EXECUTIVE SUMMARY

Introduction

Erode, the headquarters of Erode District, is one of the major urban areas in Tamil Nadu. The town has emerged as an important textile centre of south India due to its location on the banks of two major rivers, Cauvery and Bhavani. It is also a commercial and agro based industrial center. Proximity to Coimbatore and Salem, two major industrial towns in Tamilnadu is increasing the growth potential of Erode.

Presently, Erode city extends its influence over the entire Erode district and neighboring districts of Namakkal, Tirupur and Karur. In the capacity of the district headquarters, the city houses many administrative offices, educational and health institutions, universities, wholesale markets and other trades. Erode falls under the category of highly urbanized areas, with an urbanisation level of 51%. The urban population density of Erode is 4550 persons/sq. kms (Census-2011), and this is above the average urban density of Tamil Nadu (3520)

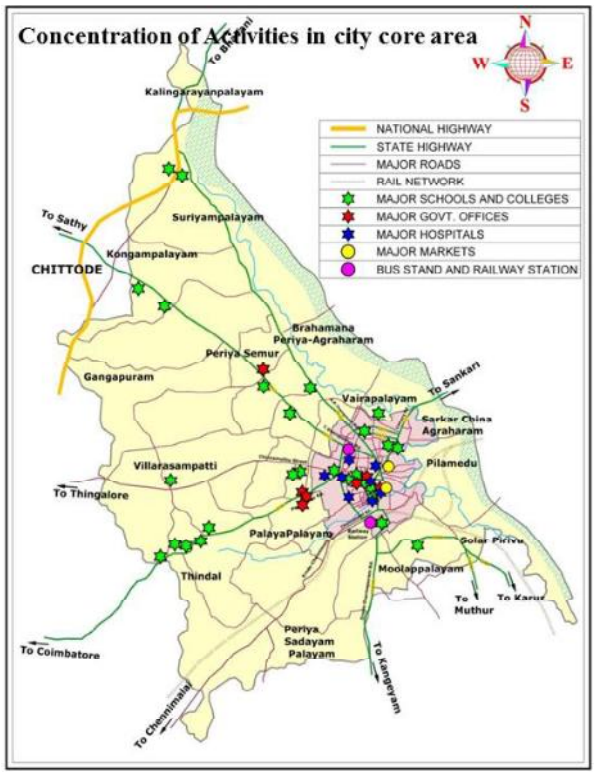
Regarding the travel connectivity, Erode is well connected with other areas through road and rail. The State Highways passing through the city, such as Perundurai road, Bhavani road, Chithode road, Karur road, Nasiyanur road, and Kangayam road function as the major mobility corridors of the urban area in addition to its function as regional connectors. Three railway lines joins at Erode and hence the Erode railway station is a major rail junction and it acts as a rail transit point.

Expanded Erode City Municipal Corporation (ECMC) covering an area of 109.52 sq.kms was formed in 2008 by merging the old Municipal Corporation (area of 8.44 sq. Kms) with four municipalities, two Town Panchayats and five village panchayats. In 2013, the LPA area has been expanded to 730.70sq. kms by adding additional areas of Erode and Perundurai taluks.

Urbanization and Its Effect

Erode Municipal Corporation with an area of 8.44 sq. kms was upgraded to City Corporation (109.52 sq. kms) in 2008. In order to meet the required functions of the district head quarter, the old town area itself emerged as the central business district with concentration of many commercial activities, offices; educational institutions, health centers, etc. (refer Figure). Even though in recent years, some of the major activities such as certain industrial units, markets, etc. have been shifted to city suburbs as part of decongestion drive, the core city area is still very congested with small industrial units such as tanneries, agro- based processing units, warehouses, godowns and goods yard at railway station, bus stand (city and intercity).

Erode is witnessing traffic and transportation issues due to factors like unplanned growth, intense urban sprawl, limited road space with increased vehicle ownership. These factors lead to urban mobility issues, pollution and environmental hazards. Under the flagship scheme of Sustainable Urban Transportation Program, steps are taken to conduct Comprehensive Transportation studies with an aim to prepare long-term urban transport strategy to improve the mobility. This is in line with the National Urban Transport Policy (NUTP).



Govt. of Tamil Nadu has taken initiative to conduct Comprehensive Mobility Plan (CMP) for Erode LPA with the financial aid from International Bank for Reconstruction and Development (IBRD). The project is taken under Tamil Nadu Urban Development Project III and routed through Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL), Government of Tamilnadu to initiate a Comprehensive Mobility Plan (CMP) study for Erode Local Planning Area (LPA). TNUIFSL has awarded the consultancy contract to M/s CDM Smith India Pvt. Ltd., Bangalore.

Need, Necessity and Importance for Preparation of Erode CMP

Erode is as a major transport hub in the western part of Tamil Nadu and facilitates the mobility needs of the region. Erode requires a CMP due to:

- Its upgradation to City Corporation in 2008 with an area expansion more than ten times, without planning for the transport infrastructure and the city is facing challenges due to urban sprawl.
- Encourage the sustainable modes of transport as the city lack pedestrian and cyclist facilities,
- Discourage personal modes of transport, thereby reduce congestion, pollution and increase travel safety
- Identify proper on street and off street parking areas which helps in the effective use of road space, reduce congestion and pollution levels.

- Transportation system planned for Erode should be able to meet social, economic and environmental sustainability goals. This can be achieved through a proper CMP
- CMP ensure a quick, affordable, safe, reliable, comfortable, energy efficient and environmentally sustainable systems
- CMP will be the tool to guide sustainable growth of the transport sector, by implementing the plans in a timely manner.

Objective and Scope of Study

The principal focus of the study is to develop short, medium and long term strategies and develop an urban mobility plan for Extended Erode LPA. It also involves identification of specific proposals for upgradation of transport infrastructure/facilities to ease the congestion/improve mobility level for a period of twenty years. The study covers the following objectives as formulated by Ministry of Urban Development, Govt. of India (MoUD) in the toolkit for CMP:

- To provide a long-term vision(s) and goals for desirable urban development in the study area
- To illustrate a basic plan for urban development and include a list of proposed urban land use and transport measures to be implemented within a time span of 20 years or more
- To ensure that the most appropriate, sustainable and cost effective implementation program is undertaken in the urban transport sector
- To identify feasible short term, medium term and long term traffic management measures and transport infrastructure needs to facilitate safe and efficient movement of people for the present and future.

The scope of services in line with the objectives is divided into seven principal tasks as given below:

TASK 1: Defining the Scope of the CMP

TASK 2: Data Collection and Analysis of the Existing Urban Transport Environment

TASK 3: Development of Business as Usual (BAU) Scenario

TASK 4: Development of Sustainable Urban Transport Strategies

TASK 5: Development of Urban Mobility Plan

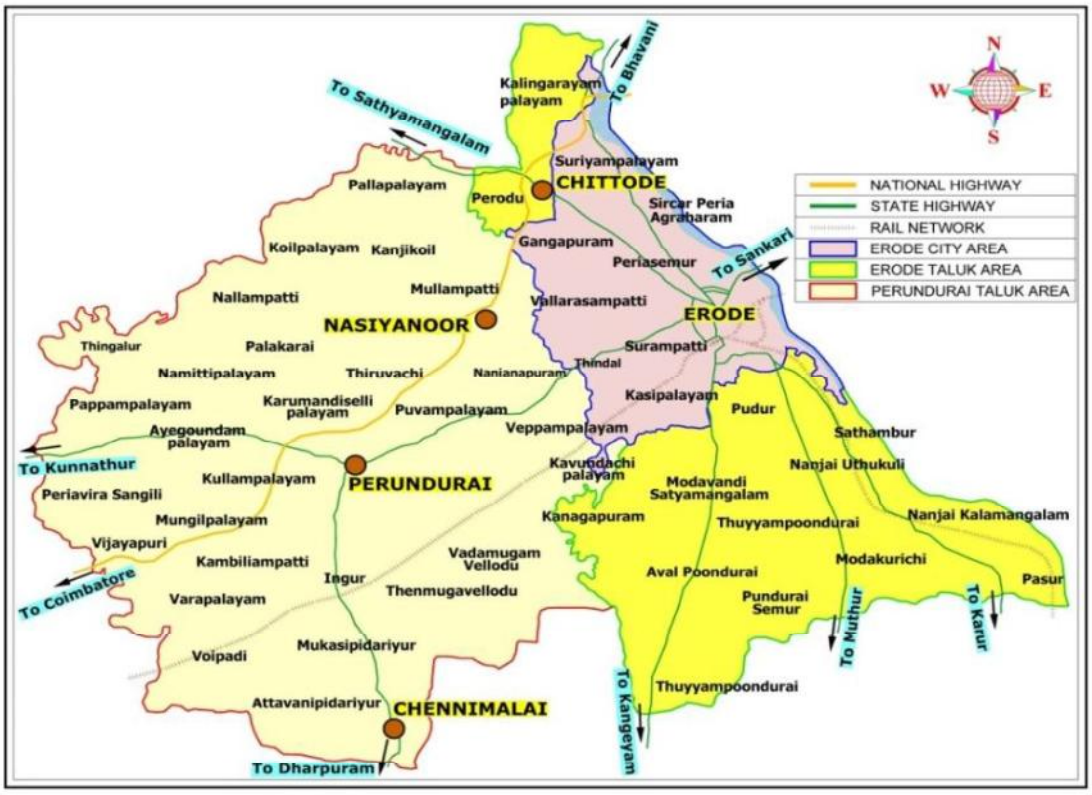
TASK 6: Preparation of the Implementation Program

TASK 7: Stakeholder consultations

The CMP is prepared as per the toolkit formulated by Ministry of Urban Development, Govt. of India (MoUD). Three stakeholder meetings and one workshop were conducted at different stages of the study and its suggestions were incorporated in the CMP.

Study Area

The study area comprises of the Extended Local Planning Area of Erode, which is about 730.70 sq. km. This includes the expanded Erode City Municipal Corporation (ECMC) with an area of 109.52 sq. km, 22 town panchayats and 5 panchayat unions spread in Erode and Perundurai taluks.



Study Area details				
Sl. No	**Name of Taluk**	**Name of area**	**Status**	**Area (sq.kms)**
1	Erode	Expanded Erode City	City Corporation	109.52
		Chithode, Avalampundurai, Mudakiruchi, Surampalayam, Arachalur, Kodumudi, Sivagiri, Unjalur, Pasur, Vadugapatti, Vellottamparappu, Kilampadi, Chinnasamudram, Kollamkoil, Vengambur	Town Panchayats (15 nos.)	209.34
		Erode, Mudakiruchi, Kodumudi	Panchayat Unions (3 nos.)	
2	Perundurai	Perundurai, Chennimalai, Nasiyanur, Pallapalayam, Kanjikoil, Pothampalayam, Nallampatti,	Town Panchayats (7 nos.)	411.84
		Perundurai, Chennimalai	Panchayat Unions (2 nos.)	
Total Area (sq. kms)				**730.70**

Socio-economic Profile

Erode city is popularly known as 'Textile city of South India'. The population of extended LPA of Erode as per Census-2011 is 8,67,256, which includes Erode City Corporation (population- 4,98,121). The city population contributes about 58% of the LPA population (cover 15% of the extended LPA area). The population density (2011) for the LPA is 1187 persons per sq. kms. and for the city is 4,548 persons per sq. kms. The average household size is 3.3 for the city area, while the same for rest of LPA is around 3.5. The reported average monthly income of household is about Rs. 8000/- in the city area and Rs. 7,000/- for the rest of LPA. As per the statistics, 60% of households in the city and 45% in rest of LPA own a vehicle.

The economic base of Erode include agriculture (turmeric/banana/ coconut/rice/oil/ sugarcane), industry (textile, tanneries, paper, coconut oil, etc). State Industries Promotion Corporation of Tamil Nadu Ltd. (SIPCOT) at Perundurai is an important industrial park in the LPA. It is an important textile and turmeric trading centre of national importance and hence Erode is also known as Manjal Maanagaram (Turmeric city) and Javuli Nagaram (Textile city).

SIPCOT: An Industrial Park by SlPCOT is present in Perundurai and Ingur villages of Erode district in an area of 2751.98 acres. So far, 2600 acres of land have been acquired and out of this, 1300 acres were developed for Phase- I and the balance 1300 acres have been set apart for Phase – II. There are about 150 industrial units in the SIPCOT, including steel, pipe, manufacturing, etc.

The workforce participation ratio (WPR) of Erode (44% for city and 54% for LPA) is higher than India average (39%). Employment is mainly seen in the household industry sector and other working sectors such as secondary, services, tertiary, etc.

Share of Work Force			
Sector	**City**	**LPA- excluding city**	**Total LPA**
Primary Sector	4.3%	43.2%	22.6%
Household Industry	2.3%	3.6%	2.9%
Other Workers (secondary & tertiary)	93.3%	53.2%	74.5%

Source: CDP, Census of India, Secondary data

The existing land use of the LPA has been verified using the details collected from the LPA Authority and data collected from other secondary sources. Future land use plan of the LPA is yet to be finalized by the planning authority.

Urban Transport Systems & Facilities

Bus Transport: Erode has an efficient public bus transport system. Tamil Nadu State Transport Corporation (TNSTC) provides long distance as well as city/mofussil bus services in Erode. The city/mofussil bus fleet strength is 153 (TNSTC- 106, private- 47), and operates about 1640 services daily. Its city/mofussil bus operation covers 112 routes covering major roads in the LPA. Buses are operating to places such as Perundurai, Bhavani, Chennimalai, Chithode, Sivagiri, Modakurichi, Arichalur, Tiruchengode, etc. In addition to TNSTC services, there are private buses (both normal and mini buses operated by private operators). The total number of daily trips made by bus in the LPA area is 3.23 lakhs, in which 1.73 lakhs is made within the city itself.

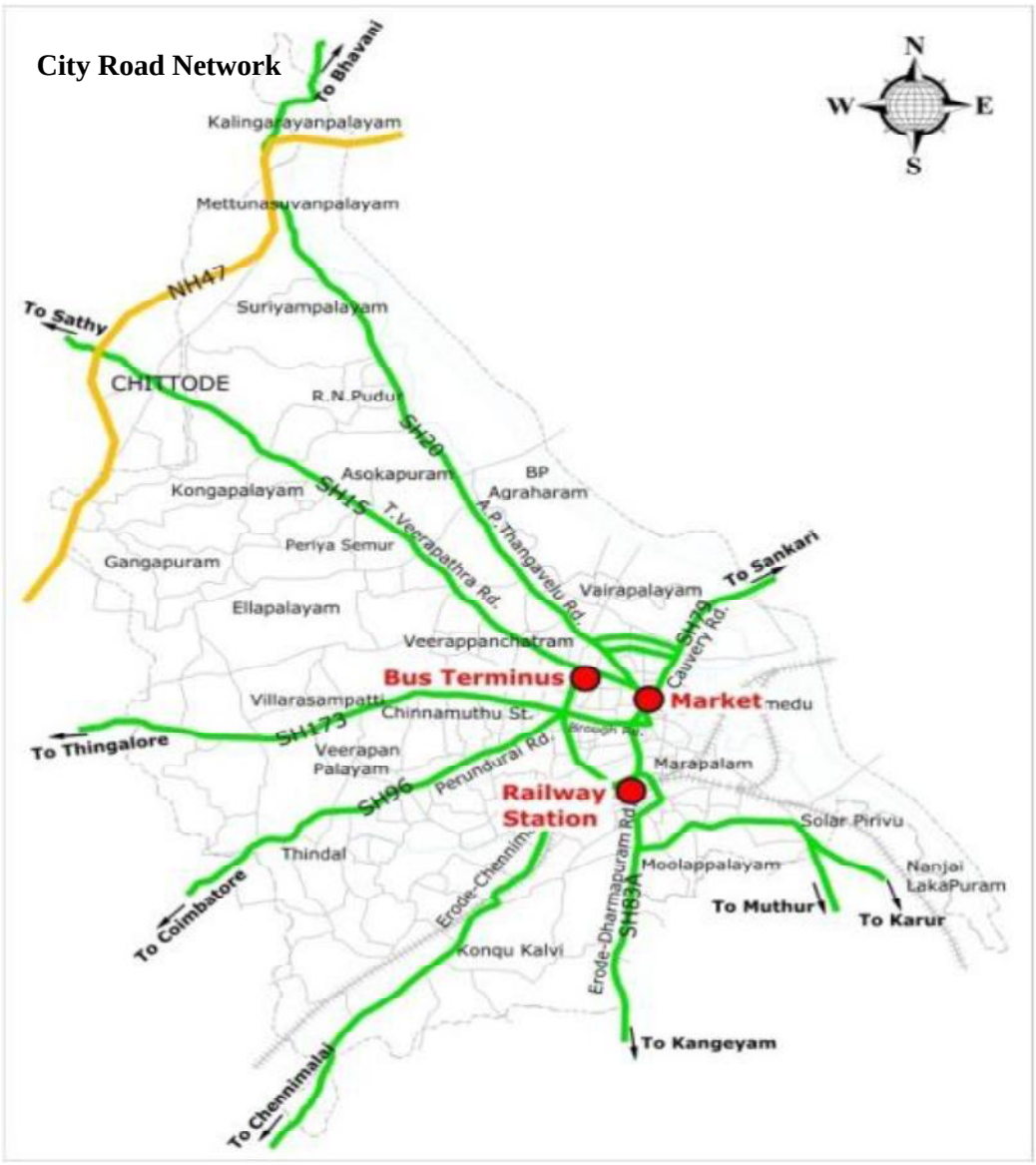
Inter city services by SETC (State Express Transport Corporation)/ TNSTC and private operators is about 2530 daily services, mainly towards Coimbatore, Salem, Karur, Sathy, Gobichettipalayam, Kangayam, Trichy, Namakkal, etc;.

All city/mofussil buses are making services to various destinations in the LPA, with a good coverage in the city and LPA. However, there is no exclusive city bus system in Erode and this is compelling urban residents to use personal modes to avoid the crowded buses in the peak periods.

IPT Transport: The Intermediate Public Transport (IPT) modes include normal auto rickshaws and shared auto rickshaws (few nos.) mainly serving the LPA. Totally there are about 5000 auto rickshaws in the city area; however the utilization is very low (about 5% of trips). Main reason for lower utilization is its high fare, as IPT operation is not organised.

Private Transport: Popular personalised modes of transport are two wheelers and cars. As on 31st March 2013, total number of registered vehicles in the LPA area is 4.51 lakhs, which is growing at about 7% per annum. 85% of the total registered vehicles are two wheelers.

Road Network: The LPA has a total road network of 1100 km., comprising of arterials, sub-arterials and major local streets. The city road network constitutes 300 kms. The arterial network includes National Highways (NHs), State highways (SHs) connecting Erode with major places in the district, State and neighboring states, form about 180 kms.



Rail Network: Erode is a major railway junction of Southern Railways with two rail lines passing through (Jolarpettai-Morappur-Salem-Erode-Tirupur-Coimbatore line and Erode-Karur line). Passenger trains are plying towards Salem, Tirupur and Karur. However, the share of trips made in LPA by rail is found to be very minimal.

Goods Transport: The number of goods vehicles registered in Erode is 17,925 as on 31st March 2013. About 19, 000 goods vehicles enter and leave the city daily (trucks and MAVs constitute 5,000). The average share of goods vehicles in the city traffic during peak hour is about 8%. As a measure of traffic management during peak hours, trucks are restricted to enter the city core area between 8 am – 11.30 am and 4pm – 8 pm. The ban is making trucks to park on various roads outside the city core area and immediately after the restriction periods, these vehicles enter the city together and add traffic congestion, especially at the junctions.


View of Truck Parking facility provided by Lorry Owner's Association


View of Truck parking on City roads

Truck terminals are absent in Erode, except the private truck parking at Kongampalayam near Chithode (managed by Lorry Owners Association, Erode). This facilitates parking place for about 200 trucks.

Transport Terminals

(a) Bus Terminals

Central Bus Terminal, **Erode**: The Central bus terminal is located in city core area abutting both Mettur road and Sathy road. Both city/mofussil and intercity buses operate from the bus stand, making more than 4,000 services per day. About 90,000 passengers use this bus stand daily. The bus stand is with 120 bus bays spread in the area of 11.2 acres. Entry/exit points are available from Sathy road and Mettur road. Access roads are made one-way due to width constraint. Future expansion of the bus stand is difficult due to land constraint. Car and two wheeler parking space is available in the bus stand complex.


View of Central Bus Stand- Erode

Perundurai Bus Stand: The bus stand is located on Olappalayam road. This has fifteen bus bays spread on six platforms. There are services towards Erode, Coimbatore, Kangayam, Palani, Tharapuram, Bhavani, etc.

Chennimalai Bus Stand: It is a small bus stand with nine bus bays located on Chennimalai- Kangayam road and it services the buses bound between Perundurai, Kangayam, Erode and Chennimalai.

(b) Railway Stations

The important railway stations are:

- Erode junction and
- Perundurai

Erode Junction: Erode Railway Station is a major junction and is located in the heart of the city. The station is accessible from Tarapuram road. Intermodal facility with bus bays is available at the station premises. Parking facility is available in the station premises.

Perundurai: The station on Erode- Coimbatore railway line is located about 6 kms away from Perundurai town. The station has stop only for passenger trains.

There are four minor stations in the LPA, with stops for only passenger trains. They are: Ingur and Thottipalayam on Erode- Coimbatore railway line. Chavadipalayam and Pasur are the two stations on Erode- Karur railway line.

Markets: City Market (Gani market) and Nethaji market are the important markets located in Erode city. The turmeric market at Nasiyanur is an exclusive market for turmeric.

Urban Transport Scenario

The study includes all basic data collection and analysis procedures proven desirable in similar studies conducted in several other cities in the country and abroad.

The main objective of the survey is to derive the passenger and freight travel pattern. These surveys will be aimed at analyzing the movement within different sub areas of the LPA and also to other influence areas in the region beyond.

The collection and analysis of information on the present transportation system is therefore basic to the planning and transportation of the future. A comprehensive primary data collection was undertaken by the Consultants as part of the study on several aspects in addition to data from secondary sources. Standard procedures were used to verify the completeness and reliability of the processed data obtained through various surveys conducted, the duration and the number of locations for which are furnished in the Table below:

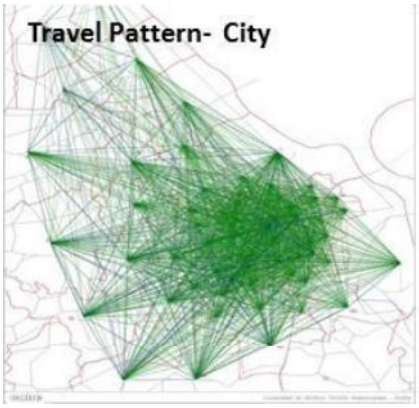
Sl. No	Type of Survey	Duration	Locations/Km
1	Classified Volume Count at Screen lines	16 hrs (6.00-22.00)	14 Nos.
2	Classified Volume Count at Junctions	16 hrs (6.00-22.00)	10 Nos.
3	Classified Volume Count at Cordons	24 hrs	20 Nos.
4	Parking Surveys	12 hrs (8.00-20.00)	3 km
5	Origin Destination Surveys	24 hrs	20 Nos.
6	Speed Delay Surveys	Peak & Off peak periods	Arterial, Sub arterial and major collector roads within LPA
7	Public Transport Passenger On Board Survey	16 hrs (6.00-22.00)	Selected routes & bus terminals
8	Commuter surveys	24 hrs	Cordons & major transit points
9	Household Travel Surveys	-	Sample size of 2% households
10	Vehicle Operator's survey	-	Operator's offices
11	Terminal Area Survey	24 hrs	Major transit points
12	Pedestrian Survey	16 hrs (6.00-22.00)	Critical road sections and junctions
13	Road Inventory	-	LPA road network excluding local streets and collectors
14	Topographic Surveys at Key Sections/Junctions	-	9 nos.

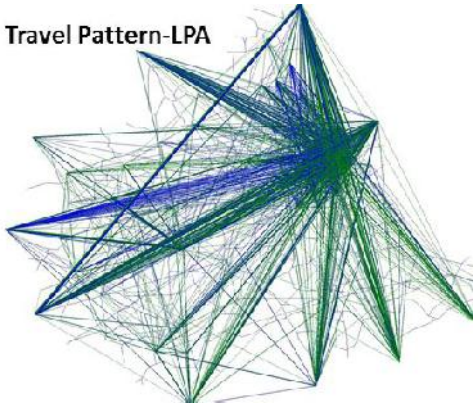
Urban Travel Characteristics

Urban population growth coupled with increased economic activities has led to a rapid growth in the urban travel demand. The total daily trips estimated is about 9.78 lakhs in the LPA, of which about 60% is made in the city area. In LPA, motorised trips alone constitute about 6.36 lakhs. The non-motorised trips (including both walk and bicycles) is significant with 35% and 33% respectively in LPA and city.

	City		LPA	
Mode	Nos.	%	Nos.	%
Public transport	173,584	30%	323,033	33%
Car	40,503	7%	58,733	6%
Two-Wheeler	133,081	23%	205,566	21%
Auto Rickshaw	40,503	7%	48,944	5%
Bicycle	34,717	6%	68,522	7%
Walk	156,226	27%	274,088	28%

	City		LPA	
Mode	Nos.	%	Nos.	%
Total (all modes)	578,614	100%	978,886	100%
Total (motorised)	387,672	100	636,276	100

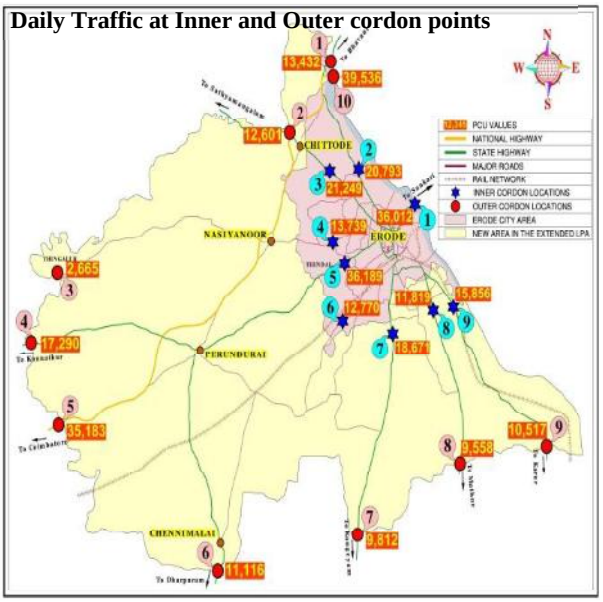




Per capita trip rate for all modes combined and only for motorised are found to be 1.09 and 0.7 for LPA and 1.12 and 0.74 for the city.

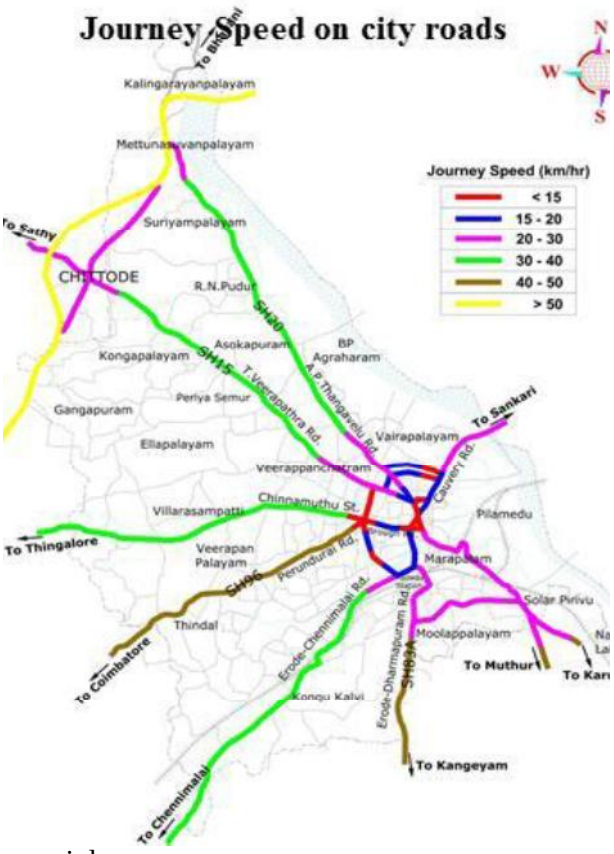
Significant share of trips by public transport is observed in LPA (33% all trips). 21% of trips are made by Two Wheelers, Share of Car and Auto rickshaws is low with 6% and 5% respectively. The share of walk trips in LPA is 28% and that of bicycle is 7%.

The total number of vehicles entering/exiting daily is 1.64 lakhs and 1.24 lakhs respectively in the city and LPA. The composition is Car: 20% to 25%, two wheelers: 45% to 60%, Bus- 6% and Commercial vehicles: 10% to 20%. The peak hour traffic at screen line locations varied from 8.4% to 11% with a high share of motorized two wheelers. The floating population to Erode is about 1.5 Lakhs per



day. Sizeable daily traffic ranging from 11,714 PCU's to 35,867 PCU's is observed at various Inner Cordon locations, whereas it is ranging from 2,672 PCU's to 40,903 PCU's in the outer cordon locations.

Major roads in the city area, specifically the stretches in the city core are highly congested. Roads such as Mettur Road, Gandhiji Road, Netaji Road, Cauvery Road, Perundurai road, etc; are carrying traffic above their capacity (V/C) ratio >1.0). The average composition of traffic in the city is Two wheelers- 65%, Car- 12%, Goods vehicles- 8%, Auto Rickshaw- 6%, Bus- 6%, non-motorised vehicles- 3% respectively.



Journey Speed: Average journey speeds in Erode city during peak hours are about 19 kmph. The analysis of speed and delay data reveal that delays are mainly due to Junctions, pedestrian movement, haphazard parking, bus stops, high traffic, etc. Very low speeds were observed in the city core on Mettur road, Brough road, Netaji road and Gandhiji road.

Walking & Cycling: Walking and cycling account for approximately 2.0 lakhs trips in the city (walking itself is 80% of non-motorised trips). Yet the infrastructure for these are almost nonexistent. Besides, the encroachment and vehicle parking in the available footpaths has resulted in spilling of pedestrians on to the carriageway, thereby reducing the roadway capacity.

Pedestrians use road space due to the absence of Footpath

Results from the pedestrian survey counts reveal the following:

- Total pedestrian volume crossing the road is in the range of 4000 to 10000 in a day.
- Among all the locations within the City, heavy pedestrian crossing was observed at GH

Junction, Brough road, Panner Selvam Park, near bus stand and Mettur road.

- Footpath is generally absent in the city
- Foot over Bridge (FOB) present at one location; across Mettur road near the Central bus station entrance. Pedestrian signals & crossing facilities are absent.
- The share of bicycle trips is 7%, and cycle volume is substantial on Sathy road, Brough road, Nethaji road, Bhavani road, etc. However, exclusive lane for bicycles is absent. Cycle path is mandatory on urban roads as per National Urban Transport Policy.

Intersections: There are about eighty major intersections in the LPA, (twenty eight in the city and forty six in the rest of LPA), in which thirteen are signalized. However, these junctions are not grade separated, causing traffic delay and pollution. Cycle time at many signalized junctions is above 120 sec. and has high traffic during peak hours. Junctions lack markings, signage and pedestrian crossing facilities. Critical junction details are presented below.

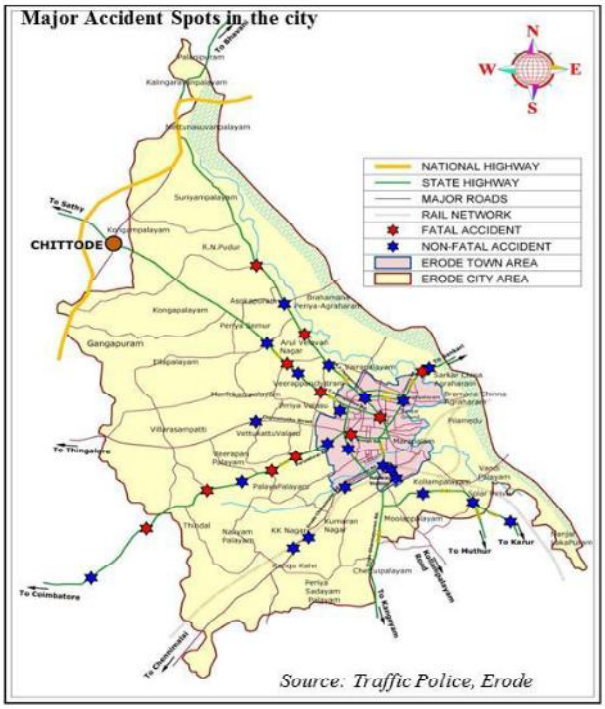
Sl. No.	Major Junctions	Signal Cycle time (sec.)	Peak hour Traffic (PCU)
1	Swastik circle junction	140	6010
2	GH junction	170	8477
3	Bull fight junction	120	6594
4	Panner Selvam park junction	120-130	5849
5	Old bus stand junction, Perundurai	120	4310

Parking: Designated on-street parking is absent in Erode. Parking demand is high in the city core area, especially on Mettur road, Brough road, near Paneer Selvam Park, Netaji road, Gandhiji road and Easwaran Koil Street, etc, with total parking demand of about 900 PCE/hr (Parking Car Equivalent). Maximum demand is observed for two wheelers (75%), followed by Car (10%). Majority are short-term parkers (<1 hr). Unauthorized and indiscriminate parking impedes free flow of traffic and causes accidents. Off-street parking facilities are available at Erode Railway junction, Erode Central bus terminal and Gani market area. Organised on-street parking facilities are essential for better parking management and smooth traffic flow. Off-street parking facilities will be useful for better parking management in the future.

River Crossings and Rail Crossings: Three bridges and two barrages exist across River Cauvery, which flowing through eastern boundary of Erode city. The most significant one is the two lane Cauvery Bridge, which is being widened to four lanes.

There are eighteen road-rail crossings present in the LPA area of which eleven are RoBs/RuBs. One RoB is under implementation at Shashtri Nagar. The level crossings and the RUBs due to its height restriction and lack of proper lighting cause safety concern.

Road Accidents: The accident data was collected for the district and it reveals that about 20% to 30% of accidents happening are fatal. When compared to total accidents, the growth rate of fatal accidents is also very high (8% per annum). As per Police records, on an average two fatal accidents and five non-fatal accidents are happening daily in the district. Majority of the accidents are happening within the city limits. The junctions on NH 47 are also critical accident spots due to high speed of vehicles, absence of lighting facilities and inadequate signage and markings.



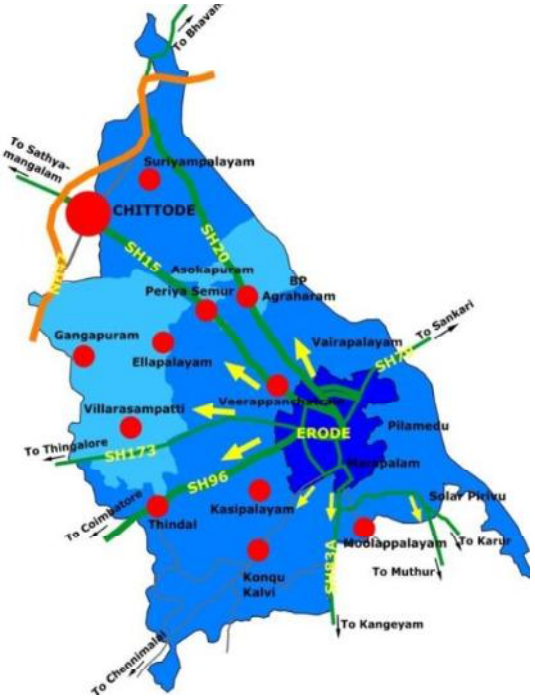
Institutional Setup

Multiple agencies are dealing in traffic and transport sector. The agencies involved in planning and implementing traffic & transportation schemes and in traffic management include:

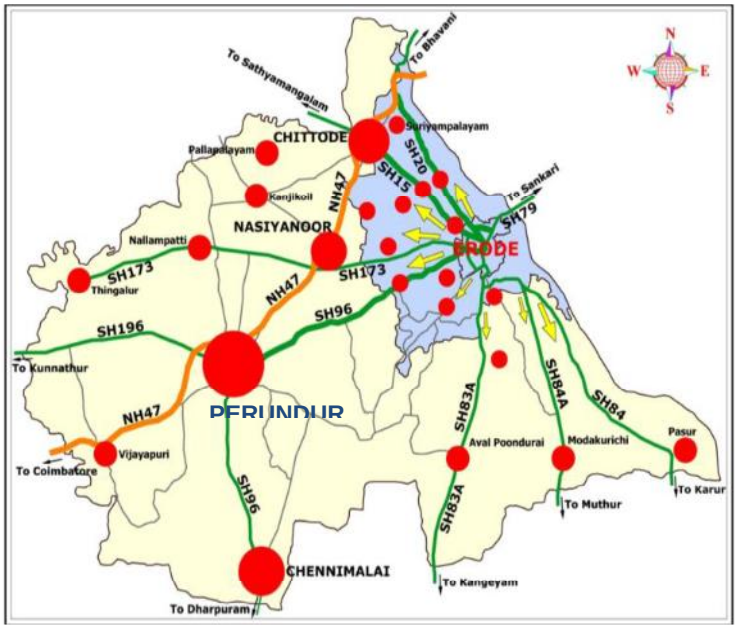
- Local: ECMC, Town Panchayats, Panchayat Unions
- Regional: Local Planning Authority
- District level: District Administration
- State level: TNSTC, SETC, Traffic Police, Highways Dept.,
- National level: NHAI, Indian Railways
- Private organisations: Bus operators, Truck operators and IPTs

Growth Directions:

The emerging Industrial clusters are mainly in the sectors of Garments Industry, Turmeric based products and Cosmetics, Food Processing Industries, Software development, IT enabled services, Chemical & Plastic Industries. The proposed Coimbatore- Salem Industrial Corridor (CETNS- as per Tamil Nadu Vision Plan-2023) is expected to generate economic developments in the region. Erode will be benefitted significantly due to the Manufacturing and Business Investment Area proposed near Perundurai. As per Erode Master plan-1996, Perundurai and Chithode were proposed to develop as satellite towns of Erode. Various studies done in the past identified certain transport schemes for Erode city. Ring road through the city periphery, Bus terminal and truck terminal in the outskirts of the city are significant among them.



Erode falls under the category of highly urbanised areas, with an urbanisation level of 51%. Based on the current population density pattern, the various parts of the city are growing at various levels. The city core area, i.e.; the areas in the Old Erode town, where the commercial activities are concentrated, have shown a decline in population during the last decade. This indicates the residential activities are being shifted to other parts of the city and the core area is becoming a central business district with heavy commercial developments. There are certain high density areas present in the city which are saturated and hence population growth in the future will be minimal. The potential growth centers include the city areas (excluding the core area), city outskirts and extend to LPA along the growth corridors and the urban areas in the LPA. The future growth of the city will be channelised along certain developments in the study area such as development of Perundurai SIPCOT and CTENS industrial corridor.



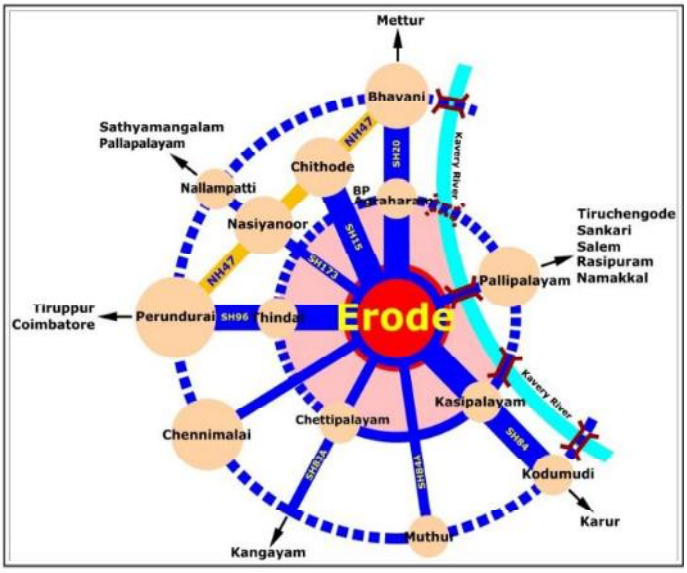
The growth pattern of Erode is generally along the transport corridors, especially towards North- West direction due to the presence of NH 47. Hence the projected socio economic parameters assume a higher growth along this direction.

Projected Planning Variables		
	2013	2033
Population		
City	516,620	783,025
Rest of LPA	381,441	610,720
Total	898,061	1,393,746
Employment		
City	205,226	370,481
Rest of LPA	141,849	295,225
Total	347,075	665,706

Erode Local Planning Area's increase in overall growth will require an adequate and efficient transport system to meet the anticipated population of about 14 lakhs by 2033 from 9 lakhs in 2013.

Future Road Network Strategy

Erode has a radial road network with roads emerging from the city center and connecting to various parts of the city, LPA and the region. The core city is the center of commercial and market activities for the district and the region, resulting in very high travel demand within the city and for the floating population (daily about 1.5 lakhs). Certain extent of congestion on the city roads is due to absence of ring roads/bypasses to carry the through traffic. Also the connectivity between the growing urban nodes in the LPA is important. There are a number of fast growing urban nodes located east of river Cauvery such as Pallipalayam, Sankari, Thiruchengode, etc. There is high interaction between Erode and these urban nodes and the connectivity is currently restricted, with few bridges. Considering these aspects, the network strategy of the CMP is evolved.



- The transport network so developed must be adequate in terms of supply by the horizon year.
- Restructuring of land use development by way of relocation of certain activities from the city core to outer periphery so that the development would be transit oriented and be a high density development.
- Development of various urban nodes in the LPA as satellite towns
- Improve connectivity with the urban nodes in the city, LPA and outside

CMP Vision

The CMP vision for transport in Erode LPA is that ***"An integrated approach towards the transport services and systems for Erode to promote sustainable urban transport infrastructure through various projects, including policies and planning, public transport systems and goods delivery networks, NMT facilities, land use, with a view to provide safe, affordable and efficient transportation, with focus on energy efficiency, reduction in pollution, and congestion, controlling urban sprawl by considering the regional and national importance of Erode"***.

CMP Goals

A set of performance indicators has been developed as goals to be achieved in 2033 for Erode. The goals have been defined based on the Vision and the objectives of the CMP. The mobility strategies developed will aim at attaining these goals.

Sl. No.	Indicator	Base year (2013)	Business as Usual Scenario (2033)	CMP Goal (2033)
1	City Bus Service Coverage	70%	70%	90%
2	Average Journey Speed in city (KMPH)	19	14	30
3	Public Transit Share % (motorised)	50	39	>60%
4	Walkability (Footpath Length / Road Length of Major city roads)	Nil	Nil	100%
5	Cyclability (Cycle path Length / Road Length (Major city roads)	Nil	Nil	50%
6	Safety	Poor	Poor	Safe
7	Organised On- Street Parking facilities	Nil	Nil	At least 10% of road length
8	Non-Motorized Share	35%	30%	35%
9	Pollution load (kg/day)	12,460	18,085	Reduce to 10,000

Sustainable Urban Transport Strategies

Erode mobility improvements cannot be achieved by a single strategy and will need to be addressed through a multipronged approach. The following strategies are adopted to improve mobility of Erode. The strategies when implemented through specific projects shall fulfil the goals and objectives of the CMP.

(1) Public Transit Strategy

- **Bus Transport**: Introduce local city bus service, especially to the emerging urban nodes in the periphery of the city and segregate the mofussil buses from the local city service. Shifting intercity buses to new locations outside the city and the Central bus stand to be retained for city services. To provide new bus routes to the regions both in city and LPA which are not served presently.
- **Rail Transport**: The passenger trains running between Erode and places like Coimbatore, Tirupur, Salem, etc.; provide intercity mobility to an extent. Proposed strategy is to develop few stations along the existing railway lines and provide stops for passenger trains with some intermediate stations. This will help to link more areas to the city faster, in the form of a mass transport. This will result in energy savings and will also help to decongest the city.

(2) Non-Motorized Transport Strategy

At present, there are no facilities for pedestrians and cycle traffic in Erode and the CMP strategies towards NMTs are:

- Designated and well maintained footpath (as per IRC standards) on urban roads. The footpath should be provided with hand rails at junctions.
- Grade separated (preferably subways) and at-grade crossings (zebra crossings, striping, pedestrian flashing signals) at mid blocks and exclusive pedestrian signal phase at junctions.
- Exclusive cycle path on roads (2 m wide) where cycle traffic is observed and on the roads near schools and colleges.

(3) Parking Management Strategy

- Regularisation of on-street parking by designating parking bays with bay marking, introducing parking fee, banning parking on the streets with lower width and heavy traffic.
- Development of off-street parking sites and integrating it with other CMP elements. The parking structures will be either isolated or integrated with the public transport terminals to facilitate the public transport.

(4) Goods Vehicle Management Strategy

- Restricted movement of commercial vehicles in the city core area
- Segregation of long distance commercial vehicles from city roads
- Shifting of warehouses, go downs and yard from Erode railway station
- Development of truck terminals outside city area
- Use of small and medium size vehicles with modern emission controls in the central city areas in the day time

(5) Traffic Management Strategy

- Road Improvements
- Intersection Improvements
    - Signalization
    - Signal Retiming
    - Intersection Channelization and Geometric Improvements
    - Pedestrian crossing facilities
    - Area Traffic Control & ITS
- Policy Related
    - Parking management
    - Regulation of Auto rickshaws
    - Hawker Management
    - Enforcement

(6) Travel Demand Management Strategy

These strategies would help in a healthy shift in the travel patterns of the study area. To further increase the public transport modal share, additional demand management interventions may be implemented as necessary such as:

- Corridor Densification
- Parking Management
- Congestion pricing for commercial vehicles in the core area

Erode Urban Travel Demand Model (EUTDM)

Transport Demand Modeling has been done by the use of advanced state of the art computer package "CUBE". In general four-step modeling framework has been adopted:

- Trip Generation – estimating number of origins and destinations for each zone.

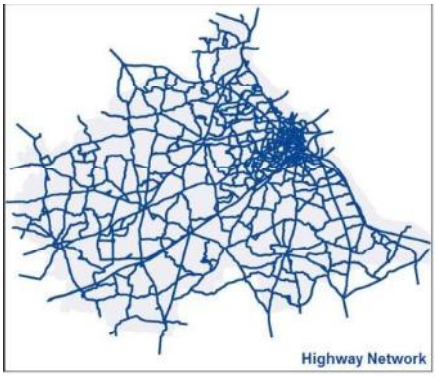
- Trip Distribution – attaching the origins and destinations for each trip to complete trips.
- Mode Choice – determining the mode of travel for each trip (car, auto rickshaws, transit).
- Assignment – establishing routes and transit paths.

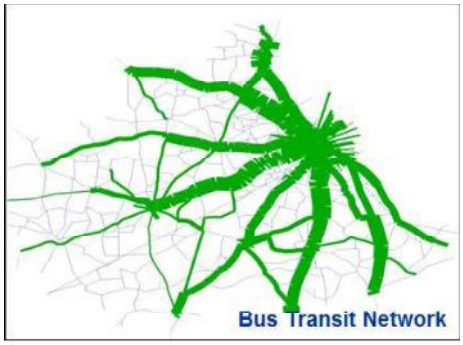
The arterials, sub arterial and major collector road are considered in the development of the network. The transit network represents different public transport modes along with their routes, frequency connectivity, headways, speeds, capacity and accessibility to support estimation of travel times on individual links and passenger volumes on individual transit lines and links. Household and roads ide passenger interview data were used to develop the observed mode-wise trip matrices. The external trips were constructed based on the O-D survey conducted at the outer cordon.

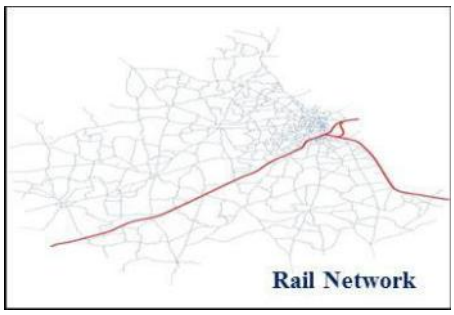
Model focuses on peak period conditions because these conditions include the most important recurrent congestion period and tend to guide transportation system design. Peak period models provide more accurate indications of directional travel patterns during design conditions than do daily models.

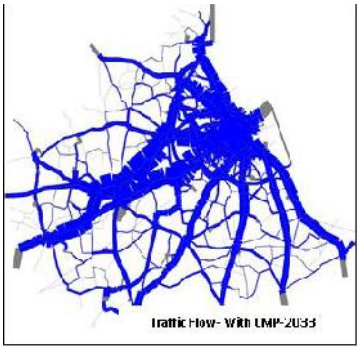
The observed highway and public transport matrices were assigned on the base year network. The assigned traffic volume has been compared with the observed traffic counts on screen lines and found to be within acceptable range.

Trip generation models were built to forecast the number of person trips that will begin from or end in each travel analysis zone with in the region for a typical day of the target year. Separate trip- generation models were developed for work, education, business and other purposes. A correlation matrix of trip production to various land uses was done based on which trip production models have been developed.









The present study combines the trip distribution and mode choice to form a combined Trip Distribution and Modal Split phase using a conventional doubly constrained gravity model. Synthetic trip matrices were developed by the calibrated distribution cum mode choice parameters. These synthetic matrices were compared with the observed matrices. Checks were done to examine the validity of the synthetic matrices against the observed matrices and forecast made.

CMP Outcome

The scenarios tested using the Erode Urban Travel Demand Model (EUTDM) are:

I. Business as Usual scenario (with the committed proposals)
II. CMP scenario (Business as Usual + CMP proposals)

With the proposed CMP strategies, the share of private modes will decline to 30% from 52%, while the public transport share will increase to 62% from 39% in the 'Do-something' scenario. The average network speed in the city is expected to be as 26KMPH with the CMP proposals, from a lower speed of 14KMPH. Another important outcome is the reduction in vehicular emissions. The pollution load is expected to decrease from 18,000kg to 12,700kg. The current non-motorised mode share is 35%. It is expected that the share will remain same with the suggested non-motorised transport proposals suggested in the CMP.

Sl. No.	Indicator	Base year (2013)	CMP Scenario - 2023*	CMP Scenario - 2033**
1	City Bus Service Coverage	70%	90%	90%
2	Average Journey Speed in city (KMPH)	19	23	30
3	Public Transit Share % (motorised)	50	54	62
4	Walkability (Footpath Length / Road Length of Major city roads)	Nil	100%	100%
5	Cyclability (Cycle path Length / Road Length (Major city roads)	Nil	50%	50%

Sl. No.	Indicator	Base year (2013)	CMP Scenario - 2023*	CMP Scenario - 2033**
6	Safety	Poor	Safe	Safe
7	On- Street Parking	Nil	50% of demand	50% of demand
8	Non-Motorized Share	35%	35%	35%
9	Pollution load (kg/day)	12,460	15% reduction	42% reduction

*Note: *- Based on short and medium term plan, **- Based on short, medium and long term plan*

Regulatory and Institutional Setup

Regulatory Framework: The following regulatory mechanism is proposed for the effective development of urban land use and transport systems in Erode:

- Public Transport Improvement
    - Privatization of bus transport is found to be successful in many cities. It is suggested to frame an economically rational regulatory framework that can address the potential market such as privatization, lease contract, concessions, etc.
    - Priority Lanes: Regulations, such as bus and high occupancy vehicle lanes, achieve their effect by reducing the road space available for cars and help in mass transportation (proposed Bus priority lane, BRT, High Density bus corridors)
    - Concession for physically challenged people, senior citizens, etc.
- Traffic safety improvement;
    - Ban of aged vehicles: A regulatory measure required in urban transport is the ban of vehicles above 15 years (as per Motor Vehicle Act- 1988, Tamil Nadu). This will reduce accidents, air pollution and also offer savings in fuel consumption.
    - Training programme: Awareness training on traffic rules, regulations and safety aspects for drivers, traffic police and common people.
    - Enforcement measures such as pedestrians to use footpath, crossing at designated locations and facilities and imposing penalty on violations. Fine/removal of vehicles for parking at 'No parking' stretches.

- Introduction of Transport Demand Management (TDM) measures
    - Parking regulations by limiting duration and by specifying designated places for various modes and discounts and exemptions for physically challenged and senior citizens. Higher parking fee during peak traffic hours and festival seasons. No parking fee for bicycles (suggested on-street parking measures).
    - Land Use Control and trip minimization: Land use control is another method of controlling the travel. For example, mixed land use planning reduces the travel length and also the parking space requirements, as a large part of the travel can be carried out by walk or cycling (Integrated transport and land use plan adopted in the CMP, Chapter 4: Existing and Future Landuse Pattern).
    - Staggering working hours of schools and colleges: This is another regulatory measure to control the peak hour traffic. This is implemented in many cities effectively to reduce traffic congestion and better usage of the existing road space (Suggested Travel Demand Management presented in Chapter 9 of CMP Main Report)
    - Zoning regulations and controlled densities: Regulatory measure on zoning regulations and controlled density measures in the city core area can help decongest the city further as per Development Control rules.
    - Parking standards for new developments: Setting standards for the parking requirements for all activities in the new developments as per Development Control rules.
- Reduce vehicle emissions
    - Vehicle Technology and alternative fuels: Enforcing the use of advanced technology vehicles operated with electric and hybrid technologies and environmental friendly and by switching to low carbon fuels such as LPG and CNG (Energy efficient/Alternate fuels and Cleaner Development mechanism proposed in CMP: Chapter 10).
    - Development and maintenance of urban green belt

- Public- private partnership: Allowing private investors to operate/manage certain transport infrastructures such as bus shelters/bays, junction improvements, parking sites, bus and truck terminals, BRT, etc.

Institutional Framework: Multiplicity of institutions has resulted in fragmentation of functional responsibilities, lack of local resources, paucity of financial resources and lack of privatization strategy for the sector, as a whole. This calls for developing and maintaining an integrated transport system by an appropriate authority.

- **Establishment of Unified Metropolitan in Transport Authority (UMTA)** : UMTA should have the following responsibilities:
    - Regulatory
        - Setting norms/ Standards / Guidelines
        - Traffic Service levels
        - TSM Guidelines
    - Planning
        - Land use – transport integration
        - QA/QC for comprehensive mobility Plans
        - Updation of Master plans
    - Funding
        - Project Approval
        - State/Central fund sanctioning and channeling
    - Co-Ordination
        - Co-ordination with other Urban Infrastructure departments
- **Integration of Public Transport:** UMTA can be the authority for integration of the city, mofussil and intercity bus services and coordination between TNSTC and private operators and RTO.
- **Establishments of SPVs for the implementation of the proposed projects:** To form a special purpose vehicle wherein the stake holders of both the government and the private parties manage the project.
- **Other changes necessary to promote PPPs:** A set of guide lines which helps to achieve the PPP projects a success. PPP arrangement, indeed, calls for a judicious approach to decision making and underscores the need for a framework that enables the private sector partner to make reasonable returns on investments without diluting the standards and quality of services provided.

Stakeholder Meetings and Workshop

Stakeholder meetings were carried out at three stages of CMP preparation, i.e.; (1) Inception, (2) Interim and (3) Draft CMP. There was good response in all the three meetings that about 30-50 representatives of elected and officials from local bodies, various government departments, NGOs and Associations attended and expressed their views and suggestions. The suggestions are recommendations from the stakeholders were incorporated in the CMP. Finally, a workshop was conducted to educate and train the stakeholders on the transport proposals proposed to achieve the objectives and vision of CMP.

CMP Plans

The transport strategies, when applied scientifically in tandem, have resulted in a number of schemes. These schemes are essential for the efficient operation of the transport system in the whole of Erode LPA. Erode Mobility plan items are summarized as follows:

1. Public Transport Improvement Plan
2. Non- Motorized facility Improvement Plan
3. Network Development Plan
4. Goods Vehicle Management Plan
5. Mobility Management Plan

The summary of CMP Plan is presented below.

Sl. No		Proposals	Unit	Region			Implementing Agency	
				City	Rest of LPA	Total	ECMC/TPs/PUs	Others
1		**NMT Facility Improvement Plan**						
	1	Footpath development	Kms	45	15	60	√	√
	2	Pedestrian crossing facilities (reflective marking, signals)	No.	30	5	35	√	√
	3	Street light	Kms	-	150	150	√	√
	4	Pedestrian subways	No.	14	2	16	√	√
	5	Improvement of FoB on Mettur road	No.	1	-	1	√	
	6	Bicycle lanes	Kms	35	-	35	√	√
2		**Mobility Management Measures**						
	1	On-street parking Management	Kms	5	2	7	√	
	2	MLCP near Panner Selvam park	No.	1	-	1	√	
	3	Off street parking near Mettur road (at grade facility)	No.	1	-	1	√	
	4	ITS	No.	34	-	34	√	
	5	Traffic Signage & markings	Kms	55	150	205	√	√
	6	Rectification of accident prone locations	No.	-	4	4		√

Sl. No		Proposals	Unit	Region			Implementing Agency	
				City	Rest of LPA	Total	ECMC/TPs/PUs	Others
	7	Intercity bus terminals+ Intermodal stations	No.	-	3	3	√	
	8	One way on Mettur road	Kms	3.6	-	3.6	√	
	9	Urban greenbelt	Kms	13	2	15	√	
3		**Public Transport Improvement Plan**						
	1	Introduction of exclusive city bus services (additional mini buses)	No.	90		90		√
	2	Additional buses in 2014	No.	117		116		√
	3	Additional buses in 2018	No.	207		242		√
	4	Bus services from Perundurai to Urban areas (Normal bus)	No.	-	50	50		√
	5	Bus shelters	No.	120	40	160	√	√
	6	Bus Bays + Bus shelters	No.	40	250	290	√	√
	7	Additional buses in 2023	No.	242		242	√	√
	8	Bus priority Corridor (Perundurai- Erode road)	Kms	18		18	√	√
	9	High Quality Buses in Bus priority corridor	Kms	26		26		√
	10	High Quality Buses in High Density Bus routes between Erode and Chithode, Lakkapuram, Bhavani	No.	52		52		√
	11	BRT on Perundurai- Erode road	Km	18		18		√
	12	Additional buses in 2033	No.	270				√
	13	New small terminals in city and LPA	No.	9	4	13	√	
	14	Existing Bus Terminal improvements	No.	-	2	2	√	
	15	New Railway stations	No.	2	6	8		√
	16	Improvements to existing railway stations	No.	-	5	5		√
4		**Road Network Development Plan**						
	1	Single to two lane	Kms		477	531	√	
	2	Intermediate to Two lane	Kms	12	74	86	√	√
	3	Two to Four laning	Kms	12	156	168	√	√
	4	Four to Six laning	Kms	10	42	52	√	√
	5	Intersection redesign	No.	28	46	74	√	√
	6	Inner ring road (4 lane) from Cauvery bridge to Kangayam road	Kms	-	7	7	√	
	7	Completion of Inner ring road (4 lane)	Kms	18	-	18	√	
	8	Satellite ring road (New 4 lane)	Kms	-	60	60	√	√
	9	Flyovers	No.	3	-	3	√	
	10	New RoBs/ RuBs	No.	3	2	5	√	√
	11	Existing RuB improvements	No.	4	6	10	√	√
	12	Existing RoB widening	No.	4	6	10	√	√
	13	Bridge widening (2 to 4 lane), SRR, Cauvery bridge, IRR- Solar	No.	-	2	2	√	√
	14	New bridge (4lane) on IRR- Bhavani check post	No.	1	-	1	√	

Sl. No		Proposals	Unit	Region			Implementing Agency	
				City	Rest of LPA	Total	ECMC/TPs/PUs	Others
5		**Goods Movement management**						
	1	Truck Terminals	No.	-	2	2	√	
	2	Truck Banning in core city					√	
6		**Market Improvements**						
	1	Improvement of road side markets	No.	3	-	3	√	
	2	Improvement of markets at Perundurai, Chithode, Chennimalai	No.	-	3	3	√	
	3	Shifting of Nethaji market	No.	1	-	1	√	
	4	Development of Meat market	No.	4	-	4	√	

Investment Programme and Prioritisation

The individual proposals differ from each other in terms of their cost, time at which it has to be taken up for implementation, construction time and finally the duration up to which their benefits will last. The total project cost estimated is Rs. 5020.00 Crores, which include Rs. 1865.00 Crores in the city area and Rs. 3155.00 Crores for rest of LPA. The CMP for Erode is prepared giving emphasis to urban mobility, the promotion of public transport and the enhancement of NMT facilities with a view to influence modal shift from private modes to public transport and NMT. The study area comprises of extended LPA (730.30 sq.kms). The rest of LPA areas (outside city area) cover about 85% of the study area and is with narrow road system and hence road improvement proposals are suggested for the LPA area mainly. Erode town (8.44 sq.kms) was upgraded to City Corporation with an extended area of 109.52 sq.km very recently. As part of integrated land use and transportation planning and to reduce traffic congestion in the city core, relocation of various activities is proposed so that the travel demand of people will be reduced in the future. In order to have better mobility, it is essential to strengthen road system in these areas with new roads/wider roads (including committed projects) such as Inner Ring road, development of RoBs/RuBs and bridges across River Cauvery are proposed to eliminate bottlenecks in the city area.

Project Prioritisation: The broad criteria considered for prioritisation of projects include:

- Implementation time
- Cost and financial sustainability; Relatively smaller projects with financial sustainability
- Economic outcome; Positive (lower costs and time savings)
- Climate change impact; Minimize impact
- Land acquisition; None or minimize to reduce time
- Feedback from stake-holders

The projects are prioritised in the following manner:

- Short-term (< 5 years), target year: 2018

- Medium -term (5- 10 years), target year: 2023
- Long-term (>10 years), target year: 2033

The short-term measures include efficient scheduling of public transport, traffic management, safety, pedestrian facilities, traffic circulation plan, one-way plan, on-street parking managements, bus shelters, etc.

Medium-term measures are primarily aimed to increase the city's public transport and non-motorised transport mode shares. They typically involve corridor-level projects like, development of flyovers, bridges, terminals, parking sites, parking policy development and implementation in the city.

Long-term measures include implementing the overall vision of the CMP. This includes developing city level networks and mobility corridors, bus systems, public/mass-transit networks, parking regulation measures and pricing strategies as a demand management tool, improving the overall road network to provide adequate accessibility for existing developed areas and new ones as the city grows, centralised control measures for traffic signal systems and public transport operations.

Proposals	City	Rest of LPA	Total	Short Term	Medium Term	Long Term
NMT Facility Improvement Plan	93	51	144	110	34	0
Mobility Management Measures	22	67	89	19	34	36
Public Transport Improvement Plan	943	339	1281	321	208	753
Road Network Development Plan	784	2687	3472	158	1347	1966
Goods Movement management	-	10	10	5	0	5
Market Improvements	22	2	24	4	20	0
Grand Total (rounded off)	**1,864**	**3,156**	**5,020**	**617**	**1,643**	**2,760**

Implementation Strategy

The share of various implanting agencies in the investment is presented below. State Highways Dept. is stakeholder with highest share (51%), followed by Town Panchayats and TNSTC. PPP projects constitute 21%.

Proposed Project Cost for all Stakeholders at Different Phases *(Rs. in Cr.)*						
Agency/Type of Funding	Components	Short Term (2018)	Medium Term (2023)	Long Term (2033)	Total	Share (%)
Erode Corporation	Footpath, subways, traffic management measures, green belt, wayside bus terminals, market improvements	90	51	0	141	2.8%

Proposed Project Cost for all Stakeholders at Different Phases *(Rs. in Cr.)*						
Agency/Type of Funding	**Components**	**Short Term (2018)**	**Medium Term (2023)**	**Long Term (2033)**	**Total**	**Share (%)**
State Highway Dept.	Road widening, Flyovers, Bridges, Inner Ring road	151	1080	943	2173	43.3%
TNSTC	Fleet augmentation, Exclusive city services, Bus priority corridor	235	200	382	817	16.3%
Town panchayats/ Panchayat Unions	Bus shelters/bays, footpath, subways, Traffic management measures, street lighting, market improvements, road widening	105	87	345	538	10.7%
Railway Dep.	RoBs, Stations	12	48	11	71	1.4%
Police Dep.	ITS	2	0	0	2	0.0%
PPP	Off street parking, Truck & intercity bus terminals, Satellite ring road, NH widening	5	177	719	902	18.0%
Sponsored	On-street parking, Junction improvements, bus shelters	17	0	0	17	0.3%
SPV	BRT			360	360	7.2%
Grand Total (rounded off)		**617**	**1643**	**2760**	**5020**	**100%**

Broadly, the sources of funding would be decided based on the funding availability, ease of accesses, tenor and cost of funds. As corporation is playing the major role in managing the infrastructure requirement for city transport needs, the discussion mainly revolves around financial capacity and sources for Erode Corporation.

Only about 2.8% of the total investment requirement (INR 5,020 crores) is estimated to be implemented by Erode Municipal Corporation (ECMC) during different phases. Of the total projects by ECMC (INR 141 crores), INR 90 crores and 51 crores worth of projects need to be implemented during short and medium term (refer Table 12.6). However, implementation of these projects will largely depend upon EMC financials and its loan absorbing capacity, in case they plan to resort for loan funding.

Considering the huge quantum of project and the investment required, the funding cannot be met from single source. The source can vary depending on the financial viability of the project, nature of project, ownership of project, etc. In addition, considering the quantum of investment, generally the organisations may not have sufficient financial capacity to carry out the full investment requirement. Hence option of attracting private investment and identification of new sources of income have to be explored. This section deals with the various funding options that the agencies can consider financing the identified projects. The main financing options are:

- Own Sources
- State & Central Schemes with full or partial grant components

- Domestic Financial Institutions
- Bond Market
- Private sector through PPP and sponsorship
- External Assistance (loan and aid components)
- Climate Change funds/CDM

Funding Support

The Erode CMC can select the prioritised projects for implementation with financial assistance from Central/State Govt. or multilateral funding agencies. ECMC has to categorize the projects which can be implemented by way of EPC, PPP and Sponsorships. The prioritisation and implementation methodology is suggested for the identified projects is presented in the CMP. Upon categorisation and in consultation with state government and the nodal agency for the program, prepare detailed projects report (DPR) for EPC and sponsorships projects and structure the PPP projects and prepare necessary bidding and contract documents.

The Erode CMC can select the prioritised projects for implementation with financial assistance from Central Govt. The CMP for Erode is a key document providing rationale for transport projects for the city and LPA and is prepared as per the Guidelines and Toolkits developed by the MoUD. Therefore, within the overall planning hierarchy, the CMP can be considered as a prerequisite for the application of funds from Central Govt. This requires submission of CMP for MoUD approval by the Erode CMC. After the approval, a separate study for Alternate Analysis is required for major projects using the separate toolkit prepared by MoUD under the DFID/WB funded project 'Capacity Building of Sustainable Urban Transport Planning'. This should be followed by Feasibility study (DPR level I), Appraisal to MoUD for funding and detailed study (DPR level II).

Similar procedure is required for getting financial assistance from multilateral agencies which is possible through the respective state nodal agency.

Preliminary Economic and Financial Analysis

A preliminary economic analysis has been carried out for the CMP scenario and for key projects. The proposed projects will yield tangible and non-tangible savings due to equivalent reduction in road traffic and certain socio-economic benefits. The cost-benefit analysis has been carried out considering the quantifiable benefits of reduction in vehicle operating cost, travel time, environmental pollution and accidents. The city also benefit due to other non-tangible savings such as better urban environment, reduced road maintenance, health benefits, etc. The projects are economically feasible. The implementation of entire CMP would result in an economic internal rate of return of 16%. Based on financial analysis, truck terminals and Multi-storied parking sites (with commercial developments) are suitable for PPP and bus terminals can be implemented by ULB.

Preliminary Environmental and Social Assessment

Preliminary impact assessment was carried out highlighting the environmental and social sensitive areas. None of the improvements will fall/pass through any environmentally sensitive areas, except, the following projects, which are in the vicinity of certain environmentally sensitive areas. However, a detailed study is recommended during the feasibility stage to assess the actual impact and required measures.

Proposal	Environmentally sensitive areas
Proposed Satellite Ring Road alignment	About 2kms of the section of Satellite ring road between Perundurai road and Kangayam road passes close to the Vellode bird sanctuary and Vellode pond
Widening of SH 15 (Chithode road)	at Periya Semur the alignment is close to Gani Ravuthar Kulam
New Bridges (4 lane)-1 nos., Bridge Widening (2 lane to four lane)-3 nos.	Across River Cauvery
Widening of Chennimalai Uthukuli road & Chennimalai Kangeyam road	Abutting to Chennimalai RF

The short-term projects generally do not involve land acquisition or settlement issues and are with limited land acquisition requirements. Other medium term and long term projects such as road widening, flyovers, etc. in the city area, the proposed ring roads may have displacement of businesses and residents in the affected areas may have a negative social impact. The new bus and truck terminals are proposed on vacant land to the extent possible to reduce social impacts. For the projects identified in the CMP, the social categorisation and social budget need to be prepared, in the feasibility/detailed project report preparation stages. However, a preliminary assessment of the land requirement (based on inventory/visual observation) for the projects is presented in the report.

By implementing the recommended CMP proposals, about 40,000 Kilolitres of fuel can be saved in a year. Additionally, the annual reduction in CO_2 emission is about 170 kilo-tonne and about 40% of other particle emissions.

Way Forward

Mobility plans are comprehensive documents and it cover main areas such as the management and monitoring of urban mobility, promotion of collective public transport and the enhancement of soft modes (walking and cycling) with a view to influence modal shift from private modes to collective or non-motorized means, the transport and distribution of goods, and to a certain extent the planning of road traffic and the organization of parking. The practice of formulation of Comprehensive Mobility Plans for Indian cities has emerged in the past ten years as a comprehensive road map, reflecting real concern on how NMT and public transport should develop as a sustainable activity itself, but also to support economic activity and reinforce social cohesion.

The mobility plan seeks to “move people, not vehicles”. By emphasizing the pre-eminence of public transport and goods transport and integrating the land use with transport

networks, with encouraging non-motorised transport it seeks to achieve the objectives of the NUTP. A series of sustainable urban transport projects to enhance facilities for public transport, NMT facilities, parking management and efficient traffic management measures ensure a safe, affordable and efficient transportation in Erode. The NMT proposals and traffic management measures need immediate attention to provide safety of vulnerable road users. Though Erode has an efficient public transport with better patronage, an exclusive city service may be advantageous to cater the travel demand arising due to the urban sprawl in the future. Transit Oriented Developments need to be encouraged on the public transport corridors.

Way Forward for the above projects is shown in the chart below.

Sl. No	Time Frame	Changing the mobility conditions - Actions	Changing Behavior
1	Short Term	Prioritise NMT projects and take up few pilot projects in first year Initiate Training and capacity building program to handle the projects Making public bus transport system more attractive Develop a system of city specific measurable indicators to incorporate sustainable mobility Traffic management measures including junction improvements, on-street parking, etc	Arousing citizen's awareness
2	Medium Term	Framing a suitable institutional frame work to implement CMP schemes Acting on the urban forms and urban development Enforcement of development control regulations as per master plan for effective implementation of proposed CMP plans Identification of funding sources on long term basis to ensure projects recommended can be implemented	Convincing the key players and stimulating the will to act together
3	Long Term	Regulations as long term goal Revision of the master plan to take into account land use transport integration	

To conclude, CMP being a visionary document evolved through a clear and logical methodology and as the cities are growing constantly with changing land use, it is recommended to update the CMP at least once in every five years.