty	7.50	31984	35341
	Kadukkutty	17.63	23488	25954
	Mala	28.35	33177	36660
	Annamanada	25.08	28724	31739
	Kuzhur	19.11	19956	22051
Total		**898.04**	**393527**	**432225**

Source :IDDP,Census 2011

The regional connectivity of the Town and the presence of higher Educational facilities within the Town influence the surrounding Panchayats in many ways. The town has prominent role in the regional transportation network of the region since it acts as a Tourist station for the tourist proceeding to enjoy the flavors of east. Chalakudy Town has so many micro industries, almost 127 micro industries are functioning inside the Town area. There is a proposed mini industrial unit within town area. Hence the industrial development potentials of the town has to be given due respect. Chalakudy is a centre for trade and commerce for the neighboring Panchayats and towns also.

CHAPTER 3

DEMOGRAPHY

Demography is the scientific study of human populations. It is a very general science that can be applied to any kind of dynamic living population. It encompasses the study of the size, structure, and distribution of these populations, and spatial and/or temporal changes in them. Perhaps human population is the most deciding factor and major resource of a place. Hence the study is treated as an utmost important one.

This chapter deals with the demographic characteristics of Chalakudy Town like population, population density, growth rate, sex ratio etc. The study is based on the census report 2011.

3.1 Population

According to the 2011 census, the total population of Chalakudy Town is 49525. As per 2011 census Chalakudy Town constitutes 1.59% of population of Thrissur district and 7% of the total urban area. The figure 3.1 shows the decadal variation of total population in Chalakudy town area through the years 1971 to 2011. It can be seen that since 1971 population had been steadily increasing, but during the last decade ie 2001-2011 rate of increase has come down.

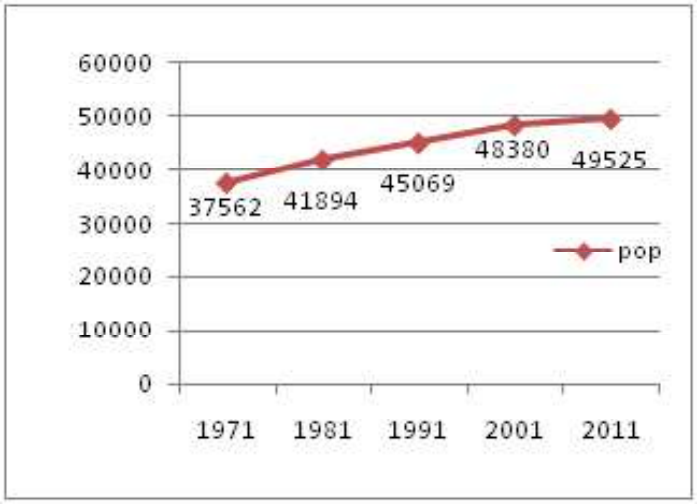


Fig. 3.1 Decadal variation in population

Source :Census of India

Figure 3.2 shows the population comparison with nearby LSGIs as per 2011 census. From this graph, it can be seen that Chalakudy Town has the maximum population and Pariyaram grama panchayat has the lowest population.

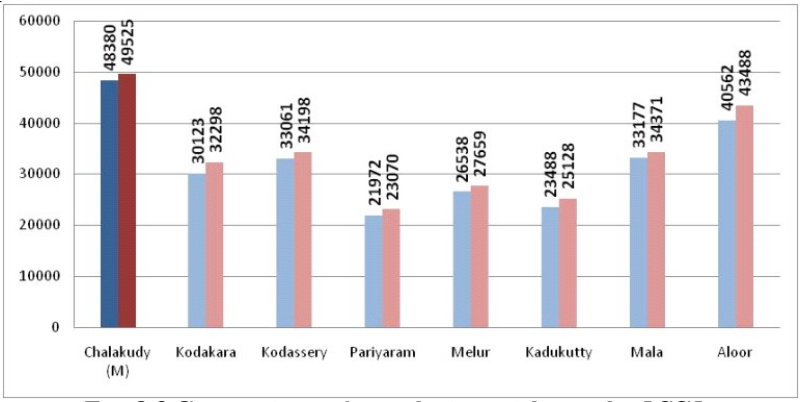


Fig. 3.2 Comparison of population with nearby LSGIs

Source :Census of India

Figure 3.3 shows the population comparison of the urban local bodies in Thrissur district. It is very clear that Chalakudy Town has second lowest population among urban local bodies in Thrissur district. Thrissur Corporation area is having the highest population and Chavakkad Town is having the lowest. The above two comparisons reveal the urban nature of the town area.

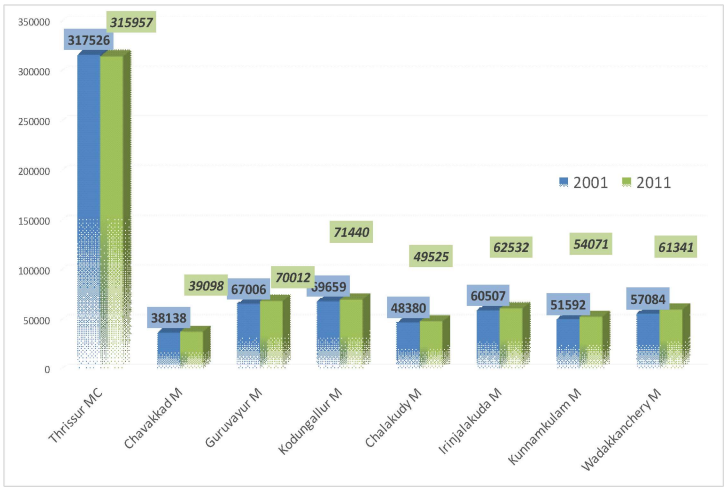


Fig.3.3 Comparison of population with urban LSGIs

Source : Census of India

3.2 Population growth rate

During the year 2001-2011, the population growth rate of Chalakudy Town is 2.36, which is less than the growth rate of the district (4.94) as shown in the figure 3.5. Figure 3.4 shows the variation of population growth rate of Chalakudy Town during the decades 1981- 2011.

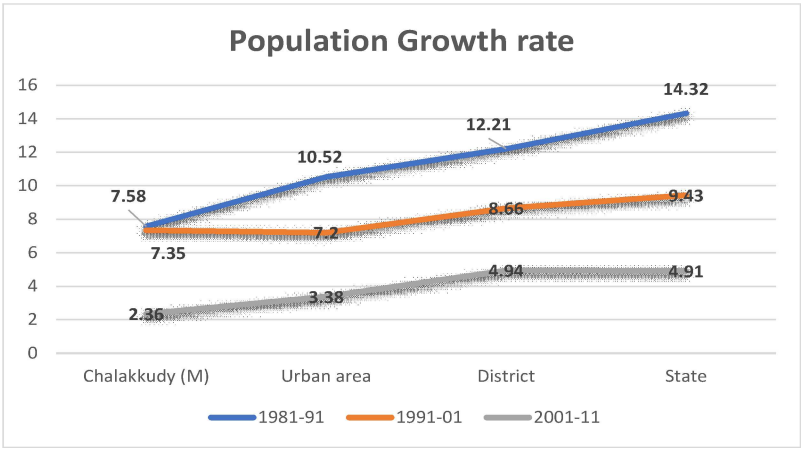


Fig. 3.4 Variation in population growth rate

Source : Census of India

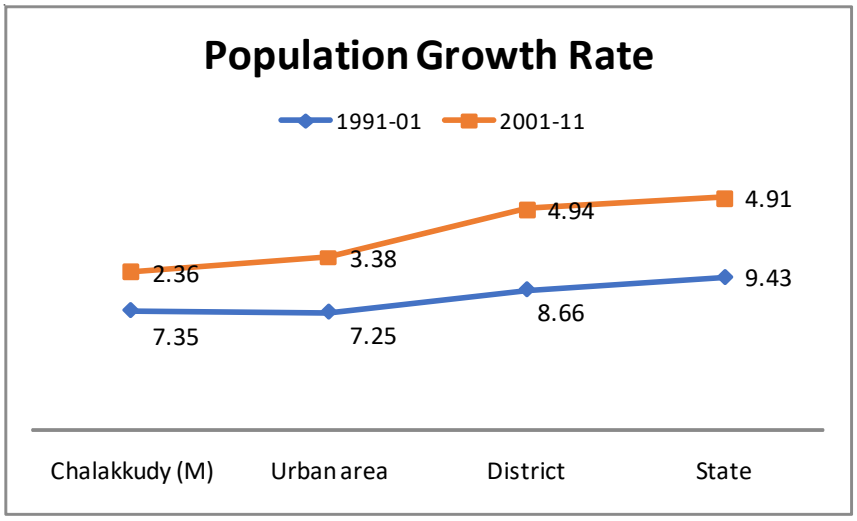


Fig. 3.5 Comparison of population growth rate

Source : Census of India

Growth rate of population is less than that of district & state in 1991-01 & 2001-2011. Growth rate of Chalakudy municipality is high when compared with urban area average.

It can be seen that during these 4 decades, population growth rate has gradually come down

from 7.58 to 2.36. Figure 3.6 shows the comparison of the population growth of Chalakudy Town with nearby LSGIs. During the decade 1991-2001, Chalakudy Town has fourth lowest population growth rate. From the figure 3.7, it can be seen that Chalakudy Town has second lowest population growth rate when compared to urban LSGIs in the district.

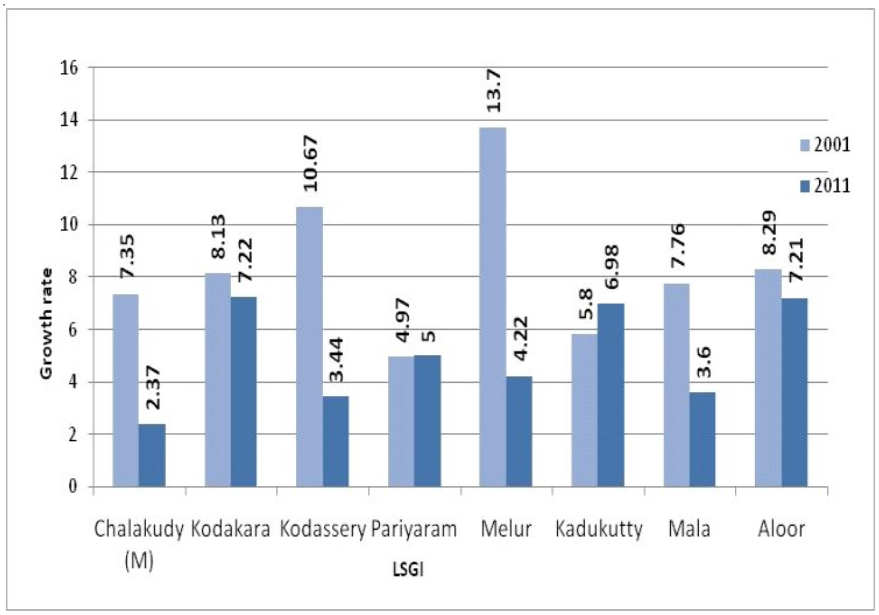
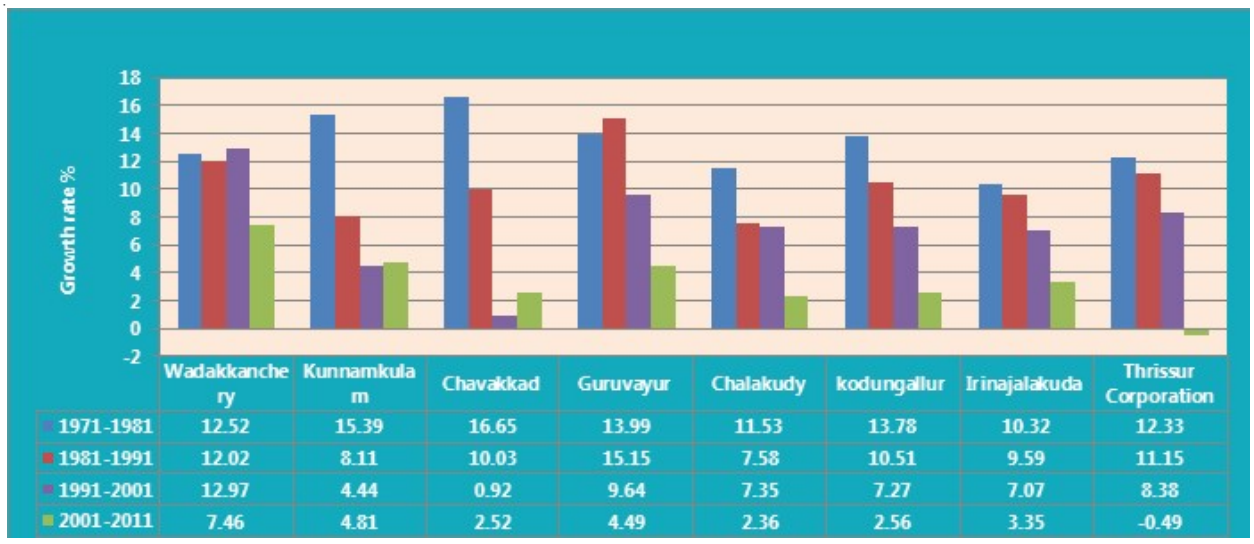


Fig. 3.6 Population growth rate comparison with nearby LSGIs



	Wadakkanchery	Kunnamkulam	Chavakkad	Guruvayur	Chalakudy	kodungallur	Irinajalakuda	Thrissur Corporation
1971-1981	12.52	15.39	16.65	13.99	11.53	13.78	10.32	12.33
1981-1991	12.02	8.11	10.03	15.15	7.58	10.51	9.59	11.15
1991-2001	12.97	4.44	0.92	9.64	7.35	7.27	7.07	8.38
2001-2011	7.46	4.81	2.52	4.49	2.36	2.56	3.35	-0.49

Fig. 3.7 Population growth rate comparison with urban LSGIs

3.3 Population density

Population density is a measure of population per unit area. This is an important index of population which shows concentration of population in a particular area. Density of population impacts the environment and ultimately will have an effect on the quality of life of the people. Reducing the load of density on resources and infrastructure is a huge challenge. As per 2011 census the population density of Chalakudy Town is 1963 person/sq.km. The population density is higher in comparison with that of district and in fifth position when compared with all other urban local bodies during 2011. It is shown in figure 3.8 and figure 3.9.

As per 2011 census Chavakkad town has the highest population density (3151) and the Chalakudy town has the fifth lowest population density (1963). From the comparison with the nearby LGSIs in 2011 census, it is clear that Chalakudy town has the highest population density (1963) which is shown in figure 3.10. The net population density of Chalakudy in 2011 is 2321. The variation of net density from gross density indicates the presence of vacant/ unutilisable land in the area. Net population density is lowest in comparison with urban LSGIs. The ward wise distribution of population density is given in figure 3.11. This shows that ward number 19 has the highest density.

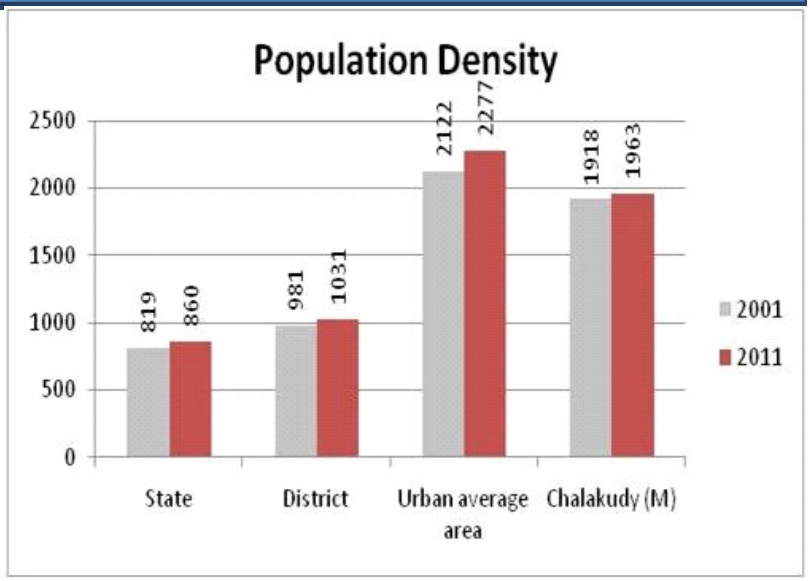


Fig. 3.8 Comparison of population density with District

Source : Census of India

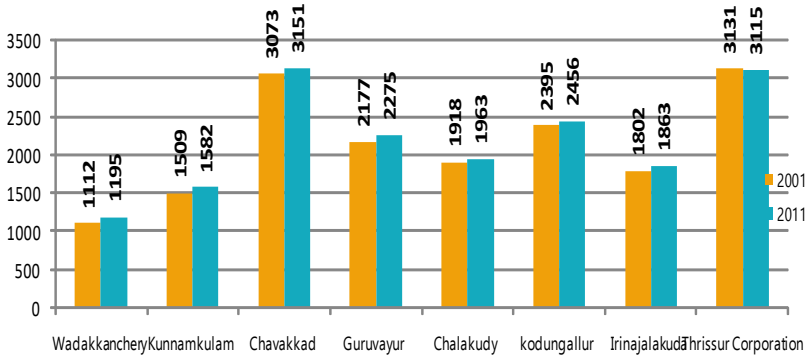


Fig. 3.9 Comparison of population density with urban LSGIs

Source : Census of India

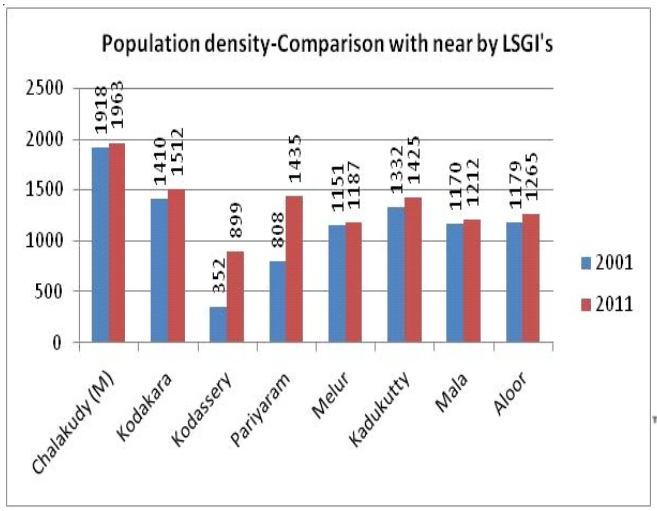


Fig. 3.10 Comparison of population density with nearby LSGIs

Source : Census of India

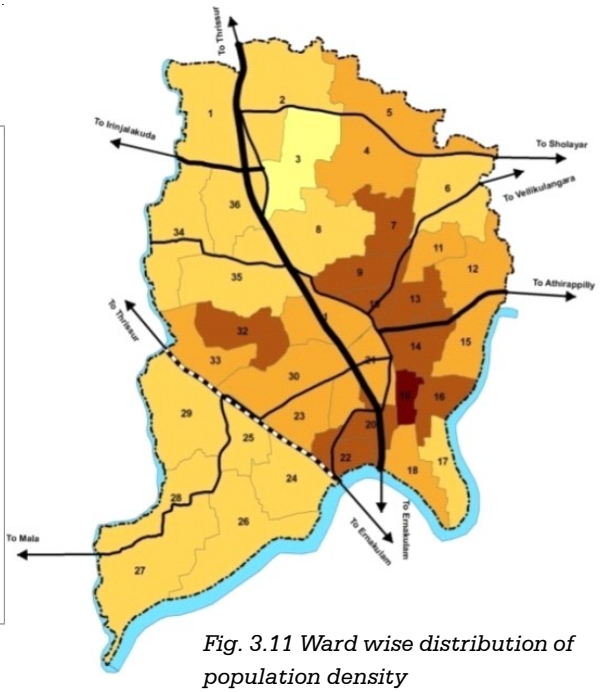


Fig. 3.11 Ward wise distribution of population density

3.4 Sex ratio and age-sex pyramid

As per 2001 census , sex ratio of the town is lowest among the the district , Urban area and State and in 2011 census sex ratio is slightly higher than the State. The graphical representation of the sex ratio in 2001 & 2011 is shown in figure 3.12. According to this, the highest sex ratio is in Chavakkad town and lowest is in Thrissur Corporation. On considering only towns, Chalakudy town is in the second lowest position. The pictorial representation of this data is shown in figure 3.13.

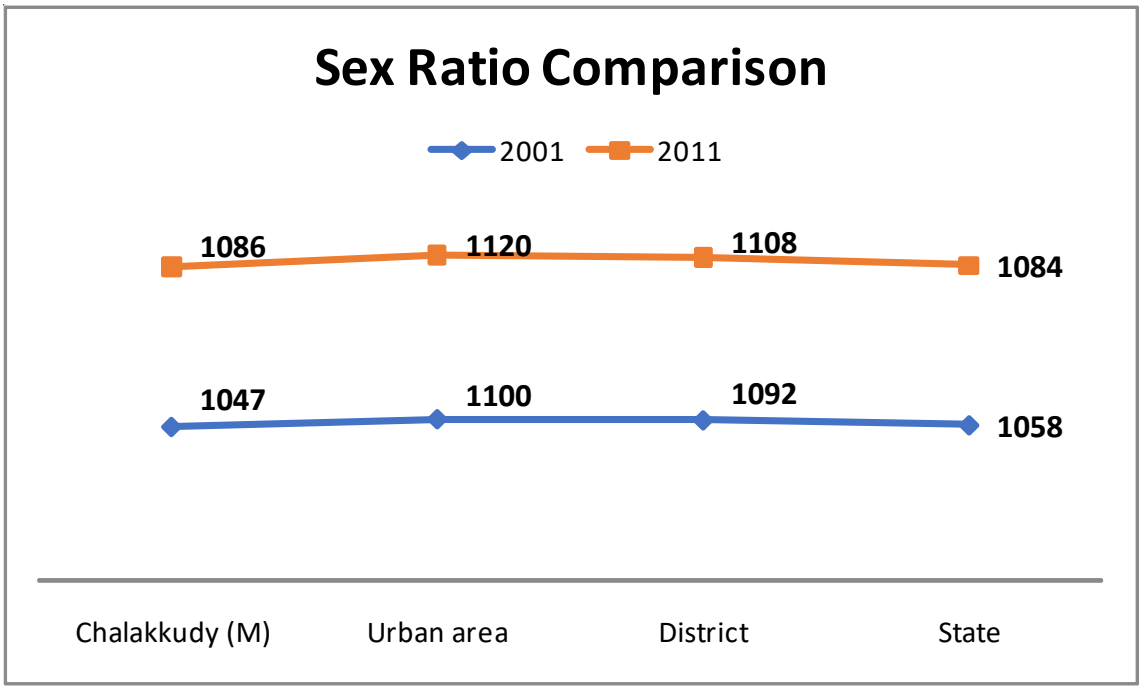


Fig. 3.12 Comparison of sex ratio

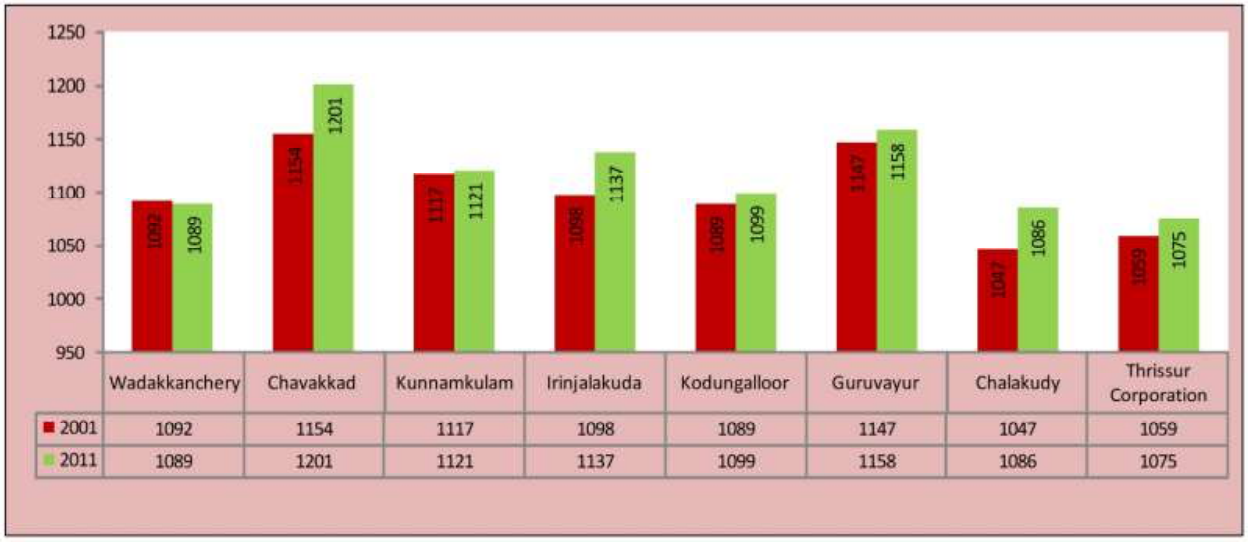
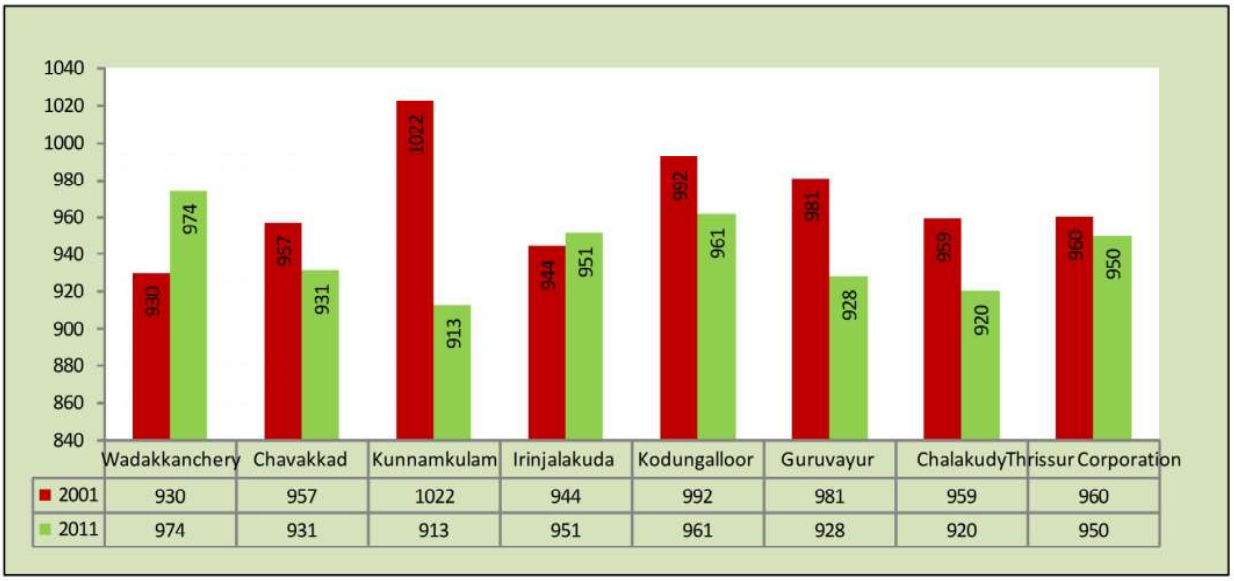


Fig. 3.13 Comparison of sex ratio of urban LSGI's

The data on child sex–ratio i.e., the sex-ratio of males and females in the age group 0 - 6 yrs is very prominent from the point of view that it is an indicator of the likely future trends of sex-ratio of the population and an indicative of the birth rate. As per 2011 census, the child sex-ratio of the state is 964 and that of the district is 950. Variation of child sex-ratio of Chalakkudy Municipality during 2001-2011, in comparison with other ULBs in the district are shown in fig 3.14. During 2011 Chalakkudy Municipality displayed the second lowest Child sex ratio among ULBs.



	Wadakkanchery	Chavakkad	Kunnamkulam	Irinjalakuda	Kodungalloor	Guruvayur	ChalakudyThrissur Corporation
2001	930	957	1022	944	992	981	959	960
2011	974	931	913	951	961	928	920	950

Fig. 3.14 Comparison of childsex ratio of urban LSGI's



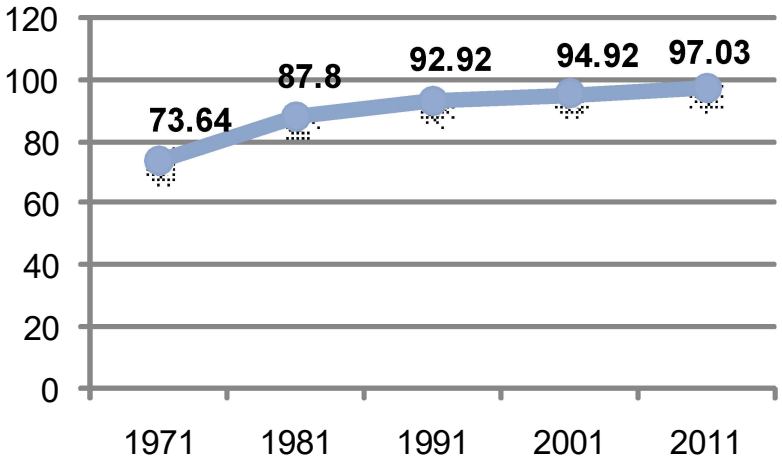
Fig. 3.15 Age sex pyramid

The age - sex pyramid shows the male - female population combination of the town area.

3.5 Literacy

Literacy is an indicator which shows light into the development scenario of a place. In India according to census criteria one with the ability to read and write is regarded as literate. It is the key for socio-economic progress.

In the last decade, the literacy rate of India has improved by 9%. Among the states Kerala topped with a 93.9% literacy rate. The literacy rate of Chalakudy Town is increasing over the time and is comparatively higher. Figure 3.16 shows the representation of the decadal variation of literacy rate in Chalakudy town area.



Source : Census 2011

Fig. 3.16 Variation of literacy rate

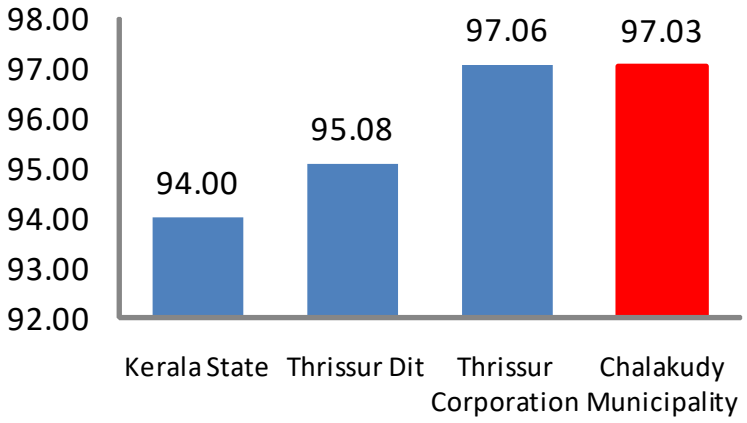


Fig. 3.17 Comparison of literacy rate with state and district

Source : Census 2011

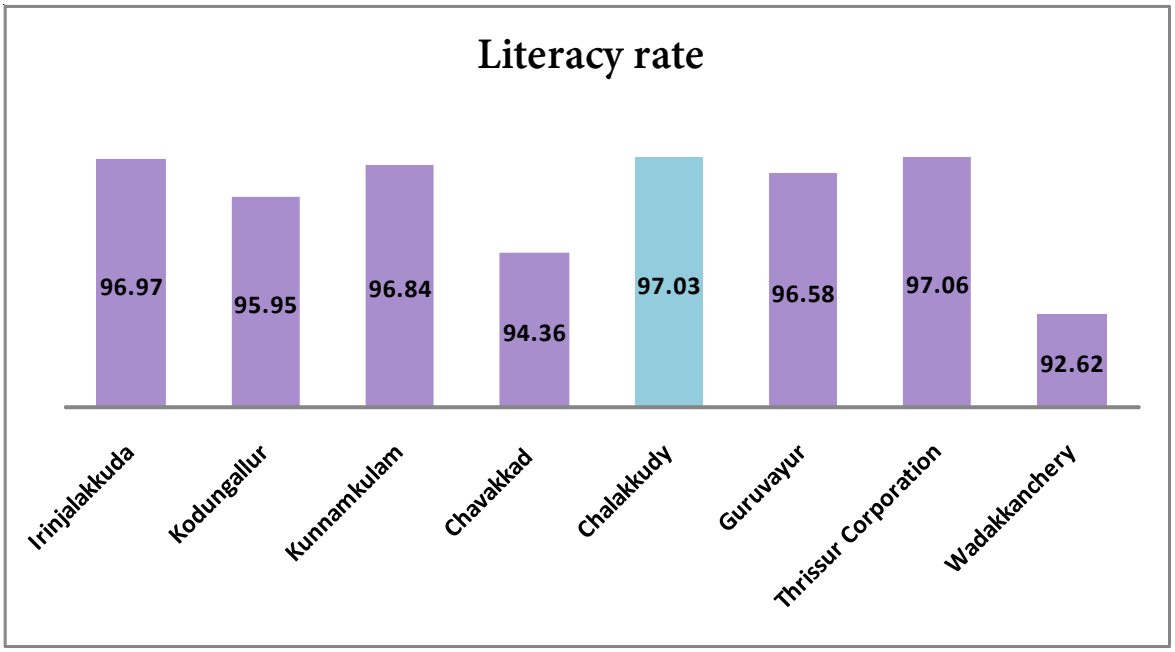


Fig. 3.18: Comparison of Literacy rate of urban LSGI's

Literacy rate of both male and female in Chalakudy town area are higher than that of state and district. On comparison with other towns, Chalakudy Town shows the second highest literacy rate (97.03). The representation of these data is shown in below figure 3.17 and figure 3.18.

3.5.1 Female literacy rate

As per census 2011 female literacy rate is well below male literacy rate. Literacy rate of Indian women is 65.46%. But among the states, Kerala rank top in female literacy with 92%. In Chalakudy Town the female literacy rate is 96.08% and that of men is 98.09%. Figure 3.18 shows the the decadal variation of female literacy rate in Chalakudy Town. From the analysis, it is evident that the literacy rates of men and women show an increasing trend. The female literacy rate laps behind male literacy rate. Lack of awareness and social customs may be some of the reasons for the same .

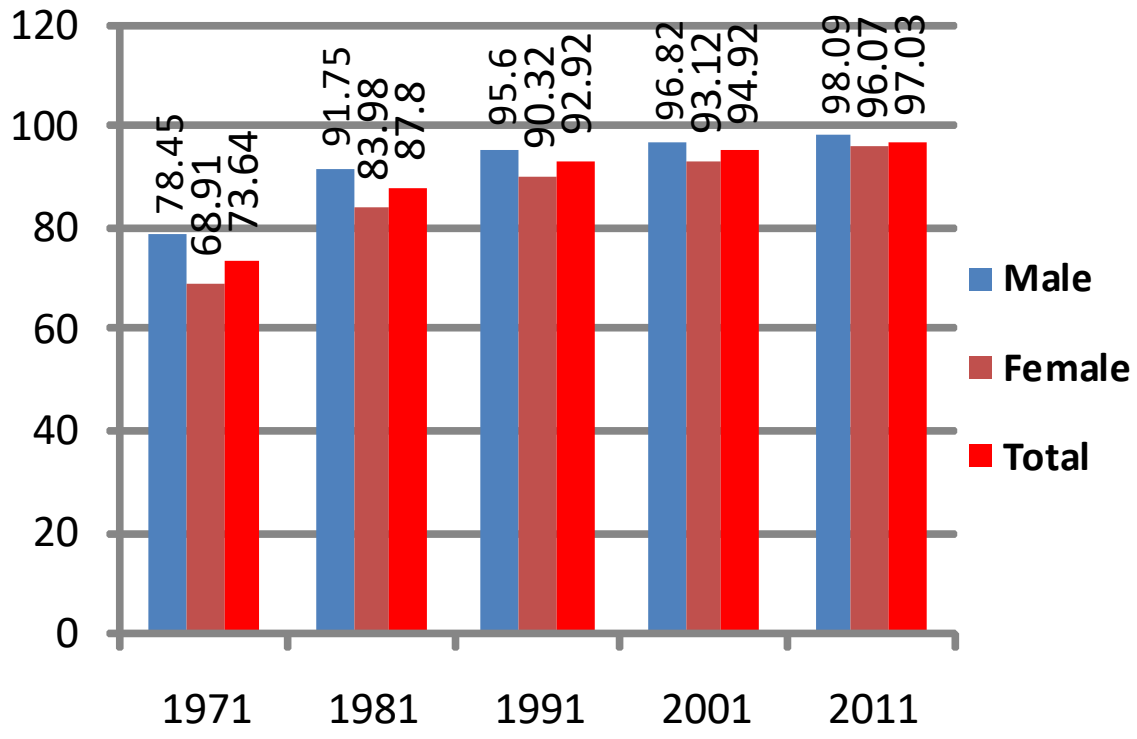


Fig. 3.19 Comparison of male, female and total literacy rate

Source : Census of India 2011

3.6 Household size

Household size is the number of people living together in one house. 2011 census has revealed that the household size in the cities is declining. This trend is not surprising as the nuclear family system is becoming more and more common in our country. Kerala is one of the nine states that have a medium household size of four or less. As per the 2001 census, house hold size of the Chalakudy Town is 4.45 and as per 2011 census, house hold size is 3.94 which is less than State, District and Taluk averages of respective years. From the table 3.1 it is clear that on an average Chalakudy Town has a nuclear family character.

Table 3.1 Comparison of household size

Sl.No	Area	Household size	
		2001	2011
I	Kerala	4.73	4.25
II	Thrissur District	4.65	4.11
III	Urban local bodies		
1	Wadakkanchery	4.66	4.17
2	Kunnamkulam	4.63	4.11
3	Kodungallur	4.56	3.98
4	Chalakkudy	4.45	3.94
5	Guruvayur	4.72	4.12
6	Irinjalakuda	4.45	3.92
7	Chavakkad	5.62	4.73
8	Thrissur corporation	4.59	4.03

Source : Census of India 2011

3.7 Conclusion

The total population of the LSGI shows an increasing trend and constitutes nearly 1.70% of that of the district. As per 2001 census population of Chalakudy is comparatively higher as compared to the surrounding area but lower among urban LSGIs. Population growth rate shows a decreasing trend and comparing with other urban LSGIs, Chalakudy Town is having second lowest growth rate(2011) . Population density is higher in comparison with district and in fifth position when compared with all other urban local bodies during 2011. In 2001 when compared with nearby LSGI's population density is higher. As per 2001 census sex ratio of the Town is less than the district and urban average. As per 2011 census sex ratio is less than district and second lowest in urban LSGI and Child sex ratio is less than district and second lowest when compared to other urban LSGI's. As far as demographic aspects are considered, Chalakudy town area shows the character of a city on transition. It does not have very high density of population and the growth rate has not come down to the level of a pucca urban area. But the general trend of nuclear family prevalent in Kerala is seen here as well. Also migration both outward and inward is not very prevalent here.

CHAPTER 4

OCCUPATIONAL STRUCTURE

The distribution of population according to the different types of occupations is referred to as occupational structure. This generally is an indicator of the economic development of the place. Developed nations generally have more people working in secondary and tertiary sectors. Occupational structure is important sociologically because of its effect on social class and social in equality. This chapter deals with the current occupational structure of the Chalakudy Town and its temporal variation.

4.1 Workforce participation rate

Workforce participation rate is the ratio between the labour force and the total population of the planning area. As per the 2011 census the WPR of Chalakudy town is higher than the district and fourth highest among the urban LSGIs. The WPR of Chalakudy town is 35.51.

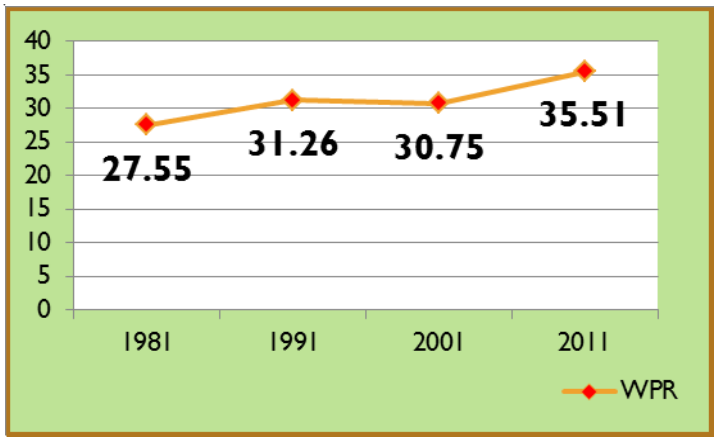


Fig 4.1 Variation in Workforce participation rate

Source: Census 2011

From the analysis of the decadal variation of WPR, It is clear that male WPR and female WPR are showing an increasing trend. The decadal variation of WPR is shown in figure 4.1. It can be seen that WPR is on the increase and there is a sudden variation in 2011 to 35.51 from 30.75 in 2001.

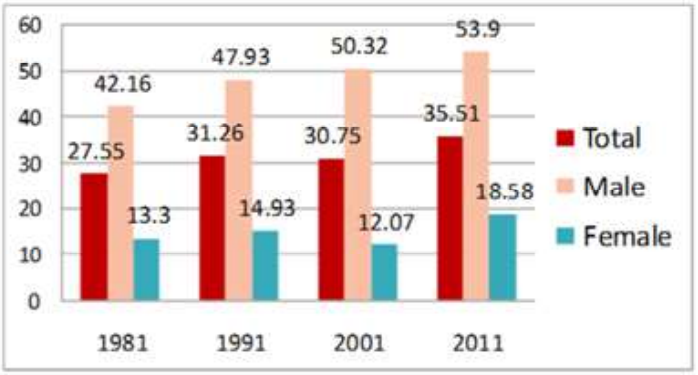


Fig 4.2 Male-Female comparison of WPR

Source: Census 2011

The figure 4.2 shows the male female split of WPR and its decadal variation. From both the figures it can be inferred that the increase in WPR may be due to an increase in female WPR compared to male WPR. The female WPR is generally picking up in the state scenario and the same is reflected here as well.

The WPR of Chalakudy is well above the district average and state level, which

indicates a better economic scenario (figure 4.3) . The workforce is compared with the nearby LSGIs to assess the relative situation of the planning area. On comparison of WPR with urban LSGI's (Census 2011) Chalakudy is in fourth position and on comparison with the nearby LSGI's (Census 2001) Chalakudy shows a lower value. This can be attributed to the urban rural mixed nature of the place. The comparisons are shown in figure 4.4 and 4.5.

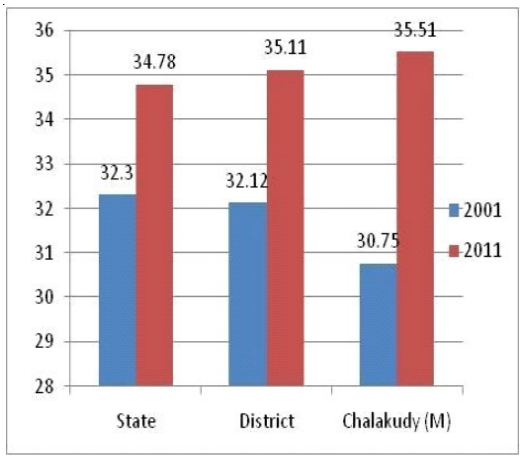


Fig 4.3 Comparison of Work Participation Rate

Source: Censusbook

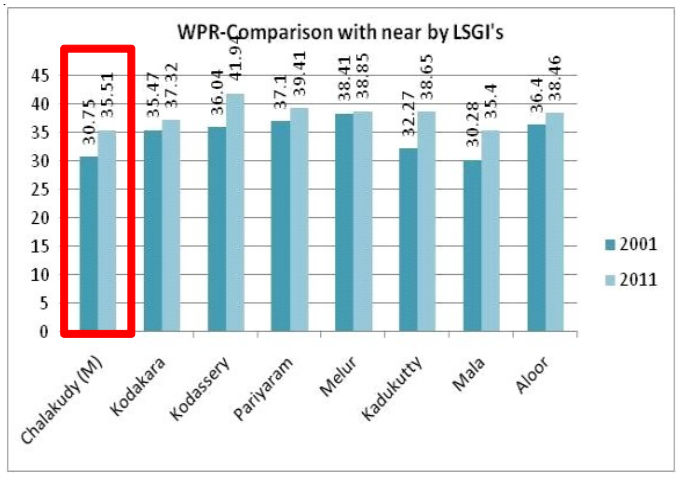
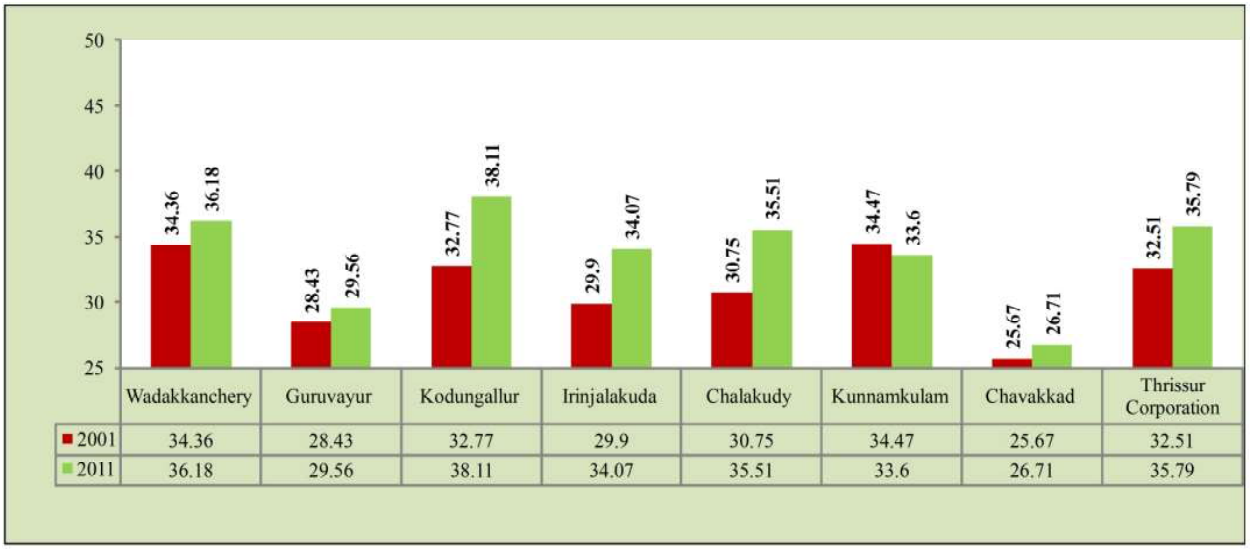


Fig 4.4 Comparison of WPR among nearby LSGIs

Source: Censusbook



	Wadakkanchery	Guruvayur	Kodungallur	Irinjalakuda	Chalakudy	Kunnamkulam	Chavakkad	Thrissur Corporation
2001	34.36	28.43	32.77	29.9	30.75	34.47	25.67	32.51
2011	36.18	29.56	38.11	34.07	35.51	33.6	26.71	35.79

Fig 4.5 Comparison of WPR with other urban LSGIs

Source: Censusbook

4.2 Occupational structure

As per the census classification, workers are classified into main and marginal workers. Main workers are engaged in economically productive activity for six months or more in a year, while marginal workers work for less than six months a year. Out of total

workers 89% are the main workers and 11% are the marginal workers (figure 4.6).

Figure 4.7 shows the temporal variation of total workers and main workers. It is clear that increase in the total workers is directly proportional to the main workers in the decade 2001-2011. This shows that majority of job opportunities created during the last decade are of a permanent nature.

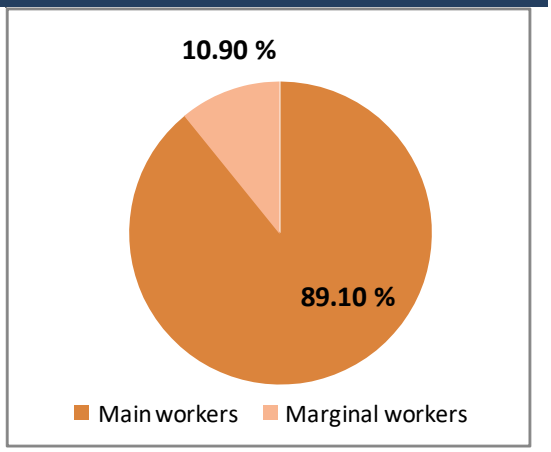


Fig 4.6 Main and marginal workers

Source: Census 2011

Main workers are categorised as cultivators, agricultural labourers, household industrial labourers and other workers. This classification is generally termed as the occupational structure of the planning unit.

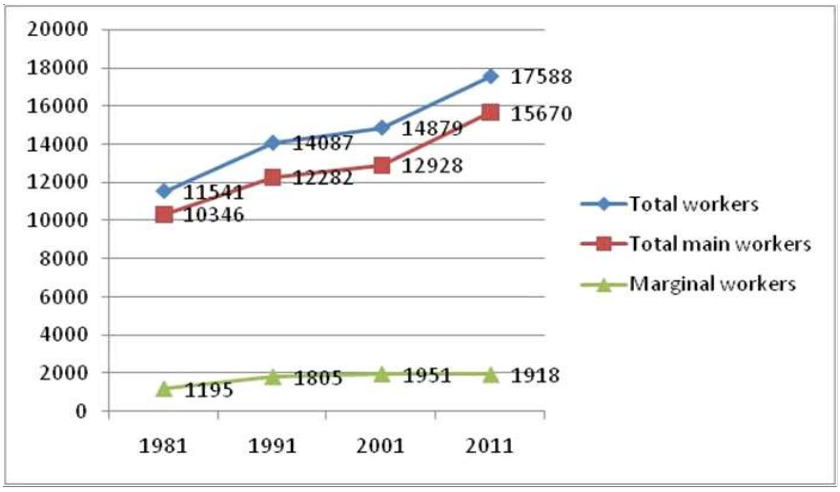


Fig.4.7 Variation of total workers and main workers

Source: Census 2011

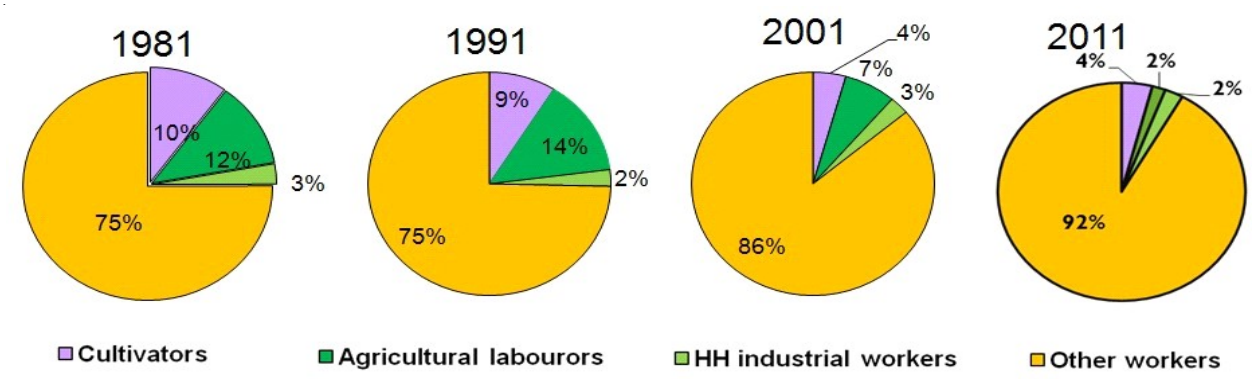


Fig.4.8 Occupational structure- 1981,1991,2001 and 2011

Source: Census 2011

The decadal temporal variation of the occupational structure through the year 1981-2011 is given in figure 4.8. It can be inferred that the agricultural related workers got reduced over the years. Pattern of occupation got shifted from agriculture and industry to other sectors. The cultivators decreased by 8% during the period 1981-2011. Industrial related workers also has come down from a good 10% to 4% in 2011. This is in accordance with the trend exhibited at the state level. This transition is mainly owing to the wide range changes in terms of ownership of land, cropping pattern, cultivation practices etc.

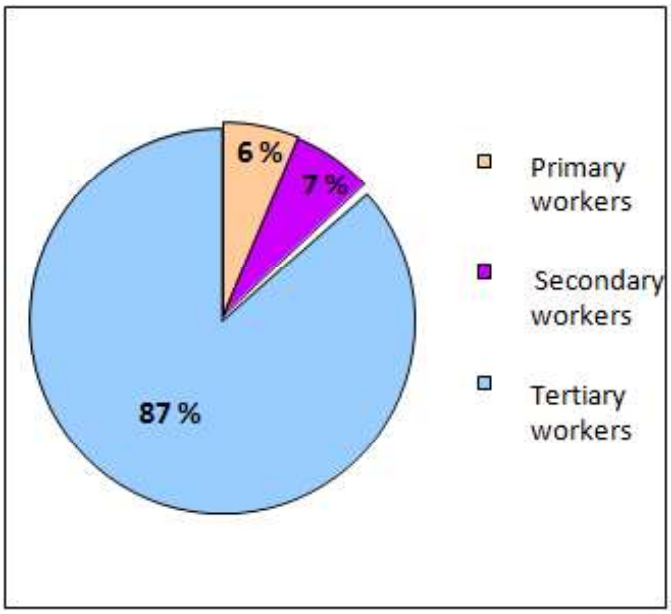


Fig. 4.9 Threefold classification of workers

Source: Census 2011

The current three fold classification of workers arrived at from socio economic survey -2012 is given in figure 4.9. This shows that secondary and teritiary sectors are tending to form the economic base of the town. Primary sector is on the verge of a decline. This is an indicator of an urbanisation trend. On comparing the occupational pattern with other urban LSGIs of the district, it can be concluded that Chalakudy along with Kunnamkulam , Wadakkanchery and Irinjalakuda has a little greenery left in the race towards urbanization (figure 4.10).

Table 4.1 Percentage of workers in each category

Type	Average % for the LSGlineachcategory
GovtEmployee	9.94
Agriculturelaborers	1.44
Agriculturecultivators	3.72
Livestockworker	1.06
NRI	11.96
Headloadworkers	0.53
Beediworkers	0.16
Carpenter	1.22
Coirworker	0
Householdindustrialworker	0.58
Construction(Helper)	3.83
Vegetabletrader	0.48
Retailfishvendor	0.16
Wholesalefishvendor	0.05
Conventionalfishman	0.05
Plantationworker	0
Hotelworker	0.9
Driver	7.07
Retailseller(Otherthanedibleitems)	1.12
Beverageworker	0.11
Constructionworker	2.6
Othermajorindustrialworker	6.06
Otherworkers	46.94

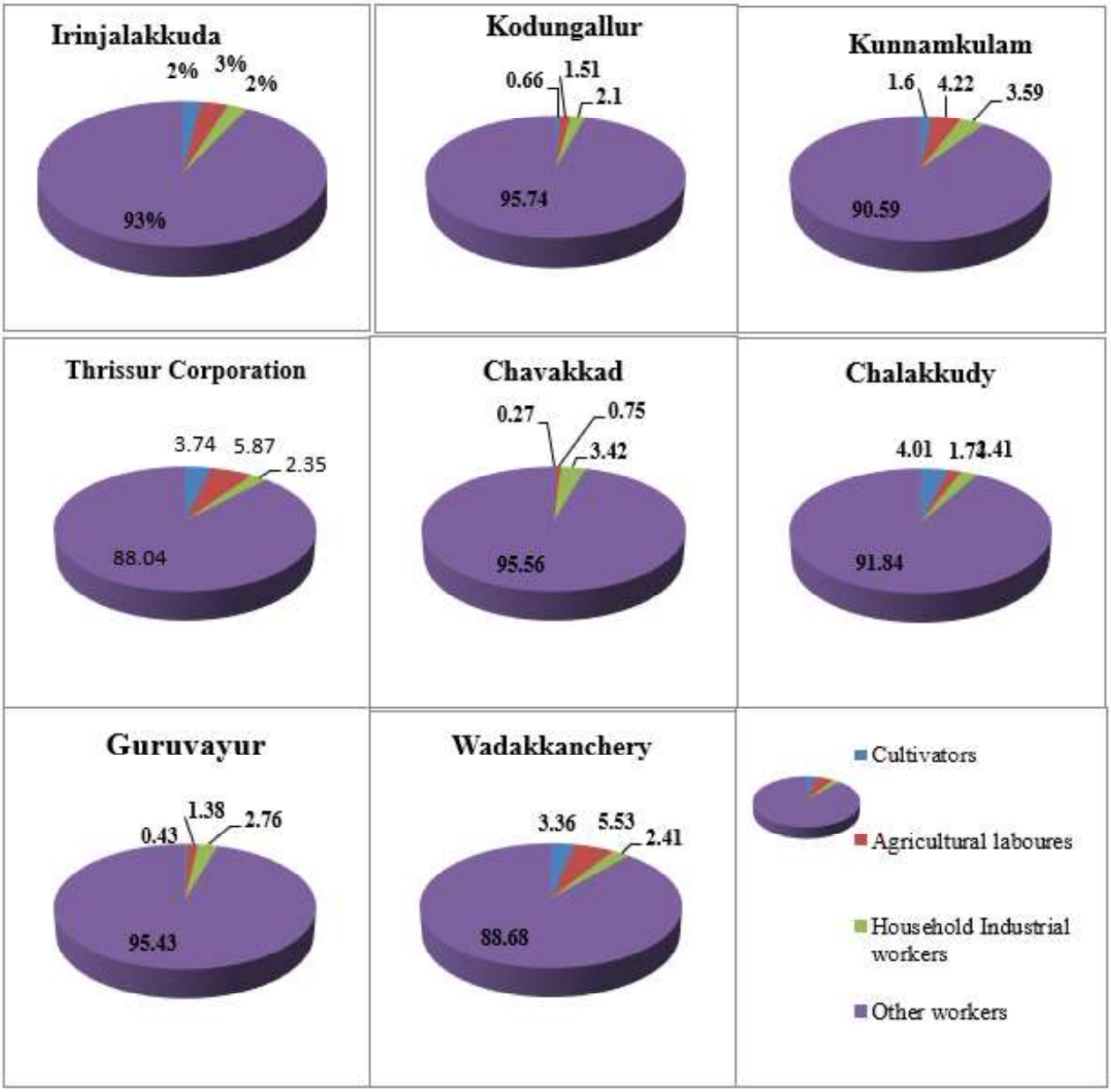


Fig.4.10 Comparison of occupational structure Source: Census 2011

The table 4.1 indicates the percentage of workers in each category as per socio economic survey - 2012. The major category in this table is other workers (46.94%) mainly from service sector and trade and commerce. The other major categories are NRI (11.96%), govt. employee (9.94%), driver (7.07%), other majority industrial workers (6.06%) etc.

As per 2001 census distributions of the Concentration Index of the workers are given in figures. 4.11, 4.12 and 4.13. The figure 4.11 represents the concen- tration index of cultivators, and it is clear that the CI of cultivators is seen more in wards 4, 19, 20. Its because of the presence of wet land. Figure 4.12 represents the concentration index of agricultural labourers.

The concentration of agriculture labourers is seen more in 3,7,10 wards. Figure 4.13 represents the concentration index of HH workers and more HH workers are seen in wards 11,19, 21, 28 and 29.

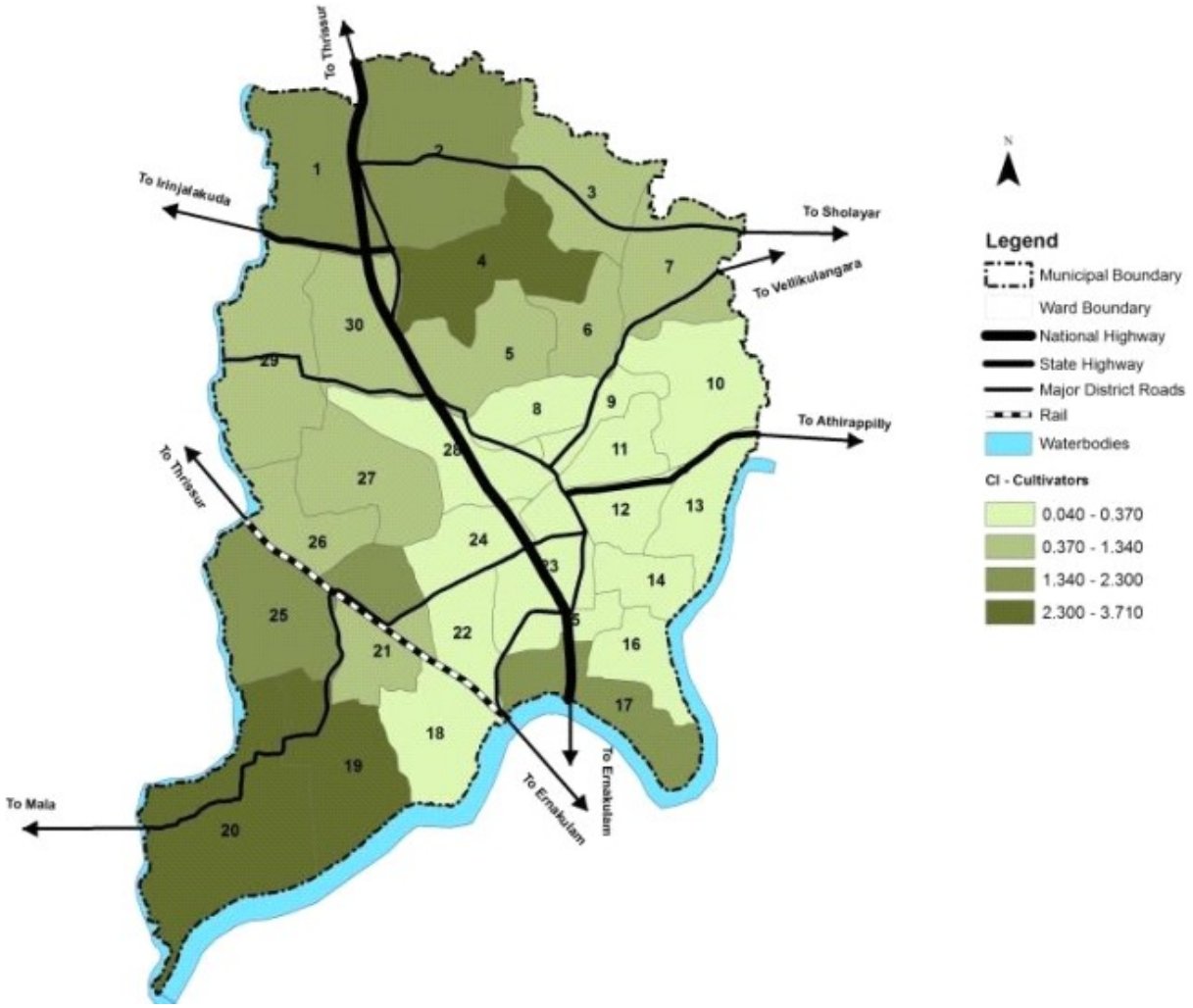


Fig 4.11 Concentration Index of cultivators

Source: Census data 2001

From the analysis of the above three figures, it is clear that more agricultural labourers are in northern borders of the town. It's because of the influence of the agricultural activity in adjacent panchayaths. Industrial workers are more concentrated beside the main industries.

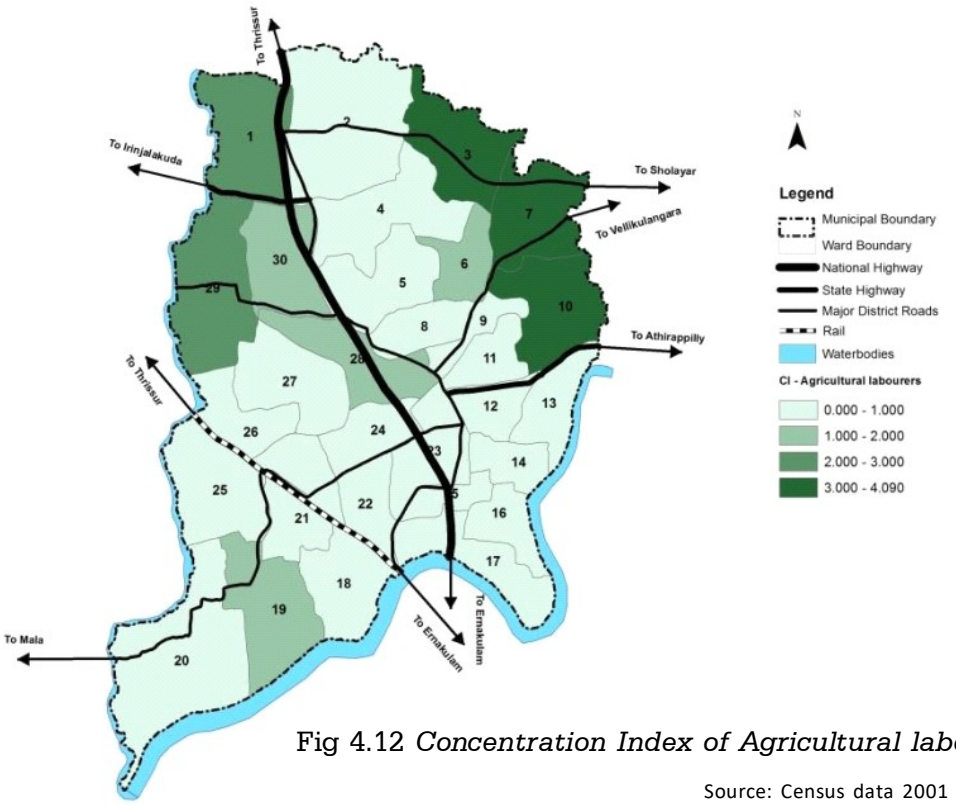


Fig 4.12 *Concentration Index of Agricultural labourers*

Source: Census data 2001

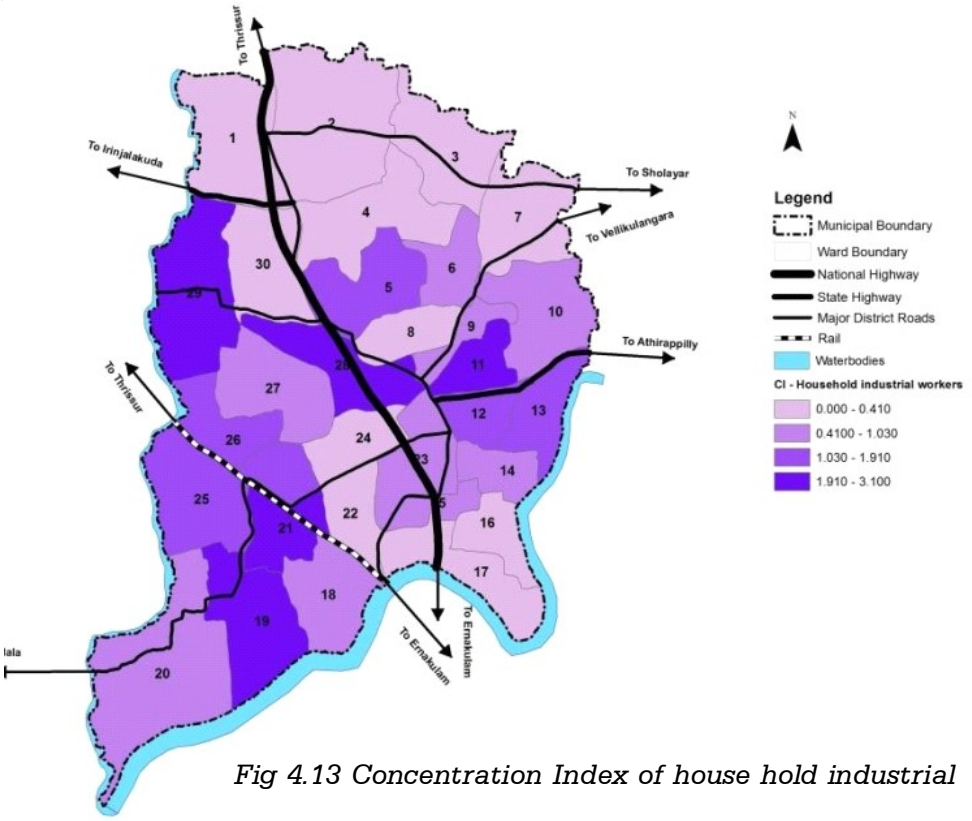


Fig 4.13 Concentration Index of house hold industrial workers

Source: Census data 2001

4.3 Conclusion

WPR shows increasing trend. As per 2011 census Chalakudy shows a higher WPR when compared with district and fourth highest in urban LSGI. Female WPR is also increasing. Along with increase in workers, Main workers show an increasing trend which indicates stable job scenario. Over the years Agriculture related workers got reduced. Pattern of occupation shifted from primary to other workers. Incomparison with other urban LSGIs other workers % is lower. Socio economic survey reveals that 12% of workers are employed abroad. 87% of workers are working in tertiary sector as per Socio - economic survey which shows development of town in business, trade and commerce etc.

CHAPTER 5
LAND USE

Land use involves the management and modification of natural environment such as field, pastures and settlements. Existing land use of Chalakudy town area and land use analysis is detailed out in this chapter. The study is based on the land use survey conducted in 2012.

5.1 Existing land use pattern

Existing land use of the Chalakudy municipal area based on the land use survey conducted in 2012 is shown in figure 5.1.

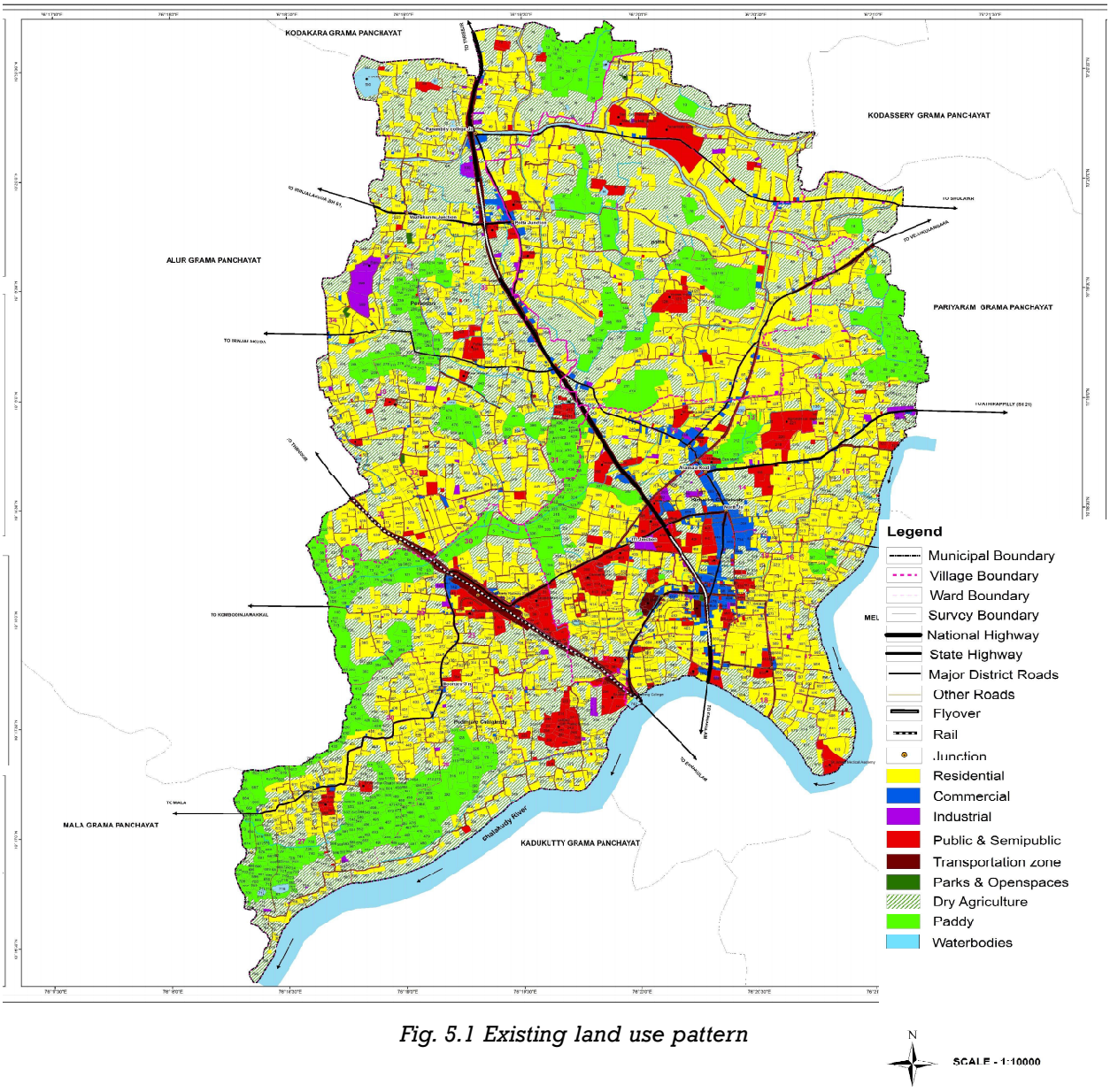


Fig. 5.1 Existing land use pattern

The total area of Chalakudy town is 25.23 sq.km. The land use can be divided into different categories namely Residential, Commercial, Industrial, Public and Semi-public, Agricultural, Parks and Open spaces, Transportation, Water bodies. The pattern of land use and the out comes of various analyses throw some light in to the structure of the land and the development directions of Chalakudy. The land utilised for agriculture activities is seemingly on the higher side in Chalakudy. Land use breakup is shown in table 5.1 and percentage of land use is shown in figure 5.2.

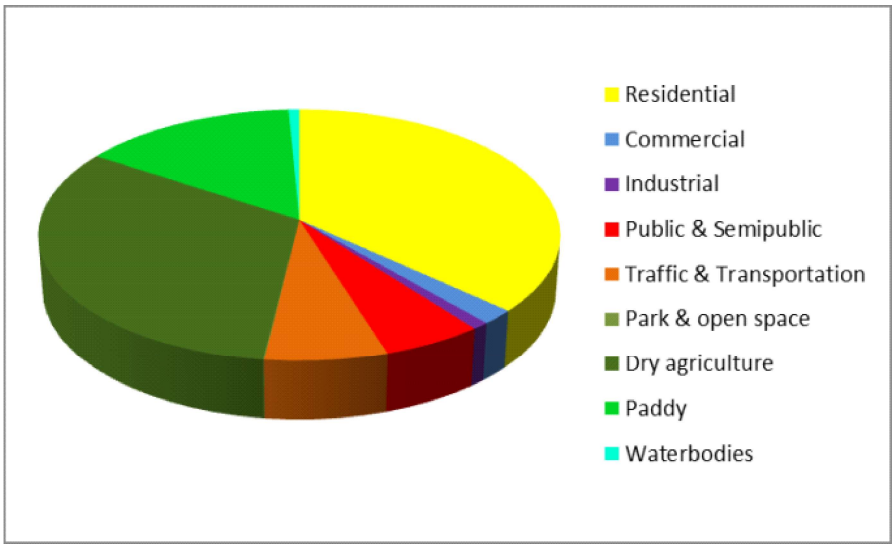


Fig. 5.2 Percentage of land use

Source: Land use survey 2012

Table 5.1 Existing break up of land use

Landuse	Area	%
Residential	9.27	36.76
Commercial	0.47	1.88
Industrial	0.23	0.92
Public & Semipublic	1.41	5.59
Traffic & Transportation	1.70	6.75
Park & open space	0.01	0.06
Dry agriculture	8.14	32.27
Paddy	3.79	15.01
Waterbodies	0.19	0.76
Total	25.22	100.00

Table reveals that out of the 25.22 sq.km. 9.27 sq.km. is utilised for residential activity comprising 36.76% of the total area. The next major activity is dry agriculture i.e. 8.14 sq.km amounting to 32.27% of the total area. Paddy land is a dominant land use here amounting to 3.79 sq.km. (15.01%). Then comes transportation land use (6.75%) and Public and semipublic land use amount to 1.41 Sq.Kms and nearly 5.59%.Commercial, industrial and water body contributes 1.88%, 0.92%, 0.76% of the total area respectively.

Table 5.2 Ward wise land use breakup

	Ward Name	Residential	Commercial	Industrial	Public	Agricultural	Park & Open Space	Transportation	Water bodies	Others
		1	2	3	4	5	6	7	8	10
1	Thanippara	0.298	0.005	0.015	0.015	0.577	0.000	0.047	0.057	0
2	Periyachira	0.405	0.030	0.008	0.059	0.734	0.002	0.145	0.046	0
3	PottaSchool	0.314	0.009	0.002	0.028	0.441	0.00	0.041	0.008	0
4	Alavi Centre	0.326	0.001	0.000	0.054	0.526	0.000	0.035	0.025	0
5	Panambilly College	0.289	0.002	0.007	0.082	0.506	0.000	0.063	0.019	0
6	Sithara Nagar	0.311	0.004	0.001	0.001	0.554	0.000	0.059	0.000	0
7	Pottachira	0.201	0.004	0.002	0.009	0.242	0.000	0.018	0.000	0
8	Parakkottikal Temple	0.321	0.008	0.002	0.048	0.581	0.000	0.042	0.000	0
9	St.Joseph Church	0.224	0.003	0.000	0.006	0.186	0.000	0.023	0.000	0
10	St.James Hospital	0.119	0.038	0.006	0.028	0.027	0.000	0.042	0.000	0
11	Koodapuzha Church	0.243	0.003	0.002	0.003	0.082	0.000	0.010	0.000	0
12	Thirumannamkunnu	0.235	0.002	0.016	0.005	0.401	0.000	0.020	0.003	0
13	Gandhi Nagar	0.146	0.006	0.003	0.098	0.099	0.000	0.018	0.003	0
14	Power House	0.241	0.040	0.000	0.052	0.160	0.000	0.035	0.000	0
15	Arattukadavu	0.327	0.002	0.006	0.009	0.145	0.000	0.038	0.000	0
16	Vettukadavu	0.253	0.001	0.000	0.032	0.104	0.000	0.023	0.000	0
17	Chenathunadu	0.233	0.002	0.001	0.031	0.122	0.000	0.022	0.000	0
18	GayathriAshramam	0.241	0.008	0.001	0.020	0.163	0.000	0.031	0.000	0
19	St,Marys church	0.078	0.027	0.000	0.015	0.048	0.000	0.018	0.000	0
20	Housing board	0.166	0.067	0.004	0.023	0.015	0.002	0.067	0.000	0
21	Municipal Quarters	0.154	0.116	0.029	0.121	0.134	0.000	0.099	0.000	0
22	Kannampuzha Temple	0.183	0.007	0.001	0.033	0.079	0.000	0.041	0.000	0
23	I.T.I.Ward	0.170	0.001	0.000	0.180	0.071	0.000	0.045	0.002	0
24	I.R.M.L.P.School	0.184	0.002	0.011	0.155	0.338	0.000	0.071	0.000	0
25	F.C.I ward	0.201	0.012	0.001	0.064	0.082	0.000	0.114	0.000	0
26	Moonjeli Ward	0.271	0.003	0.002	0.008	0.826	0.000	0.037	0.000	0
27	Kottat Ward	0.279	0.002	0.004	0.031	1.024	0.001	0.035	0.012	0
28	Mythri Nagar	0.260	0.006	0.000	0.000	0.355	0.000	0.035	0.000	0
29	Karakulathilnadu	0.378	0.003	0.007	0.001	0.666	0.000	0.063	0.000	0
30	Municipal office	0.328	0.008	0.000	0.041	0.416	0.000	0.053	0.000	0
31	ArayankalaMazjid	0.204	0.028	0.005	0.040	0.303	0.000	0.079	0.001	0
32	Thachudaparambu	0.333	0.002	0.005	0.019	0.221	0.000	0.035	0.000	0
33	V.R.Puram	0.326	0.006	0.002	0.013	0.184	0.001	0.042	0.002	0
34	Urabankunnu	0.390	0.005	0.076	0.008	0.505	0.007	0.033	0.003	0
35	Prasanthi Hospital	0.363	0.007	0.004	0.068	0.658	0.001	0.063	0.006	0
36	Karunalayam	0.272	0.003	0.006	0.025	0.347	0.000	0.060	0.000	0
	TOTAL	9.27	0.47	0.23	1.41	11.93	0.01	1.70	0.19	0

Source :Landuse survey 2012

Table 5.2 gives the ward wise land use break up for 36 wards of Chalakudy Town. Out of this almost 18 wards are showing predominance in residential land use. These wards are situated around the Chalakudy town and the V.R Puram area. The remaining wards are showing predominance in agricultural land use. Percentage details of ward wise distribution of landuse is given in figure 5.3.

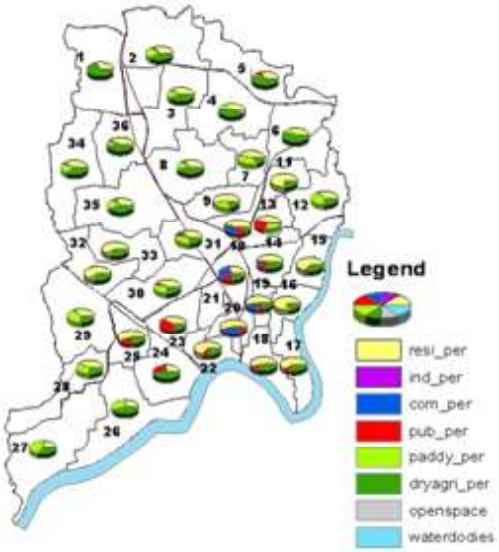


Fig. 5.3 Percentage share of ward wise land use

5.2 Comparison of land use

A comparison of the land uses among the urban LSGIs of Thrissur district is shown in figure 5.4. From the figure it may be inferred that Thrissur Municipal Corporation, Guruvayur, Wadakkanchery , Chavakkad and Kodungallur are having a high urban content of land use whereas Chalakudy is exhibiting a semi urban/semi rural content of land use. It has not lost its rural charm totally as in the case of other Towns.

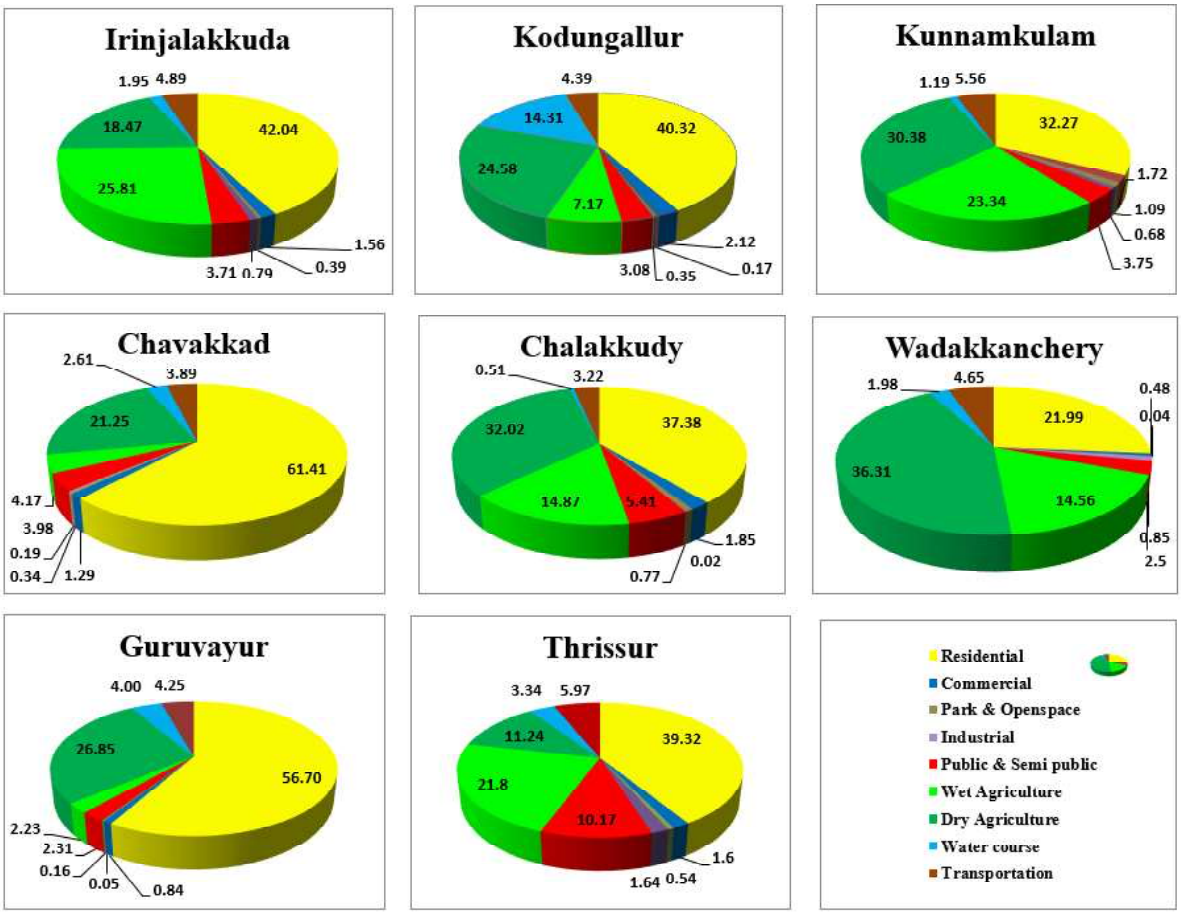


Fig. 5.4 Comparison of the land uses among the urban LSGIs

5.3 Concentration index of different land uses

The concentration index (CI) quantifies the extent of concentration of a particular land use in a ward. The concentration index can be one, less than one or greater than one. A concentration value greater than one indicates that there is a considerable concentration for the said land use in that area

$$\text{The concentration index of a particular land use in a ward} = \frac{\text{Percentage of that particular land use in the ward}}{\text{Percentage of that particular land use in the local body area}}$$

5.3.1 Concentration pattern of residential land use

Residential land use comes to around 36% of the total land area. Figure 5.5 shows the ward wise spatial distribution of concentration index of residential land use. Wards 11 (Koodapuzha church) and Ward 16 (Vettukadavu) are having high concentration index

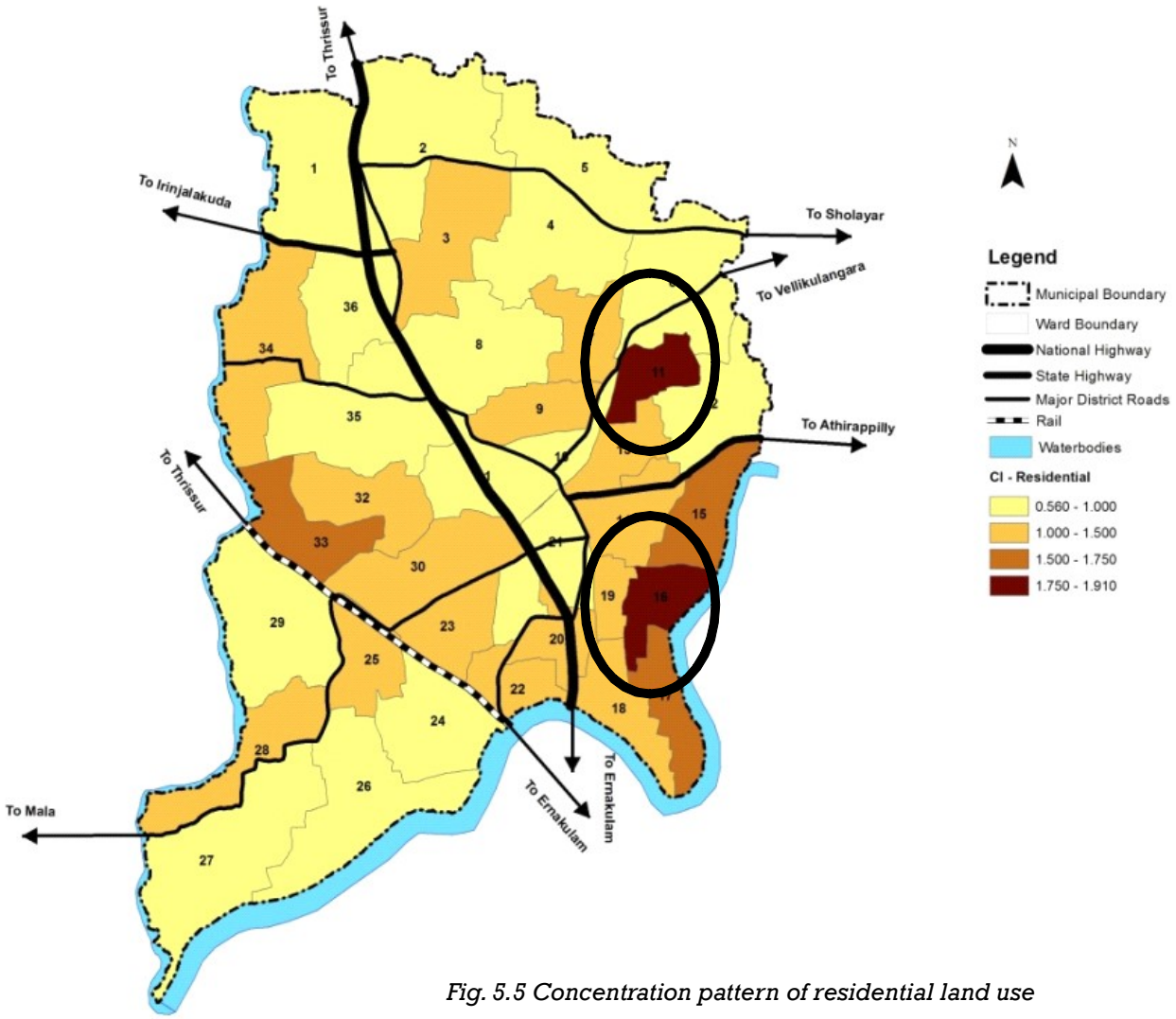
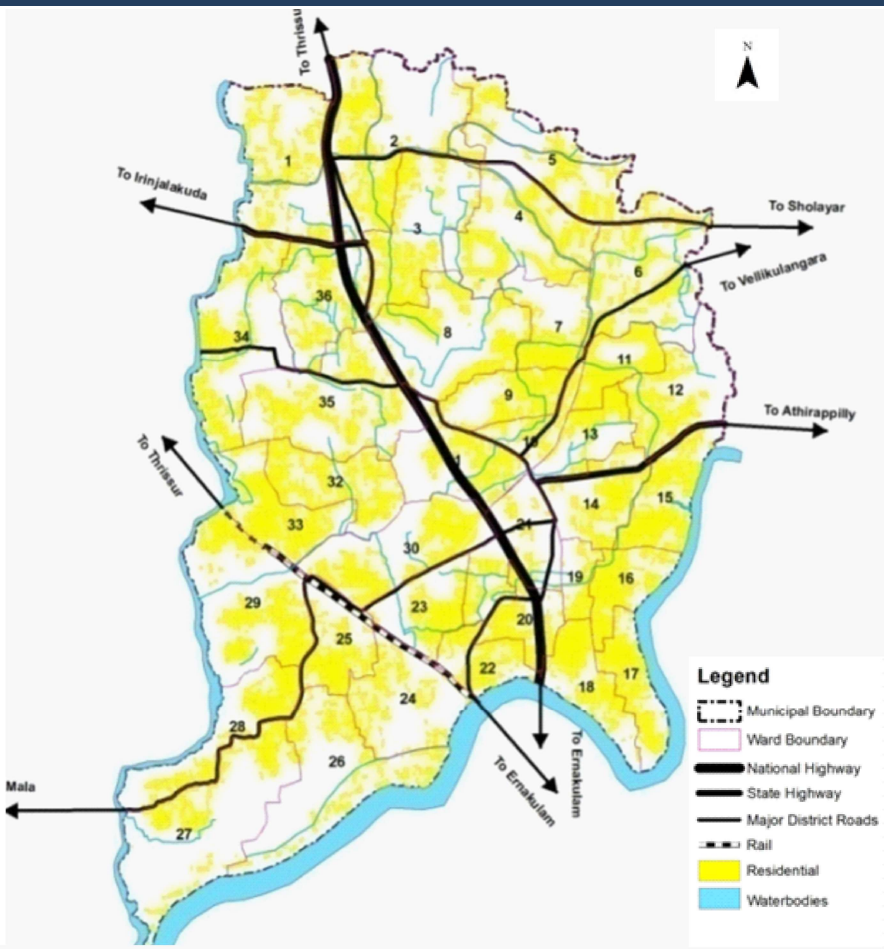


Fig. 5.5 Concentration pattern of residential land use

range from 1.75 - 1.91 and ward 32 has the CI range from 1.5 to 1.75. Wards on the northern side and south west corner are having the CI range from 1 to 1.5. Residential concentration

is developed in places with easy accessibility and availability of facilities. Generally the land cost will be high and people will have a tendency to fill up paddy and other agricultural land for residential uses. Also a natural growth of densely populated residential pockets will take place and this will make the provision of amenities difficult. Figure 5.6 shows the distribution of residential land use.



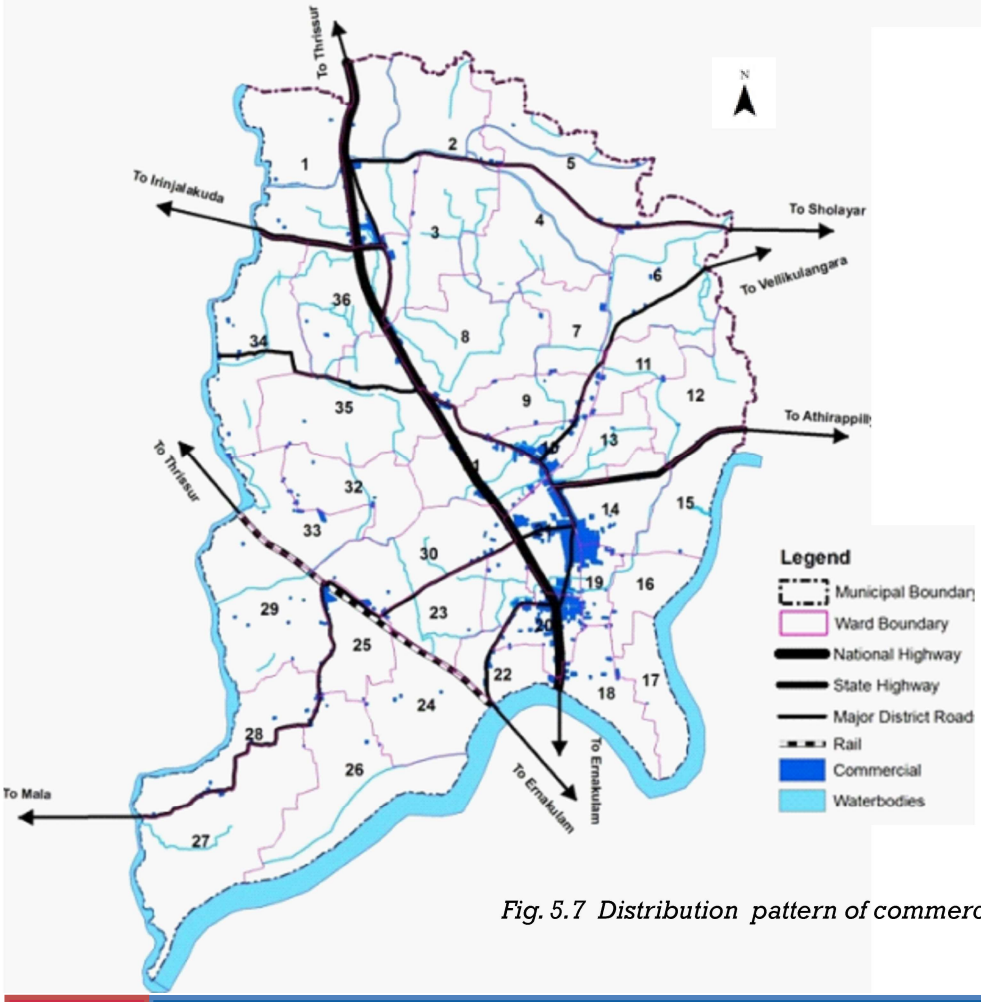


Fig. 5.7 Distribution pattern of commercial land use

5.3.2 Concentration pattern of commercial land use

Commercial land use constitutes only 2% of town area. Ward wise distribution of commercial land use of Chalakudy Town is shown in figure 5.7. From the figure we can infer that commercial concentration is more towards town centre and along NH 544. Generally the commercial land use is concentrated in the CBD area and is seen as a ribbon development along all the major road corridors. On the analysis of the commercial land use and the facilities available, a hierarchy for the nodes has been arrived at, according to which north and south junctions are first order nodes, Potta and Railway station junction are second order nodes.

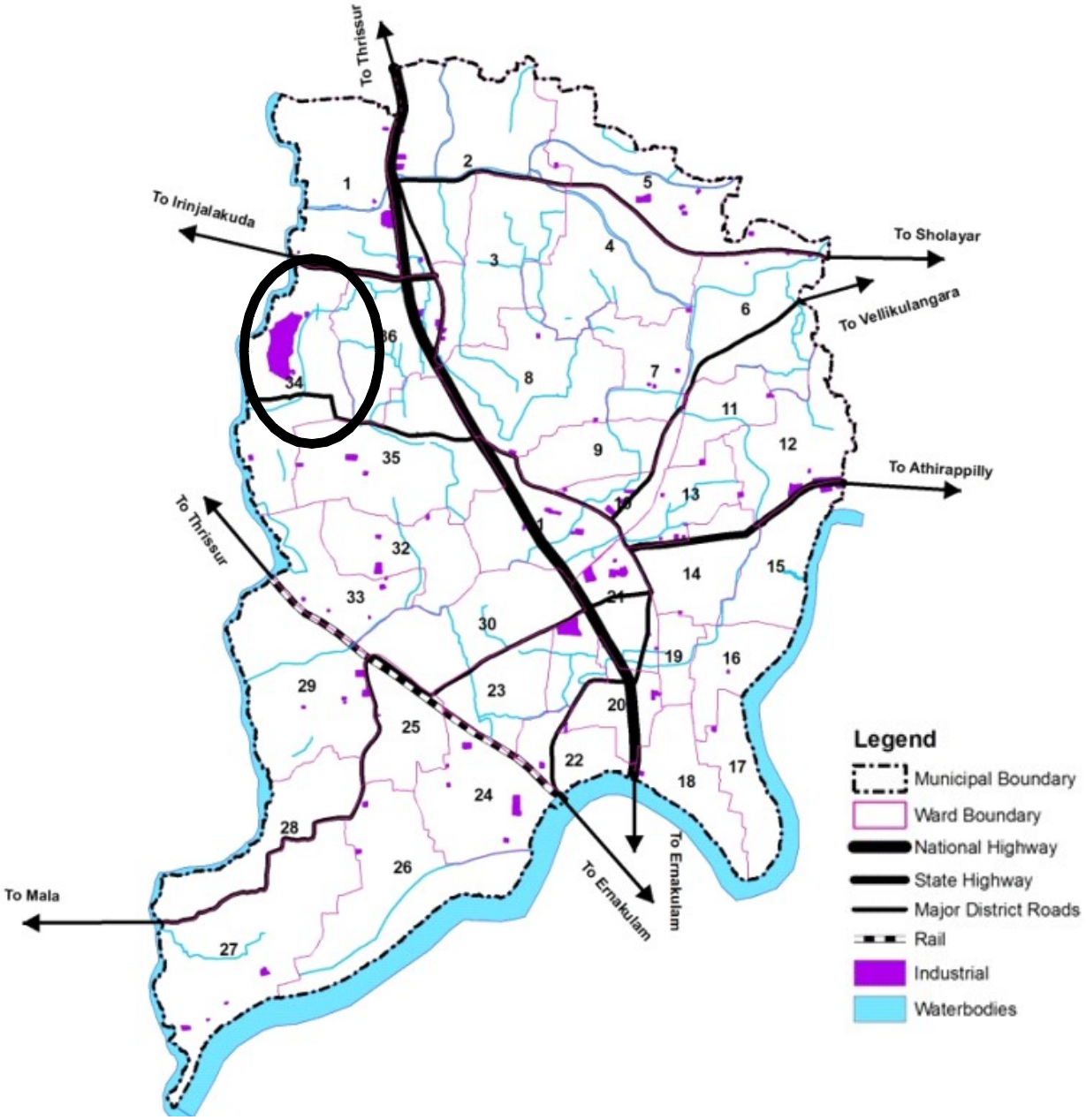


Fig. 5.8 Distribution of Industrial land use

5.3.3 Concentration pattern of industrial land use

Only 0.88% (0.195 sq.km.) of total town area is used for industrial land use. Distribution pattern of industrial land use is shown in figure 5.8. From the figure, it is clear that industrial concentration is more towards the town center. Ward 5 (Panampilly college), 21 (Municipal Quarters) and 34 (Urumbankunnu) are showing higher concentration of industrial land use. Several small scale engineering and other service industries are predominant in the area.

5.3.4 Concentration pattern of public and semi public landuse

Figure 5.9 shows the ward wise spatial distribution of the concentration index of public and semipublic land use. From the figure, it is clear that ward 23 has more public and

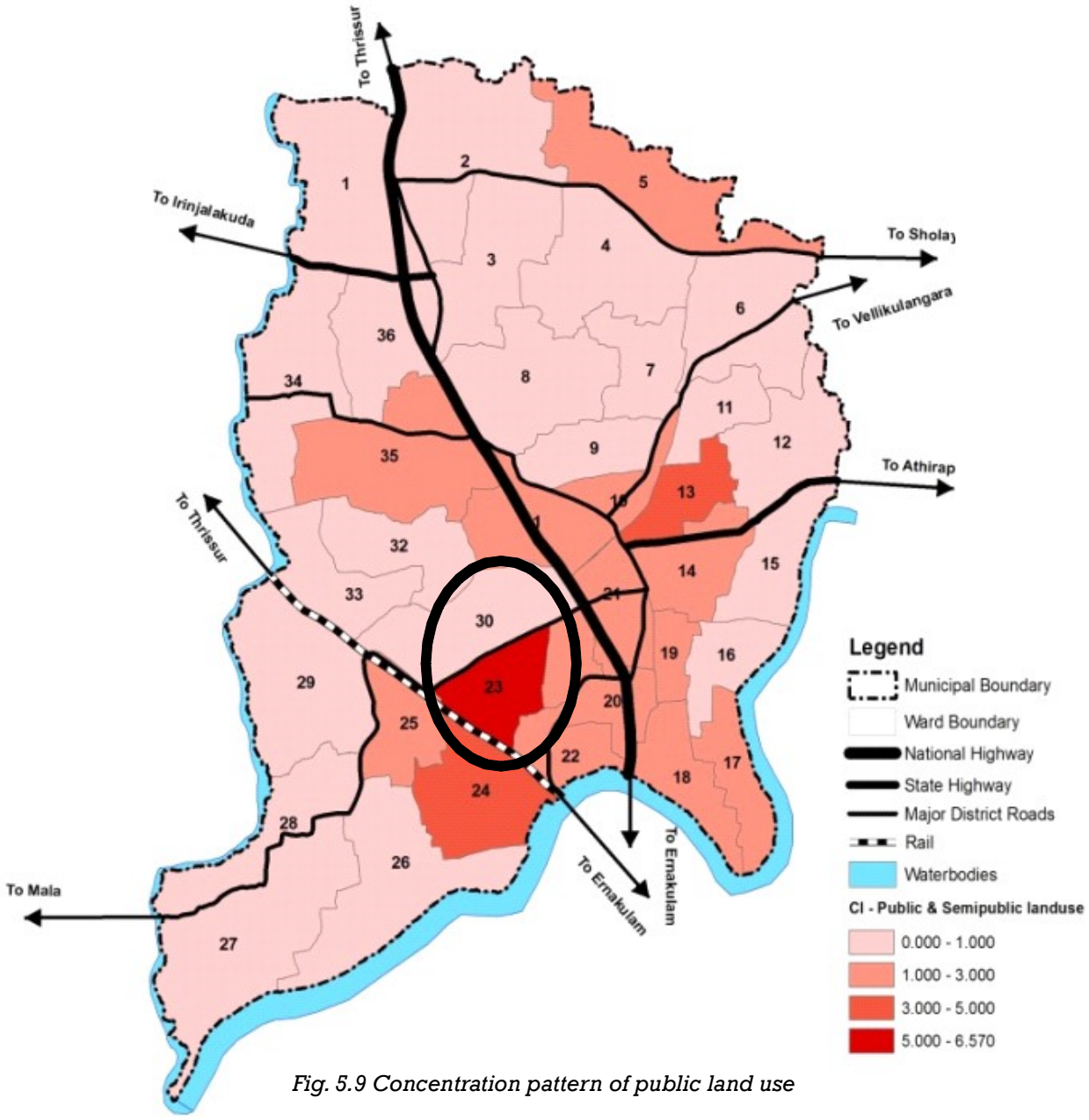


Fig. 5.9 Concentration pattern of public land use

semi public land use. Educational institutions like SH college, Carmel College and ITI Chalakudy are in this ward. Public and semi public land use constitutes 6% of the municipal area. Figure 5.10 shows the distribution of public land use in the planning area. The educational and health institutions are not distributed in a balanced fashion; instead they are concentrated around the core area.

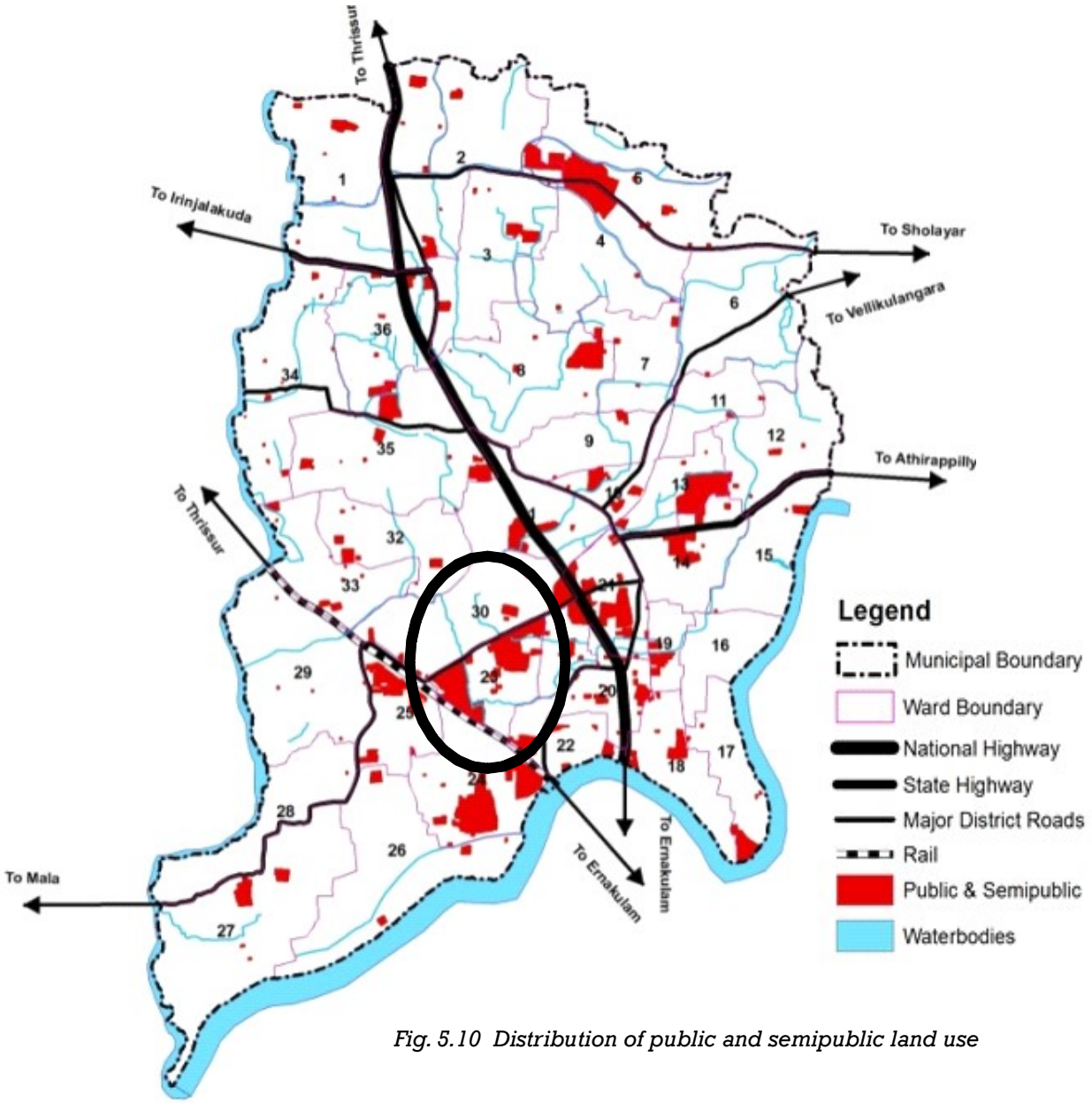


Fig. 5.10 Distribution of public and semipublic land use

On comparison it can be inferred that non-residential and non-agricultural land uses are concentrated in wards between Chalakudy railway station and the national highway.

5.3.5 Concentration Pattern of Agricultural Land Use

A major share of land in the Town is occupied for agricultural use. Considering both wet and dry agriculture use, 48% of total municipal area is under agricultural land use. The ward wise spatial distribution of concentration index of wet & dry agricultural land use of

Chalakudy Town is as shown in figure 5.11. Agricultural land use is mainly sub divided into wet agriculture and dry agriculture. Details of distribution of wet & dry cultivation are shown in figure 5.12. Except in the core area, all other wards are having concentration of agricultural land use.

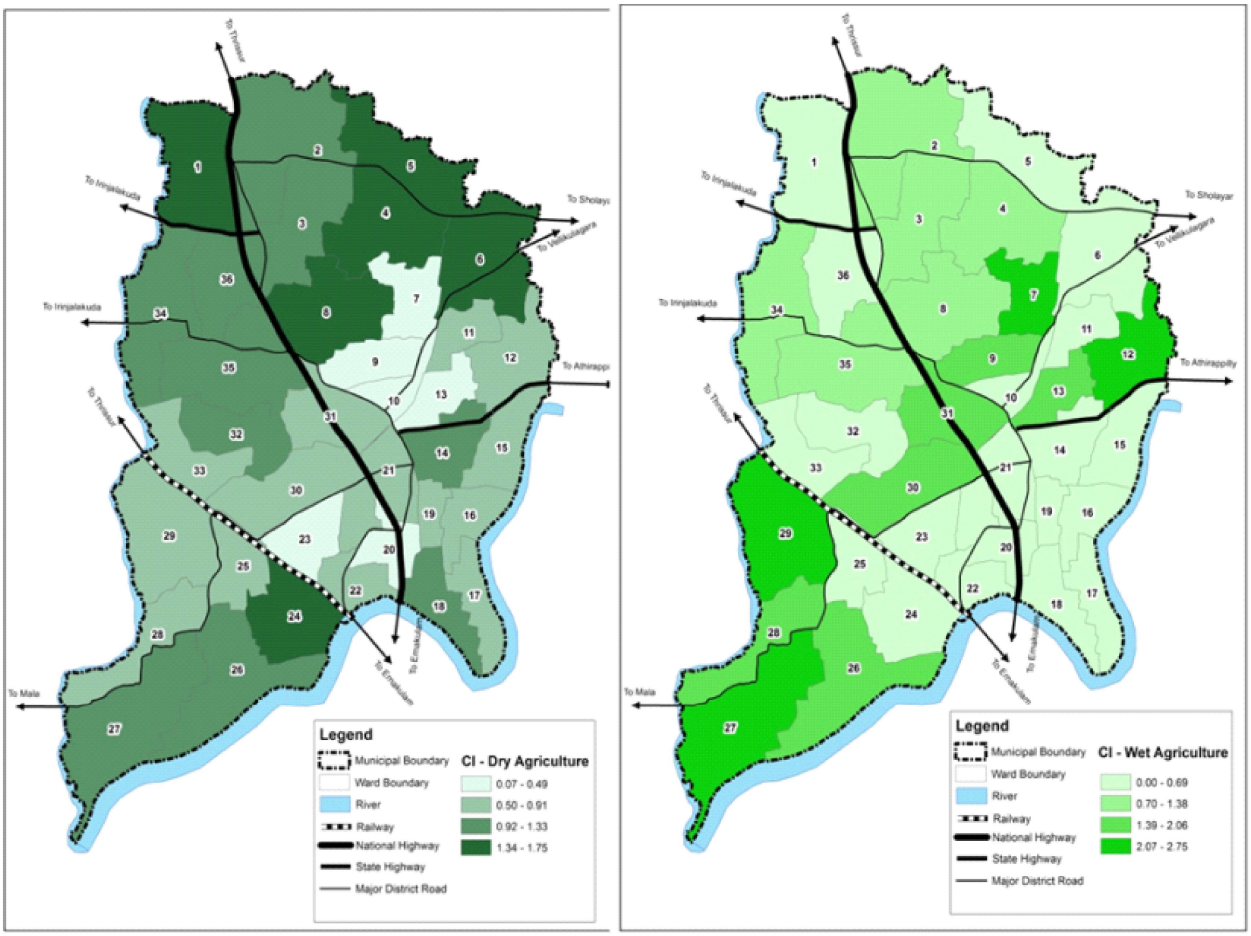


Fig. 5.11 Concentration pattern of Dry & Wet agriculture

Among agricultural land use, paddy is around 15%. Dry agriculture is distributed through out the municipal area except the core area.

From the pattern it can be inferred that wards situated in the south western corners Moonjeli (ward 26) and Kottat (ward 27) are having more concentration of agriculture land use. This is because of the presence of Chalakudy river and the geographical feature of the land (low land region). It is clear that majority of wards showing concentration indices greater than 1.5 are having wet agriculture. Wards situated between St.James Hospital and Chalakudy town are having low concentration of agriculture land use. The town area is almost free of agriculture activities.

5.3.6 Other major land use concentrations

One of the remaining major land uses is transportation which comes to nearly 3% of the total area. National Highway 544, between Kochi and Coimbatore, State High way 21

which connects Athirapilly - Anamala and State Highway 61 which connect Potta–Moonnupeedika are the major transportation corridors. Also there are a number of good roads connecting to the various parts of the Town.

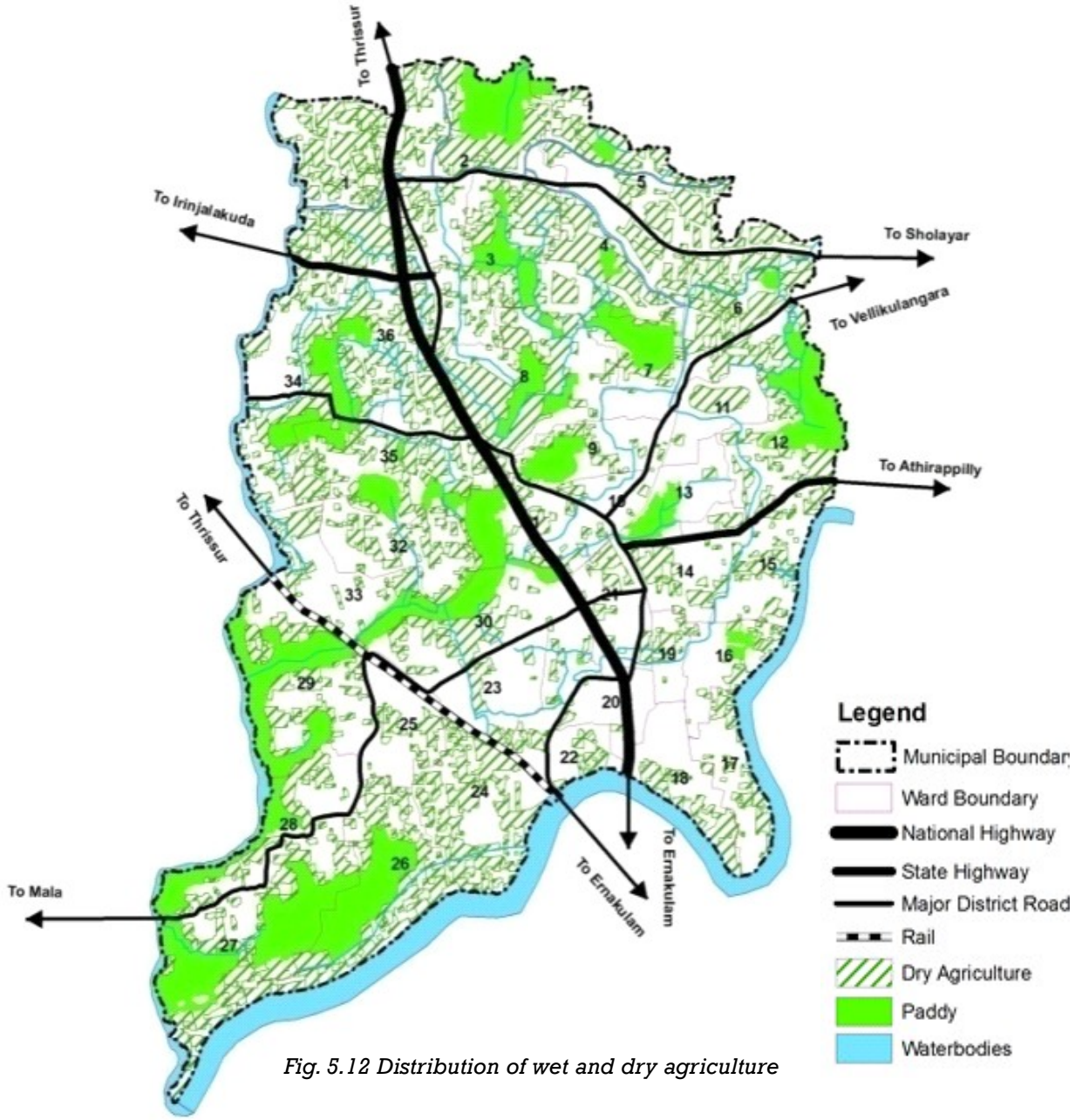


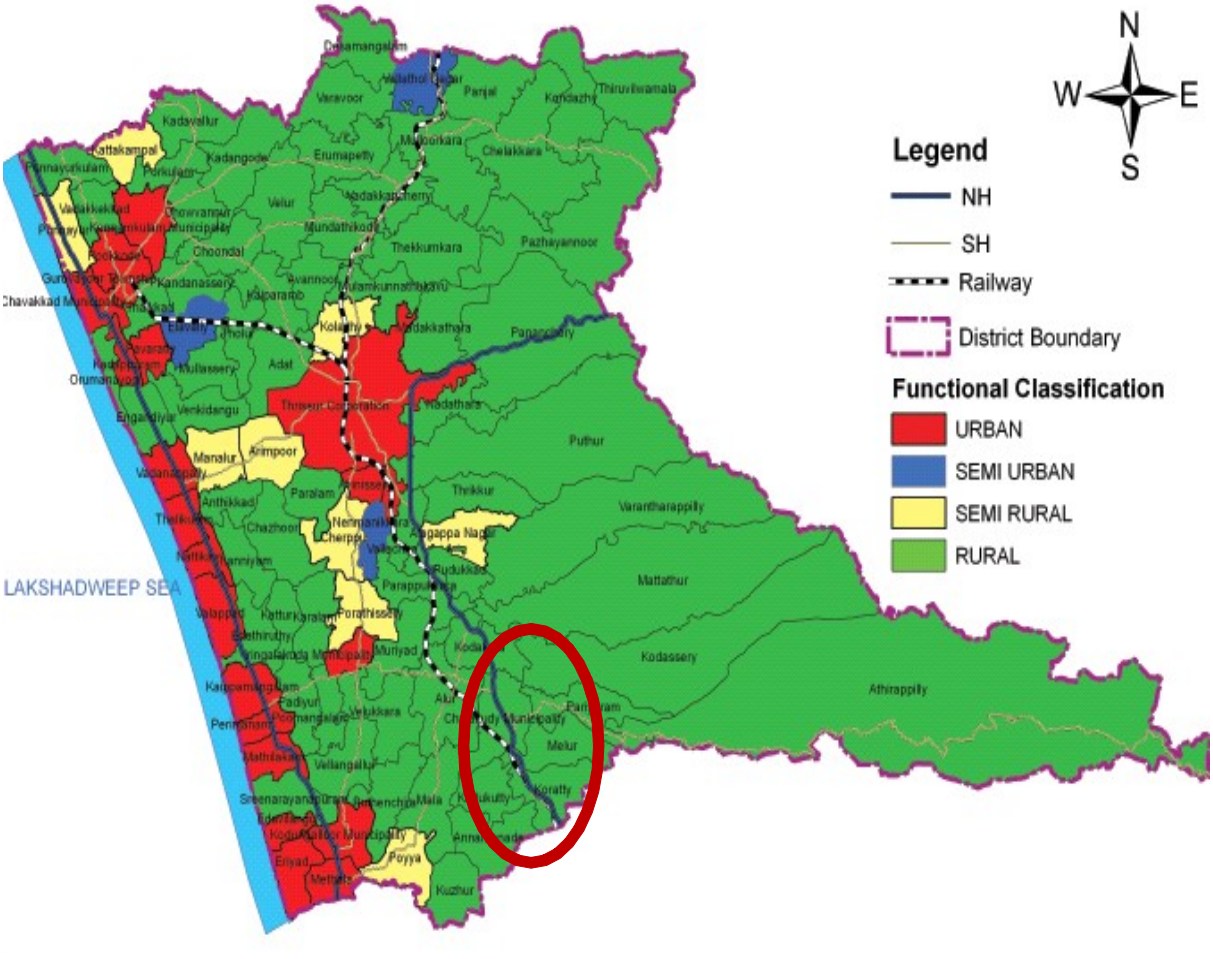
Fig. 5.12 Distribution of wet and dry agriculture

Chalakudy has a KSRTC and private bus station in the town. The KSRTC station is a transit station for inter-district and inter-state buses in and around Kerala. The private station runs local bus services into the suburbs of Chalakudy. The railway station at Chalakudy is operated by the Southern Railway Zone of Indian Railways, and comes under Trivandrum Railway Division. Chalakudy railway station is situated 2 km from the town centre.

Another land use worth mentioning here is water bodies. This comes to around 1% of the total area. This may be due to the Chalakudy River, Irrigation canals and the presence of large number of small ponds and streams in the municipal area.

5.4 Functional character of wards

The functional character of a local body is determined by the major activity within the LSGI. The character may be of a rural nature if primary activities are predominant, urban nature if secondary or tertiary activities are predominant or may be a combination of both. The functional character of Thrissur district as per IDDP perspective plan is shown in figure 5.13.


N
W
E
S
Legend
NH
SH
Railway
District Boundary
Functional Classification
URBAN
SEMI URBAN
SEMI RURAL
RURAL
LAKSHADWEEP SEA
Thrissur Corporation
Chalakudy Municipality
Kodassery
Athirappilly
Mattathur
Varanthappilly
Puthur
Thekkumkara
Pazhayannoor
Panangadu
Kodakkathara
Mullassery
Adat
Manalur
Arimpoor
Paralam
Chazhoor
Cherpu
Parappukara
Pudukkad
Kattur
Poyya
Kuzhur
Melur
Koratty
Velukkara
Mathilakam
Vellangallur
Kadangode
Enumapetty
Mundathikode
Choondal
Kandanassery
Avanoor
Kaparambu
Elavally
Cholayil
Venkidangu
Anthikkad
Nellayi
Aloor
Muriyad
Kodakkathery
Chelakkara
Kondazhy
Thiruvilwamala
Panjal
Varavoor
Kadavallur
Kattakampal
Ponnayurkulam
Porkulam
Velur
Chowannur
Vadakkekad
Ponnayi
Kokkalai
Chavakkad Municipality
Orumanayur
Engandiyur
Vadanappally
Thirukkol
Nattika
Kaipamangalam
Padiyur
Pennukkara
Edamuttam
Sreenarayanapuram
Eriyad
Methala
Annamanada
Perinchellur
Mala
Kodakara
Thekkur
Nenmanikkara
Aloppara Nagar
Parappukara
Kattur Karalam
Porathissery
Kodakara
Vellikulangara
Kallur
Kuttikuzhy
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show urban character. Semi urban character is exhibited by LSGI's that have urban influence like Vallathole Nagar (located near Shornur Municipality in Palakkad district), Elavally and Vallachira. Most of the LSGI's in the mid land and high land region of the district exhibit rural character. Semi - rural character is seen in those LSGI's which are in a transition zone between LSGI's of urban and rural character.

The wardwise functional character is arrived at based on analysis of population density distribution, plot size distribution and landuse concentrations. The result of this analysis is shown in figure 5.14 which shows that the municipal wards are showing mixed character.

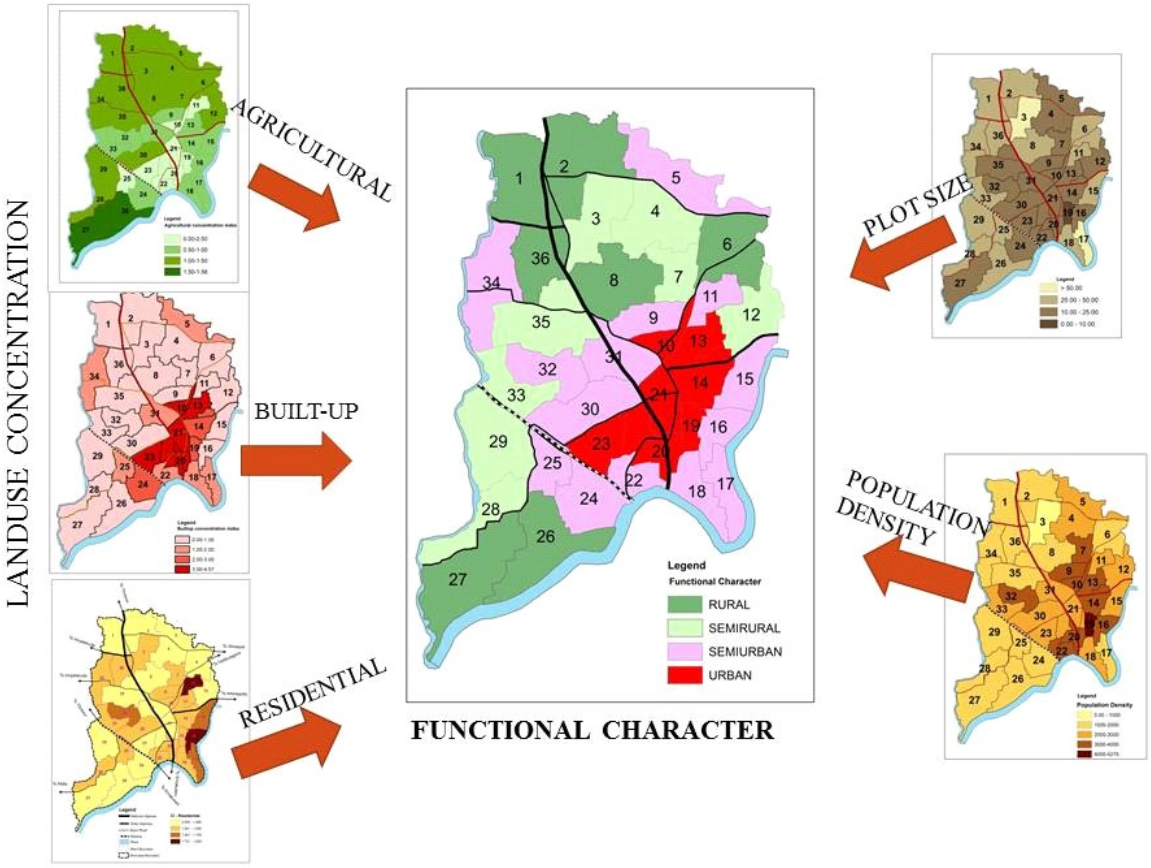


Fig 5.14 Functional character of Chalakudy town

Wards 1,2,6,8,26,27 and 36 show rural character. The rural nature of these wards is justified by the high agricultural landuse concentration, low population density, low concentration of residential and built - up landuse and large plot size. Almost 8 wards show semirural character. These wards are located in the north and east sides of the town. High concentration of agriculture - residential mix and less built-up landuse in these wards justifies its semirural character. Wards 5, 9, 11, 15, 16, 17, 18, 22, 24, 25, 30, 31, 32, 34 show semi-urban character. In these wards , the concentration of residential and built-up land use is moderate where as the agriculture concentration is low. The population density is high and the plot size is in the medium range of 10-25 cents. The wards 10,13,14,19,20,21,23

located in the town centre show urban character. These wards are densely populated and has high concentration of built up landuse but very low agricultural concentration. The average plot size is in the range of 5-10 cents.

By analysing concentration patterns of public, commercial and industrial land use, it can be concluded that a mixed activity pattern is seen in the central area of the town and along major traffic corridor as shown in fig 5.15.

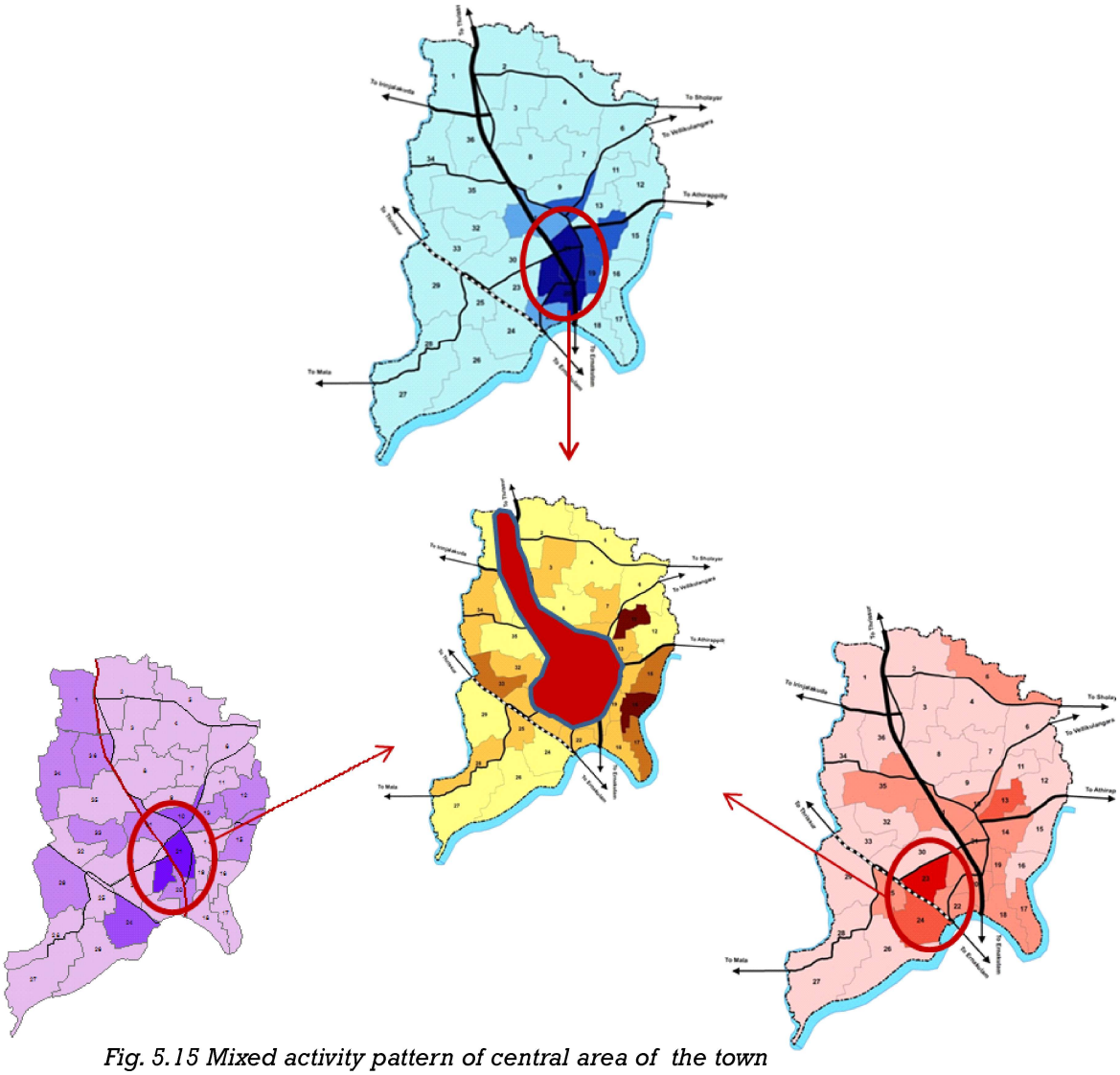


Fig. 5.15 Mixed activity pattern of central area of the town

5.5 Conclusion

Land use analysis of Chalakudy Town shows that the total agriculture area considering both dry and wet, agriculture comes to a significant figure of 48% and that of residential land use comes to 35.66% of the town area. This is a contrasting figure when compared to other town of the state. This fact emphasizes the agricultural potential of the town. More commercial activities are along NH and major roads. From ward wise functional character of the Town it is clear that urban nature of the Town is seen in town centre. Northern portions are predominantly rural in nature.

CHAPTER 6

TRADE AND COMMERCE

6.1 Introduction

Chalakudy had a glorious past in trade since the ancient times. Trading of spices with Portuguese through Kodungalloor port flourished in Chalakudy. The Portuguese people selected Chalakudy as a prominent place to transport timber and the other forest resources to Kodungalloor harbor through Chalakudy River. During the reign of Sakthan Thamburan, the Cochin emperor, Suriyani Christians came here for trade and laid the foundation for the trading activities of the Chalakudy town. During the colonial discipline of the British Empire, they constructed a tramway between Parambikulam and Chalakudy. It was one of the finest modes for the transportation of timber products and spices. This also boosted the commercial activity in Chalakudy Town.

6.2 Existing scenario

Presently Chalakudy Town is one of the major commercial centers of Thrissur district. 1.86% (0.47 sq.km) of the municipal area is used for commercial purposes. Commercial centers are located at Anamala junction, North junction, South junction, Potta and along the major roads (SH and NH).

As per the integrated district development plan, Chalakudy Town comes under the economic development corridor. This is mainly due to the presence of the National highway (NH 544). This zone has to play a key role to trigger the economic growth of the town.

Figure 6.1 represent the commercial land use and figure 6.2 represent the concentration index of commercial landuse in Chalakudy town area.

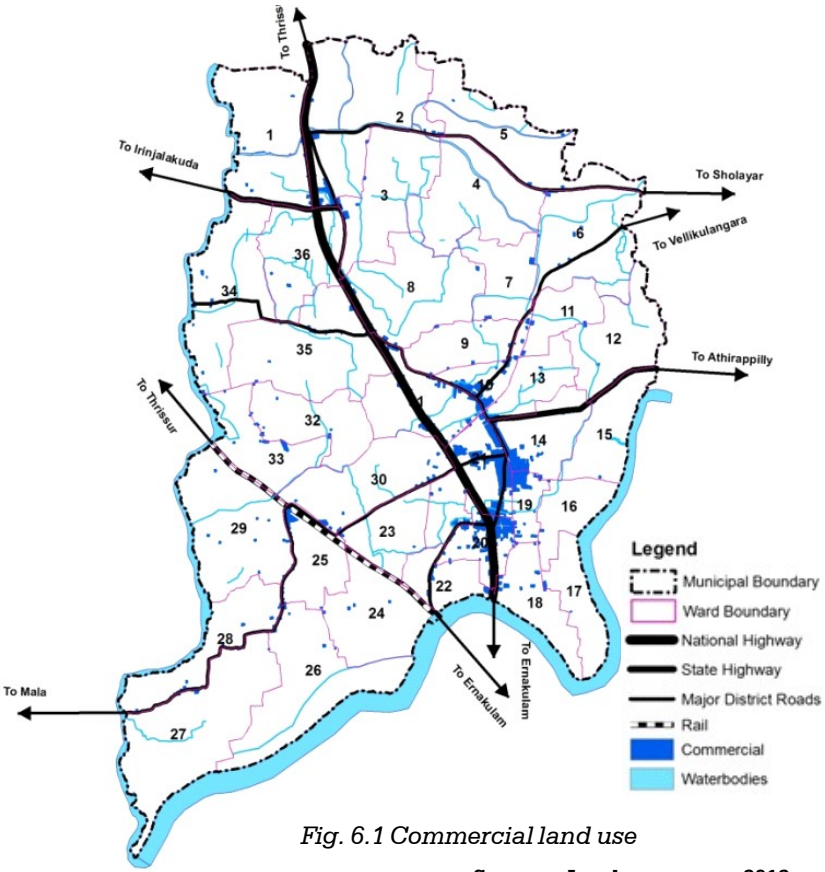


Fig. 6.1 Commercial land use

Source : Landuse survey 2012

6.3 Existing hierarchy of nodes

The existing hierarchy of nodes in Chalakudy Town is shown in the figure 6.3. From the figure, it is clear that a ribbon development pattern is followed in areas between St. James hospital junction and Chalakudy south junction. Hence this area is treated as a single node which is the first order node. Potta area act as the second order node and the railway station area act as third order node. Kottat, Alavi centre and Govt.hospital junctions are fourth order nodes. Among these nodes concentration of activities is more in the corridor between South junction and North junction, especially in the market area. Apart from the major facilities in the town centre which LSGIs from eastern area depend, Potta centre and Kottat centre serve as sectoral level activity centre. Table 6.1 shows the commercial activity at major centres.

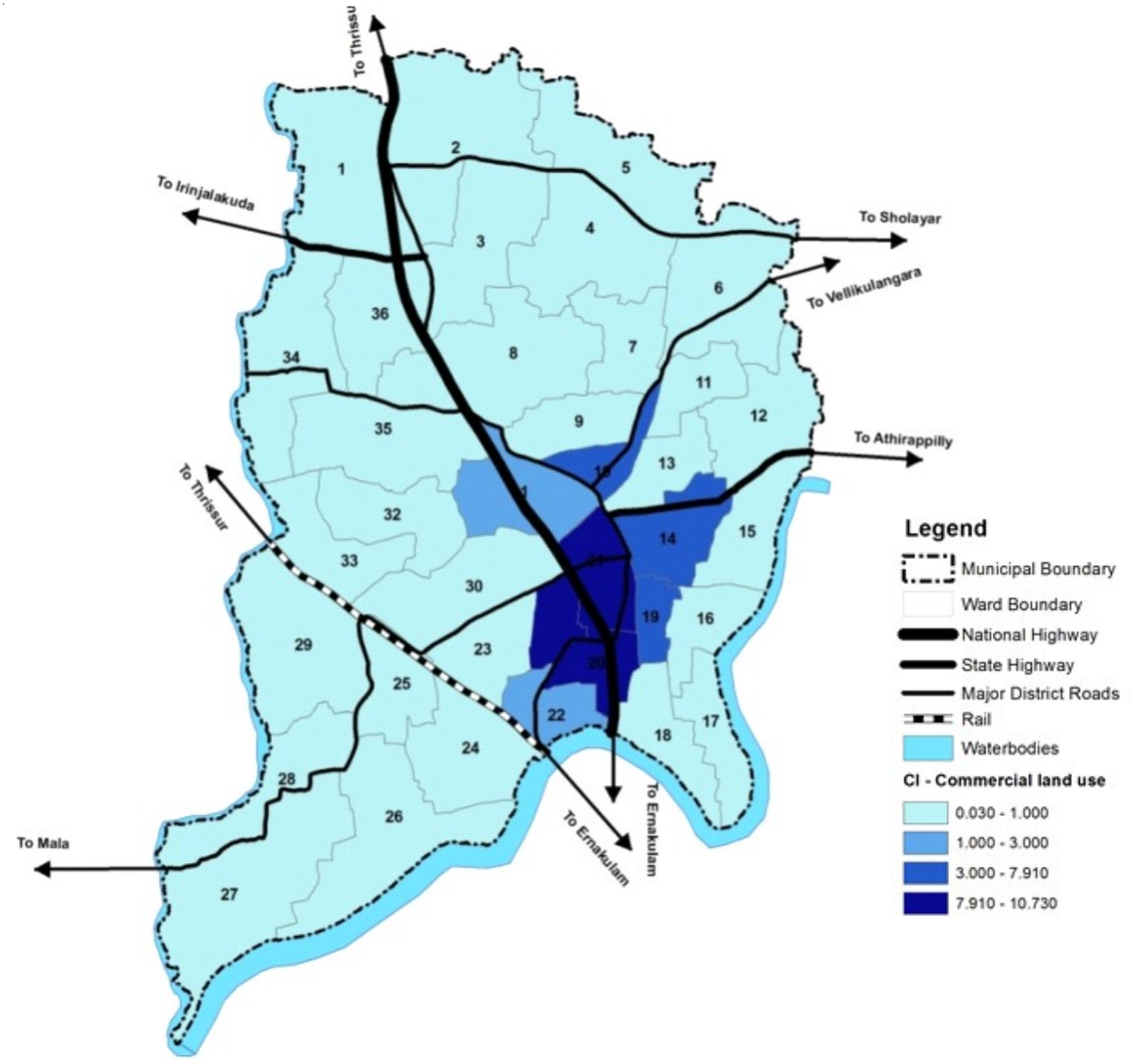


Fig. 6.2 Concentration index

Table 6.1 Commercial activity at major centres

Junctions	Wholesale shops	Retail shops	Business establishment	Restaurants	Others
CBD area	35	1823	42	24	5
PottaJn	1	157	2	3	23
Railway Jn	0	65	7	3	1
KotatJn	2	24	1	1	10
Hospital Jn	0	27	0	1	2
AlaviJn	0	33	1	1	8

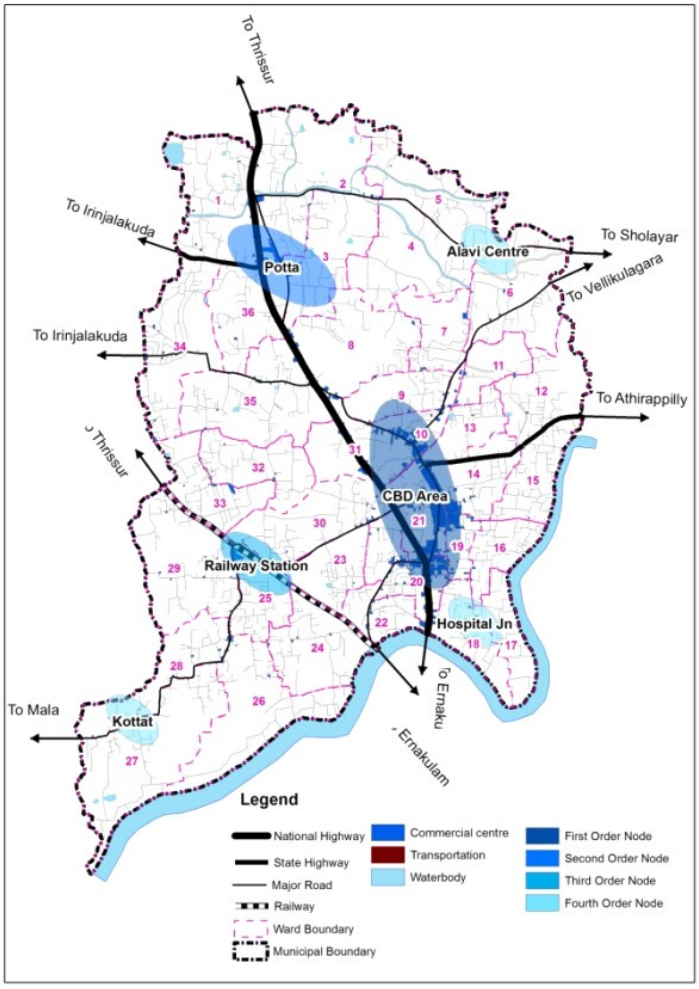


Fig 6.3 Existing hierarchy of nodes in Chalakudy



Kottat junction



Railway station junction

Source :Landuse survey

6.4 Existing marketing facilities

Chalakudy market is located at North junction; all types of commodities are being marketed here. For meat, fish as well as vegetables, this is the only destination in the Town.

Apart from normal marketing activities, whole sale trade of spices and the like from the eastern part of the district takes place here. Whole sale trading takes place on Tuesdays



Chalakudy market



Fish market

and Fridays, which are market days. General functions are there for all the days. Agro based trading is the expression of this market. Even though the market is bustling the facilities available are too insufficient. There are no separate stalls for meat, fish and vegetables. Parking, loading and unloading facilities are also not upto the satisfactory level. Since this is the only market in the Town, people from the northern side and western side are finding it too difficult to access the market. Hence a local/sectoral market is suggested as the need of the hour as reflected in the local level analysis.

The fish market is located inside the main market itself. There are almost six ice factories in the Town. Out of this ,five factories are situated inside the market. This is an indicator regarding the quantity of fish trade done in the whole of the municipal area.Chalakudy fish market is the main stay of all the fish supplied in the Town and nearby Panchayats.

The meat market is also located inside the main market. Authorized slaughter house is situated inside the market which is not a modernized one.

6.5 Street vendors / Informal sector

Street vendors in Chalakudy Town are negligibly less when compared to the other Towns in the district. The details regarding the street vendors are given in table 6.2. Street vending can be seen in the major junctions. Only a single unit has approval from local body. 22 labourers are engaged in this sector.

Table 6.2 Details of Street Vendors

Sl no:	Location/Place of concentration of informal sector activities	Type of activity- fruits and vegetables ,garments, tea and snacks, home appliances, books etc.	Extent of informal sector activity in each area (no: of shops/carts), no: of street vendors	No of units under informal sector activity having approval of local body	Labour force in informal sector activity
1	Potta – Chalakudy Highway	Fruit	Cart -1	0	1
		Tea	Cart -1	0	1
2	North – South Road(old high way)	Tea	Cart -2	0	2
		Leather work	Street Vendors-2	0	2
		Vegetables 1	Cart -1	0	1
		Lottery 1	Cart -1	0	1
3	Market Road	Vettila 1	Street Vendors-1	0	1
		Vegetables 2	Cart -2	0	2
		Fruit 1	Cart -1	0	2
4	Private Bus Stand	Milma and Fruits	1	1	3
		Leather work	Street Vendors	0	1
		Readymade garments	Cart -4	0	5

6.6 Conclusion

Almost 1.86% (0.47 sq.km) of the town area is used for commercial purposes. North and South junctions (town centre) are the two major commercial nodes. Commercial centers are concentrated at Anamala junction, North junction, South junction, Potta, along NH, and along SH roads. When compared with other towns street vending activity is very less. Eastern side Panchayats mainly depend on Chalakudy market. Insufficient space for parking, loading and unloading and non-separated trading activities such as vegetables, fish, meat and cattle are the problems affecting activities in the existing market.

Road widening and provision of parking spaces near major commercial centers will help to increase the economic development of the town. Provision of sufficient infrastructure facilities and decentralizing the marketing activities can definitely enhance the functionality of the trade and commerce sector in the town area.

CHAPTER 7

INDUSTRY

Industry means the production of an economic good or service within an economy. It is one of the background players for the development of trade and commerce. This chapter deals with the industrial activities in Chalakudy Town.

7.1 Introduction

Since the start of trading activities only small scale industries have flourished in Chalakudy Town. These industries were mainly based on timber. Chalakudy Town became an industrial centre from the beginning of the 19th century with the establishment of the Cochin state tramway that runs from Parambikulam to Chalakudy. This proved to be one of the finest modes of transportation for timber products.

The location of Chalakudy Town is ideal for industrial development. Its central position, facilities for transport of goods through rail, road, nearness to the Cochin port and availability of man power, electricity and water supply are factors congenial for the growth and development of industries. But industrial development has been handicapped for want of natural resources and the raw materials required for the major manufacturing industries. As such there are no major manufacturing industrial establishments in Chalakudy Town. The decline of industrial sector is not an issue in Chalakudy alone. But the whole of Kerala, though vibrant with potentials and ahead in social development exhibits the same trend.

7.2 Past scenario

Chalakudy was a well-known industrial center in the history of Cochin State. The main industrial commodity of the past was timber. Chalakudy established trade relationship through the trading of spices with Portuguese through Kodungalloor port. The potential in the spices trading and timber trading paved the way to the development of this place. The ancient records state that these timber products were exported to England from here. Tramway (which connected Parambikulam and Chalakudy) is used to transport the timber products, from the forest area to Chalakudy.

The other major industries were Cochin potteries, Cochin tanneries and tapioca products. Cochin potteries were established in 1921. The main products of the Cochin potteries were glazed tiles and jars.

The tapioca company was established in 1965.The main products of the company

were starch for cloth industry, dextrin, lactose formaking soft drinks and toffees.All these industries together contributed much to the economic and social development of Chalakudy. But as of now all these are defunct industries.

7.3 Existing status

An industry can be called as a large scale one if it has an investment of more than 10 crores for setting the plant and machinery. Industry with 5 to 10 crores investment is said to be a medium one and that having an investment between 25 lakhs and 5 crores is called as small scale industry. Micro industries are small enterprises having an overall investment of about 25 lakhs.

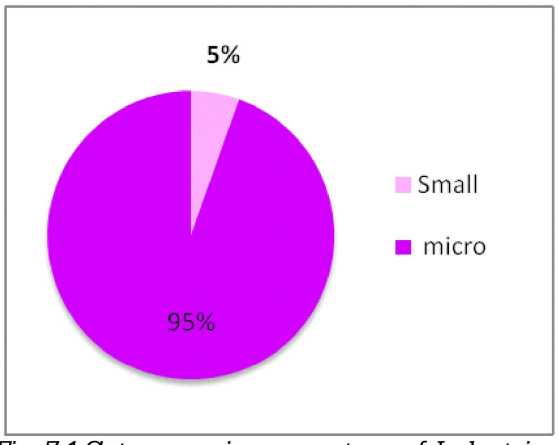


Fig. 7.1 Category wise percentage of Industries

Table 7.1 Industries in Chalakudy town

Type of industry	No. of industry	labourers
Small scale	3	39
Medium scale	NIL	NIL
Micro industries	127	667

About 2,04,381 number of concerns consisting of both Micro, Small and Medium Enterprises (MSMEs) and large scale enterprises have so far registered in the state. In the number of registered MSMEs units in the state, Thrissur stands second compared to other districts. Thrissur has a share of 12% in the state total. 130 MSMEs are registered in the Chalakudy Town area. There is no large scale industry within the municipal area. Out of the total industries registered in the district, Thrissur Corporation has maximum concentration (411 nos.), way above the next highest in Kunnamkulam municipality (134 nos.).

Out of the total 130 industrial enterprises, there is no large scale industry. Only three units are registered as small scale industries and the remaining 127 numbers are micro enterprises. That means nearly 95 % of the industrial units are of micro nature. On a whole 706 workers are there in these 130 units. The split in mode of industries is shown in figure 7.1 and table 7.1.

7.4 Details of small scale industries

There are only three small scale industries in Chalakudy Town, EMKE traders, Eddy current controls (India) Ltd and Royal photo magic and digital print products.

The EMKE traders is situated in between Potta and PMG Junction, along the side of NH 544. Timber trading is the main activity in this industry. The turnover of this company is almost 3 crores and 6 labourers are presently working here.

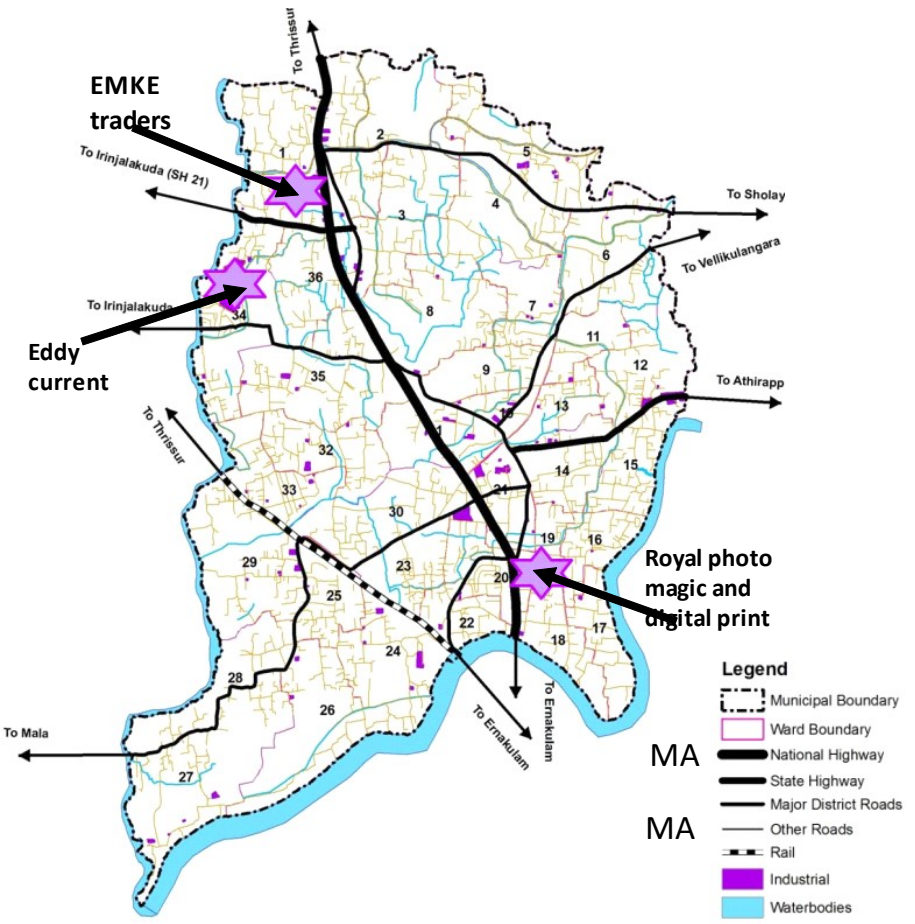


Fig. 7.2 Location of the small scale industries

Eddy Current controls (India) ltd. is also a small scale industry in Chalakudy Town. This company was established in 1971 with 40 employees. It is situated at Urumbu-kunnu, 4 km from Chalakudy town. This company manufactures Dyno drive and spares which controls the speed of the motors by using electro-magnetic force. Presently 25 employees are working here. The company is having an annual turnover of one core.



Royal photo magic



EMKE Timber traders



Eddy current controls Ltd

Royal photo magic & digital print is located in South junction Chalakudy. Digital photo print paper is the main production here. The production amounts to 9 lakhs numbers annually and has 8 laborers working here. The locations of these industries are shown in figure 7.2.

7.5 Micro industries

Chalakudy Town has a major share of micro industries. Almost 127 micro industries are functioning inside the municipal area. The details are given below in figure 7.3. It can be seen from the figure that majority of the micro industries falls under general (other) category. Apart from that engineering based industries, plastic based industries, concrete and construction material based industries and garment making industries dominate the scene.

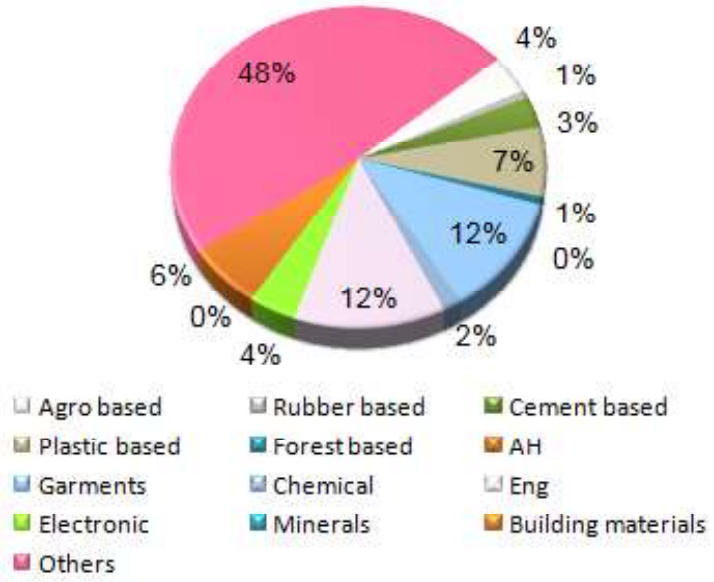


Fig. 7.3 Category wise percentage of micro industries

Source : District Industries office, Thrissur and Local Enquiry

Out of the 127 micro industries, engineering based industries and garment based industries are 12% each. Other major micro industries are agro based, plastic based, electronics based and building materials based. A small percentage of rubber based, forest based and chemical based industries are also functioning here.

There are six garment making and tailoring units operating in micro scale industry sector in the municipal area. About 40 workers are there in these units taken together. There are five numbers of Agro based micro scale industries in Chalakudy town area. The industries in this category are mainly involved in production of rice powder and other food powders. There are only two numbers of chemical based industrial units in Chalakudy Town. High capital investment and pollution problems are the main reasons for the shortage of chemical industry in Municipal area. Growth rate of engineering based units is very high in the area. 16 engineering based units are working inside the municipality limits. One of the problems faced by this sector is the huge investment and the fast out dating of technology. Electronic and IT based industrial units are increasing in the Town. Eddy current controls (India) Ltd is one of the well-known small scale industries in this sector. Here dynodrive and spares which control the speed of the motor (with the help of special force of electro-magnets) are manufactured. Thermal power station, sugar mill and paper mill are mainly using these products. These products are sold in the internal market as well as exported. The annual turnover of this concern comes to around 1 crore.

Plastic based industrial units are accommodating 75 numbers of workers. These

units have a vital role in the production of plastic packing.

Chalakudy was famous for its timber industry. Timber and timber products were exported from Chalakkudy to England in previous century. Cochin state tramway was used for the transportation of timber from Parambikkulam to Chalakkudy. Ukkens timber products, EMKE timber traders etc. are some of the industries in this field. Unavailability of raw materials, labours, health problems for the workers due to the timber dust, increase in production cost, shift in work pattern etc. adversly affected the industry.

7.6 Industrial land use

The industrial land use in the Chalakudy Town has been discussed in the chapter 5 "Land use".Only 0.88% (0.195 sq.km) of total municipal area is used for industrial land use.

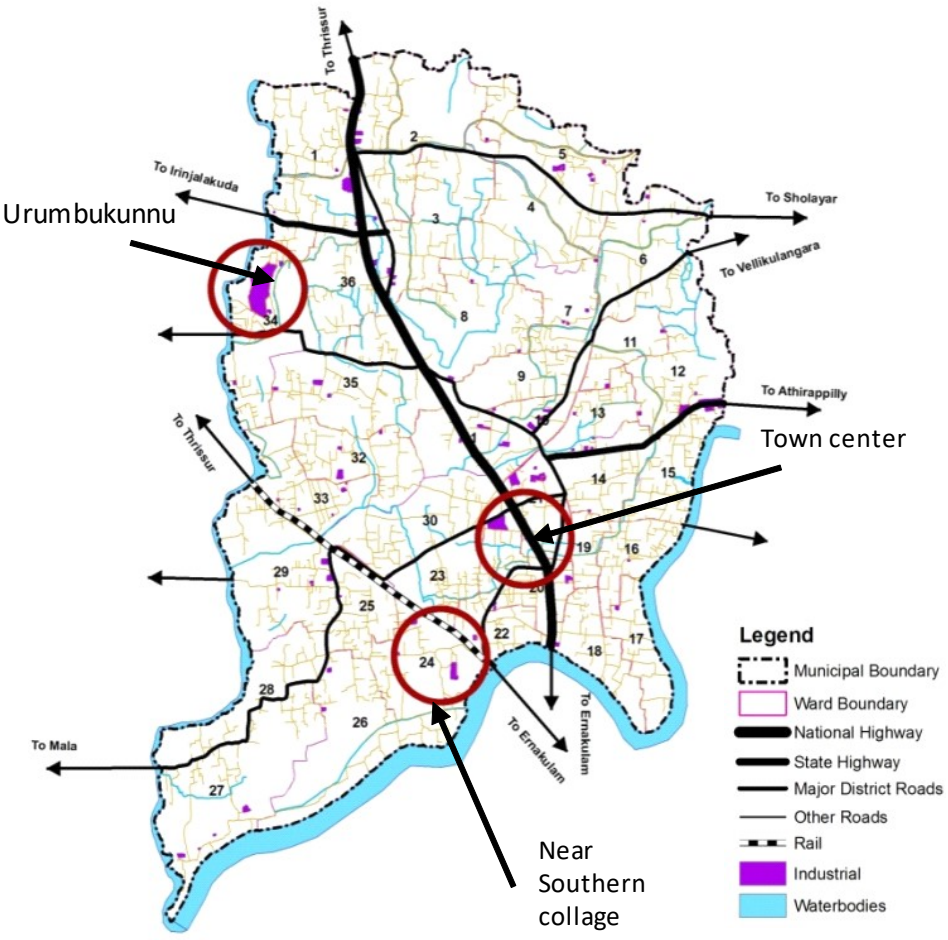


Fig. 7.4. Industrial land use

Concentration pattern of industrial land use is shown in figure 7.4. From the figure, it is clear that industrial concentration is more towards town center. Wards 25, 21 and 34 are showing higher concentration of industrial land use. Among these wards, ward no. 21 shows more industrial concentration due to the presence of Cochin potteries. Industries are

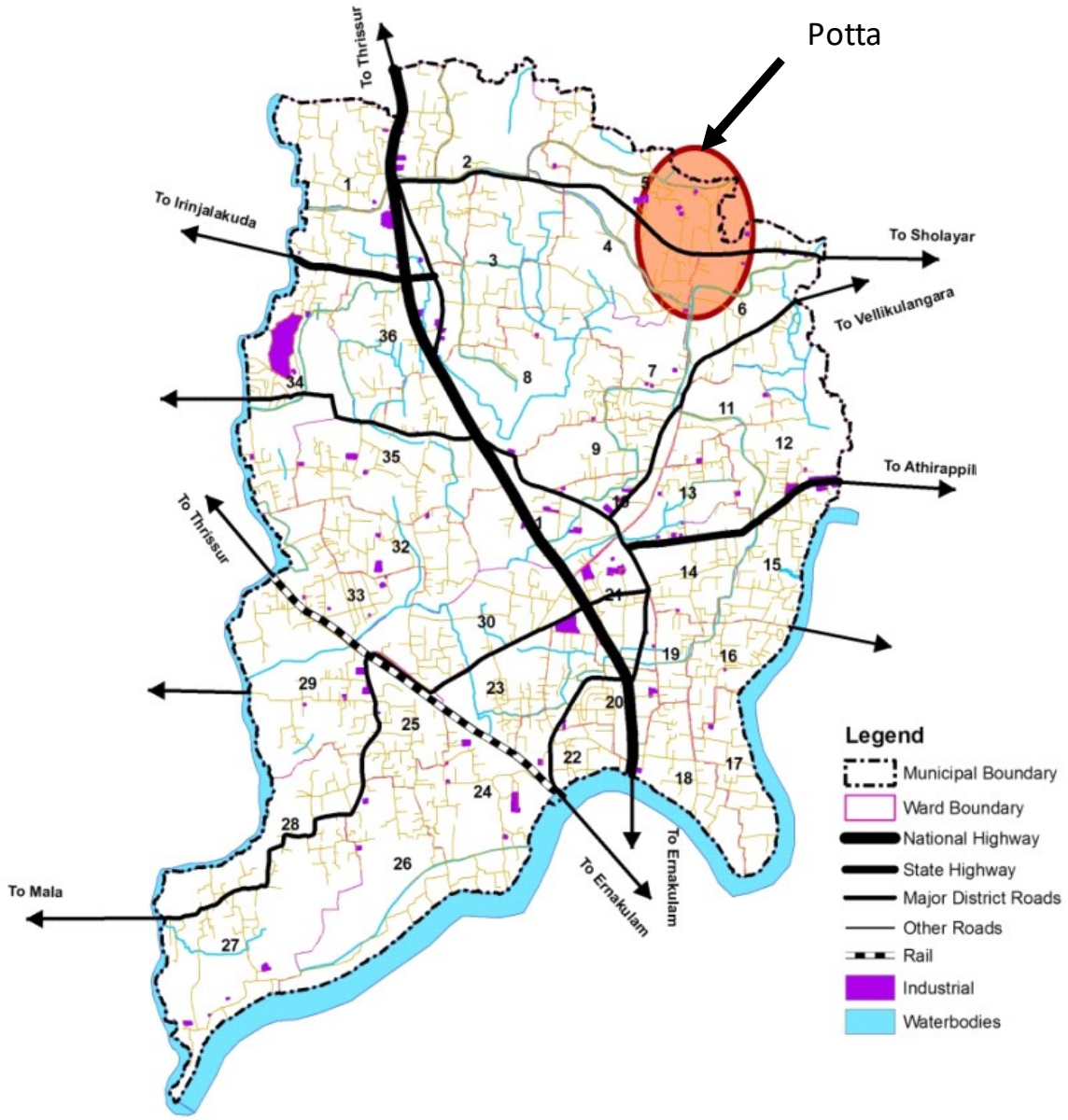


Fig. 7.5 Location of proposed mini industrial estate

mainly concentrated along the sides of NH and SH. Chalakudy falls under the zone Economic Development Corridor. In this zone, tertiary & secondary activities (especially industrial activity to trigger economic development) are expected to flourish. It is envisioned to be suitable for large/medium scale industries, industrial parks, IT & info parks, good quality education and healthcare institutions.

There is also a proposed mini industrial unit in Potta. Two acres of land has been acquired by Chalakudy municipality for it. 21 number of units are proposed to operate in the mini industrial estate. Out of this 7 units are of hazardous (plastic) nature and 14 numbers are of other non - polluting category. The location of proposed industrial estate is shown in figure 7.5.

7.7 Conclusion

Chalakudy Town has immense potential for industrial development and has come down due to unavailability of natural resources and raw materials required for major manufacturing industries. The proposed industrial estate can boost the industrial activity. Land available in public sector (defunct Cochin potteries) can be used for profitable industrial projects. Industries are mainly concentrated along the sides of NH & SH and railway line. Chalakudy town has potential for industrial development due to good transportation linkages with seaport, airport and the nearest urban centre, Kochi. As per the development concept of the District Plan, Chalakudy falls under the zone Economic Development Corridor. In this zone, tertiary & secondary activities (especially industrial activity to trigger economic development) are expected to flourish. It is envisioned to be suitable for large/medium scale industries, industrial parks, IT & info parks, good quality education and healthcare institutions.

CHAPTER 8
TOURISM

Responsible tourism is mainly concerned with 3 kinds of responsibilities termed as triple bottom line-economic responsibility, social responsibility and environmental responsibility. It is the best way of reducing the negative impacts of tourism and to maximize the position effects. Responsible tourism is gaining acceptance and Kerala has the pride of being on the first place to have implemented the style. This can benefit the travelers, host population and it can improve the living conditions of the local population.In Chalakudy also responsible tourism can be attempted. This chapter deals with the analysis of the activities and Tourism potential of this place.

8.1 Existing Scenario

At present Chalakudy is neither in tourist map nor is a sought after destination. It acts as a tourist station only for the tourist proceeding to enjoy the flavors of the east. The existing activities are detailed here under.

8.1.1 Athirapilly Water Falls

Athirapilly falls is perhaps the most spectacular waterfall in Kerala. It is located on the west - flowing Chalakudy River in Athirapilly Panchayat near the Vazhachal forest Division and Sholayar ranges. This 24 meter water fall and the nearby Vazhachal waterfalls are popular tourist destinations in the vicinity of Chalakudy Town. It is nick named as "The Niagara of India". Controversy about a state-proposed hydro electric dam on the Chalakudy river above the water falls began in 1990s and has continued through 2011, it is located at a distance of 31 km from Chalakudy. Chalakudy is the point on the national highway from which Athirapilly can be accessed easily.



Athirappilly water falls

8.1.2 Vazhachal Falls

Vazhachal Falls is situated in Athirapilly Panchayat of Thrissur district in Kerala. It is located on the west - flowing Chalakudy River near the Vazhachal Forest Division and at the edge of the Sholayar ranges. It is located 36 km from Chalakudy. Tourists are attracted towards this place due to its wilderness and beauty.



Vazhachal falls

8.1.3 Thumboormuzhi Dam and River Garden

Thumboormuzhi dam is built across the Chalakudy River. The major attraction of Thumboormuzhi is the River garden. This garden is also named as "butterfly garden", since it houses variety species of butterflies.

A children's park is situated adjacent to the garden with restaurant facilities. It is situated in Pariyaram panchayat, 15 km away from the Chalakudy town. This dam which is primarily built for irrigation purposes offers a calm and cool locale for the passengers to relax, in contrast to the adventurous feel provided by Athirapilly and Vazhachal.



Thumboormuzhi dam

Dream world and Silver storm water theme parks are two picnic spots sought after by many visitors from Thrissur district and all the adjacent districts. Dream world water theme park is situated in Pariyaram panchayat and located 10 km from the Chalakudy town. Silver storm water theme park is also situated in Athirapilly Panchayat and located 30 km from the Chalakudy town, on the way to Athirapilly waterfalls.

8.1.4 Tourist information

The number of tourists who visited Athirappily and Vazhachal in the year 2012-13 as per the statistics available from the Forest department is shown in table 8.1.

Table 8.1 Tourism statistics

Location	Domestic/ year	Foreigners/ year
Athirapally	1088083	8164
Vazhachal	71479	245

It indicates the thrust which can be tapped by Chalakudy town by providing facilities for accommodation and leisure inside the town.

8.1.5 Accommodation facilities

Accommodation facilities available presently in Chalakudy town includes one 4 Star hotel with 66 rooms and three 3 Star hotels and five economic hotels as given in table 8.2. Chalakudy does not have any home stay facilities. Considering the large number of tourists visiting the nearby tourist centres, Chalakudy town can be developed into a facilitation centre for providing accommodation, leisure and other necessary facilities to the tourists.

Table 8.2 Accommodation facilities

4 STAR HOTELS	3 STAR HOTELS	ECONOMIC HOTELS
Hotel Sidhartha (66 rooms)	Medows (30 rooms) Kallely (20 rooms) Luciya (10 rooms)	❖ Jeevan Tourist Home ❖ Apsara hotel (10 rooms) ❖ Rachana hotel (10 rooms) ❖ Highway hotel(10 rooms) ❖ HotelHillway (10 rooms)

Source: District tourism office, Thrissur & SIC

8.2 Tourism areas with in Chalakudy

Chalakudy has many features which can act as a crowd puller due to some or other reasons. Pilgrimages are on a high here. The aspects which can be high lighted are detailed below.

8.2.1 Chalakudy River

This is the fifth longest river in Kerala, flowing west ward, with a total length of 145 km. It originates from Anamala and Nelliyampathy ranges in Western Ghats and joins sea at Kodungalloor. The river has a gentle slope with the river bed being rocky and this explains the presence of many falls in its course**.** The river initially runs smoothly and be comes turbulent as it nears Chalakudy. The Town is bounded on its western parts by this river.The river is ideal for local boating facility and water games. The potential for boating and relaxing can be tapped with a view of protecting the sides of the river as well. The riparian vegetation consisting of rich and rare flora and fauna can also be utilised and protected.



Chalakudy River

8.2.2 Holy Land

A museum by this name is situated along with the St. Mary's church Chalakudy. The Holy Land museum depict all the important events from the life of Jesus, especially his birth, public ministry, passion, crucifixion, and believed resurrection and ascension, and concludes with the scene of his mother Mary being crowned as the Queen of heaven and earth. The Holy Land museum has on display several relics and other objects of religious and historical importance. The Holy Land replica was completed in 2006.



The Holy Land museum

8.2.3 Divine Retreat Centre Potta

The Potta Ashram was founded in 1977 as a Centre to direct and co-ordinate popular mission retreats. This is a religious place where people assemble for religious purpose. Meditation is the major activity. It is situated 3 km away from the Chalakudy south junction . Apart from the above few more attractions such as the Cosmoclub, Koodappuzha check dam, Siva temple etc are also there. The locations of these attractions are shown in figure 8.1.



Divine retreat centre Potta

8.3 Tourism circuit

Connecting all the tourism flavors in and around Chalakudy and also with the idea of utilizing the potential of this transit point, a tourism circuit starting from Chalakudy town can be planned.

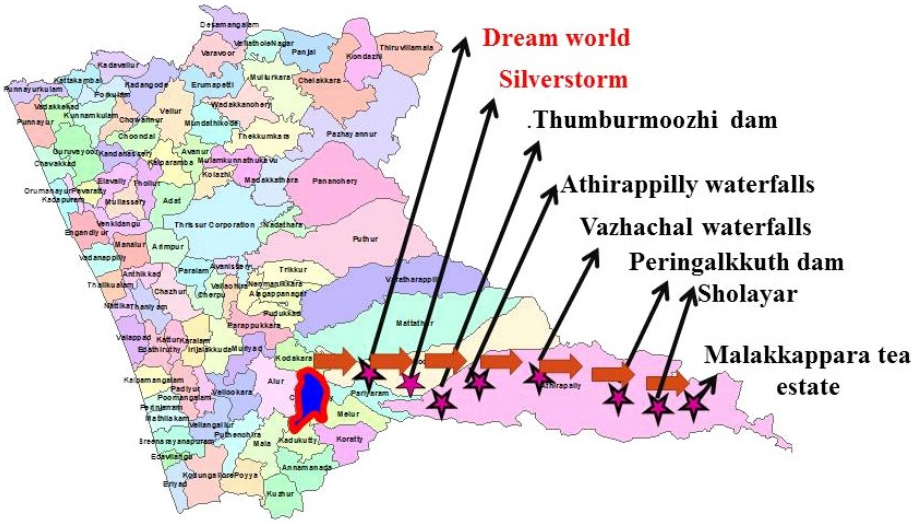


Fig. 8.1 One day tourism circuit - Chalakudy

8.4 Conclusion

Presently Chalakudy Town is not having a prominent position in tourism map of Thrissur district. It is only a transit station to nearby tourist centres. For tourism development, a tourist information centre is essential in Chalakudy. One day tourism circuit connecting the spots near and inside the town can be developed with more infrastructural facilities from Chalakudy. Accommodation facilities available in Chalakudy are very nominal. Also the presence of forest area near the tourist spots is a constraint in developing accommodation facilities near to these spots. So Chalakudy town can be developed into a facilitation centre for providing accommodation ,leisure and other necessary facilities to the tourists. Thereby tourists can be attracted to the existing tourism potential inside the town area due to the presence of the scenic beauty associated with the Chalakudy river and other spots.

CHAPTER 9

AGRICULTURE AND ALLIED SECTORS

Kerala is traditionally an agrarian community. The fertile river basins and the abundance of rainfall here made agriculture very profitable and attractive. Agriculture had a strong hold in all places irrespective of whether it's an urban or rural LSGI. But in the modern age it has lost its charm with the advent of many job avenues in the secondary and tertiary sectors. Recently our state is promoting agriculture with various schemes and awareness programs among people. As per the kerala state organic farming policy under National Horticulture mission (NHM) organic farming is going to be popularised in the state in a phased manner by the State Horticulture Mission (SHM). This chapter deals with the agriculture activities prevalent in Chalakudy.

9.1 Existing Scenario -Agriculture

As per the land use analysis, 47.34 % of land is used for agricultural purposes. Out of this land 32.54 % is dry agriculture and 14.80 % is wet agriculture. The spatial distribution of agricultural lands in Chalakudy town is shown in figure 9.1.

Table 9.1 Area under cultivation for crops

Type of crop	Area (Ha)
Paddy	250
Nutmeg	140
Coconut	750
Arecanut	150
Banana	175
Vegetables	60
Vettila	8
Tapioca	20
Pepper	15

Source: KrishiBhavan Chalakudy

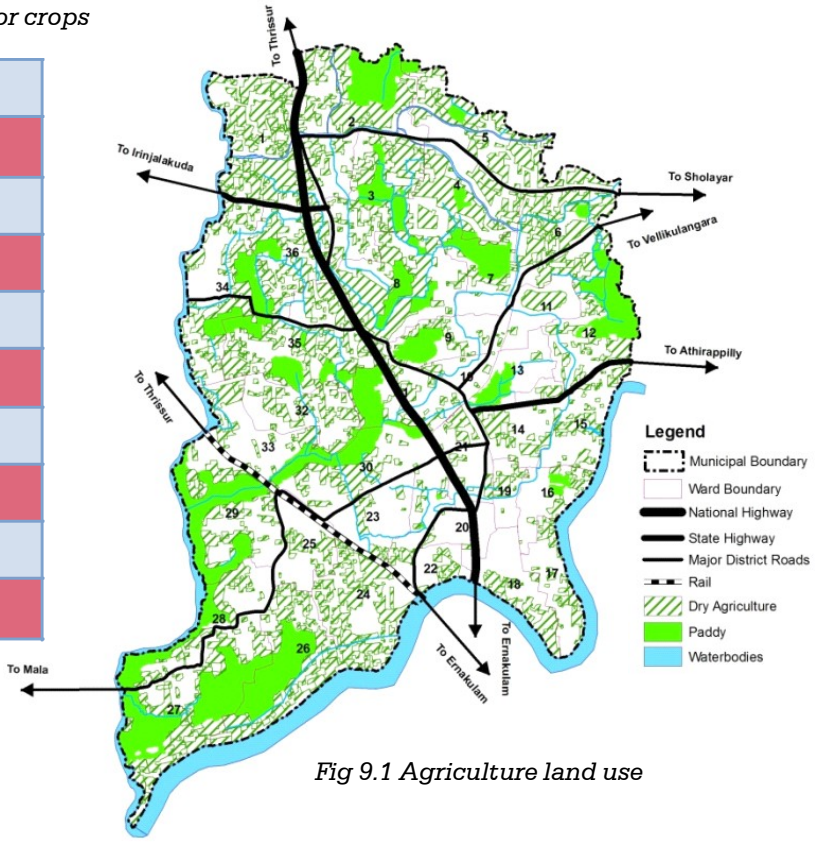


Fig 9.1 Agriculture land use

The soil suitability map for the district is shown in the figure 9.2; according to this sandy clay loam and gravelly clay loam (clay content increasing with depth) type of soil is

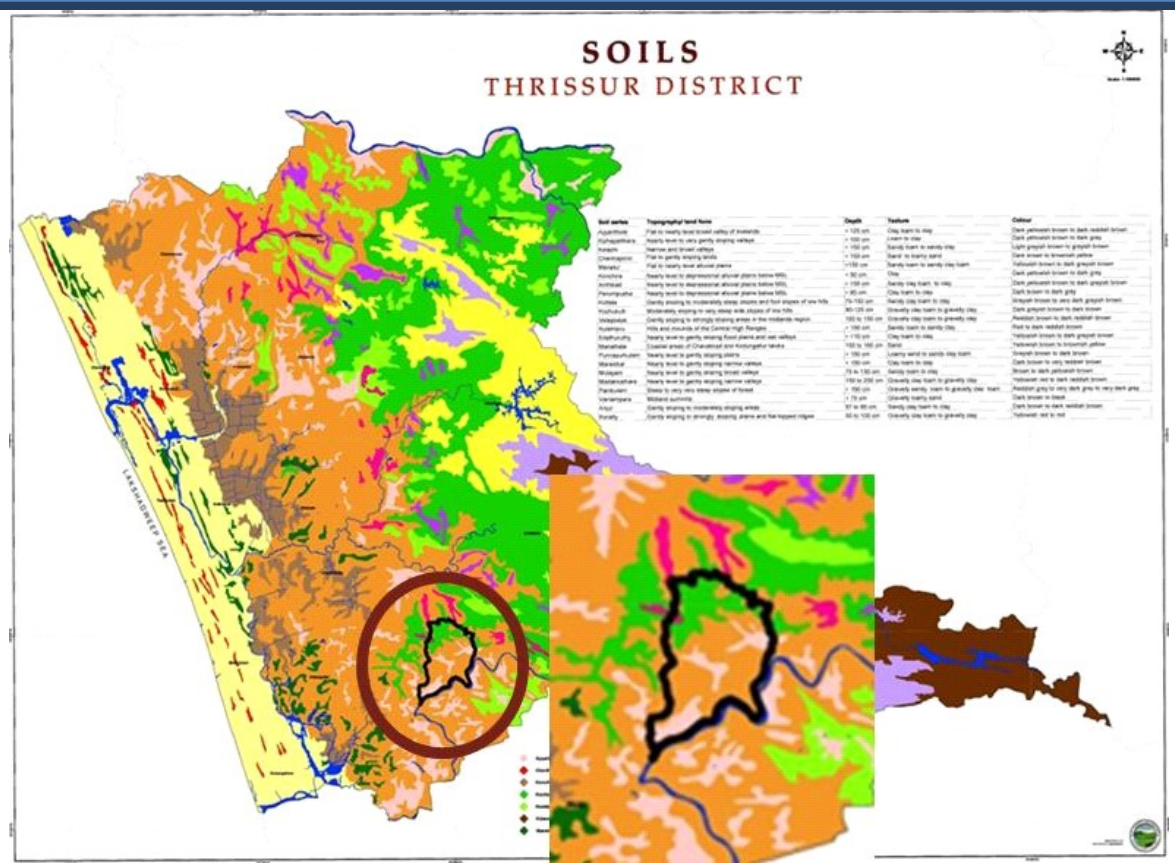


Fig 9.2 Soil types – Thrissur district

Source: Soil Conservation Department

seen in the town area. The crops suitable for this soil are coconut, paddy, nutmeg, banana and arecanut. Dry agriculture mainly constitutes the homestead cultivation and wet agriculture is mainly paddy. The data from krishibhavan is given in figure 9.3 and table 9.1. From the data it can be inferred that 46% of the total cultivation is coconut. Paddy nutmeg and banana are the next major crops. Vegetables are also cultivated. All these are cultivated along with the residential activity. No plantations can be seen here.

From the socio economic survey 2012, it is clear that the agricultural activities are showing a slightly increasing trend. The "Padashekarasamithi" in the municipal are a lead the major agricultural activities in the Town with the support of Krishibhavan. Local level analysis also revealed the enthusiasm of the people to promote agriculture and related activities. The detailed analyses of crops are given below.

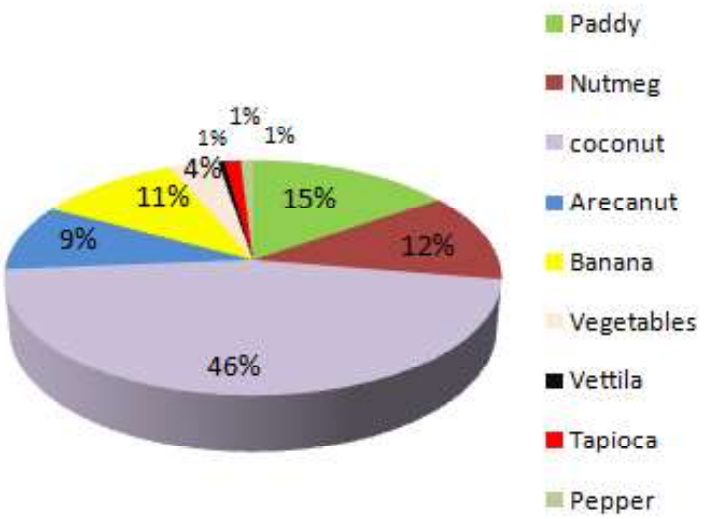


Fig 9.3 Area under cultivation for various crops

Source: KrishiBhavan, Chalakudy -2012

Table 9.2 Agricultural details

Sl no:	Type of crop	Area(HA)	Production / year
1	Paddy	250	3250 kg/ha
2	Nutmeg	140	180 kg/plant
3	Coconut	750	80 nuts/ palm
4	Areca nut	300	60 kg / plant
5	Banana	120	20000 kg/ ha
6	Vegetables	60	
7	Vettila	8	

Source: KrishiBhavan Chalakudy and SIC

9.1.1 Paddy

Rice being the staple food of Kerala paddy cultivation plays a major role in socio-cultural life of rural Kerala. Paddy cultivation has literally declined through out Kerala owing to various reasons. The shift to cash crops is very evident in Kerala and the same trend prevails here as well. In Chalakudy paddy cropping is done in the first and second crop period. The municipal area has a large scale paddy cultivation. Total area under paddy cultivation in Chalakudy town is 250 hectares with production of virippu- 320 MT and Mundakan - 325 MT.

9.1.1.1 Virippu

The Virippu is the first period paddy crop which is cultivated in the month April- May and extends to October-November. The year wise production and porductivity of the virippu crop is shown in the figure 9.4 and 9.5 as per the secondary data available. From this graph it is clear that the area and the production shows an increasing trend. But Productivity shows a decreasing tendency. The only way out to make the paddy cultivation economic is to make the activity more productive.

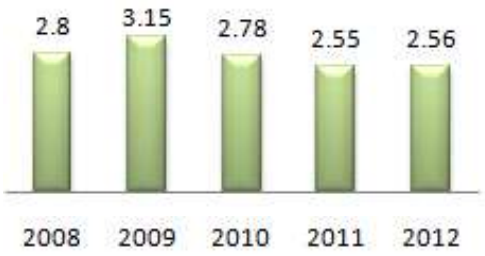


Fig 9.4: Comparison of the year wise production of Virippu

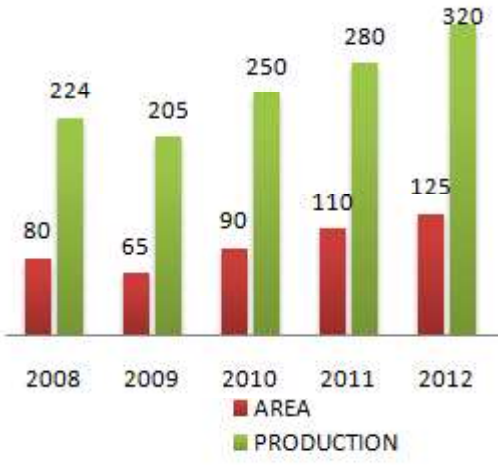


Fig 9.5: Comparison of the year wise productivity of Virippu

Source : Krishi Bhavan Chalakudy

9.1.1.2 Mundakan

Mundakan season is the period starting from September to October and extending to December to January. The graphical representation of the year wise production and the productivity is shown in the figures 9.6 and figure 9.7 respectively. It reveals that the area and production shows an increasing trend but productivity is decreasing over the years.

On Comparing with nearby LSGIs, Chalakudy Town has the second highest position in paddy production. In the case of productivity, the Town shows a value higher than the district average, but little less when compared to the nearby LSGIs. These details are shown in figure 9.7 and 9.8 respectively. As per the secodary data availble, almost 250 hectares of land is used for paddy cultivation and the annual production is 3250 kg/Ha. Irrigation is done mainly through irrigation canals. Cultivation depends on rain as a major source of water. Chalakudy river is utilised for irrigation in the form of six lift irrigation schemes.

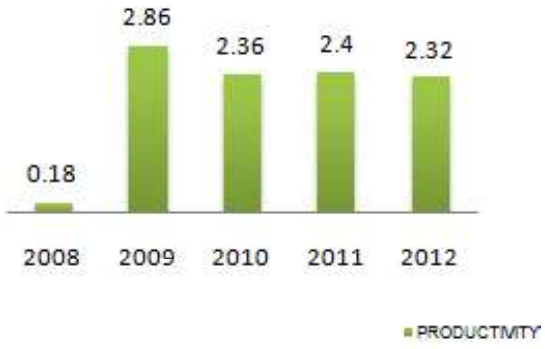


Fig 9.6: Comparison of the year wise production of Mundakan crop

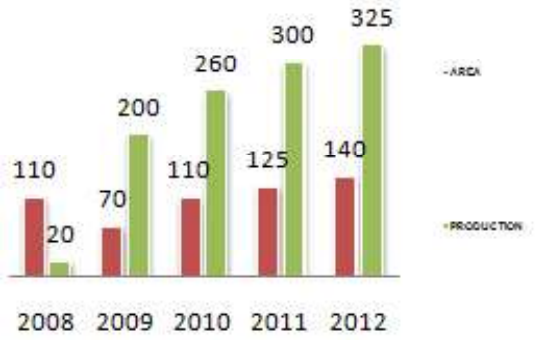


Fig 9.7: Comparison of the year wise productivity of Mundakan crop

Source : Krishi Bhavan Chalakudy

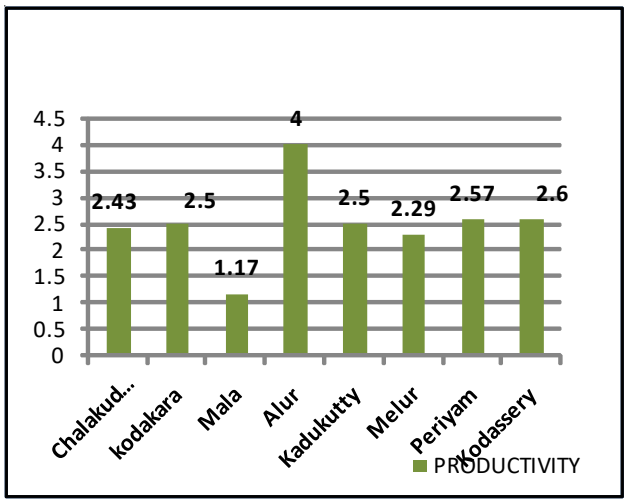


Fig 9.8 Comparison of paddy productivity with nearby LSGI's

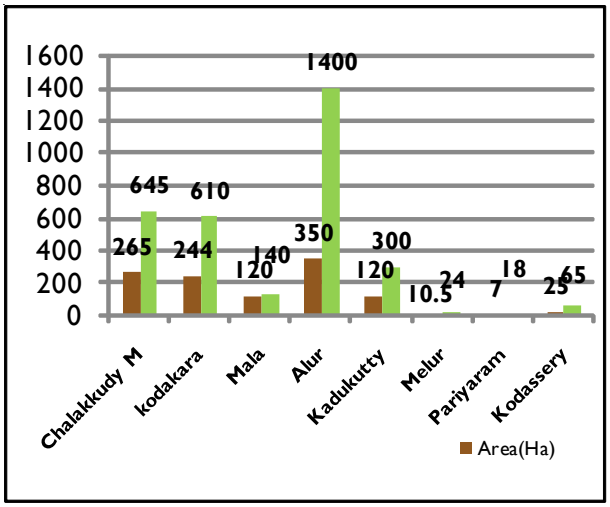


Fig 9.9 Comparison of paddy area and production with nearby LSGI's

9.1.2 Banana

Chalakudy town is one of the major banana cultivating LSGI's in Thrissur district. Banana cultivation is showing an increasing trend. 150 hectares of land is used for banana cultivation with a production of 39000 MT. As per the secondary data available from the Krishibhavan in Chalakudy, the year wise production and productivity of the banana is shown in figure 9.10 and 9.11. From this data it is clear that production and productivity are showing an increasing trend. In comparison with the near by LSGI's Chalakudy Town has the third position in banana cultivation (figure 9.12.)

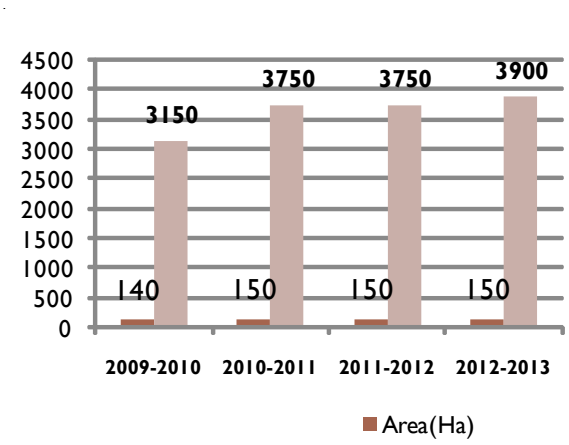


Fig 9.10 Temporal variation of banana production

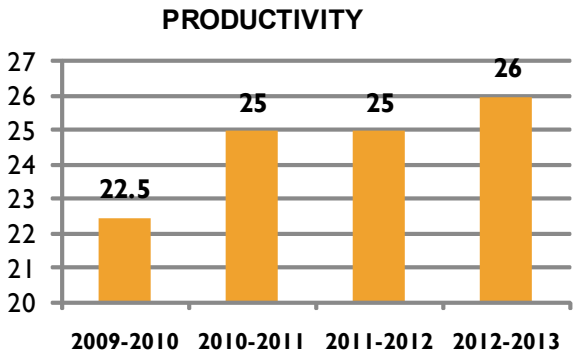


Fig 9.11 Temporal variation of Banana productivity

Source : Krishi Bhavan Chalakudy

9.1.3 Vegetable

The vegetable cultivation in Chalakudy Town is also showing an increasing trend. Almost 55 hectares of land is used for vegetable cultivation. The annual production is 400 MT. Vegetable cultivation is seen more in the Kottat area (South–West part of the Town). Comparison of year wise production and productivity is shown in fig 9.13 and 9.14 respectively.



Comparing with the near by LSGI's, Chalakudy Town has the highest position in the vegetable production and the third highest in productivity of vegetable cultivation.

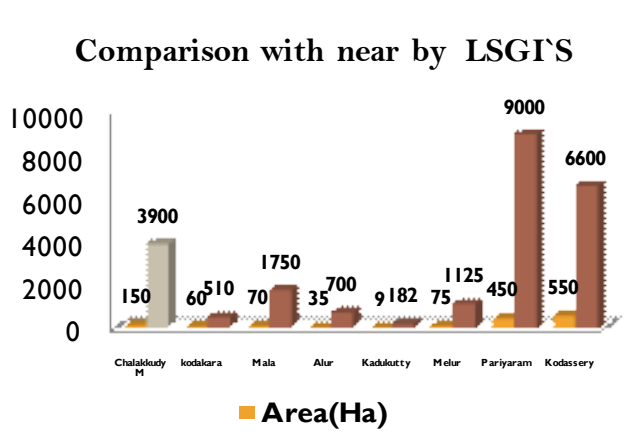


Fig 9.12 Comparison of Banana production with nearby LSGI's

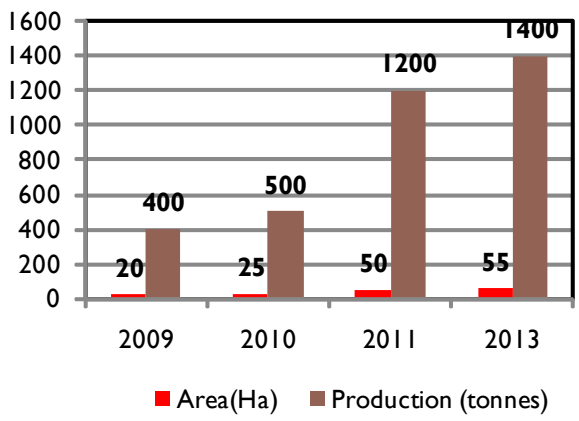


Fig 9.13 Decadal variation of vegetable area and production

Source : KrishiBhavan Chalakudy

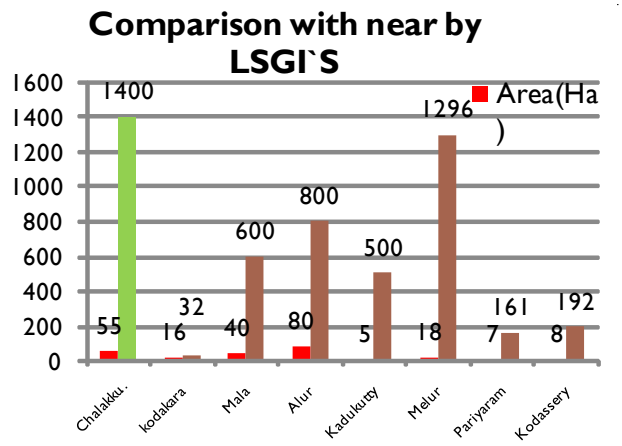


Fig 9.14 Comparison of vegetable productivity with nearby LSGI's

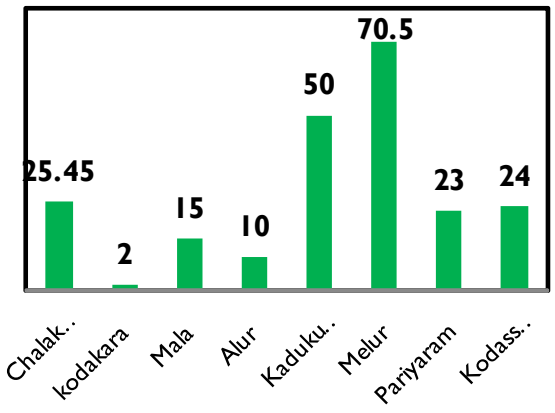


Fig 9.15 Comparison of vegetable production with nearby LSGI's

Local level analysis revealed that marketing facilities are not sufficient in the municipal area. Also the pricing of the commodities is not in a balanced manner. This pose a set back to the farmers.

9.2 Irrigational Facilities

Most of the agricultural activities mainly depend on the Chalakudy River. Presently six LI schemes are operating in Chalakudy Town. They are Kottat LI scheme (Chalakudy river), Chathankulam LI scheme, Kozhikulam LI scheme, Alvin centre LI scheme (Kummayakulam), Pambattukulam LI scheme and Periyachira LI scheme. The location of these LI schemes are in given below in figure 9.16 Out of this Kottat LI and Chathankulam irrigation projects are under the control of irrigation department of Kerala.

All others are operated by the town. Almost all areas are covered in this project. The decreasing water level of Chalakudy River causes water scarcity in the surrounding area. The encroachments by the sides of irrigation canal have caused pollution and water logging in the canal. This occasionally affects the free flow of water and contaminates water.

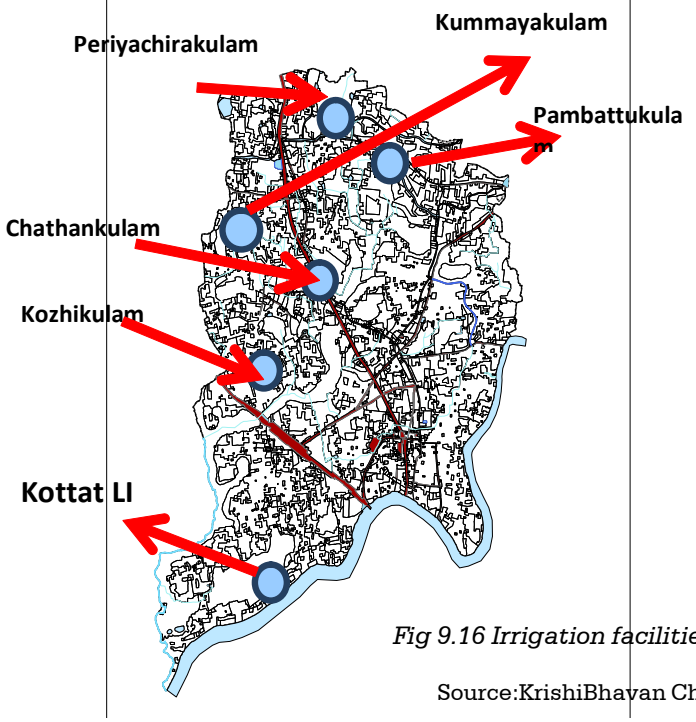


Fig 9.16 Irrigation facilities

Source:KrishiBhavan Chalakudy

9.3 Existing Scenario - Animal Husbandry

From the secondary data available, the livestock population of Chalakudy Town is shown in table 9.2. The main live stock here are cow, buffalo, goat, hen, duck and pig. The main products obtained from the livestock are egg, milk, meat. There are four numbers of Poultry farm since the municipal area. About 80000 Kg/month of meat is produced in Chalakudy town area and there is only one authorized slaughter house which is located in the market. But it is not a modern one. From the local level analysis it is identified that so many unauthorized slaughter houses are functioning in the town area. The percentage wise domestic animal in Chalakudy town area is shown in table 9.3.



Table: 9.3 Livestock Population

SL NO 1	Name of ward/place						
		cow	Buffalo	Goat	Duck	Pig	others
1	36 ward	3116	314	1216	13539	62	12

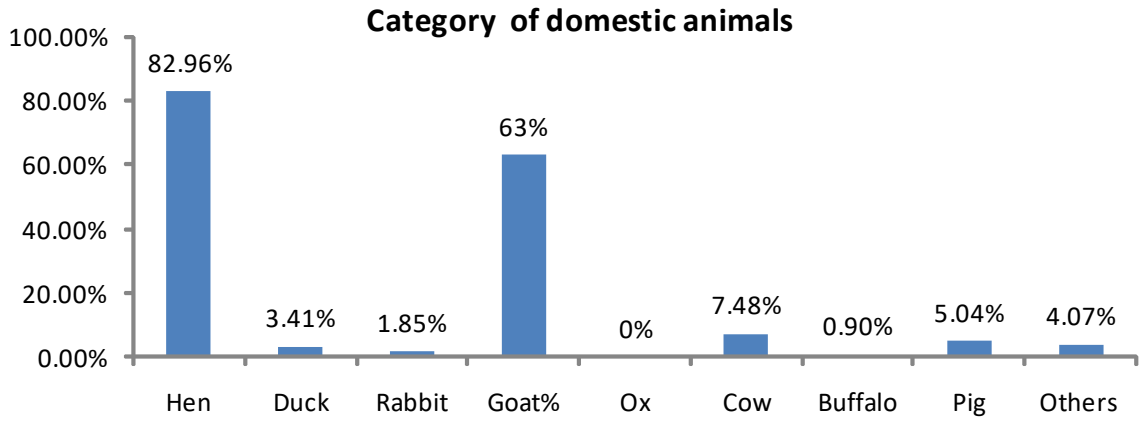


Fig 9.17 Category of domestic animal

Source: Secondary data from animal husbandry office Thrissur

As per this data it is clear that 82.96 % houses have hens at their house. There is no hatchery in the Town. Similar to agricultural activity there is a potential in animal husbandry sector also.

Table 9.4 Details of Dairy Farm in Chalakudy Town area

Ward no:	Name of ward/place	Name of Diary farm	No. of cattle	Quantity of milk produced / day
20	Housing Board	Krishnamoorthy	10	180 Kg
15	Chalakudy	Moolans	11	190 Kg
28	Mythri Nagar	Moolans	12	180 Kg
18	GayatriAshramam	KrishnakumarDiary farm	10	190 Kg

Table 9.5 Details of dairy outlets and collection centre

Ward no:	Name of ward / place	Type of outlet / collection centre	Average quantity of milk collected/day	Average quantity of milk collected/month
18	Hospital ward	Cooperative society	500kg/day	15000 kg/month

Source: Animal husbandryOffice ,Thrissur

In the case of milk production, there are four dairy farms in Chalakudy town area. The total daily average milk production in Chalakudy is 185 kg /day. There is only one collection centre functioning in the municipal area. The monthly collection of milk in the collection Centre is 15000 kg. The figures represent only the milk production in organized

sector. From the local level analysis it is identified that household level activities are predominant and most of the people distribute milk in the surrounding areas.

From the secondary data obtained from the animal husbandry office Thrissur, there is a total of 3116 cows in the municipal area, of which only 43 are in the organised sector and the rest 3073 are in unorganized sector. If it is assumed that 50% of these cows are productive with an average milk production of 10 kg/day, the total production comes to around 15365 kg/day. A Govt. veterinary hospital is situated in the Town.

Indian council of Medical Research (ICMR) recommends 280 ml of milk, 16 gms of meat and 0.25 eggs per day/ person respectively. Approx. monthly requirement based on ICMR recommendation is given in table 9.6

Table 9.6 Requirement of milk,egg and meat

Category	Approx. monthly requirement based on ICMR recommendation
Milk & Milk products	416000 litres
Egg	371440 Nos
Meat	23770 kg

The existing production from Animal Husbandry sector in Chalakudy is not sufficient for supplying the required quantities of milk and egg. The huge production of meat without a few authorised and modernised slaughter houses can affect the health and hygiene of the people.

9.4 Fisheries

Chalakudy is not a coastal Town and hence marine fisheries sector is absent here. But as per the secondary data available from the district fisheries office Thrissur, there are 41 numbers of labourers working in fishing sector. These are mostly fish vendors and distributors. Inland fishing activity is not prominent here, even though many ponds are there. Ornamental fisheries units are found in Chalakudy Town. Nearly 3 registered units are there and a handful of unregistered units are also profitably functioning here. 23 ponds are present in the Town which can be utilised for promoting inland fisheries activities.

9.5 Marketing Facilities





The existing market is located at the central part of Chalakudy Town. Surrounding local bodies also depend on this market. Vegetable shops are scattered within the town center and along main roads.

People from Potta and Kottat

area are not effectively utilising this market, due to the distance and heavy traffic which needs to be traversed to reach the market. A mini market in this area will be a solution to the present issues.

9.6 Conclusion

The major crops in Chalakudy Town are Paddy, Banana and Vegetables. Nutmeg, coconut and areca nut. The area and production of paddy, banana and vegetable cultivation is showing an increasing trend. Nutmeg production is low compared to the nearby LSGI's but productivity is greater than the district average. Prevalence of root wilt and other coconut diseases are badly affecting the productivity of coconut. It can be seen that homestead cultivation and floriculture nurseries are augmented. Encroachment of irrigation canal bunds leads to depositing of waste materials in canal which is affecting the free flow of water. Proper renovation of irrigation canal is necessary.

The existing production from Animal Husbandry sector in Chalakudy is not sufficient for supplying the required quantities of milk and egg. The huge production of meat without a few authorised and modernised slaughter houses can affect the health and hygiene of the people.

CHAPTER 10
TRAFFIC AND TRANSPORTATION

Transport infrastructure is tied to every sector of economy. It is closely related to economic growth and reduction inpoverty. Simultaneously demand for transport increases as income increases. In doing the analysis the factors that need to be considered are the future distribution of population, urbanization, economy and environmental aspects.

10.1 Introduction

As far as connectivity and traffic are concerned Chalakudy is on a high. National highway 544 and 2 State highways (SH 21 and SH 61) are the major corridors. Chalakudy has a KSRTC bus station and a private bus station operating within the Municipal limits. There are inter - district and inter-state KSRTC buses operating from/via Chalakudy. The private bus station runs bus services into the suburbs of Chalakudy. The rail transport system in Chalakudy is operated by Southern Railway Zone of Indian Railways, and comes under Trivandrum Railway Division. Chalakudy Railway Station is a halting point for many trains running through Kerala which includes all passenger trains and some of the express trains.

The nearest airport is Cochin International Airport, which is 22 km away from Chalakudy. All major international and domestic flights are available from Cochin International Airport.

10.2 Existing Road Network of Chalakudy Town

Chalakudy has a well-connected road network that provides easy inter-district and inter-state road transportation. The National highway 544 passes through Chalakudy that connects Kochi to Salem. There are two State Highways in Chalakudy. The SH 21 which provides connectivity to Tamil Nadu state, starts from Chalakudy and continues upto Anamala via Athirapilly. The second state highway is SH 61, the Potta – Moonnupeedika road which connects another national highway NH66. It provides connectivity to Guruvayur, Mala, Kozhikode and Malappuram district. Other major roads include Chalakudy – Mala road, Potta – Elanjipra road and Vellikulangara road.

10.3 Traffic Surveys

The existing traffic characteristics in Chalakudytown area were studied to identify the main problems and potentials here. To provide necessary inputs for the study, various primary surveys are conducted in the study area. Surveys carried out are as follows

- Speed and Delay Characteristics
- Link Volume Capacity Utilisation
- Traffic volume at major intersection
- Parking Characteristics
- Pedestrian Volume

10.3.1 Speed and Delay characteristics

As part of the study, speed and delay survey was carried out on all the major road stretches within Chalakudy study area. The speed and delay characteristics of major roads in Chalakudy study area is given in Table 10.1.

The speed and delay survey was conducted on NH 544, from Periyachira to Chalakudy Bridge, over a length of 5.85 km. The journey speed and running speed of the section was found to be 38.71 kmph and 47.65 kmph respectively. The major reasons for the delay in this section were found to be the presence of signals and intersections.

In old NH section, the delay was caused by the intersection, congestion and bus stops. The journey speed in this section was noted as 28.53 kmph while the running speed was 30.10 kmph. In SH 61, for a length of 1.23 km, the journey speed was found to be 25.60 kmph and running speed was 25.89 kmph, from Vazhakunnam to Potta junction. The presence of Bus Stops and congestionhas been identified as the reason for delay.

In Mala road with a total length of 5.55 km, the journey speed was found to be 30.64 kmph and running speed was 31.46 kmph. The section for survey was taken from Parayanthodu Bridge to Town junction, in which the delay was caused by intersections and signals. The 1.27 km long KSRTC road was also taken for speed and delay survey, in which the journey speed and running speed were found as 23.33 kmph and 24.32 kmph respectively. The reasons for which the delays were caused are intersections and presence of slow moving vehicle. The SH 21 (for a length of 1.76 km) and Elinjipra Road (for a length 3.28 km) was also considered for speed and delay survey, but no delay was found in these

sections. The journey speed and running speed of SH 21 was 39.60 kmph and that of Elinjipra road was 42.47 kmph. The running speed was found to be lowalong some part of the sections due to the poor road condition and poor geometric alignment of the road.

Table 10.1: Speed and Delay Characteristics of Major Roads in Chalakudy

Sl. No.	Chainage	Location	Running Time			Delay Time			Journey Time (seconds)	Journey Speed (kmph)	Running Speed (kmph)	Cause of Delay
			Minutes	Seconds	Total (seconds)	Minutes	Seconds	Total (seconds)				
Name of Road:		**NH 544**			**Direction**		**Periyachira to Chalakudy Bridge**					
1	0.000	Periyachira										
2	0.790	Elinjipra Road Junction	0	56	56	0	0	0	56	50.79	50.79	
3	1.540	Potta flyover	0	53	53	0	0	0	53	50.94	50.94	
4	2.850	Potta Asramam Junction	1	44	104	0	33	33	137	34.42	45.35	Signal, Intersection
5	4.400	Municipal Office Junction	1	47	107	1	7	67	174	32.07	52.15	Signal, Intersection
6	5.030	Chalakudy Flyover	1	5	65	0	2	2	67	33.85	34.89	Congestion
7	5.850	Chalakudy bridge	0	57	57			0	57	51.79	51.79	
					442			**102**	**544**	**38.71**	**47.65**	
Name of Road:		**Old NH**			**Direction**		**Kodakara to Chalakudy**					
1	0.000	Nadukunnu										
2	0.350	Panampilly Junction	0	41	41	0	0	0	41	30.73	30.73	
3	1.140	Potta Junction	1	16	76	0	9	9	85	33.46	37.42	Intersection
4	2.430	Potta-Aashramam Junction	1	55	115	0	0	0	115	40.38	40.38	
5	3.670	CCMK Hospital Junction	2	6	126	0	0	0	126	35.43	35.43	
6	3.830	Tramway Road Junction	0	24	24	0	0	0	24	24.00	24.00	
7	3.940	Anamala Junction	0	18	18	0	6	6	24	16.50	22.00	Congestion, Intersection
8	4.310	Town Junction	1	9	69	0	0	0	69	19.30	19.30	
9	5.000	South Junction	2	9	129	0	18	18	147	16.90	19.26	Bus Stop, Congestion, Intersection
					598			**33**	**631**	**28.53**	**30.10**	
Name of Road:		**SH 61**			**Direction :**		**Vazhakunnam-Potta**					
1	0.000	Vazhakunnam										
2	0.370	Edaya Junction	0	44	44	0	2	2	46	28.96	30.27	Bus Stop, Congestion
3	0.940	Potta Flyover	1	50	110	0	0	0	110	18.65	18.65	
4	1.230	Potta Junction	0	17	17	0	0	0	17	61.41	61.41	
					171			**2**	**173**	**25.60**	**25.89**	
Name of Road:		**SH 21**			**Direction**		**Anamala Junction - Koodapuzha**					
1	0.000	Anamala Junction										
2	1.760	Koodapuzha	2	40	160	0	0	0	160	39.60	39.60	
					160			**0**	**160**	**39.60**	**39.60**	
Name of		**Mala Road**			**Direction**		**Kottat - Town Junction**					

Road:												
1	0.000	Parayanthodu Bridge										
2	0.630	Kottat Junction	1	10	70	0	0	0	70	32.40	32.40	
3	2.190	West Chalakudy Junction	2	40	160	0	0	0	160	35.10	35.10	
4	3.540	Railway Station	2	30	150	0	0	0	150	32.40	32.40	
5	5.020	Municipal office Junction	2	40	160	0	0	0	160	33.30	33.30	
6	5.550	Town Junction	1	35	95	0	17	17	112	108.00	127.33	Intersection, Signal
					635			**17**	**652**	**30.64**	**31.46**	
Name of Road:		**KSRTC Road**			**Direction**		**South Junction -KSRTC**					
1	0.000	South Junction										
2	0.370	Bus Stand	1	23	83	0	8	8	91	14.64	16.05	Intersection, Slow Vehicle
3	1.270	Level Cross	1	45	105			0	105	30.86	30.86	
					188			**8**	**196**	**23.33**	**24.32**	
Name of Road:		**Elinjipra Road**			**Direction**		**Panampilly-Potta**					
1	0.000	Panampilly Junction										
2	1.270	Panampilly College Junction	1	49	109	0	0	0	109	41.94	41.94	
3	2.470	Alavi Centre	1	43	103	0	0	0	103	41.94	41.94	
4	3.280	Potta	1	6	66	0	0	0	66	44.18	44.18	
					278			**0**	**278**	**42.47**	**42.47**	

Source: Traffic & Transportation study -2012

10.3.2 Link Volume and Capacity Utilization

Link Volume:-

One of the fundamental measures of traffic on a road system is the volume of traffic using the road in a given interval of time. It is also termed as flow and is expressed in vehicles per hour or vehicles per day. When traffic is composed of a number of types of vehicles, the normal practice is to convert the flow in to equivalent passenger car units (PCUs), by using certain equivalency factors. The flow is then expressed as the PCUs per hour or PCUs per day. The daily traffic volume has been found to be highest for the Chalakudy Bridge - MO junction section of NH-544 amounting to 75,073 PCUs followed by Ashramam road junction - Periyachira link with 58,727 PCU and MO junction - Ashramam road junction with 57,810 PCU. In the Old NH section, Anamala Junction - CCMK Hospital Junction link possessed the maximum daily traffic in the order of 20,500 PCU followed by Town Junction - Anamala Junction link with 18,700 PCU. The daily traffic along Potta – Moonnupeedika road was 17,000 PCU and that for Athirapilly road was 8,500 PCU. For the KSTRC Road the daily traffic was 17,100 PCU and for Chalakudy - Vellikulangara Road, the daily traffic was about 10,100 PCU. Figure 10.1 and table 10.2 shows the traffic volumes in major roads in Chalakudy

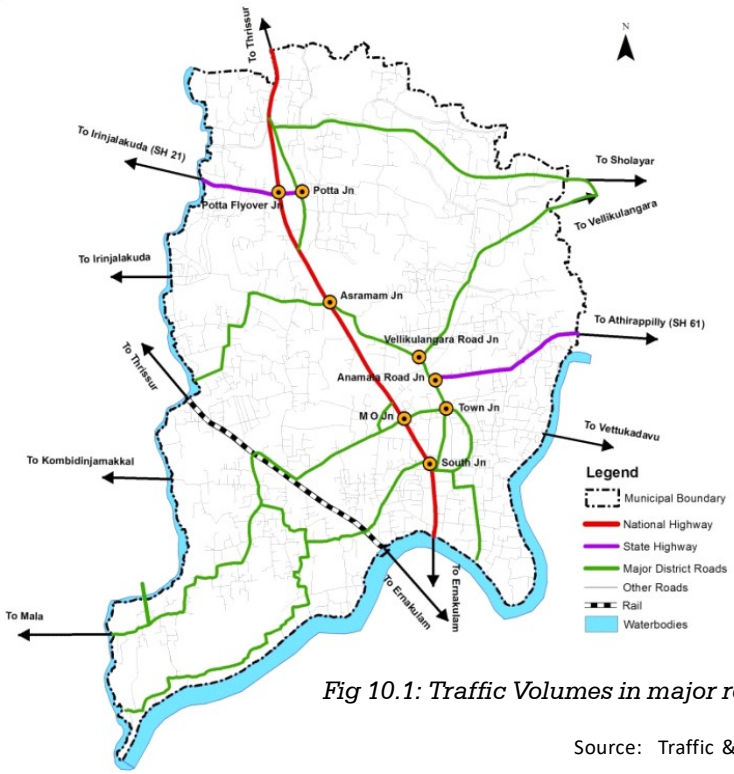


Fig 10.1: Traffic Volumes in major roads in Chalakudy

Source: Traffic & Transportation study -2012

Table 10.2: Volume of Daily Vehicular Traffic on Major Road Links within Chalakudy

Sl. No	RoadLink	TypeofVehicle												Totalvehicles/day (No)	TotalPU/day
		Bus	Minibus	Car	Passauto	Twowheeler	MAT	Truck	Minitruck	Goodsauto	Bi-cycle	Hand cart	Others		
I	NH544														
L-01	ChalakudyBridge-MOjunction	1,981	466	18,058	3,311	15,492	886	8,822	3,946	2,692	203	6	21	55,884	75,073
L-02	MOjunction-Ashramamroadjunction	1,432	575	15,802	1,990	9,902	877	6,248	3,790	1,253	336	4	16	42,225	57,810
L-03	Ashramamroadjunction-Northboundary(Potta)	1,742	671	16,693	1,822	7,225	937	6,447	3,556	1,294	195	0	14	40,596	58,727
II	AthirapalliRoad(SH21)														
L-04	AnamalaJunction-Koodapuzha	317	158	1,907	1,156	4,289	21	361	438	244	127	3	6	9,027	8,586
III	Potta-MoonnupedikaRoad(SH61)														
L-05	PottaJunction-PottaFlyover	691	90	1,803	735	2,176	16	286	188	143	623	9	0	6,760	7,537
L-06	PottaFlyover-Vazhakunnam	352	34	4,226	669	5,028	12	1,884	1,391	669	12	0	27	14,304	17,146
IV	Chalakudy-MalaRoad														
L-07	TownJunction-MunicipalOffice	537	270	2,061	1,921	5,001	0	138	283	226	599	6	0	11,042	9,887
L-08	MunicipalOffice-RailwayStation	482	205	4,902	3,228	7,284	20	487	983	625	625	2	10	18,853	17,557

L-09	RailwayStation-AnnallurBridg	525	176	1,600	1,022	4,038	8	476	288	313	800	3	0	9,249	9,101
V	OldNHSections														
L-10	SouthJunction-	1,447	141	2,921	3,360	5,969	21	106	489	391	589	0	7	15,441	15,692
L-11	TownJunction-AnamalaJuncti	1,037	287	3,604	4,537	9,188	21	215	476	556	820	0	4	20,745	18,720
L-12	AnamalaJunction-CCMKHospitalJun	1,074	191	3,219	5,400	10,521	14	370	732	532	619	9	5	22,686	20,567
L-13	CCMKHospitalJunction-AshramamRoadJunction	601	126	1,361	547	2,371	0	55	310	105	283	0	8	5,767	6,010
L-14	PottaJunction-PanampillyJunction	222	32	1,059	1,007	1,920	16	52	73	88	677	9	0	5,155	4,540
VI	Chalakudy-VellikulangaraRaod														
L-15	CCMKHospitalJunction-Kattipokka	281	75	2,814	2,122	5,155	0	153	314	538	446	0	0	11,898	10,160
VII	Potta-ElinjipraRoad														
L-16	PanampillyJunction-AlaviCentre	64	203	1,273	532	1,660	0	422	965	421	255	6	5	5,806	6,448
VIII	KSRTCRoad														
L-17,18	SouthJunction-KSRTC	1,881	518	2,651	2,771	6,214	7	284	329	509	420	8	5	15,597	17,107
IX	PottaAshramamRoad														
L-19	PottaAshramam-Vellanchira	43	19	850	442	1,502	0	71	354	36	160	0	0	3,477	3,061
X	MarketRoad														
L-20	MarketRoad	0	0	714	1,005	3,221	0	5	111	158	1,218	6	0	6,438	4,302
XI	PottachiraRoad														
L-21	ElanjipraRoad-VellikulangaraRd	43	5	266	383	872	0	5	63	149	1,110	0	0	2,896	2,035
XII	TramwayRoad														
L-22	BreakStarClub MoolaJunction-OldNH	0	42	578	735	2,844	12	56	105	47	1,705	0	0	6,124	4,077

Source: Traffic & Transportation study -2012

10.3.3 Capacity Utilisation

Capacity utilisation of the road stretches was measured by volume-to-capacity ratio (V/C Ratio). It is the ratio of volume of traffic plying on the road stretch to the capacity of the road stretch. 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. The volume capacity ratio of major roads within the Chalakudy

Study area is given in Table 10.3. The construction of the new NH has alleviated the traffic congestion on the old NH; this is clearly seen from the v/c value.

Table 10.3: Volume - Capacity Ratio on Major Road Links in Chalakudy

Road/Link No.	Road Link	Capacity (PCU/day)	Volume (PCU/day)	Volume-capacity ratio
I	NH 544			
L-01	Chalakudy Bridge - MO junction	36,000	75,073	2.09
L-02	MO junction - Ashramam road junction	36,000	57,810	1.61
L-03	Ashramam road junction - North boundary (Potta)	36,000	58,727	1.63
II	Athirapalli Road (SH 21)			
L-04	Anamala Junction - Koodapuzha	12,000	8,586	0.72
III	Potta - Moonnupedika Road (SH 61)			
L-05	Potta Junction - Potta Fly over	12,000	7,537	0.63
L-06	Potta Flyover - Vazhakunnam	12,000	17,146	1.43
IV	Chalakudy - Mala Road			
L-07	Town Junction - Municipal Office Junction	12,000	9,887	0.82
L-08	Municipal Office Junction - Railway Station	12,000	17,557	1.46
L-09	Railway Station - Annallur Bridge	12,000	9,101	0.76
V	Old NH Sections			
L-10	South Junction - Town Junction	12,000	15,692	1.31
L-11	Town Junction - Anamala Junction	12,000	18,720	1.56
L-12	Anamala Junction - CCMK Hospital Junction	12,000	20,567	1.71
L-13	CCMK Hospital Junction - Ashramam Road Junction	12,000	6,010	0.50
L-14	Potta Junction - Panampilly Junction	12,000	4,540	0.38
VI	Chalakudy - VellikulangaraRaod			
L-15	CCMK Hospital Junction - Kattipokkam Junction	12,000	10,160	0.85
VII	Potta - Elinjipra Road			
L-16	Panampilly Junction - Alavi Centre	12,000	6,448	0.54
VIII	KSRTC Road			
L-17, 18	South Junction - KSRTC	12,000	17,107	1.43
IX	PottaAshramam Road			
L-19	PottaAshramam - Vellanchira	12,000	3,061	0.26
X	Market Road			
L-20	Market Road	12,000	4,302	0.36
XI	Pottachira Road			
L-21	Elanjipra Road - Vellikulangara Road	9,000	2,035	0.23
XII	Tramway Road			
L-22 - 24	Break Star Club Moola Junction - Old NH	9,000	4,077	0.45

Source: Traffic & Transportation study -2012

10.3.4 Traffic volume at major intersection

Based on the reconnaissance survey, turning movement surveys at nine major intersections in the study area were conducted to as certain the peak hour demands. Major intersections selected for volume count survey are given in Table 10.4 and shown in Figure 10.2.

Table 10.4 List of Intersections Selected for Turning Movement Survey in Chalakudy

Sl. No.	Name of Intersection	Type of Intersection	Intersecting Roads
1	Ashramam Road Junction	Four Arm	NH-544 & Asramam Road
2	South Junction	Six Arm	Old NH, Service Road & Market Road
3	Municipal Office Junction	Four Arm	NH-544 & Mala Road
4	KSRTC Road Junction	Five Arm	Service Road & KSRTC Road
5	Potta Junction	Three Arm	Old NH & Potta - Moonnupedika Road
6	Potta Fly Over Junction	Four Arm	Service Road & Potta - Moonnupedika Road
7	CCMK Hospital Junction	Three Arm	Old NH & Vellikulangara Raod
8	Town Junction	Four Arm	Old NH, Market Road & Mala Road
9	Anamala Junction	Three Arm	Old NH & Athirapilli Road

Source: Traffic & Transportation study -2012

The summarised traffic flow in PCU at these intersections is given in Table 10.4. It can be seen that the Ashramam Junction wit nessed the maximum peak hour traffic flow of 4083 PCU. MO junction has peak hour traffic of 4056 PCU and South junction has peak hour traffic of 3600 PCU. For the other intersections, the peak hour traffic flow varied between 730 to 3200 PCU.

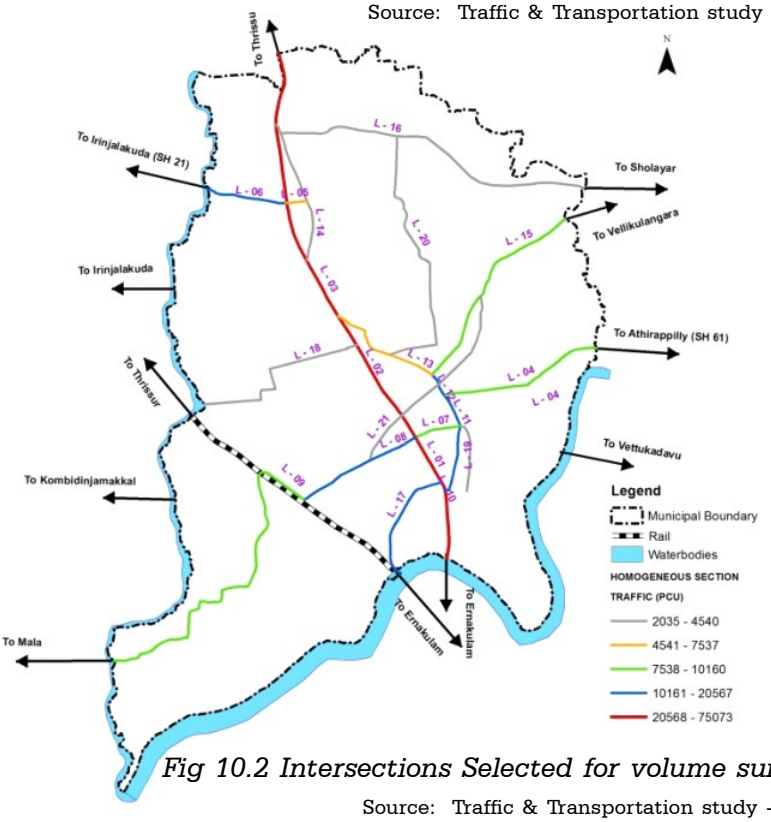


Fig 10.2 Intersections Selected for volume survey

Source: Traffic & Transportation study -2012

10.3.5 Parking Characteristics

Parking surveys were carried out on major road sections of Chalakudy study area to obtain the peak parking demand and parking duration of various categories of vehicles on these road sections. Major road stretches/locations selected for parking survey is given in Table 10.5. Figure 10.3 shows the locations selected for parking survey. It can be inferred that South Junction is witnessing maximum parking. The details reveal that only 10% of vehicles park for more than 1 hour.

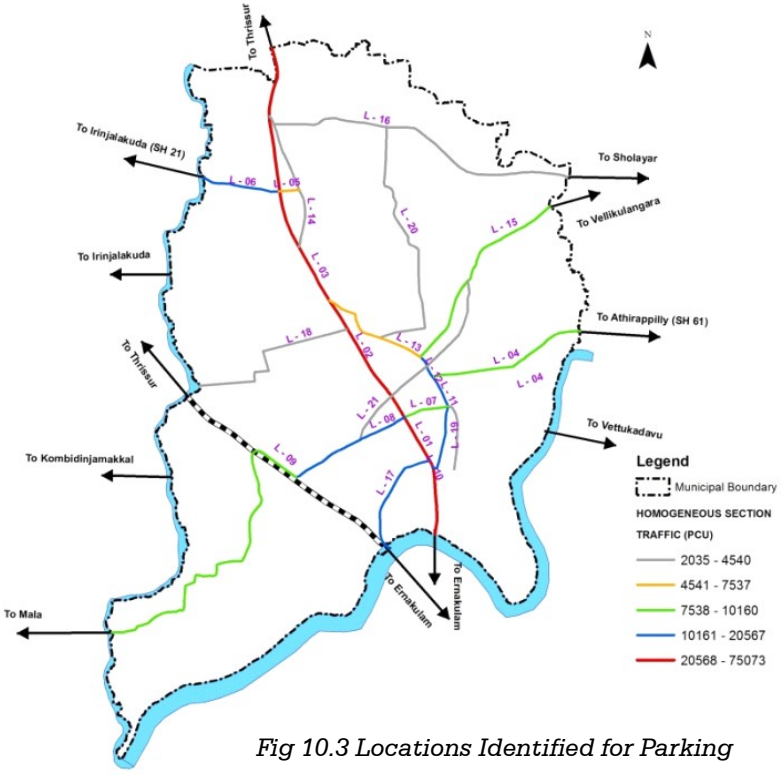


Fig 10.3 Locations Identified for Parking

Source: Traffic & Transportation study -2012

Table 10.5: Locations Identified for Parking Demand Survey inChalakudy

Sl. No.	Road	Locations
1	NH 544	Town-Block Panchayath
2		Municipality Area
3		South Jn
4	Old NH	South Jn- Town Jn
5		Town jn-Anamala Jn
6	Mala Road	Town jn-M.O jn
7		Railway Station Area
8		Mini Civil Station Area
9	Police Station Road	South Jn-Police Station Jn
10	Market Road	Market Road
11	KSRTC Road	Sibi Complex-Nirmala
12		South jn - Sibi Complex

Source: Traffic & Transportation study -2012

10.3.6 Pedestrian Volume

Analysis of pedestrian crossing movement at major activity/ traffic generation areas has shown that a maximum of 868 pedestrian movement occurred at Town Junction. Also high volume of pedestrian cross movements occurred at South Junction and Bus Stand Junction. Peak hour pedestrian cross movements that are observed at major locations in Chalakudy are given in Table 10.6. On-street parking was found to exist along the old NH sections and the market road. Also vehicles were parked near the MO junction and mini civil station area.

Table 10.6 Peak Hour Pedestrian Cross Movements at Major Locations in Chalakudy

Sl.No.	Name of location	Peak time	No. of Pedestrians		
			Up	Down	Total
1	Bus Stand Junction (Highway)	3.45 PM- 4.45 PM	406	150	556
2	South Junction (East of Highway)	5.00 PM- 6.00 PM	506	298	804
3	South Junction (Under Fly Over)	3.45 PM- 4.45 PM	82	107	189
4	Anamala Junction-Old Highway	9.00 AM-10.00 AM	82	29	111
5	Anamala Junction-Anamala Road	9.30 AM- 10.30 AM	46	129	175
6	Town Junction Old NH Road (Near Chunkathu Jewellery)	10.00 AM- 11.00 AM	558	310	868
7	KSRTC Road	9.00 AM- 10.00 AM	285	62	347
8	Municipality Junction	4.00 PM- 5.00 PM	147	96	243

Source: Traffic & Transportation study -2012

A considerable amount of vehicles (511 numbers) were parked in the South junction, especially under the fly over. At most of the locations, majority of the vehicles parked were found to be for short duration of less than 30 minutes. 10 to 25 per centof these vehicles were parked for a period ranging between 30 minutes and one hour. Long duration vehicles constituted only around ten per cent of the total vehicles.

10.4 Characteristics of Inter-town Passenger Traffic

The inter - town passenger transport in Chalakudy is met mostly by road based KSRTC buses, private buses, mini-buses, and a host of personalised vehicles like four-wheelers, two-wheelers etc. Chalakudy railway station is situated inside the Town and hence there is a proportional use of trains as well. An analysis of the O-D survey data collected from outer cordon survey locations revealed that an estimated 4,43,109 inter-town passenger trips were performed in the study region on a reference day consisting of 2,53,200 bus passenger trips, 43,975 mini-bus trips, 80,405 car trips, 44,758 two-wheeler trips, 15,653 auto trips and 5,118 train trips. It could be inferred that public transport hasa significant role in meeting the inter-town passenger demand. The occupational

characteristics of passengers were ascertained from the O-D survey. It can be seen that the number of casual labourers are pretty high amounting to about 30.61% of the total trip makers. The business men constituted 29.90% of the total trips.

Persons working in the service sector constituted the 12.98% of the inter-town travelers, of whom 6.96% worked in the Government sector and 6.02% worked in private sector. Dependent population like unemployed, housewife, student and retired hands together constituted 13.65% of the total inter-town passengers. In Chalakudy, an estimated 1.46 lakh inter-town passenger trips were performed for work or related purpose, which constituted almost 32.97% of the total inter-town passenger movements. This was followed by 1, 58,581 personal trips and 69,081 back home trips. The details of the surveys are depicted in figures 10.5 and 10.6

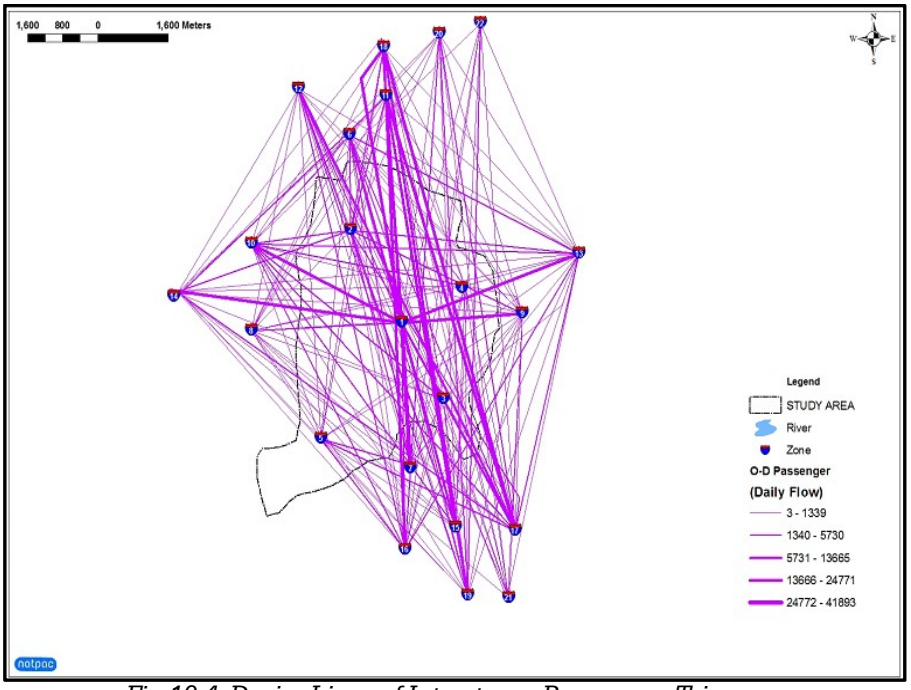


Fig 10.4: Desire Lines of Inter-town Passenger Trips

Source: Traffic & Transportation study -2012

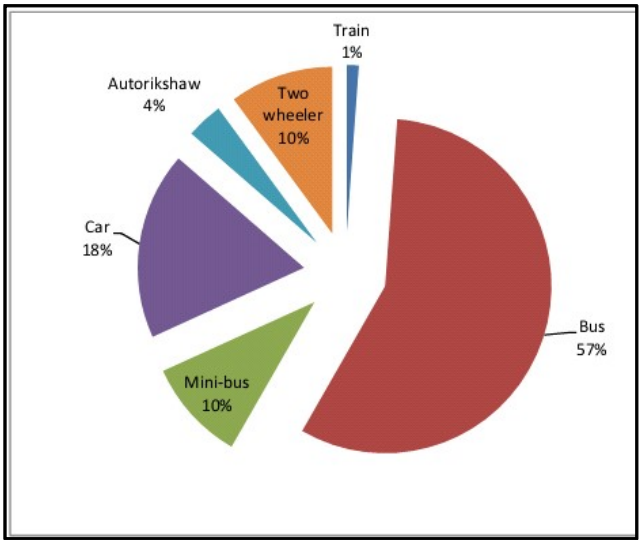


Fig 10.5 Modal Split of Inter-town Passenger Traffic

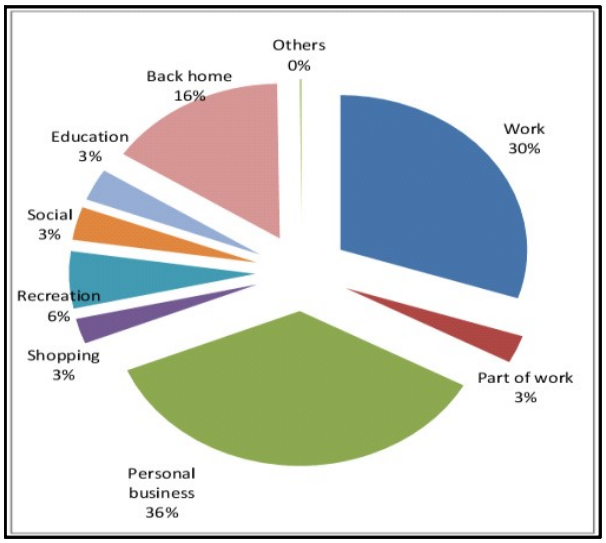


Fig 10.6: Distribution of Inter-town Daily Passenger Trips According to Purpose of Trip

Source: Traffic & Transportation study -2012

10.5 Characteristics of Inter - town Goods Traffic

A total of 37,022 goods vehicles passed through the outer cordon points in Chalakudy Town on the reference day (Table 10.8). The total goods volume comprised of 20,352 trucks followed by 10,889 Mini trucks and 5,781 goods auto rickshaws. The quantum of goods handled by the goods vehicles was to the tune of 90,605 tones. Trucks carried the maximum volume of goods traffic (71.2%), followed by mini - trucks (25.9%). The remaining 2.9 per cent of goods traffic was handled by goods autos. Inter-town movement of goods to the tune of 90,605 tones was carried out of the study region. The major traffic generator of goods traffic within the study region was the CBD area with 7,205 tones (7.95%) most of them bound for other Districts within the State. A total of 12,046 tones of goods traffic were

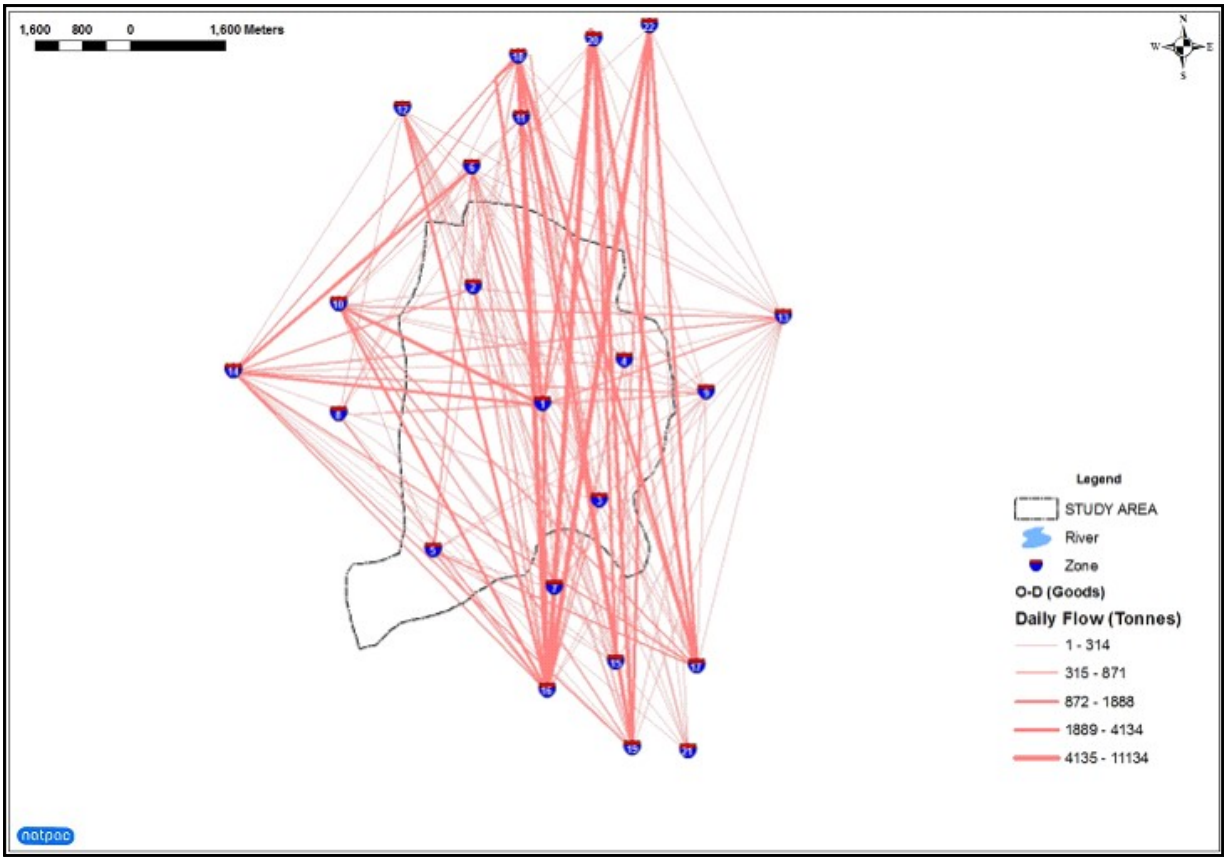


Fig 10.7: Desire Lines of Inter-town Goods Traffic

Source: Traffic & Transportation study 2012

generated from remaining Thrissurarea. Goods generated from other districts formed 63.60% of the total volume, while the goods generated from other states was to the tune of 11,801 tones. In the case of goods traffic attraction, CBD area had the dominant share of 6,027 tones. Among the external zones, 24.89% of the goods traffic terminated in ThrissurDistrict, while 37.23% formed the volume to other districts. Goods bound to other states were 22,210 tones constituting to 24.51% of the total volume.

Table 10.7: Modal Spilt of inter-town Daily Goods Traffic in Chalakudy

Sl.No.	Mode of travel	No.of vehicles		Quantity carried	
		No.	Per cent	Tons	Per cent
1	Truck	20352	54.97	64,479	71.17
2	Mini Truck/Tempo	10889	29.41	23,470	25.90
3	Goods Autorikshaw	5781	15.62	2,656	2.93
Total		**37,022**	**100.00**	**160,952**	**100.00**

Source: Traffic & Transportation study 2012

10.6 CONCLUSION

Based on detailed studies, base line data pertaining to traffic and transportation system for Chalakudy town has been compiled. The base line data consists of transport network in the study area, volume and capacity utilization on major roads, parking demand and pedestrian volume, inter-town passenger and goods traffic characteristics. From the foregone analysis it has become clear that there are problems in many roads due to unplanned intersections and crossings. The volume capacity ratio of many roads has exceeded the optimum value. On-street parking is predominant in the major road stretches emphasizing the need for organized parking in the municipal area. Also many aspects point to the need for a pedestrian friendly design.

CHAPTER 11

DRINKING WATER

Availability of drinking water, good sanitation and pollution free environment are the three essential factors of a healthy society. Generally health and sanitation are linked to safe drinking water. Pollution and contamination of drinking water is a major problem in the global context as in the local scenario. In this chapter deals with the availability of safe drinking water, the source, existing distribution system, treatment facilities and scarcity details in Chalakudy Town are detailed out.

11.1 Introduction

Chalakudy Town has a tropical humid climate, with an oppressive summer and plentiful seasonal rainfall. The hot season, lasting from March to May, is followed by the south-west monsoon from June to September. The north east- monsoon occurs from October to November and the rest of the year is generally dry. Average annual rainfall in Chalakudy Town is about 3251.15 mm (Census 2001). Seasonally, monsoon season experiences maximum precipitation followed by post-monsoon and pre monsoon seasons.

People residing in Chalakudy town area depend on wells as well as public water supply. The majority of people in town area depend on well water. The decrease in rainfall and conversion of wet land and paddy fields to residential plots has lead to the reduction in the recharge of ground water table. As the recharge does not take place properly, drying up of wells is a common phenomenon in Chalakudy.

11.2 Existing Scenario

Surface sources, ground water sources and rainwater collected from roof tops meet the water requirement for different purposes like, domestic needs, industrial & commercial needs, instituti onal needs, fire-fighting, livestock, public purpose, agricultural needs etc.

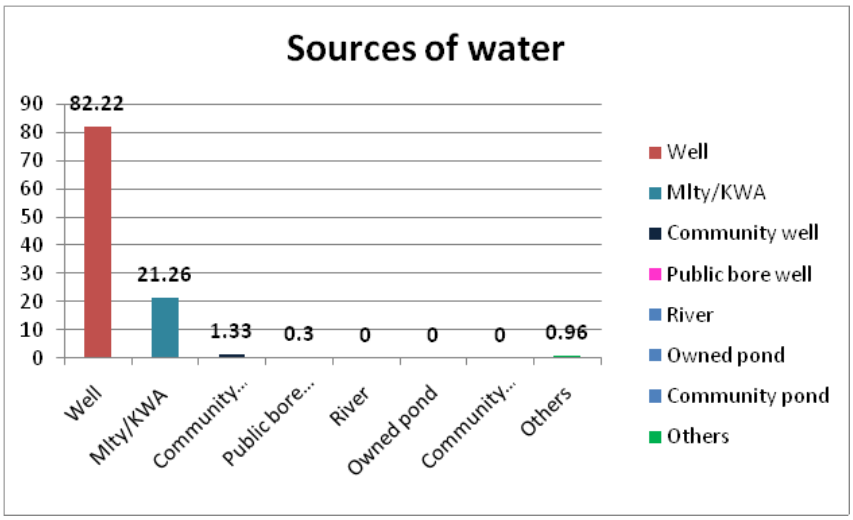


Fig 11.1 Different type of water sources

Source:Socio economic survey,2012

The principal sources of water for domestic use are open wells.

The details of water sources as revealed from socio economic survey is given in figure 11.1. As it is evident 82.22 % of people depend on wells, 21.21 % of people access piped water supply. A small group of people seems not to have access to safe drinking water.

11.2.1 Distribution Net Work

The drinking water supply scheme operating in the town area is based on Chalakudy River. Altogether 8.89 MLD of water is supplied per day in the town area even though the supply is only intermittent. Water from the intake is treated in the treatment plants at Koodappuzha and is stored at Thanippara and Koodappuzha tanks and then supplied to the town area. The above stored water is supplied to OH tanks of 33 lakh litre capacities in Thanippara and low level tank of 13.5 lakh litre capacity at Koodappuzha. The water is treated by rapid sand filtration. The treated water is enough to supply to the town area. The total quantity of water supplied by KWA is about 8.89 MLD/day (approximately). The details of OH tanks are given in the table 11.1. The distribution maps of the two overhead tanks are given in the figure 11.2.

Table 11.1 Details of Water Supply Tanks

NATURE OF TANK	CAPACITY	LOCATION
Overhead tank	33 lakh litre	Thanippara
Low level tank	13.5 lakh litre	Koodappuzha
Source: KWA, Chalakudy		

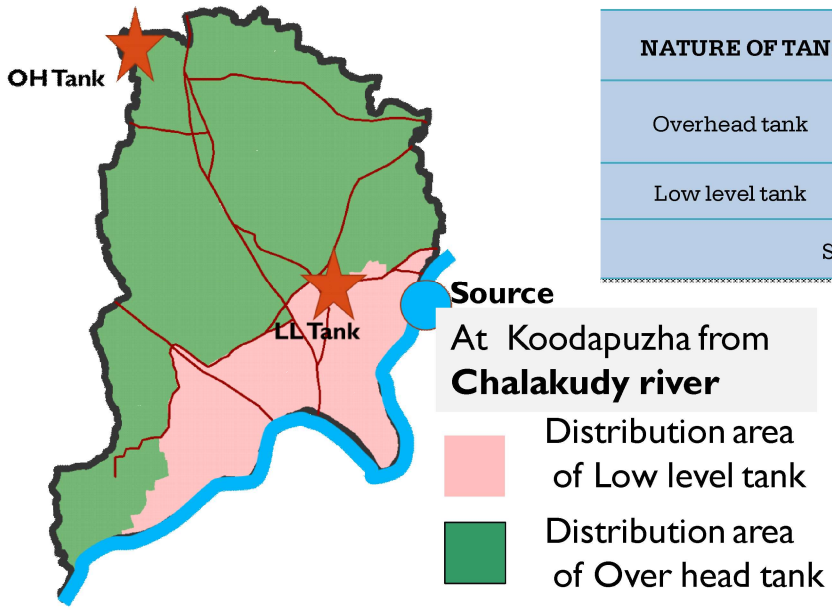


Fig 11.2 Distribution network

Table 11.2 Details of water treatment plants

Location	Source of water	Capacity of the plant	Type of treatment	Working condition
Koodappuzha	Raw water from Chalakudy river	17 MLD	Aeration, flocculation/ filtration, chlorination	satisfactory

Source: KWA, Chalakudy

Table 11.3 Details of Distribution Network

Sl no:	Network	Source	Area of coverage	No of connections	No. and capacity of OH tank (ML)	Total quantity supplied / day	Quality of water
1	Low level zone distribution ranges pipe sizes from 400mm dia to 32mm premo/AC/C1/PVC for a length of 32500m	Chalakudy River	Ward nos.(11 to 31fully &6,7,9,10 part)	4348 connections in the Town as on 31.7.2012	13.5 Lakh ltr.(OHT at CHDY KWA compound W-10)	13.5 Lakh ltr.(OHT at CHDY KWA compound W-10)	Properly treated
2	High level zone distribution ranges pipe sizes from 600mm dia to 75mm dia AC/C1/PVC pipes for a length of 17500m	Chalakudy River	Ward nos.(1 to 5, 8 fully & 6, 7, 9, 10 part)		33.0 Lakh ltrs.(GL tank at Thanippara ward 1)	33.0 Lakh ltrs.(GL tank at Thanippara ward 1)	Properly treated

11.3 Water Scarcity

Even though Chalakudy is bordered by river and has plenty of rain, certain wards experience scarcity. Scarcity of water is experienced during the summer season. Water table is receding in the city and the average GWL is 2.30 m below the ground level. Socio economic survey reveals that out of 21.26% using town/KWA water, 5.47% of the families have duration of water supply less than one hour. A study regarding the proximity of water sources to households conducted in Socio economic survey reveals that in Chalakudy Town area almost 100% of population has water sources within 0.5 km from their houses. It also reveals that 4.88% families suffer from water shortage for at least 1-6 months. Only 0.52% of households experience water scarcity for more than 6 months. Details are given in figure 11.3.

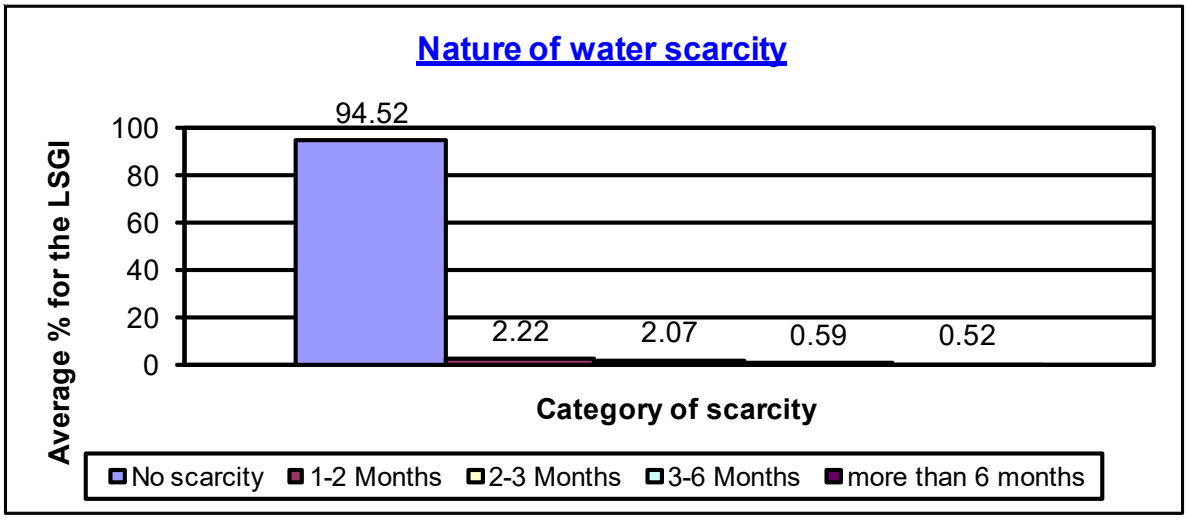


Fig 11.3 Nature of water scarcity

Source: Socioeconomic survey 2012

The socio Economic survey and local level analysis conducted in Chalakudy Town area reveals that 94.52% of the people experience no scarcity throughout the year. 2.22% of the people experiences water scarcity for 1-2 months of the year and 2.07% experiences water scarcity for 2-3 months of the year and 0.59% experiences water scarcity for 3-6 months of the year. 0.52% of people experiences water scarcity severely for more than 6 months

of the year. In order to avoid severe water scarcity in future proper conservation and protection of the surface sources have to be done. About 23 small and large ponds are there within the municipal area. Proper measures have to be taken to protect them from misuse and contamination.

The ward wise scarcity analysis is given in figure 11.4. It can be seen that 6% of households in ward 1 experience water scarcity for a period more than 6 months. Also wards 6, 10, 11 and 32 experience scarcity for a period more than 6 months.

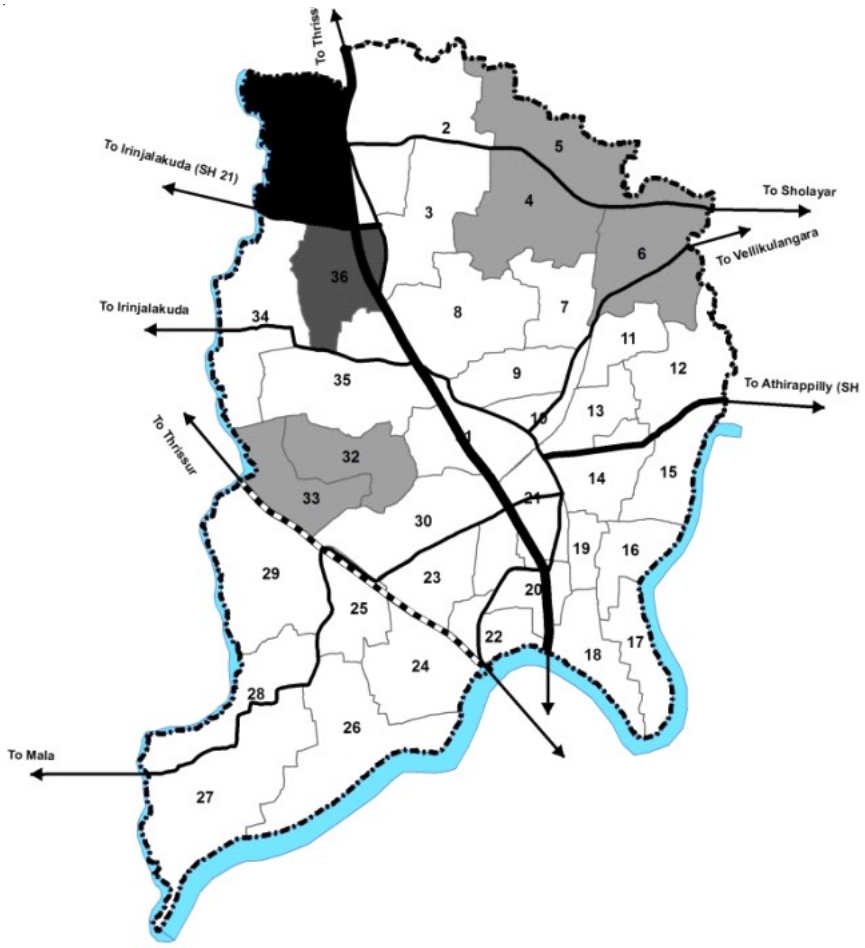


Fig 11.4 Nature of water scarcity – Ward wise

Source: Socioeconomic survey 2012

11.4 Conclusion

From the foregone detailed analysis it can be concluded that Chalakudy Town area is having water shortage only during summer season. Most of the people depend on well for their domestic use. Routine maintenance of water supply pipelines has to be done to increase the efficiency of water supply. Chalakudy Town is blessed with natural water resources. These may be utilised and preserved optimally as drinking water sources for the town. Rainwater harvesting is also to be promoted to recharge the ground water table

CHAPTER 12
SANITATION

Sanitation is the hygienic means of promoting health through prevention of human contact with the hazards of wastesandthe treatment as well as proper disposal of sewagewastewater. Hazards can be physical, microbiological, biological or chemical agents of diseases. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal. This chapter deals with the various issues related to sanitation in the town area.

12.1 EXISTING STATUS

12.1.1 Solid Waste Management

Waste management collectively involves the collection, transportation, processing or disposal, managing and monitoring of waste. As in any other developing city waste management is an ongoing challenge due to weak systems and rapid urbanization.



Landfills with solid waste

Presently Chalakudy Town has an effective solid waste collection system. It is a centralized type system with 36 workers, 1 JCB, 1 tractor and 2 Tippers for collecting the Solid wastes. The system covers only the central areas of the town. As per the secondary data available from the Health section of Chalakudy Municipal office, a total of 8 Tons/day of solid waste is generated and collected here. The statistics refers to the waste produced in the central area of the Town alone. The data pertaining to the rest of the area is not available as there is no collection system existent. As per the socio-economic survey 98.8% of domestic wastes are disposed at the source itself.

Currently the Town has a solid waste treatment plant functioning in the Town, at Potta. A biogas plant with three units is functioning in the Chalakudy market. The location of the treatment plants are shown in the figure 12.1. The plant at Potta has a capacity to process 2T waste per day. The project was commissioned in the year 2008 and is functioning in an area of 2 acres. The processed waste is used as manure and the separated plastic waste is sold to outside agencies. This plant primarily serves the Potta area especially the vegetable

market at Potta. The Biogas plant is located in the Chalakudy market. This plant has a capacity to process 750 kg of wastes per day. But the gas produced is not utilized properly. Another biogas plant is installed near the housing board colony catering to the residential area out here. Out of the 8 tonnes of waste collected only about 4 tonnes is processed and the remaining is disposed through land filling.

12.1.2 Waste disposal at household level

The details of waste disposal in the residential area as per socio-economic survey 2012 are given in table 12.1. From the table it is clear that almost 98.8% of peopledisposed waste in their own compounds. That means only 1.2% of residential waste produced are to be managed by the town.Waste disposal at source should be practicedand the necessity to have a waste disposal system ineach house that has sufficient plot size has to be pointed out.

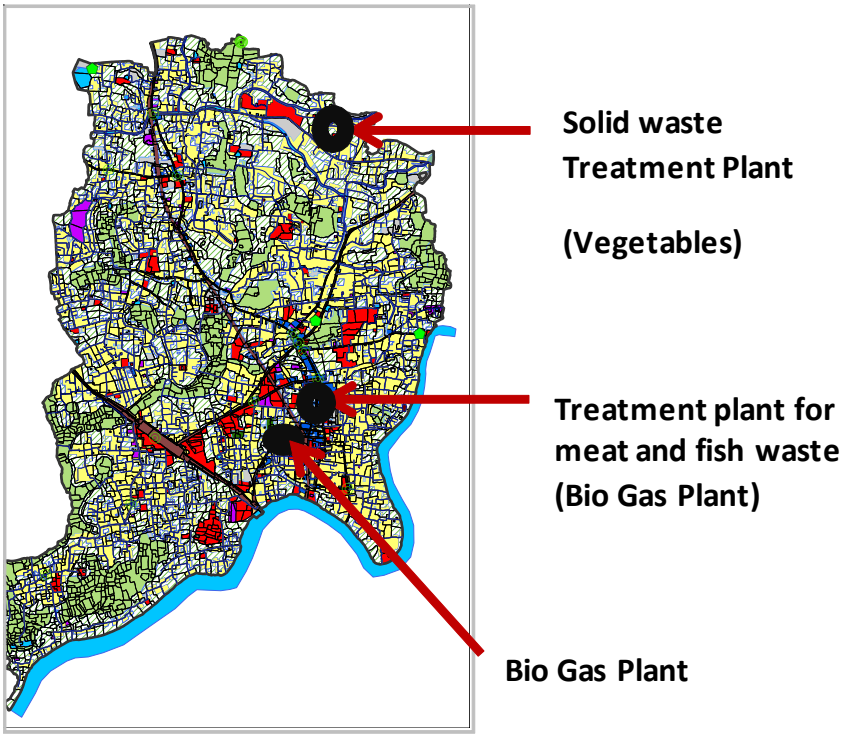


Fig 12.1 Location of treatment plants in town

Source : Primary survey 2012



Solid waste treatment plant

Table 12.1: Details of waste disposal

Category of place of waste disposal	Own compound	Street	Garbage bin	Open ground	Others
Average % for the LSGI in each category	98.8	0.44	0.07	0.44	0.15

Source : Socio Economic Survey

12.1.3 Drainage Network

Earlier there used to be a system through which the water was drained finally into the river. The natural slope was also in favour for this to happen. But now due to a variety of reasons natural drains are blocked or filled up and this resulted in the flooding of the area.The rapid urbanisation resulted in increased quantity of waste water and this was drained into the available open spaces thus causing pollution and environmental deterior ation.

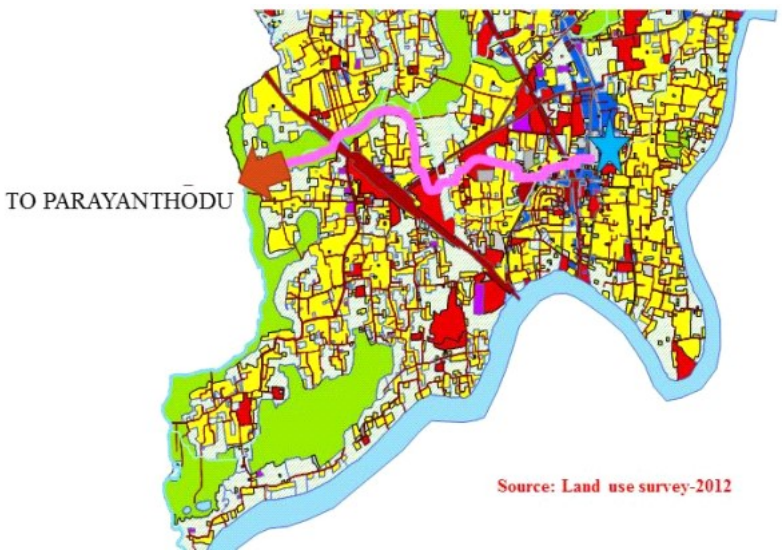


Fig 12.2 Location of drainage network in town

Source : Primary survey 2012

There is no proper scheme for storm water drainage and sewage disposal in Chalakudy town area. The town is using the drains to carry off rain water. The waste water from the public drains is disposed finally into low lying areas without any treatment.Figure 12.2shows the channel that carries the waste water from the urban centerto the low lying cultivated land near Parayanthodu



Flooding in the town area

12.1.4 Sewerage system

An organised sewerage system is an important aspect to create healthy living conditions. Currently there is no sewerage system in the Town. There is no piped sewerage system existing in the Town, other alternate and traditional methods of sanitation are in practice by people like water closets / septic tanks, pit latrines etc.people largely depend on

individual septic tank for disposing sewage. Socio economic survey reveals that 98.3% depends on septic tanks, 1.63 % depends on pit latrines and a negligible 0.07 % depends on other methods. Households without any sanitation facility is nil. However a sewerage system is a must at least for the central area of the Town like Chalakudy in future .The effect of sewage on soil and ground water sources through the use of septic tanks have to be studied to assess the need of an exclusive sewerage system

12.1.5 Biomedical Waste

All Hospitals have their own system for disposal of solid waste. All Biomedical wastes are collected by IMAGE at Palakkad.

12.2 CONCLUSION

As per the socio economic survey 2012, almost 98.3% houses have septic tank. The public sanitation facilities provided are very weak. There are only 2 public toilets in town area, one is in municipal bus stand area and the other one in the market area. From the analysis it can be concluded that treatment of solid waste at the household level is satisfactory. But the municipal solid waste collection and treatment in the town has to be improved. Thrust should to be on the fact that the impact caused to the environment has to be borne by the polluter. Waste management system has to be revamped to adapt to the modern technologies so that work become easier and more efficient.

CHAPTER 13
EDUCATION

This chapter details out the existing educational status, basic infrastructural facilities available and the development issues in Educational sector in Chalakudy Town.

13.1 Introduction

Education is a social process, which equips man to handle the duties and responsibilities of the society. Thrissur is well known globally for its immense advancement in the field of education. Being a part of a district that has achieved 93% literacy rate, Chalakudy Town offers good opportunities for education at all levels in both general and technical fields. The Town provides ample opportunities for the intellectual development of the young generation of the region. The accessibility to the place makes these facilities exploited to the maximum.

13.2 Existing Scenario

The Panampilly Memorial Government College, Sacred Heart College, Nirmala College, St. James Medical Academy Pharmacy College, Nirmala College of Information Technology and Southern college of Engineering & Technology are the major higher educational institutions in Chalakudy. One of the very few and the oldest Aeronautical colleges in the country, Southern College of Engineering (affiliated to Director General of Civil Aviation) was founded in the year 1954 in Chalakudy. The ITI in Chalakudy is one of the oldest in the Kerala state. The educational institutions are known for the quality of education they impart and have a reputation for being student friendly.

13.2.1 Educational Status

As per 2011 census, the literacy rate of Chalakudy Town area is (97.03%).When compared with the literacy rate of Thrissur district (92.27%) and Kerala state (90.86%), Chalakudy Town has a much higher value. A comparative study in literacy rate based on 2001 census is shown in fig 13.1.

The decadal variation of literacy rate of Chalakudy Town is shown in figure 13.2. It indicates that the literacy rate of Chalakudy area shows an increasing trend from 1971 to 2011. This discloses the educational stability of the area. The awareness of people, opportunities available for education and the abundance of educational institutions in the Town may be the reasons for this.

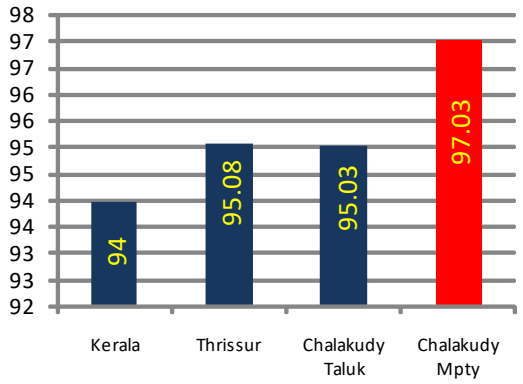


Fig 13.1 Literacy rate comparison

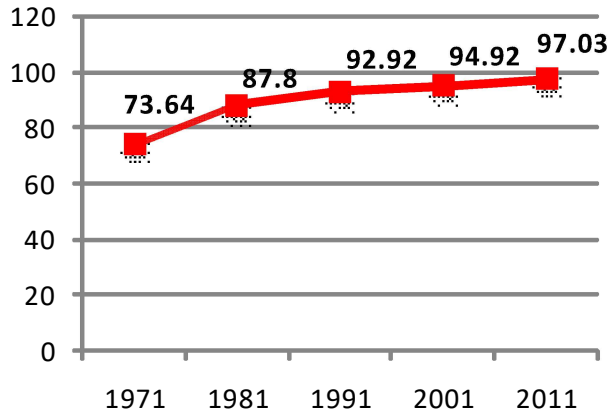


Fig 13.2 Literacy rate temporal variation

Source:Census 2011

Figure 13.3 shows the comparison between male and female literacy rate of Chalakudy Town during the years 1971 to 2011. The male and female literacy rate of Chalakudy Town in 2011 is 97.03% and 96.07% respectively. The value is higher than that of Kerala state and Thrissur district. But it can be seen that the female literacy in Chalakudy Town is behind the male literacy level. Thrust has to be given for girl child education.

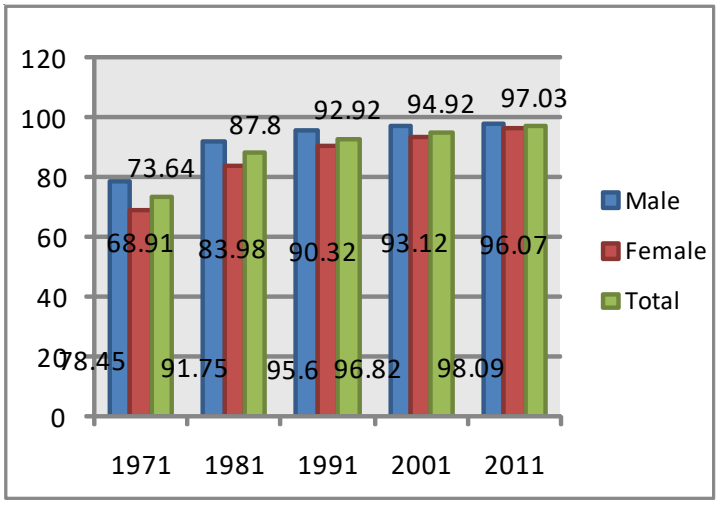


Fig: 13.3 Comparison of male - female literacy

Source: Census2011

Figure 13.4 gives the comparison of literacy rate as per census 2011 with other urban centers in the district. It can be seen that Chalakudy ranks second next to the Thrissur Corporation. The high literacy rate points to the strong social set up prevalent in the Town.

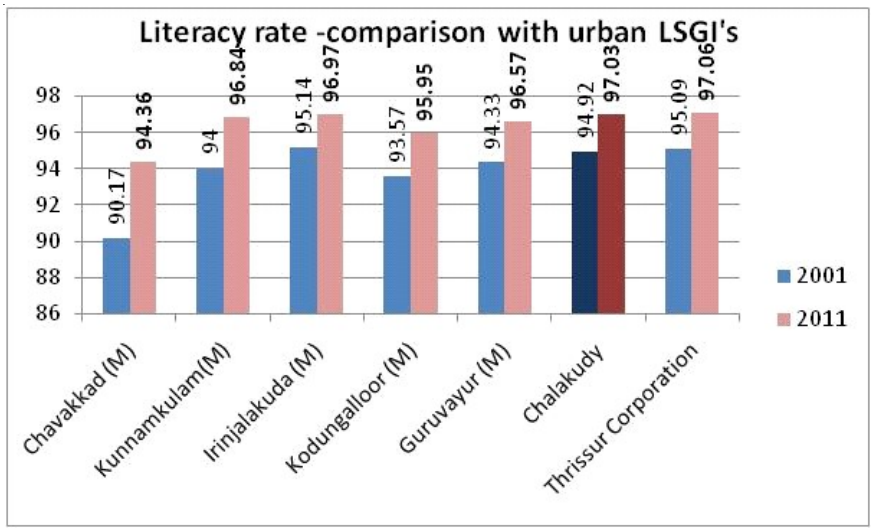


Fig 13. 4 Literacy rate comparisons with other towns

Source: Census book

The educational status of people as per socio economic survey conducted in Chalakudy Town (sample size: 1 out of every 10 households) is shown in figure 13.5. It shows that there are 6.01% of illiterate persons in Chalakudy Town area.

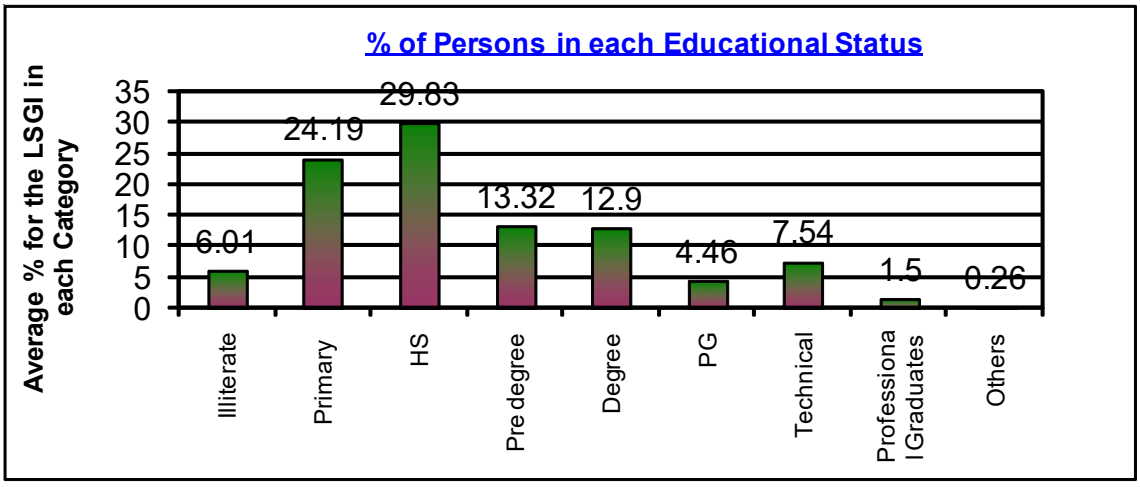


Fig 13.5 Percentage of persons in each educational status

Source: Socio Economic data

13.2.2 Educational Institutions

The existing status of pre - primary schools, lower and upper primary schools, High schools, higher secondary & vocational higher secondary schools and higher educational institutions are analyzed here. Around 28 educational institutions are there in general education system in the Chalakudy Town. Category wise division of educational institutions up to higher secondary level in Chalakudy town area is given in table 13.1. A special school (Madona Centre) is functioning in Chalakudy town area at Potta.

Table 13.1 Details of schools in Chalakudy Town

Category	Govt.			Aided			Unaided			Total		
	Schools	Students	Teachers	Schools	Students	Teachers	Schools	Students	Teachers	Schools	Students	Teachers
Primary	5	335	21	6	2440	91	6	5283	202	17	8058	314
HS	3	418	25	2	1366	17	5	1444	80	10	3228	122
HSS	1	480	22	1	440	18	5	731	74	7	1651	114
VHSS	1	108	9	0	0	0	0	0	0	1	108	9

Source :Primary survey 2012

Figure 13.6 reveals the details of aided and un-aided schools in Chalakudy town area, which shows that there are 31 % of government school 32% are aided and 37% are unaided school . From fig 13.7 ,it can be seen that only 10% of students are studying in government institutions, 33% students in aided and 57% students in unaided schools. This reduction in

the number of students may be due to the lack of infrastructure facilities in Government schools and the present trend of status definition. Facilities in government institutions have to be improved so that more students will be attracted to the government schools rather than private sector institutions.

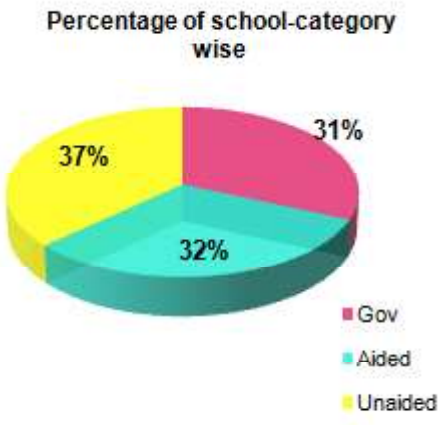


Fig 13.6 Category of school-ownership wise

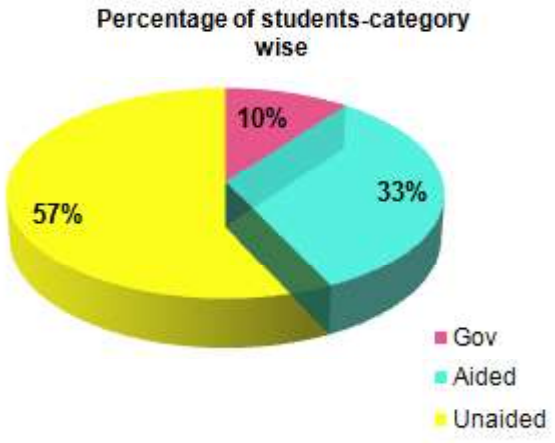


Fig 13.7 Category of students-institution wise

Source : Socio Economic Survey

The location of educational institutions in the Town is shown in figure 13.8. From the figure it can be inferred that there is a proper distribution of facilities in the Town.

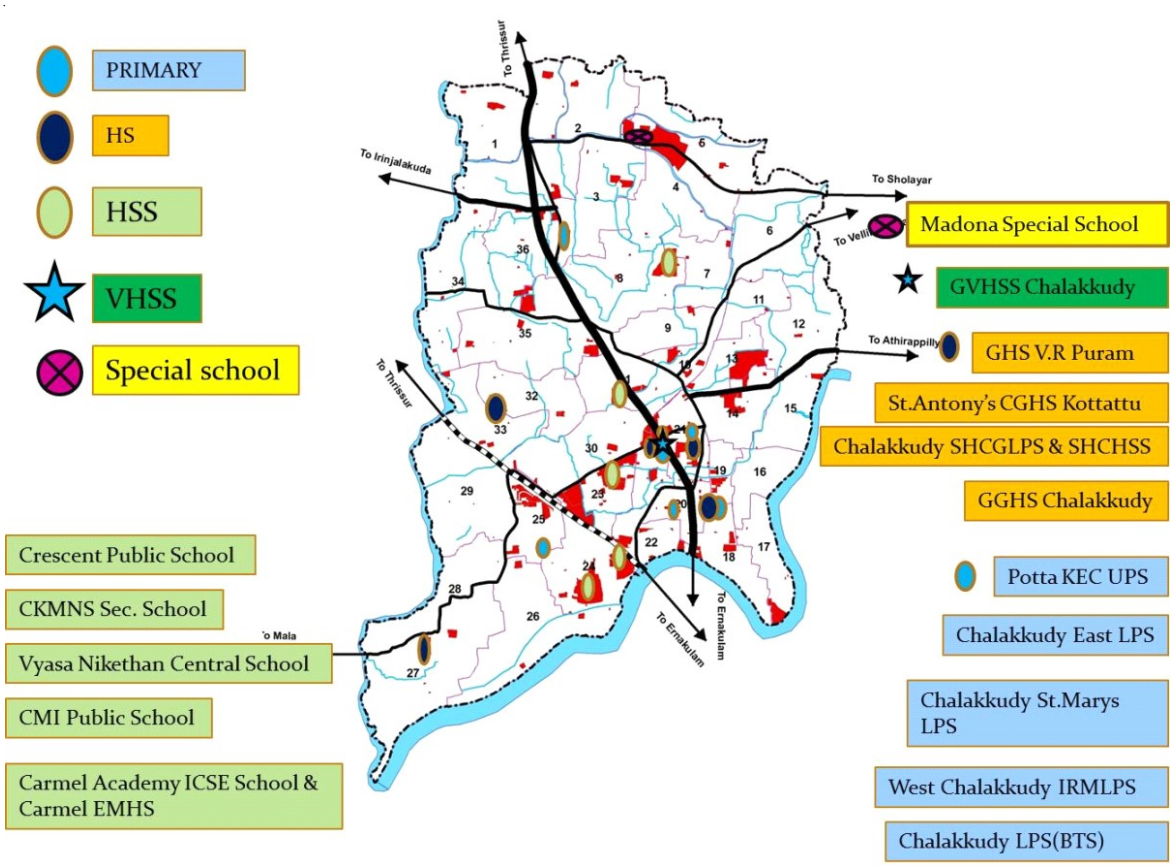


Fig 13.8 Locations of educational institutions

Source :Primary survey 2012

Primary schools

The location of primary Schools in the Town is shown in figure 13.9. It can be seen that in the north and east part of the Town primary education facilities are less. But on primary survey it is revealed that there are facilities in the nearby Panchayats. A maximum distance of 1 Km from the school is assumed as a convenient distance for a child in the primary class to travel daily without any physical stress.

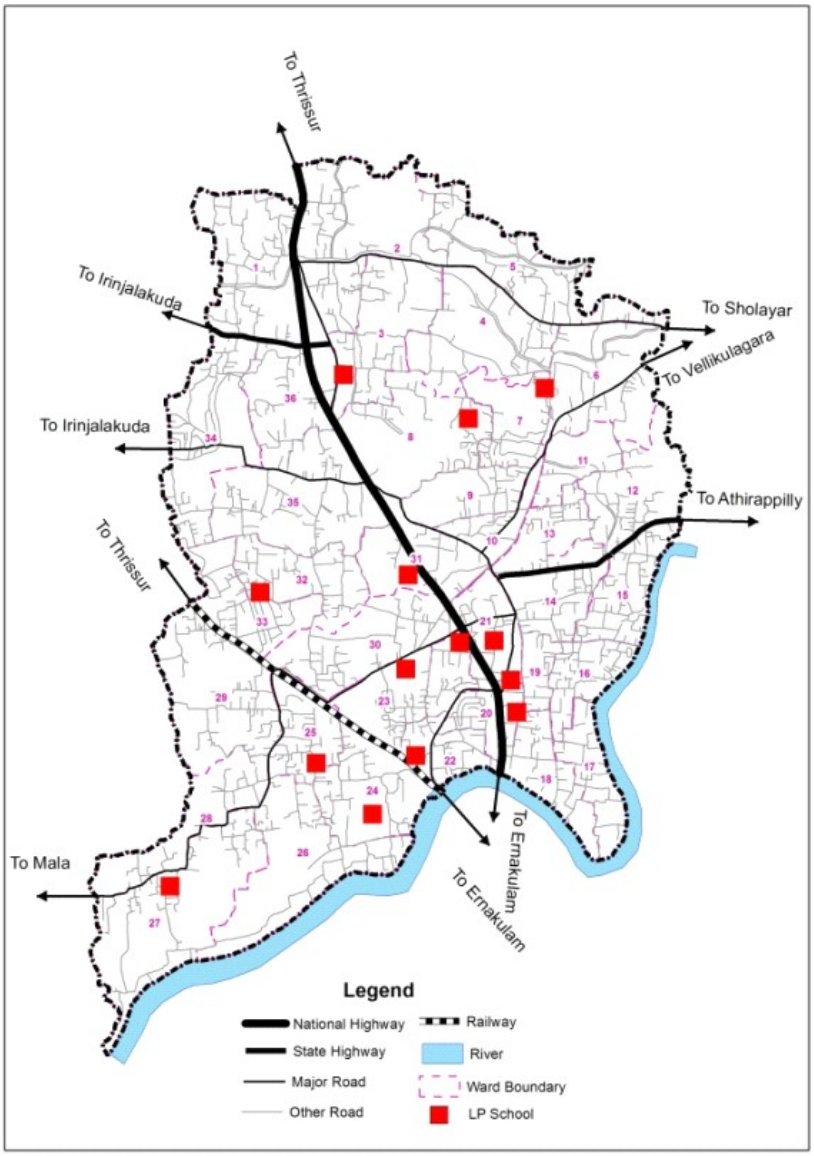


Fig 13.9 Locations of LP schools

Source :Primary survey 2012

The number of students in Government primary school is 335 which is very much lower when compared to that of aided school (2440) and unaided school (5283). The Teachers - Students ratios are 1:16, 1:27 and 1:26 respectively for Govt., aided and unaided schools. The recommended teachers -student's ratio in the draft rules for the implementation of the right to children to free and compulsory education Act in the state is 1:30 for standard 1 to 5.

High schools

The total number of High schools in the Town is 10. The higher secondary schools also serve the function of the high schools. As per the UDPFI planning standard, one high school of 700 seats is required for a population of 13000. Hence for a population of 49525 around 4 schools are necessary. Hence in the case of high schools it can be assumed that the number of high schools is sufficient for the existing population of the town.

Out of the 3 high schools in the Town majority of schools (2 no:) are in the Govt. sector. The remaining one high school is in the aided sector. While assessing the teacher's student's ratio, it is found that in govt. schools this ratio is 1:17. The ratio is 1:80 and 1:18 in aided and unaided sectors respectively. As per the draft rules, the teachers – students ratio for standards VI to VIII is recommended as 1:35, if the same ratio is maintained for high schools also. It is clearly evident that the teachers are not sufficient in the aided sector.

Higher secondary schools

The total number of higher secondary schools available in the town is 7 with student's strength of 1651. As per the planning standards for a population of 49525 around 4 schools is required. Hence in the case of higher secondary schools, it can be assumed that the number of schools is sufficient for the existing population. The teacher- student ratio is 1:22, 1:24 and 1:10 for the Govt., aided and unaided schools respectively. If the acceptable teacher- student ratio is considered as 1:40 it can be assumed that in the existing higher secondary schools enough number of teachers is available and if number of divisions can be increased, with the present teacher's strength more number of students can be accommodated.

13.3 Infrastructure Facilities

Almost all schools in Chalakudy Town are found to have good infrastructure facilities except some government schools. All the UP, HS, HSS and VHSS have computer lab and internet facility. Most of the educational institutions in Chalakudy town area depend on well as major source of water. The educational institutions namely GGHS Chalakudy, West Chalakudy IRMLPS, Chalakudy St.Mary's LPS, Chalakudy East LPS and Chalakudy LPS (BTS) are found to have no playground facility. Every school is found to have separate toilets for girls and boys.

13.4 Higher Education

Chalakudy has a number of institutions imparting higher education both in the general as well as the technical stream. There are Certificate Courses, Diploma Courses and degree and PG Courses. Two prominent Arts and Science Colleges under Calicut University are in the Chalakudy town area. They are



Panampilly Govt. College

Panampilly Govt. College and Sacred Heart College.

Chalakudy Town is facilitated with a Vanitha Govt.I.T.I, Govt.I.T.I (SCDD), Theresian I.T.C at Potta, Govt. I.T.I Chalakudy, Govt. T.T.I Chalakudy. St.James Medical Academy is situated within the Municipal boundary, offering courses in the medical sector. The location of the higher education institutions in the Town are shown in figure 13.10 and the student details of the higher educational institutions are given in table 13.2



Sacred Heart College,Chalakudy

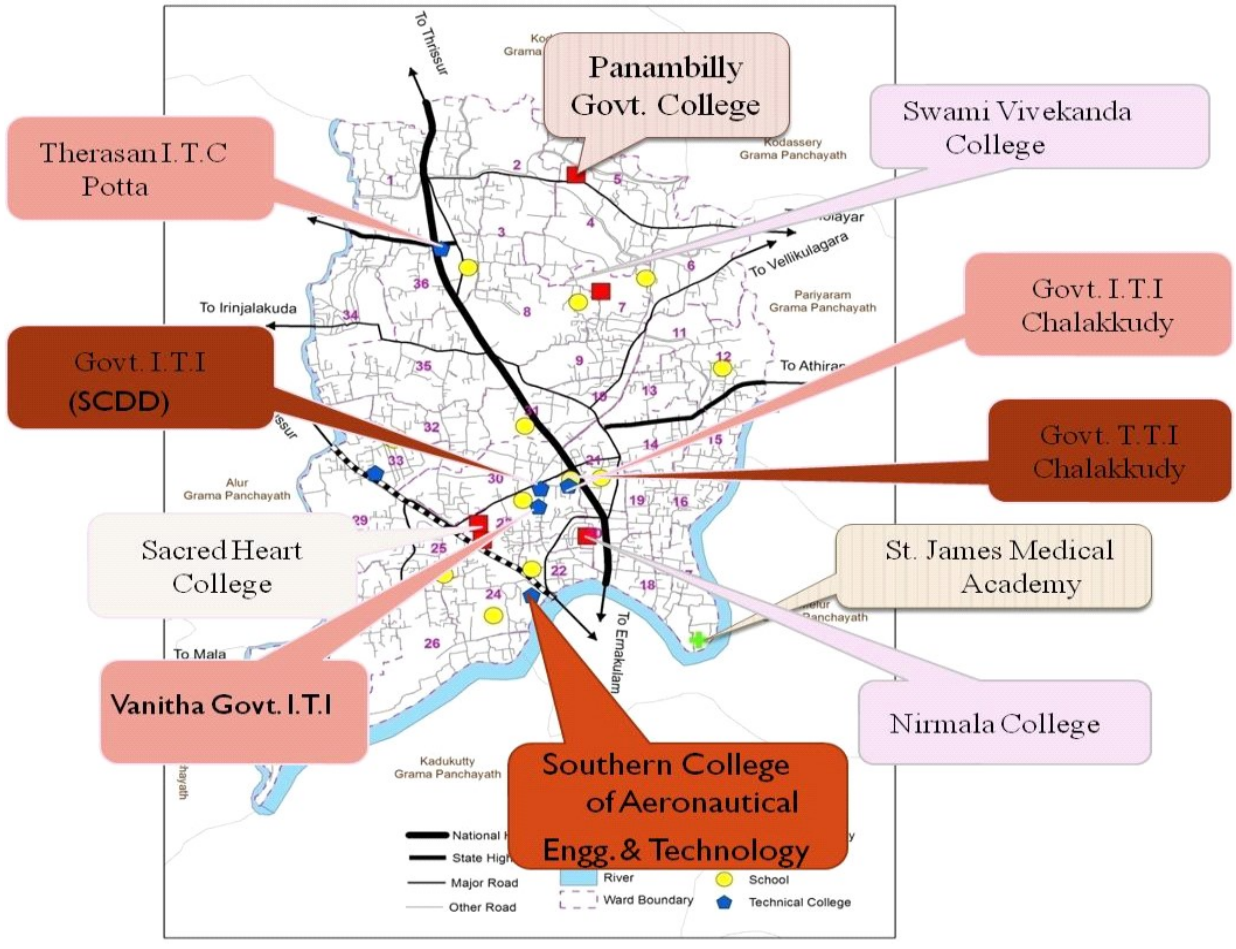


Fig 13.10 Location of higher educational institutions

Source :Primary survey 2012

Table 13.2: Student details of higher educational institutions

Sl. No.	Name of College	Number of students course wise (UG)			Number of students course wise (PG)			Govt./Aided/Unaided	Play Ground
		BA	B.Com	Total	MA	M.Sc	M.Com		
1	Sacred Heart College	360	150	780	30	24	0	Aided	Y
2	Panambilly Govt. College	270	150	480	30	0	40	Govt.	Y
3	Nirmala College	105	285	390	52	0	70	Private	N
4	Vanitha Govt. I.T.I	Electronics mech.-126 Computer operator &programming-52						Govt.	
5	Govt. I.T.I Chalakudy	19 courses-1071						Govt.	
6	Govt.ITI (SCDD)	Draftsman civil-42,Plumber-21						Govt.	
7	Govt. T.T.I Chalakudy	Teachers training course-78						Govt.	
8	Therasian I.T.C Potta	Draftsman civil-36 Electronics mech.-36 Mech Automobile-36						Private	
9	Nirmala College IT	MBA-250,MCA-175, Msc.IT-40, BCA-750, B.com & B.com CA-720, Travel &Tourism-360, Fashion Technology-100, BBA-360						Private	
10	Southern college of Engg. And Technology	Aircraft maintaining Engg.-40 B. Tech in aeronautical Engg.-10						Private	
11	St. James Medical Academy							Private	

Source :Primary survey 2012

In addition to these institutions there are several private colleges and computer institutions like St. Ann's College, Jyothis College etc. All these institutions together enrich the education sector here.

For higher order professional and Medical education students have to depend on the institutions available in the nearby LSGI's. Thrissur district has enough facilities for all the modes of higher education. The institutions present within a radius of 15 km from Chalakudy are shown in figure 13.11. Students can easily access these places as the accessibility parameter is on the higher side.

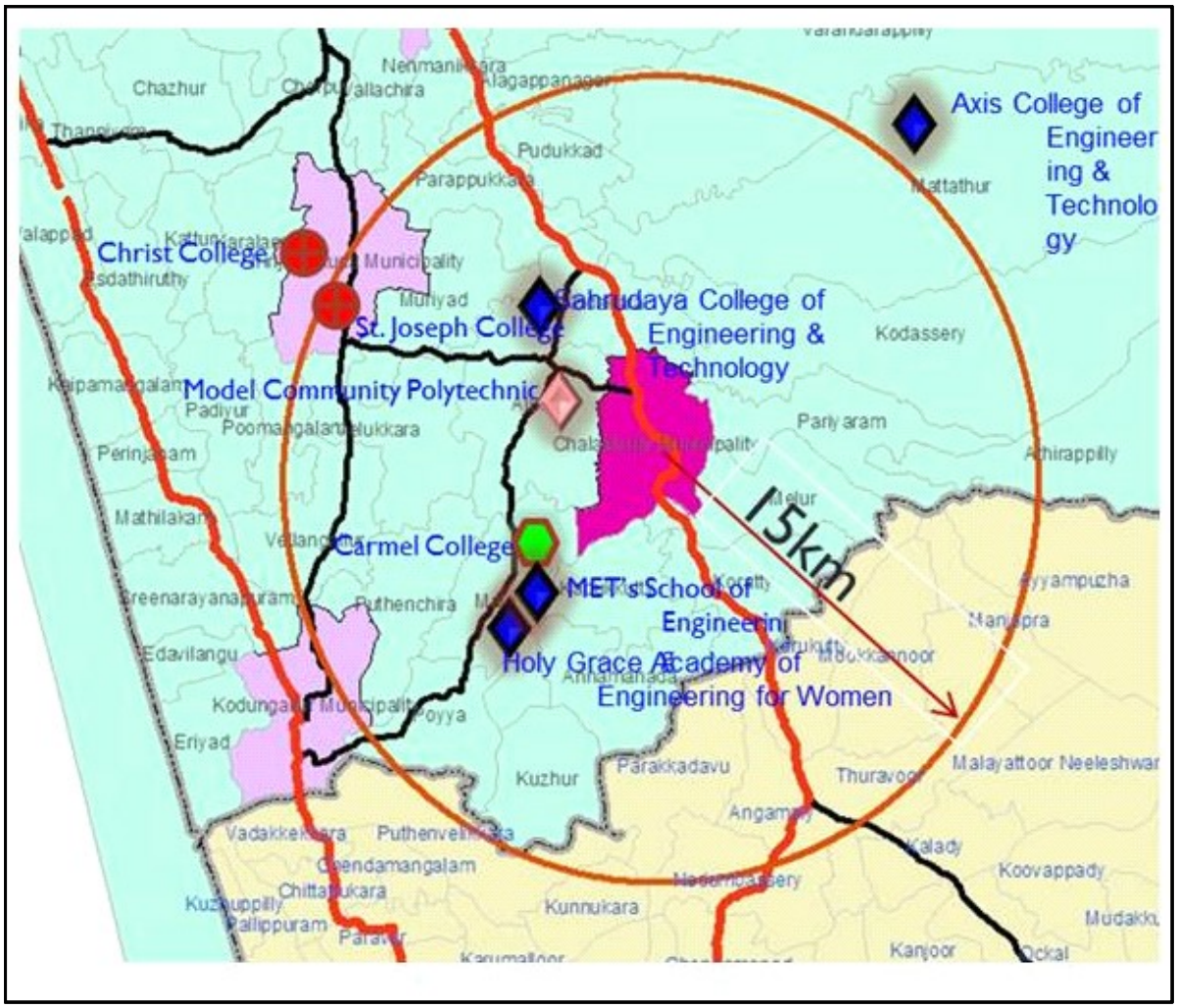


Fig 13.11 Higher educational institutions in nearby LSGIs

The planning standards referred in the educational sector are given in table 13.3.A glance through these figures reveals that the facilities available here are sufficient for the existing population.

Table 13.3: Educational Facilities as per Planning Standard

Sl. no	Catogory	Index	Required	Existing	Remarks
1	High school	1 HS for 13000 ppn	4	10	-
2	Higher secondary	1HSS with 8 div:for 13000 ppn	4	7	-
3	Arts and Science college	1 Arts and science college for 80,000 ppn	1	3	-
4	Polytechnic college	1 polytechnic for 36000 ppn	2	-	Availablein surrounding areas
5	ITC/ITI	1 ITC/ITI for 35000 ppn	2	4	-
6	TTC	1 TTC for 120000 ppn	1	1	-

Source :Primary survey 2012

13.5 Development Potentials

Chalakudy Town itself has many technical educational institutions funded by both government and private sectors. Apart from these technical educational institutions within the town, the institutions located in the nearby LSGI's increase the potential of Chalakudy town as a technical education hub at a district level. Opportunities for training, skill addition and job for the students passing out from these technical institutions can be made available inside the town area.

13.6 Conclusion

Chalakudy Town has a comparatively higher literacy rate. Both male & female literacy rates are higher than that of state and district average. Even though there are sufficient number of Govt. Institutions only 10% of students depend on government institutions up to HSS level. Reasons may be the lack of infrastructural facilities and basic amenities in government schools. From the foregoing analysis, it can be concluded that, at present the situation is satisfactory and it can very well take the people forward with the betterment of the infrastructure and up gradation of quality of services imparted. Opportunities for training, skill addition and job for the students passing out from the technical institutions existing in and around the town can be made available inside the town area.

CHAPTER 14

HEALTH

Health is an important determinant of well being, which is positively related to labour, productivity and economic efficiency. Hence maintaining good health at the individual or micro level and at the community or macro level is very important. Kerala has achieved good health indicators compared to other Indian states. But in the recent times Kerala is facing emergence and reemergence of certain communicable diseases. The reasons may be attributed to various factors such as non-availability of safe portable drinking water, inadequate sanitation facilities, improper solid and liquid waste management systems prevalent, climate change and other social determinants like poverty etc. This chapter analyses the existing infrastructural status of the health sector in Chalakudy *Town. It includes Allopathy, Ayurvedic and Homeo sectors in both Government and Private sector in the Town area.*

14.1 Existing Scenario

Chalakudy is well taken care of as far as health facilities are concerned. Chalakudy has a secondary healthcare institution in the form of a Taluk hospital. The Taluk hospital is situated at Chalakudy near the South junction. Apart from this there is a dispensary in the allopathic system in Govt. sector. The details of hospitals in the 3 systems of medicine are given in table 14.1 and the locations of these hospitals are shown in figure 14.1

Table 14.1: Hospital features in Chalakudy Town

Type of hospital	No of Hospital/ Dispensary	No of Doctors	No. of Beds
Allopathic	16	111	805
Ayurvedic	3	3	0
Homeopathic	3	3	0
Total	22	117	805

Source : Municipal office Chalakudy & Local enquiry

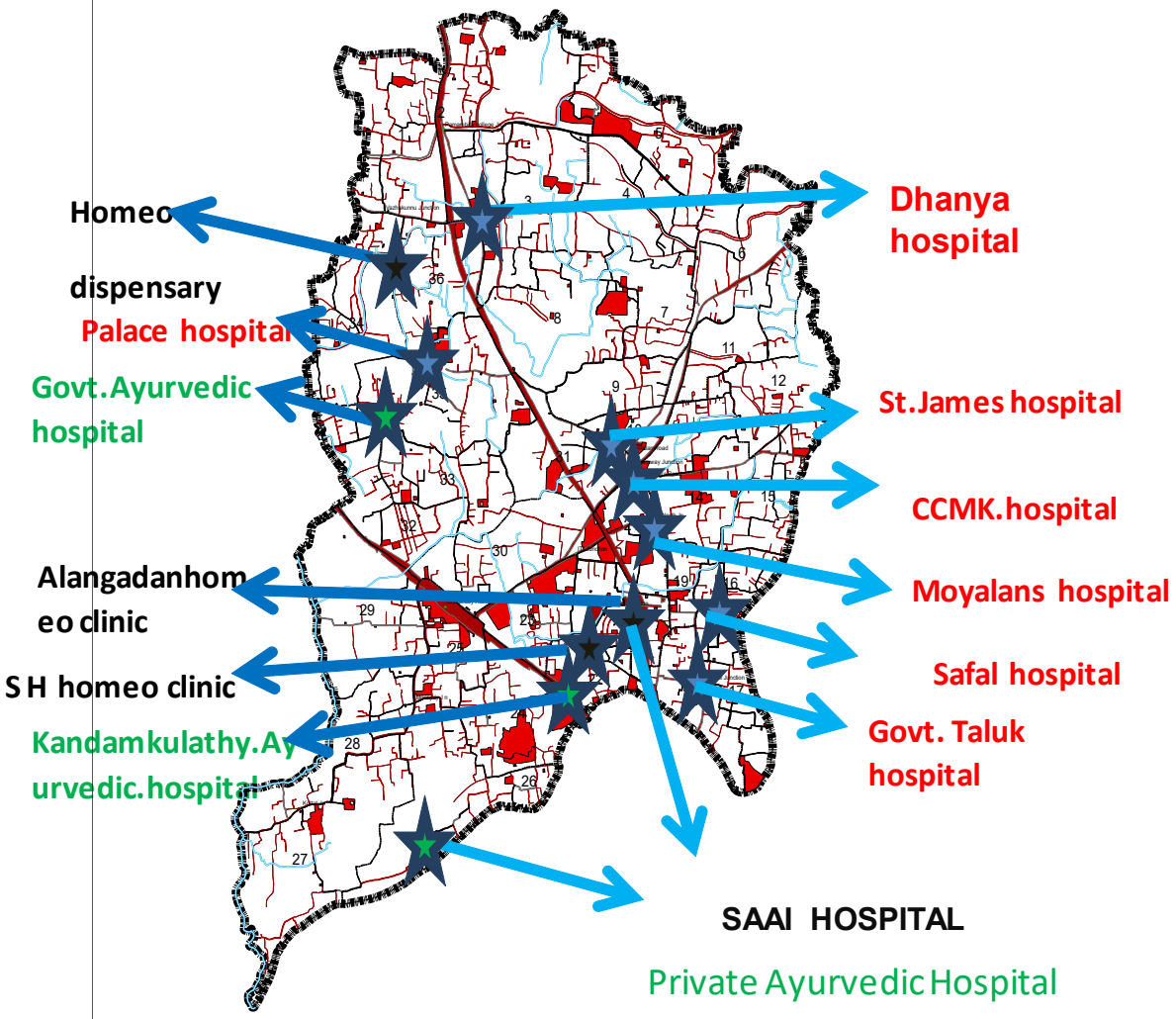


Fig 14.1: Locations of Hospitals in Chalakudy town

Source : Primary enquiry

14.2 Allopathic System of medicine

14.2.1 Taluk Level Hospital: - Taluk hospital is a secondary care institution which is equipped to handle the non - communicable diseases in particular. The accessibility through NH and SH makes it possible for the patients to reach tertiary health care institutions like medical colleges. The Taluk hospital functioning in the South junction of Chalakudy town was established by the Government. It is one of the oldest hospitals with all modern infrastructural facilities. The people in the surrounding panchayats are also benefitted with this hospital. A number of specialty services are provided at the Taluk level hospitals. Taluk hospital lacks modern diagnostic equipment and infrastructural facilities.



Taluk Hospital

14.2.2 Primary Health Centres: - Primary health centres (PHC) are set up for health promotion activities like maternal and child health, communicable diseases treatment and prevention etc. PHC is the first level of contact of the community with formal health care delivery system. The PHC functioning in Chalakudy town area is near CMI public school.

14.2.3 Private hospital:- In addition to the Taluk hospital and primary health centres, there are 7 private hospitals with advanced diagnostic facilities and 7 clinics are also functioning here. St. James hospital is the only super specialty hospital in the Town.



St. James Hospital

14.3 Ayurvedic System

Ayurveda is an integral part of Kerala's health landscape. The treatments range from common household remedies and prevention to specialised treatment for stroke and cardio vascular care. One Government Ayurvedic dispensary and two Ayurvedic clinics in private sector are functioning in the Town. Because of the growing popularity and awareness middle and upper class people are now turning to Ayurvedic treatment. Hence it is a need to strengthen the Government Ayurvedic institutions.

14.4 Homeopathic System

Homeopathy enjoys a long and honourable history in Kerala. According to the economic survey report of state planning board in the year 2011-12, nearly 25% of the patients used homeopathic medicines. The department has now introduced several people friendly methods so as to improve the support among the people. One Govt. dispensary and 3 private clinics are working in Chalakudy under homeopathic system of treatment. The Govt. Homeopathic dispensary is situated in Urumbukunnu area.



Homeo dispensary Urmbumkunnu

14.5 Disease Pattern

The diseases are classified as communicable and non-communicable. The details of houses diagnosed with diseases within last 5 years are given in Table 14.2. As per the socio-economic survey data 1.33% of families are affected by Chikungunya, 0.22 % affected by Dengue, 0.1% by malaria and 0.59% by Chicken Pox. A lot of limitations and public health issues lead to the emergence and reemergence of communicable diseases. Lack of drainage

system in the water logged areas, migration of laborers from outside states and lack of proper solid and liquid waste management programs may be attributed as the reason for health issues in Chalakudy Town.

Table 14.2 Disease pattern in Chalakudy Town

TYPE	Cholera	Dengue	Chikungunya	Hepatitis	TB	Typhoid	Malaria	Chicken Pox
Average % for the LGSI in each catogory	0	0.22	1.33	0.07	0	0	0.1	0.53

Source : Socio Economic data 2012

14.6 Planning Standard

As per the planning standards health facilities are sufficient in Chalakudy Town area. The planning standard as per the UDPFI Guidelines are given table 14.3.

Table 14.3 Planning Standards

Category	No. of Beds	Standard as per UDPFI	Required	Available
General Hospital	500	1 for 2.5 lakh population	1	
Intermediate Hospital (Category A)	200	1 for 1 lakh population	1	-
Intermediate Hospital (Category B)	80	1 for 1 lakh population	1	3
Poly-Clinic		1 for 1 lakh population	1	
Nursing home, Child welfare and Maternity centre	30	1 for 0.45 lakh population	1	
Dispensary		1 for 0.15 lakh population	4	18

14.7 Conclusion

From the analyses of the health scenario and medical facilities available in Chalakudy, it is seen that the basic health care facilities are sufficient. From the development point of view, the prime need goes to the up gradation of the medical facilities existing in the government sector and also to ensure specialty medical services through the Taluk hospital. The infrastructure facilities are to be upgraded in the hospitals in the Ayurvedic and Homoeopathy systems.

CHAPTER 15
POWER

15.1 INTRODUCTION

The genesis of power generation in Kerala can be traced back to a mini hydro electric power plant established in 1906 at Munnar. Kerala has been fortunately blessed with a huge potential for the generation of hydroelectric power and it started utilizing the potential to reach the present stage. Electricity is the most versatile and productive input that determines the growth and development of a nation. Recognising this, the state is in a mission to achieve total electrification. "Electricity to each and every common man" is the base slogan for the total electrification project in the State. This Chapter comprises of the various analyses regarding the power utilisation.

15.2 Existing Status

The category wise consumption of electricity in Chalakudy Town is shown in table 15.1 and figure 15.1. From the table 15.1 it is clear that the total consumption in the Town is 59000187 KW/hr. The major consumers are in the Domestic sector (58.06 %). Commercial and industrial consumers account to 24.53 % and 12.84 % respectively. Agricultural consumption accounts to 2.34%, this shows that agricultural consumption is far lower than industrial and commercial consumption.

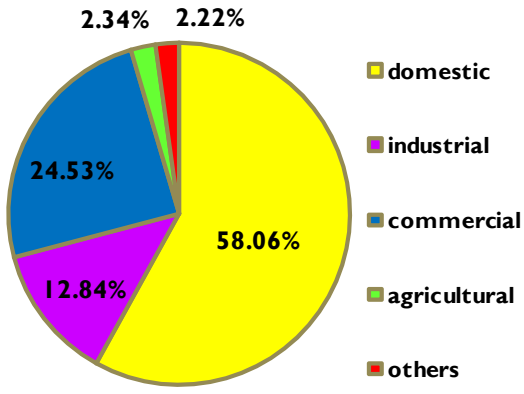


Fig 15.1 Consumption of electricity

Table 15.1 Category wise consumption

Category	Total consumption kw/hr	% of consumption
Domestic	3425828	58.06
Industrial	757584	12.84
Commercial	1447602	24.53
Agricultural	137998	2.34
Others	131175	2.22
Total consumption	5900187	100

Source: KSEB Office,Chalakudy division

Figure 15.2 shows the category wise connections in the municipal area. It show that the maximum power connections are in the domestic category (69.31%) followed by commercial (18.52%) and agriculture (10.64%). The total numbers of connections in the

Chalakudy Town are 24211. Table 15.2 details out the comparison between the number of connections and the consumption details of Chalakudy town area as per the secondary date available from the KSEB. From the detailed study of this table, it is clear that the connections are proportional to the consumption, except in the case of agriculture sector. Even though agriculture connections are more consumption is not in line with the connections. Reduction in agriculture activity is indicated by this.

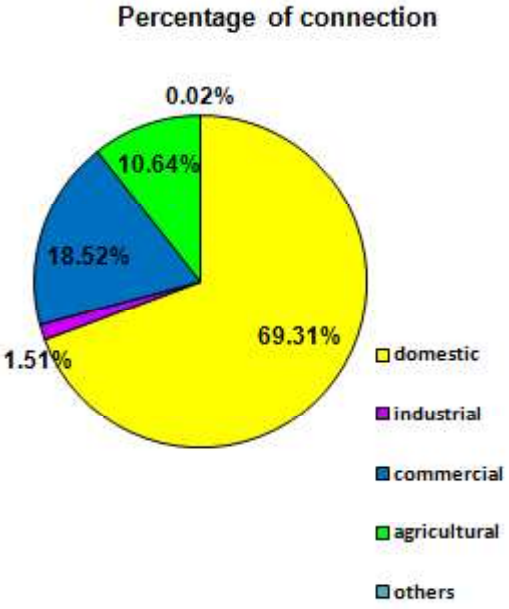


Fig 15.2: Percentage of connection

Table 15.2 comparison of connection and consumption

Category	Total connection	% of connection	Total consumption kw/hr	% of consumption
Domestic	16781	69.311	3425828	58.063
Industrial	365	1.507	757584	12.839
Commercial	4485	18.524	1447602	24.5348
Agricultural	2576	10.6397	137998	2.3388
Others	4	0.0165	131175	2.2232
Total connection	24211	100	5900187	100

Source: KSEB Office, Chalakudy division

15.3 Distribution and supply

In Chalakudy Town the distribution and supply is carried out by the KSEB through the 11 KV feeders at Chalakudy, Kodakara, Kallettumkara and Ashtamichira. The jurisdiction of various feeders prevalent in municipal area is shown in figure 15.3.

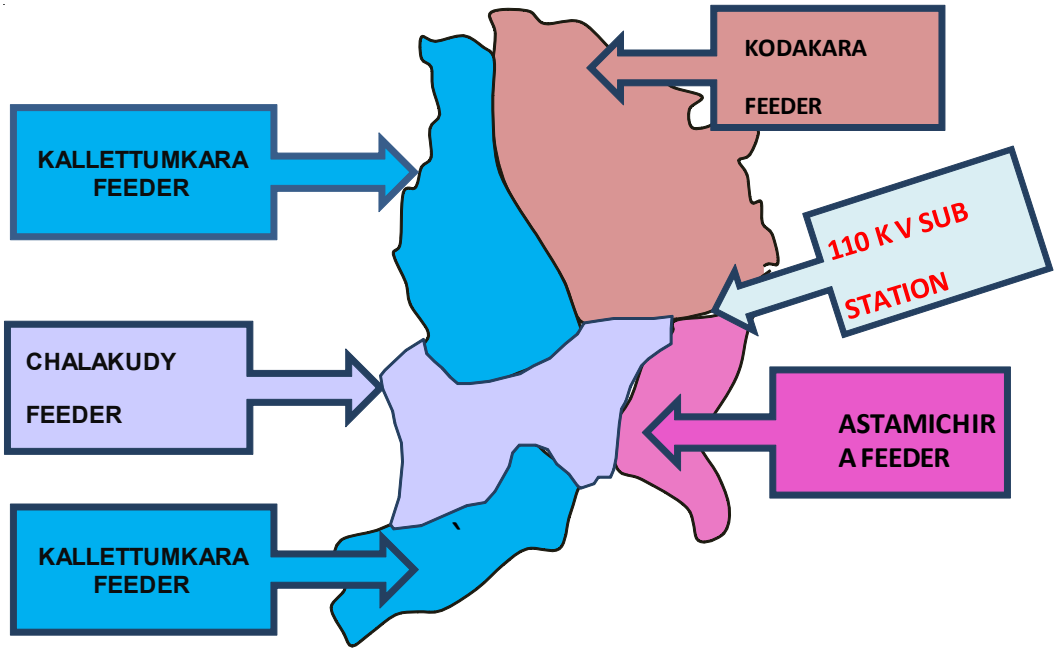


Fig 15.3 Area covered by feeders

As per the socio economic survey 2012 there is no un-electrified house in Chalakudy town area. When compared to the urban LSGIs, it is the only Town with cent percent electrified houses. The usage of non-conventional energy source is negligible which have to be promoted.

Presently there is no voltage problem in the municipal area because of the RAPDRP project (Restricted and accelerated power development and reforms programme) for the purpose of voltage improvement. Nearly 70% of the works are in a completed status.

15.4 Conclusion

Chalakudy Town depends on hydro electro power generated and distributed by KSEB for its power needs. It can be seen that the major power consumers are in the domestic sector. There are no un - electrified houses in the Town as per the socio economic survey 2012 and no voltage problem is reported in the municipal area because of the RAPDRP project. Non - conventional power modes are not prevalent here, the use of which has to be encouraged.

CHAPTER 16
SPECIAL CONCERN AREAS

Social vulnerability refers to the in ability of certain population groups to with stand adverse impacts to which they were exposed. One of the theme areas of the 'VISION 2030' by the state planning board is the protection of socially vulnerable groups. The group of people included in the vulnerable category are woman, aged people, minorities, differently abled etc. This chapter analyses the status and problems of vulnerable group including the socially backward and the below poverty line (BPL) people within the Municipal area.

16.1 Introduction

Poverty at a national level indicates that acountry may be having insufficient economic resources to invest in education, health, infrastructure, political and legal systems and public institutions, which can lead to instability and civil unrest. In developed countries, deep and persistent poverty is a serious social problem but is less wide spread than in developing countries. Poverty is often concentrated in certain segments of society, generally defined by region, by age, or by social group. Poverty is a social phenomenon in which a section of the society is unable to fulfill even its basic necessities of life. Poverty continues to prevail among the down trodden and depressed sections of the people. Socio economic inequalities between place and people have sharpened over the years. In Thrissur district as per the draft list of BPL survey 2009, 365489 families have been included in the BPL list. This shows that the district needs special attention in the poverty alleviation.

In Kerala, the rate of poverty is continuously diminishing. Respective Governments have undertaken several welfare measures and have given importance to minimum needs programme. Measures like increase in education, reservation of seats for Government jobs, women empowerment and empowering weaker sections of the society are also expected to contribute towards the alleviation of poverty.

Though the statistics of National Sample Survey points out that poverty has been reduced, the issues related to poverty reduction still remains crucial and critical. New problem shave arisen in the field of food security, shelter, access to safe drinking water, better sanitation, employment, health, education etc. Even though there are interventions from the part of government departments and LSGIs, the absolute poor are marginalised. This happens to be the after effects of national level policies of liberalisation. The important developmental issues identified in these areas are:-

- The change in cultivation of food crops to cash crops leading to migration of labour. Thus the workers among BPL population are forced to migrate from agriculture to other sectors such as coolies, construction workers etc.
- Decline of the traditional industrial sector and consequent unemployment which directly affects the BPL population
- The animal husbandry sector has become under - remunerative for the BPL Population.
- Services from the Public Health Institutions are not sufficient to cater the poor. The higher cost of treatment alienates the poor from availing treatment. Social development and security issues are not well taken care of and addressed timely.
- Poverty reduction strategy through enterprise development does not follow a holistic approach

16.2 SC/ST INDEX

SC/ST index and BPL index are used to find the social backwardness of a place. The calculated SC/ST and BPL index may be <1, =1 or>1. As per 2001 census 4.15 % of Municipal households are SC families. There are 753 SC families within the town area. (Table 16.1)

Ward wise SC population is shown in figure16.1. The figure shows that SC people are mostly concentrated in ward 33 (V.R Puram).

Table 16.1 SC Population

% of SC/ST family	4.74
% of SC family	4.15
% of ST family	.59

Source: - Socio economic survey

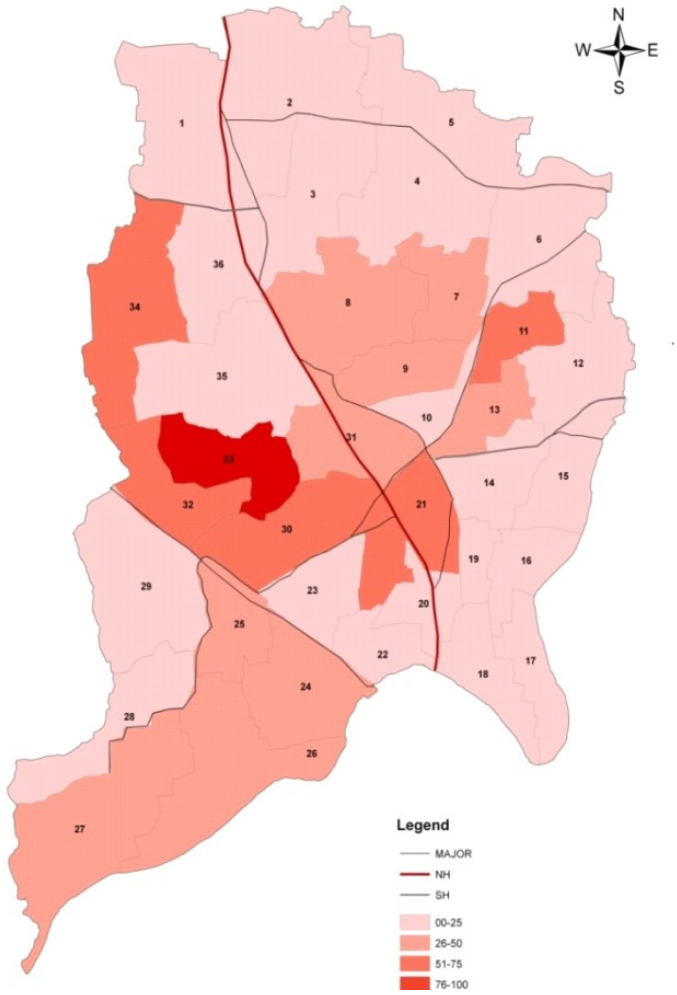


Fig 16.1 Distribution of SC families in Chalakudy town

16.3 BPL Index

The economic status of the BPL people is evaluated based on the occupational structure and average annual income of BPL population. The BPL survey conducted during 1998 reveals that the BPL population are mainly employed as coolie, agriculture labourers, fishermen etc. There is a shift from agriculture labourers to other workers over a period of time. Also over the years there is a tendency to shift from food based to commercial based crops. The trend line showing the area under cultivation for food and Commercial crops from 1986- 2004, clearly indicates the shift in cropping pattern from food to commercial crops. This has resulted in the migration of poor labourers from agriculture to other sectors. This could be the reason of high percentage of coolies among BPL population. Since most of the workers engaged in the traditional industries belong to the BPL population, they are directly and severely affected by the decline of this sector. The animal husbandry sector has become under remunerative due to declining trend of animal population, increasing cost of inputs of production etc.

As per the BPL survey conducted by the Kudumbasree in 2005, 4015 families belongs to the BPL category i.e. 31.14 % of total households in the town area are BPL. From the figure 16.2, it is evident that higher no. of BPL families are seen in Alavi center, Gandhi Nagar and V.R Puram areas.

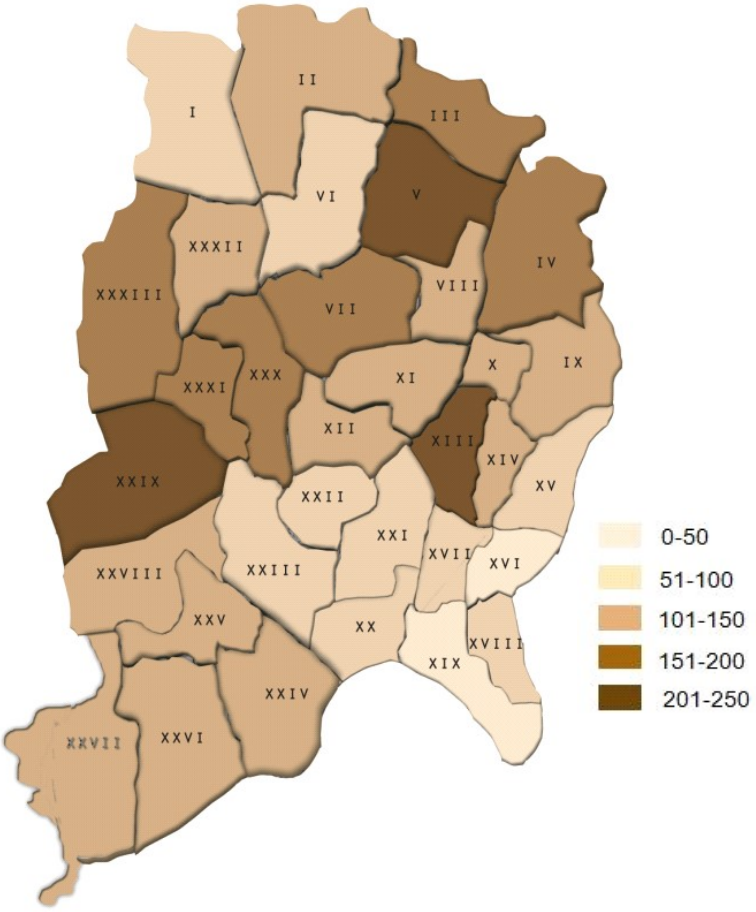


Fig 16.2 Distribution of BPL families in Chalakudy Town

Government has initiated various sustained and refined planning schemes to help the poor to attain self-sufficiency in food production. The most important initiative has been the supply of basic commodities, particularly food at controlled prices.It was a nationwide initiative as the poor spend about 80 percent of their income on food. The schemes were not been very successful because the rate of poverty reduction lags behind the rapid population growth rate.

Eradication of poverty is considered to be a long - term goal. Poverty alleviation is expected to make better progress in the next 50 years than in the past, as a trickle-down effect of the growing middle class. The growth of the middle class indicates that economic prosperity has indeed been very impressive, but the distribution of wealth is not at all even. Comparing the distribution of SC population and BPL population it can be seen that the critical wards are Alavi centre, Gandhi nagar and V.R Puram.

16.4 Poverty Reduction

The following problems are identified to be prevalent among the BPL population

- Drinking Water: The availability is critical in many parts
- Health: Services are provided from Government Hospitals, private hospitals are not accessible to BPL people
- Lack of methodology to identify poverty
- Illogical utilization of funds
- Disparity between intensity of poverty and investment of resources
- A cluster approach has not been developed.

The potential areas of development to alleviate poverty are as follows:

- Intervention through promoting cultivation of vegetables, fruits and ornamental plants etc.
- Micro enterprise development through cluster approach
- Intervention of LSGIs in Health and Education Sector
- Effective network of CBOs of poor women under Kudumbasree
- Flexibility of executing poverty reduction activities through Kudumbasree

E.M.S housing scheme has been introduced with the objective of providing houses to all houseless / landless members of the society and also to provide land and house to all landless / houseless members belonging to BPL category. The primary objective of IAY (Indira Aawaz Yojana) is to assist the construction of dwelling units by members of SC/ST, free bonded labourers and also non SC/ST rural people below the poverty line by providing them with grant in-aid.

16.5 Social issues

There are no evidences of social unrest in any class of the society. All the social justice

programs and ICDS programs are delivered through the Anganwadi's functioning in the Town. The details collected from police station also do not speak of any relevant issue to be addressed except that of higher number of suicide cases. This may be due to suicide cases reported in connection with railway track and river.

16.6 Conclusion

Government have introduced many programmes for enabling the poor to increase their productivity through access to credit, markets, property rights, technology, health and education systems. This will help in the progress of backward classes.

There are certain areas of concern in the development of BPL population. Improvement of substandard area should be given top priority. There are certain areas where the down trodden are generally employed including animal husbandry, agriculture and fisheries which have good potential in the district. Therefore the development programmes in these sectors should be given priority to include the BPL population especially the SC/ST and other socially weaker sections of the society. Also, infrastructure facilities including safe drinking water, electricity, solid waste disposal system etc. should be provided inareas where the BPL people are concentration. Thus in order to have best results in the area of poverty alleviation, there has to be an integrated approach for poverty alleviation through concerted efforts of Government Departments and others.

CHAPTER 17
ENVIRONMENT

Environmental protection is a practice of protecting the natural environment on individual, organizational or Government level for the well - being of nature as well as humans. Protection becomes inevitable when the pressure of population and technology threatens to degrade the environment. An ***Ecologically Sensitive Area*** *is a type of designation for an area which needs special protection because of its landscape, wildlife, physiographic or historical value. In this era when global warming is of prime concern, it is the duty of every citizen and community to protect the nature. Every possible measure needs to be taken to let the nature breathe. This chapter deals with the ecologically and environmentally sensitive areas and the issues related to them in Chalakudy Town.*

17.1 Existing status

The ecologically and environmentally sensitive areas in Chalakudy Town are Paddy lands, Ponds, Chalakudy River and a number of streams especially Parayanthodu. All these areas which include places of scenic beauty and home to a wide range of flora and fauna are in a degraded condition and needs attention.

17.1.1 Paddy lands

The figure shows the distribution of paddy lands in Chalakudy Town. From the figure it is clear that most of the paddy lands are situated in Kottat area and the north eastern parts of the town. Paddy land is a note worthy land use here which accounts to 3.752 sq.km of the municipal area i.e. 14.89% of the total area. Although nearly 15% of the land is categorized as paddy land most of these are not actively cultivated. Single crop pattern is largely practiced here. Paddy

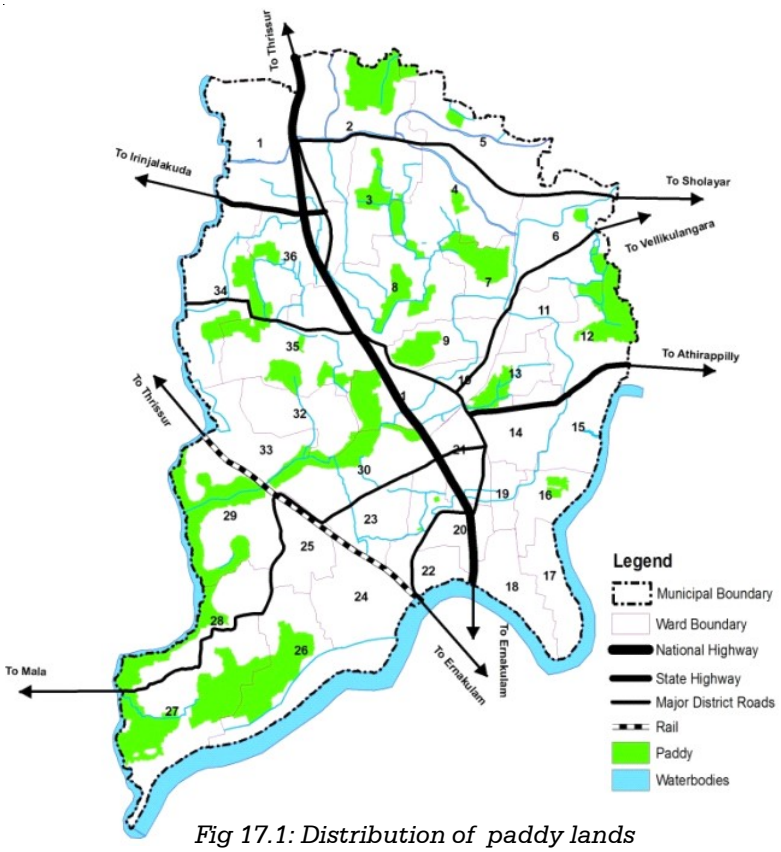


Fig 17.1: Distribution of paddy lands

lands without cultivation are under the threat of land conversion. These lands are environmentally and ecologically sensitive and hence every possible measure should be adopted to conserve it from conversion. These are the water recharging channels and any degradation will result in urban floods.

17.1.2 Water bodies

As in any other place in the central Kerala this place is also blessed with a number of water courses. Several water bodies in the municipal area are a source of drinking water; others are not being used due to pollution and contamination. The main water bodies in Chalakudy Town are Chalakudy River, Parayanthodu and ponds. These water bodies together helps in carrying the runoff and reduce the water scarcity to desirable levels. The water bodies in Chalakudy Town are given in figure 17.2. From the figure it is clear that the water bodies are sufficiently distributed through out the entire municipal area.

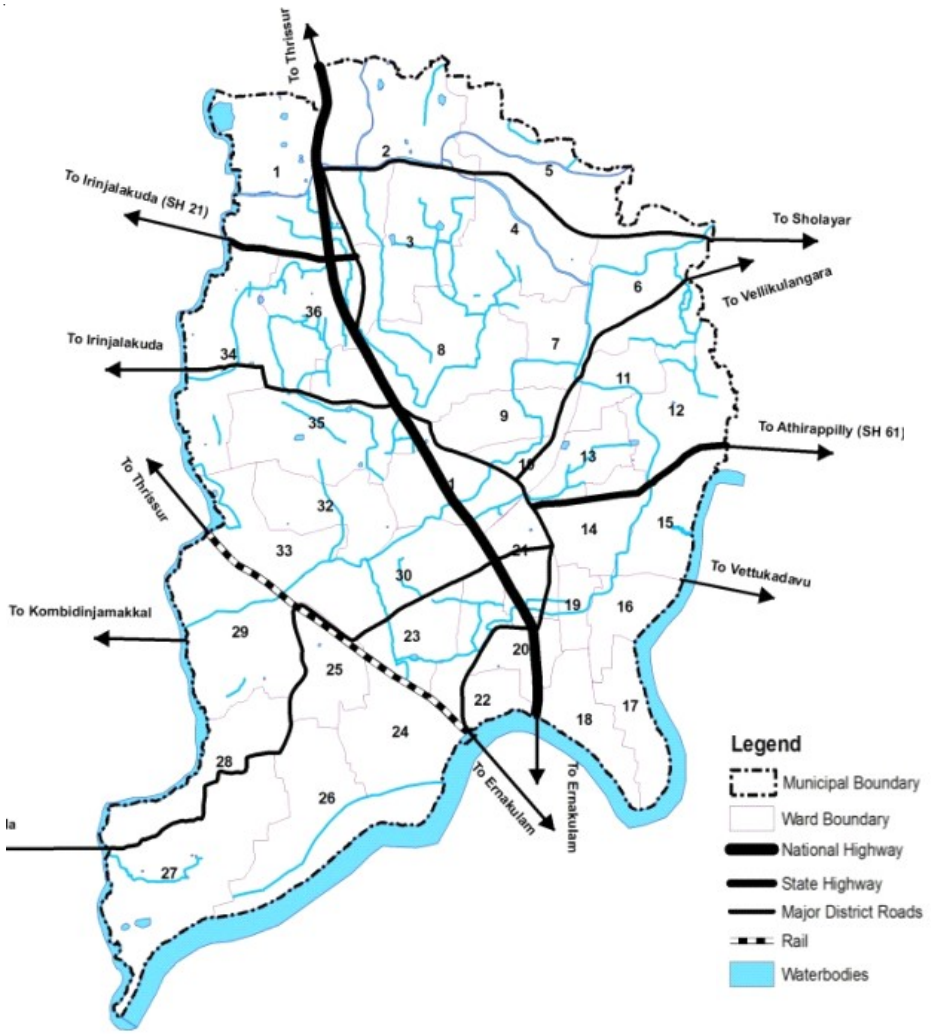


Fig 17.2 Water bodies

Chalakudy puzha is the fourth largest river in Kerala. It has its origin in Anamala region in Tamil Nadu and flows down to Arabian Sea through Kerala. It is known for its rich diversity in the fish species. Also Chalakudy River is one of the very few rivers with relics of riparian vegetation which adds to its ecological importance. The river flows along a part of the eastern boundary and the southern boundary of Chalakudy. This river controls the flood levels in the urban areas of the Town by carrying the run off from the upland areas. But the

block age of drains has recently resulted in the flooding of this place. For well-being of humans as well as for the river, protection measures are to be effectively carried out.



Images of Parayanthodu in Kottat area

Parayanthodu passes through the south west part of the town area. Many ponds and canals are spread all over the municipal area. This was a prominent natural drain in the past, but has now deteriorated due to encroachments and blockages in its course.

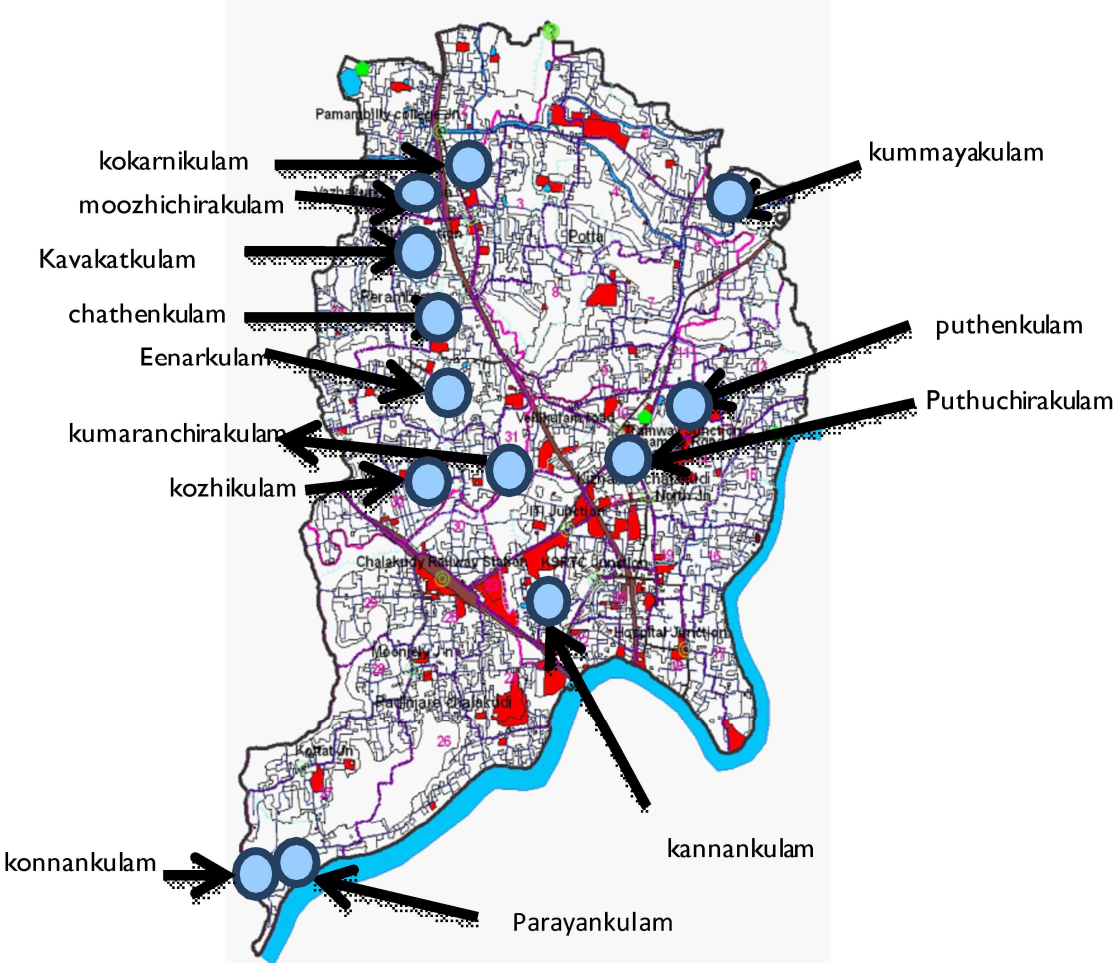


Fig 17.3 Location of ponds

Source : Landuse Survey 2012

There are many natural and artificial ponds in Chalakudy Town. Artificial ponds are built solely for the purpose of irrigation . The location of these ponds is shown in figure 17.3. Noise pollution is another factor that actively contributes to the degradation of environment or in making a place less livable. Noise pollution is increasingly becoming a threat in the emerging urban areas, noise produced from different sources is creating catastrophe to the humans. Hence necessary steps may betaken to curb the level of noise so that environment quality is maintained. Several measures like use of improved technique, creation of green vegetation cover, protective devices, etc may be introduced to control noise pollution. In Chalakudy the hospital areas, school areas and residential areas are to be taken care from this point of view.

17.2 Conclusion

From the foregone analyses, it is very clear that Chalakudy Town is environmentally sensitive with the presence of Chalakudy River, Parayanthodu, paddy fields and so many ponds. It should be preserved for maintaining the environmental / ecological balance.

CHAPTER 18

RECREATIONAL INFRASTRUCTURE AND CIVIC AMENITIES

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 and reading rooms are essential venues for many recreational activities. In support of recreational activities government has taken an important role in their creation, maintenance, and organisation. Recreation - related business is an important factor in the economy and has taken the standards of an industry both merchandising and servicing.

18.1 Recreational Facilities

Recreational facilities includes parks and open spaces, play grounds, Theatres, multi purpose open spaces, play grounds, botanical garden, zoological parks and other facilities like water bodies and other natural features.

Park and open spaces occupies only 0.0029 sq.km area in Chalakudy Town. In addition to this, school grounds, Panampilly Govt. College ground etc. are there. The details of existing park and open spaces in Chalakudy town area are given in table 18.1 As per the recommended standards for a small Town 15-18% land may be reserved for recreational activities. Hence there is a need for construction of Parks and open spaces and stadium in the Town.

Table 18.1 Details of parks and open

Facilities	Sl. No.	Name	Location/Ward
Park	1	Takolkkaran park	Near private bus stand
Open(Play) ground	2	Panambilly Govt. College ground	Ward-V
	3	Play ground	V.R. Puram

Source: Municipal Office, Chalakudy & local enquiry

There are three theatres within the Municipal boundary the locational details and capacity of which is given in table 18.2

Table 18.2 List of theatres in Chalakudy Town

Name	Location	Extent
Ayinikkal Movies	Ward-XIV	60 cent/1055
Akkara	Ward-XX	70 cent/850
Surabhi	Ward-XX	45 cent/1147

Source: Municipal Office,Chalakudy& local enquiry

18.2 Civic Amenities

Community centers are public locations where members of a community tend to gather for group activities, social support, public information, and other purposes. They may sometimes be open for the whole community or for a specialised group within the greater community. List of community centers in Chalakudy town area are given in table 18.3.

Table 18.3 Details of community centers in Chalakudy town

Name	Location	Extent
V.R Puram	Ward-XXX111	4300 sq.ft
Urumbankkunnu	Ward-XXXIV	1000 sq.ft
52 Pura	Ward-XX111	1000 sq.ft
Proposed town hall	Ward-XIV	1.25 Acre land

Source: Municipal Office,Chalakudy & local enquiry

There is only one library (Naduvamkavikal) in Chalakudy Town; it is situated near Municipal office. The library has a collection of nearly 20,000 books.

Table 18.4 Details of crematoriums in Chalakudy Town area

NAME	LOCATION	EXTENT
Municipal crematorium	Potta/XXXI	50 cent
V.R Puram	Ward-XXX111	
Malayanparambu	Ward-XXV	
Aaryankala	Ward-XXI	
Urumbunkkunnu	Ward-XXXIV	

Source: Municipal Office,Chalakudy& local enquiry

The details of the crematoriums existing in Chalakudy town area are -given in table 18.4. A modern electric crematorium in Chalakudy town built by the town with all modern equipments is established now at Potta.

Chalakudy Town is blessed with sufficient service facilities like petrol pumps, police stations, fire stations, LPG godowns etc. The locations and details of all the recreational and other civic facilities are shown in figure 18.1. and table 18.5 respectively.

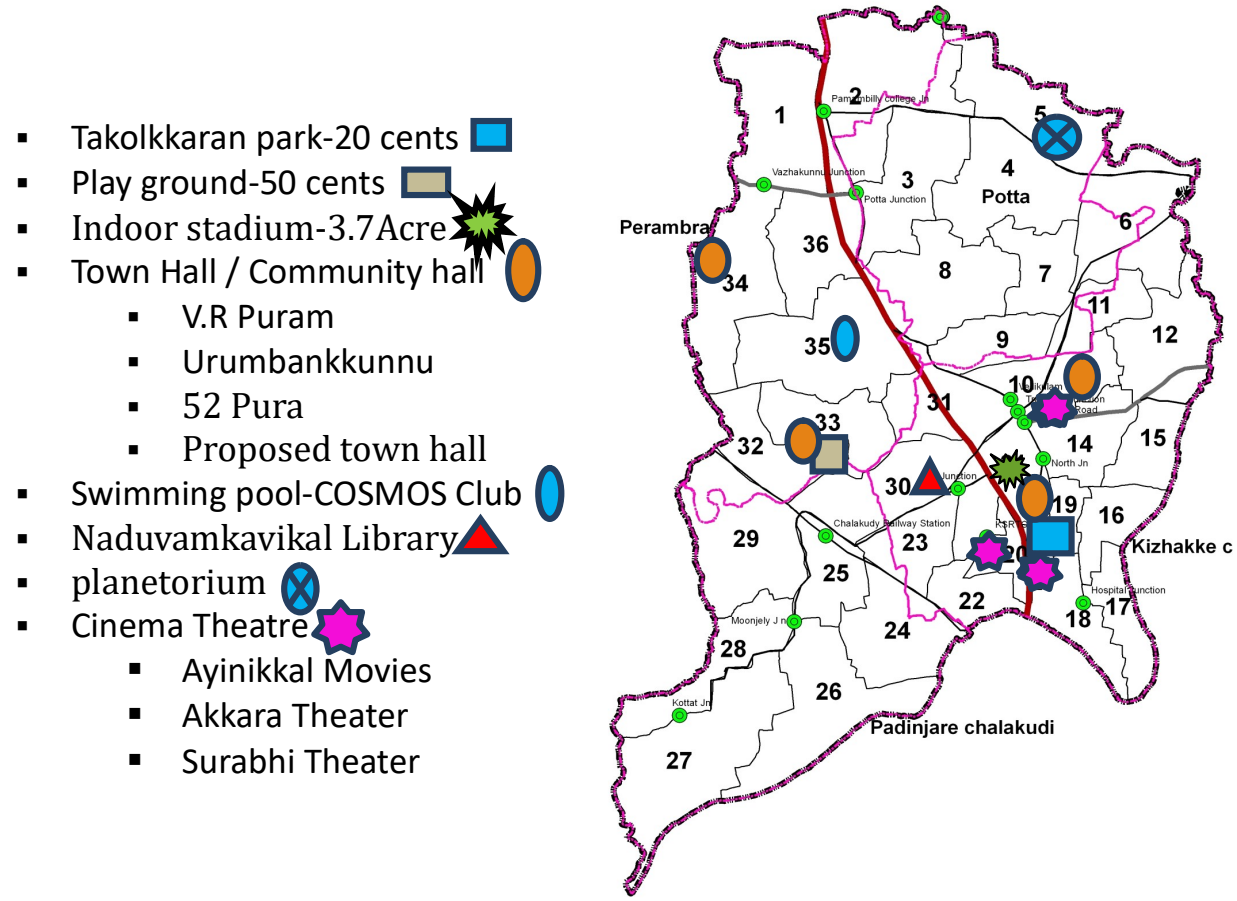


Fig. 18.1 Recreational facilities

Source: Municipal Office, Chalakudy & local enquiry



Plot of the municipal indoor stadium



Panampilly college indoor stadium

Table 18.5 Details of other facilities

Sl No:	Facilities	Name/Numbers	Location	Extent/Capacity/Service area
1	Petrol Pumps	Indian Oil Corporation	Ward -35	60 cents/75000 ltrs
		Broadway Auto Service HP	Ward -21	15 cents/58000 ltrs
		Cheryath Industrial & Transport Indian Oil Corporation	ward -21	60 cents/65000 ltrs
		Azzezslam company HP	ward -14	10 cents/57000 ltrs
		Ismail & sons BPCL dealer	ward -14	26.60 cents/59000 ltrs
2	LPG Godown	Nil		
3	Fire station(SI)	1	Ward 20	20 cents
4	Police station	Police station(SI)	Near Safal hospital/19	10 cents/57000 ltrs
		Circle Inspector Office	Near KSRTC bus stand/20	50 cents

Source: Municipal Office, Chalakudy& local enquiry

18.3 Conclusion

As per planning standards all facilities are available to the optimum level, but are clustered together in the town centre and needs to be redistributed. As far as recreation facilities are concerned, there is a need to redistribute and equip the facilities.

CHAPTER 19
HOUSING

Housing condition has a direct and positive impact on health, status, attitudes and values of the population concerned. The national housing policy recognises the provision of shelter in the following terms; It improves the quality of life, creates conditions for attainment of better health, hygiene and education, stimulates economic activity, e nhances productivity, creates employment opportunities, motivates savings and promotes social justice.

19.1 Housing

As per the analysis of the data pertaining to this sector, 39% of the land is under residential use with a net population density of 2321 persons/sq.km. The housing condition prevailing in the Town is given in figure 19.1.

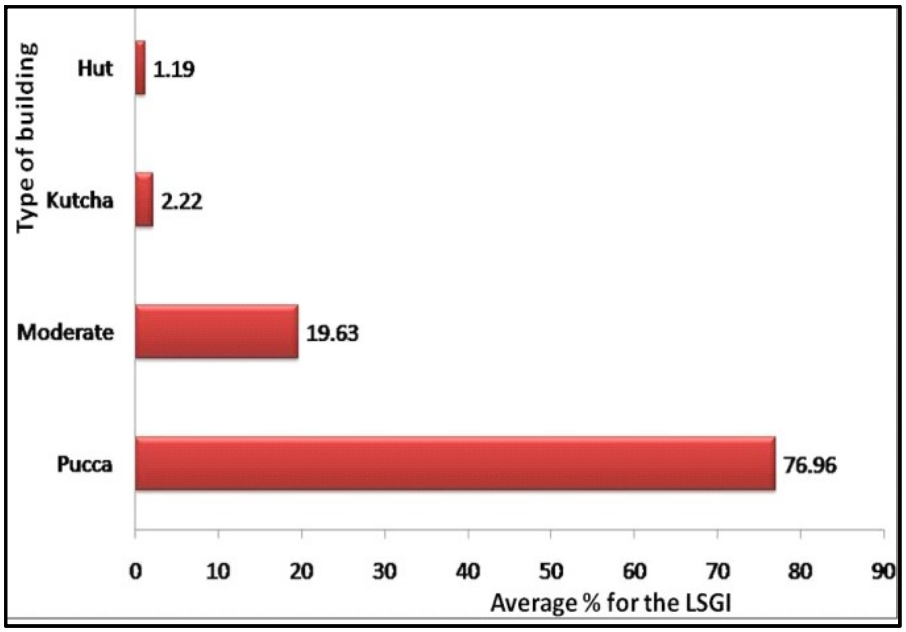


Fig. 19.1 Housing condition - % variation for different types of buildings

It can be seen that 3.4 % of the houses are kutcha or hut type. The distribution of nature of houses belonging to kutcha or hut category is shown in figure 19.2. It can be inferred that ward 9 and 10 has a concentration of huts. Figure 19.3 and 19.4 shows the variation of plot area owned by individuals and range of plinth area of houses respectively. It can be seen that majority of the people (35%) have 6-10 cents of land to their title and 47% of people built to a maximum between 75-150 sq.m. This is an indicator of the social status prevailing in the society there. Only 2.4% of people live in too small living spaces (<20 sq.m). Thus it can be concluded that the general housing scenario is satisfactory.

In the socio-economic survey it is revealed that majority of households in the Town, i.e. 94.37% have their own land 0.74% have lease land and the remaining 4.67% have other type of land ownership.

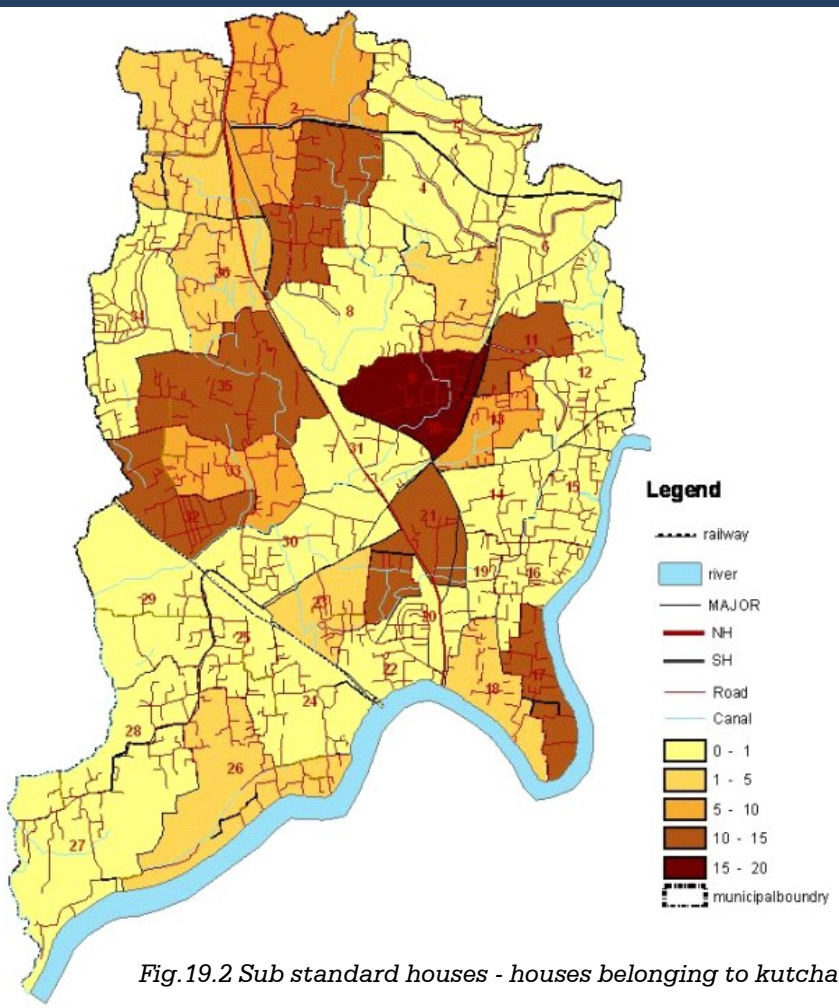


Fig.19.2 Sub standard houses - houses belonging to kutcha or hut

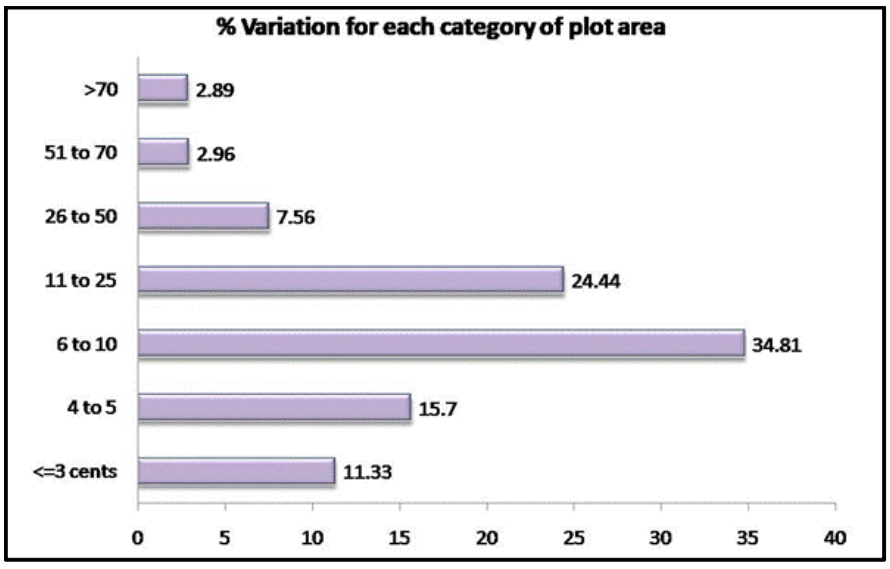


Fig.19.3 Average plot area

The primary slum survey conducted here revealed that the substandard housing areas present here are not of bad condition. The locations of substandard housing areas are given in figure 19.5. Comparing this with figure 19.4, it may be inferred that housing condition in many a substandard housing area is below moderate level. Apart from the above

substandard houses there are five areas which need to be addressed as per local level analysis. The locations of these areas are given in figure 19.6.

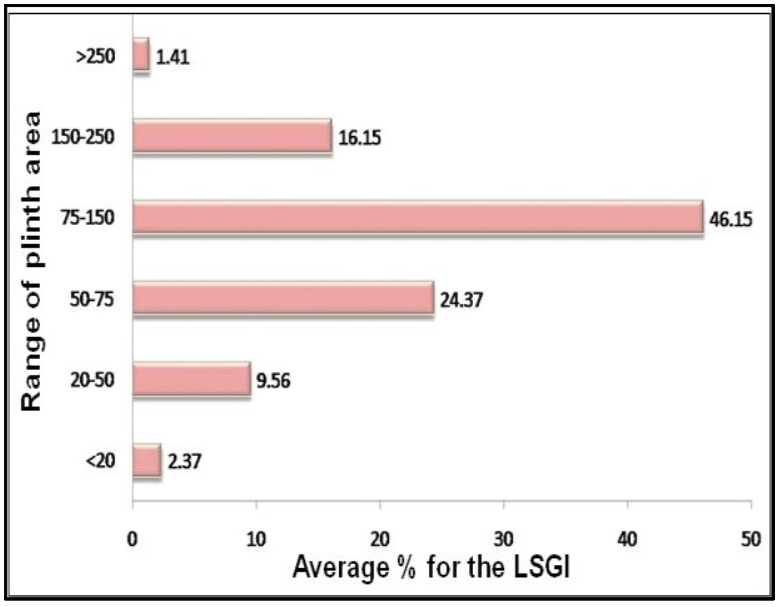


Fig. 19.4 Average plinth area

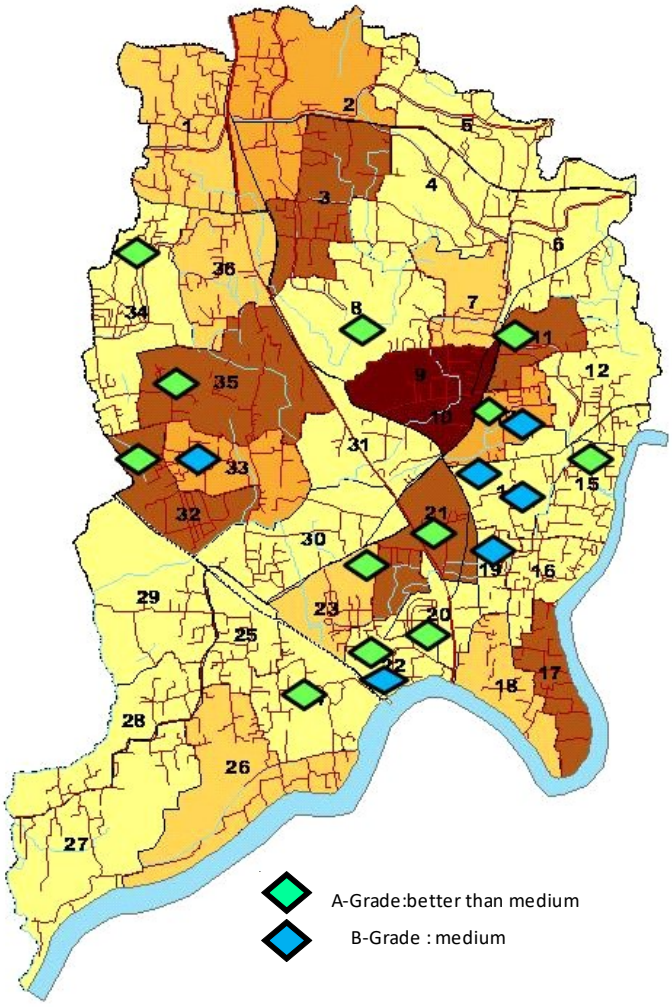


Fig. 19.5 Sub standard houses as per slum survey

Table.19.1 Sub standard houses as per slum

Sl.No.	Name of Colony/Slum	No.of Houses	Grade
1	Pallikanal golden nagar	39	B
2	Padinjarekurisu	15	B
3	Pallikanal	64	A
4	Pallikanal colony	11	A
5	Pallikanal	9	B
6	Railway Gate	17	B
7	Vettikadavukanal purampokku	50	B
8	Vettikadavukanal purampokku	9	A
9	Kalapattupulaya colony	11	B
10	Tramway purampokku	3	A
11	Parakottambalam purampokku	20	B
12	52 pura colony	52	B
13	Vettukadavu canal 16 colony	16	A
14	VR puram colony	270	B
15	Eenarkulam purampokku	15	B
16	Urumbankunnu colony	75	B
17	24 veedu colony	24	B
18	Kumaramadam colony	25	A

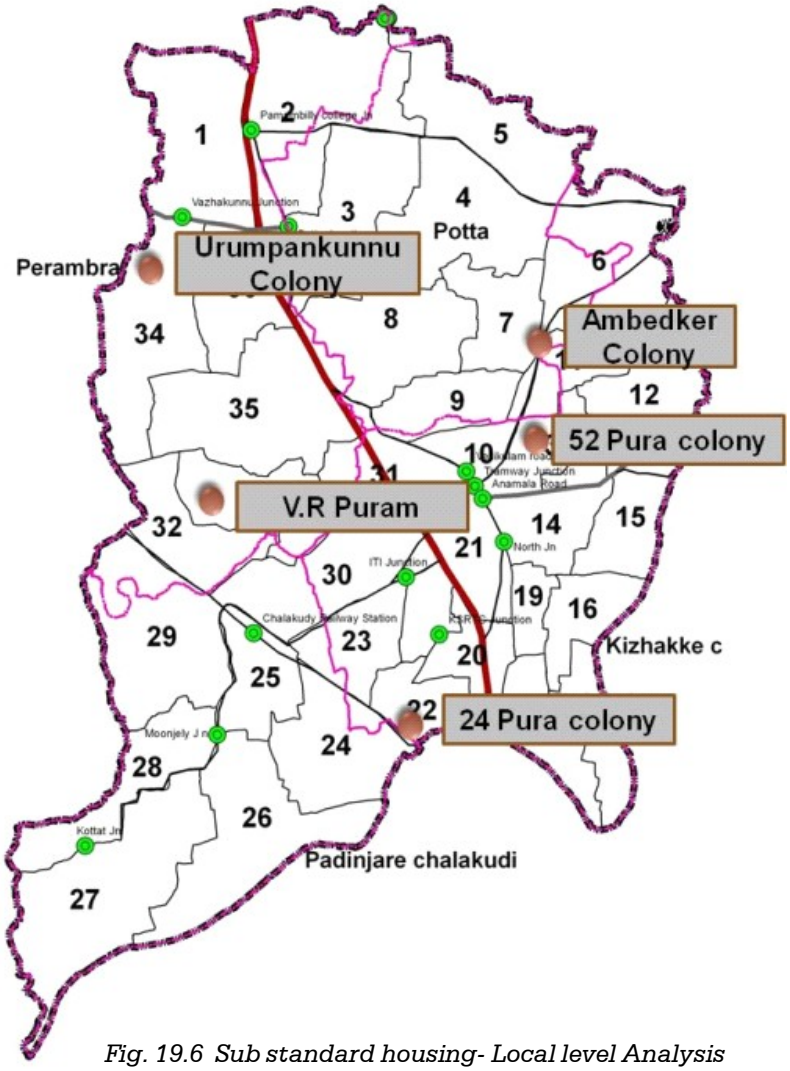


Fig. 19.6 Sub standard housing- Local level Analysis

19.2 Sanitary system and solid waste disposal system

As per the socio economic survey 2012, 100% of houses in Chalakudy Town have some sort of sanitary system. No public sewerage system is there in the Town. Septic tank is the major form of sanitary waste disposal system and is followed by pit latrine.

The survey also reveals that 98.8 % of wastes from the houses are disposed in their own compound.

19.3 Electrification of houses

As per the socio - economic survey (2012) conducted 100% of houses of the Town are electrified.

19.4 Availability of services

The distance to facilities and the comparison standards from houses to facilities like motorable roads, bus stops, schools, post offices, health facilities, hospitals, ration shops,

play grounds, etc are shown in table 19.1. The socio economic survey data is also analysed by comparing the distance to various facilities with certain standard. The average distance to various services and comparison with adopted standards is shown in table.

Table 19.2 Distance to facilities and comparison with standards

Sl no	Facilities and standard	% of people with the opinion that distance to facilities are higher than standard
1	Distance to motorable road greater than 0.5 Km	19.93
2	Distance to bus stop greater than 0.5 Km	61.41
3	Distance to primary school greater than 0.5 Km	86.89
4	Distance to LP school greater than 0.5 Km	89.41
5	Distance to UP school greater than 1 Km	53.7
6	Distance to HS school greater than 3 Km	22.59
7	Distance to post office is greater than 3Km	11.7
8	Distance to health greater than 5Km	16.37
9	Distance to hospital greater than 5Km	9.48
10	Distance to ration shop greater than 5 Km	1.3
11	Distance to playground greater than 5 Km	16.59

19.5 Conclusion

Housing condition in general is promising, but certain pockets still have substandard housing condition prevailing, which needs to be eradicated. Also there is no data regarding the migration of workers from other states. Considering the in - migration that may happen in future, housing needs may be on a high and measures will have to be formulated to tackle the situation.

CHAPTER 20
FINDINGS

The major findings and inferences arrived at from the different analyses are listed here sector wise.

20.1 Regional Setting

- Located in the south central part of the Thrissur district at 10°30' N latitude and 76°33'E longitude
- Chalakudy town has an area of 25.23 sq.km and consists of four villages. It is presently a second grade municipality with 36 wards
- Well connected by road (NH 544,SH21,SH61) and rail in the North-South direction.
- Between Kochi Metropolitan City (54km) & Thrissur Corporation (32 km) along the NH-544
- Nearby railway stations are Chalakudy, Irinjalakuda, Angamali and Thrissur.
- Cochin International Airport and Kozhikode International Airports are 22 kms and 135kms respectively from Chalakudy
- As per State Urbanisation Report
    - Urban Profile 2021- 5th order urban centre
    - Urban Profile 2031-Constituent LSGI of Alappuzha - Ernakulam – Thrissur - Palakkad Corridor
- As per IDDP plan perspective,
    - Chalakudy Town falls under Economic development Corridor
    - Urban profile and functional character of Chalakudy Town is urban.

20.2 Demography

· As per 2011 census data , total population of the LSGI is 49525. The total population of the LSGI shows an increasing trend and constitute nearly 1.59% of that of the district. Wards 4,5,33 & 35 are the ward having maximum population size

- The population size of Chalakudy town is high among nearby local bodies and second lowest among the other urban LSGIs in the district.
- Population growth rate during last decade is 2.36% and is showing a decreasing trend. It is low in comparison with State, District and nearby local bodies but second lowest among urbal local bodies.

20.3 Occupational Structure

- Workforce participation rate is 35.51% which is showing increasing trend. Chalakudy shows a higher WPR when compared with District and fourth highest in comparison with urban LSGIs within the district
- Chalakudy shows a gradual increase in the number of total workers and total main workers. Main workers show an increasing trend which indicates stable job scenario.
- Out of total workers, 89% are Main workers and only 11% are Marginal workers .
- Female WPR is increasing through the decades and is high when compared to the other urban LSGIs in the district.
- Over the years Agriculture related workers got reduced. Pattern of occupation shifted from primary to other workers.

20.4 Land Use

- Landuse analysis reveals that out of the total area of 25.22sq.km,9.27 sq.km. is utilised for residential activity comprising 36.76% of the total area. The next major activity is dry agriculture i.e. 8.14 sq.km amounting to 32.27% of the total area. Paddy land is a dominant land use here amounting to 3.79 sq.km. (15.01%). Transportation land use and Public and semipublic land use amount to 6.75% and 5.59% respectively. Commercial, industrial and water body contributes 1.88%, 0.92%, 0.76% of the total area respectively.
- Almost 18 wards are showing predominance in residential land use. These wards are situated around the Chalakudy town and the V.R Puram area. Commercial activities are concentrated in the central area and along NH & major roads.Builtup landuse is found to be concentrated in the town centre.
- Dry agriculture concentration is mainly seen in the northern side of the town whereas wet agriculture concentration is seen in the southern & eastern portions. This conforms to the relief and soil pattern.

- Functional character of the town in the district perspective plan of IDDP is rural. Wards in the town centre are urban. Wards having high agricultural concentration are rural in character.

20.5 Trade and Commerce

- Chalakudy acts as a major trading centre for the nearby rural areas for the sale of their products. Trading activities in the town is mainly concentrated in the market located near North Junction.

- Only about 2% of the municipal area is being used for commercial activities. A ribbon type commercial development is seen along the old NH from Anamala Jn to South Jn. Commercial concentration is also seen at junctions at Potta, Railway Station, Kottat, Alavi Centre and Hospital Junction

- The existing market has trade in all type of commodities ie, meat, fish, vegetables, spices and the like.

- The buildings in the market are presently insufficient for providing separate stalls for separate commodities. It also needs improvement in facilities like parking, loading & unloading space and drainage.

- The present market is not easily accessible to those from the northern areas due to the presence of major junctions.

20.6 Industry

- Chalakudy was a well - known industrial center of Cochin state for trading activities in timber. Industrial development has come down due to unavailability of natural resources and raw materials required for major manufacturing industries.

- Industries which flourished in the town in previous decades like Cochin Potteries, Cochin tanneries and tapioca products have become defunct.

- Chalakudy town has potential for industrial development due to good transportation linkages with seaport, airport and the nearest urban centre, Kochi.

- As per the development concept of the District Plan, Chalakudy falls under the zone Economic Development Corridor. In this zone, tertiary & secondary activities (especially industrial activity to trigger economic development) are expected to flourish. It is envisioned to be suitable for large/medium scale industries, industrial parks, IT & info parks, good quality education and health care institutions.

- Micro industries have the major share of the present industrial scenario. Maximum no. of industrial units in Chalakudy municipality are under Engineering (automobile workshops, welding units, fabrication units etc), Garment making and others (Printing, Bakery products, Software development etc.)
- Industries are mainly concentrated along the sides of NH, SH and railway line
- An industrial estate is proposed near Panambilly College with an area of 2 acres. Municipality has acquired the land and is yet to start the functioning of the estate.
- The town has scope for agro-based value added processing units as it has good connectivity with the agricultural-oriented panchayaths of the east side.

20.7 Tourism

- Presently Chalakudy Town is not having a prominent position in tourism map of Thrissur district. It is only a transit station to nearby major tourist centres like Athirappilly, Vazhachal, Thumboormuzhy, Peringalkuthu, Malakkapara and amusement parks like Dreamworld, Silverstorm etc.
- The number of tourists visiting Athirappilly and Vazhachal in a year comes to around 11 lakhs.
- Accommodation facilities available in Chalakudy are very nominal. Also the presence of forest area near the tourist spots is a constraint in developing accommodation facilities near to these spots. So Chalakudy town can be developed into a facilitation centre for providing accommodation, leisure and other necessary facilities to the tourists. Thereby tourists can be attracted to the existing tourism potential inside the town area due to the presence of the scenic beauty associated with the Chalakudy river and other spots.

20.8 Agriculture & Allied Sectors

20.8.1 Agriculture

- From the analysis, it is derived that the major crops cultivated are Paddy ,Banana & Vegetables. Apart from this, Vettila, Tapioca & Pepper are also cultivated in some areas
- Although Coconut, Arecanut & nutmeg covers large areas, active cultivation is not existing in the town.
- Paddy area and production is increasing while productivity is decreasing through the years

- In the case of Banana and vegetables, area, production and productivity is increasing.
- Dry agriculture concentration is mainly seen in the northern side of the town whereas wet agriculture concentration is seen in the southern & eastern portions. This conforms to the relief and soil pattern.
- Agriculture mainly depending on Chalakudy river, ponds and irrigation canal. Six lift irrigation schemes are functioning in the area for agricultural purposes. Encroachment of irrigation canal bunds causes depositing of waste materials in canal which is affecting free flow of water.

20.8.2 Animal Husbandry

- The main livestock in Chalakudy are Cow, Buffalo, Goat, Hen, Duck and pig.
- The products obtained from livestock are mainly egg, meat and milk.
- One Veterinary dispensary is existing within Municipality
- The existing production from Animal Husbandry sector in Chalakudy is not sufficient for supplying the required quantities of milk and egg. The huge production of meat without a few authorised and modernised slaughter houses can affect the health and hygiene of the people.

20.8.3 Fisheries

- Potential for ornamental fish culture.
- Around 23 ponds present in the town which can be utilized for inland fisheries .

20.9 Traffic and transportation

As per the NATPAC study report,

- Heavy movement of vehicular traffic along the NH 544.
- In NH 544 Reason for delay is due to the presence of signals & the intersections
- Volume-capacity ratio of the road link Chalakudy Bridge-MO Junction is 2.09 which show that utilization is more than twiceits capacity.
- Ashramam road Junction witnessed the maximum peak hour traffic flow of 4083 PCU.
- High volume of pedestrian cross movements occurred at South Junction& Bus Stand Junction

- Unorganized on-street parking in the absence of proper parking lots.
- Public transport has a significant role in meeting the inter-town passenger demand.
- Major traffic generating zone within the study region is the CBD area, with 26.73% of the total trips.
- Encroachment of right-of-way by hawkers& parking of vehicles.
- Absence of adequate design for major junctions along the major roads.

20.10 Drinking water

- Main source of drinking water supply is the Chalakudy River.
- 8.89 MLD of treated water is supplied per day. It covers thewhole of municipal area.
- 77.23% of people depend on domestic wells and 20.48% of people depend on public water supply scheme.
- From socio economic survey only 5.40% of people are found to experience water scarcity. Out of this only 0.52% average of the LSGI is affected by water scarcity for more than six months. Wards in the north side is most affected.
- There are a good number of ponds in the Town out of which Ernakulam, Moozhikulam,Kummayakulam&Kumaranchirakulam can be used as drinking water sources.
- Routine maintenance of pipe line is suggested in the local level analysis

20.11 Sanitation

- 8 tonnes of solid waste is generated in municipal area, from which 3.75tonne waste is treated. Balance is now used for land filling which will cause negative effects on the soil in future. Hence a plant for processing all of the waste is to be planned. Waste generated in the market is processed in a biogas plant. The gas produced is not utilised.
- Blockages in drainage network & encroachment of drains causing flooding.
- Waste water from public drains are disposed without any treatment finally to Parayanthodu which in turn flows to the Chalakudy river
- As per socio economic survey 98.3% of houses are using septic tank for sewage disposal. The effect of sewage on soil and ground water sources through the use of septic tanks

have to be studied to assess the need of an exclusive sewerage system.

20.12 Education

- Chalakudy Town has a comparatively higher literacy rate.
- Both male & female literacy rates are higher than state &district average.
- Only 10% of students depend on government institutions up to HSS level. Reasons may be lack of infrastructural facilities and basic amenities in government schools
- Chalakudy has a number of institutions imparting higher education both in the general as well as the technical stream.The Panampilly Memorial Government College, Sacred Heart College, Nirmala College, St. James Medical Academy Pharmacy College, Nirmala College of Information Technology and Southern college of Engineering & Technology are the major higher educational institutions in Chalakudy.Chalakudy Town is facilitated with a VanithaGovt.I.T.I,Govt. I.T.I(SCDD),Theresian I.T.C at Potta,Govt. I.T.I Chalakudy, Govt. T.T.I Chalakudy.
- Apart from these institutions within the town, the institutions located in the nearby LSGI's like Sahrudaya College of Engg and Technology, MET's school of Engineering,Holy Grace Academy of Engineering,Model Community Polytechnic,Carmel College,Christ College, St.Joseph's College, Axis College of Enginnering increase the potential of the Chalakudy town as a technical education hub at a district level.
- Opportunities for training, skill addition and job for the students passing out from these technical institutions can be made available inside the town area.

20.13 Health

- Up gradation of existing facilities is the immediate requirements in government sector
- Expansion of Ayurveda hospital in government sector including inpatient section is needed.
- From local level analysis:-
    - One Ayurveda hospital is needed atPanampilly college area.
    - Wellness clinic including exercise facility in Taluk hospital
    - Pakalveeduwith modern facilities (For aged persons.)
    - Expansion of Homeo hospital at Urumbunkunnu is necessary.

20.14 Environment

- Paddy land has to be protected and utilized effectively.Filling up of natural drains causes flooding and is to be cleaned and preserved.
- Conserve existing ponds from pollution, and use itfor agricultural and drinking waterpurposes.
- Encroachment of canals & rivercauses water logging and should be removed.

20.15 Civic & Recreational Amenities

- About 4% of people in Town area are having substandard housing facilities
- As per planning standards, required recreational facilities are available within the Town
- Facilities are clustered near town centre
- Play grounds should be provided at Potta, Town center, &West Chalakkudy
- As per slum survey no bad condition slums are found.
- Sufficient area for park should be proposed in a planned manner.

CHAPTER 21
GOALS AND OBJECTIVES

Chalakudy town is now at an up beat stage in themarch to development, a stage in which foresight, clarity of vision and firm decisions are required to ensure that the true and sustainable development takes place. This chapter deals with the goals and objectives of the master plan to be attained from the analysis of the entire data through out the plan period.

21.1 Development goals

The vision statement is "To develop Chalakudy to the optimum level by achieving high quality services and vibrant economy through innovative sustainable and equitable ways utilizing the strength in trade, industry, tourism and agriculture"

The development goals are formulated from the observation and findings derived from the analysis of the sectors.Goal setting gives a long term vision of the things that areto be achieved in the given time frame.Goals are supposed to be specific, measurable, achievable,realistic and time bound. A goal for a master plan should be the one which will finally achieve the result of an optimum level development. The goal of the new master plan is to provide a comprehensive frame work for physical development planning within the town area. It is essential to continuously improve the productivity in all sectors. It has been also observed that Chalakudy Town as the administrative head quarters of the Taluk, should act as a service centre for entire Taluk. Chalakudy is to be developed as a higher order service centre that serve the surrounding local bodies providing higher order facilities in services, infrastructure, marketing, health, education and tourism. More over land use analysis shows 47% of the area is under agricultural land use which indicates that there is a scope for agriculture activity in the town area specially theeastern area (Kottat) of the Town.

As per the district development plan Chalakudy town area comes in the economic development corridor. In this zone the tertiary and secondary activities (especially industrial activity to trigger economic development) are more focused. It is necessary to strengthen the base of human resources, reduce poverty and conserve environment. There is a need to rehabilitate, modernize and widen our network of both physical and social infrastructure In short the goals setfor the master plan has to look up to physical economic and social development with view to protect the nature.

The major development goals for the Chalakudy Master plan are :-

- To strengthen Chalakudy town as an economic hub in between Thrissur - Kochi economic development corridor
- To utilize the development potentials in primary and tertiary activities at its full extend in a sustainable way for the economic growth of the inhabitance
- To create adequate and efficient infrastructure facilities for the betterment of living conditions with an inclusive kind of approach
- To develop and facilitate Chalakudy town as a service centre for the surrounding regions and entire Taluk area
- To conserve and develop the existing waterbodies and paddy area with consideration to ecofriendly parameters.

21.2 Development objectives

The development concept must be visualised in the broadest context so as to meet the expectations regarding a more elevated standard of living. Development objectives detailed out here are to be recorded as ways to achieve the development goals already discussed . The development objectives are as given below:-

- To strengthen the economic base of the Chalakudy town
- To enhance the potentials of trade and commerce activities for both local and floating population
- To promote Chalakudy town as a facilitator in tourism sector and to attract tourist population visiting nearby major tourist centres like Athirappilly,Vazhachal, Thumboormuzhy, Peringalkuthu, Malakkapara and amusement parks like Dreamworld, Silverstormetc
- To plan and implement the programs for utilizing the high potential in agriculture activities
- To play a key role to trigger the employment opportunities in service and tertiary sectors such as IT, ICT etc.
- To ensure healthy living conditions with the provision of excellent physical and social infrastructure facilities
- To improve the quality of public institutions and facilities in education, health, recreation and other social infrastructure sectors

- To provide adequate water supply, solid waste management system, transportation facilities etc. for upliftingliving conditions
- Use of modern technologies and new financial mode of operations for the infrastructural development
- To develop Chalakudy as a service centre for thesurrounding region and entire Taluk
- To develop the Chalakudy town as a Taluk headquarters with regional level infrastructural and governance facilities
- To promote the town as a support centre for the technical education institutions situated in and around the town.
- Promote the town as commercial, economical and transportation hub to cater the needs of surrounding rural areas also
- To take measures for the conservation of environmental sensitive areas and their protected development
- To introduce riverfront development project along Chalakudy river side
- To interlink natural drains and ensure the natural flow to the Parayanthodu
- Revitalisation of the natural drains to provide a proper drainage pattern thereby avoiding floods and other environmental problems.
- Protection of paddy land
- To introduce measures to reduce noise and air pollution

To ensure affordable houses to homeless peoples.

CHAPTER 22

DEVELOPMENT CONCEPT

Development concept formulated should reflect the goals envisaged with a spatial reference. The primary goals for the social and economic development with due regard for the environment to attain a sustainable development is transformed to a spatial platform here.

This chapter details out the development concept evolved from the development goals framed based on the problems and potentials existing in the area. It also deals with use of 'Smart city' concept as a physical principle tool for development.



22.1 Introduction

The development concept for the town is formulated based on the findings of the spatial and sectoral analysis while remaining in the purview of the goals fixed and also in line with the broad development vision arrived at the district level. The district level development vision has included Chalakudy in the economic development corridor which is suggested to have a thrust on the tertiary sector development. The town has been playing a major role in the commercial sector by supporting the trading requirements of the nearby agrarian areas. Improvement to the existing market and provision of new trading centres is envisioned.

It has been made very clear from the analysis that the existing strong potentials in the production sectors are under-utilised. A major development thrust is offered by the National Highway passing through the centre of the town in north south direction. Industrial development is a major potential seen in the town as per the perspective of the district plan. The thrust of the tourism potential available in the region has not presently created an impact on this town. Development may be oriented to tap this potential as well. The activities in the agricultural and animal husbandry sector should provide for the requirements of the town population thereby maintaining self-sufficiency in the production of safe and fresh food.

Chalakudy town is presently an education hub having institutions at school, college and professional levels for imparting education. Chalakudy has a number of institutions imparting higher education in the technical stream. For higher order professional and Medical education, facilities are available in the institutions existing in the nearby LSGI's. The town has a potential for developing a centre which will impart training and skill development and also provide job opportunities for those passing out from the technical institutions in and around Chalakudy town.

Having been uplifted as the taluk head quarters this town has to strive to become a second order Centre with taluk level facilities available. Along with this the ecology and environment need special mention. The development concept is technically formulated based on the following factors.

1. Existing Spatial form
2. Concept based on major development sectors
3. Suggested road network
4. Suggested hierarchy of nodes
5. Ecological conservation needed

22.1.1 Existing Spatial form

Existing spatial form is arrived at considering the functional classification, hierarchy of nodes, hierarchy of settlements and work centres

22.1.1.1 Functional Character

As mentioned in the IDDP Thrissur, Chalakudy town as a whole shows rural functional character. The ward-wise functional character is arrived at based on analysis of population density distribution, plot size distribution and landuse concentrations. The result of this analysis is shown in figure 22.1 which shows that the municipal wards are showing mixed character.

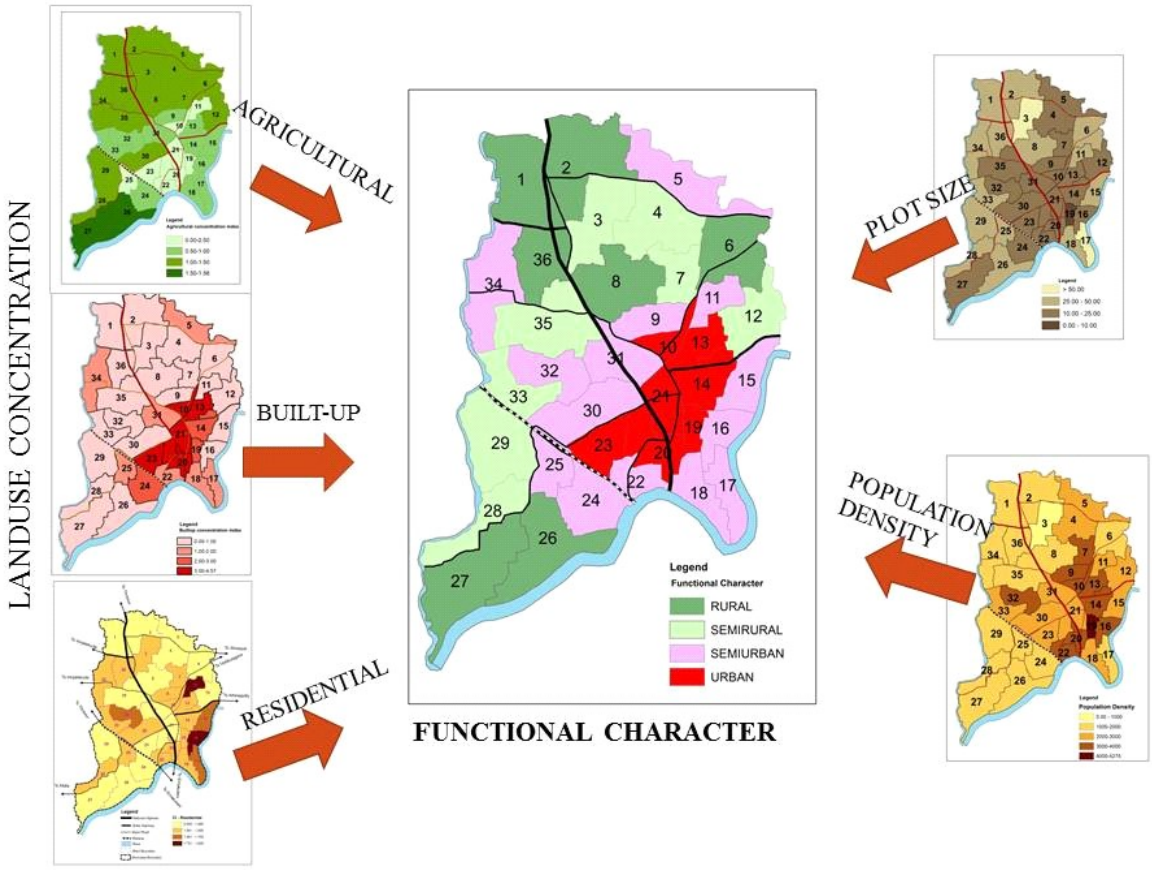


Fig 22.1 Functional Character

Wards 1, 2, 6, 8, 26, 27 and 36 show rural character. The rural nature of these wards is justified by the high agricultural land use concentration, low population density, low concentration of residential and built-up landuse and large plot size. Almost 8 wards show semi rural character.These wards are located in the north and east sides of the town. High concentration of agriculture-residential mix and less built-up landuse in these wards justifies its semi rural character. Wards 5, 9, 11, 15, 16, 17, 18, 22, 24, 25, 30, 31, 32, 34 show semi-urban character. In these wards , the concentration of residential and built-up landuse is moderate whereas the agriculture concentration is low. The population density is high and the plot size is in the medium range of 10-25 cents.The wards 10,13,14,19,20,21,23 located in the town centre show urban character. These wards are densely populated and has high concentration of built up landuse but very low agricultural concentration. The average plot size is in the range of 5-10 cents.

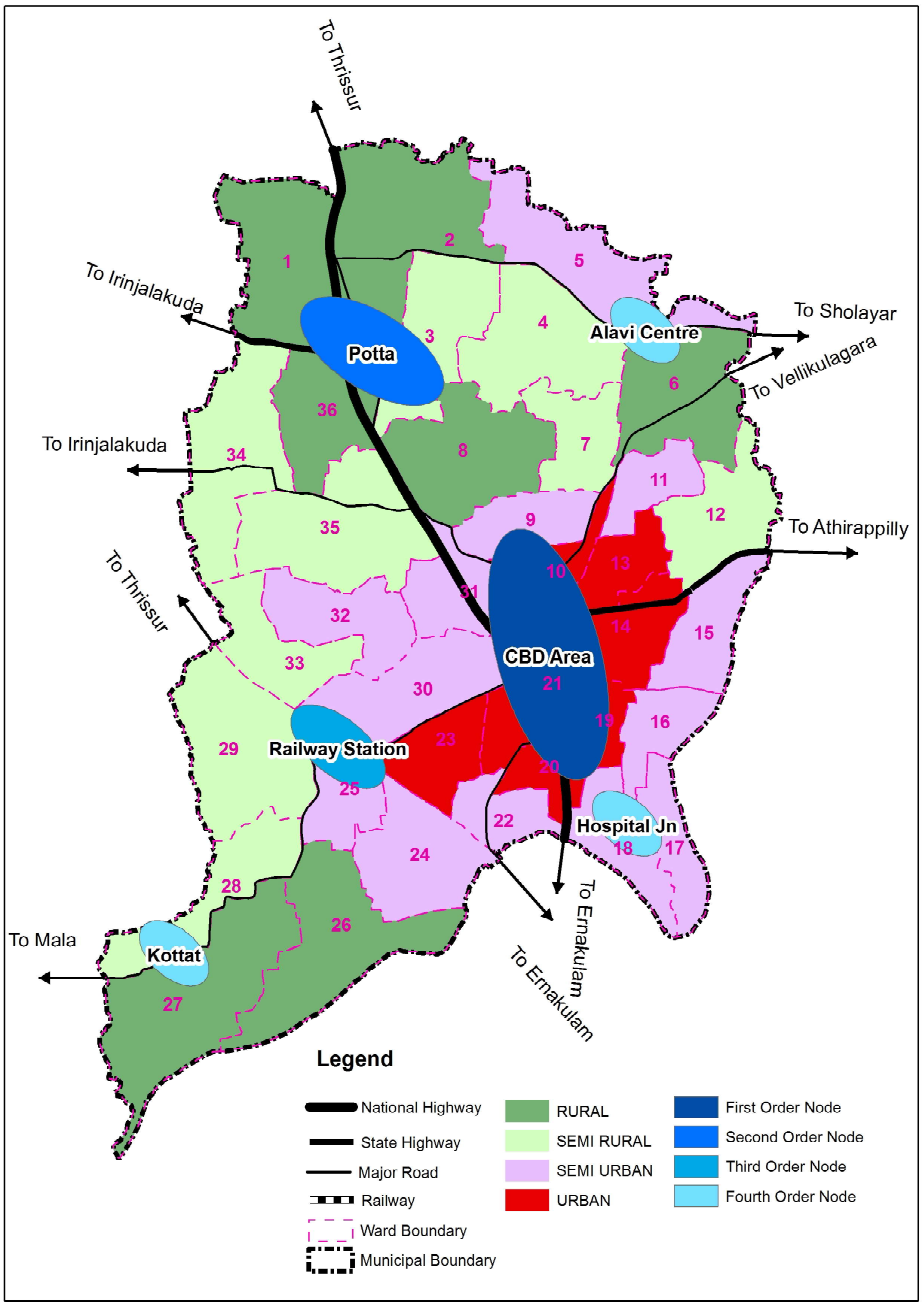


Fig 22.2 Hierarchy of nodes

22.1.1.2 Hierarchy of nodes

The CBD area extending from Anamala junction to Chalakudy South junction act as the 1st order node. Potta junction act as 2nd order node and railway station junction act as 3rd order node. Kottat, Alavi center and taluk hospital junction act as 4th order nodes.

22.1.1.3 Hierarchy of settlement

The existing hierarchy of settlement of Chalakudy town is analyzed based on the available urban facilities. The spatial distribution of built-up land use reveals the distribution of urban facilities within the town. As per the IDDP Report Thrissur, Chalakudy town falls under 2nd order settlement. Figure 22.3 shows the hierarchy of settlements in Chalakudy town.

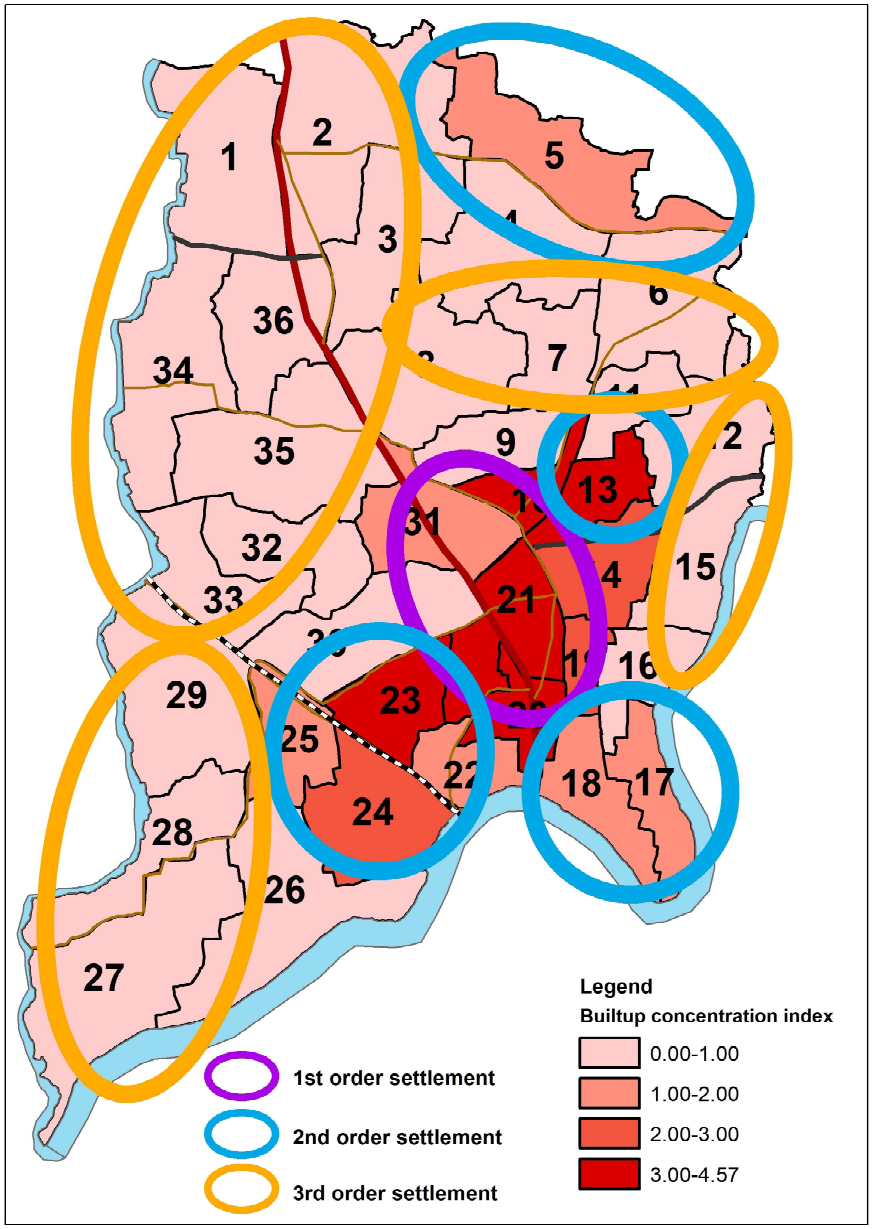


Fig 22.3 Hierarchy of settlement

22.1.1.4 Work centres

Based on the important activities taking place within the town area, different work centres are identified. The work centres in Chalakudy town includes dry agricultural land, wet agricultural land, educational institutions, industrial area and trade and commerce. Figure 22.4 shows the location of work centres within the town area.

It reveals that the area located in the north east and North West shows the dry agriculture land whereas, east and south shows the wet agriculture land. Major educational institutions are located in the north and south portion, industrial land in the west, north and eastern portion and Trade and commerce in the South east and North West of the town area. Figure 22.5 and 22.6 shows the formulation of spatial form and spatial form respectively.

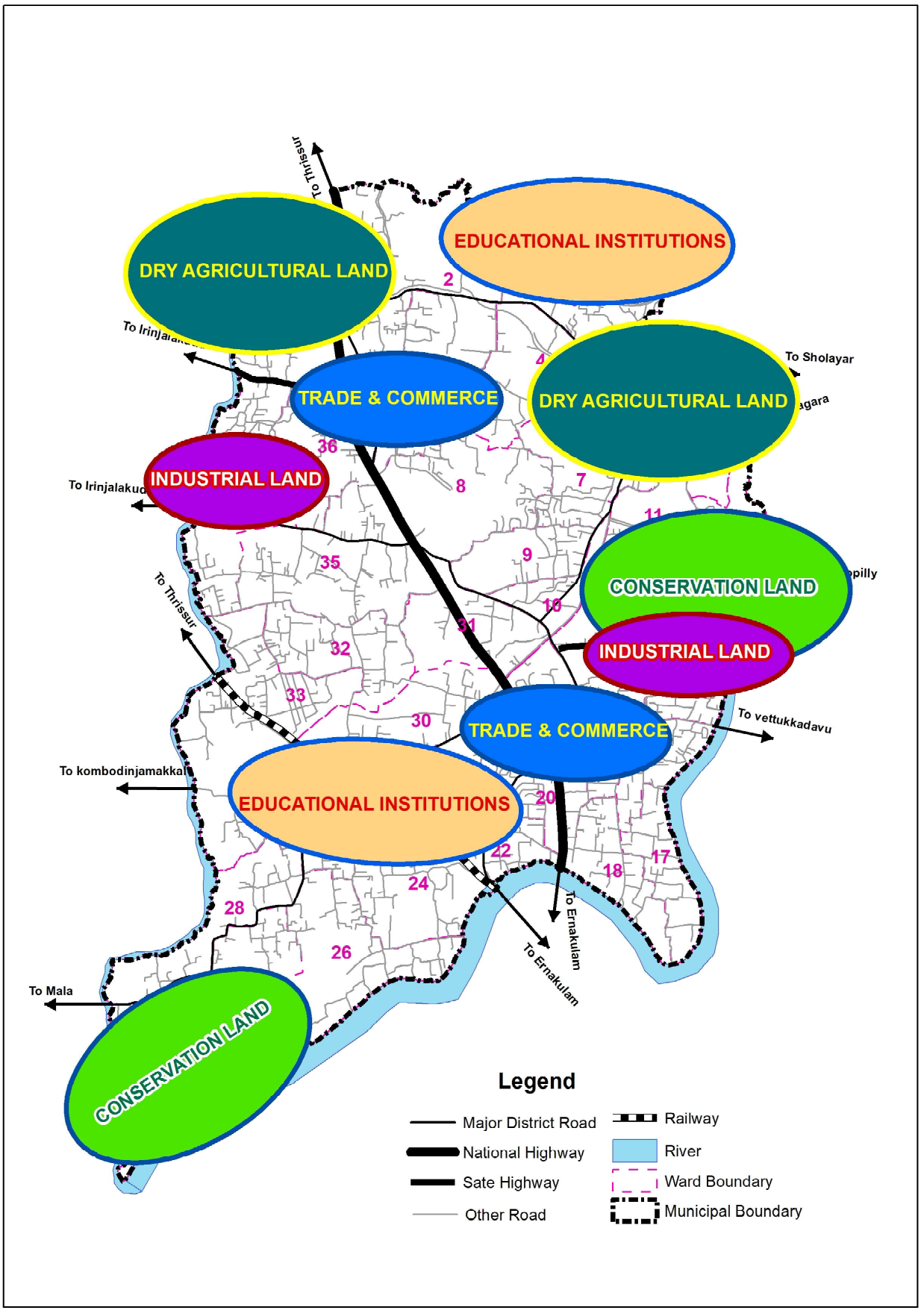


Fig 22.4 Work Centres

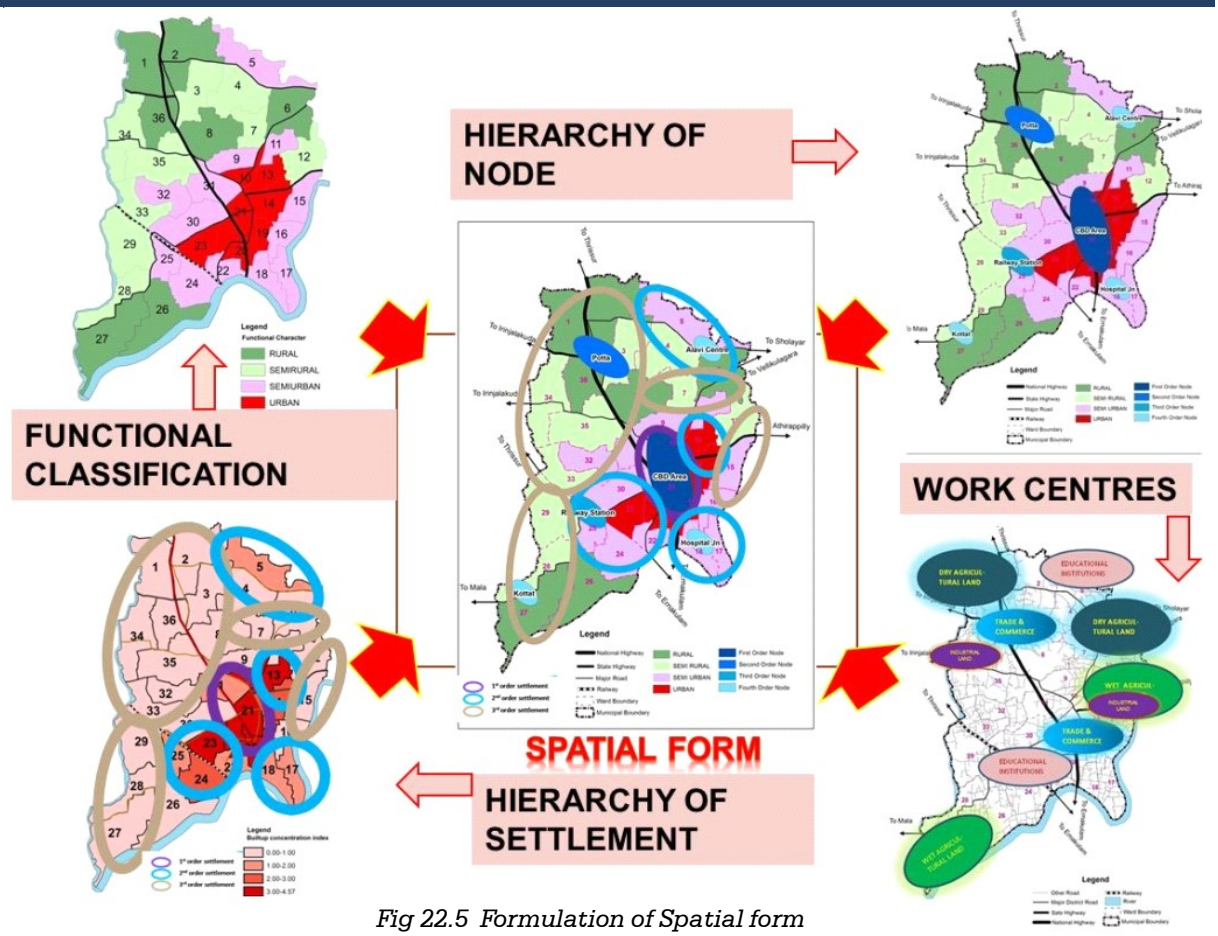


Fig 22.5 Formulation of Spatial form

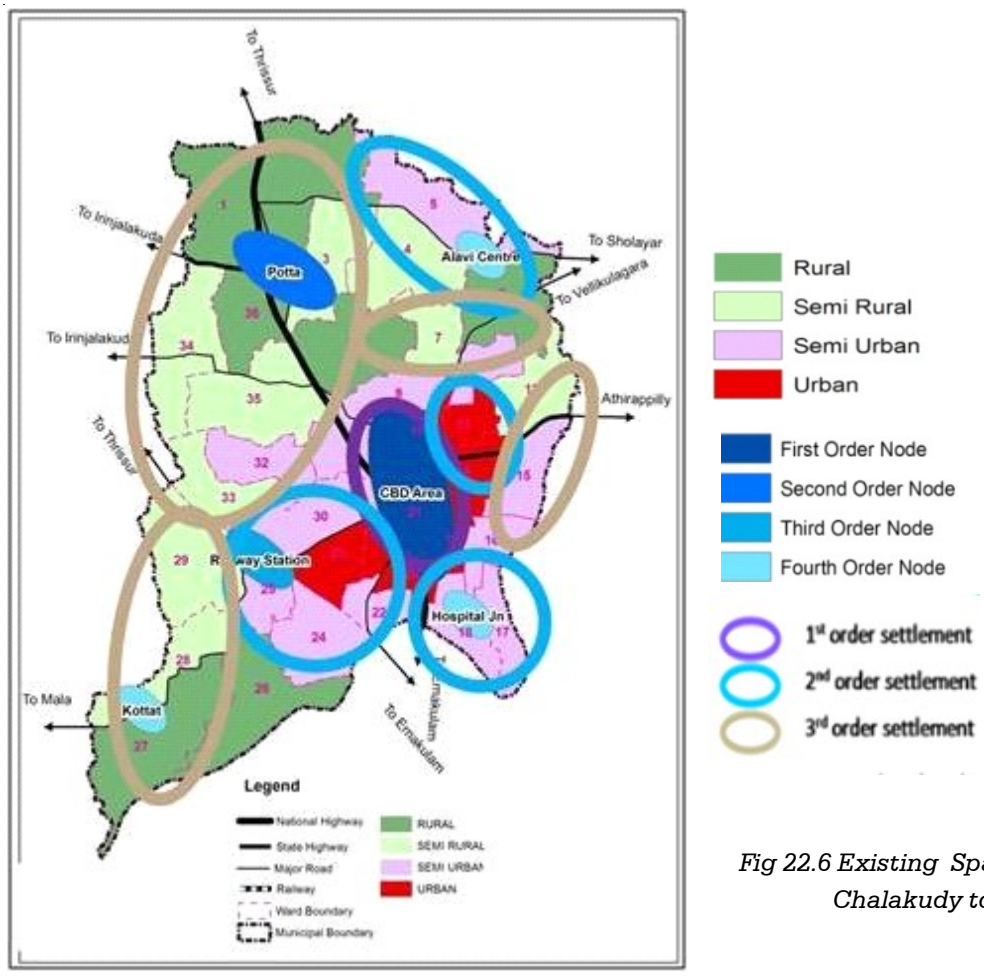


Fig 22.6 Existing Spatial form of Chalakudy town

22.1.2 Concepts based on major development sectors

The findings from the spatial and sectoral analysis of the town reveals the development direction of the town. The land use analysis shows that major trading activities are located in the town centre. The CBD area of the town will remain as the commercial hub of the town. Industrial activity is now present at different locations of the town. Being located in the economic development corridor as per the district plan perspective, industrial potential is found along the sides of National Highway and state highways. An industrial estate is in the process of developing in the northern side near Panambilly College.

The presence of major technical education institutions in and around the municipal town can cater to the increasing demand of skilled workers. A skill acquisition cum technical work centre can be planned in the town.

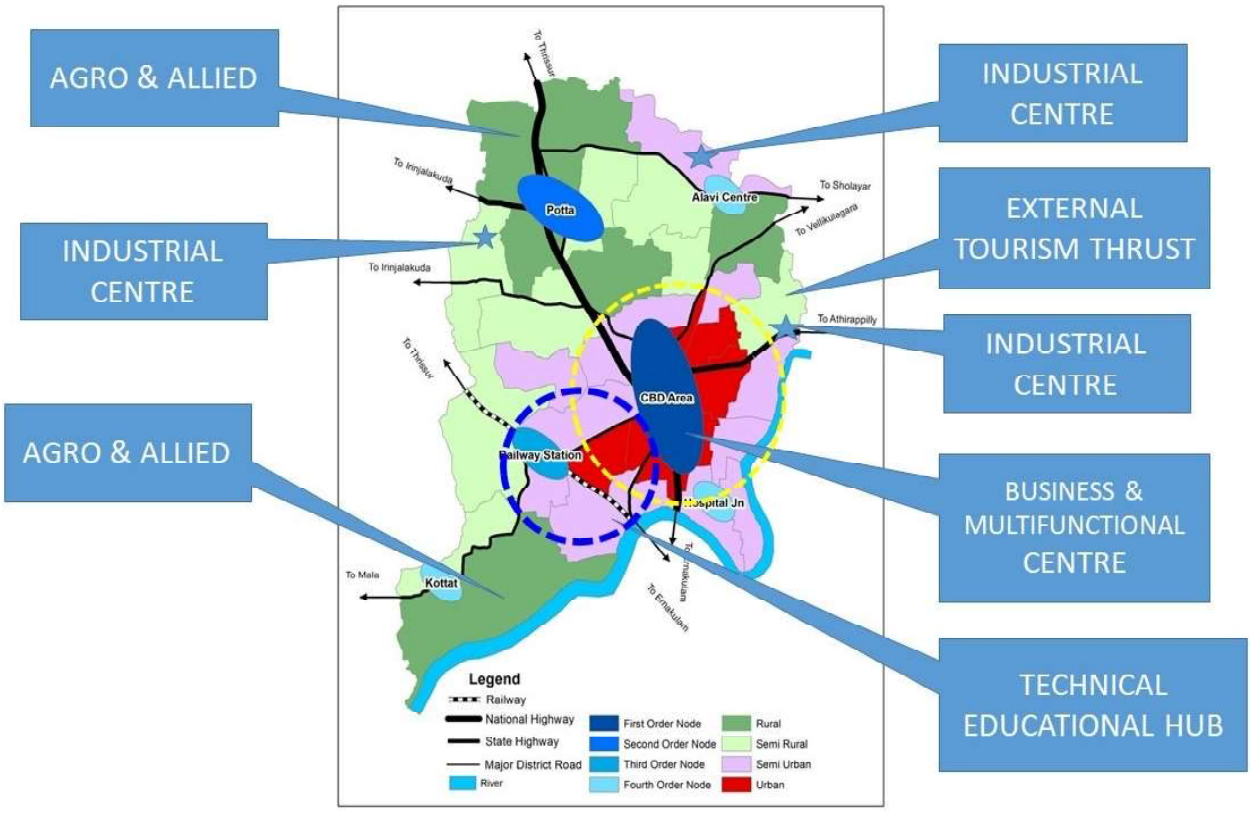


Fig 22.7 Consolidation of major factors for development concept

Tourism activities in the eastern region of the town create a potential for supporting activities like accommodation, leisure activities etc. inside the town. The agricultural activity area can be retained and promoted for satisfying the demand of the local community. Figure 22.7 shows the consolidation of major factors in the development concept.

22.1.3 Suggested road network

From the traffic and transportation sector analysis it is very clear that connectivity factors are sufficient here. The major corridors here are National highway (NH 544) and the two state highways (SH 61 & SH 21). The development that happens in the Tertiary sector is predominantly transit oriented in Chalakudy. Focus should be to develop roads for effective communication with exercising a control over the agglomeration of activities along the corridors. A radial half ring road pattern is envisaged for the future sustainable development of this town. Suggested road network is shown in figure 22.8

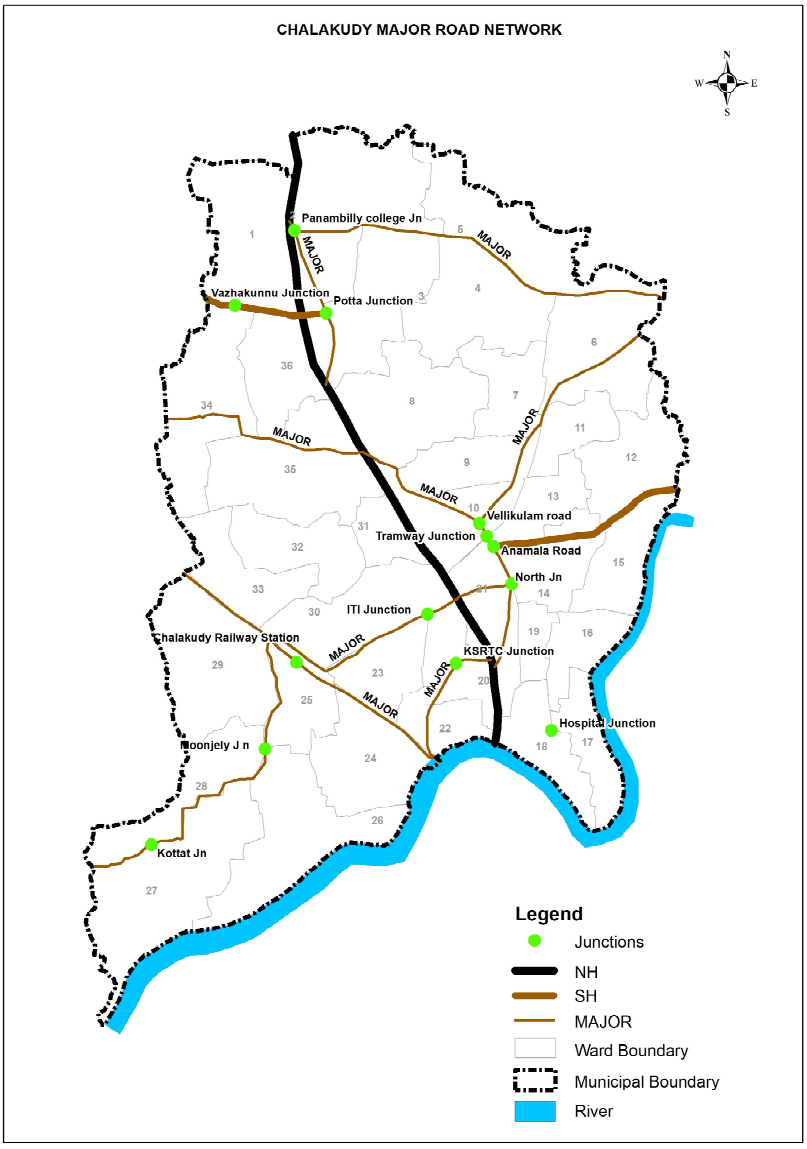


Fig 22.8 Suggested road network

22.1.4 Suggested hierarchy of nodes

Analysis of the existing nodes and transport junctions reveals that the existing first order junction located at CBD area extending from Anamala junction to Chalakudy South junction and 2nd order junction at Potta will remain as 1st and 2nd order respectively in future. Railway junction remains the 3rd order node. The existing 4th order node, Alavi Centre is raised to 3rd order as an external tourism thrust and industrial potentials are found in and around the node. The proposed radial half ring road creates two 4th order node where it meets with state highway and national highway. Kottat and Taluk Junction remains the 4th order node. Figure 22.9 shows the suggested hierarchy of commercial nodes.

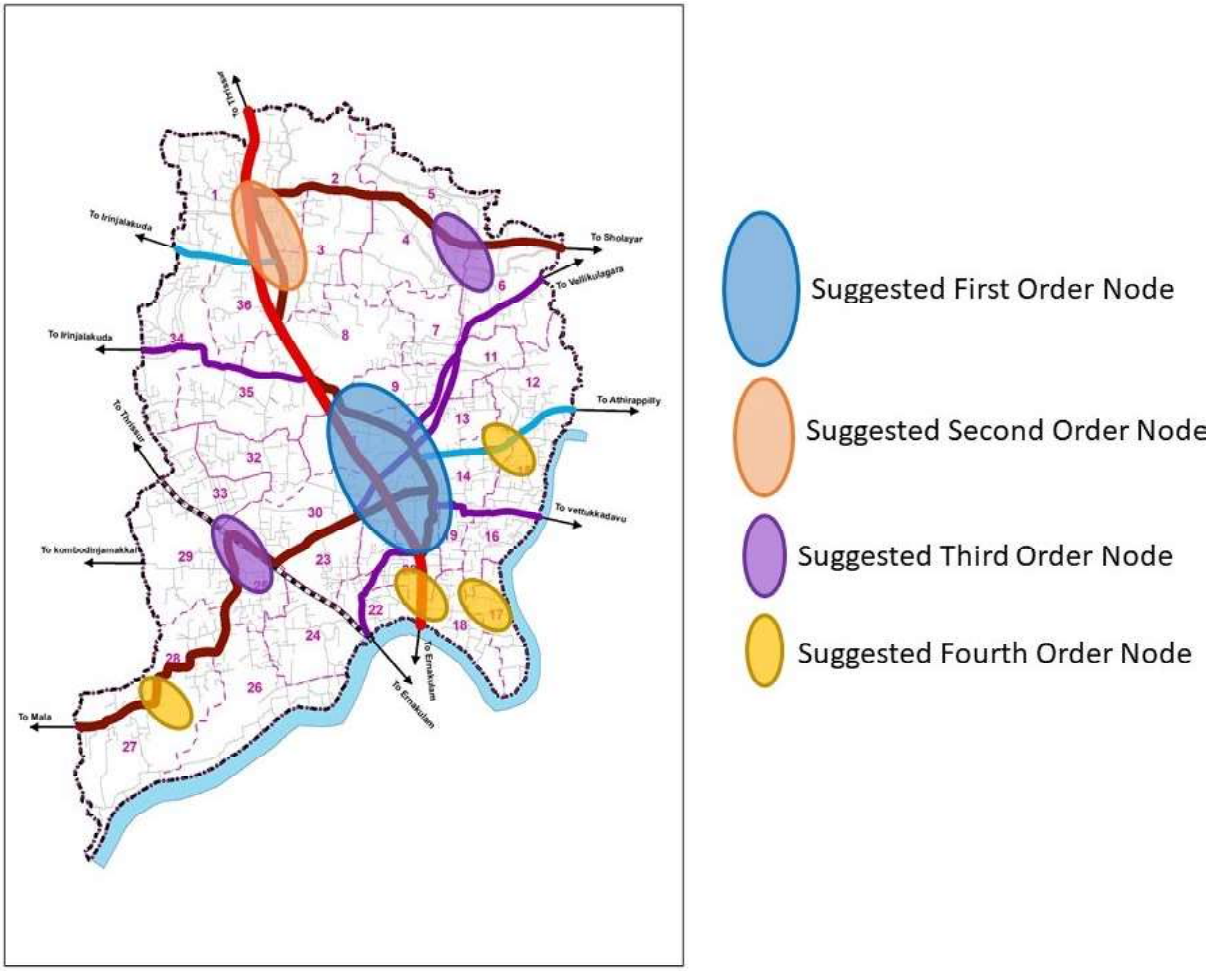


Fig 22.9 Suggested Hierarchy of commercial nodes

22.1.5 Future Population Density distribution

The distribution of the projected population through the wards is carried out using the goals in mind. Projected population of the town is around 55261 in 2031. An attempt to distribute the population with a view of sustainable development is done. Compaction of those wards having high density of population is the concept. This can ensure availability of the urban services to the densely populated areas. Also this can reduce the over exploitation of the resources and the effective utilisation of the available land in the background. The pictorial representation of the future density distribution is shown in figure 22.10. From this figure it is clear that a high population density can be seen in the town area at the range of 3500- 4500 in ward nos. 9,8,10,16,22 and 32. The lowest density can be seen in the Kottat area and on northern side of the town in the range of 0-1500. The area surrounded by the town and the V R puram area fall in the 2500 - 3500 range.

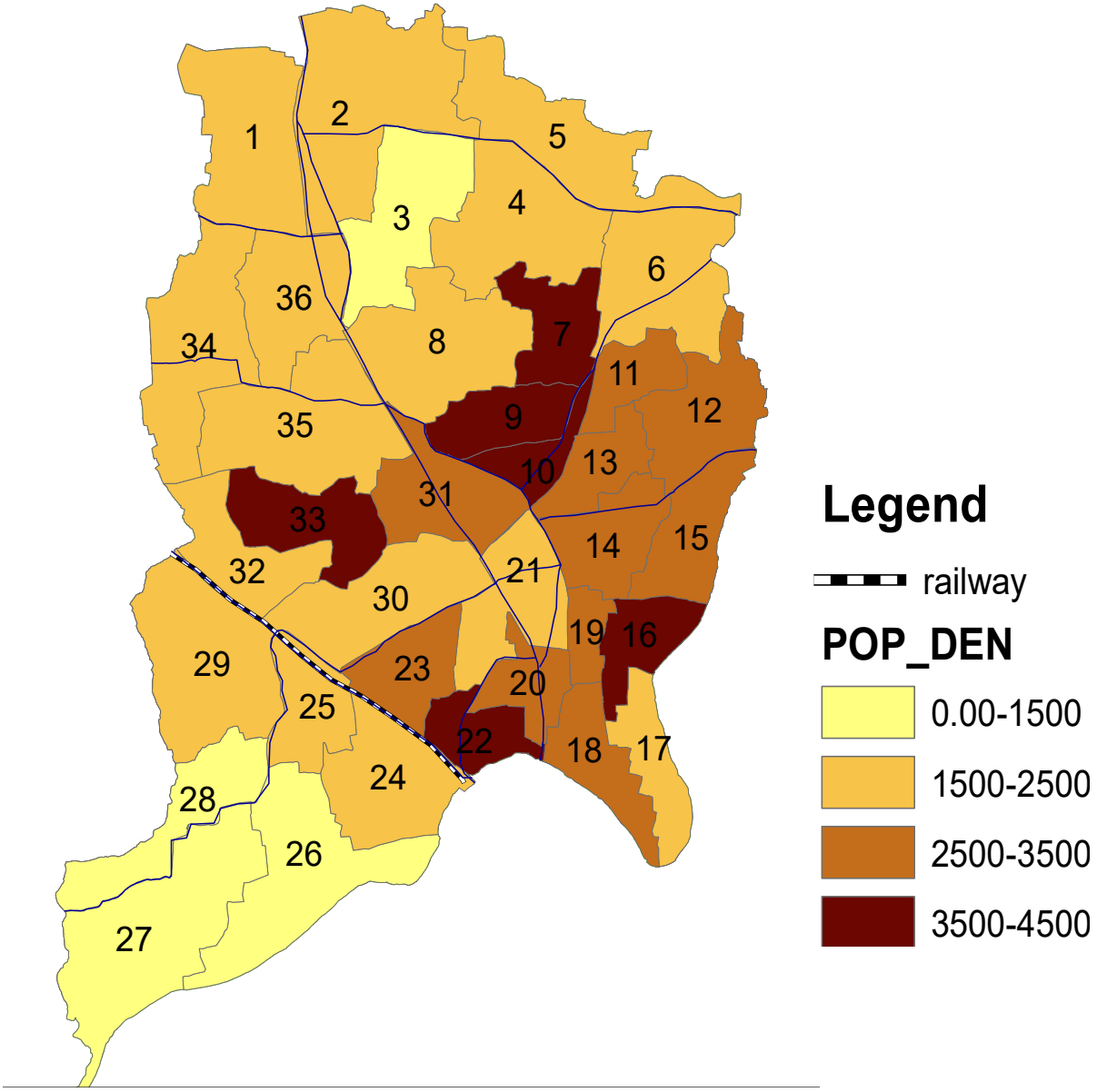


Fig 22.10 Future population density distribution

22.1.6 Concept on Environmental Conservation

The ecologically important areas in Chalakudy town are Paddy lands, Ponds, Chalakudy River and Parayanthodu. The locations of the above are shown in figure 22.11. Ecologically important areas play a vital role in maintaining the ecological balance such as water infiltration, protection of biosphere, provide livable space for various flora and fauna, strengthen food cycle etc. Therefore these areas have to be retained and preserved along with the urban development.

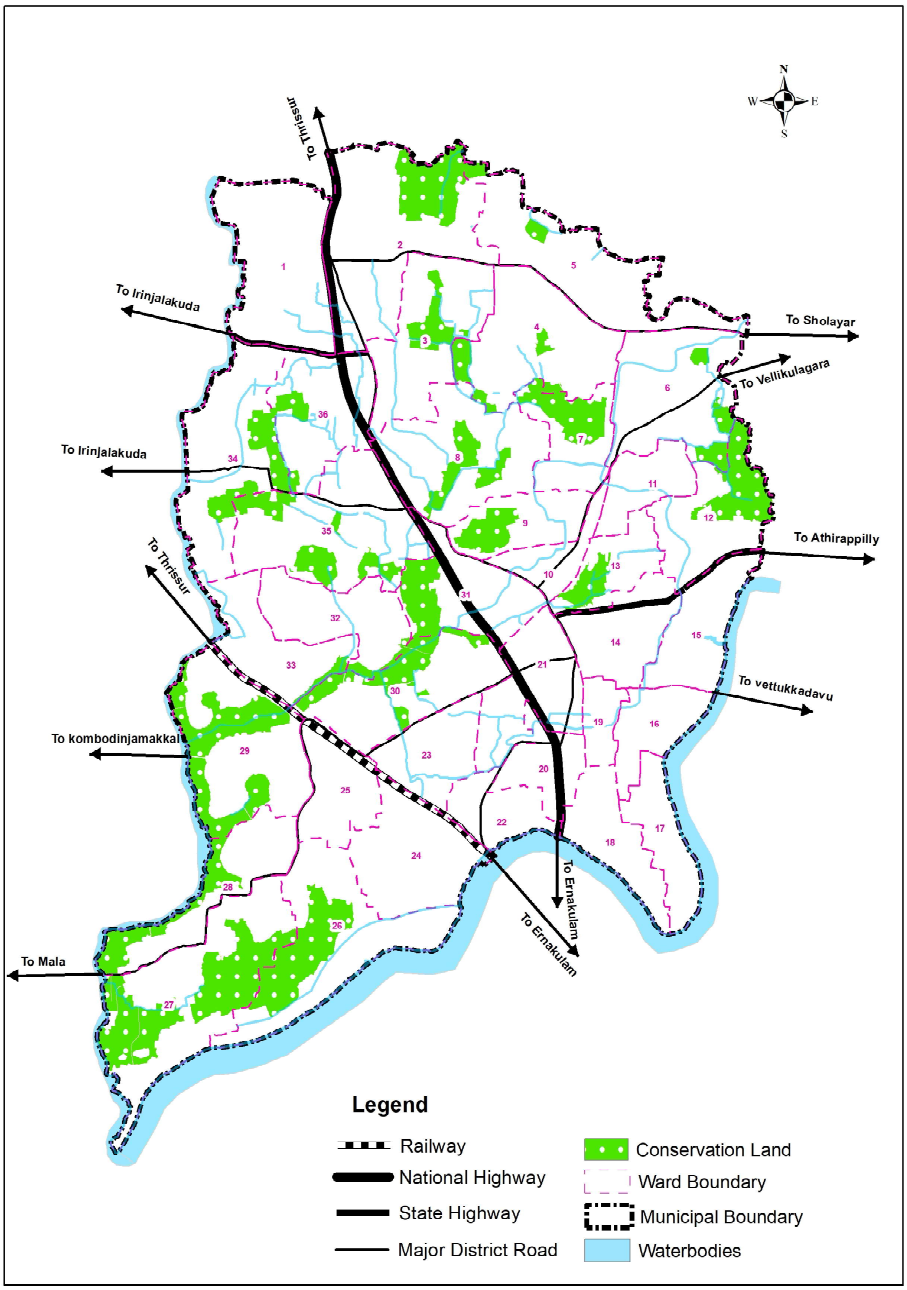


Fig 22.11 Distribution of ecologically important areas

22.2 Development Concept

Development concept is evolved by integrating all the above factors, which is pictorially represented in figure 22.12. The existing commercial ribbon development along the sides of old NH extending from St James hospital Jn to South Jn can be developed into a bean shaped CBD. Business and trading activities are expected to flourish in this area.

The areas having urban functional character located around the proposed CBD area can be categorized as multi functional area. Also the area near to the second order commercial node ie Potta comes under multi functional zone. The locations of major institutions and offices inside the municipality have been classified as public. The thrust on

the town due to the presence of technical education institutions in and around the area is proposed to be utilized byearmarking an area for a skill acquisition cum technical work centre named Techno centre. The areas envisioned for the development of the tourism facilitation potential available in the town is along the state highway 21. The existing industrially developed areas, the proposed industrial estate and such potential areas can be developed into industrial promotion areas to achieve the perspective of the district plan.

On the northern and southern side of the town residential and agricultural areas are found to be mixed in presence. The southern Portions lying adjacent to the river has a potential for agriculture and is also prone to natural disasters. The northern part also can be maintained to be a low density area. These areas are proposed as low density residential area. The remaining residential areas can be developed as such. The existing paddy lands are to be retained for future.

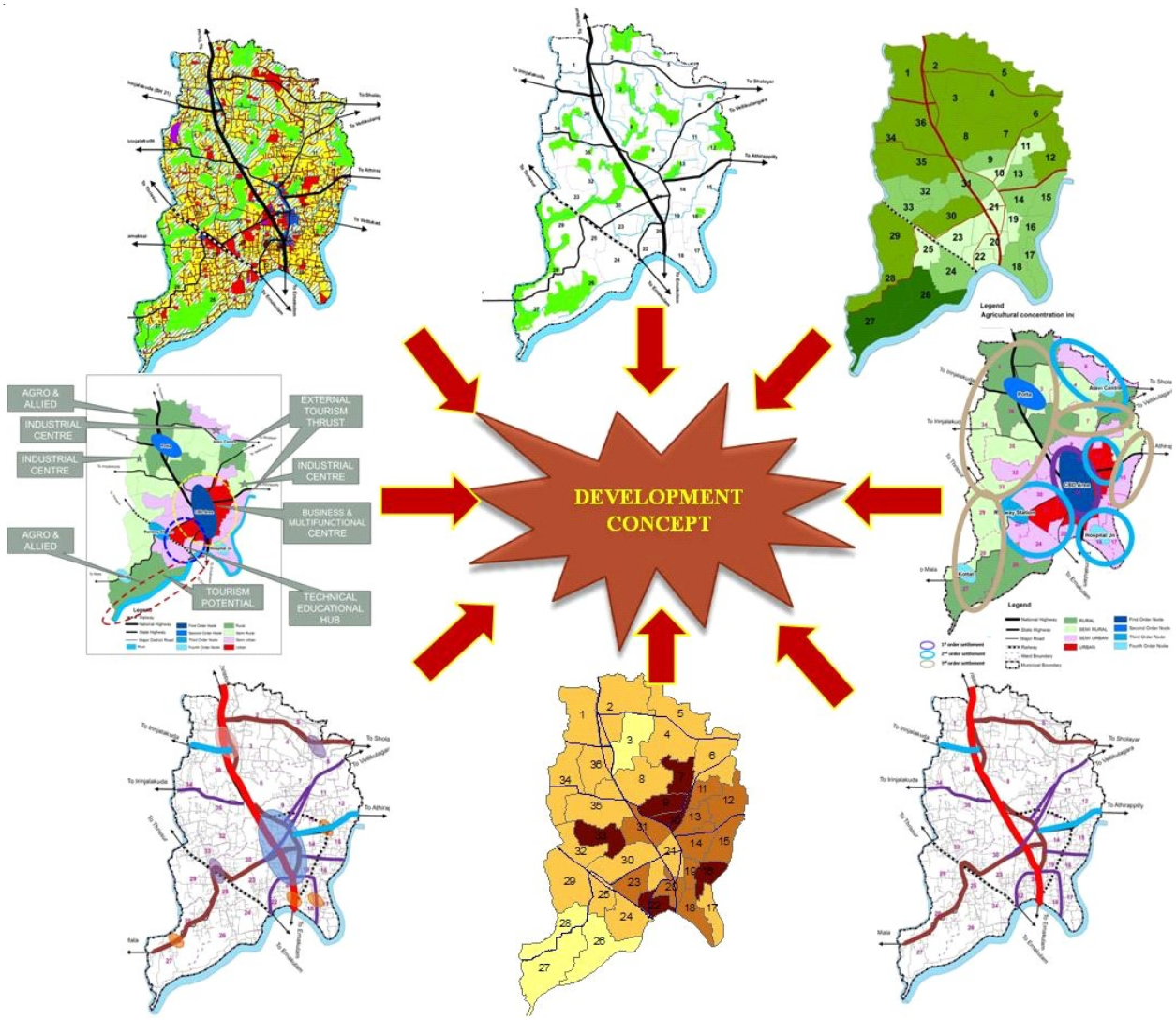


Fig 22.12 Formation of development concept for the town

Development concept formulated after integrating above discussed factors for a sustainable development is as shown in figure 22.13. As per development concept the town has been divided into the following policy zones as CBD, Multi functional, Public, Techno Centre , Tourism facilitation, Industrial promotion, Conservation Zone, Low Density Residential Area and High Density Residential Area.

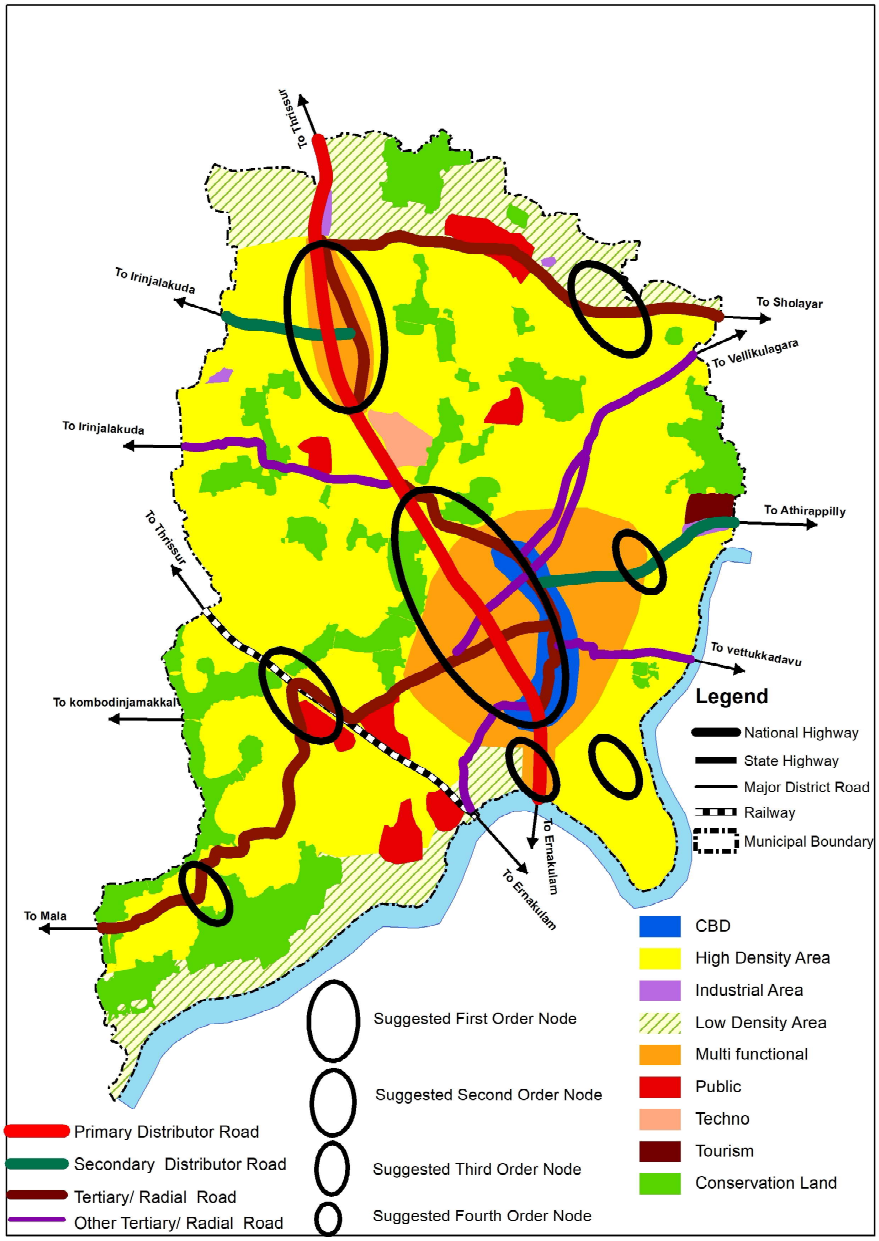


Fig 22.13 Development concept for the town

22.3 Smart city- A principle guideline

It is projected that urban India will contribute nearly 75% of the national GDP in the next 15 years. Cities are accordingly referred to as the engines of economic growth. There is accordingly a crying need for the cities to get smarter to handle this large-scale urbanization and finding new ways to manage complexity, increase efficiency, reduce expenses, and improve quality of life.

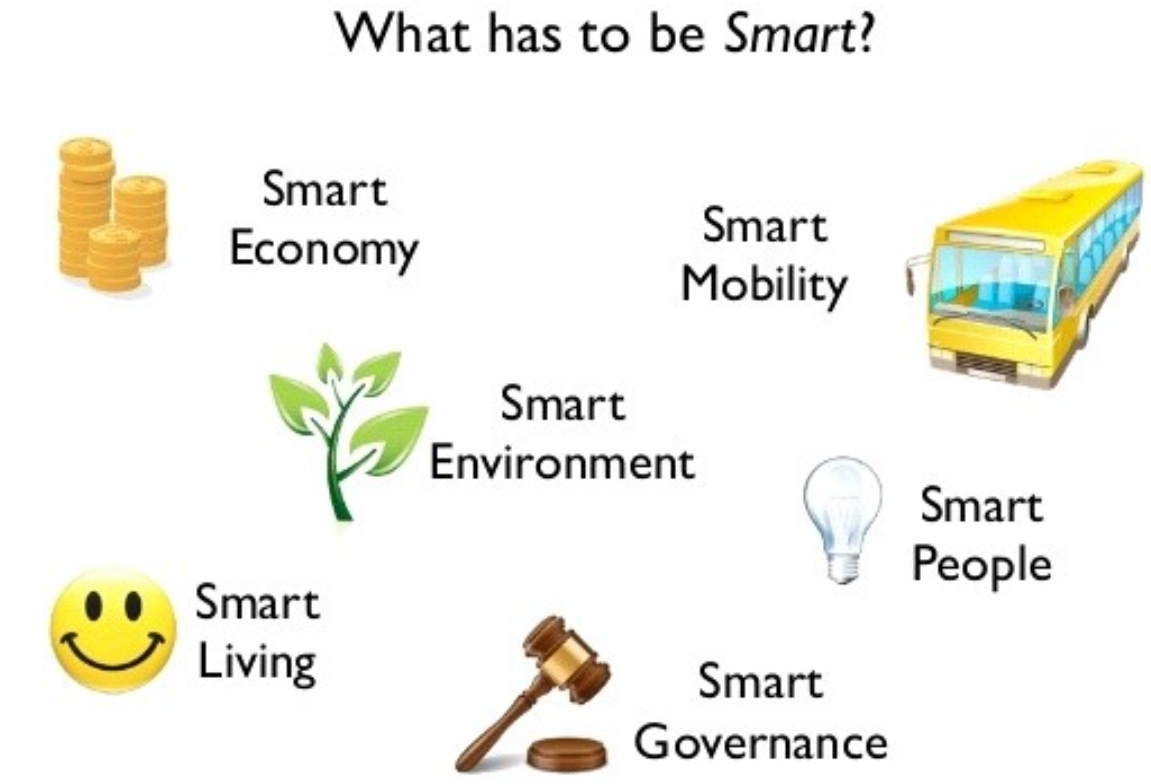
The smart cities should be able to provide good infrastructure such as water, sanitation, reliable utility services, health care, attract investments, transparent processes that make it easy to run a commercial activities, simple and online procedures for obtaining approvals, and various citizen centric services to make citizens feel safe and happy. Thus Master Plan consider Smart city as a general principle tool for each project, which gives a physical orientation for development activities.

A Smart City will generate options for a common man to pursue his / her livelihood and interests meaningfully. In this context:

- **Competitiveness** refers to a city's ability to create employment opportunities, attract investments and people. The ease of being able to do business and the quality of life it offers determines its competitiveness.
- **Sustainability** includes social sustainability, environmental sustainability and financial sustainability.
- **Quality of Life** includes safety and security, inclusiveness, entertainment, ease of seeking and obtaining public services, cost efficient health care, quality education, and opportunities for participation in governance.

Smart city aspects:

There are six key aspects that define a Smart City:

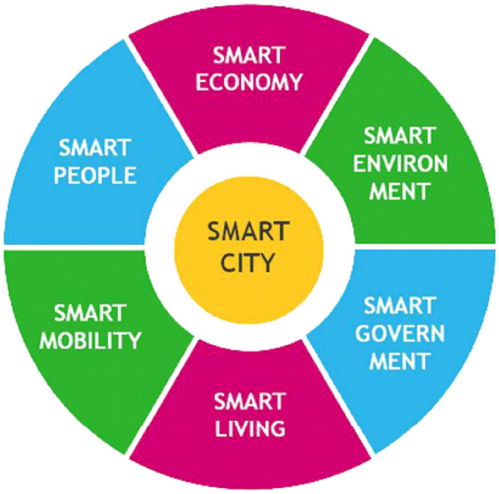


- Level of learning
- Social and ethnic plurality
- Creativity
- Cosmopolitanism / open mindedness
- Participation in public life
- Inclusive society
- Sharing of data
- Security and protection of sources
- Networking and communicating

- Innovative spirit
- Economic image and trademarks
- Productivity
- Cooperation among public and private sectors
- Development of social incubators
- Small and medium entrepreneurship
- Ability to transform

- Attractiveness of natural conditions
- Green buildings
- Green energy
- Green Urban planning
- Reduction of CO2 emission
- Use of renewable energy sources
- Monitoring on energy consumption
- Sustainable resource management

- Mixed – modal access
- Prioritized and non – motorized options
- Technologies to improve Urban mobility
- Integrated ICT
- Local and(inter-) National accessibility
- Sustainable
- Innovative
- safe



- Social cohesion
- Culturally vibrant and happy
- Healthy condition
- Individual safety
- Housing quality
- Education facilities
- Touristic attractivity
- Living – lab
- Crowdsourcing co-design

- Public participation in decision making
- Public and social services
- Transparent governance
- Enabling supply and demand side policy
- ICT and e-governance
- Political strategies and perspectives

Fig. 22.14 Key aspects of Smart city

Project proposals for shaping Chalakkudy as a smart city are as follows;

1. **Smart economy** – Competitiveness**:** The Smart Economy combines the successful elements of the enterprise economy and the innovation or 'ideas', while promoting a high-quality environment, improving energy security and promoting social cohesion. A key feature of this approach is building the innovation or 'ideas' component of the economy through the utilization of human capital - the knowledge, skills and creativity of people - and its ability and effectiveness in translating ideas into valuable processes, products and services. A second important aspect is the greening of the economy and the development of green enterprise.

   Major components of sustainable economic development are

- Productivity
- Diversity
- Stability of growth
- Energy
- Waste reduction, treatment and green spaces
- Equity
- Landuse - Transport integration

Some of the urban remunerative projects forging towards the concept of smart economy are: IT Park near Ashramam junction**,** Office complex at the vacant land of Cochin Pottery, Eco compact city project, Neera project**,** group organic farming, ornamental fish farming at Thanippara quarry, etc.

2. **Smart Mobility** – Transport and Information & Communication technology (ICT)**:**

- Promote a variety of transport options - Transit Oriented Development (TOD), public transport and last mile para - transport connectivity.
- Adopt unique design for bus stops, terminals etc.
- Priority for pedestrian movement and non - motorized vehicular traffic
- Provide pedestrian friendly utilities such as street furnishing, shaded areas, canopies, lighting facilities etc. Junction improvement including grade separation, traffic islands, turning radius etc. shall be considered.
- Intelligent Traffic Systems (ITS), sometimes called Intelligent Transportation Systems,

apply communications and information technology to provide solutions to congested highways as well as to other traffic control issues.

- Intelligent traffic management through installation of traffic signal control systems, cameras etc. at major junctions etc.
- Geometric design of roads - Planning is necessary to ensure that the roads designed matches the intentions regarding its function.
- Sharing of Freight and Passenger vehicles, non - motorised vehicles and pedestrian traffic may lead to congestion on roads. Hence restrictions can be brought in town centres to limit the growing pressure of traffic.
- Reduced and managed parking inside 10 - minute walk circle around town center

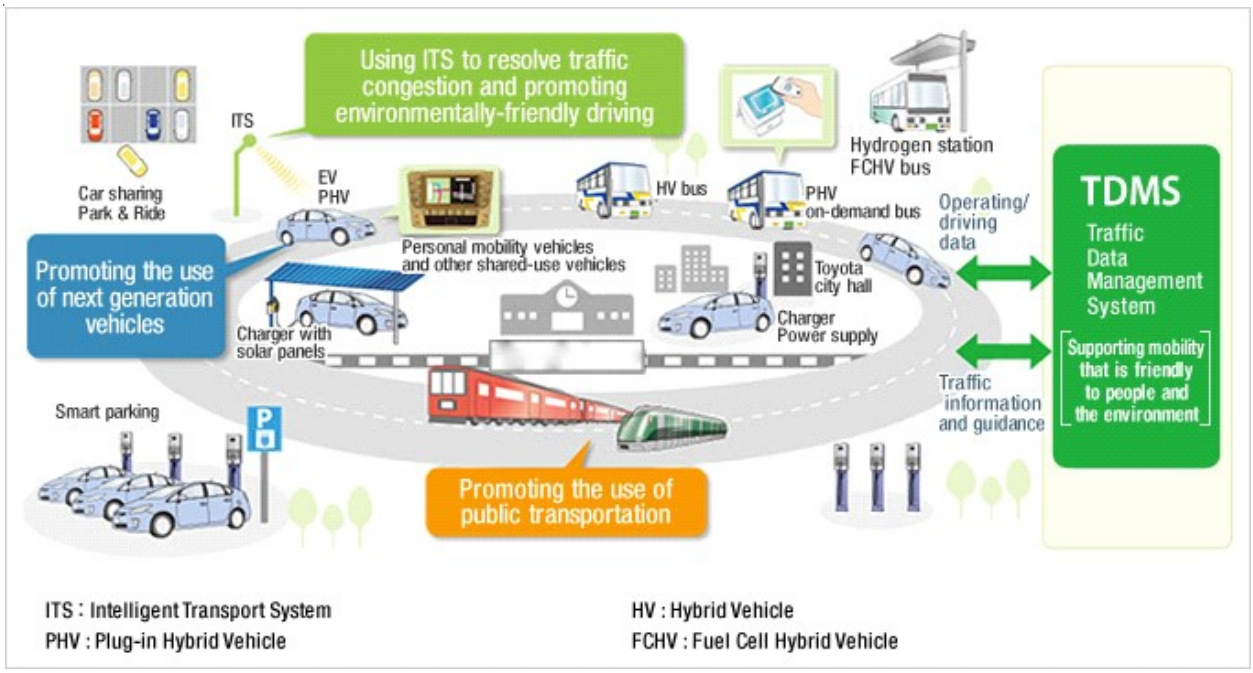


Fig. 22.15 Smart Mobility concept

3. **Smart Environment** – Natural resources **:** The purpose of "smart" environment is to reduce energy consumption and in some cases, creating positive energy - ratio with the principles of ecological design of ICT. In fact, the "smart" buildings, estimated to account for a significant part of reducing green house gas emissions through Information and Communication Technology (ICT). Conceptual drawing of green house is shown in figure 22.12.

ICT is used to reduce energy consumption in buildings in the following ways :

- In the short term: ICT will be used to ensure that existing and new buildings meet the

current and new requirements for energy efficiency.

- In the medium term: ICT tools can help in optimizing the design of the iron cycle and management of energy use during operation
- In the long run: ICT will promote and support new business - models and processes for the implementation of energy efficiency. The buildings will evolve from energy consumers to the "prosumer" (producer + consumer).

The idea is to connect and measure the energy consumption and factors influencing energy consumption in order to achieve maximum energy efficiency, reduce energy consumption in the building, and at the same time, increase the comfort and "livability" of the building.

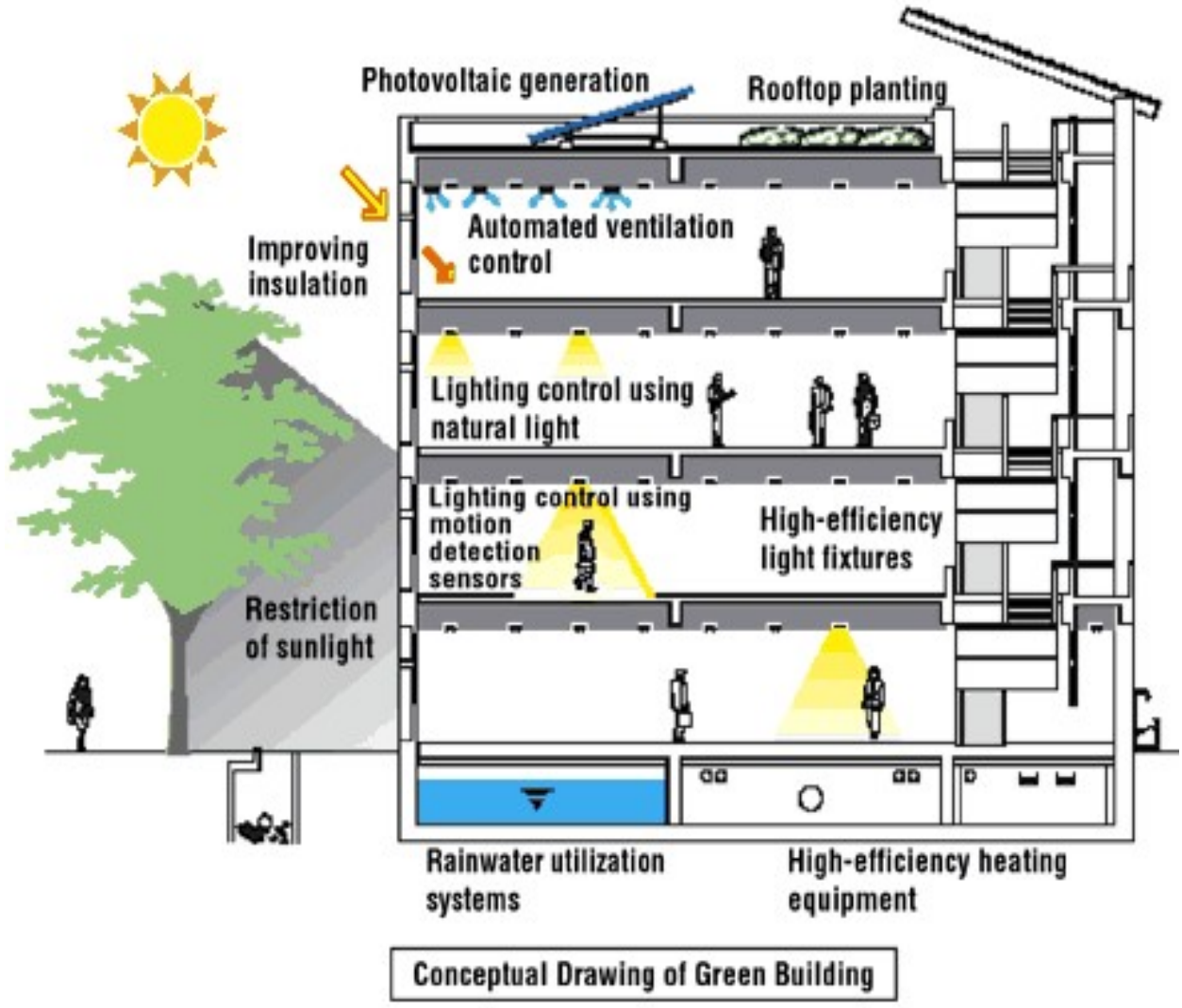


Fig. 22.16 Green building – conceptual drawing

Following are some of the other strategies to achieve the concept of smart building;

- Promotion of Green buildings by providing incentives, etc.
- Environmental Impact Assessment of projects
- Rainwater harvesting for all buildings
- Alternative and sustainable forms of energy to be promoted
- Efficient Waste Management to treat solid waste generated and offer various solutions to recycle shall be introduced. Various methods like landfill, Incineration/Combustion, Recovery and Recycling, Plasma gasification, Composting, Waste to Energy (Recover Energy), Avoidance/Waste Minimization may be adopted for waste disposal.
- Green urban planning
- Ecological awareness
- Sustainable resource management

4. **Smart People** – Social and human capital **:** It creates a sense of belonging, equity and this envisages the public participation opportunity with an Inclusive development approach. Projects like – Puzhayoram project, Eco compact city, etc. generates more chances for social interactions and there by creating a sense of social cohesiveness.

   Capacity Training - to make people smart enough to live in a whole new smarter world by educating them

   E-learning – town must have digital development plans for institutions, connectivity to internet in houses and institutions and promotion of e - learning programs.

5. **Smart Living** – Quality of life **:** Smart living refers to a better Quality of life. Multi sector integration and consideration is given to create a smart, healthy and vibrant society. Master plan is aimed at - standardized healthcare facilities accessible for all. Various strategies are adopted to ensure safe and healthy living conditions for all, such as;

- Maintenance and betterment of facilities at Thaluk hospital**,** Health institutions in Homeopathy sector to be promoted**,** Thrust given for - Vayomithram project**,** Mosquito eradication programme to be strengthened**,** Measures to ensure hotel sanitation and food safety**,** Three tier system for solid waste management**,** Adoption of proper septage system**,** Waste water treatment plant at Parayanthodu, Biogas plants to treat liquid wastes at market, etc.**,** Promotion of organic farming**,** Treated waste water to be channelized

towards the organic farming land at proposed – Puzhayoram project., Promotion of cycling and walking habit by creating adequate facilities, Provision for silent zones.

- Puzhayoram Agri tourism project is supposed to be one of the prestigious urban remunerative project that enhances the social condition and lifestyle of the inhabitants along with a vision to promote tourism, this provides an insight in to the historical importance of Chalakudy with respect to – trade and commerce, that have a moving tramway museum integrated with multi user activity with a design intention of – generating social interaction between the town and the outside world.

- Some of the other projects are; Children's park and play ground near cosmos club, Park and digital library at the vacant land of Cochin Pottery, Indoor stadium with sports academy near north junction.

6. **Smart Governance** – Participation **:** e - governance is the application of Information and Communication Technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand - alone systems and services between government-to-customer, government-to-business, government-to-government as well as back office processes and interactions within the entire government frame work. Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner.

- Friends centers for effective billing purposes
- GIS database for the town and spatial management
- Improvement of services through online
- library with digital facility at the vacant land of Cochin Potteries

CHAPTER 23
POLICIES AND STRATEGIES

Development Policies and Strategies include a plan of action and guidance for the implementation of development goals and objectives. It helps in efficient utilisation of potentials and minimizing the problems.

23.1 General development policy

General policies and strategies are worked out to achieve the set goals considering the development potential, need for physical development and need to preserve certain natural features, thereby bringing a synergy in the whole planning process. The following policies and strategies are carved with a view point of maintaining synchronisation with the district level policies and strategies. The general development policy is to stream line all the developmental activities as envisaged in the goals to attain an optimum level of growth

23.2 Sectorial policies and strategies

- Identification and distribution of available land among various land uses to ensure optimum use without any conflicts
- Introduce specific projects based on land availability and economic viability for the sustainable and equitable growth of the town
- Adopt 'Smart city' concept as a principle tool for the entire planning scheme

23.2.1 Trade & commerce sector

The trade and commerce sector can be strengthened to meet the customer's needs through the expansion of existing market and decentralising the town centre.

- Existing market need to be modernized and renovated.
- To provide separate loading and unloading facility
- To provide a separate sale counter for local products
- Adequate parking facilities to be ensured.
- Future development of the commercial centers at second order nodes,through effective land utilization measures.

- Upgradation of existing market area to a regional trade center and provide a new market at Potta
- Establishment of commercial centers, wholesale and retail trading centers to attract local as well as floating population to the town

23.2.2 Tourism sector

Chalakudy is a town situated in the banks of Chalakudy River. It is the base camp to travelers to Athirapilly and Vazhachal. Chalakudy is a prime destination of tourists, Chalakudy is blessed with scenic beauty and refreshing weather, has all the amenities of a suburb and is well connected to roads and railways.

- Development of tourism facilities including lodging areas, restaurants, info center, transportation facilities etc. to cater the needs of tourists to Athirappilly region
- Establish Chalakudy Riverfront development project for the protected development of the riverside

23.2.3 Agriculture and allied activities

Rejuvenation of agricultural and animal husbandry sector through optimum utilization of irrigational facilities and to attain self-sufficiency in the case of vegetable and milk production is the development policy of agricultural and allied activity sector.

Development strategies of the sector are:

- Establishment of agro service centre and labour bank
- Promotion and integration of homestead cultivation with animal husbandry sector.
- Optimum utilisation of the irrigational potentials.
- Establishment of the dairy farms,goatfarms,poultry farms.
- Rejuvenation of Agricultural and animal husbandry sector and Irrigational facility

23.2.4 Industrial sector

To develop the economic development corridor as envisaged in the IDDP by promoting technology based industries. The reservations for the growth of this secondary

sector based on the growth of background shall be ensured.

The development strategies are given below:-

- To develop and promote agriculture related industries.
- To encourage the woman entrepreneurs
- To encourage traditional industries and industries based on products from agriculture and allied sectors
- To develop IT based industrial park.
- To ensure parking/loading and unloading facilities.
- To ensure marketing activities.

23.2.5 Traffic and transportation

Equip transportation network to promote the efficient, rapid and safe movement of traffic. The policy is to develop alternative links to divert the by - passable traffic passing through town center. The diversion of roads generates new junction which will generate new commercial centres.

- Up gradation of existing major access roads
- Widening of major roads to hold the future traffic
- Junction improvements in the existing as well as proposed nodes.
- Provision of parking facilities in the core areas/Market area.
- Enhancing the share of public transport and to make the roads pedestrian friendly.
- Construction of the footpath, signage etc.
- Encourage transportation network to promote the efficient, rapid and safe movement of traffic
- Providing transportation facilities for decongestion of existing town centre

23.2.6 Solid Waste and Sanitation

Emerging need for the development of scientific disposal facility in the municipal area should be addressed.

- To renovate the existing solid waste treatment plant
- Establishment of waste water treatment plant
- Strengthening and expanding the existing drainage network.
- Ensure safe, adequate, and cost-effective water supply, waste treatment to all town residents

23.2.7 Health and education

Health service and education are the integral part of the essential social services required to support the system and to enhance the liability of the place. So basic facilities considering the future population is to be ensured. Also being a technical education hub, facilities for providing skill addition and job opportunities for students from institutions in and around the town can be developed.

- Provide a centre for providing skill addition and job opportunities for students
- Provide measures to reduce noise pollution nearby educational and health institutions
- Ensure proper infrastructural facilities for all hospitals and schools
- Improvement of the existing health and educational facilities

23.2.8 Other infrastructural facilities

The development policy in this sector is to transform the low population density area to high density area by providing the essential infrastructural facilities for decongestion of existing town centre. Identification and preservation of appropriate areas for future parks and play ground.

- To develop essential infrastructure facility
- Identification and preservation of appropriate areas for future parks and play ground
- Establishment of children's park and puzhayora road
- Establishment of public housing facility and upgrade substandard houses
- To protect and maintain the peaceful and attractive residential neighborhoods
- Immediate rehabilitation of people living beside canal side.

23.2.9 Environment

Conservation of ecologically important areas.

- To protect the environmentally sensitive areas
- To conserve all the water bodies in the town
- To conserve existing greenery and provide green belt for natural drains.

CHAPTER 24

PROJECTED REQUIREMENTS

Projections are based on the assumption that the past trends will continue to operate in future as well. The reliability of projection depends on the closeness it has with the reality. In general population projections are treated as predictions and never to be taken as final population. In the IDDP for Thrissur district, various zones are suggested to have induced growth rate of population. Hence the growth rate envisaged in IDDP is taken here as the policy growth rate and the corresponding requirements are worked out. This Chapter details out the projected population for the plan year and corresponding requirements

24.1 Population Projection

In IDDP for Thrissur district out of the various zones envisaged Chalakudy belongs to the economic development corridor. In this zone the trend based growth rate in 2021 will be 4.07% only. But the induced growth rate is estimated to be 7% which is the result of the planned intervention. Thus considering the growth rate of the policy zone the population in 2021 will be 52992. Expecting the same trend to continue, population for 2031 is worked out in 3 different methods.

24.1.1 Arithmetic Method

In this method, the difference between the populations of a place at a given interval is taken and added to a later date to get the future population with the same intervals.

YEAR	Population	Increase in population	Rate (r)
1971	37562		
1981	41894	4332	433.2
1991	45069	3175	317.5
2001	48380	3311	331.1
2011	49520	1140	114
Total		**11958**	**1195.8**
Average		**2989.5**	**298.95**

$$P_n = P_0 + rn$$

Where P_n is population in the nth year, P_0 is the population for base year, r is annual increase of population and n is the number of years. Using this method the projected population obtained is given below.

Population for 2021 =52992

Population for 2031 =55499

24.1.2 Geometric Increase Method

In this method the ratio between decadal populations are taken as common and the least available population figure multiplied by the common ratio as the projected population total for the period after an equal interval.

YEAR	Population	Increase in population	Rate(r)
1971	37562		
1981	41894	4332	1.115
1991	45069	3175	1.076
2001	48380	3311	1.073
2011	49520	1140	1.024
Total			**4.288**
Average			**1.072**

Population for 2021 = 53087

Population for 2031 = 56911

24.1.3 Incremental Increase Method

In this method, the average increase / decrease during the past decades are taken and the average incremental increase is added for each consecutive decade.

YEAR	Population	Increase in population	Incremental increase
1971	37562		
1981	41894	4332	
1991	45069	3175	-1157
2001	48380	3311	136
2011	49520	1140	-2171
2021	52992	3472	2332
Total		**15430**	**-860**
Average		**3086**	**-215**

Population at nth decade, $P_n = P_0 +$ (Average increase + Incremental increase x No. of decades)
Where P_n = Population at the end of nth decade and P_0 = Base year population

Population for 2021 = 52992

Population for 2031 = 53371

The average population of the town for the year 2031 is 55261, now considering **a** floating population of 5000 which will be attracted to the town for a multiple of reasons; the total population for assessing the requirements may be taken as 62000

Floating population in 2031	5000
Average projected population	55261
Total population	60261

24.2 Anticipated Changes in Occupational Pattern

The economic activities govern the occupational structure of the area. The expected population by 2031 is 55261. With the introduction of new development projects as per the new master plan, economic base will be strengthened which will further result in the increase of job opportunities in town area. From the trend based projected work force participation rate for Chalakudy Town area in figure 24.1, it can be found that the WPR reaches about 40.46% by the end of 2031.

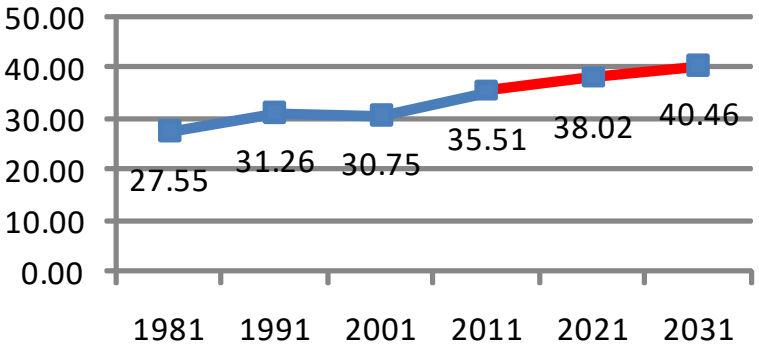


Fig. 24.1 Anticipated WPR

24.3 Requirement of Physical Infrastructure

Requirements in Chalakudy Town area for 2031 according to standard guidelines are given below.

1. Trade and Commerce

Chalakudy Town is a medium town. As per the UDPFI guidelines the trade and commercial area requirement for a medium sized town is estimated as 0.24 ha to 0.32 ha per 1000 persons. In 2011 the trade and commercial area is 4.66 ha and it has to be increased to 21 ha by the year 2031.

2. Water supply

The total quantity of water supplied in the town area is about 8.89 MLD. The requirement of water as per UDPFI guide lines for domestic uses is 135-150 lpcd. A minimum of 150 lpcd per person is considered as the future demand. From this the future demand for domestic purpose is estimated to be 9.039 MLD. So there is a need for additional requirements in the case of sources as well as distribution.

3. Energy

One 11 KV substation for 15,000 population is taken as the general standard for all

categories of towns. One 110 KV Substation is existing there. One LPG godown for 15000 populations and 1 petrol pump for 150 Ha of gross residential area and 1 for 40 Ha of industrial area are the requirements. The demand for 2031 is given in Table 24.1

Table 24.1 Power requirement for the year 2031

Category	Existing Nos	Standards recommended	Demand 2032
11KV substation	One 110KV substation	1 for 15,000 persons	4 Nos
LPG Godowns	1	1 for 40-50,000persons	2
Petrol pumps	6	1 for 150Ha of gross residential and 1 for 40 Ha of industrial area	6 Nos

4. Solid waste management

Being a medium town the quantity of waste generated per day as per UDPFI guideline is estimated as 0.375 kg. For projected population of 2031, the quantity of waste generated will be 20.72 Tons/day. As per the present situation the waste generation is 8 tons/day and collection is 3.5 tons/day. If the present solid waste management system continues for the coming years, in 2031 an additional of 17.22 ton has to be treated per day. Hence an efficient waste management system has to be adopted for waste disposal. If three level waste management system is adopted then waste from public places and markets only will have to be treated.

5. Education and health

The educational facilities and health facilities required as per the planning standard for the year 2031 is given in Table 24.2 and 24.3

Table 24.2 Future requirement in Education sector

Sl No	Category	Existing Nos	Standards recommended	Demand 2031	Shortage
1	High School	10	1/13000 population	5	nil
2.	HSS	7	1/13000 population	5	nil
3.	Arts & Science	3	1/80,000 population	1	nil
4.	Polytechnic	0	1/36,000 population	2	2
5.	I.T.C/I.T.I	5	1/35,000 population	2	nil
6.	T.T.I	1	1/1,20,000 population	1	nil
7.	Professional college	3	1/2,50,000 population	1	nil

Table 24.3 Future requirement in Health sector

Category	No. of Beds	Existing	Standard recommends	Demand 2031	Shortage
General Hospital	500	150	1 for 2.5 lakh population	-	
Intermediate Hospital (Category A)	200	1	1 for 1 lakh population	-	
Intermediate Hospital (Category B)	80	4	1 for 1 lakh population	-	
Poly-Clinic		-	1 for 1 lakh population	-	
Nursing home, Child welfare and Maternity centre	30	1	1 for 0.45 lakh population	1	nil
Dispensary		5	1 for 0.15 lakh population	4	nil

Recreational use

Recreational use includes parks, playfields and other open spaces. For a medium town the recreational space should be provided at the rate of 1.4-1.6 ha/1000 persons.Chalakudy Town currently has 0.3 sq.km area for recreational facilities, i.e1.09% of the total area. In 2031, the recreational space to be provided is about 1 sq.km

6. Socio cultural facilities

Table 24.4 Planning standards for Socio- Cultural facilities

Category	Standard as per UDPFI	Existing	Demand 2031	Shortage
Community Room	1 for 5000 population	11	13	2
Community Hall	1 for 15000 population	4	4	_
Library	1 for 15000 population	2	_	_
Rrcreational Club	1 for 1 Lakh population	5	_	_
Music,dance & drama centre	1 for 1 Lakh population	1	_	_
Meditation & spiritual center	1 for 1 Lakh population	1	_	_
Social-cultural centre	1 for 10 Lakh population	_	_	_

CHAPTER 25
SECTORAL PROPOSALS

This chapter deals with the various development proposals suggested for Chalakudy municipal area. The major development sectors identified are Trade and Commerce, Tourism and Agricultural activities. Apart from these the suggestions in the various service sectors are also discussed.

25.1 Industry

As per the development concept of the district, Chalakudy town is in the Economic Development corridor (EDC). In this zone industrial activities are more expected. It has to play a key role to trigger the economic growth and generating employment opportunities. This zone is suitable for heavy/medium scale industries, industrial parks, IT & Info park.

The National Highway 544 running centrally through Chalakudy will boost the industrial activities in the municipal area. So it is essential to promote more industrial activities on the sides of the NH 544 . The various proposals are as under.

25.1.1 Rejuvanate the Existing Industrial Estate as IT Park

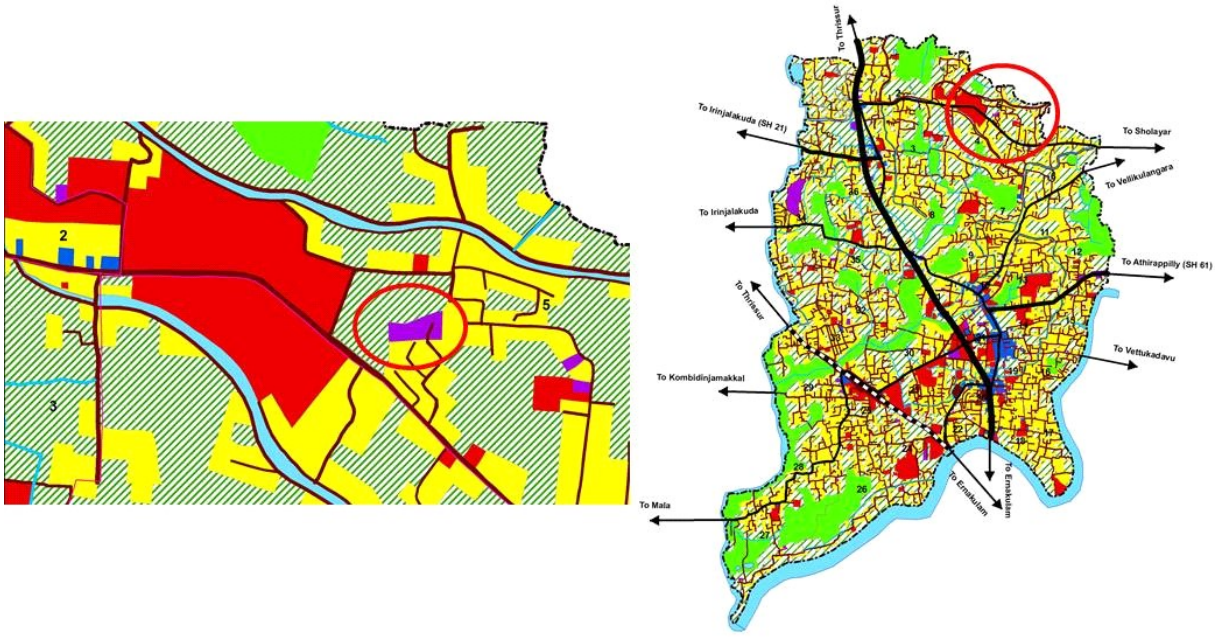


Fig 25.1 Location of the IT Park

The modern world is driven by technology. The advancement of information technology (IT) has revolutionised the way we live, work, and do business. Revitilization of existing Industrial Estate at Potta as I T Park will create new jobs, attract foreign capital and increase local and national competitiveness and also play a significant role in the development of local economies.



25.1.3 IT Park

Information Technology is one among the fastest growing economic activities. The application and impact of information technology is felt in almost all walks of life. This can provide transparency in all dealings and it even helps in improving the standard of living of the people. From the analysis we can see that a trend in shifting the work pattern to IT sector, is prevalent here. In line with the Govt. IT policy, an IT park is suggested here with eco-friendly design considerations. The proposal of new IT Park is near Ashramam junction with the area of 2.36 Ha and the location is shown in figure 25.2.

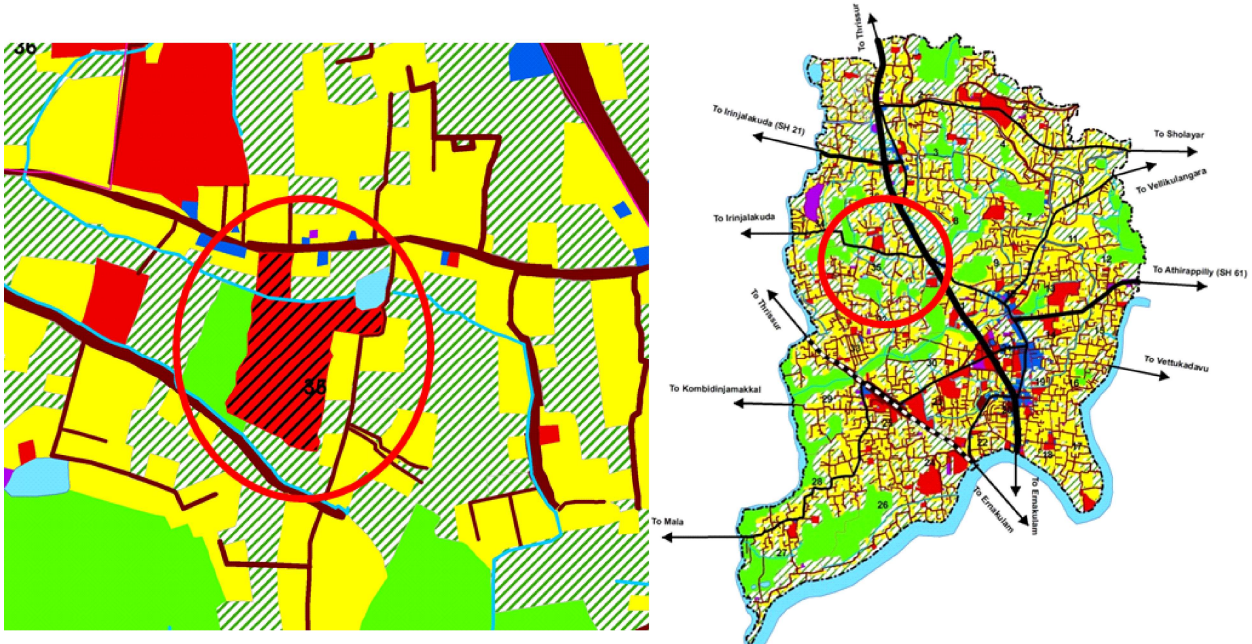


Fig 25.2 Location of the proposed IT park

25.2 Tourism

Chalakudy as such is not an active tourist centre, but it is a transit point to a handful of hot tourist spots in Kerala. It is suggested to utilize this aspect to make it a revenue generating factor.

25.2.1 Tourism facilitation areas

Chalakkudy town holds immense opportunities in acting as a base camp for tourists visiting Athirappally and Vazhachal waterfalls. Tourist facilitation area, proposed beside the SH 21 passing through Chalakkudy town heading towards these waterfalls , holds a high potential for the town.

Such a tourist facility is expected to have wide range of amenities and infrastructure for the travelers. Being specific, it should comprise of motels, hotels, restaurants, convenience stores,entertainment and recreational facilities like cinema halls, children parks, parking facilities, prayer rooms, rest rooms, diverse accommodation facilities like dormitories or homestay. This is expected to provide a safe and homely ambience for both the domestic and foreign travelers. Economic activities triggered by such developments will support the municipality financially. The proposal also highlights the importance of zero waste development in an eco-friendly manner.



Fig 25.3 Tourism Facilitation centre-Conceptual view

25.2.2 One Day Tourism Circuit

Chalakudy has got a great scope for tourism;its outrageous scenic beauty attracts tourists, from different parts of the country as well as foreigners. Chalakudy Master Plan with PPP encourages ecotourism projects. Fig 25.4 shows the current tourism circuit map

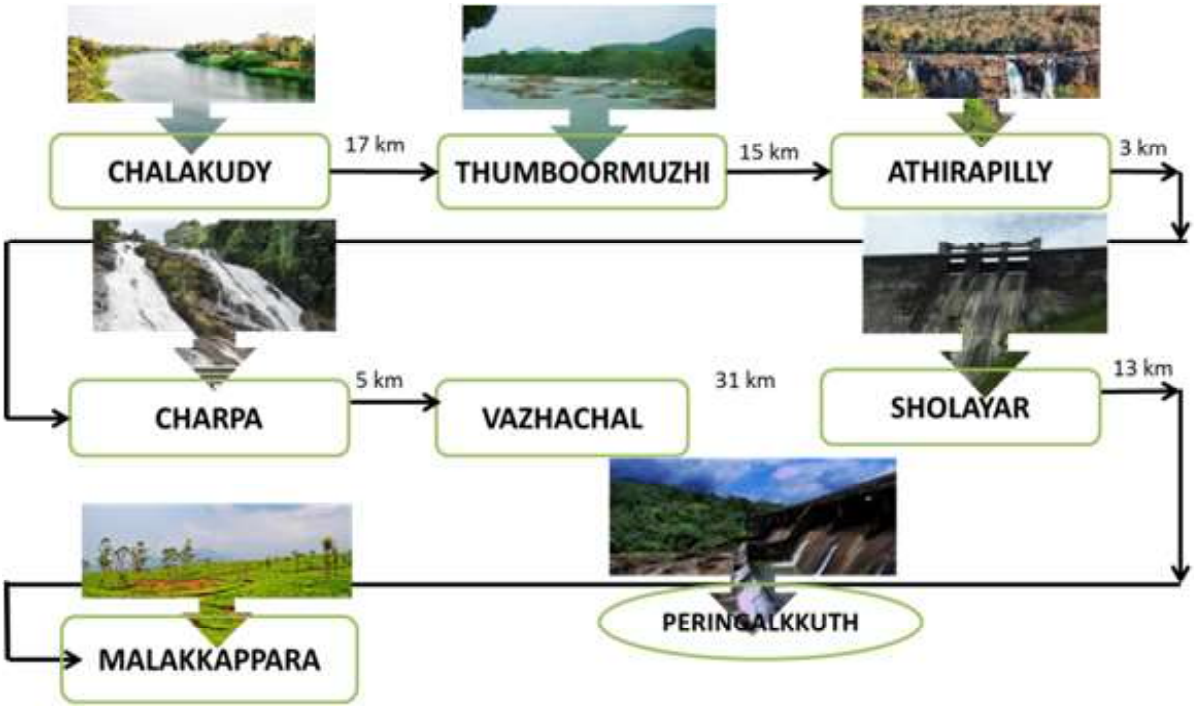


Fig 25.4 Location of tourism potential areas around Chalakudy

Water theme Parks:

1 Dream World Water Park is just 8 Kms from Chalakudy.

2 Silver storm Water Park, is at a distance of 20 Kms from Chalakudy.





3 **Thumpoormuzhi**: Thumpoormuzhy Mini Dam, waterfall and Garden is at a distance of 16 Kms from Chalakudy.

4 **Athirapally waterfalls**: The fury and beauty of the waterfalls are best watched during monsoon when it attains a phenomenal 400 meters width and falls 80 feet deep down on the waiting rocks. The whispering breeze, the lovely sylvan rain forests and the river rich in mineral makes an exhilarating experience for any visitor – the destination is just 30 Kms from Chalakudy.



5 **Charpa falls**: Charpafallsplunges on to the road during monsoon is a sight to watch, which is at a distance of 33 Kms from Chalakudy.



6 **Vazhachal falls**: Vazhachal falls through not as voluminous as Athirapilly falls will take one to pristine beauty with nature's own landscaping. With the abundant flora and even herbal plantation maintained by the forest department, Vazhachal is a botanist's treasure trove that is at a distance of 35 Kms from Chalakudy.



7 **PeringalkuthHydel Tourism & Boating** : Deep in the forest,Peringalkuth dam has opened for Hydel Tourism. One could enjoy the greenery with exciting thrill of the Speed Boat, the serene voyage in the Drifting Coffee shop or the self-driven Pedal. ,



Boats, and can spot wild animal, this hydel tourism spot is at a distance of 44 Kms from Chalakudy.



8 **Vachumaram :** An ideal lake formation in the midst of the forest, at a distance of 52 Kms from Chalakudy.

9 **Malakkappara :** Tea garden hill station, It is an unexplored tourist destination, inspite of its rich in natural beauty. It's famous for the Tea Estate of the Tata Company in its area. The roads turn misty, during the early morning hours and the sky becomes clearer as the day descends. The forests of this area are thrilling and amazing. There are several small waterfalls and natural spots. This exciting hill station is at a distance of 80 Kms from Chalakudy.



25.3 Agriculture and allied activities

The economy of the town has one of its bases on agriculture. The aim is to make Agriculture prosperous, socially inclusive and environmentally friendly. The focus will be on increasing the competitiveness and productivity in agriculture so as to raise, the income and the well- being of the people. Sustainable agriculture practices with specific strategies taking in to account topography, soil characteristic, climate, pests and local availability of inputs should be introduced. The major proposals in this sector are as follows

25.3.1 Retain the existing paddy fields

As per the existing land use plan nearly 375 hectare land is under the paddy cultivation. The proposal aims at the conservation of the existing rice fields. Paddy cultivation shall be enhanced by introducing group farming and making use of labour bank and rural employment program, Workers can make cultivation profitable by introducing high yield seeds, manures and by adopting new farming techniques and machineries. Availability of laborers can be increased by providing subsidies, training programme etc. Along with this improving the productivity of paddy is also aimed at. The highest productivity of 4000Kg/ hectare in the region of Alur is aimed at to be achieved., ,

25.3.2 Plant new coconut trees

The productivity of the coconut cultivation shows a negative trend in the town. It is mainly because of the old and damaged trees. For better results, the removal and replantation programme should be implemented through the clusters in municipal area. The replanting will also help to prevent the occurrence of the weather - related Mite disease which affects the palms, during extended hot spells of weather.

- Phases:- Alavicentre, Pottachira, Vazhakunnu, Thachudaparambu, Kottat area, Railway station area, Boundary of Chalakudy river.

25.3.3 Banana cultivation

Increase area and the production of the banana cultivation to achieve the productivity higher than the surrounding local bodies, since the soil has been found to be ideal for such crops. It can be taken forward as homestead cultivation.

25.3.4 Promotion of homestead cultivation and Poly House Technology

It is a proposal of promoting homestead cultivation and the poly house technology with the help of the agriculture department. Homestead vegetable garden helps to produce organically grown safe food for us. The evil effects of strong pesticides can be avoided by spending a few hours in nutritional garden. A nutritional garden protected by live fences of Chekkurmanis (madhuracheera) or other spreading vegetables can accommodate several fruits and vegetables. Familiar organic cultivation practices and organic pest control methods will help to produce rich food rather than expensivefood. The main purpose of polyhouse technology is to provide a good conducive environment for successfully nurturing high quality plants round the year. The growing of fruits, flowers and vegetables under polyhouse is common practice in developed countries. Greenhouse structures are commonly used to grow off - season horticultural crops when the conditions are not favorable for their normal growing. Greenhouse ensures continuous supply of fruits, vegetables and flowers throughout the year. Farmers can directly sell their products proudly





before other farmers and get 90-95% enhanced price.

25.3.5 Proposal of Agro service centre

It is proposed to establish an agro service centre at Kottat. The objectives of the agro service centre shall be to organise, promote and develop marketing, processing and storage of agricultural, horticultural and forest produce, The distribution of agricultural machinery, implements and other inputs, wholesale or retail as the case may be, Assistance for technical advice in agricultural production for the promotion and the working of its members, setting up of cooperative marketing, processing and supply societies in the town.

25.3.6 Various proposals in animal Husbandry sectors are;

- **Proposal of Dairy farm in Kottat-**

  Kottat is the agricultural pocket in the municipal area, where vast expenses of paddy is kept idle. Apart of this may be utilised for establishing a dairy farm. This initiative can bring together the farmers in this sector and can ensure a decent income for them. Also this can lead to self - sufficiency in this field. Here also sustainable practices can be aimed at. Integration of crop and livestock operations is highly complementary, both biologically and economically .

- **Fodder cultivation along the sides of natural drains and irrigation canal and river side**

  Fodder cultivation has become an immediate necessity for promoting dairy development activities since hay the prime feed for cattle is seemingly unavailable locally, due to the decline of paddy cultivation. Small scale fodder cultivation at individual level is to be promoted in all the possible homesteads with approximate size of 30 cents. Assistance from the Animal husbandry department is available for this. For a reasonably large scale fodder cultivation, plantations can be established along the river side by individuals or dairy development society, similar to the 'Koipurammodel' (A model fodder cultivation initiative by Koipuram milk society on the banks of river Pampa).

Assistance in the mechanization and harvesting are given by the department. Training will also be imparted in the activities to be carried out.

25.3.7 Irrigation proposals

Along with the development proposals of sustainable nature, several suggestions for irrigation of cultivated land are given. A new lift irrigation project based on the pond at Thanippara can water the lands in the north western part of the town where scarcity is experienced. Also a check dam along the river at Kottat is suggested so as to water the cultivated land in the Kottat area. The renovation of Alapilly pond in the north eastern portion is suggested to be used as a source of watering nearly 500 hectares of cultivated land. The location of Thanippara scheme and Alapilly pond are shown in figure 25.5

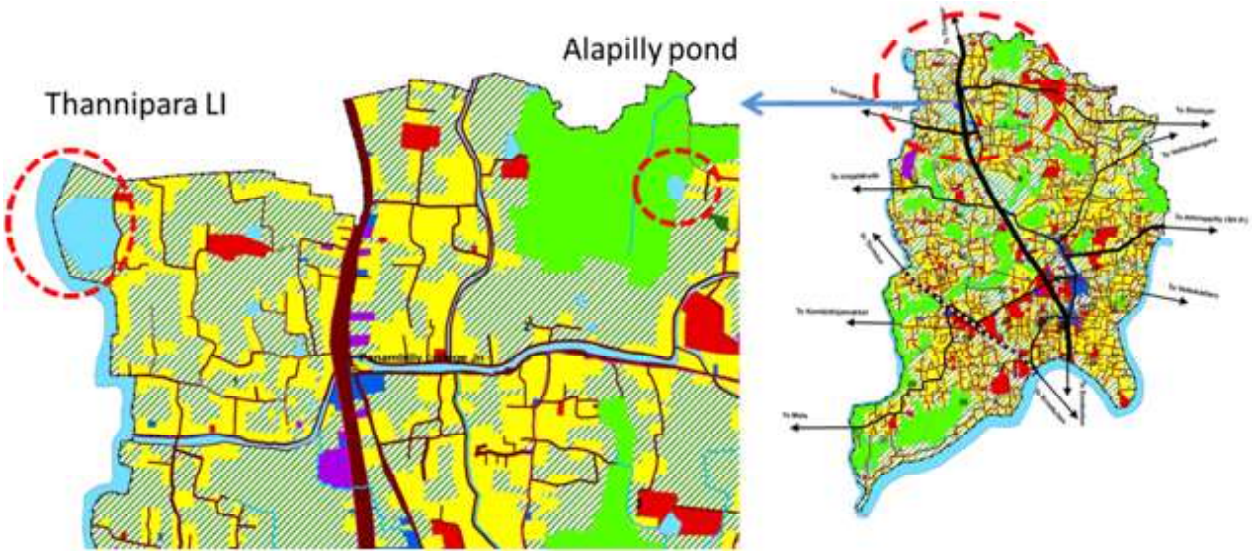


Fig 25.5 Location of Thanippara LI scheme and Alapilly Pond

25.4 Trade and Commerce

Chalakudy is a significant commercial and trade centre at both local and regional level and is proposed to function as a service centre for surrounding regions. In the development vision formulated for Chalakudy, there is a strategical move to streamline and focus the commercial and related activities. Also out of the developments in the background sectors, trade and related facilities will have to be enhanced. Also for decongesting the town centre, commercial opportunities at various other nodes need to be introduced.

25.4.1 Renovation of existing market

The existing market area can be planned to accommodate all the infrastructural facilities like separate parking area, loading and unloading facilities, and distinct area for vegetable, fish and meat markets. The existing market is redesigned to have loading and unloading facilities, parking space, separate counters for vegetables, grocery, meat etc. The market will then provide a means for the farmers to sell the home grown organic vegetables in the sail counter. It can even be owned by the farmers them selves, to get rid of the mediators and increase the profit. The new design is shown in fig 25.6

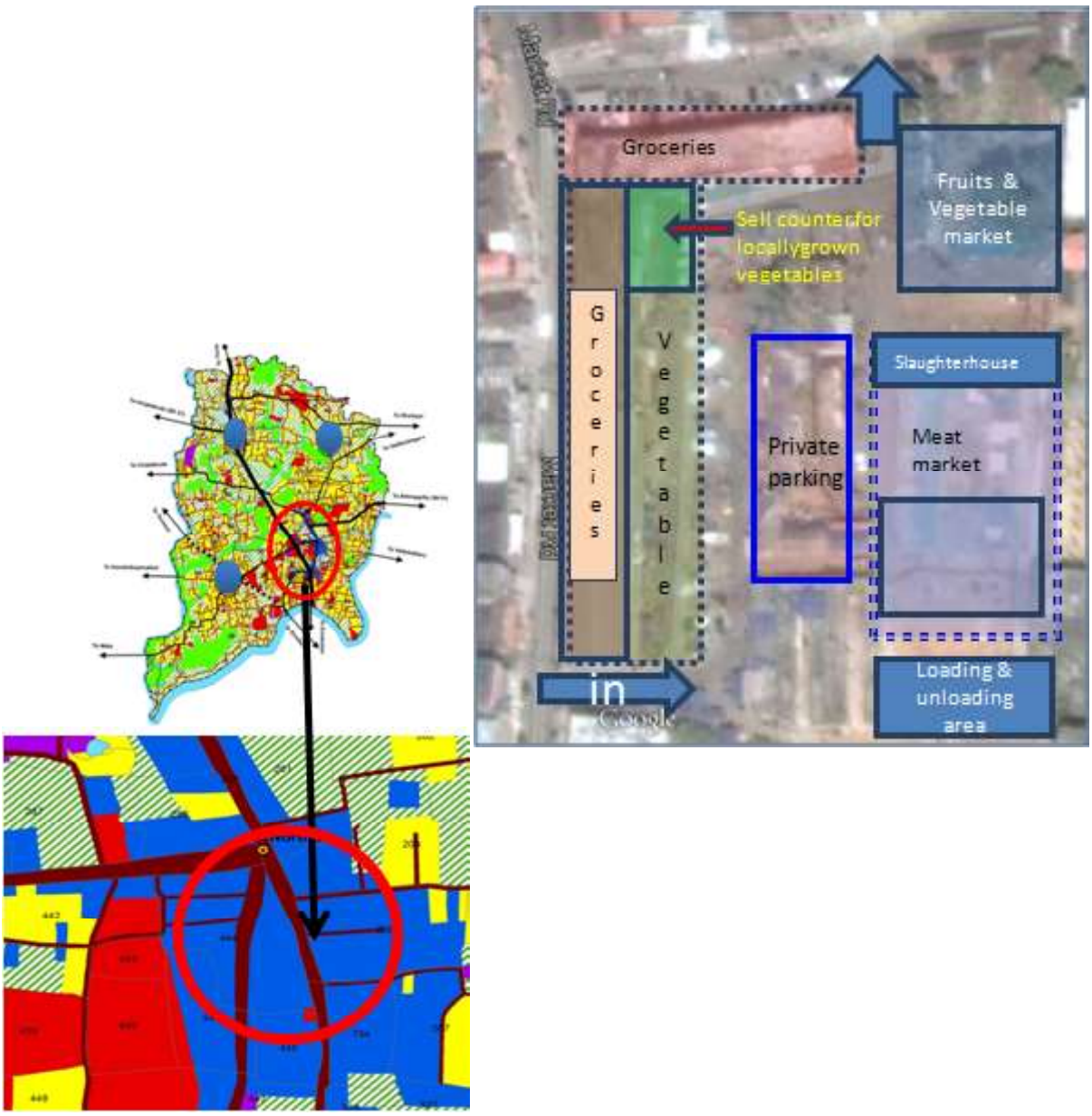


Fig 25.6 Location of Chalakudy market and suggested design

25.4.2 Mini market at Potta

This market is very useful for the trading activity of the people from eastern and northern sides of the municipal area and adjacent local bodies. There is a need of shifting the present cattle market to Potta because of the present pathetic condition of cattle market. The ideal location for this new market is shown in figure 25.7

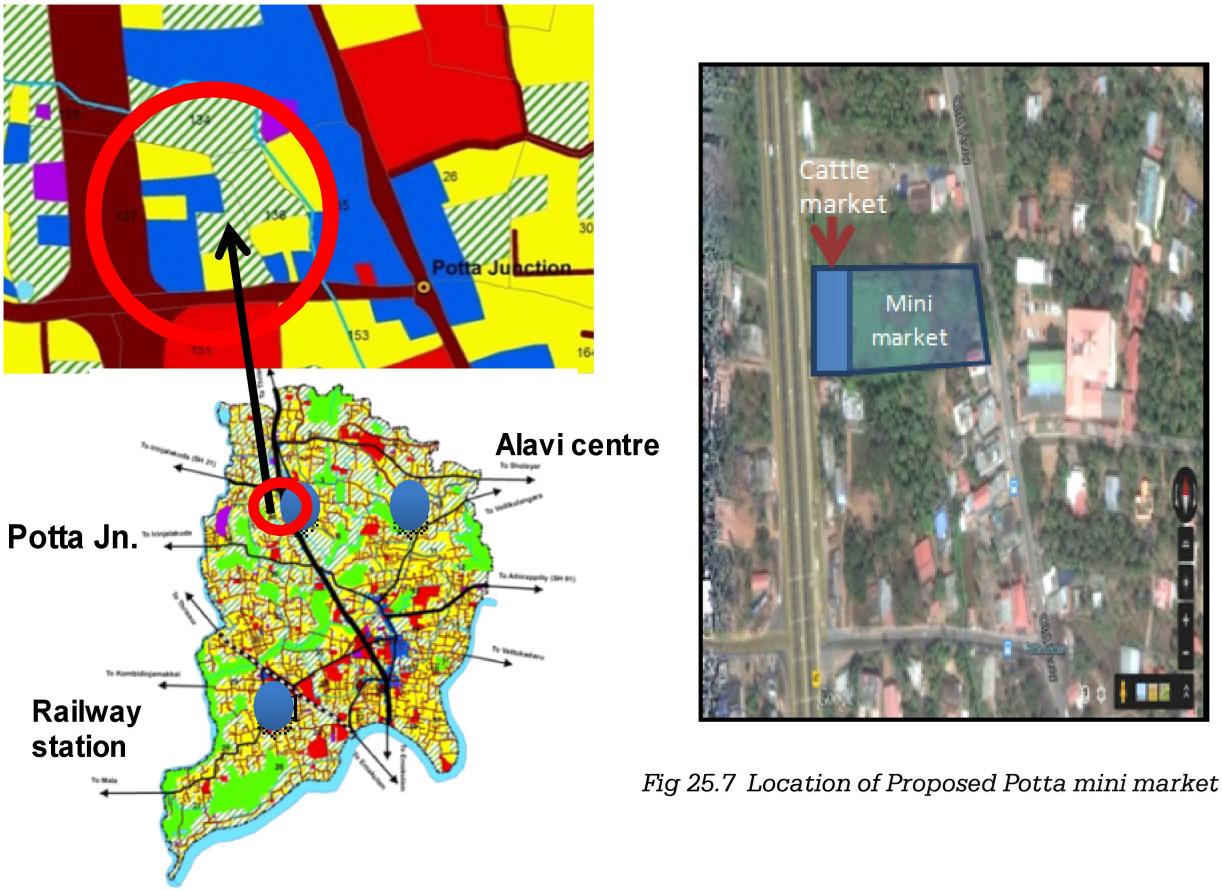


Fig 25.7 Location of Proposed Potta mini market

25.4.3 Development of commercial area and the new commercial nodes

Commercial area can be developed along the sides of the NH 544 and commercial centers at Potta, Alavi centre, Railway station area, Hospital jn, and Kottat jn. These new commercial centres are to be designed and improved by including in junction improvement schemes.

25.5 Drinking water

Access to safe drinking water is important as a health and development issue at the national, regional and local level. Investments in water supply schemes can yield an economic benefit, as it outweighs the adverse effects of health threats. The various proposals in the drinking water are detailed here:

1. **Vettukadavu water supply Scheme**

It is a proposal for a water supply scheme in vettukadavu based on Chalakudy river. The project aims to collect water from Chalakudy river and facilitate adequate supply to the market and town centre. The suggested location is shown in figure 25.8



Fig 25.8 Location of Vettukadavu WSS

2. Rain water harvesting

Even though Chalakkudy town is sufficient in terms of drinking water availability, measures should be taken for recharge of ground water as a futuristic approach. A policy level decision is required to promote the rain water harvesting as a massive movement. It can be done in two ways; individual level and community level. Rain water harvest tanks, rain water pit, measures to check the speed of surface run off are the some of the strategies which can be adopted.

3. The other major site specific proposals

- Thanippara quarry consist of three water ponds. Water available through this can be used for various projects. A new lift irrigation project can water the lands in the north western part of the town where scarcity is experienced. In addition to this master plan is envisioning an ornamental fish farming in one of the remaining two sources. This viable project can be a remunerative one to the revenue of the Local Self Government. The last one may be used for Agricultural purpose within the nearby areas.

- Proper awareness campaign has to be made to prevent contamination of wells.

- Replacement of old and damaged pipe system.

- Conservation of ponds and wells is a solution against the future water scarcity. The

ponds which can be conserved are Eerarkulam, Kozhikulam, Kummayakulam and Kumaranchirakulam. Locations of these ponds are shown in figure 25.9

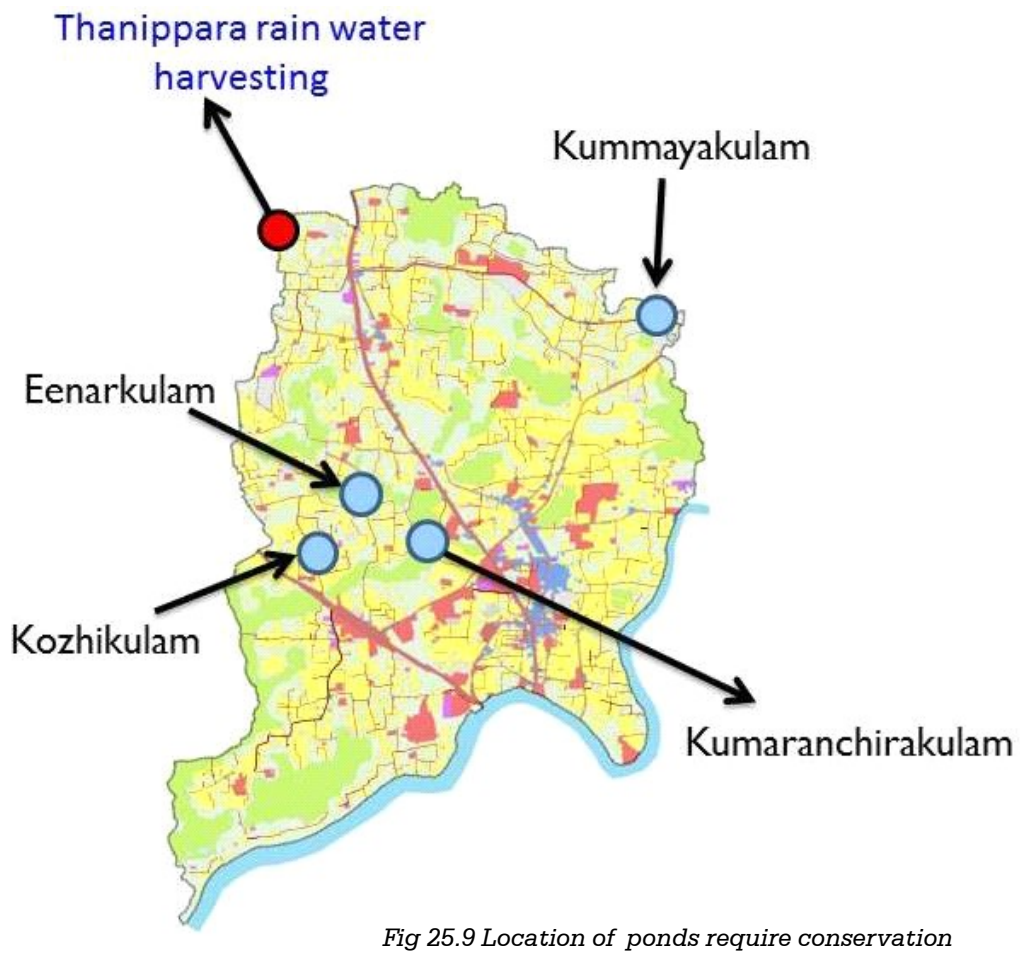


Fig 25.9 Location of ponds require conservation

25.6 Sanitation

For social and economic development, adequate sanitation facilities with good hygiene and safe water are essential. Lack of proper sanitation leads to many diseases and also for the spreading of many diseases. This is a severe threat to the developing countries. A few proposals are discussed here to solve the issue of sanitation and hygiene.

25.6.1 Solid waste disposal

Chalakudy town has a solid waste treatment plant at Potta. This plant is insufficient and lack modernized machineries.

At present the waste generated is 8T/day in the central areas of the town. But only about 3.5T/day is being processed. For projected population of 2031, the quantity of waste generated will be 20.72 Tons / day out of which the wards with increased population density (which are suggested to be densified) should be focused. The waste generated from these areas should be totally collected and treated. For this existing treatment plant is to be improved with modern machineries and a new treatment plant is also suggested at Kottat area.

A door-to-door collection of waste from households and other establishments must be introduced within the town with the participation of Self-help groups such as Kudumbasree. The basic collection operation can be divided into two elements – primary and secondary collection.

Primary collection is managed door-to-door on a daily basis by waste collectors. Households are encouraged to segregate their waste in two fractions – bio degradable and non-biodegradable. Further, the waste collectors makes a further initial separation into recyclable, inert and bio degradable waste before storing the waste. From the primary collection carts or tricycles waste is transferred directly to trucks or tractor trolleys. As soon as bins are full they are transferred to waste processing centres for composting, recycling and ultimately disposal. Through out the secondary collection system biodegradable, recyclable and inert waste is managed separately. In the case of commercial and industrial establishment an initial treatment should be done by the generators themselves. As per district development plan, decentralised approach in waste disposal shall be made and the programmes like pipe composting, Bio gas plants, Community bio gas plants at colonies etc. can be implemented.

Apart from the above Proposal for solid waste treatment, following suggestions are also made

- Adequate measures are to be adopted for disposal of e-waste
- **Suchitwa colony**- Special attention need to be given to colony areas by providing not only household latrines but for soakage pits, garbage pits, covered drainage and clean drinking water. Phasing for the proposal of *"Suchitwa colony "*
  - *VR puram (1st phase),*
  - *52 pura colony (2nd phase)*
- Proposal of e-toilets at *Private bus standjunction,North Jnand South Jn.*

25.6.2 Septage

Septage is the liquid and solid material pumped from a septic tank, cesspool, or other primary treatment source. Since Chalakudy is a town area, higher order facilities are required for the treatment of septage. As per IDDP Thrissur, a central location is identified for the district in Puthukkad Grama Panchayat. It is situated very near to the town under consideration. Primarily treated septage at its source of generation can be shifted to Puthukkad. Facilities should be made available for the effective collection and transportation

aspects.

25.6.3 Drainage and Sewerage System

Chalakudy town has a fairly good natural drainage system which is now been blocked due to garbage deposition and encroachment of adjoining landowners. Master Plan for Chalakudy envisages an effective drainage and sewerage system for Chalakudy. CBD region generates the maximum waste when compared to rest of the region and the quantity of grey water and septage to be generated in 2041 is calculated as 6.324 mld and 10.411kld respectively as per the "Liquid Waste Mangement Plan of Chalakkudy ",prepared by LSGD Planning. Most of the households in the town dispose their grey water with in the plot itself. So the grey water from commercial, industrial, institutional and other sources are mainly need to treat to yield a healthy community and hence an effective sewerage system is proposed for CBD region.

The main objectives are;

- To treat the drainage water and to channelize the entire drainage in to Parayanthodu
- To interlink the missing connections of the existing drainage channels

Since CBD region generates the maximum of waste, this region is given a separate treatment plant at ward 19, and for the rest of the region the existing natural drains are cleared for free flow according to the topographical slope and the entire system is inter connected and all types of buildings should incorporate In situ liquid waste treatment plant and special provisions for reusing treated waste water as per KMBR (Rule 79).

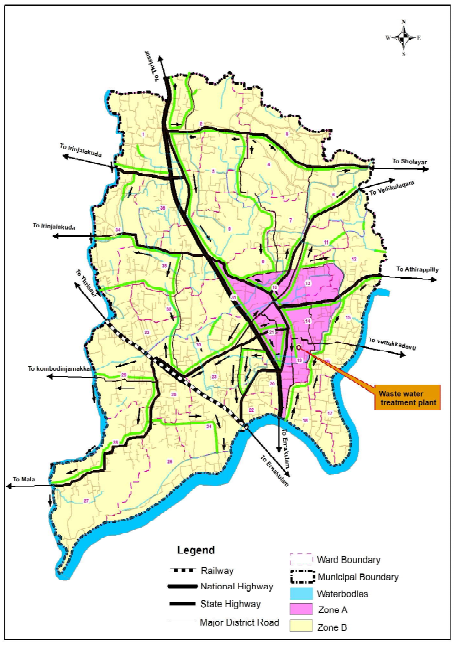


Fig 25.10 Tentative map showing drainage & sewage systems for Chalakudy town

A tentative plan for sewage and drainage management of Chalakudy town has to be prepared. A detailed plan should be prepared before the execution of the project considering the local topography, built area, natural flow of water etc. Treatment of waste water from town can be done at proposed treatment plant and allow passing to the Parayanthodu or can be used for other irrigation purposes. The suggested location of waste water treatment plant is shown in figure 25.10.

25.7 Air pollution

Chalakkudy town center is hectic in terms of large number of vehicle movements, which itself cause for air pollution at an alarming rate. Tree cladding for public buildings and social forestry efforts can minimize extend of air pollution. Planting of trees as an avenue in either side of the roads may also be considered for higher hierarchical order roads.

25.8 Health

According to the planning standards, health facilities available in the town are seen to be adequate. But Chalakudy, being a Taluk head quarter town has to serve as a regional level facilitator. Major problems in the sector are insufficient facilities in the hospitals. So the main proposal in the health sector is to modernize the existing Taluk hospital, Ayurvedic hospital and the Homeo hospital.

Various other suggestions are as follows

- In-patient wing of every hospital shall be strengthened to accommodate the future needs.
- A laboratory with modern facilities shall be introduced in the Govt.sector.
- Accessibility and bus service to the Taluk hospital should be developed.
- Health institutions in homoeopathy sector shall be promoted.
- Periodical maintenance of hospitals shall be made.
- Facility to provide essential medicines at low price to economically weaker section.
- Health centers should be provided according to the needs.
- Mosquito eradication programme shall be strengthened and periodical monitoring shall be made.
- Hotel sanitation and food safety should be ensured.

Vayomithram

Vayomithram medical camp is organized with free medical treatment for citizen above 65 years old. The project also offers palliative care for patients and free ambulance services. The project has three exclusive help desks in Thrissur. Chalakkudy town should utilize this service at its full extend.

25.9 Education

25.9.1 Suggested proposals

- Ensure sanitation facilities in all the schools.
- Awareness about drugs and intoxicant abuse in schools
- Public transportation facilities exclusive for children shall be extended to the schools.
- Children's parks shall be introduced in the primary schools
- School buses should conduct service especially to the interior areas
- The student police scheme shall be strengthened in schools.

25.10 Power

The energy position in the town is seen commensurating with the requirement. It is presumed that the routine expansion programme of the KSEB shall be adequately covering the increased energy demand in the town. Other proposals in this sector are

- 3.11 KV sub stations are proposed in the planning area to meet the future emerging demand due to the expansion in various sectors
- Usage of non-conventional energy shall be encouraged.
- Fire wood system must be encouraged. More trees should be planted to make fire wood.
- Usage of solar energy has to be promoted. Solar system must be provided in all government and educational institutions and other public places. With the phasing as mentioned below.
    - ♦ Municipal office (Phase 1)
    - ♦ Government offices (Phase 2)
    - ♦ Public buildings (Phase 3)

The power distributing system shall be strengthened to reduce distribution loss.

- Bio-mass and Bio-gas production should be increased.
- Usage of petroleum and petroleum products should be discouraged.
- Usage of new energy efficient equipment's like LED should be promoted.
- Awareness and training programme should be encouraged for the sustainable use of energy.
- Provision for high mast light in Thaluk hospital junction
- Underground electric cabling may be considered in the commercial area near old NH.

25.11 Housing

25.11.1 Housing area near to Panampilly College

In Chalakkudy, Housing condition in general is promising, but certain pockets still have substandard condition prevailing, which needs to be eradicated. In order to eradicate the substandard houses and also ensuring houses for homeless people, the Municipality has acquired about an extent of 100 cent land near to Panampilly College.This area is earmarked for housing and is shown in figure 25.11.

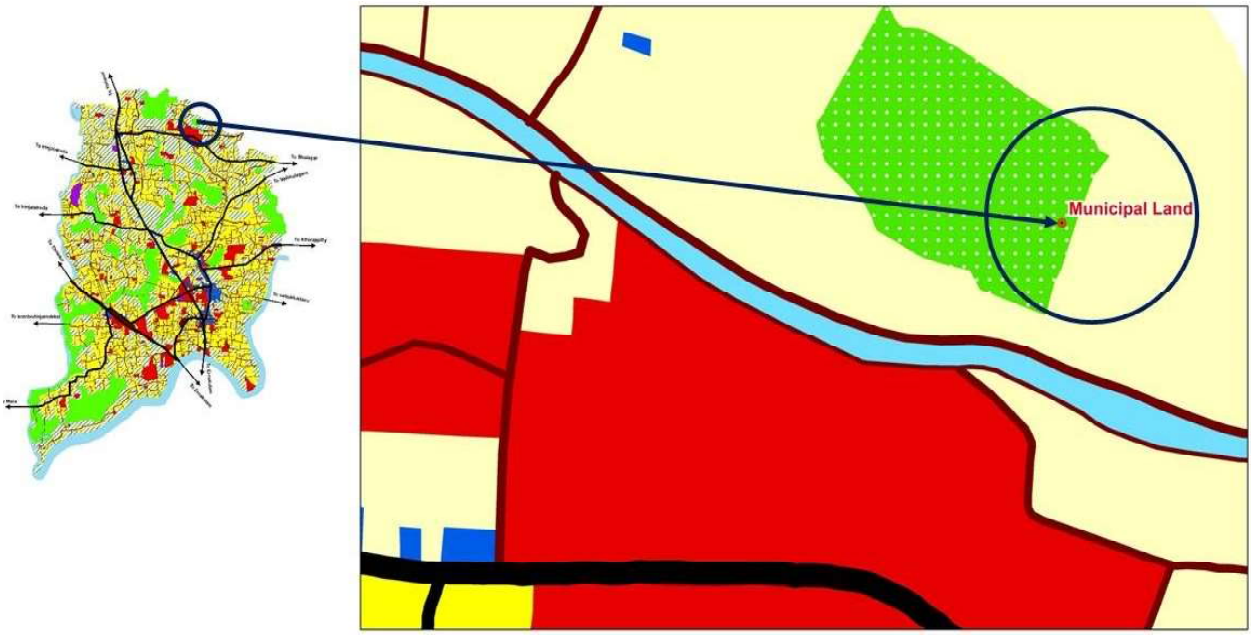


Fig 25.11 Location of Special Zone for Housing Area

25.11.2 Renovation or improvements of substandard housing areas

Substandard housing areas identified after conducting slum survey has to be renovated by providing more infrastructural facilities. In addition to this rain water harvesting and biogas plant has to be established in these colonies

25.12 Infrastructure Facilities

25.12.1 Proposals for office complex, library and Park

The vacant land of the Cochin Potteries can be utilised for various purposes like Park, Library building and Office complex. Present library building is very congested and lack modernized facilities. So it is necessary to propose a new library building with digital library and other modernised facilities.The suggested location is shown in figure 25.12.



Fig 25.12 Suggested location for new Library and Office Complex

25.12.2 Children's Park and play ground

A proposal is made for a children's park at the vacant land owned by the municipality near Cosmo clubin 0.566 Ha area of land. This serves the surrounding areas. Also proposal for play grounds in various places of the town such as Potta, Railway station area and Kottat is put forward.

25.12.3 Indoor stadium with sports academy

An indoor stadium with sports academy is proposed near the north junction having area of 1.24 Ha. The location of stadium is shown in figure 25.13

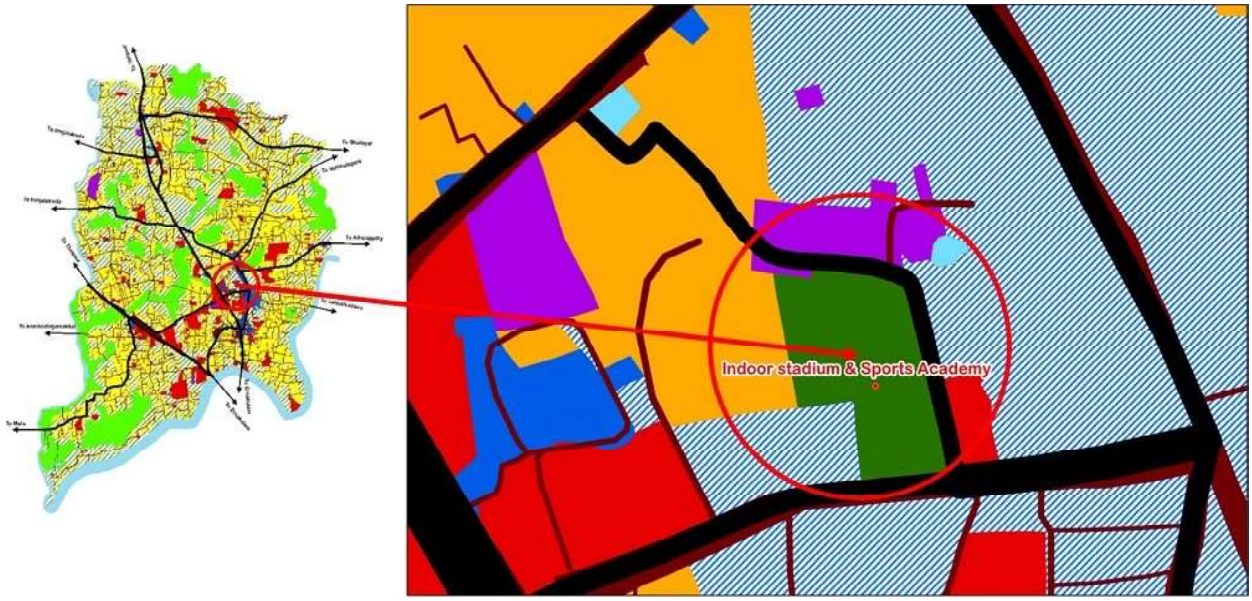


Fig 25.13 Suggested location for Indoor stadium with sports academy

25.12.4 Thanippara rock garden

Existing quarry at Thanippara can be converted into a dream projects called 'Thanippara rock garden'. This recreation facility will be materialized with features such as viewing decks to the ponds, watch tower which capture the beauty of agricultural lands of Mala, Alur panchayats, Rock climbing areas with sufficient safety measures, Communal sculptures for the customization of the space, Night lighting, Ornamental fishing, Covered shelters with eco- friendly materials, Snack counters, Car parking areas, Toilet units etc. with an extent of 5.343 Ha. The location of the projects is shown figure 25.14

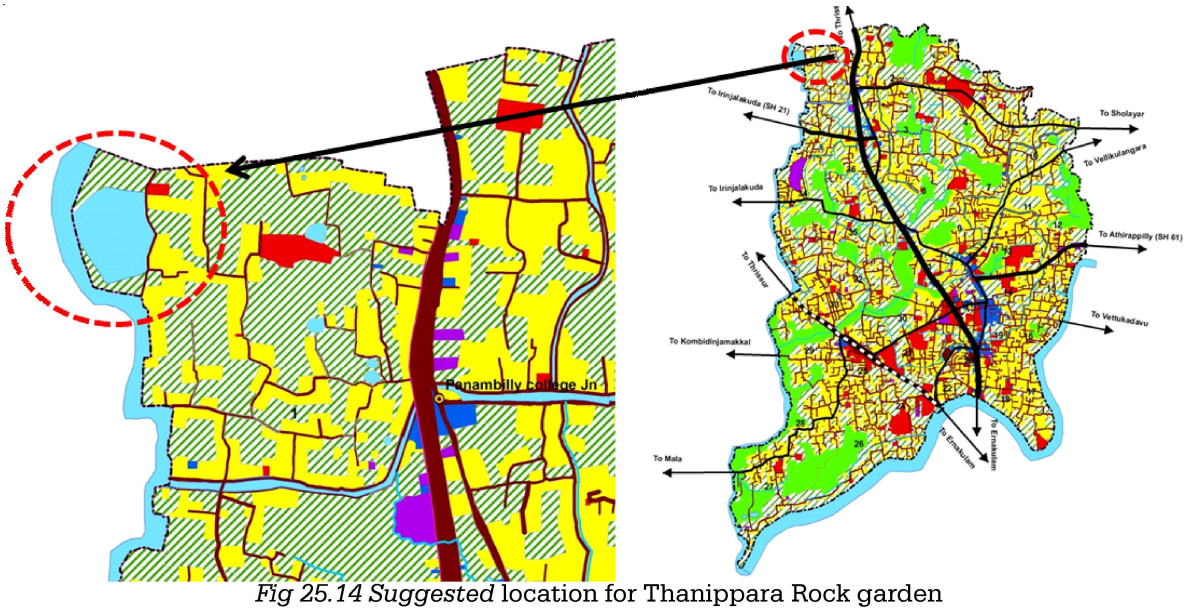


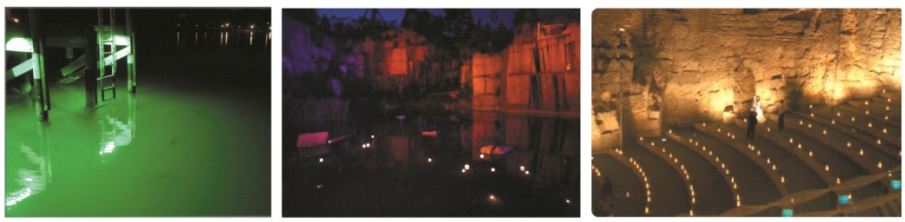
Fig 25.14 Suggested location for Thanippara Rock garden



View deck



Communal sculptures & Rock climbing areas



Night lighting

Fig 25.15 Design elements for Thanippara Rock garden

25.13 Social welfare

A sound social welfare system is essential for the stability and sustainable development of the society. Quality welfare services do not only support the vulnerable, disadvantaged and people in need but also enhance mutual help and support there by preventing the occurrence of social problems.

25.13.1 Pakalveedu

Existing social centres and its activities should be developed for old age people with modern facilities like TV, Internet, library etc. Nearly 4 numbers of such facilities are here to be rejuvenated and made functional.

Other major proposals are discussed below

- Public sanitation facilities/ comfort station and E-toilets should be developed and maintained at public places.
- Anganavadi and its activities must be developed. Plots and buildings for Anganavadi should be provided for each ward.
- Training centre should be provided for the betterment of physically challenged persons.
- Encourage the activities of JagrathaSamithi and Kudumbasree.

25.14 SC/ST Community

VR Puram, Urumbankunnu, 52 pura, 24 pura and Ambedkar colony are the five declared SC colonies in the municipality area. Required basic infrastructure facilities are available within the SC colonies. Mutual connectivity of these colonies is required for the integrated development of SC communities. The major proposals are;

- Connectivity and accessibility to the SC colonies should be developed.
- Development of modern sanitation system in the SC colonies.
- Parks, library, modernised cemetery, Public well with pump system and open spaces should be provided as part of the colony beautification.
- Schools and other educational institutions in VR Puram SC colony should be developed by providing all facilities and accessibility.
- Mini market should be provided for the marketing of local products and traditional products from SC colonies.

25.15 People's Participation

Different levels of discussions were held with the stake holders of the town regarding the existing scenario and expected developments in different sectors. The aspirations obtained from the people were recorded and reviewed while formulating the major proposals for the development of the area.

25.16 Need and justification of proposals

Master plan envisages an integrated development of Chalakudy town with a sustainable approach. Detailed analysis of the existing status of the town and future requirements were carried out through extensive surveys. Chalakudy town can be called as residential town along with agricultural activities.

- The town lies in the Economic Development Corridor (EDC) between Ernakulam and Thrissur which is being developed as one of the major service town. Concentration of commercial development along the old NH with a slow outgrowth.
- When analyzing the development trend pattern one of the major changes came since the

  - Flyover at Chalakudy south, playing a significant role in diverting the through traffic from the rest of the city traffic reducing the congestion to an extent.

- Present land use conversions shows a gradual change from existing conditions to commercial development with provisions for service sector.
- It is being developed as one of the major service town for neighbouring rural LSGI's. These areas depend on Chalakudy town for various services such as health, education, job, transportation and recreational facilities, commercial activities etc.

The Master plan stipulates a steady and restricted urbanization pattern, encourages sustainable development giving thrust to Trade and commerce, tourism and agriculture activities. To ensure a decent standard of living and quality of life for its people as envisaged in the development vision and to cater to the trend of urbanization seen in the town, proposals were included in the service sectors like better connectivity, improved solid waste treatment plant, sewage and drainage systems, more recreation facilities and other highly essential infrastructure.

A study on the financial condition of the Municipality showed that generation of revenue could be utilized for developmental activities in both physical as well as social infrastructure. Hence remunerative projects were included which will assist the local body in the long run. Projects can be implemented through the utilization of Central /State government funds or through public/private partnership initiatives. A tentative table showing the approximate anticipated income from the proposed projects is shown below.

Sl. No.	Name of Project	Expected completion period	Approximate expected Yearly income
1	I.T. PARK	15 years	1000 lakhs
2	Mini market at potta	10 years	25 lakhs
3	Indoor stadium at North junction	10 years	25 lakhs
4	Multi-level parking unit at market	20 years	15 lakhs
5	Thanippara rock garden	10 years	5 lakhs
TOTAL EXPECTED YEARLY INCOME			**1070 lakhs**

Thus the Master Plan for Chalakudy town is envisaged to bring about major changes in the development scenario of the town and assist the local body in achieving the vision conceptualized for the town.

CHAPTER 27

TRAFFIC AND TRANSPORTATION PLAN

Transport development plan for Chalakudy is prepared by considering the traffic characteristics as well as infrastructure facility in the town. The plan takes into account the existing traffic scenario and is based on an evaluation of the future requirement with respect to the base year data.

The widening of the NH 544 along with the construction of fly overs at South junction and Potta junction has very much alleviated the traffic congestion in Chalakudy town. As far as NH 544, which almost bisects the region is concerned; the Municipal Office junction is one of the critical locations where the Mala road crosses the highway. This junction is controlled by using traffic signals. During day time, long queues are found at this intersection, especially along the NH. South junction is a major intersection in the town and can be split into two intersections. The presence of exit roads from the private bus stand as well as the KSRTC road shows very high traffic volume at this intersection.

The road network pattern within Chalakudy town does not follow any particular road pattern but to some extent it seems to follow a radial pattern. The South junction and the Town junction along with the Municipal office area together form the CBD area and most of the trips are concentrated towards this CBD. The old NH carries heavy traffic to the CBD in addition to the vehicles coming from police station road, service roads and KSRTC road. SH 21, Tramway Road and Chalakudy – Vellikulangara road are the roads which add traffic to the old NH sections. Some of the traffic from the state highways is of by passable nature. Traffic from Chalakudy – Mala road and road from Town junction which intersects with NH 544 causes congestion at Municipal office junction. SH 61 and Potta – Elinjipra road causes traffic Congestion at the Potta junction.

- The major traffic and transportation problems in Chalakudy town are:
- Highly conflicting traffic movement at the South Junction, Municipal Office Junction and Town junction;
- Inter-mixing of intra-town and inter-town traffic on the major road corridor in the absence of alternate road links;
- Unorganized on-street parking in the absence of proper parking lots;

- Movement of inter-town bus traffic due to the location of inter town-bus station within the central area of the town;
- Encroachment of right-of-way by hawkers at Market Road and old NH;
- Off street and on street parking of vehicles especially along the old NH sections;
- High safety risk to pedestrian movement near the Town junction and South Junction areas
- Absence of adequate design for major junctions along the major roads.

Since the most important problem of Chalakudy town is heavy traffic along the old NH, especially near the CBD area, emphasis is given to develop the existing road network and give alternative links to divert the by passable traffic passing through the stretch. This would also help to reduce the inter mixing of intra-town and inter - town traffic on roads within the central part of the town.

27.1 Proposed Road Network

On the basis of the projected volume of traffic and alternative network development schemes considered, a road development plan has been formulated for the town. As per the future road development plan for the town, the proposed network confirms to a pattern similar to radial pattern. Four categories of roads are proposed for Chalakudy town. These are as follows:

27.1.1 Primary distributor roads

The primary distributor road in the Chalakudy town is the National Highway 544. As per the standard width suggested by National Highway Authority of India, it has to be widened. This road acts as the main distributor and connector road in this place. The primary distributor road along with the fly over is shown in figure.27.1.

27.1.2 Secondary distributor road

The Secondary distributor roads in the municipal area are the two state highways. SH 21 leading to Athirappilly and SH 61 leading to Moonupeedika connects to NH 66. Considering the regional importance, these roads are to be widened to 16 m. The Secondary distributor roads are shown in figure 27.2

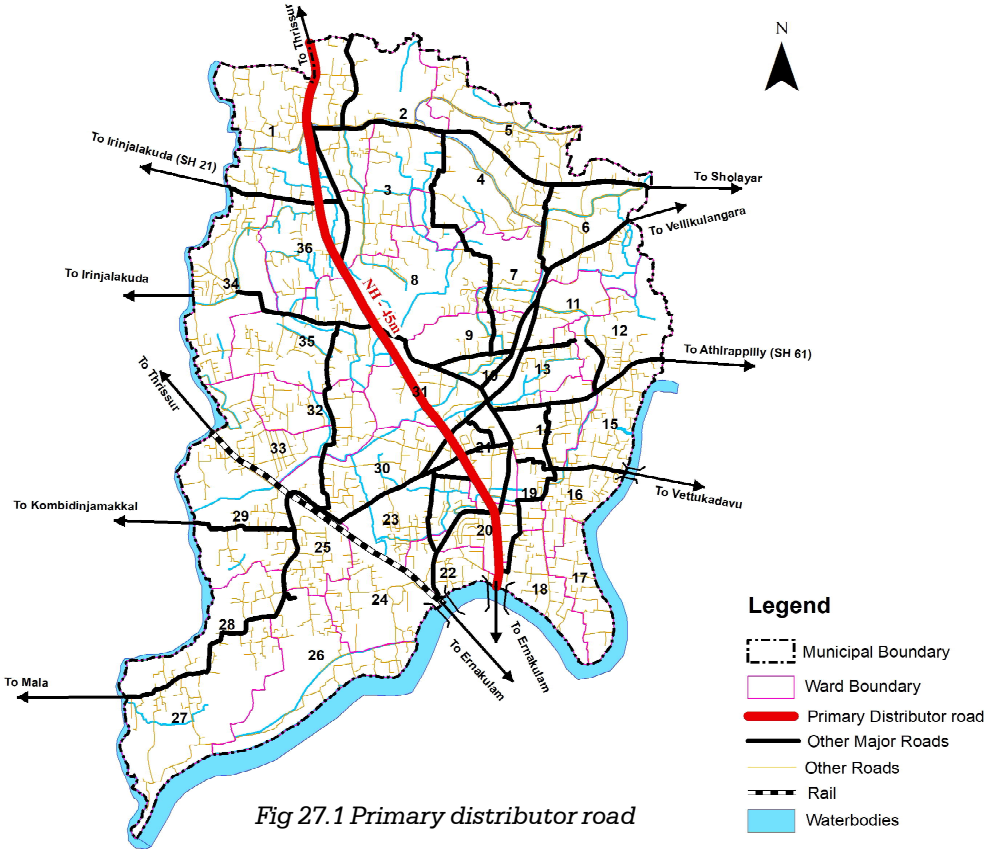


Fig 27.1 Primary distributor road

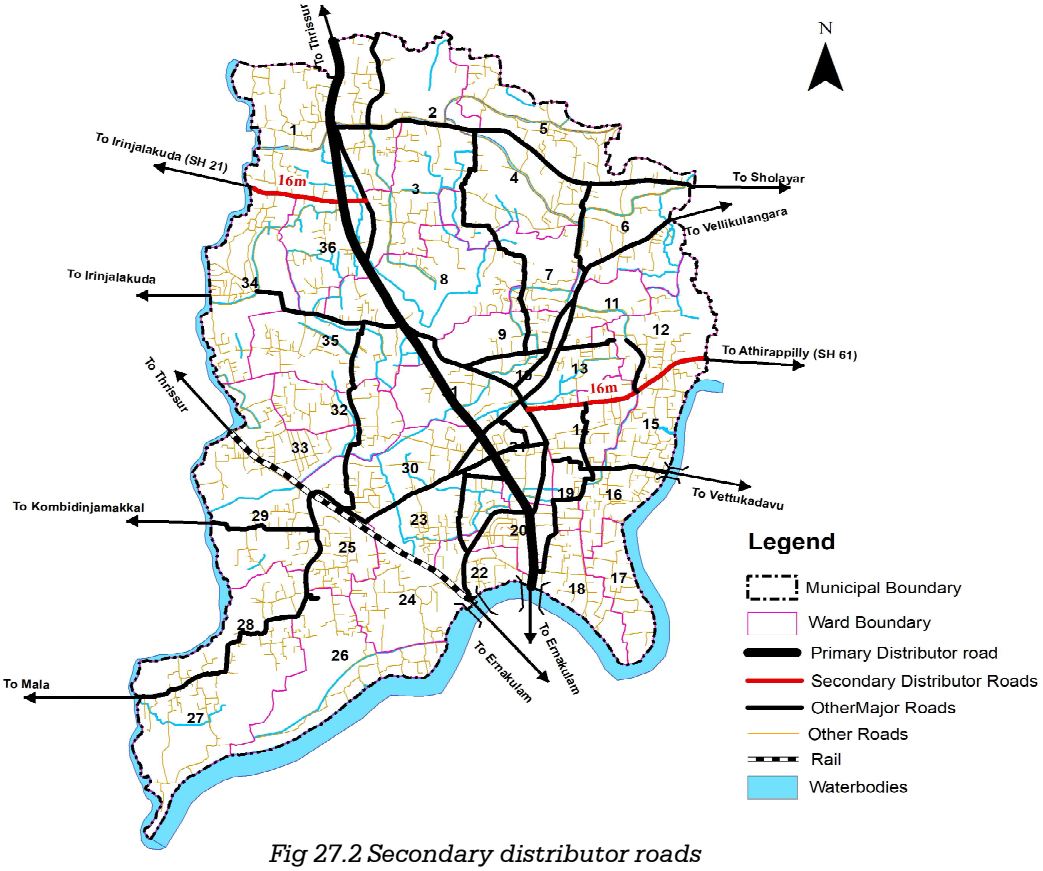


Fig 27.2 Secondary distributor roads

27.1.3 Tertiary/Radial roads

These are the roads that connect the town and other nearby centres. These may be regarded as the collector roads to NH 544 from the sub urban & agrarian centres. The old NH which serves as a corridor to the town centre is also brought into this category. The roads treated as tertiary are the roads from Potta to Vellikulangara via Panampilly college road, from town centre to Mala & the old NH. All teriary roads are to be widened to 15 m except Mala road (tram way to west chalakkudy village office)which is to be widened to 24m and are shown in figure 27.3. Apart from the above other radial roads passing through the town area

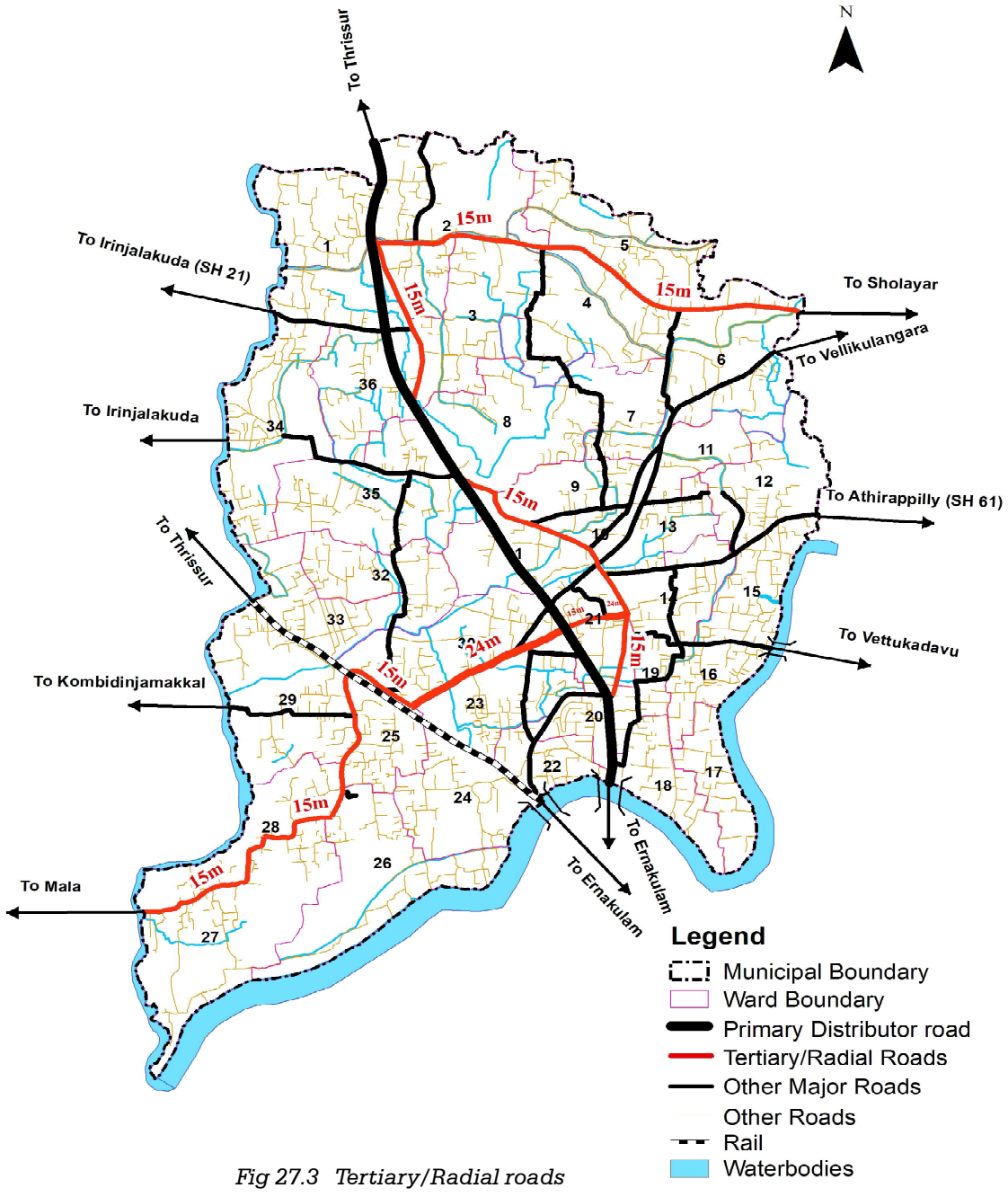


Fig 27.3 Tertiary/Radial roads

the road from old NH to Vellikulangarapassing through the front of CCMK Hospital, road from NH 544 to Potta Asramam, and Vettukadavu road starting from Trunk Junction and ending near the VettukadavuBridge. In these radial roads , Tram way road and KSRTC road are to be widened to 15 m, Vettukadavu road ,Vellikulangara road and Potta ashramam road from NH to Paliyampadam Jn are to be widened to a width of 12m and the road from paliyampadam Jn to Kalari Temple road is to be widened to 8m. The roads are shown in figure 27.4.

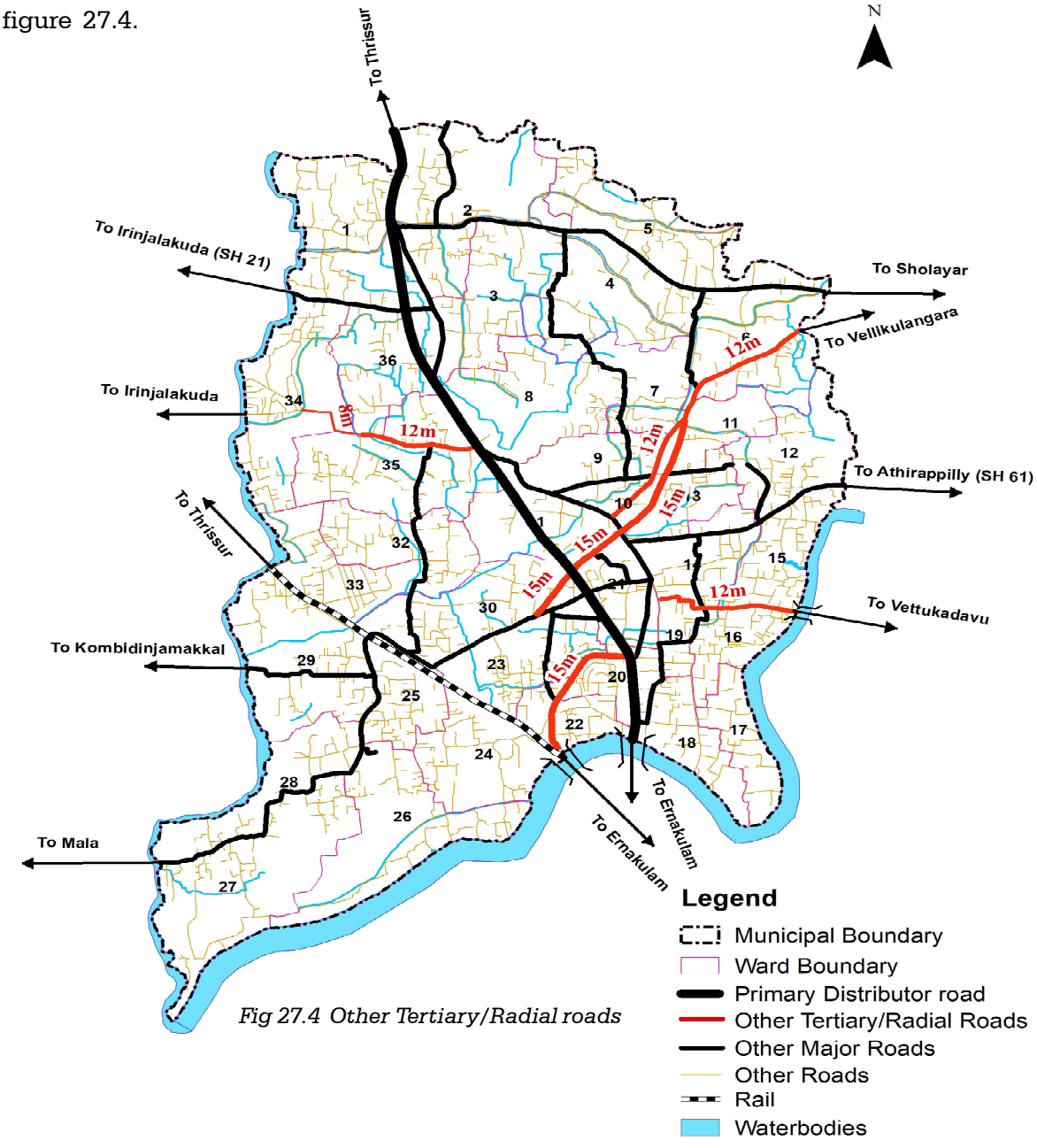


Fig 27.4 Other Tertiary/Radial roads

27.1.4 Inner ring road (Half ring road)

It is proposed to develop ring road for Chalakudy town by utilizing the municipal roads. The proposed road starts from Hospital road near Chalakudy bridge and reaches market road through police station road. From market road it deviates right through irrigation canal and reaches to K.S.E.B substation road. From K.S.E.B substation road the ring road

intersects Athirapilly road, deviates right through SH21 and reaches irrigation canal. From this canal it passes left through irrigation canal bund. From there 52 colony road inersects at tramway road. Pappy road from vellikulangara road moves to old NH road and ends at Cars India Jn. These roads are to be widened so as to enable easy bidirectional movement. Athirapally road & Vellikulangara road will help to direct the thorough fare from town, The proposal is shown figure. 27.5.

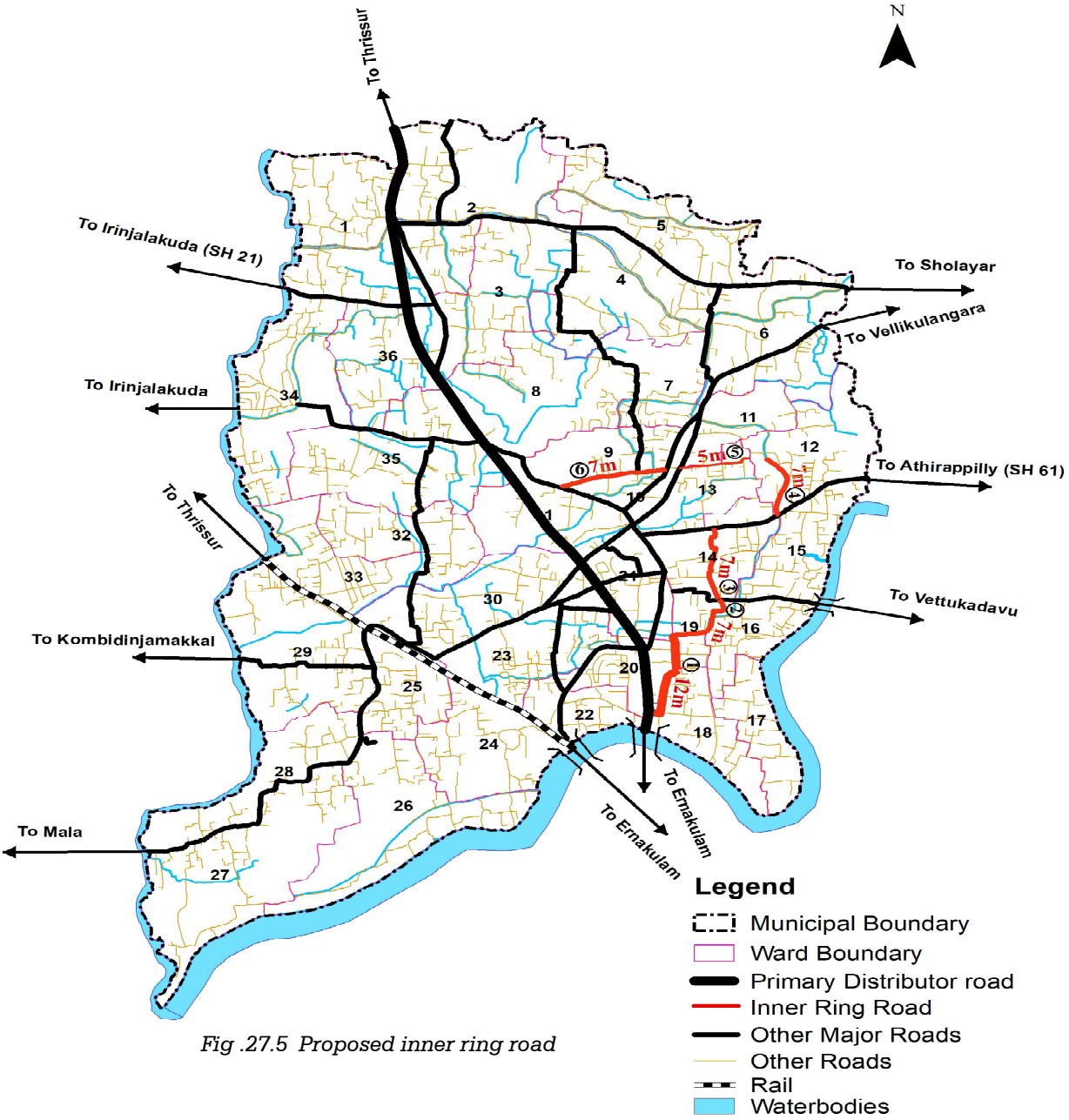


Fig .27.5 Proposed inner ring road

27.1.5 Major link roads

Major link roads are proposed to be widened and they include:

1. Pottachira road -(8m)

2. V R Puram road - (6m)

3. Ambalanada to Karoor road - (8m)

4. K K road - (8m)

5. Stadium road - (12m)

These roads are shown in figure 27.6.

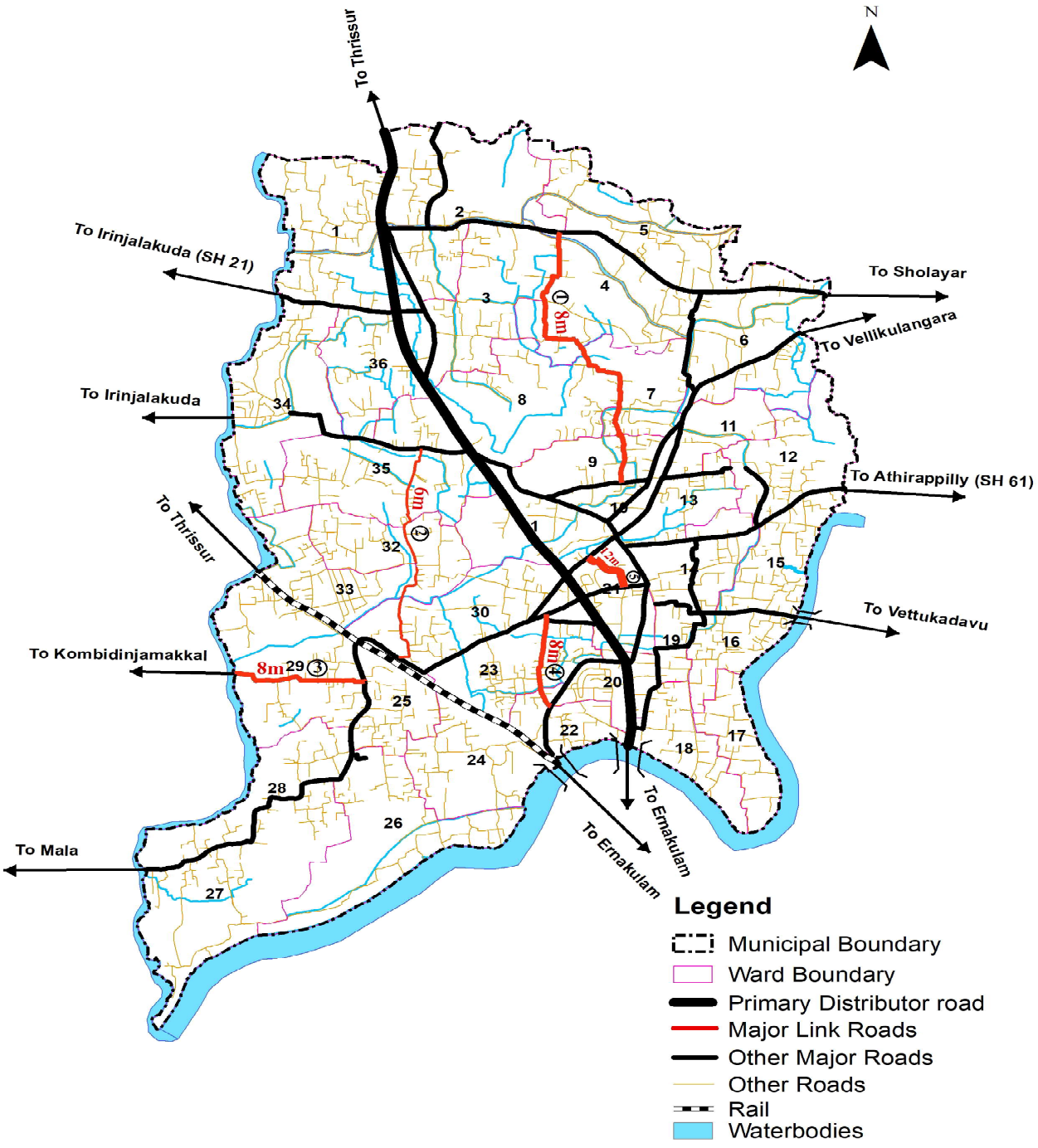


Fig 27.6 Major link roads

27.1.6 Minor link roads

Minor link roads are proposed to be widened and they include;

1. Blachira canal bund road - (6m)
2. Mosco Alavi centre road - (7m)
3 Road from KK road to NH(near Govt.Boys School Ground) - (8m)
4. Moonjeli Jn road - (5m)

These roads are shown in figure 27.7.

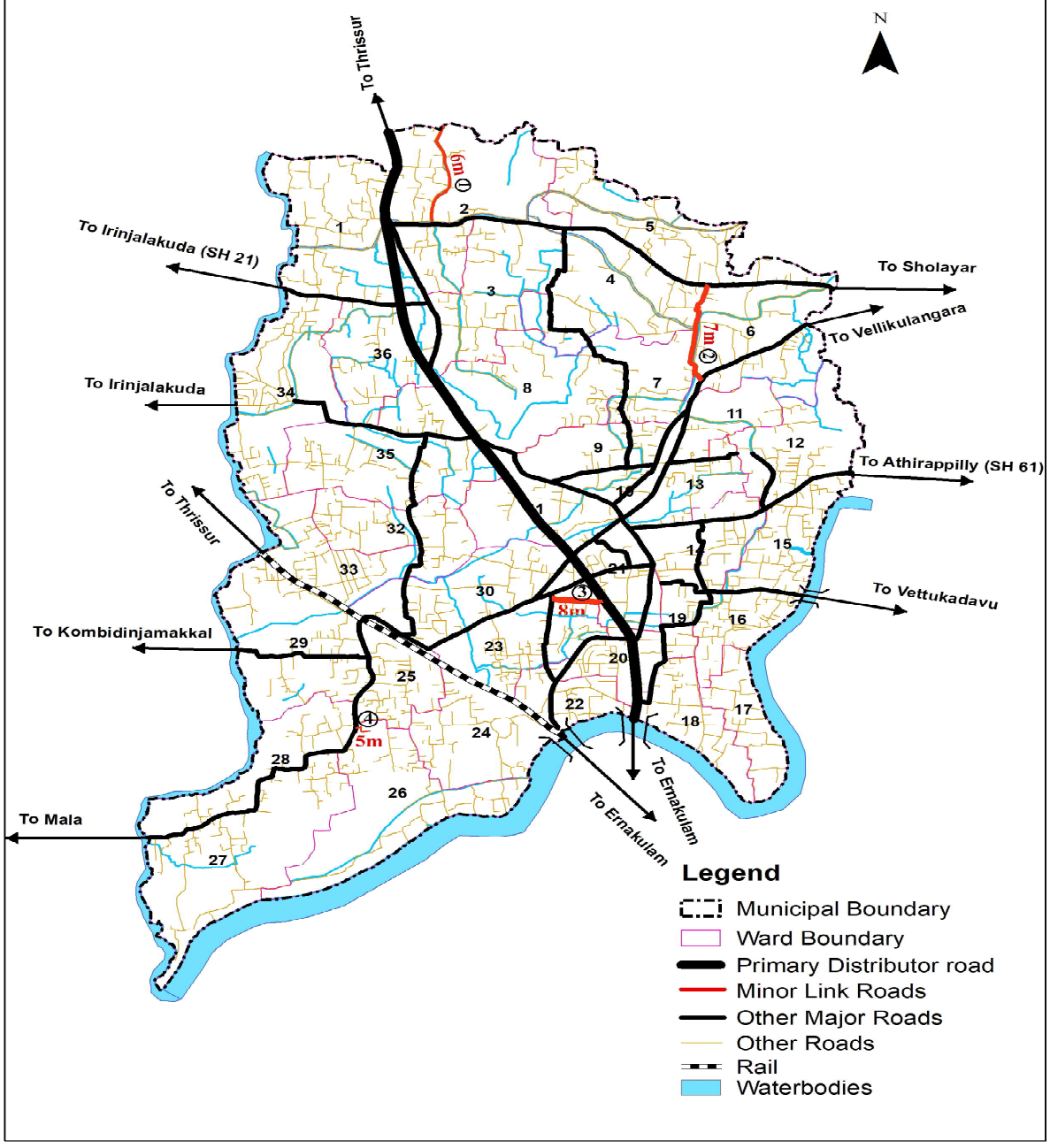


Fig 27.7 Minor link roads

The proposed road network is shown in figure 27.8.

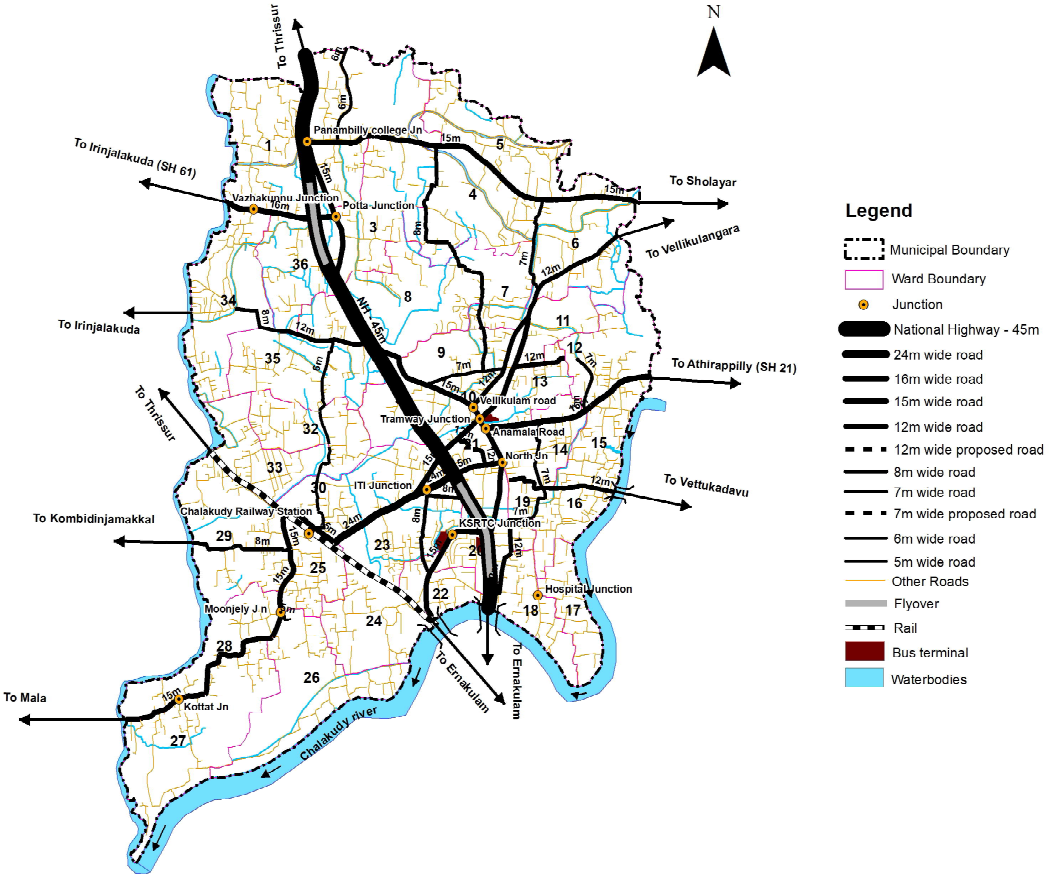


Fig 27.8 Proposed Road Net Work

27.2 Intersection improvements

Proper design of intersections is required to enable smooth, safe and efficient flow of traffic. A well designed intersection can increase the capacity of the same and also adds on to the aesthetics of the area. Junction improvement locations is shown in figure 27.9.

As far as Chalakudy South junction is concerned, the junction houses many commercial establishments and also avenues of business and commerce. Besides that, the bus stands are situated very near to the junction. Further improvement of the South Junction has been found to be non-viable primarily because, any such step further shall have to be preceded by land acquisition activities such as the buildings and other structures near the junction shall have to be demolished to pave way for the widening process and also due to the flyover passing over the South junction. In these circumstances it is desired to improve this intersection with traffic signals.

In Municipal office junction, rather than road widening it is more convenient to provide grade separation for the movement of traffic in Mala road like a flyover or an underpass.Apart from these junction, the intersecting points like Ashramam road junction on NH 544 ,Cars

India Jn,Vellikulangara Jn, Anamala junction,Potta junction and Town junction on old NH are needed to be taken up for detailed design considering the existing traffic flow and the need for future road widening.

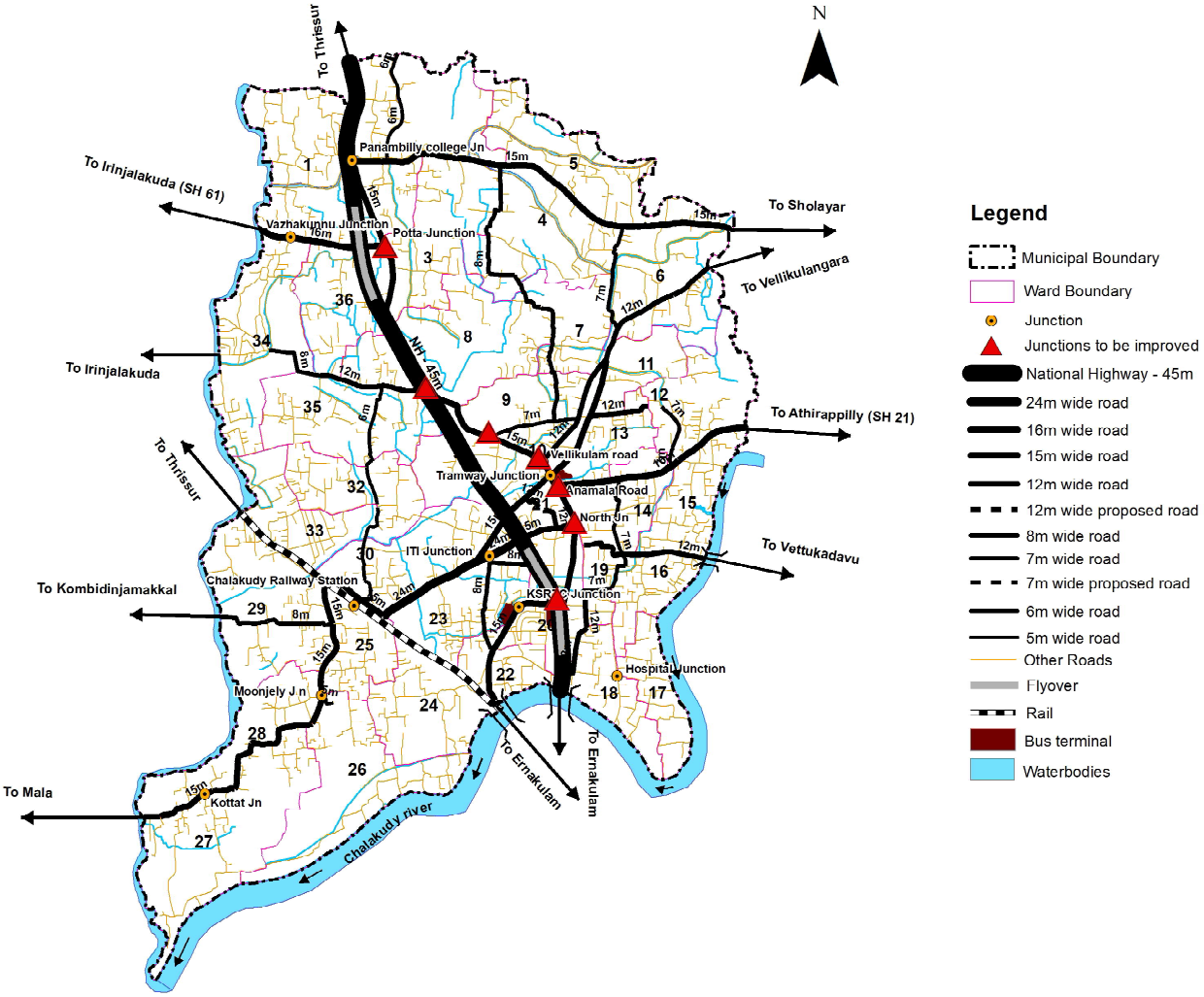


Fig .27.9 Junction improvements location

27.3 Rail Network

Chalakudy railway station is inside Chalakudy town. Angamaly railway station is also near to the town. The major rail head is at Thrissur. All the passenger trains and some express trains have halt at Chalakudy railway station. For further improvement of the rail network in Chalakudy, the railway division has to provide halt for more trains passing through this station.

27.4 Bus Terminals

As far as traffic in Chalakudy is concerned, the major traffic aggravating problem is the location of the exit paths of both bus stands, private as well as KSRTC bus stands to the CBD area. The number of buses operating is high. Bus stand at tramway road Jn. on old NH (North bus stand) should be the main private bus stand. The eastern exit may be widened so as to improve the functionality. The traffic flow should be changed as given below and shown in figure 27.10.

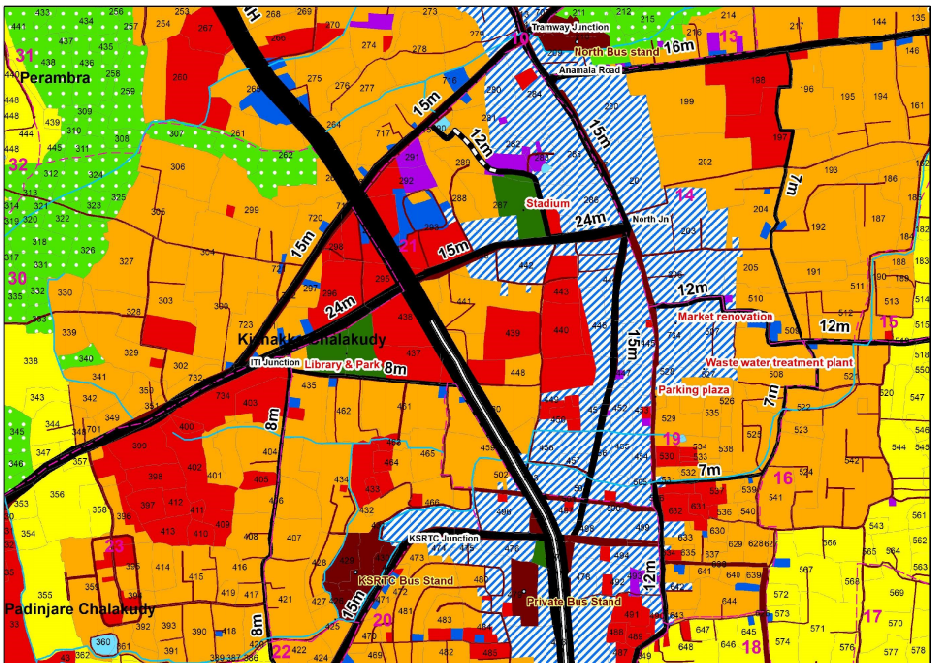


Fig 27.10 Proposed bus route details

From South side: - South bus stand >KSRTC road> KK road > Mala road > Tramway > Underpass > North bus stand

From Vellikulangara and Irinjalakuda:- North bus stand > OLD NH > South bus stand >KSRTC road> KK road > Mala road > Tramway > Underpass > North bus stand

The KSRTC bus stand will be retained as such. State of the art facilities may be provided at the bus terminals with the provision of improved infrastructures.

27.5 Pedestrian Facilities

The pedestrian facilities that need to be considered are:

- **Sidewalks or walkways :-**

The sidewalks or footpaths are "pedestrian lanes" that provide people with space to travel within the public right-of-way, that is separated from roadway vehicles. For Chalakudy town, considering the existing pedestrian demand, sidewalks with a width of 1.5m to 2.5 m is proposed for all types of roads including arterial, sub-arterial, collector and local roads.

- **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. For Chalakudy town, cross walk markings are desirable at all arms of the major intersections. Apart from these intersections, cross walk markings need to be proposed at major high pedestrian volume locations like educational institutions, hospitals and commercial centers.

- **Pedestrian Overpasses / Under passes:**

Pedestrian overpasses and under passes allow for the uninterrupted flow of pedestrian movement, separated from the vehicle traffic. Pedestrian underpass / overpasses are proposed at selected locations in Chalakudy town which have high concentration of commercial establishments and pedestrian volume. The locations are north junction and the municipal Junction, in front of Cresent School, Tramway Jn.

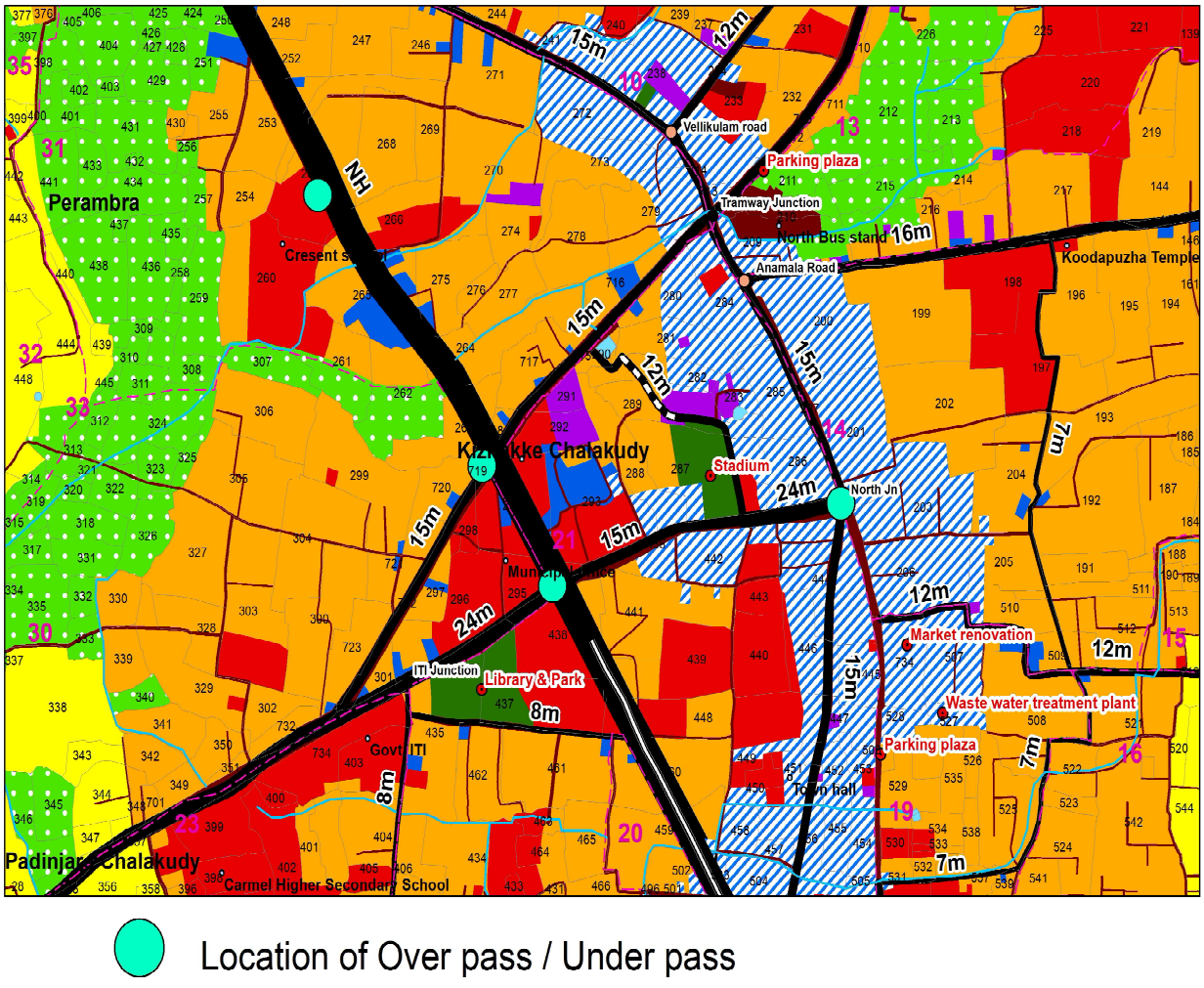


Fig. 27.11 Location of Overpass/underpass

Detailed engineering surveys need to be carried out before finalizing the exact location and design of the pedestrian facilities at the proposed sites, as shown in figure 27.11.

27.6 Parking Facilities

Considering the parking demand observed at many of the road stretches, a combination of commercial cum automated parking system is proposed for Chalakudy town. To prevent on street parking on KSRTC road, it is proposed to provide parking lots in the vacant land beside KSRTC Bus Stand. To prevent the on street parking on Municipal area, it is proposed to provide parking lots on the vacant land opposite to Municipal Office Junction. To prevent on street parking on town centre, a multilevel parking (MLP) unitis proposed in the vacant land near market .The suggested locations are shown in figure 27.12.

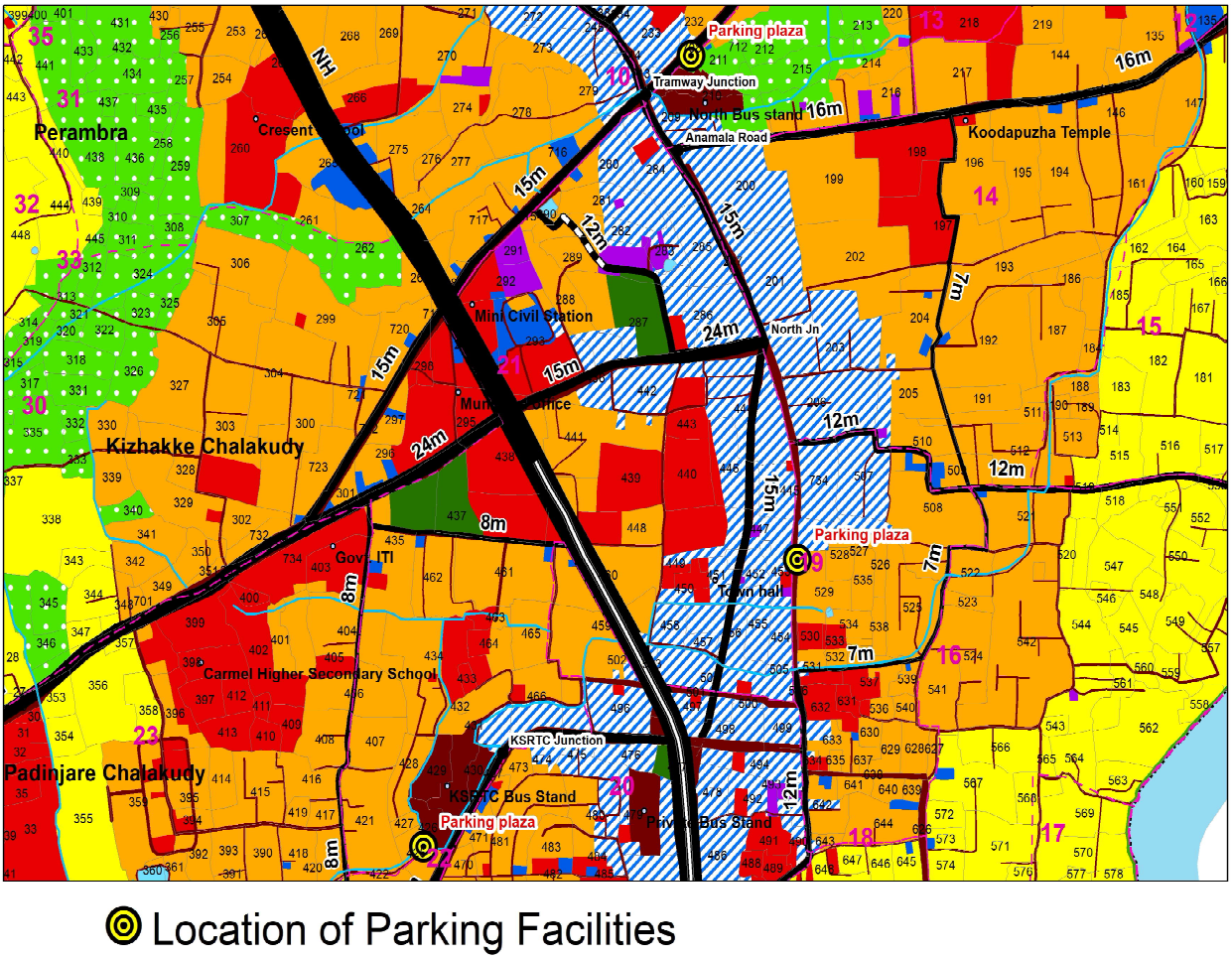


Fig 27.12 Location of parking facilities

Table 27.1 : Details of Road to be widened

Sl No	Name of the Road	Existing width in Metres (Approximate)	Total Road Length in Metres (Approximate)	widening in metres
I	**Primary Distributor Road**			
	NH 544	40.14	5971.4	45
II	**Secondary Distributor Road**			
	SH61(Potta -Irinjalakkuda Road)	12.6	837.62	16
	SH 21 (Anamala Koodapuzha Road)	9	1780.97	16
III	**Tertiary /Radial Roads**			
	Athirappilly road (panambilly college road)	12.65	3527.13	15
	Old NH (Opposite to Dhanya hospita	14.26	1511.78	15
	Old NH (South Jn to Ashramam Jn)	12.83	2702.03	15
	Railway Station Road			
	North Junction to Post Office Jn	24.68	167.57	24
	Post Office Jn to Signal Jn	21.49	320.54	15
	Mala Road (Tram way to West Chalakkudy Village Office)	20.6	1371.94	24
	Mala Road (Society to Municipal Boundary)	12.66	3884.69	15

Sl No	Name of the Road	Existing width in Metres (Approximate)	Total Road Length in Metres (Approximate)	widening in metres
IV	**Other Tertiary /Radial Roads**			
1	Vellikulangara Road	22.11	2312.38	12
2	Tramway Road	17.22	2167.22	15
3	Vettukadavu Road	4.5	1148.79	12
4	KSRTC Road	17.6	1239.66	15
5	Potta ashramam road (From NH to	10.15	906.21	12
6	paliyampadam Jn to Kalari Temple r	4	578.62	8
V	**Inner Ring Road (Half Ring Road)**			
1	Road from NH to Palli canal	12.24 & 3	825.81	12
2	Road from Palli canal Junction to Vettukadavu road	4	638.31	7
3	Koodapuzha temple to Vettukadavu	3.5	719.84	7
4	Anamala Junction to kala club	3	593.74	7
5	52 colony front road	5	517.35	5
6	Pappy road (from vellikulangara road to old NH)	4.2	788.97	7
VI	**Major Link Roads**			
1	Pottachira road	4.17	2836.39	8
2	V R Puram road	5	2135.9	6
3	Ambalanada to Karoor road	7	1041.02	8
4	K K road	4	834.68	8
5	Stadium road	5.80 & 4.2	420.28	12
VII	**Minor Link roads**			
1	Blachira canalbund road	4.1	976.85	6
2	Mosco Alavi centre road	6	972.94	7
3	Road from KK road to NH(near Govt.Boys School Ground)	9.4	373.48	8
4	Moonjeli Jn road	3	144.32	5

CHAPTER 28

DETAILED TOWN PLANNING SCHEMES (DTP) AND THEIR REVOCATION

Detailed Town Planning (DTP) schemes means a comprehensive plan for a particular area within the local planning area, concieved within the framework of the Master Plan, if any for the local planning area, providing detailed proposals for spatial development of such particular area indicating the manner in which the use of land and development therein shall be carried out. Local planning area is the area coming under the jurisdiction of Chalakkudy Municipal Council.

There was no Master Plan prepared for the town till draft Master Plan for Chalakkudy town -2031 published in the year 2021. But in order to control the development at the core of the town, in a planned manner, early planning efforts were done and two Detailed Town Planning Schemes were prepared and sanctioned during 1983, they are DTP scheme for Market area and DTP scheme for Office complex area. Both schemes were prepared for satisfying the development scenareo at that time. At present, the development trend has entirely changed which necessitated the review of the DTP schemes.

28.1 DTP SCHEME FOR OFFICE COMPLEX AREA, CHALAKKUDY

28.1.1 REVIEW OF DTP SCHEME

Majority of Public offices and Institutions are located and being functioned at this area.This area covers an important part of Central business area (CBD) of the town. The total extent of land brought under the scheme is about 55.5 Hectres.The main institutions functioning here are Chalakkudy Municipal Office, Forest office, Govt.I.T.I, Women's I.T.I, Irrigation office, PWD guest house etc. For the smooth and healthy functioning of the Institutions along with other uses in the area, a development plan was prepared and a DTP scheme for Office complex area, Chalakkudy was sanctioned in accordance to the same. Developing this area as Public & Semipublic activities, providing safe and sound acesses, ensuring overall development of the area on planned basis and providing ad-equate infrastructure facilities,etc. are the main objectives of this scheme.

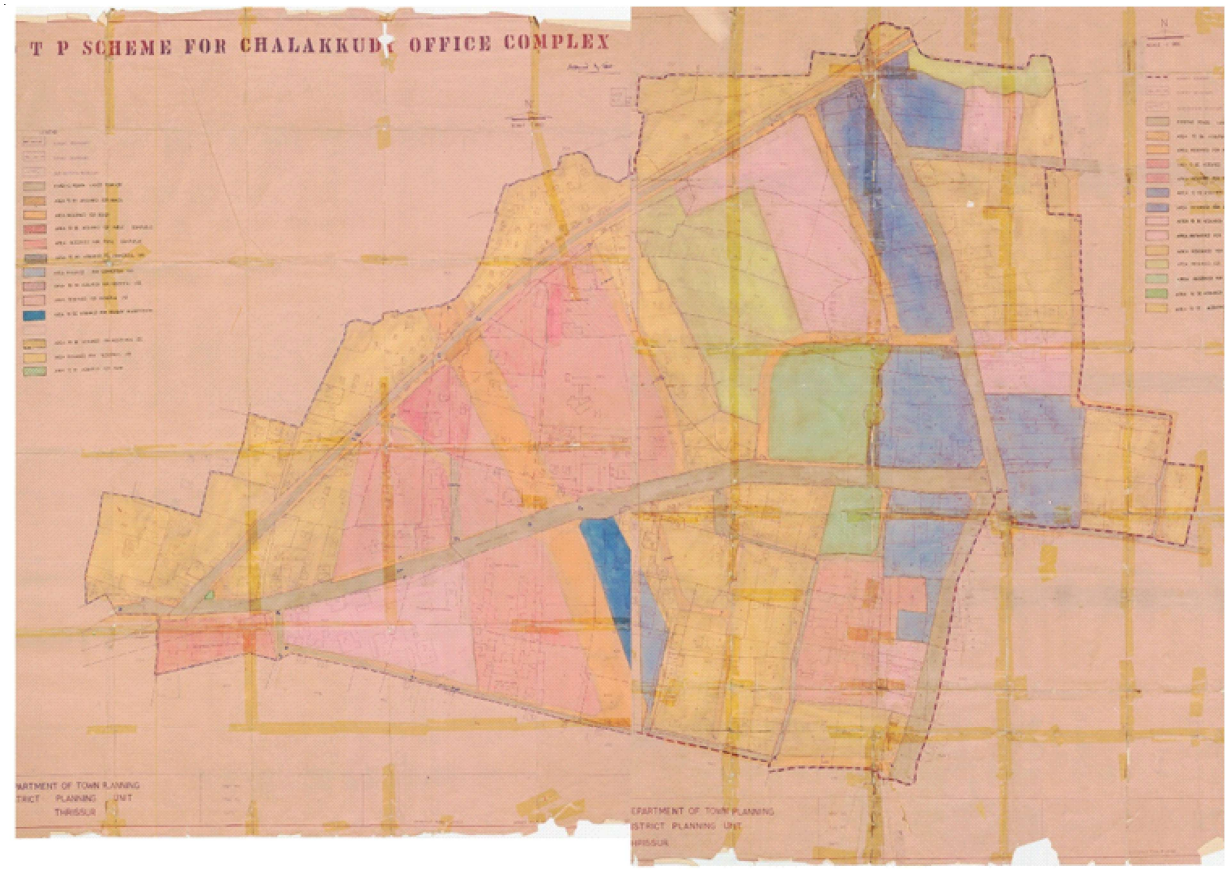


Fig 28.1 DTP Scheme for Chalakkudy Office Complex Area(scanned copy)

The Government have sanctioned this scheme under subsection (3) of section 12 of the Town Planning Act,1108 (IV of 1108) vide notification issued under G.O (Ms.) No. 193/ 83/LA & SWD dated 5th November, 1983 published as S.R.O. No.207/84 in section iv, Part I of Kerala Gazette No. 10 dated 6th March,1984. Since then, competent authorities had been enforcing development regulations contained in this sanctioned scheme.

Government has reviewed the implementation and enforcement of the scheme and decided to vary the scheme for the purpose of making the zoning regulations of the scheme compatible to the present development scenario, on 05.11.1983 . In this respect, Government, as per G.O. (Ms.) No.165/2011/LSGD dated 2nd August, 2011 published a draft of the proposal for variation of the scheme as required under sub-section 2 (b) of section 13 of Town Planning Act,1108. In exercise of the powers confered by sub-section (2) of section 13 of the Town Planning Act,1108, The Goverment of Kerala varied the DTP scheme for Office Complex, Chalakkudy as per G.O (Ms) No. 139/13/LSGD dated 2nd April 2013 published in volume II of Kerala Gazette as S.R.O. No.287/2013, No. 1019 , dated April,2013.

Major proposals envisaged in the scheme are development of major roads, reservation of Public land including some extra land reserved for their future expansion, making other zone's regulations compatible to Public use,etc. Among them, the development of roads are almost achieved as per the proposed alignment and width. And also could seen that spatial developments are achieved adhering to the schemeperspective.

Comparing with the proposals of Published Master Plan, it is seen that the road proposals are almost adhered to the scheme proposals. The railway station road is proposed to width of 24m in Master Plan instead of 22m. National Highway 544 has achieved 45m width and retained as such, Tramway road is retained 15m width, old NH road is proposed as 15m width, and BTS road is proposed to 8m instead of 10m. Most of the existing roads has retained as such without widening. The comparison of road proposals of Master plan with the DTP scheme is shown in table 28.1.

Comparing with Landuse proposalof Master plan, Public & Semipublic use zones are retained as such in Master plan. Mixed use zone is planned instead of various independent zones to enable present development trend of the town. The Chalakkudy Potteries in the scheme area has earmarked to the present use, as Park &open space. The central business area of the town where all developmental activities are takingplace is proposed as CBD zone enabling all non-hazardous activities. The Municipal Indoor Stadium which came into existance as a proposal of the scheme, is retained in Master Plan.

Table 28.1: comparison of road proposals in Master Plan with DTP scheme proposals

Sl No	Name of the road stretch	Proposed Road width as per DTP scheme	Proposed Road width as per Master plan-2031	Existing road width (average)
1	Railway Station Road (B-B)	22m	24m	15m
2	Tram way Road (D1-D1)	15m	15m	15m
3	PWD Rest house Road (D7-D7)	12m	No road Proposal	4m
4	KK Road (E1 – E1)	10m	8m	8m
5	B T S Road (E- E)	10m	8m	8m
6	D5 - D5 (through Sy no: 293)	12m	No road Proposal	Not formed
7	D3 – D3	12m	No road Proposal	Not formed
8	D4 – D4	12m	No road Proposal	Not formed
9	F5 – F5	7m	existing road	5m
10	F3 – F3	7m	No road Proposal	Not formed
11	NH road (trunk road)	15m	15m	15m
12	C2-C2 (throughsy no 708)	15m	15m	9m
13	E2 - E2 (through sy no 200 & 208)	10m	No road Proposal	Not formed
14	D2 – D2	12m	No road Proposal	Not formed
15	NH 544(A-A)	45m	45m	45m

28.1.2 SCHEME REVOCATION

The DTP scheme for Office Complex Area, Chalakkudy shall stand revoked as provided under 2nd proviso to section 50(1) of the Kerala Town and Country Planning Act,2016; once the Master Plan is sanctioned under section 36(8) of the Kerala Town and Country Planning Act,2016.

28.2 DTP SCHEME FOR MARKET AREA, CHALAKKUDY

28.2.1 REVIEW OF DTP SCHEME

This scheme covers an important part of the central business area of the town. About 32% of the scheme area is under residential use. This scheme lies adjacent to the DTP scheme for Office Complex area, on the south-eastern side. For the planned development of commercial area, this scheme was prepared and sanctioned.

The Goverment have sanctioned this scheme under subsection (3) of section 12 of the Town Planning Act,1108 (IV of 1108) vide notification issued under G.O (Ms.) No. 192/83/ LA & SWD dated 5th November 1983. Since then, competent authorities have been enforcing development regulations contained in this sanctioned scheme.

The total extent of land brought under the scheme is about 46 Hectres. Of this area, the scheme envisages acquisition of only 7.550 Hectres of land for commercial, residential, industrial and public & semipublic uses and for development of road. About 1.11 Hectres of land is proposed to be acquired for Municipal Bus stand. The main objectives of the scheme are Extention of planned residential development, Ensuring overall development of the area on a planned basis, Providing safe and sound accesses and to develop the growing commercial centre and the market with adequate facilities.

Comparing with proposals envisaged in the Master Plan for Chalakkudy Town-2031, it is seen that the road network proposed in the scheme area has almost implemented in accordance with scheme proposal.



Fig 28.2 DTP Scheme for Chalakkudy Market Area (scanned image)

Market road is proposed to 12m instead of 15m in the scheme. National Highway 544 has achieved 45m width and retained as such. Tramway road is retained 15m width, old NH road is proposed to 15m width ensuring its existing width and BTS road is proposed to 8m instead of 10m. In the case of new alignment proposal, Palm road (B1-B2) with the planned width15m is materialised, while the road starting from old NH and passing through south side of Market (C3-C3 & C1-C1 & D3-D23) is dropped in Master Plan considering the present road network concept.Considering the present importance, the KSRTC road is proposed to a width of 15m in Master Plan. Most of the existing roads are retained as such without widening. The comparison of road proposals in Master plan with DTP scheme proposals is shown in table 28.2.

Comparing with Landuse proposal, Public & Semipublic use zones are retained in Master plan as such. Mixed use zone is planned instead of various individual zones to enable the development of the town as per the present trend. The Central Business Area of the town including Market, where all developmental activities are taking place is earmarked as CBD Zone in Master Plan enabling all non-hazardous activities.

Table 28.2: comparison of road proposals in Master Plan with DTP scheme proposals

Sl No	Name of the stretch	Proposed Road width as per DTP scheme	Proposed Road width as per Master plan-2031	Existing road width	Remarks
1	National High way A-A (Salem-Kochi High way)	45m	45m	45m	
2	D1 – D1 (Central Road)	10m	No road Proposal	5m	
3	B2 – B2 (Market road)	15m	No road Proposal	11m	
4	B3- B3 (Market road)	15m	12m	11m	
5	D3 – D3	10m	12m	8m	
6	D4 – D4	10m	No road Proposal	3m	Partially formed
7	D5 – D5	10m	12m	8m	
8	D2- D2	10m	No road Proposal	Not formed	
9	E1 –E1	7m	7m	4m	
10	E2 – E2	7m	7m	4m	
11	C1 – C1	12m	No road Proposal	Not formed	
12	E3 – E3	7m	No road Proposal	5m	
13	C3 – C3	12m	No road Proposal	Not formed	
14	B1 – B1	15m	No road Proposal	Not formed	
15	C2 – C2	12m	No road Proposal	4m	partially formed

28.2.2 SCHEME REVOCATION

The DTP scheme for Market Area, Chalakkudy shall stand revoked as provided under 2nd proviso to section 50(1) of the Kerala Town and Country Planning Act,2016 once the Master Plan is sanctioned under section 36(8) of the Kerala Town and Country Planning Act,2016.

CHAPTER 29

ZONING REGULATIONS

1. All future developments shall be in conformity with the provisions of the Master Plan for Chalakudy Town -2031.

2. For the implementation and enforcement of the proposals envisaged in this Master Plan, areas have been zoned under various categories such as High Density Residential Zone, Low Density Residential Zone, Mixed Zone, CBD, Commercial Zone, Industrial Zone, Public and Semipublic Zone, Transportation Zone, Recreational Open Spaces , Conservation Zone, Water Bodies Zone ,Green Strip and Special Zone. Details regarding the nature of uses 'Permitted', and uses 'Restricted' in each zone are given in Table 29.1. These regulations shall be enforced in conjunction with other specific provisions if any elsewhere in the Master Plan.

3. Uses **'Permitted'** in a zone cover the uses that can be normally accommodated in the relevant zone. Such uses may be permitted by the Secretary, Chalakudy municipality *(*here in after referred to as Secretary) if in accordance with other relevant rules/orders concerned in force. In some cases it may be possible to permit some other uses also, which are not likely to affect the quality and environment in a zone specified for a particular use. Such cases have to be individually examined based on their performance characteristics and special location factors. Such cases which come under this category are classified as "Uses Restricted".

   a. Uses **Restricted -1** Category deals with the restricted uses that shall be permitted by the Secretary with the concurrence of the District officer of the Local Self Government Department (Planning) having jurisdiction over the area (hereinafter referred to as Town Planner).

   b. Uses **Restricted -2** Category deals with the restricted uses that shall be permitted by the Secretary with the concurrence of the Chief Town Planner of the Local Self Government Department (Planning)

4. **"Uses prohibited"** are various objectionable uses in each zone which shall not be permitted under normal circumstances .All uses which does not come under ' Uses Permitted' or 'Uses Restricted' will be considered as 'Uses Prohibited'

5. Any use not specified either in the 'uses permitted' or 'uses restricted' 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 Town Planner.

6. If any portion of a zone is put to a "**Use Prohibited**" as stated in Para 4, before coming into the operation of this Master Plan, such use shall be termed as non-conforming use. A non- conforming use may be allowed to continue in its existing location and essential repairs and maintenance for the structure may be permitted by the Secretary, provided that the said use 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. The total built up area of such non - conforming use shall not exceed 1.5 times the existing built up area.

7. Zoning regulations are not intended to prohibit existing uses that have been lawfully established prior to the enforcement of these regulations, unless otherwise specifically mentioned in this Master Plan. Zoning Regulations are essentially intended to help the cmpetant authority in taking decisions regarding granting or refusal of permits for land development and construction of buildings/strucures.

8. For the purpose of these regulations, floor area means the total floor area of the building on all floors measured as per the provisions of Kerala Municipality Building rule in force.

9. Subject to zoning regulations of the respective use zones, more than one uses may be combined in a building/plot, provided that the total floor area of individual uses shall be limited to that prescribed for each such use in the zoning regulation for the respective zone.

10. Existing areas and structures of archaeological importance and religious uses may be permitted to continue in all the zones and shall be treated as permitted uses.

11. 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 line of the road, unless otherwise specified in the Master Plan or Detailed Town Planning scheme in force or in any detailed road alignment approved by the Government. If widening on one side of any stretch of the road is constrained due to the physical barriers of water bodies zone, railway land and protected archaeological monuments /sites, the road widening in that stretch shall be accounted from the other side.

12. Provisions/ regulations under under the Kerala Conservation of Paddy Land and Wetland Act 2008, Disaster Management Act, Archeological Sites and Remains Act, Coastal Zone Regulations, Aircraft Act 1934, Environmental Protection Act 1986 and any other applicable statutes as amended from time to time shall prevail over the respective provisions of this Master Plan.

13. 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.

14. Electric charging stations for vehicles may be permitted in all zones other than Water bodies zone and Conservation zone.

15. In Conservation zone, permitted and restricted uses in adjacent land use zone may be permitted with the concurrence of the Town Planner if that particular land in Conservation zone is not classified as paddy land or wetland as per Revenue records at the time of issuance of permit.

16. Transmission / telecommunication towers, wireless station, ATMs, water tanks, waste management units and public utility buildings/structures shall be treated as permitted uses in all zones except in Waterbodies Zone .

17. Operational Constructions as defined in the Kerala Town & Country Planning Act 2016 shall be treated as permitted use in the Master Plan Area.

18. Disaster mitigation projects by competent authorities shall be permitted in all zones

19. Uses Permitted in ***Mixed Zone*** may also be permitted by the Secretary, if not allowable otherwise as per the zoning regulations applicable, on both sides of the following roads (as per this Master Plan) in High Density Residential Zone and Low Density Residential Zone, in land upto a depth as shown in the table below.

Uses restricted in ***Mixed Zone*** may also be permitted by the Secretary if not allowable otherwise as per the zoning regulations applicable, but with the concurrence of the Town Planner or the Chief Town Planner as the case may be, on both sides of the following roads (as per this Master Plan) in such applicable zones as mentioned above, in land upto a depth as shown in the table below:

Sl. No.	Existing/Proposed ROW in Metres	Depth (in metres) on both sides of the road upto which provisions of Mixed Use Zone is applicable
1	45 Metres	500m
2	24 Metre or more	200m
3	12 Metre or more	100m

If more than 50% of the area of a plot is included within the Mixed Zone , the entire plot shall be deemed to be included under such Mixed Zone.

20. 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).

21. Expansion of existing Public and Semi Public Institutions, and existing Industrial units including thier incidental uses to adjacent plots shall be treated as permitted use irrespective of the zone in which such adjacent plot lies, except in Waterbodies zone and Conservation zone.

22. Only the existing areas under Public and Semi Public uses ,and Industrial uses are intended to be included under Public and Semi Public zone and Industrial zone respectively. If any private property put under uses other than those permitted or restricted in the above zones has got included within such zones, the Secretary may, with the concurrence of the Town Planner, after verification of the Revenue ownership documents, accord sanction for development by adopting the regulations of the surrounding land use zone in the proposed land use map, subject to the provisions as per applicable Acts, Rules and Goverment Orders in force in the State.

23. If public activity ceases or do not exists in a private land, uses permitted/ restricted in the surrounding land use zones shall be allowed in the plot with the concurrence of the Town Planner, if no records are available with Chalakkudy Municipality regarding any proposal for acquiring that particular land for any public use at the time of application for buiding construction or land development.

24. Projects of Central/State Government, Local Self Government Institutions, Public Sector Undertakings and other Government Institutions may be permitted with concurrence of the Town Planner in all built up zones such as High Density Residential, Low Density Residential, Commercial, Industrial,Mixed, Public and Semi Public, CBD etc, if such uses are not included in the permitted ues or restricted uses as per the zoning regulations applicable.

25. In case of uncertainity in identifying the alignment and boundary of thodu, canal, river, existing public road, railway line and in the absence of survey boundaries for the same in the Proposed Land Use Map, it shall be referred to the actual position on ground as well as Revenue records, and decision taken by the Secretary in this regard shall be final.

26. The land specially demarcated for certain projects as Special Zones, may be procured as per the provisions of the Kerala Town and Country planning Act 2016, by Chalakkudy Municipality or other agencies concerned.If the proceedings to procure such land have not been initiated within 7 years from th date of sanctionig of this Master Plan, the areas so specifically demarcated may be released and assigned to a use permitted/restricted in the surrounding land use zone in the Proposed Land Use map by the Secretary with the concurrence of the Town planner, based on the application for building permitt recieved.

27. If different land use zones falls within single plot, all uses permitted as per zoning regulations of such land use zones may be permitted by the Secretary in the plot. If application submitted includes any of the restricted uses 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 Waterbodies Zone, Conservation Zone and Recreational Open Spaces this provision shall not be applicable.

30. Large Scale Development projects in an area 1 hectare or more, exceeding an investment of Rs.100 Crores, which provide direct employment (after commissioning of the project) to the tune of not less than 500 may be permitted in all zones other than water bodies zone, conservation zone, if not included in the permitted uses or restricted uses as per zoning regulation applicable.In such cases, the recommendation of a committee with constitution as below shall be obtained, subject to satisfying the procedures laid out here under and the Secretary shall comply the same while issuing permit.

Also, Adequate provision shall be made for supporting infrastructure such as water supply, sewarage, solid waste management, power supply etc. Separate systems for management of solid waste and sewage shall be provided and maintained by the developer at his cost. The project shall be completed within a period of 5 years or as suggested by the Committee.

30.1 Procedure to be followed

(a) The developer shall submit the project report, detailing the demand, feasibility and Environmental Impact Assessment aspects of the project, together with the approval, if necessary, obtained from the Ministry of Environment and Forests, Government of India to the Convener of the committee and the Convener shal make all arrangements for convening meeting of the committee at the earliest and the committee shall consider and dispose of the project report within a period of one month from the date of receipt of the same.

(b) The constitution of the committee shall be as given under:

Pricipal Secretary / Secretary to Government, Local Self Government Department	-	Chairperson
The Director, Local Self Government Department (Urban)	-	Member
The Chief Town Planner, Local Self Government Department (Planning)	-	Convenor
The District officer of the LSGD (Planning) having jourisdiction over the district concerned	-	Member
Secretary of Chalakkudy Municipality	-	Member

(c) The Convenor shall fix the venue, date and time of the meeting in consultation with Chairperson and shall be responsible for safe custody of records and communications thereof.

(d) The meeting shall be presided over by the Chairperson or in his absence by a member to be authorised by him.

(e) The quorum of the meeting shall be majority of the total number of members of the committee for the project.

(f) The developer shall also produce before the committee, all required clearances from the State and Central Government agencies concerned

Table 29.1 Zoning Regulation

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
31	**High density Residential Zone**			
31.1	Residential buildings consisting of single or multifamily dwellings, residential flats / apartments, residential quarters, night shelters, orphanages, old age homes, Dharmasala, Ashram, Mutt,Madrassa,Hostels and Boarding Houses			
	Shops, Professional Offices, Commercial Offices, Banks & other Financial Institutions, Restaurants, Canteen, Hotels - floor area **limited to 400 m^2.** Places of Worship.	Vehicle Fuel Filling Stations		
	Cottage Industries including coir, Service Industries of non-nuisance Nature (See Annexe-I), with number of workers limited to 6 without power or 9 workers with power limited to 10 HP	Public utility areas and Public Utility buildings other than those included in the permitted category.	.	Any other uses not specified in columns 1, 2 & 3
	Educational institutions essentially serving the needs of residential community such as Day Care, Crèche, Nursery Schools, Kindergartens and schools offering general education (up to High school level) .	Cremation Ground/Crematorium, Burial Ground/ Common Vault		

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Health institutions essentially serving the needs of residential community such as dispensaries, clinics (Out Patient), Diagnostic Centres-floor area **limited to 200m^2**.	Outdoor Game Stadium, Open air theatre, Amusement Park		
	Community facilities such as Community Halls, Recreational Clubs, Social Welfare Centres, Gymnasium /Yoga Centers, Swimming Pool, Libraries , Exhibition centres, art galleries-floor area **limited to 200m^2.**			
	Utility Installations and Civic Amenities essentially serving the needs of residential community such as post office, police station, telephone exchange, fire station, tot lots, parks, play grounds, water treatment plants below 5 MLD and weekly markets			
	Plant Nursery, Agriculture and Horticulture, Pastures and Grazing Grounds, Fodder Cultivations, Seed Farms, Storage of Agriculture Produces and seeds, Green Houses, Pump Houses			
	Wells and Irrigation Ponds incidental to community needs.			
	Automobile workshops for two/ three wheelers – floor area **limited to 200 m^2.**			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
31.2	**Provided that the existing / Proposed access road has a width of 7m minimum.**			
	Hospitals & health centres with number of beds limited to 10. Higher Secondary Schools. Community Halls, Auditoriums, Recreational clubs, Social Welfare Centres, Convention Centres, Gymnasium/Yoga Centres, Swimming Pool, Libraries, Exhibition centres, Art galleries, Movie halls, Cultural and Information Centre, Museum, Other Public Utility Areas & Buildings -**floor area limited to 500m2** Shops/Professional Offices,Commercial Offices, Banks and other financial institutions, Restaurants , Canteens, Hotels, Godowns, Ware houses, Storage (Non hazardous), IT-Software - **floor area limited to 500 m2.**	LPG distribution centres (excluding bottling plants and bulk storage) floor area limited to 50 m2.		
31.3	**Provided that the existing / Proposedaccess road has a width of 12m minimum.**			
	Shops/Professional Offices,Commercial Offices, Banks and other financial institutions, Restaurants , Canteens, Hotels, Godowns, Ware houses, Storage (Non hazardous), IT-Software - floor area limited to 750 m2. Community Halls, Auditoriums, Recreational clubs, Social Welfare Centres, Convention Centres, Gymnasium/Yoga Centres, Swimming Pool, Libraries, Exhibition centres, Art galleries, Movie halls, Cultural and Information Centre, Museum, Other Public Utility Areas & Buildings -floor area limited to 750 m2	Stacking yards/Godowns/Warehouses for Storage of non hazardous materials. Higher Education Institutions Diagnostic Centres,Clinics, Hospitals with number of **beds limited to 50**	Multiplex Complexes	

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
32	**Low density Residential Zone**			
32.1	Agriculture, horticulture and fodder cultivation, pastures, grazing ground, and other types of cultivation including social forestry.			Any other uses not specified in columns (1), (2) & (3)
	Dairy Farms, Fish farms, Seed farms, Poultry farms, Plant nursery, pump house, wells and irrigation ponds. Orphanages, Old age homes, dharmasala, ashrams, mutts, madrassa	Fuel filling stations		
	Residential buildings consisting of Single or Multifamily dwellings, residentiaal flats / apartments, residential quarters, Hostels,night shelters, orphanages, Old age homes, all below a height of 16m	Junk Yards, Cremation ground / crematorium, burial ground, common vault Slaughter house, Gas Godowns, Saw mills with Timber Yard, Sewage Treatment Plants Fish/Meat Processing Unit		
	Shops, professional offices, commercial offices and establishments, banking and financial institutions, Gymnasium, Yoga Centres, restaurants, canteens – floor area limited to **200** m2.			
	Cottage industries, Service industries of non-nuisance Nature (See Annexe - I)engaging not more than 6 workers without power or 3 workers with power limited to 5HP,			
	Day Care and Creche, Nursery Schools, Kinder Garten / Primary & Upper primary schools			
	Dispensaries, Clinics(Outpatient) and diagnostic centres etc having a floor area limited to **100 m^2.**			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Recreational clubs, Gymnasium/Yoga centres, Swimming pool, Libraries, Reading rooms etc. having a floor area limited to **100m2**		Bus Terminal/ Stand/Truck Terminal	
	Police Post/Police Station, Telephone Exchange, , Fire station, wireless stations and Telecommunication towers.			
	Tot Lots/Parks/Play Grounds, Water treatment plant below 5MLD			
	Automobile workshops for 2/3 Wheelers			
	Weigh bridge, Godowns, Ware houses, Storage -non hazardous- floor area limited to **100m2**			
32.2	**Provided that the existing/Proposed access road has a width of 7m minimum**			
	Dispensaries, Clinics(Outpatient) and diagnostic centres etc having a floor area limited to **200 m^2.**			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Shops/Professional Offices, Commercial Offices and establishments, Banking and financial institutions, Gymnasium/ Yoga centres, Restaurants , Canteens – floor area limited to **300 m2.**	Markets- Plot area upto 500m2 LPG distribution centres (excluding Plants and Bulk Storage)- Floor area upto 50m2		
	High schools and Higher Secondary Schools			
	Godowns/ware houses/Storage - Non hazardous- floor area limited to **200m2**			
	Community halls, Auditorium, Recreational clubs, Social welfare centres, Wedding Halls floor area limited to **500m^2.**			
	Hospitals & Health Centres **with number of beds limited to 5.**			
32.3	**Provided that the existing/Proposed access road has a width of 12m minimum**			
	All Residential buildings consisting of single or multifamily dwellings, residential flats / apartments .	Stacking yards, Godowns/ Warehouses for Storage - non hazardous materials.		
		Higher Education Institutions.		
		Diagnostic Centres, Clinics, Hospitals with number of **beds limited to 50.**		

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
33	**Mixed Zone (Residential, Commercial, Industrial)**			
33.1	All uses that are permitted in High density Residential Zone, Commercial Zone and Industrial Zone	All uses restricted-1 in High density Residential zone, Commercial zone and Industrial zone		Any other uses not specified in columns (1),(2) & (3)
33.2	**Provided that the existing/Proposed access road has a width of 7m minimum**			
	Museum, Fair grounds, Open air Theatres, Indoor/Outdoor games stadium	Industrial Estates& Industrial Parks, Service Industries of Non nuisance Nature (see Annexure II) engaging not more than 9 workers with power limited to 30 HP in areas other than industrial estates/parks Sewage treatment plants,LPG godowns		
33.3	**Provided that the existing/Proposed access road has a width of 18m minimum**			
	Hospitals & Health centres upto 300 beds		Bus / Container Terminal	

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
34	**Central Business District (CBD)**			
34.1	All uses that are permitted in Commercial zone Ashram,Mutts, Madrassa Places of Worship	Other Public utility areas & Public utility buildings		Any other uses not specified in columns (1), (2) & (3)
	Additions and alterations to the existing public and semi public buildings including addition of new blocks without altering the use. Buildings incidental to Public and Semi public uses with floor area limited to 100sqm.	Parking buildings and parking lots Higher Educational Institutions provided the access has a width of 7m Minimum Fuel filling stations Saw mills with Timber Yard Slaughter Houses		
35	**Commercial Zone**			
35.1	All shops including shopping complexes, shopping malls, hypermarkets, Automobile Show room, restaurants, hotels, markets.	Other public utility areas & Public utility buildings.	Multiplex Complexes	Any other uses not specifiedi n columns (1), (2) & (3)
	Places of worship Professional offices, commercial offices & establishments, banking and financial institutions, IT software units, Movie halls, Auditorium, Wedding			
	Godowns / warehouse / storage of Non-hazardous materials, stacking yards.	Dairy & Dairy Farm, Poultry Farm.		

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Saw mills, weigh bridges, printing press, IT hardware/electronic industries, Gymnasium/Yoga centres	Fuel filling stations		
	Automobile workshop for 2/3 wheelers	Smoke house		
	Automobile workshops, automobile service stations for light motor vehicles,- **floor area limited to 300m2**	Saw Mills with Timber Yards		
	Cottage industries, cold storage,ice factory, service industries of non-nuisance nature with number of workers limited to 19 without power or 12 workers with power limited to 20HP(See Annexe-I)	Slaughter Houses.		
	Expansion of existing residential buildings, Single Family Residences, Residential flats/apartments with lower floor(s) for commercial use only, night shelters, orphanages, old age homes, dharmasala, hostels and boarding houses, lodges and guest houses, Ashram, Mutts, Madrasa.			
	Government (Local /State/Central) or Public Sector Offices			
	Day care, Creche, Nursery Schools, Kindergarten and schools offering general education up to High school level. Expansion of existing educational institutions			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Social welfare centres, library and reading rooms, exhibition centres, art gallery museum, convention centres			
	Clinics, diagnostic centres and hospitals with number of **beds limited to 50.**			
	Tot lots, Parks & playgrounds, fair grounds, open air theatres			
	Parking plaza, Taxi/Jeep stands			
	Plant nursery, Storage of agricultural produces and seeds, Pump House, Wells and Irrigation Ponds			
35.2	**Provided that the existing / Proposed access road has a width of 7m minimum**			
	Marble and granite storage/cutting centres. Automobile workshops/ automobile service stations for light motor vehicles	Service Industries off non-nuisance nature with number of workers limited to 19 without power or 9 workers with power limited to 30 HP (See Annexe I) Hospitals above 50 beds. Indoor /Outdoor game stadiums	Bus Terminal / Stand Truck Terminal	
	Higher Secondary Schools Vocational training Institutions			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
35.3	**Provided that the existing / Proposed access road has a width of 12m minimum**			
	Higher Educational Institutions. Hospitals & Health centres, Outdoor games stadium	Lorry stands, Bus terminals	Multiplex Complexes	
36	**Industrial Zone**			
36.1	All industries other than obnoxious and nuisance type industries, Automobile Workshops & Automobile Service Stations, Spray Painting Workshops, Saw Mills, Timber Yard, Ice Factory, Cold Storage, Fish and Meat Processing Units, Printing Press, Water Treatment Plants, Marble and Granite Storage and Cutting Centres, Industrial Estates & Industrial Parks.	Other Public Utility Areas and Public Buildings. Sewage Treatment Plants, Dumping Yards	Container Terminals with access width of 15 m minimum	Any other uses not specified in columns (1), (2) & (3)
	Godowns/Warehouses/Storage of non hazardous material, stacking yards, weigh bridge. Dairy and Dairy Farms, Dairy related Industries, Poultry Farms, Piggery Farm, Smoke House.	Slaughter Houses. Single family residences builtup area upto 300sq.m		
	Dry Cleaning Plants, Power Plants, Sub Stations Government or Public Sector Offices. Transport Terminals incidental to industrial use. Shops/Professional Offices, Commercial Offices, Banks & Other Financial Instiutions , Restaurent , Canteen, Hotels - Floor area limited to 100m2	Fuel filling stations, Junk Yards Cremation Ground/Crematorium, Burial Ground, Common vault		

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Residential and Commercial Uses incidental to the Industrial Use. Any other activity essentially incidental to Industrial use with floor area upto 100 sqm	Storage of Explosives and Fire Works, Gas Godowns, Crusher Units.		
	Tot lots, Parks and Play Grounds attached to incidental residential use.			
	Green houses, Storage of agriculture produces and seeds			
37	**Public and Semipublic Zone**			
37.1	Local/State/Central Government/Public Sector Offices and Other Related Public Buildings	Single family residence floor area upto 300sq.m,		Any other uses not specified in columns (1),(2) &(3).
	Residential Quarters incidental to public and semi public use. Ashram/Mutts Public Utility Areas and Buildings.	Bus terminals/stand, lorry stand, Fuel filling station		

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
	Additions and alterations to the existing public and semi public buildings including addition of new blocks .	Cremation Ground / Crematorium, Burial Ground, Common Vault Shops/Professional Offices, Commercial Offices, Banks & Other Financial Instiutions , Restaurent , Canteen, Hotels - Floor area limited to 300m2		
	Buildings for incidental uses with floor area limited to **100 m^2**.			
	Water treatment plants below 5 MLD,Tot lots, Parks/Play Grounds,Open air Theatres, Zoological and botanical Gardens/Bird Sanctuary, Camping sites.			
	Educational institutions, Civil Defence and Home Guard, Library and Reading Rooms, Social Welfare centres, Museum, Indoor games stadium, Swimming pools,Exhibition centres and art gallery			
	Places of worship, Clinics, Diagnostic centres and Hospitals. Auditoriums/Wedding halls/ community halls, convention centers incidental to public and semipublic uses, outdoor games stadium, parking plazazs,auto rickshaw/taxi/jeep stands, boat jetty. Solid Waste Disposal area Only buildings/ structures incidental to the solid waste disposal system are permitted. Green buffer of 5m must be provided around solid waste disposal area			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
38	**Transportation Zone**			
38.1	All buildings and uses connected with transport and communication Such as Bus terminal /Lorry / Car/Jeep Stand, Railway Station, Auto Rickshaw Stand, essential repairs and Service Shops related to the transport and Communication use Weigh Bridges	Public Utility Areas and Buildings	Container Terminals provided that the access has a width of 15m minimum.	Any other uses not specified in columns (1),(2) &(3).
	Any incidental uses to the transport terminals such as Retail shops,Restaurants , Canteen etc. with floor area liited to 30% of the built-up area of the terminal	Fuel Filling Stations		
	Staff Quarters,Offices, Night Shelters, Guest Houes etc incidental to the transport terminals			
	Parking Plazas, Transmission Towers and Wireless Stations.			
39	**Recreational Open Spaces**			
39.1	Any construction/land development essential for the development/ improvement of open air recreational facilities.	Public Utility Areas and Buildings which will not affect the character of the area.		Any other uses not specified in columns (1),(2) &(3).
	Fish Landings, Boat Jetties, Guided Boat Rides, Watch Towers, Eco Walk Ways, Water Sports Facilities, Fair Grounds etc.			
	Tot Lots, Park, Play Grounds, Swimming Pools, Open Air Stadium, Open Air Theatre, Zoological and Botanical Garden, Bird Sanctuary, Eco Walk Way etc.			

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
40	**Conservation Zone**			
40.1	Paddy cultivation Agriculture/ Horticulture/Fodder cultivation, Fish Farms/ Seed Farms/ Pump House/ Wells and Irrigation Ponds without any building construction. OR Constructions/ land developments in conformity with the Conservation of Paddy Land and Wet Land Act, 2008 .			Any other uses not specified in columns (1),(2) &(3).
41	**Water bodies Zone**			
41.1	All existing water bodies shall be conserved. Bridges, Side protection walls, Bathing Ghats, Boat jetties etc may be permitted based on community level requirements.			Any other uses not specified in columns (1),(2) &(3).
42	**Green strip**			
	Area to be used only for planting trees in order to retain as green areas, parks, pump houses, wells and irrigation ponds, storage of agricultural products and seeds, green house. 5 m wide Green Strip may be provided surrounding the sides of natural water bodies			Any other uses not specified in columns (1),(2) &(3).

Para No	Uses Permitted	Uses Restricted-1	Uses Restricted-2	Uses Prohibited
	1	2	3	4
43	**Special Zone** Special zones include the areas specifically demarcated for certain projects. No other activity unless otherwise specified shall be permitted in such zones. If this projects are not materialised in corresponding demarcated land within a period of 7 years, from the date of sanctioning of this master plan, The freezed land may be released and returned back to that zone as per the existing land use.			
SZ 1	**Tourism facilitation centre**	Single family Residences - floor area upto 300 sq m, Resorts , Hotels, Restaurants , Boarding Houses , Night Shelters , Guest Houses, Lodges. Retail Shops /Professional Offices , Commercial Offices/Establishments, Banking and Financial Institutions - floor area upto 200 sq m, Gymnasium / Yoga Centers, library and Reading Rooms, Museum, Exhibition Centres and Art Gallery,Open air Theatre , Tot Lots/Parks/Play Grounds, Amusement parks, Swimming Pools Clinics, diagnostic centres - floor area upto 150sq .m Transmission towers and wireless stations		
SZ 2	**IT PARK**	Land can be developed as IT centre without disturbing the surrounding environment		

ANNEXURE -1

List of non-obnoxious and non-nuisance type of service or light industries

1. Aerated water and fruit beverages
2. Apparel making
3. Assembly of air coolers and conditioners
4. Assembly of bicycles, baby carriage and other small non motorized vehicles.
5. Atta - chakks
6. Ayurvedic medicinal formulations, Ayurvedic health club
7. Bakery products, biscuits, confectionaries
8. Bamboo and cane products (only dry operations)
9. Block making for printing
10. Card board or corrugated box and paper products (paper or pulp manufacturing excluded)
11. Carpet weaving
12. Cement and concrete products (where crusher is not used)
13. Chilling plants and cold storage
14. Coir (without bleaching / dyeing)
15. Concrete batching plants
16. Cotton and woolen hosiery/ Cotton and silk printing
17. Electro plating
18. Electronics and electrical goods
19. Electronics equipment (Assembly)
20. Engineering workshop and general fabrication works (without any chemical treatment)
21. Embroidery and lace manufacturing
22. Flour mills (job work only)
23. Foam bed, latex thread
24. Foot wear (rubber and PVC)
25. Furniture making
26. Fountain pens
27. Garment stitching, tailoring
28. Gold and silver smithy

29. Gold and silver thread sari work
30. Ice- cream or ice making
31. Insulation and other coated papers (paper or pulp manufacturing excluded)
32. Jobbing and machining
33. Light engineering
34. Laundry, dry cleaning and dyeing
35. Manufacturing of formulated synthetic detergent products
36. Manufacture of soaps involving process without generation of trade effluents (saponification of fats and fatty acids only)
37. Mineralized water
38. Musical instruments manufacturing
39. Oil ginning/expelling
40. Optical frames
41. Paint (by mixing process only)
42. Paper pins and U- clips
43. Power looms / hand looms (without dyeing & bleaching)
44. Photo and picture framing
45. Pressure testing units
46. Printing press
47. Rice mills
48. Rope (cotton and plastic)
49. Rubber gloves other than that for surgical and medical purpose
50. Rubberized coir mattresses
51. Scientific and mathematical instruments
52. Sports goods
53. Steeping and processing of grains
54. Small foundries
55. Tissue culturing
56. Toys
57. Water softening and demineralization plants
58. Watch, pen and spectacles repairing.

ANNEXURE 2

List of obnoxious and nuisance industries subject to Objectionable sounds , dust, odours, fumes, effluents or processes constituting hazardous use and which are to be located in hazardous zones (grouped) under Indian Standard Industrial classification

(vide Regulation 7- 1, 7 - 2 and 13-2)

Manufacture of Food Stuff:

(1) Slaughtering, preservation of meat and fish and canning of fish

Manufacture of Beverages:

(2) Production of distilled spirits, wines, liquor etc. from alcoholic fruits and salts in distillery and brewery

(3) Production of country liquor and indigenous liquor such as toddy, liquor from mahua, palm juice

Manufacture of textiles:

(4) Dyeing and bleaching of cotton

Manufacturing of wood & wooden products, sawing and planning of wood:

(5) Wood seasoning

(6) Manufacture of veneer & plywood

(7) Paper, pulp and straw board

Manufacture of leather and leather products:

(8) Currying, tanning and finishing of hides and skins and preparation of finished leather

Manufacture of Rubber petroleum & local products:

(9) Manufacture of tyres and tubes and tyre retreading

(10) Manufacture of industrial and synthetic rubber

(11) Reclanation of rubber

(12) Production of petroleum, kerosene and other petrol products in refineries

(13) Production of chemicals and chemical products

Manufacture of chemical and chemical products:

(14) Manufacture of basic industrial chemicals such as acids, alkalies and their salts, not elsewhere specified (specially sulphurious, sulphuric, nitric, hydrochloric etc. acids, ammonia chlorine and bleaching powder manufacture.)

(15) Manufacture of dyes, paints, colours, ink powder, varnishes, printing ink etc.

(16) Manufacture of fertilizers (specially from organic materials) (17) Manufacture of disinfectants and insecticides

(18) Manufacture of Ammunition, explosives and fire works

(19) Manufacture of matches

Manufacture of Nonmetallic mineral products other than Petroleum and coal:

(20) Manufacture of cement

(21) Manufacture of lime

(22) Manufacture of plaster of paris

Manufacture of Basic Metals and their Products:

(23) Manufacture of iron and steel including sheeting, refining, rolling and conversion into basic forms

(24) Manufacture including smelting, refining etc. of nonferrous metals and alloys in basic forms

(25) Manufacture of ornaments

Manufacture of machinery (other than transport) and electrical equipment:

(26) Manufacture of all kinds of battery, Miscellaneous items not covered above

(27) Incineration, dumping and reduction of offal, dead animals, garbage or refuse

(28) Manufacture of gelatin and glue

(29) Fat, tallows, grease of lard refining of manufacture

(30) Bone meal, bone girst and bone powder

(31) Manufacture of cashewnut shell oil and

(32) Other similar types of nuisance industries.

ANNEXURE -3

STAKEHOLDERS OF CHALAKUDY MUNICIPALITY

COUNCIL MEMBERS - 2020-2025

ചാലക്കുടിനഗരസഭ 2020–2025			
ാർഡ് ംബർ	കൗൺസിലർമാരുടെ പേര്	ഫോൺ നമ്പർ	വാർഡിന്റെ പേര്
1	ജിജി ജോൺസൻ	9072128088	താണിപ്പാറ
2	എബി ജോർജ്ജ്	9846032787	പെരിയാച്ചിറ
3	വത്സൻ സി എൻ	9744011008	പോട്ട സ്കൂൾ
4	ജോയ് ആന്റണി	9447272653	അലവി സെന്റർ
5	സൗമ്യ വിനേഷ്	9745808617	പനമ്പിള്ളി കോളേജ്
6	പ്രീതി ബാബു	8592042274	സിത്താര നഗർ
7	വി. ഒ. പൈലപ്പൻ	8086675292	പോട്ടച്ചിറ
8	ലില്ലി ജോസ്	9745868903	പാറക്കോട്ടിക്കൽ ക്ഷേത്രം
9	സൂസമ്മ ആന്റണി	9747853212	സെന്റ് ജോസഫ് ചർച്ച്
10	തോമസ് മാളിയേക്കൽ	9846285111	സെന്റ് ജെയിംസ് ഹോസ്പിറ്റൽ
11	ബിജി സദാനന്ദൻ	9446802239	കൂടപ്പുഴ പള്ളി
12	സൂസി സുനിൽ	9745132330	തിരുമാന്നാം കുന്ന് ക്ഷേത്രം
13	ഷൈജ സുനിൽ	9544856846	ഗാന്ധി നഗർ
14	എം. എം. അനിൽകുമാർ	9539512917	പവർ ഹൗസ്
15	അഡ്വ. ബിജു എസ് ചിറയത്ത്	9447007567	ആറാട്ട കടവ്
16	സിന്ധു ലോജു	9539778299	വെട്ട കടവ്

ചാലക്കുടിനഗരസഭ 2020–2025			
വാർഡ് നമ്പർ	വാർഡ് നമ്പർ	വാർഡ് നമ്പർ	വാർഡ് നമ്പർ
17	ദീപു ദിനേശ്	9645502323	ചേനത്തു നാട്
18	വി. ജെ. ജോജി	8086000900	ഗായത്രി ആശ്രമം
19	സി. എസ്. സുരേഷ് (വിനു)	9846282288	സെന്റ് മേരീസ് ചർച്ച്
20	എലിസബത്ത് ടി ഡി	9188648542	ഹൗസിംങ് ബോർഡ്
21	നിത പോൾ	9446904855	മുനിസിപ്പൽ ക്വാർട്ടേഴ്സ്
22	ശ്രീദേവി സി	9495224420	കണ്ണമ്പുഴ ക്ഷേത്രം
23	ബിന്ദു ശശികുമാർ	9847308515	ഐ. ടി. ഐ വാർഡ്
24	സുധാ ഭാസ്കരൻ	9847204168	ഐ. ആർ. എം. എൽപി സ്കൂൾ
25	കെ. വി. പോൾ	9447007284	എഫ്. സി. ഐ വാർഡ്
26	ജിതി രാജൻ	7592985973	മൂഞ്ഞേലി വാർഡ്
27	ജോർജ് തോമസ്	9349150051	കൊട്ടാട്ട് വാർഡ്
28	ആനി പോൾ	9400395030	മൈത്രി നഗർ
29	ബാലൻ കെ പി	8606296453	കാരക്കുളത്തിൽ നാട്
30	റോസ്സി ലാസർ	9400179690	മുനിസിപ്പൽ ഓഫീസ്
31	ജോജി കെ ജെ	9048381015	ആര്യങ്കാല മസ്ജിദ്
32	ആലീസ് ഷിബു	9946983790	തച്ചുടപറമ്പ്
33	ഷിബു വാലപ്പൻ	9846588605	വി. ആർ പുരം
34	സുനോജ് കെ എസ്	9400480952	ഉറുമ്പൻ കുന്ന്
35	ലിബി ഷാജി	9496041263	പ്രശാന്തി ഹോസ്പിറ്റൽ
36	ബെറ്റി വർഗീസ്	9048661218	കരുണാലയം

COUNCIL MEMBERS - 2017

Ward. No.	Councilor	Ward Name
1	Sri. Joju.V.J	Thanippara
2	Smt. Reena Davis	Periachira
3	Smt. Beena Davis	Potta school
4	Smt. Sulekha Sankaran	Alavi centre
5	Sri. Joy Chamavalappil	Panampilly college
6	Smt. Molly Paulson	Sithara Nagar
7	Smt. Sarala Neelenkattil	Pottachira
8	Sri. V.O. Pailappan	Parakottikkal Temple
9	Sri. Wilson Panattuparambil	St.Joseph Church
10	Smt. Susamma Antony	St.James Hospital
11	Sri. Sasi K Kottayi	Koodapuzha Church
12	Sri. Gijan Mathayees	Thirumanthamkunnu Temple
13	Sri. Ganeshan V.C	Gandhi Nagar
14	Smt. Usha Stalin	Power House
15	Smt. Usha Parameswaran	Arattukadavu
16	Sri. Geo Kizhakumthala	Vettukadavu
17	Smt. Mary Nalan	Chenathunadu
18	Smt. Geetha Teacher	Gayathri Ashramam
19	Smt. Seema Jojo	St. Marys Church
20	Sri. V.J.Joji	Housing Board
21	Adv.U.V.Martin	Municipal Quarters
22	Sri. K.M.Harinarayanan	Kannampuzha Temple
23	Smt. Bindu Sasikumar	I.T.I
24	Sri. M.P.Bhaskaran	I.R.M.L.P. School
25	Smt. Laiji Thomas	F.C.I

Ward. No.	Councilor	Ward Name
26	Sri. K.V.Paul	Moonjely
27	Smt. Annie Paul	Kottatt
28	Sri. M.A.Jose	Maithri Nagar
29	Smt. Suma Baiju	Karakulathunadu
30	Adv. Biju S Chirayath	Municipal Office
31	Smt. Biji Sadanandan	Aryankala Masjid
32	Sri. Shibu Valappan	Thachudaparambu
33	Smt. Alice Shibu	V.R. Puram
34	Smt. Jayanthi Praveenkumar	Urumbankunnu
35	Sri. P M Sreedharan	Prasanthi Hospital
36	Sri. Varghese Varocky	Karunalayam

COUNCIL MEMBERS - 2014

Ward. No.	Councilor	Ward Name
1	Smt. Seleena Jacob	Thanippara
2	Sri. Johny Pullan	Periachira
3	Sri. Wilson Manjanga	Potta school
4	Sri. M.Raghunath	Alavi centre
5	Smt.Vanaja Vikraman	Panampilly college
6	Sri. Francis Panekadan	Sithara Nagar
7	Sri V.O. Pailappan	Pottachira
8	Smt. Sarala Neelengattil	Parakottikkal Temple
9	Smt. Jancy Jaison Vadakkan	St.Joseph Church
10	Sri. Jose Manadan	St.James Hospital
11	Smt. Biji Sadanandan	Koodapuzha Church
12	Smt. Usha Parameswaran	Thirumanthamkunnu Temple
13	Smt. Vanaja Bhavanandan	Gandhi Nagar
14	Sri. M M Anilkumar	Power House
15	Sri. Biju S Chirayath	Arattukadavu
16	Smt. Mary Nalan	Vettukadavu
17	Sri. Anto Vadakkan	Chenathunadu
18	Sri. George Kattuparamban	Gayathri Ashramam
19	Sri. C.S. Suresh	St. Marys Church
20	Smt. Thankamma Andrews	Housing Board
21	Smt. Bindu Martin	Municipal Quarters
22	Smt. C.Sreedevi	Kannampuzha Temple
23	Sri. T.Pradeep Kumar	I.T.I
24	Smt. K.J.Sreedevi	I.R.M.L.P. School
25	Sri. K.O. Thomas	F.C.I
26	Smt. Sheeba Jayan	Moonjely
27	Sri. U.T.Simon	Kottatt
28	Smt. Priya Jose	Maithri Nagar
29	Sri. Jose .J Pynadath	Karakulathunadu

Ward. No.	Councilor	Ward Name
30	Smt. Karthyayani Kavalan	Municipal Office
31	Sri. P.P.Paul	Aryankala Masjid
32	Smt. Alice Shibu	Thachudaparambu
33	Sri. Shibu Valappan	V.R. Puram
34	Sri. P.M.Sreedharan	Urumbankunnu
35	Smt. Ramani Padmanabhan	Prasanthi Hospital
36	Smt. Betty Varghese	Karunalayam
30	Smt. Karthyayani Kavalan	Municipal Office

SIC WORKING GROUP MEMBERS - 2014

1. Agriculture, Animal Husbandry, Dairy Development and Fisheries Sector

Chairman : Sri. Jose .J Pynadath

Convener : Agriculture Field officer

Members :
1. Sri. U.T.Simon, Councilor.
2. Smt. K.J Sreedevi, Councilor.
3. Sri. T.A Sivaraman
4. Sri. Thomas Puthussery
5. Smt. Sheela Paul
6. Sri. T.A. Paul
7. Sri. Paul Pullan
8. Sri. Dr.Balachandran
9. Sri. Johny Kattalan

2. Irrigation and Watershed Development Sector

Chairman : Sri. K.O. Thomas, Councilor.

Convener : Assistant Executive Engineer, Irrigation

Members :
1. Smt. Seleena Jacob, Councilor
2. Sri. M.Raghunath , Councilor
3. Smt. Susi Sunil
4. Sri. Jose Puthenpurackal
5. Smt. Sheeja.A.S Aloor
6. Sri. V.L. Johnson
7. Sri. T.J. Paul
8. Sri. Jose Meleppuram
9. Sri. Kochappan Ambookkan

3. Industry and Commerce Development Sector

Chairman : Sri. M.M. Anilkumar,

Councilor.Convener : Industrial extension officer.

Members :
1. Smt. Jancy jaison, Councilor.
2. Sri. George kattuparamban, Councilor.
3. Sri. Shaji Madathiparambil
4. Smt. Rani Pailan
5. Sri. George Kannampuzha.
6. Sri. M.L. Kochumathu.
7. Sri. T.T. Varghese
8. Sri. Ittoop Ainikkadan

4. Health and Drinking Water Sector

Chairman : Sri. Jose Manadan, Councilor

Convener : Superintendent, Taluk hospital, Chakakudy.

Members :1. Sri. C.S. Suresh, Councilor.
2. Smt. Biji Sadanandan, Councilor.
3. Smt. Vananja Vikraman, Councilor.
4. Sri. Dr. Jose Kurian
5. Sri. T.P. Rajan
6. Sri. Sarasijakshan
7. Sri. Paul Pullan
8. Sri. V.V. Davis
9. Sri. Prof. Krishnakumar

5. Infrastructure Development Sector

Chairman : Alice Shibu, Vice Chairperson

Convener : Municipal Engineer

Members : 1. Sri. Francis Panekkadan, Councilor.
2. Smt.Sheeba jayan, Councilor.
3. Sri. Francis Chirayath
4. Sri. I.L. Anto
5. Sri. Ajithan Parambikkadan
6. Sri. Shaju Palliyil
7. Sri. K. T. Vasu
8. Sri Pradeepkumar Housing Board
9. Sri. Devassykkutty Panekkadan.

6. Education Development Sector

Chairman : Sri. P.P. Paul, Councilor

Convener : A.E.O,

Members : 1. Smt. Thankamma Andrews, Councilor

3. Smt. Bindu Martin, Councilor

4. Sri. Sugathan Master

5. Sri. B.P. Appukkuttan
6. Sri. Dr.C.C. Babu
7. Sri. T.A. Johnson
8. Sri. Sebastian John
9. Sri. Unnikrishnan Master
10. Sri. K.P. Aravindan

7.Social Welfare and Poverty Reduction Development Sector

Chairman : Smt. Ramany Padmanabhan, Councilor

Convener : Social Welfare officer, CDPO.

Members :
1. Sri. Anto Vadakkan, Councilor
2. Smt. Sarala Neelenkattil, Councilor
3. Smt. Vanaja Lalan
4. Smt. Leela poulose
5. Smt. Sheeba Shaiju
6. Smt. Rosy lazer
7. Smt. Jayanthi Praveenkumar.
8. Smt. Devassy Pullan.
9. Smt. Rosy George.

8.Scheduled Caste and Scheduled Tribe Development

Chairman : Smt. Karthiyayani Kavalan,

CouncilorConvener : S.C.Development officer.

Members :
1. Sri. Shibu Valappan, Councilor
10. Sri. P.M. Sreedharan, Councilor
11. Sri. Dileep Perambrath
12. Sri. Jayan Kalabhavan
13. Sri. C.A Kunjayappan
14. Smt. Saraswathy Subran
15. Smt. Sulochana Harikumar
16. Sri. C.M Ayyappan
17. Sri. Ramakrishnan Vettiyattil

9.Power and Telecommunication Development Sector

Chairman : T. Pradeepkumar, Councilor

Convener : Asst. Executive Engineer, KSEB Chalakudy.

Members :
1. Sri. Johny Pullan, Councilor
18. Smt. Betty Varghese, Councilor
19. Sri. M.A. Varunny
20. Sri. K. Soman
21. Sri. M.T. Joy Maliyekkal
22. Sri. M.K. Chandran
23. Sri. M.P. Bhaskaran
24. Sri. P.T. Devassy
25. Sri. O.S Chandran

10. Tourism Development Sector

Chairman : Ad.Biju.S.Chirayath ,

CouncilorConvener : Secretary DTPC.

Members :

1. Smt. Priya Jose, Councilor
2. Smt. Usha Parameswaran, Councilor
3. Sri. Thomas Pullan
4. Sri. P.D.Ouseph Master
5. Sri. C.M. Nazeer
6. Sri. Shimmy George
7. Sri. Adv.C.B. Arun
8. Sri. K.A. Unnikrishnan
9. Sri. Subash Chandradas

11. **Environment and Waste Disposal Development Sector**

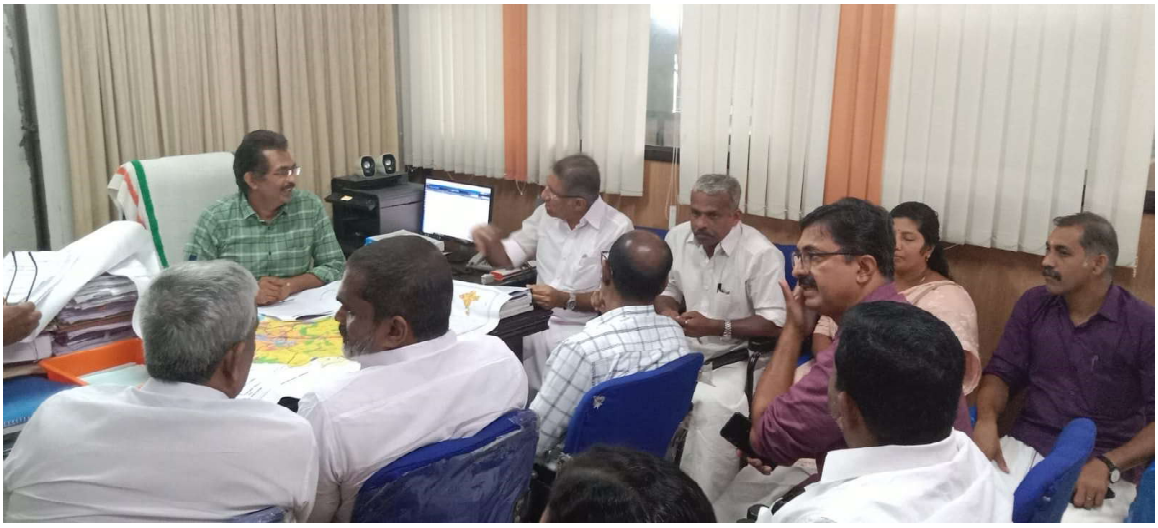
Chairman : Smt. Mary Nalan, Councilor

Convener : Health Superindendent.

Members :

1. Sri. Wilson Manjaga, Councilor
2. Smt. C Sreedevi, Councilor
3. Sri. Jaison Vadakkan
4. Sri. K.V. Paul
5. Sri. P.T. Jose
6. Sri. A.M. Chandrasekharan
7. Sri. N. Kumaran
8 Sri. K.I. Ajithan
9 Sri. P.V. Antony

Master Plan Special Committee - Various Discussions and Field Visits









Master Plan Special Committee -
Various Discussions and Field Visits







ANNEXURE -4

Planning Team for Master Plan for Chalakudy town:

Sri. K.R. Rajeev, Town Planner

Sri.Manoj Kumar K.B, Deputy Town Planner

Smt.Jeeva Liza Xavier,Deputy Town Planner

Smt. Vimaja. C.R, Assistant Town Planner

Sri.Rajesh.M.C, Assistant Town Planner

Sri.Radhakrishna K.S, Assistant Town Planner

Smt.LathikaP.V, Ist Grade Surveyor/Draftsman.

Sri. K.M. Gopakumar, former Town Planner

Smt. Jinumole Varghese, former Deputy Town Planner

Smt. P.M. Sugathakumari, formerAssistant Town Planner

Sri.Sanu.K.Thekkath, former Assistant Town Planner

Technical Assistance:

Smt. Binu.C.S, Reseach Assistant

Sri.Biju. K.A, Stastical Assistant

Sri.Manoj.V, former Research Assistant

Smt. Sabitha.O.M, former Statistical Assistant

Sri.Bigith V.B ,former Planner Associate

Smt.Swathy.K.V, Planning Assistant GIS

Smt. Reshma K Raveendran,formerPlanning Assistant GIS

Smt. Sajitha, former Computer Assistant