

Tamil Nadu Urban Infrastructure Financial Services Limited

**City Corporate Plan cum Business Plan for
Tiruvottriyur Municipality**

Final Report

March 2008



ICRA Management Consulting Services Limited

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Executive Summary

The Tamil Nadu Urban Infrastructure Financial Services (TNUIFSL) mandated ICRA Management Consulting Services (iMaCS) for preparation of City Corporate Plan cum Business Plan (CCP-BP) of Tiruvottiyur Municipality (Tvr-M). This exercise intends to enable Tvr-M to develop a holistic, structured and consultative approach to fine-tune and define its development priorities going forward.

The objectives of the exercise are three-fold: a) to assess existing demand-supply gaps in service delivery and derive a comprehensive infrastructure improvement plan (including a Capital Investment Plan) required, b) to identify revenue enhancement and financial improvement measures and c) to develop a Financial and Operating Plan to implement a sustainable infrastructure improvement plan.

City profile and growth potential

Tiruvottiyur Municipality is located to at a distance of 7 km north of Chennai at 13.75° latitude on North and 80.25° longitude. It is bound on the north by Kattivakkam Municipality, east by Bay of Bengal, west by Manali. Buckingham canal traverses across the town from West to East of this town. Tiruvottiyur

Constitution	Selection Grade
Area	21.42 sq.km
Wards	48
Population (2001)	212281
Decadal growth %	25.9%
Population Density (per Ha)	99
Slum population (% of total)	15%

lies in the district of Tiruvallur and within the Chennai Metropolitan Area. (ChMA). The population of Tiruvottiyur town could nearly double in the next two decades going up to nearly 400,000 by 2026. Our population projections closely mirror the projections arrived at by CMDA in its draft Second Master plan for ChMa. Tiruvottiyur exhibits a mixed residential feel in most parts of the town with trading and related commercial activities within the town. Towards the west of Tiruvottiyur are residential localities like Mahalakshmi Nagar, Raja Shanmuga Nagar, Anjugam Nagar, Bharat Nagar and Gopal Nagar.

A brief SWOT analysis of the town is presented below:

Strengths <ul style="list-style-type: none"> Proximity to Chennai Presence of an industrial base Rail connectivity to rest of Chennai Nearness to both the major ports of Chennai and Ennore 	Weakness <ul style="list-style-type: none"> Several areas of town narrow and congested Small scale units in town facing problems Significant gaps in infrastructure and unplanned residential developments Significant / visible slum population
Opportunities <ul style="list-style-type: none"> One of the fastest growing large suburbs Gateway for rest of Northern Chennai Improving arterial road connectivity could improve commercial base of town Proposed developments along Ennore port could trigger further residential developments. 	Threats <ul style="list-style-type: none"> Overall development of North Chennai has been relatively slow Continued negligence of infrastructure may actually lead to outward migration of high income groups / professionals Persistent threat of cyclonic and flood related events in view of location

The key economic development themes for Tiruvottiyur town are summarized below:

- 1. Guide growth of the town by exploring scope for extension of town limits -** Tiruvottiyur has a significant presence of small scale industry and several large industrial units. Against 64% of land being developed area – CMDA envisages that developed area would be 72% by 2026; residential development to grow by 3% and industrial use by 2%. Given the expected population growth, there is clearly very little additional land available for handling and planning for this growth in an orderly manner. Therefore, there appears to be case for evaluating scope for bringing in adjoining areas to direct future growth, as aspect that also figured high in our consultations with the council and with public stakeholders.
- 2. Significant gaps in urban infrastructure – water, sanitation and roads need to be addressed on priority -** While water supply and UGD projects on the anvil with DPRs being under preparation by CMWSSB, there is a need for a comprehensive plan for flood management and storm water drains required. Tiruvottiyur is constrained by low lying areas on both sides in the vicinity of the coast and the Buckingham canal. Further, the road length per sq.km at 5.9 km / sq.km is among the lowest road densities among suburban areas in Chennai. This lack of adequate connectivity and road networks is evident in the visible congestion and traffic snarls that is evident. Given this scenario, widening and strengthening arterial roads including development of elevated sections as suggested as part of Chennai City Development Plan are critical in managing the future growth of the town.
- 3. Explore scope for shifting small scale industries to a newly created industrial estate / park in the town -** Apart from the large industrial units within Tvr-M, there are a number of small scale and ancillary units within the town. Given the haphazard nature of the growth, several industrial units are located fairly close to residential areas. There is a need to explore the scope for creating a industrial cluster separately within the town where all these units can be shifted. Apart from releasing land for other development, this could enable provision of necessary infrastructure for the industries in one place.

Municipal Services - Status assessment, gaps and actions being taken

Exhibit 1 presents a summary of service levels and status with respect to select indicators in Water Supply, Sanitation, Transportation, Street lights and Solid Waste Management.

Exhibit 1 Summary of prevailing service levels – key indicators, issues and gaps

Sl. no	Name of the Indicator	Value	Issues and Gaps / Initiatives
Water Supply			
1	Daily Per Capita Supply (LPCD)	22.2	<ul style="list-style-type: none">• Bottlenecks prevail in distribution and storage• Very poor LPCD levels of water supply• Connection and Collection efficiency poor• Insignificantly low number of house service connections
2	Storage Capacity / Daily Supply (%)	26%	
3	Distribution Network / Road Length (%)	22%	
4	Water connections / Assessed properties (%)	7%	
5	Population per Public Fountain (Nos.)	174	
Sanitation			
6	Presence of UGD network (Yes / No)	Yes	<ul style="list-style-type: none">• Very poor sanitation conditions.

Sl. no	Name of the Indicator	Value	Issues and Gaps / Initiatives
8	Household per Public convenience seat (nos.)	----	<div>Ongoing UGD scheme needs to be accorded highest priority</div> <ul style="list-style-type: none">Public conveniences network needs to be expanded.Greater thrust on maintenance and upkeep requiredAwareness programs to educate population on importance of sanitation should accompany asset creation.
9	Storm Drain Length / road network (%)	26%	
Roads and Street Lights			
10	BT roads / Total (%)	67%	<ul style="list-style-type: none">Several BT surfaced roads are in poor conditionFlood prone nature of town makes roads particularly vulnerable
11	Road length per Street Light (m)	24	
Solid Waste Management			
11	Waste generation per capital (gms)	454	<ul style="list-style-type: none">Significant gaps in SWM practicesNeed for an integrated program to implement SWM rules and regulations on priority.Proposed improvements in the Dumping yard to be implemented on priority.Need for greater awareness creation and investments
12	Collection efficiency (% of waste generated)	100%	
14	Compost yard area (Acres per 10,000 population)	0.049	
15	Average vehicle trips	2	
16	Source Segregation and Composting (Yes/No)	Yes	

Analysis of financial performance

Exhibit 2 provides a summary of the income and expenditure of Tiruvottiyur Municipality. Income has declined from FY 2002 to 2006. While the decline can be largely attributed to the decline in other income which has shown a spike in FY 2002, other streams of revenue have been largely flat. Total expenditure has also been flat and there has been an overall decline in cash surplus during the period. Debt servicing / Total Revenue was at 10% during the period.

Exhibit 2 Income and Expenditure summary

INCOME	2002-03	2003-04	2004-05	2005-06	CAGR %
OWN INCOME	824	718	739	737	-4%
Property tax	469	475	484	438	-2%
Profession tax	56	65	67	72	9%
Water & Sewerage Charges	29	26	36	54	23%
Other Service Charges & Fees	44	39	47	50	4%
Other Income	226	113	105	123	-18%
ASSIGNED REVENUE	217	221	203	207	-2%
DEVOLUTION FUND	355	499	419	374	2%
GRANTS & CONTRIBUTIONS	91	57	52	0	-100%
PRIOR PERIOD INCOME	61	3	47	0	-100%
TOTAL	1548	1498	1461	1318	-5%

EXPENDITURE	2002-03	2003-04	2004-05	2005-06	CAGR %
Salaries	502	514	492	566	4%
Operating Expenses	331	480	390	410	7%
Programme Expenses	0	0	0	0	-100%
Administrative Expenses	32	37	21	49	15%
Finance Expenses	221	188	191	119	-19%
Depreciation	312	397	269	712	32%
Prior Period Expenses	2	24	0	0	-100%
TOTAL	1088	1243	1095	1144	2%
SURPLUS- (Excl.Depr)	459	254	366	174	-28%
Operational Ratio (Total Exp/Total Income) (All figures in Percentage)					
Incl Depreciation	90%	110%	55%	141%	109%
Excl. Depreciation	70%	83%	77%	87%	79%
Debt servicing (Rs in lacks)					
Loan repayments – Interest	112.19	98.89	120.05	95.32	426
Loan repayments – Principal	9.85	27.62	34.26	69.16	141
Debt servicing / Total Revenue	8%	8%	11%	12%	10%

Source: Tvr-M accounts. iMaCS analysis

Capital Investment Plan, priority projects and technical assistance requirements

Exhibit 3 provides a summary of the CIP for Tvr-M. The CIP has been prepared based on

- Status and progress on projects identified as part of the Vision Plan (2004-09)
- Consultations with stakeholders and feedback on our presentation to the Council.
- Discussion with Tvr-M officials and review with TNUIFSL and CMA

Exhibit 3 Capital Investment Plan summary

Segment	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	TOTAL
Water Supply	27	2467	2467	2467	4	7431	121	1671	9223
Sanitation	351	1302	1302	1302	351	4610	598	1181	6389
Solid Waste Management	95	0	16	293	0	404	664	260	1327
Transportation	14	14	979	979	979	2967	1154	2480	6601
Urban Services for poor	0	0	57	57	2451	2564	11971	0	14535
Others	83	108	278	68	38	575	190	380	1145
TOTAL (BY ULB)	571	3891	5099	5166	3824	18551	14698	5972	39221

Priority projects

Priority projects identified for implementation by Tvr-M are listed in Exhibit 4 below.

Exhibit 4 Priority projects: FY 2008-12

Sl. No	Sector	Project	Cost Rs. Lakh	Status
1	Water supply	Comprehensive scheme to provide 135 LPCD and house service connections in all wards	7400	DPR getting ready. Project to be implemented under JNNURM.
2	Sanitation	Underground Drainage Scheme	2900	Project under implementation
3	Sanitation	Flood management and storm water drains	1757	Proposed. DPR required

Sl. No	Sector	Project	Cost Rs. Lakh	Status
4	SWM	Land acquisition and development of compost yard	80	Under implementation
5	Roads	Restoration of roads after UGD completion	2900	Proposed
6	Remunerative assets	Slaughter house and gasifier crematorium	60	Under implementation
7	Remunerative assets	Swimming pool	200	Proposed
8	Slum upgradation	Project being implemented under BSUP	844	Under implementation

Technical assistance requirements

A list of project level / sector specific technical assistance requirements needed from CMA/TNUISFL is given below:

1. Comprehensive GIS for the town with updated information on all urban assets including roads, water supply, sanitation etc.
2. DPR and technical assistance for digitization of layout records and town planning information
3. DPR for flood management and integrated storm water drains.
4. Comprehensive Transportation and Traffic study
5. DPR for roadmap for 24x7 supply
6. DPR for solid waste management with focus on scientific disposal and mechanised handling of waste with private sector participation

Projects by other departments / agencies

Projects to be taken up for implementation by other Government departments include the following:

1. **Highways department / NHAI/TNRDC** – i) Completion of EMRIP project (TNRDC)– Rs. 309 crore and ii) proposed strengthening of TH road at a cost of Rs. 22 crore (SH) iii) Elevated road along Tiruvottiyur high road from Toll gate to Eranavoor bridge (SH) and iv) ROB at Tondiarpet-Tiruvottiyur crossing (Railways/SH). Projects iii and iv have been recommended in the Chennai CDP submitted under JNNURM. Further, public consultations indicate the need for pedestrian subways at Matthumanthai, WIMCO gate, Anna Nagar Gate
2. **Chennai Metro water** – Execution of comprehensive water supply and roadmap for 24x7 water supply
3. **CMA** –Technical assistance in GIS application, e-governance and accounting systems
4. **CMDA (along with Tvtr-M)** - Dissemination of land use plan and exploring scope for extending town limits
5. **Department of industries/CMDA/Tvr-M** – Conduct a study to evaluate scope for progressively shifting small scale industries under a separate industrial area.

Reform Agenda

Tvr-M's ability to improve on its financial performance hinges primarily on its ability to sustain and improve on the revenue growth noticeable in recent years.

State level - 10 point agenda

1. Implement recommendations of the Third State Finance Commission, particularly those relating to the revenue buoyancy including property tax reform and devolution income from GoTN.
2. Ensure stability of tenure of key officials. Except for extraordinary circumstances, there should be a minimum tenure of at least 2 years for all the key positions including Commissioner, Municipal Engineer, Manager, Town Planning Inspector, Sanitary and public health head and Accountant. Further, guidelines need to be clarified and enforced for formal charge handover to ensure continuity, when there is a transfer of officials.
3. Conduct a zero-base assessment of skill gaps and manpower needs of ULBs to ascertain the appropriate manpower plan in terms of skill sets and experience/seniority. This is particularly relevant given the recent developments, specifically in urban planning and GIS, municipal accounting and systems, e-governance and modern practices in infrastructure service delivery including potential for Public-Private Partnerships.
4. Address critical operational areas through focused training and capacity building interventions, particularly in the areas of a) Engineering and project development, b) Accounting and Finance and c) Use of CAD/GIS applications in Town Planning and Engineering functions.
5. CMA, GoTN should continue with its ongoing technical assistance to ULBs to improve their accounting systems and computerisation. Setting up of the Debt Monitoring Cell to reconcile and disseminate information on debt status of the ULBs is also a positive step in this direction.
6. CMA, GoTN should insist and make ULBs complete accounts closing and audit within 3 months of completion of financial year. TNUDF could consider a grading system to categorise ULBs on the basis of quality of accounting and reporting practices.
7. Develop / enforce technical standards with specific applicability to municipal projects construction and execution particularly in the areas of a) integrated road asset creation and management, b) Flood management and guidelines for storm water drain construction and c) Building on ongoing initiatives in Solid Waste Management with greater focus on scientific waste processing and disposal mechanisms.
8. CMA, GoTN along with TNUIFSL should develop a framework for PPP covering specific policies and guidelines and model concessions for PPP in urban services including Water supply, Sanitation, Solid waste management, Street light maintenance and remunerative projects.
9. ULBs should be required to establish the practices of an independent systems audit to be conducted annually. This would enable ULBs to build in robust processes for disaster recovery and security of the IT architecture of the ULB.
10. Facilitate creation of a formal institutional mechanism to manage functional overlaps among nodal agencies/state level agencies and the ULB at the city level.

ULB level

Tvr-M could potentially double its income by FY 2012 through focused interventions in the following areas:

1. **Property tax:** – through revision in ARV, widening assessee base and closer scrutiny.
2. **Professional tax** – sustaining growth in assessments through widening tax base among traders and self-employed professionals
3. **User charges** – through increased penetration of water connections and new sewerage connections could potentially triple user charges income from the current levels.
4. **PPP / remunerative projects** - Tvr-M also needs to explore land development as a revenue enhancement mechanism and should focus on attracting private sector participation through appropriate BOT/ SPV structures for implementing remunerative projects.
5. **Collection Efficiencies** in both taxes and user charges indicate scope for improvement.
6. **NGOs / Corporate participation** - Intensify focus on attracting NGOs/advertising revenue for city beautification projects to reduce reliance on grants for such projects.

FOP, borrowing capacity and investment capacity

Exhibit 5 provides a summary of the results of the FOP. As can be seen, Tiruvottiyur's revenues could potentially go up to **Rs.7324 lakh** by 2016 and **Rs. 15703 lakh** by 2027.

Exhibit 5 Financial and Operating Plan - summary

Estd. Revenues – FY 2008 (Rs. Lakh)	2,702
Estd. Revenues – FY 2016 (Rs. Lakh)	7,234
Estd. Revenues - FY 2027 (Rs. Lakh)	15,703
Revenue CAGR % - FY 2008-17	11.6%
Revenue CAGR % - FY 2008-27	9.7%
Average TE (excluding depreciation)/TR (%)	48%
Average DS/TR (%)	17%
Average DSCR	2.59
Borrowing Capacity	16931
Investment Requirement	39,221
Investment Capacity (at 50% loan)	33,862
IC/IR (including Urban Service for Poor)	86%
IC/IR (without USP investment)	137%

The borrowing capacity of Thiruvottiyur works out to Rs. **16,931** lakh. At an aggregate level, assuming loans to be equivalent to **50%** of investment, sustainable investment capacity works out to Rs. **33,862 lakh**, which translates to about 86 % of the total investment requirement (including slum rehabilitation). If we exclude slum rehabilitation and urban services for poor projects which are largely grant funded, the borrowing capacity translates to **137%** of the total investment requirement. Hence Tiruvottiyur is well placed to meet its capital investment requirements.

1. Introduction

1.1 Background to the study

The Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) intends to assist Tiruvottiyur Municipality (also referred to as Tvr-M in this document) in strengthening and improving its financial position for effective capital investment management and urban service delivery. As part of its project development and capacity building role, TNUIFSL retained ICRA Management Consulting Services Limited (IMaCS) for assistance in preparation of a City Corporate Plan cum Business Plan for Tvr-M.

This exercise intends to build on internal efforts of Tvr-M and the Vision Plan prepared by Tvr-M in FY 2005 that identified projects and development priorities in various areas of municipal functioning and also enable Tvr-M to develop a holistic, structured and consultative approach to fine-tune and define its development priorities going forward. The objectives of the exercise are three-fold: a) to assess existing demand-supply gaps in service delivery and derive a comprehensive infrastructure improvement plan (including a Capital Investment Plan) required, b) to identify revenue enhancement and financial improvement measures and c) to develop a Financial and Operating Plan for a 10-year period to implement a sustainable infrastructure improvement plan.

1.2 Objectives, Scope of Work and study modules¹

1.2.1 Objectives of the study

The objectives of this exercise as defined by TNUIFSL were to:

- a) Define the growth directions and service up-gradations in relation to the activity mix / growth
- b) Look at the demand for the projects specified by the ULBs, and identify gaps in services to broadly outline infrastructure needs;
- c) Identify specific capital improvement needs with regard to priority city infrastructure in both slums and other areas
- d) Define revenue enhancement and revenue management improvements required to sustain the rehabilitation proposed
- e) Identify reforms required in local administration and service delivery and management changes required at the local level to improve O&M of assets
- f) Suggest measures to address common growth and infrastructure issues.

¹ Compiled from the Terms of Reference document prepared by TNUIFSL

1.2.2 Scope of work

A brief summary of the scope of work for the study is given below:

- a) Assessment of demand for projects identified by ULB.
- b) Assessment of the financial and operating aspects of Tiruvottiyur
- c) Review issues relating to revenue realisation, asset management and institutional constraints
- d) Development of a Financial and Operating Plan (FOP), taking into account potential revenue enhancement and cost reduction measures
- e) Prepare a draft Memorandum of Association between ULB and TNUIFSL that will outline base line indicators and the performance targets on the same.
- f) Initiate consultations with council and local stakeholders on the priorities; redefine priorities and work with the Council to resolve on adoption of the City's FOP and CCP actions.
- g) Finalize Action Plan for the City, with a resolution from the council on the priorities and commitment to implement revenue and management improvement measures.

Annexure I provides the detailed Terms of reference and scope of work provided by TNUIFSL.

1.2.3 Study outputs and modules

We have clubbed overlapping and related study outputs defined in TNUIFSL's RFP into the following modules:

- **Module I** - Rapid Urban Assessment
- **Module II** - Strategic Plan, Capital Investment Needs and Asset Management Plan
- **Module III** - Project risk, environmental and social assessment
- **Module IV** - Financial and Operating Plan
- **Module V** - Policy Interventions and Technical Assistance requirements

1.3 Approach and Methodology

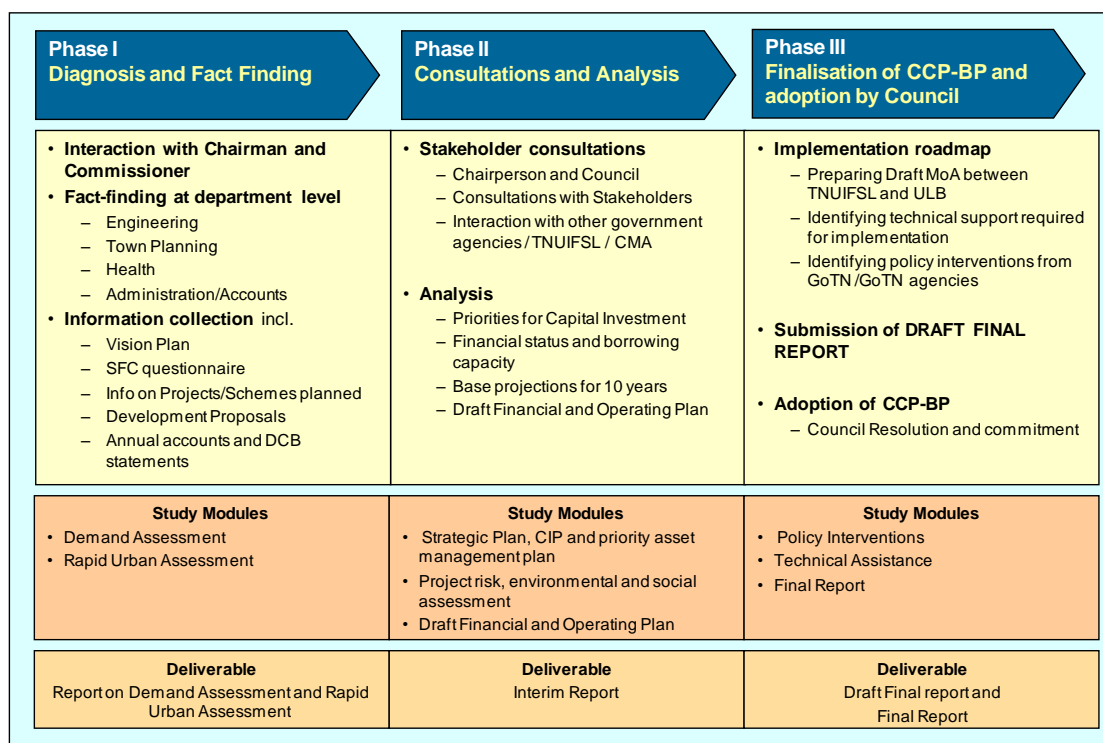
We conducted this study in three phases. Exhibit 1.1 provides a snapshot of the approach and methodology along the study modules and the deliverable(s) covered in each phase.

1.3.1 Phase I – Diagnosis and Fact-finding

The diagnostic review was directed towards achieving an understanding of demographic and economic profile of the town along with a review of the operating and financial performance of Tiruvottiyur municipality. During this phase, we focused our fact gathering on the following:

- Understanding of the city context and characteristics in terms of demographics, land-use and economic development
- Assessment of current status and requirements for various urban services
- Review of operational performance and service delivery of Tvr-M in infrastructure segments
- Compilation of information on ongoing and proposed schemes and projects.

Exhibit 1.1 IMaCS' approach and methodology



Our methodology for this phase covered the following:

a) Primary research

- We had interactions with the Commissioner and officials in various departments of Tiruvottiyur municipality. The objectives of these interactions were to get a first-hand view of the perspectives of these officials with respect to the overall status of the town and the issues in delivery of urban services.

b) City Visits

- Our team made several reconnaissance visits to different parts of the town to understand the spatial characteristics of the town and to get hang of the 'visible' issues facing municipal management in the town.
- During these visits, IMaCS' team also had informal dipstick interactions with the local populace to capture select perceptions on the town and its municipal administration.

c) Collection of information on aspects relating to the town and municipality

- We spent substantial time during this phase in perusing various documents and information available with Tvr-M and in follow-up discussions with ULB officials on the information gathered. In preparing this report, we have relied on the information provided by the ULB.

Phase I of the study culminated with the submission of Rapid Urban Assessment Report.

1.3.2 Phase II - Consultations and Analysis

In phase II, we validated the findings of our rapid urban assessment report through extensive consultations in the town. The activities during this phase included:

- a) **Consultations with the Council** - The focus of these consultations was to understand issues in urban services and to discuss options and drive a consensus on the future vision and strategy for the town. We also deliberate on the ongoing and proposed projects in order to understand and factor the council's priorities. Refer Annexure II for minutes of the discussions
- b) **Public consultations** – We also had public consultations with key stakeholders in the city. . The objective of this session is to complement the information gathered from our interactions with the council members to facilitate a wider participation of stakeholders in this exercise. Annexure III provides minutes of our meeting with the public stakeholders.
- c) **Analysis and finalisation of Capital Investment Plan** – Based on the findings of the rapid urban assessment and consultations with Council and stakeholders, we arrived at the Capital Investment Requirements for the town for the next 20 years. (i.e., 2008-2027).

Phase II of the report culminated with the submission of the report on Strategic Plan, Capital Investment Plan and Asset Management Plan report for the municipality. The report was presented to TNUIFSL, CMA and officials of Tiruvottiyur municipality before moving on to Phase III.

1.3.3 Phase III – Finalisation of report

This phase involved finalizing the contours of the City Corporate Plan cum Business Plan of Tiruvottiyur municipality. During this phase we crystallized

- a) Reform agenda to be adopted by Tvr-M including revenue enhancement options.
- b) Policy interventions and technical assistance required for Tvr-M to implement the CCP-BP.
- c) Assessment of borrowing capacity and preparation of a sustainable Financial and Operating Plan.

1.4 Organization of this report

This document presents our Final Report of the study and is structured along the sections given below. Prior to finalisation, the Draft Final Report was submitted and reviewed by TNUIFSL, CMA and Tvr-M. The report with the incorporated changes was presented to the municipal council, which passed a **Council Resolution²**, approving the report in its meeting on **29.02.2008**.

- Section 1 Introduction
- Section 2 City profile and demographics
- Section 3 Economic profile and Land use
- Section 4 Rapid urban assessment – services, issues and gaps
- Section 5 Urban Governance and management
- Section 6 Analysis of financial performance
- Section 7 Vision and strategic plan, CIP and asset management plan
- Section 8 Project profiles including analysis of risks and ESA considerations
- Section 9 Reform Agenda and Technical Assistance
- Section 10 Financial and Operating Plan

² Copy enclosed with Executive Summary of report

2. Town profile and city demographics

2.1 Location

Tiruvottiyur Municipality is located to at a distance of 7 km north of Chennai at 13.75° latitude on North and 80.25° longitude. It is bound on the north by Kattivakkam Municipality, east by Bay of Bengal, west by Manali. Buckingham canal traverses across the town from West to East of this town. Tiruvottiyur lies in the district of Tiruvallur and within the Chennai Metropolitan Area. (CMA).

2.1.1 Connectivity

The Tiruvottiyur High Road and Ennore Highway traverse the town in the north-south direction from Chennai. While Ennore Highway connects the town with Kathivakkam and other northern parts of the state, the Tiruvottiyur High Road connects to Manali High Road and Ennore Highway at the northern end of the town. The Manali High Road connects Tiruvottiyur further through the western suburbs of Chennai to the National Highways (NH4 and NH 5) connecting the town to the National Highways converging into Chennai. Tiruvottiyur is connected by Metropolitan Bus services from Chennai and its other suburbs. The Chennai Central – Gummidipoondi railway line passes through Tiruvottiyur and has a railway station at Tiruvottiyur. Suburban broad gauge trains operate daily from Chennai Central through Tiruvottiyur to Gummidipoondi. Chennai airport is about 20 km from the town. Exhibit 2.1 provides the location of Tiruvottiyur within Chennai Metropolitan Area along with a map of Tiruvottiyur town.

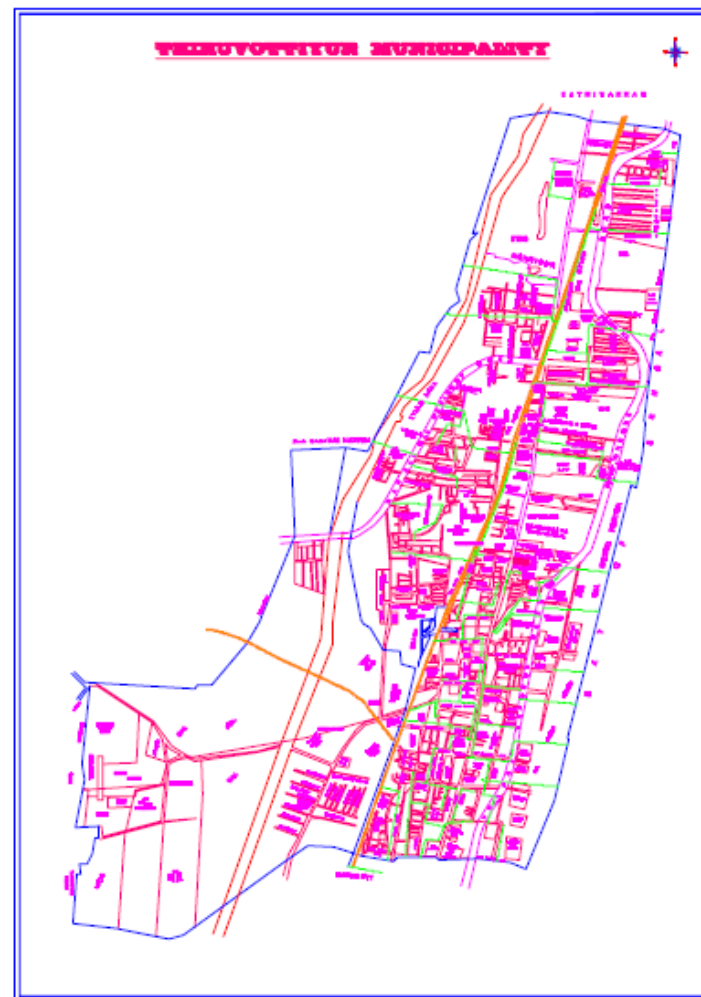
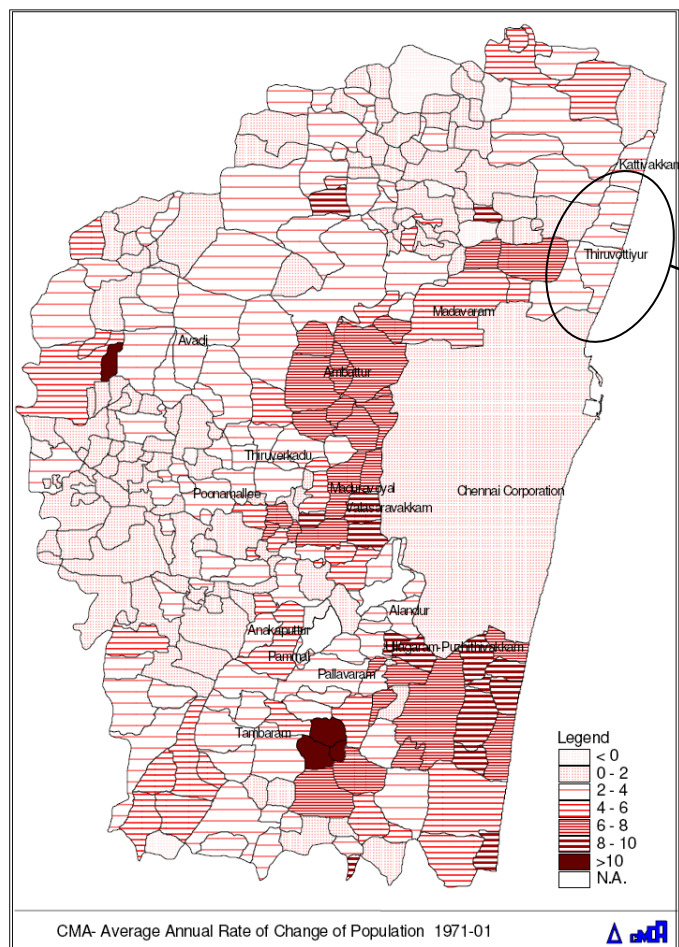
2.2 Tiruvottiyur municipality - administrative status

Tiruvottiyur comes under the North Chennai parliamentary constituency and is an assembly constituency as well. Tiruvottiyur Municipality is a Selection Grade Municipal Town and is divided into 48 wards and consists of three revenue villages, namely Tiruvottiyur, Ernavoor, and Santhagadu village. The total area of the Municipality 21.42 sq.km. The famous historical Temple Sri Thiyagarasamy Temple, Ramalingasamy madam and Pattinatharkovil are situated in the town. The Municipality was constituted in the year 1958 and was upgraded as Selection Grade Municipality on 14.12.1998 comprising the Revenue Villages of Tiruvottiyur, Ernavoor and Sathangadu.

Exhibit 2.1 Changing status of Tvr-M

S.No.	Period	Status of the Municipality
1	Prior to 01.10.1938	Town Panchayat
2	From 01.10.1958	Municipality – Grade – III
3	From 25.05.1966	Municipality – Grade – II
4	From 23.05.1974	Municipality – Grade – I
5	From 14.12.1988	Municipality – Selection Grade

Exhibit 2.2 Location of Tiruvottiyur within CMA



Source: II Master Plan Document. CMDA, Tiruvottiyur Municipality

The Municipal Council, comprising of 48 ward members, is headed by Chairperson. The executive wing is headed by Commissioner, who is assisted by a team of officials including Municipal engineer, Sanitary Officer and Manager. The current Municipal Council took charge in October 2006.

2.3 Population

2.3.1 Decadal trends and ward wise population

Exhibit 2.3 provides a snapshot of the population growth over the last few decades.

Exhibit 2.3 Population growth trend

Year	Population	Growth Rate (%)	
		Annual	Decadal
1961	37764	-	-
1971	82853	119.4%	8.2%
1981	134067	61.8%	4.9%
1991	168642	25.8%	2.3%
2001	212,281	25.9%	2.3%

Source: www.census.tn.nic.in

As per the latest census, Population of Tvr-M was 212281 (~ 49,068 households). The growth in the 60s and 70s is partly attributable to the industrial developments which took place in Tiruvottiyur and adjoining areas including Manali. Major industries like Madras Rubber factory, Wimco India, Royal Enfield India limited Carborundam Universal Limited, K.C.P. Limited. The Ennore Thermal Power station is also located in this Municipal limit and a number of small industries and tiny Industries also operate within Tvr-M. There are 15 Fishermen Slums in the Eastern side of this town.(near by sea). However, over the last couple of decades, the population growth has substantially slowed down from those levels, though it has exhibited a medium growth trajectory among the adjacent urban areas within Chennai Metropolitan Area (CMA). Tiruvottiyur is a fairly uniformly populated town. Ward no. 43 was the most populated ward as per Census 2001. Wards 3-4, 10-14,16-17, 20,21,29, 34,36 41-48 had a population of more than 3500 at the time of Census 2001. Ward wise population of the town is given in Exhibit 2.4

Exhibit 2.4 Ward wise population (Census 2001)

Ward no	House holds	Population	Ward no	House holds	Population
1	670	2850	25	911	4303
2	750	3489	26	636	2948
3	1260	5809	27	898	4047
4	1187	5173	28	667	3005
5	800	3504	29	1042	4814
6	679	3129	30	826	3660
7	1049	4782	31	822	3530

Ward no	House holds	Population	Ward no	House holds	Population
8	767	3372	32	977	4216
9	1003	4196	33	845	3510
10	1871	7814	34	1421	6041
11	1167	5037	35	844	3522
12	1151	4843	36	1101	4534
13	972	4377	37	1002	4259
14	1201	5059	38	705	3176
15	717	3079	39	861	3721
16	1155	4848	40	573	2606
17	1424	5870	41	1426	6108
18	963	4052	42	1176	4927
19	1032	4288	43	2567	11037
20	1039	4524	44	890	3888
21	1086	4589	45	1213	4955
22	762	3428	46	892	3786
23	831	3421	47	1563	6710
24	521	2573	48	1153	4872

2.3.2 Population vis-à-vis other suburban areas within CMA

Exhibit 2.5 provides details of population growth trend in Tiruvottiyur vis-à-vis other suburbs within CMA.

Exhibit 2.5 Tvr-M vis-à-vis other suburban areas in CMA

Sl. No.	Municipality	Area sq.km	Population (Thousands)				Growth %		Pop.density / Ha
			1971	1981	1991	2001	1971-2001	1991-2001	
1	Ambattur	40.36	45.59	115.90	215.42	310.97	6.6%	3.7%	77
2	Avadi	61.57	77.41	124.70	183.22	229.40	3.7%	2.3%	37
3	Tiruvottiyur	21.35	82.85	134.01	168.64	212.20	3.2%	2.3%	99
4	Alandur	8.08	65.04	97.45	125.24	146.29	2.7%	1.6%	181
5	Pallavaram	16.10	51.37	83.90	111.87	137.93	3.3%	2.1%	86
6	Tambaram	20.72	58.81	86.92	113.29	137.93	2.9%	2.0%	67
7	Madhavaram	17.41	21.05	29.46	49.26	76.09	4.4%	4.4%	44
8	Pammal	5.19	9.05	27.82	36.51	50.00	5.9%	3.2%	96
9	Maduravoyal	4.78	6.46	7.45	14.88	43.61	6.6%	11.4%	91
10	Poonamallee	6.55	18.72	23.67	28.83	42.60	2.8%	4.0%	65
11	Kathivakkam	4.75	16.14	22.10	27.17	32.59	2.4%	1.8%	69
12	Thiruverkadu	18.63	13.08	17.23	27.84	32.20	3.0%	1.5%	17
13	Anakaputhur	2.98	10.88	15.30	24.35	31.92	3.7%	2.7%	107
14	Valasaravakkam	2.97	2.41	7.58	21.95	30.98	8.9%	3.5%	104
15	Ullagaram	3.64	2.38	8.58	16.13	30.42	8.9%	6.5%	84
16	Manali	7.49	3.34	11.96	19.09	28.60	7.4%	4.1%	38
	All Municipalities	242.57	484.58	814.03	1,183.69	1,573.73	4.0%	2.9%	65
	Chennai Corporation	176	2642.00	3285.00	3843.00	4344.00	1.7%	1.2%	247
	Town Panchayats (20)	156.02	111.18	164.19	271.35	385.72	4.2%	3.6%	25
	Panchayat Unions (10)	617.00	267.3	338.74	520.24	730.79	3.4%	3.5%	12
	TOTAL CMA	1,191.59	3,505.06	4,601.96	5,818.28	7,034.24	2.3%	1.9%	59

Source: Chennai draft II Master Plan document. www.cmdachennai.org, IMaCS analysis.

Tiruvottiyur is the largest municipality in the CMA in terms of population and stands second in terms of land area (behind Avadi). In spite of being the largest municipality in the CMA, the population growth in Tiruvottiyur has been healthy even during the 1990s. With its proximity to Chennai, large land area and lower population density (77 per hectare) vis-à-vis Chennai city area (247 per ha), the population growth is expected to be strong in Tvr-M.

2.3.3 Literacy Rate and sex ratio

Exhibit 2.6 provides details of the sex ratio along with details of Literates for Tiruvottiyur, Chennai City, CMA and Urban areas in Tamil Nadu.

Exhibit 2.6 Literacy and sex ratio

Particular	Male	Female	Total	Region	Sex Ratio
Literates (nos) - Tiruvottiyur	87,323	72,925	160,248	Tiruvottiyur	953
Literacy % - Tiruvottiyur	90.50%	79.33%	85.05%	CMA	956
Literacy Rate - CMA	n.a	n.a	76.09	Chennai City	957
Literacy Rate - Chennai City	n.a	n.a	n.a	Tamil Nadu Urban	982
Literacy % - State - Urban	88.97	75.99	82.53		

Source: <http://www.census.tn.nic.in>

As seen, literacy rates in the town is slightly better than the overall urban literacy scenario in Tamil Nadu as well as the CMA area. The sex ratio for Tvr-M at 953 is lower than the state average of 982 (as per Census 2001) reflecting the lower female population, but is almost in line with Chennai city, which has a sex ratio for 957.

2.4 Population projections

We have projected the population for Tiruvottiyur town has been made using the following methods:

- Arithmetical Increase Method
- Geometric Increase Method
- Incremental Increase Method

Exhibit 2.7 provides the summary of the population projects made for the town.

Exhibit 2.7 Population Projections

	Arithmetic	Geometrical	Incremental	Average	CMDA Master Plan estimate
2001 (Actual)	212,281	212,281	212,281	212,281	212,281
2011	255,910	312,285	255,427	274,541	273,000
2016	277,725	378,766	276,819	311,103	309,000
2021	299,540	459,400	298,090	352,343	350,000
2026	321,354	557,199	319,240	399,264	397,000

Source: iMaCS analysis, CMDA II Master Plan for Chennai

The population of Tiruvottiyur town could nearly double in the next two decades going up to nearly 400,000 by 2026. Our population projections closely mirror the projections arrived at by CMDA in its draft Second Master plan for CMA. It is important to factor and take into account these population projections and trends for planning, execution and implementation of infrastructure projects in order to ensure adequate provision of urban services.

3. Economic profile and Land use

This section analyzes issues relating to Town planning, land-use and economic status of the town.

3.1 Planning efforts within CMA

3.1.1 Chennai Metropolitan Area

Tiruvottiyur falls within the Chennai Metropolitan Area. The Chennai Metropolitan Area (CMA) comprises of Chennai City and areas to an extent of 376.59 sq.km. in Kancheepuram District and 637 sq.km. in Thiruvallur District. According to 2001 Census, 38.6.percent of population of Kancheepuram District and 57.5 percent of population in Thiruvallur District live within CMA.

Chennai Metropolitan Development Authority (CMDA) constituted by Government in 1975 by an order formulated the 1st Master Plan, which was consented by the Government in G.O.Ms.No.2395, Rural Development and Local Administration, dated 04.12.1976. The Chennai Metropolitan Area consisting of 306 villages in 10 Panchayat Unions, besides 28 Town Panchayats, 8 Municipalities and 1 cantonment covers an extent of 1177 sq.km.

3.1.2 Role of Chennai Metropolitan Development Authority

The functions of the CMDA as per section 9-C of the Tamil Nadu Town & Country Planning Act, 1971 (Tamil Nadu Act No. XXXV of 1972) are

- a) To carry out a survey of the Chennai Metropolitan Planning Area and prepare reports on the surveys so carried out;
- b) To prepare a master plan or a detailed development plan or a new town development plan as the case may be, for the Madras Metropolitan Planning Area;
- c) To prepare an existing land use map and such other maps as may be necessary for the purpose of preparing any development plan;
- d) To cause to be carried out such works as are contemplated in any development plan;
- e) To designate the whole of the Madras Metropolitan Planning Area or any part thereof within its jurisdiction as a new town and to perform the following functions, namely (a) to prepare a new town development plan for the area concerned; and (b) to secure the laying out and development of the new town in accordance with the new town development plan;
- f) To perform such other functions as may be entrusted to it by the Government.

3.1.3 Chennai Master Plan - evolution and status

The first Master Plan for the Chennai Metropolitan Area was prepared by CMDA and approved by the Government in G.O.Ms.No. 2395, R.D. & L.A., dated 4.12.76. The 1st Master Plan was followed up with Detailed Development Plan taken up mostly within the city where it was experiencing rapid growth.

- a) Land-use regulation and Development Control Rules were implemented to regulate development.
- b) A set of measures including shifting the wholesale markets, bus terminus were taken to decongest the city was suggested such as from the core to the city periphery.
- c) Periodic review of Land Use Zoning depending on demand for housing, services, and employment generation projects in industrial and information Technology sectors etc. apart from processing of individual requests for reclassification also became a feature of urban planning.
- d) Of the three satellite towns proposed at Maraimalai Nagar, Thiruvallur and Gummidipoondi with target population of 1 lakh each. CMDA had taken up development of Maraimalai Nagar Satellite Town over an area of about 1200 acres; of which about 50% of the land area has been developed for industries and the remaining for housing with all infrastructures. The Maraimalai Nagar Municipality comprising the new town and also the adjoining areas has about 0.5 lakh population. In respect of the other two satellite towns identified the population as per 2001 was 0.75 lakh in Thiruvallur and 1.95 lakh in Gummidipoondi. These two towns, even without intervention by CMDA has grown as satellite town because of good rail and road network connectivity to the parent city.
- e) In respect of urban node at Manali, CMDA acquired about 500 acres of land and developed for residential developments to accommodate a population of about 70,000. In the remaining 5 nodes viz. Minjur, Avadi, Tiruvottiyur, Alandur and Tambaram through land use regulation, the target population had been achieved.

Further to the implementation of the I Master Plan, CMDA submitted the draft Second Master Plan (SMP) for Chennai Metropolitan Area - 2011. Since there were delays in implementing the Master Plan, GoTN observed that during the long gap between the date of consent of Second Master (1995) and date of dismissed Writ Petition filed against the finalisation of said draft (2001), GoTN returned the draft master plan for CMA - 2011 to CMDA directing CMDA to modify the draft second Master Plan taking into account the urban developments made, amendments made to DCR, future needs of CMA and also the CRZ regulations etc. An updated draft SMP was submitted by CMDA to GoTN in December 2005 with the request that an opportunity to the public and local bodies may be given for giving their objections / suggestions before finally approving the plan. The consultations on the draft SMP is currently under progress.

3.2 Economic status

Being a part of the CMA and an adjacent urban area, Tiruvottiyur's economic status and growth is entwined with the economic activities and growth potential within the CMA apart from the economic activities within and adjoining areas. The following section captures some of the key economic drivers for Tiruvottiyur municipality from both the CMA in general and Tiruvottiyur/adjoining areas in particular.

3.2.1 Developments in CMA

Over the years, the economic base of Chennai had shifted from trade and commerce to administration and services by the early part of the 20th Century. In the post independence period, manufacturing

became an important sector and CMA continues to be the most important industrial centre in the State. Recent trend shows that the economic structure of the city is getting tertiarised with growing contribution by Information Technology (IT) / Business Process Outsourcing (BPO) and other services. Analysis presented in Chennai SMP indicates that the CMA region alone accounts for nearly 16.21% of the state's income from all sectors with a similar proportion of the labour force in the state. Agriculture enterprise and establishments in Chennai and Kancheepuram Districts accounts for minimum and contributes only about 5% to the state's total.

Major industries in CMA are Auto, Auto Components, Railway Coach building, Petrochemicals and Fertilizers, Light Engineering and Leather products. Some of the large units are located at Ennore, Tiruvottiyur, Manali, Sembiam, Padi, Tiruvottiyur, and Porur and along GST Road, apart from the Integral Coach Factory at Perambur, and Heavy Vehicles Factory at Avadi. Many Small and Medium Enterprises (SMEs) are located at Vyasarpadi, Tiruvottiyur, Villivakkam, Guindy and Thirumazhisai industrial estates, at Madhavaram, Kodungaiyur, Poonamallee, Noombal, Perungudi, Seevaram and Sholinganallur. Simpson, Addison and TVS industries are located in the heart of the city along Anna Salai. MEPZ spreading over an area of 261 acres is functioning at Tambaram. Leather tanneries and leather based industries are located at Pammal and Madhavaram. Thermal Power Plants are located at Basin Bridge and Ennore. Many of the smaller units are scattered in various parts of the Chennai City and the rest of CMA. Industrial estate for leather goods is being developed at Thirumudivakkam.

Large Scale automobile engineering, glass and ceramic industries are located within 50 Km. from CMA at Marai Malai Nagar, Irungattukottai, Sriperumbudhur, Thiruvallore and Gummidipoondi; to mention a few are Mahindra Ford factory - manufacturing cars at Marai Malai Nagar, Hyundai Car factory and Saint Gobin Glass factory at Sriperumbudur, Spartek Ceramic tile manufacturing industry and Hindustan Earth Movers and HM Mitsubishi at Thiruvallur. Mahindra Industrial Park developed over an area of 1300 acres located along GST Road (near Chengalpattu) is about 42 Km. from CMA.

Tamil Nadu accounts for about 21percent passenger cars, 33percent commercial vehicles and 35percent automobile components produced in India. Chennai, the 'Detroit of India' is emerging as a major export hub for cars in South East Asia. In July 2005, the Government of India has decided to establish a new testing and homologation centre near Chennai. It is expected to bring about large savings in the foreign exchange spent on testing exportable vehicles at overseas facilities and also attract foreign exchange inflows by providing a competitive platform for manufacturer abroad to test their vehicles here. Tamil Nadu accounts for 70percent of leather tanning companies in India and 38percent of leather foot wear and components; most of the footwear industries are located within CMA.

3.2.2 Economic drivers - Tiruvottiyur

North Chennai has traditionally been a trading and industrial hub, with proximity to the port of Chennai and more recently the Ennore Port.

3.2.3 Select industrial units within Tiruvottiyur

A number of major industrial units have established their presence in Tiruvottiyur including the following:

- KCP Limited's Heavy Engineering Division setup in 1955 is an integrated manufacturing facility that caters to a wide range of heavy mechanical equipment and sub-systems for the core sector industries including cement and sugar. This facility is one of the largest, well-integrated workshops of its kind and has facilities for casting, fabrication and machining heavy equipment.
- MRF limited, a leading tyre manufacturer, has its oldest plant of MRF is located in Tiruvottiyur.
- ITC Limited has a packaging unit in Tiruvottiyur, which offers comprehensive solutions for cigarette and liquor packaging.
- Carborundum Universal, a leading abrasive and machine tool manufacturer has an unit for producing coated abrasives in Tiruvottiyur.
- Ennore Thermal Power Station

3.2.4 Developments in adjoining areas

A cluster of chemical industries is located in and around Manali in CMA. The presence of two major ports (Chennai and Ennore) and an international airport has made the CMA region attractive for investments with international trade linkages. The proposed development of Ennore port and the proposed Ennore Special Economic Zone could also spur development in this region.

3.3 Land-use and development

3.3.1 Development pattern and trends

This section further details the qualitative dimensions of the development and growth corridors in Tiruvottiyur town. Tiruvottiyur High Road runs through the entire length of the locality. The eastern part is dominated by industrial estates and the west by residential places. There is one more road called Ennore High Road that runs parallel to the Tiruvottiyur High Road. The region in between these roads, which consists of the eastern strip of the suburbs houses many important industrial establishments. Some of the leading industrial units within Tiruvottiyur include MRF, Royal Enfield Motors, ITC, Evershine Granites, etc. The Ennore High Road runs largely along the coast line of Bay of Bengal and has seen erosion due to sea wave. Massive concrete groynes have been put along the coast to prevent sea erosion. The Ennore Thermal Power station is located in the Municipal limit and along with more than 1000 small industries and tiny Industries. There are 15 Fishermen Slums in the Eastern side of this town (along the coastline). Tiruvottiyur exhibits a mixed residential feel in most parts of the town with trading and related commercial activities within the town. Towards the west of Tiruvottiyur are residential localities like Mahalakshmi Nagar, Raja Shanmuga Nagar, Anjugam Nagar, Bharat Nagar and Gopal Nagar. The region also features small establishment like schools, health care units and local markets. The Municipal Hospital and National Hospital are the major health care institutions in the town.

4. Rapid Urban Assessment - services, issues and gaps

This section provides details of the current status of various urban services in Tiruvottiyur Municipality and summarizes key issues. The section also covers an analysis of the projects identified by Tiruvottiyur municipality as part of its Vision Plan and the demand assessment of these projects. Finally, the section summarizes the normative gaps in infrastructure provisioning in water supply, underground drainage, roads, streetlights and solid waste management.

4.1 Water Supply

4.1.1 Existing Status – Supply vis-à-vis norms

Water supply in Tvr-M is provided by both CMWSSB and Tvr-M to the tune of 5.40 MLD. Exhibit 4.1 provides the break up.

Exhibit 4.1 Water supply - sources of supply and distance

Source	Type	Distance from town (km)	Supply (MLD)	LPCD
CMWSSB	Ground/Lakes	5.60	2.50	10.31
Hand Pumps and Open wells	Ground	-	2.90	11.96
Total			5.40	22.27

Source: Tvr-M

Water supplied by CMWSSB is to the tune of 10.31 LPCD and sources of Tvr-M contribute to 11.96 LPCD, based on the information provided by Tvr-M. As per municipal norms of 90 litres per capita per day (LPCD), Tvr-M's demand was 21.8 MLD in 2007 to meet its water supply needs completely. Salient features of the existing water supply in Tvr-M are given in Exhibit 4.2 below.

Exhibit 4.2 Water supply – Salient features

Description	Value/ Quantity
Daily water supply (MLD)	5.4
Number of House Service Connections	2300
Per Capita Supply (LPCD)	22 (CMWSSB – 9.5 LPCD Local Sources – 11.98 LPCD)
Over Head Tanks	3
Total Capacity of OHT (ML)	13.5 LL
Ground Level Sumps	2
Total Capacity of GLS	50000 L
No. of Public Fountains	95
Distribution System Length (km)	26
Total nos. of hand pumps	1300
Water from CMWSSB (MLD)	2.5

Source: Tvr-M

4.1.2 Sources

Presently CMWSSB sources the 2.5 MLD of water meant for Tvr-M from multiple sources like well fields, surface water in Panchetty. This water is then pumped to an Under Ground Tank (UGT) located at a distance of 25 km in Manali (pumping station) and then distributed to three Over Head Tanks (OHT). To cater to the additional demand apart from the supply sources of CMWSSB, Tvr-M through their in-house sources (hand pumps and open wells) supplies around 2.9 MLD of water.

4.1.3 Storage and Distribution

Tvr-M has 3 OHT's located at Tiruvottiyur High Road, Thyagarayapuram and K.R.Ramasamy Nagar. and 2 Ground Level Reservoirs (GLRs) located at Manali and Thyagarajapuram with capacities of 1 lakh litre (LL) and 0.5 LL respectively as mentioned in Exhibit 4.3.

Exhibit 4.3 Water supply - sources of supply and distance

Distribution Source	Nos	Volume (LL)
OHTs (Tiruvottiyur High road @ 5.5 LL, Thyagarayapuram @ 3 LL, K.R.Ramaswamy Nagar @ 5 LL)	3	13.5
GLRs (Manali @ 30000 L, Tthyagarajapuram @ 20000 L)	2	0.5
Total		14.0

Source : Tvr-M

Tvr-M has a total storage capacity of 14 LL and the water distribution pipe line network in Tvr-M is 26 km.

4.1.4 Access

As of FY ending 2006, Tvr-M has a distribution network of **26 km**. Given a total road length of **116.13 km** as of 2006, distribution network covers 22% of the town. There are around 2300 House Service Connections (HSC) in Tvr-M thereby translating to **7%** of assessed properties (at 33000) in Tvr-M. Out of the 48 wards in Tvr-M, 16 wards have good ground water table and presently have not been provided with HSC's or Public Fountains by Tvr-M. The balance 32 wards have around 2300 House Service Connections and 95 public fountains. There are around 1300 hand pumps within Tvr-M. The existing water tariff at Tvr-M is given in Exhibit 4.4 below.

Exhibit 4.4 Water tariffs and connection deposit

Area in sq.ft	Deposit (Rs)	Tariff (Rs)	Deposit (Rs)	Tariff (Rs)
	Domestic		Commercial	
< 500	2000	75	6000	225
500 to 1500	4000	100	10000	250
1500 to 3000	5000	125	24000	350
Special >3000	25000	125	50000	1250

Source: Tvr-M

4.1.5 Ongoing water projects

4.1.6 Comprehensive Water Supply Scheme - CMWSSB

CMWSSB is presently undertaking comprehensive water supply scheme for Tvr-M with the objective of providing 90 LPCD of water. This project is presently in the DPR stage and the DPR is expected to be ready by September 2007. The project is expected to be commissioned by mid 2009.

4.1.7 Issues and Gaps

Exhibit 4.5 summarises the current status vis-à-vis ultimate population requirements

Exhibit 4.4 Water Supply - connections and tariff

Indicator	Unit	Norm	Existing	Gap
Per Capita Water Supply	LPCD	90	22.3	67.7
Storage and Distribution				
Storage - % of Current Demand	%	50%	6.4%	43.6%
Distribution Network - % of Road Network	%	100%	22.4%	77.6%
Connections - % of assessed properties	%	80%	7%	63%
Demand - Supply Gap				
Water Demand - Current	MLD		21.8	
Water Demand - Ultimate *	MLD		35.73	
Water Supply – Current	MLD		5.4	
Demand Supply Gap – Current	MLD			16.4
Demand Supply Gap – Ultimate	MLD			30.3

Source: Tvr-M, IMaCS analysis * As per CMDA draft master plan 2026 population projection

a. Capacity gap -

Tvr-M has 48 wards and had an estimated population of 2,42,042 in 2006. Given municipal norm of 90 Litres per capita per day, demand for water supply in Tvr-M is approximately 21.8 MLD. As against this, the total water supplied within Tvr-M by various agencies is only about 5.4 MLD, implying 22.3 LPCD. Draft Master Plan – II for Chennai Metropolitan Area, 2026 prepared by CMDA indicate that the ultimate population of Tiruvottiyur by 2026 would be around 3.97 lakh implying an ultimate demand of 35.73 MLD by 2026.

b. Absence of House Service Connections

Water connections presently cater to 7% of the assessed properties indicating scope for adding more piped HSC and commercial connections.

c. Insufficient Storage Capacity

The present storage capacity available within Tvr-M at 14 LL is 26% of today's supply, 6% of today's demand (considering 90 LPCD) and 4% of ultimate demand (in 2026).

4.2 Sewerage and Sanitation

4.2.1 Underground Drainage

Tvr-M has a functioning Under Ground Drainage (UGD) system in select wards of the town, covering 52 km of sewer length. For the remaining 118 km the ULB is preparing a DPR and the work is expected to be completed by 2009. The main mode of individual disposal in the town is through septic tanks. There are an estimated 56100 septic tanks in Tvr-M. Effluent from septic tank is let into soak pits. The septic tanks are emptied by tankers owned and operated by the municipality during monsoon and overflow conditions. Sullage from all the households in the town is discharged into open storm water drains which ultimately stagnate forming cesspools in low-lying areas, resulting in breeding of mosquitoes, unsanitary conditions and odour problems.

Exhibit 4.5 Existing Sanitation System

Description	Quantity
Total nos. of households	65000
No. of households with water seal latrine and septic tanks	56100
No. of public toilets	21
Number of toilets (Vambay)	15

Source: Tvr-M

4.2.2 Ongoing UGD project:

For a length of around 118 km, the ULB is preparing a DPR at a project Cost of around Rs.28.5 Crore and the work is expected to be completed by 2009. The 118 km long UGD project is expected to be carried out in 5 phases and the project has already commenced.

4.2.3 Public conveniences (PC)

There are 15 public toilets under vambay scheme, 2 Integrated Sanitary complexes and 21 existing toilets as mentioned in Exhibit 4.6

Exhibit 4.6 Public Conveniences

Details	Units	Seats
Public Toilets (under Vambay scheme)	15	
Existing toilets	21	
Total (toilets)	36	920
Integrated Sanitary Complexes	2	

Source: Tvr-M

4.2.4 Storm water drains

Storm water drains carry the waste water in addition to storm water generated during rains. With a total length of 30 km, the drainage system covers the road network of the town only partially. Only 26 % of the road network has some form of drains in place.

Exhibit 4.7 Public Conveniences

Type	Length (km)	% of Road Network
Total Drain Length	30	26%
Uncovered Road Length	86.13	74%
Total Road Length	116.13	

Source: Tvr-M

4.2.5 Issues and gaps

Specific issues relating to sewerage and sanitation in Tiruvottiyur Municipality are highlighted below:

- Poor access of household sanitation** – Tvr-M has severe deficiencies in access to basic sanitation. The proposed implementation of UG scheme (post 2009) could improve the situation. But along with it, it is probably important for Tvr-M to take up steps and awareness campaigns for encouraging people and households to implement protected sanitation measures including septic tanks and LCS for safe disposal and prevention of pollution and health related issues.
- Need for greater coverage and better maintenance of Public conveniences** - Given the above deficiencies, a significant proportion of slum population³ and seasonal increase in floating population, there is a need for a greater thrust on providing adequate public conveniences and on their upkeep and maintenance. Tvr-M has taken a few steps including construction of ISC. However, we believe that there is scope for greater improvement in this area.
- Poor coverage, inadequacies in design and dumping of Sullage in Storm water drains** - Apart from low coverage being a key concern, especially considering that Tvr-M is a flood prone town, **(the town is at a lower level than sea and Buckingham canal; drainage water has to be pumped into the Buckingham canal since gravity flow does not exist)** the poor state of the existing storm water drains and the inadequacies in their design without adequate linkages to main channels requires substantial attention. Pollution due to dumping of sullage and stagnant pools of water is also visibly disturbing.

³ This issue is covered in greater details under Urban services for the poor.

4.3 Solid Waste Management (SWM)

110 M.T of garbage is being generated in Municipal area. Nearly 60% of the solid waste is collected by private agencies and the remaining 60% is collected by Tvr-M. Both municipal and private vehicles are used to dispose the garbage which has been dumped near Sathangadu which serves as the disposal yard for Tvr-M. Presently only “land filling” is carried out at the Sathangadu disposal yard. Tvr-M is setting up the necessary composting infrastructure at Sathangadu. Exhibit 4.8 summarizes the status of SWM in KaM.

Exhibit 4.8 Solid Waste Management - Current status

Particulars	Units	Values
Generation		
Daily Waste Generation	MT	110
Daily Waste Collection	MT	110
Waste generation per capita	Gms	454
Collection efficiency	%	100 %
Compost Yard / Dumping Yard Particulars		
Dumping / Compost Yard area	acres	12
Distance from Town	Km	2
Composting in place?	No composting. Only land filling	
Wards with door-to-door collection	All 48 wards	
Privatisation of collection	40% - private collection and balance 60% by Tvr-M	
Primary collection - Door-to-Door (by mode)	Tractors, Lorries, Trailers, Tippers	
Vehicles / Equipment Details		
Tricycle	135 nos	
Tipper Auto	4 Nos	
Tipper lorry	3 nos	
Tractors	5 nos	
Trucks	14 nos	
Trailers	8 nos	
Compactors	1 no	
Average no of trips per day	2	

Source: Tvr-M

4.3.1 Waste Generation and Collection:

Tvr-M generates around 110 MT of waste every day. On an average 110 MT of waste is being collected from all the health zones and disposed off through dumping by the agency with a collection efficiency of 100%. The collected waste is segregated into bio-degradable (around 87%) and bio-non degradable (13%) before land filling. Of the 13% bio-nondegradable solid waste around 3% is plastic and glass, metal contributes to the remaining 10%.

4.3.2 Ongoing Solid Waste Management projects

The construction of a compost yard exclusively for Tvr-M is being carried out at an estimated cost of Rs.80 lakh. Around 12 acres of land has been identified in Sathangadu for this purpose and construction has commenced.

4.3.3 Issues and Gaps

Specific issues and gaps in Solid waste management at Tvr-M are highlighted below:

- **Need for a compost yard being addressed** – Presently Tvr-M lacks a compost yard. Once the same is ready, Tvr-M can switch to composting of solid waste from the present land filling method.
- **Deficiencies in collection** - There are visible garbage pile-ups in various pockets of the town indicating the need for better collection efficiencies.
- **Awareness** - There may also be a need to intensify awareness campaigns to educate citizens on the need for handling and segregating their waste.

4.4 Transportation, Bus stands and street lights

4.4.1 Municipal roads

This Municipality is maintaining a length of 116.13 km of Roads as detailed below. The 116.13 km of roads in the above exhibit are maintained by Tvr-M.

Exhibit 4.9 Type of roads and length

Description	Length (km)	%
B.T. Road	78.30	67%
C.C. Road	10.2	9%
WBM road	14.89	13%
Earthen road	12.74	11%
Total	116.13	

Source: Tvr-M

4.4.2 Important transportation projects

In addition, two highway roads of about 11 km roads passing through Tvr-M are maintained by the State Highways department. The arterial road network through Tiruvallur comprising the Tiruvottiyur High Road and Ennore High Road are heavily congested. Specific interventions suggested in the City Development Plan prepared for Chennai Metropolitan Area include an elevated road along Tiruvottiyur high road from Toll gate to Eranavoor bridge and ROB at Tondiarpet-Tiruvottiyur crossing.

Further, the Ennore - Manali Road Improvement Project⁴ under Port connectivity Scheme has also been undertaken by NHAI. In order to implement this scheme, new body in the name of Chennai - Ennore Port Authority been formed. The State Government have handed over the Northern Inner Ring Road, Manali Oil refinery road and Thiruvottiyur - Ponneri - Panchetti Road for this scheme. The Project cost is Rs. 309 Crore. This Project consists of the following works.

- Sea protection works on Ennore Expressway
- Widening the existing Ennore Expressway (7.5 km) to 4 lane with service roads on both sides
- Upgradation and widening of Thiruvottiyur - Ponneri - Panchetti Road (9 km)
- Strengthening of Manali Oil refinery road (5.4km) and Inner Ring road (8.10 Km)

4.4.3 Bus terminus

Tvr-M has one metro bus terminal (at Tiruvottiyur High road) and around 40 bus shelters across the municipality.

4.4.4 Street Lights

The road length in Tvr-M is 116.13 Km, which is maintained by this Municipality, and another 11 km of State Highways is crossing this town. 4685 street lights are maintained by replacing then and there with Tube lights, Sodium Vapour Light, Mercury Vapour light and High Mass light as detailed in Exhibit 4.10.

Exhibit 4.10 Street Lighting

Type	Nos	%
Tube lights	3707	79.12
Sodium Vapour Lamps	820	17.50
Mercury Vapour Lamps 250 W	155	3.31
High Mast lamps	3	0.06
Total	4685	100

Source: Tvr-M

4.4.5 Issues and gaps

Specific issues and gaps with respect to roads and street lighting are summarized below:

- **Encroachments along the roads** - Informal activities along the road margins and illegal encroachments of pedestrian areas and footpaths are the other causes for traffic congestion in the town.
- **Flood-prone region** - Being a flood-prone town, the roads in the town are subject to water logging and damage. Therefore, the investments on roads typically tends to be higher
- **Need for planning restoration post UGD scheme** - With the plans to create an UGD scheme in the city, the entire road network in the town would need to be restored. So it may be

⁴ Source: GoTN – Highways department. Policy notes FY 2008

appropriate to take up any large scale upgradation of the road network keeping this in consideration.

- **Energy efficiency in street lighting** - Tvr-M needs to accord priority to improve energy efficiency and to reduce power costs incurred on street lighting.

4.5 Other assets

4.5.1 Markets, Shops and Slaughter House

Tvr-M has maintained two daily markets namely Tiruvottiyur market and Kaldipet market. There are three shopping complexes in Tvr-M which house around 69 stalls. Presently there is no slaughter house in Tvr-M. Exhibit 4.11 provides the details of the markets in Tvr-M.

Exhibit 4.11 Markets and Slaughter House

Category	Existing
Market	2
Shops	3
Stalls	69
Slaughter House	Not Available

Source: Tvr-M

Tvr-M is planning to set up a slaughter house at a project cost of Rs.20 lakh and same is expected to be completed by October 2007.

4.5.2 Crematorium and burial facilities

Tvr-M has one ordinary burial ground and is in the process of constructing a gasifier crematorium. The gasifier crematorium is presently under the tender stage and is expected to be commissioned at a project cost of Rs.55 lakh.

4.5.3 Issues and gaps

- Dilapidated condition of municipal shops - Lack of adequate infrastructure facilities in commercial areas like proper parking roads, roads, and pavements lead to traffic congestion and public inconvenience.
- No slaughter houses – Presently there is no slaughter house available in KaM. The planned Slaughter house as part of the market could address this problem.

4.6 Social infrastructure

4.6.1 Education

There are 11 schools in the municipality as mentioned in the table below:

Exhibit 4.12 Schools maintained by Tvr-M

Description	No.
Municipal middle schools	1
Elementary municipal school	11
Government higher secondary school	Nil
Matriculation school	Nil

Source: Tvr-M

4.6.2 Health

Urban Local Bodies have Primary Maternity and Child Health Centres. In Tiruvottiyur Municipality two maternity centres and five health centres are functioning. These centres cater free health care services to the urban poor. They are managed by Medical Officers and other para medical staff. They are under the overall supervision of Commissioner.

The Municipality has been provided with Medical Officer, MPHWS and Ayyas to look after the post and antenatal cases of women. The Sanitary Officer is the overall in-charge of the Health Section and looks after the prevention of Food Adulteration, conservatory work, sweeping streets, maintenance of drainage, controlling of epidemic diseases, ensuring of license to D&O trades, Birth and Death Registration, issuing certificate to birth and death registration. The Sanitary Inspector and Sanitary Workers are assisting the Sanitary officer.

Exhibit 4.13 Health care centres maintained by Tvr-M

Description	No.	Beds
Maternity Centres	2	
Other health centres	5	
Total	7	

Source: Tvr-M

4.6.3 Parks and recreational facilities

Recreational facilities include parks, playgrounds, open spaces and cinema theatres. Ideally, open spaces including parks and playgrounds should constitute about 10% of the town area. There is one park in Tvr-M (Shanmugham Park) occupying an area of two acres. There are a number of movie halls in Tvr-M.

4.7 Urban services for the poor

4.7.1 Slum details

A recent survey by Tvr-M indicates that there are 42 slums in Tvr-M as detailed below. These Forty two slums with a population of 14927 contribute to around 6.2% of the population of Tvr-M. The following are the slums affected by Tsunami in Tvr-M.

Exhibit 4.14 Slums in Tvr-M affected by Tsunami

S.No:	Name of slum	S.No:	Name of slum
1	Indira Gandhi Kuppam	11	Ernavur Kuppam
2	Annai Sivakami nagar	12	Nethaji Kuppam
3	Kasikoil kuppam	13	Bharathiyar Nagar
4	Ramakrishna Nagar	14	K V Kuppam
5	Palagai thotti Kuppam	15	M.V.N. Nagar
6	Pattinathan koil St.	16	Thiruvatriyur Kuppam
7	Appar Nagar	17	Kilijosiya nagar
8	Onddikuppam	18	Thiruchinnag kuppam
9	Lakshmipuram	19	Kumaran Nagar
10	Nallathanier Odai kuppam		

Source: Tvr-M

Therefore, provision of urban services to poor is of significant importance to Tvr-M. As part of the Basic Services for Urban Poor (BSUP), Tvr-M is finalizing various development works. Around Rs.1.7 Crore of works have been sanctioned by GoI as part of BSUP.

4.8 Status of Vision Plan projects

Exhibit 4.15 provides a summary of the projects envisaged as part of the Vision Plan and the current status of these projects.

Exhibit 4.15 Vision Plan projects and status

Segment	Projects	Total	Remarks
Water Supply	Providing pumping main line to Balakrishna Nagar (OHT)	140	CMWSSB is presently undertaking comprehensive water supply scheme for Tvr-M with the objective of providing 90 LPCD of water.
	Providing distribution pipe line		Construction of pump house and water pipe line at Ambedkar Nagar completed
	Construction of Under Ground Storage reservoir		
Storm Drains	Providing open drains at 31 places	200	Around Rs.20 lakh of storm water drains have been carried out
SWM	Purchase of compactor	100	Major portion (close to Rs.80 Lakh) have been completed. Infrastructure for compost yard at Sathangadu being done
	Completing infrastructure at compost yard		
	Dumper Placer		
	Bins		
UGD	Extension of UGD scheme to uncovered areas	2855	For a length of around 118 km, the ULB is preparing a DPR at a project Cost of around Rs.28.5 Crore and the work is expected to be completed by 2009
	Rehabilitation of existing UGD scheme		
Hospitals	Labour room modernization	73.5	Construction of lab at municipality hospital carried out at a cost of
	Operation theatre facility		

Segment	Projects	Total	Remarks
	Renovation of existing hospital building		Rs.4.50 Lakh
	Waiting hall for outpatients		
	Providing counselling centres		
	Additional water supply and toilets		
Bus terminus	Renovation of 30 nos bus shelters	9.4	Construction of modern shelter being carried out at KVK Kuppam
Roads	Laying new roads	64.5	Most of the road works have been completed
Schools	Computer Aided Education	144.45	Around Rs.25 Lakh modernization of anganwadi noon meal centre have been completed.
	Renovation of existing buildings		
	Seats and improvised class rooms		
	Improvements to toilets		
	Library		
	First Aid arrangement		
Markets	Construction of new shops and renovation of existing shops	25	Yet to be undertaken
Street Lights	Conversion of tube lights into sodium vapour lamps	100	Lighting arrangements to the tune of Rs.12 Lakh have been carried out
	Providing new street lights (527 00nos)		
	Providing automatic switches with timer		
Public Conveniences/ Toilets	Renovation of Public Conveniences (30 nos)	48	Construction of modern toilet at Apper Nagar in progress Construction of toilet at Kasikoilkuppam completed
Parks	Developing new parks	20	Yet to be undertaken
	Improvements to existing parks		
Tree plantation	20000 saplings	20	Yet to be undertaken
Burial Grounds	New burial ground at Kargil nagar with basic amenities	40	Yet to be undertaken
Improvement of slums	Improvement of roads and augmentation of water supply	5	Under BSUP scheme Rs.1.7 crore of slum development works have achieved financial sanction and construction is expected to commence soon
	TOTAL	3845	



Completed



Partially done / under implementation



Not taken up yet

Source: Discussion with municipal officials. To be confirmed.

4.9 Summary - performance vis-à-vis select indicators

Exhibit 4.16 below captures the status of core urban services of Tiruvottiyur Municipality in terms of key indicators and summarises key issues and gaps in these areas. The table summarizes the baseline situation in some critical performance indicators from the analysis presented above and highlights the critical gaps in the core urban services namely, Water Supply, Sanitation, Roads, Street lighting and Solid waste Management.

Exhibit 4.16 Core urban services - Baseline performance, issues and gaps

Sl. no	Name of the Indicator	Value	Issues and Gaps / Initiatives
Water Supply			
1	Daily Per Capita Supply (LPCD)	22.2	<ul style="list-style-type: none">• Bottlenecks prevail in distribution and storage• Very poor LPCD levels of water supply• Connection and Collection efficiency poor• Insignificantly low number of house service connections
2	Storage Capacity / Daily Supply (%)	26%	
3	Distribution Network / Road Length (%)	22%	
4	Water connections / Assessed properties (%)	7%	
5	Population per Public Fountain (Nos.)	174	
Sanitation			
6	Presence of UGD network (Yes / No)	Yes	<ul style="list-style-type: none">• Very poor sanitation conditions. Ongoing UGD scheme needs to be accorded highest priority• Public conveniences network needs to be expanded.• Greater thrust on maintenance and upkeep required• Awareness programs to educate population on importance of sanitation should accompany asset creation.
8	Household per Public convenience seat (nos.)	----	
9	Storm Drain Length / road network (%)	26%	
Roads and Street Lights			
10	BT roads / Total (%)	67%	<ul style="list-style-type: none">• Several BT surfaced roads are in poor condition• Flood prone nature of town makes roads particularly vulnerable
11	Road length per Street Light (m)	24	
Solid Waste Management			
11	Waste generation per capital (gms)	454	<ul style="list-style-type: none">• Significant gaps in SWM practices• Need for an integrated program to implement SWM rules and regulations on priority.• Proposed improvements in the Dumping yard to be implemented on priority.• Need for greater awareness creation and investments
12	Collection efficiency (% of waste generated)	100%	
14	Compost yard area (Acres per 10,000 population)	0.049	
15	Average vehicle trips	2	
16	Source Segregation and Composting (Yes/No)	Yes	

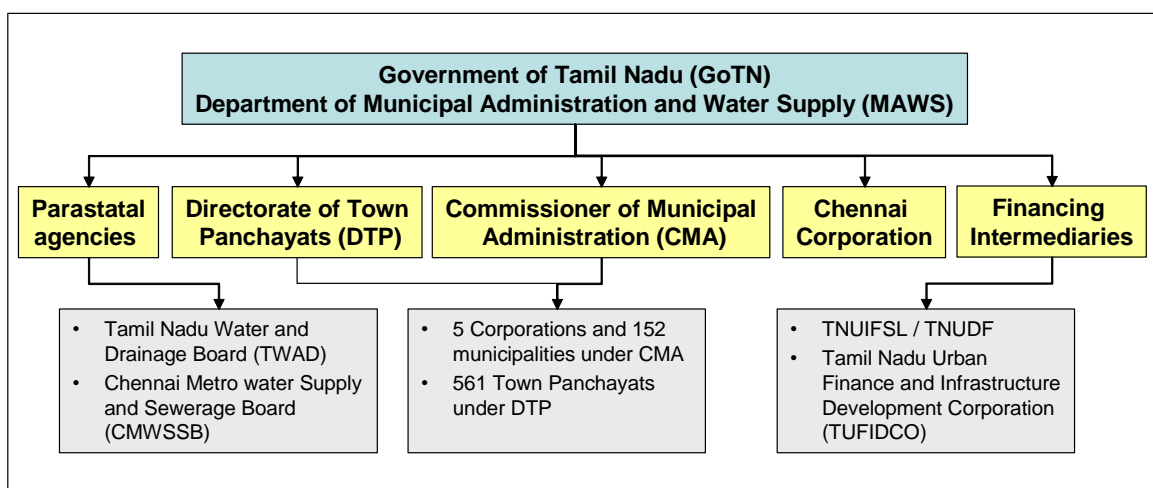
5. Urban governance and management

5.1 Policy oversight and institutional framework – State level

The governance of urban local bodies assumes importance with the adoption of 74th Constitutional Amendment Act. The Act proposes mandatory elections and greater devolution of functions to the urban local bodies including Town Corporations. The enactment of the 74th CAA provides an entirely new framework for the governance of the Urban Local Body. The Act provides for mandatory elections and a substantially larger devolution of functions to the ULBs, including several new areas hitherto not under their control. The Tamil Nadu District Municipalities Act (1920) governs the management of Municipality and Town Panchayats of Tamil Nadu. An amendment to the Municipalities Act (1920) was made in 2003 to provide impetus for environment improvement through Rain Water Harvesting.

The Urban sector in Tamil Nadu comes under the oversight of the Department of Municipal Administration and Water Supply, Government of Tamil Nadu (MAWS). The institutional structure for the urban sector is presented in Exhibit 2.3 below:

Exhibit 5.1 Urban sector - Institutional framework - State Level



Source: Policy notes, MAWS, Government of Tamil Nadu, iMaCS analysis

The department of Municipal Administration and Water Supply administers Urban Local Bodies and also implements development programs for the Urban Local Bodies in the State. The department is also responsible for planning and implementing water supply and under ground sewerage schemes in both rural and urban areas in the State.

5.1.1 Municipal Administration

At present, there are 6 Corporations, 152 municipalities and about 561 Town Panchayats (smaller ULBs) that comprise the urban sector in Tamil Nadu. The institutional framework for municipal administration is described below:

- **Corporations and Municipalities** - There are 6 Municipal Corporations, namely, Chennai, Madurai, Coimbatore, Tiruchirappalli, Salem and Tirunelveli in the State of Tamilnadu. Five Corporations (except Chennai) and 152 Municipalities including 49 Third Grade Municipalities are under the oversight of the Commissioner of Municipal Administration. Recently GoTN has initiated steps to upgrade Erode and Tiruppur municipalities as Corporations.
- **Town Panchayats** - The Town Panchayats are governed by the Tamil Nadu District Municipalities Act, 1920. There are 561 Town Panchayats in the State. Towns have become drivers of economic growth and offer opportunities for social and economic development of people. The population of the Town Panchayats is 76,46,386, which accounts for 12% of the total population of the State as per Census 2001. Town Panchayats have become service centres drawing huge floating population from adjoining rural areas. The Directorate of Town Panchayats was created in 1981, to look after the affairs of the Town Panchayats. The Director of Town Panchayats is the Head of the Department and looks after the affairs of 561 Town Panchayats. The District Collector is the controlling authority for the Town Panchayats at the District level. Under the Directorate, the Department has 16 Zonal offices, headed by Assistant Directors of Town Panchayats.

5.1.2 Parastatal agencies

- **Tamil Nadu Water and Drainage Board** - TWAD is a statutory body formed by the Government of Tamil Nadu, vested with the twin task of providing water supply and sewerage facilities to the entire state of Tamil Nadu except Chennai Metropolitan Area. TWAD came into existence on 14-4-1971.
- **Chennai Metropolitan Water Supply and Sewerage Board** - The Board is attending to the growing needs of and for planned development and appropriate regulation of Water Supply and Sewerage Services in the Chennai Metropolitan Area with particular reference to the protection of Public Health and for all matters connected therewith or incidental thereto. The Board was established under 'The CMWSSB Act. 1978' (Act No.28 of 1978) and commenced functioning from 01.08.1978

5.1.3 Financial Intermediaries

- **TNUIFSL / TNUDF** - The Government of Tamil Nadu established the Tamil Nadu Urban Development Fund (TNUDF) on a 'Public-Private Partnership' mode, with the participation of ICICI, Housing Development Finance Corporation (HDFC) and Infrastructure Leasing & Financial Services (IL&FS). The Fund is managed by Tamil Nadu Urban Infrastructure Financial Services Limited. TNUDF provides various services including project advisory, financial advisory and consultancy services to various ULBs through its fund manager, viz. Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL).
- **TUFIDCO** - TUFIDCO, a State owned Organization, was incorporated to extend financial assistance to urban infrastructure schemes in Tamil Nadu. The State Government have also appointed TUFIDCO as a State level nodal agency for the following centrally sponsored

schemes including Jawaharlal Nehru Urban Renewal Mission (JNNURM) and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)

5.2 Governance structure of Tiruvottiyur municipality

Tiruvottiyur municipality has two wings, namely, a political wing and an administrative wing. While the Municipal Council, headed by a Chairperson and constituting ward level council members constitutes the Political wing and is directly elected by the people, the Executive wing is headed by the Commissioner and consists of various operational departments.

5.2.1 Political wing

The municipal council with a 48 elected councilors, each representing a ward, forms the political wing of the municipality. One of the elected representatives is selected by the council as the Chairperson. Three committees viz., appointment committee, contract committee, tax appeal committee have been formed consisting of elected representatives and commissioner as members.

Appointment Committee

The committee is responsible for all appointments in the municipality. It consists of three members including the commissioner.

Contract Committee

The three member contract committee is responsible for approval of all contracts costing up to Rs.5000. Works above Rs.5000 are approved by the municipal council through a sealed tender.

Tax Appeal Committee

This committee addresses appeals filed by the public against orders on revision of taxes. The committee consists of six members comprising of the commissioner, chairman and four councillors.

5.2.2 Administrative Wing

The administrative wing is responsible for the day-to-day functioning of the corporation and assists the deliberative wing in the decision-making process. The Municipal Commissioner heads the executive wing of the ULB, and various officers in charge of different departments or sections assist the Commissioner in managing the ULB. Apart from its own employees, the ULB also employs daily wage basis workers or contractual workers for services such as street lighting, and sanitation and water supply. These include electricians, watchmen, water boys, drivers, valve operators etc. Certain jobs like sanitary works and garbage clearance are done through contracts, where the usual procedure followed is selection through tenders.

The **Municipal Commissioner** heads the administrative wing of the municipality. The functions of the administrative wing include:

- All executive functions with the Administrative Head (Commissioner)
- Establishment matters such as appointment, transfers, Pay and allowances, etc., correspondence with Government and other departments,

- Public relations, redressal of public grievances, Legal matters etc.
- Sanctioning of estimates and approval of contracts, payments, etc.

5.2.3 Departments of municipality

Various departments under the ULB, share the responsibility of service delivery within the Corporation. The functions of various officials/departments, under the Administrative wing, are elucidated hereunder:

- a) Commissioner. The Commissioner is at the apex of this structure and is responsible for all activities carried out by the ULB. The Commissioner is responsible for preparation and certification of all periodical records, returns and furnishes all information as may from time to time be required by the Municipal Council or the Standing committees. He is also responsible for preparation of accounts. At each general meeting, the Commissioner along with some other key officials, discuss various issues with the elected representatives.
- b) General Administration Department. - This department is responsible for establishment, other essential matters relating to office, officers, staff and their welfare like preparation of staff pay bills, maintenance of registers for advances, GPF, pension, PF's etc.
- c) Engineering and Water Supply Department. This department looks after all the works relating to execution and maintenance of basic amenities like Water Supply, Drainage, Sewerage, Storm water drains, Roads, Street lights, etc. The Engineering department is also responsible for ensuring the quality of works and their execution within the time frame.
- d) Accounts Department The Accounts Section is responsible for supervising all financial transactions related to the CMC, advising the Commissioner on all internal financial matters, updating financial receipts and expenditure details in accordance with the utilization of funds, reporting deviations in expenditure of funds in any of the allocated schemes, assisting preparation of the CMC budget, maintenance of accounts regarding stamp duty, SFC Grants, MP Grants, maintenance of petty cash book and general cash book and attending to audit requirements and other such accounts-related duties.
- e) Revenue Department :Revenue Officer, heading the Revenue Section, is responsible for collecting taxes such as, trade tax, house tax, advertisement tax, and entertainment tax; development charges; transfer of properties; collection of duty; issuing notices for recovery of tax; and monitoring revenue collections of the ULB.
- f) Public Health Department. The is responsible for ULB services such as Solid waste management, public health related works like malaria control, family planning, mother and child health care, birth and death registration etc, and other government assisted programs related to health and poverty reduction and awareness programs. Besides, this department is responsible for the enforcement of the Public Health Act. The department is also involved in promotion of health awareness programs and implements various State and Central assisted schemes like pulse polio project, SJSRY etc.
- g) Town Planning Department. The major function of this department is issue of building license, preparation and implementation of development plans and eviction of encroachments, urban planning and building regulation.

5.3 Manpower position

Exhibit 5.2 provides the manpower position vis-à-vis sanctioned posts as of October 2007.

Exhibit 5.2 Manpower status (as of October 2007)

Name of the Post			No. of posts sanctioned	Staff in position			Posts vacant
				Perma- nent	Consoli- dated Pay	NMRs	
A	General Administration						
	1	Commissioner	1	1			
	2	Manager (Class -I A)	1	1			
	3	Assistant (Class- V)	2	2			
	4	Junior Assistant (Class- VII)	6	6			
	5	Typist (Class- VIIA)	2	2			
	6	Record clerk (Class X)	2	2			
	7	Office Assistant	4	3			1
	8	Asst. Programmer	1	1			
	9	Data Entry Operator	1	1			
B	Accounts Department			0			
	1	Accountant (Class- II)	1	0			1
	2	Cashier (Junior Assistant)	1	1			
	3	Junior Assistant	3	3			
	4	Office Assistant		0			
C	Revenue Section			0			
	1	Revenue Officer (Class- II)	1	0			1
	2	Revenue Inspectors/Market Superintendents (Class - V)	3	2			1
	3	Bill Collectors	15	14			1
	4	Assistant	1	1			
	5	Junior Assistant	5	5			
	6	Office Assistant	2	0			2
D	Engineering Wing			0			
	1	Municipal Engineer (E.E.)	1	0			1
	2	Junior Engineer	1	1			
	3	Draughtsmen	2	2			
	4	Work Inspector	1	0			1
	5	Office Assistant	1	1			
E	Street Lighting			0			
	1	Wireman	4	4			
	2	Helper	4	3			1
	3	Others (Pl .specify) (Line Inspector)	1	1			
F	Water Supply			0			
	1	Water works Overseer	1	1			
	2	Electrician	2	2			
	3	Meter Reader (Tap Inspector)	1	0			1
	4	Fitters (Pipe Line)	2	2			
	5	Turn Cock Operator	1	1			
	6	Watchman (Pumpset)	5	5			
	7	Driver	1	1			
	8	Cleaner (Fountain)	2	2			

Name of the Post			No. of posts sanctioned	Staff in position			Posts vacant
				Perma- nent	Consoli- dated Pay	NMRs	
G	Public Health			0			
	1	Health Officer	1	1			
	2	Sanitary Inspector	10	5			5
	3	Supervisor	10	9			1
	4	Field Assistant	2	0			2
	5	Conservancy staff(Sanitary worker)	332	240			92
	6	Drain cleaners (AntiFilaria Mazdoor)	8	8			
	7	Drivers	16	16			
	8	Office Assistant	1	1			
	9	Watchman	2	2			
H	MEDICAL			0			
	1	Medical Officer	10	7			3
	2	Staff nurse	3	3			
	3	Pharmacist	1	1			
	4	Mat. Assistant	4	4			
	5	Mat. Ayah	4	3			1
	6	Health visitor	5	3			2
	7	Computer cum clerk	5	2			3
	8	M.P.H. worker	22	22			
	9	Female attendant & (F.N.A)	8	8			
	10	Male Nursing Assistant (M.N.A)	1	1			
	11	Watchman	2	2			
I	SEWERAGE			0			
	1	Workers (Drainage)	46	44			2
	2	Others (Pl.specify)(Drainage Supervisor)	2	2			
J	Town Planning			0			
	1	Town Planning Officer (Grade-I)	1	1			
	2	Town Planning Inspector	4	3			1
	3	Junior Assistants	2	2			
	4	Chainman	2	2			
	5	Office Assistant	1	1			
K	Parks & Gardens			0			
	1	Gardener	7	6			1
	2	Gang mazdoor	7	6			1
L	Other Staff			0			
	1	Community Organiser (NM)	12	12			
	2	Cook	13	12			1
	3	Assistant (Helper)	13	11			2
		TOTAL	639	511			128

Source:Tvr-M

As seen from the table, vacancy rate is currently about 20% vis-à-vis the sanctioned posts. 92 out of the 128 vacancies are in the area of conservancy staff. However, Tvr-M is managing by outsourcing collection work to private operators. Other key areas of vacancies including Accounting and finance, Municipal engineer and Medical/Public health.

5.4 Role of other agencies

The State Government's line departments continue to play a crucial role in urban basic service delivery. Sectors and agency involvement include:

- a) Master Plan. The Department of Town and Country Planning (DTCP) prepares the Master Plan and Comprehensive Development Plan (CDP) for the city/town, and the mandate of implementing the Master Plan lies with the ULB.
- b) Roads and Highways. Department of Highways, Government of Tamil Nadu maintains the National, State Highways and select arterial roads that pass through the city. Municipal roads are however created and maintained by the ULB.
- c) Environmental Protection. The Tamil Nadu Pollution Control Board (TNPCB) is responsible for environmental protection and enforcement of rulings related to the same, passed by competent authorities.
- d) Slum Upgradation. The Tamil Nadu Slum Clearance Board (TNSCB) develops improvement schemes for notified/regularized slum settlements in the city/town. Infrastructure provision is financed partly through loans from the Housing and Development Corporation (HUDCO) and partly through grants from GoTN and GoI.

5.5 Reforms undertaken by Tiruvottiyur municipality

5.5.1 Accrual accounting

Fund based accrual accounting has been implemented in the urban local bodies in Tamil Nadu under TNUDP-II and Tiruvottiyur municipality has also been following the system for the last 4-5 years.

5.5.2 E-Governance

E-Governance of Tiruvottiyur Municipality is aimed to provide online citizen services and information to all hierarchies and monitoring performance of Municipality. All Municipal records are computerised and information stored in a central server and connected to an uplink which online on the internet. Property tax, Water Charges, Nontax, Profession Tax and trader license fees and Birth and Death certificate may be obtained from the computerized civic centre at the municipal premises. Through the e-governance program, Tiruvottiyur Municipality hopes to provide easy access to the municipality and municipal records to its citizens.

5.5.3 Citizen's Charter

As per the directions of the Government of Tamil Nadu, the Tiruvottiyur Municipality has published its 'Citizen's Charter' during 1998 to bring ULBs function closer to the people. The main focus of this charter is to introduce transparency, responsibility and user friendliness in its service provision and maintenance. Its basic objectives were:

- Provide fast and quality service to the citizens.
- Inform the public about time limits to address the problems, and

- Provide transparency in administration.

This publication of citizen's charter brings people and administration closer and to let people know how much time is required to get works done. If the work is not attended to even after stipulated time, they can approach the Commissioner/ Chairperson. Thus, people's rights are made known to them. This also reduces time on the part of public, as they need not follow the movement of their applications at the municipal office. Further, through this charter, they also create awareness about sanitation, town improvement, tax payment and the like. Based on the time frame given for understanding / compliance, various works/ activities can be evaluated either by citizens or by Tvr-M, paving the way for improving performance. Specific interventions in human resource development and systems dealt with in the section 9 - Reform agenda subsequently in the report.

6. Analysis of financials

This section provides a summary analysis of the financial performance of Tiruvottiyur Municipality.

6.1 Income and Expenditure summary of Tiruvottiyur Municipality

Exhibit 6.1 provides a summary of the income and expenditure of Tiruvottiyur Municipality. This has been prepared based on audited financials for FY 2003 to FY 2006.

Exhibit 6.1 Income and Expenditure of Tiruvottiyur Municipality

INCOME	2002-03	2003-04	2004-05	2005-06	CAGR %
OWN INCOME	824	718	739	737	-4%
Property tax	469	475	484	438	-2%
Profession tax	56	65	67	72	9%
Water & Sewerage Charges	29	26	36	54	23%
Other Service Charges & Fees	44	39	47	50	4%
Other Income	226	113	105	123	-18%
ASSIGNED REVENUE	217	221	203	207	-2%
DEVOLUTION FUND	355	499	419	374	2%
GRANTS & CONTRIBUTIONS	91	57	52	0	-100%
PRIOR PERIOD INCOME	61	3	47	0	-100%
TOTAL	1548	1498	1461	1318	-5%
EXPENDITURE	2002-03	2003-04	2004-05	2005-06	CAGR %
Salaries	502	514	492	566	4%
Operating Expenses	331	480	390	410	7%
Programme Expenses	0	0	0	0	-100%
Administrative Expenses	32	37	21	49	15%
Finance Expenses	221	188	191	119	-19%
Depreciation	312	397	269	712	32%
Prior Period Expenses	2	24	0	0	-100%
TOTAL	1088	1243	1095	1144	2%
SURPLUS- (Excl.Depr)	459	254	366	174	-28%
Operational Ratio (Total Exp/Total Income) (All figures in Percentage)					
Incl Depreciation	90%	110%	55%	141%	109%
Excl. Depreciation	70%	83%	77%	87%	79%
Debt servicing (Rs in lacks)					
Loan repayments – Interest	112.19	98.89	120.05	95.32	426
Loan repayments – Principal	9.85	27.62	34.26	69.16	141
Debt servicing / Total Revenue	8%	8%	11%	12%	10%

Source: Tvr-M. iMaCS analysis

Annexure V and VI provide the detailed I&E / Balance Sheet and DCB statements respectively. Income has declined from FY 2002 to 2006. While the decline can be largely attributed to the decline in other income which has shown a spike in FY 2002, other streams of revenue have been largely flat. Total expenditure has also been flat and there has been an overall decline in cash surplus during the period. Debt servicing / Total Revenue was at 10% during the period.

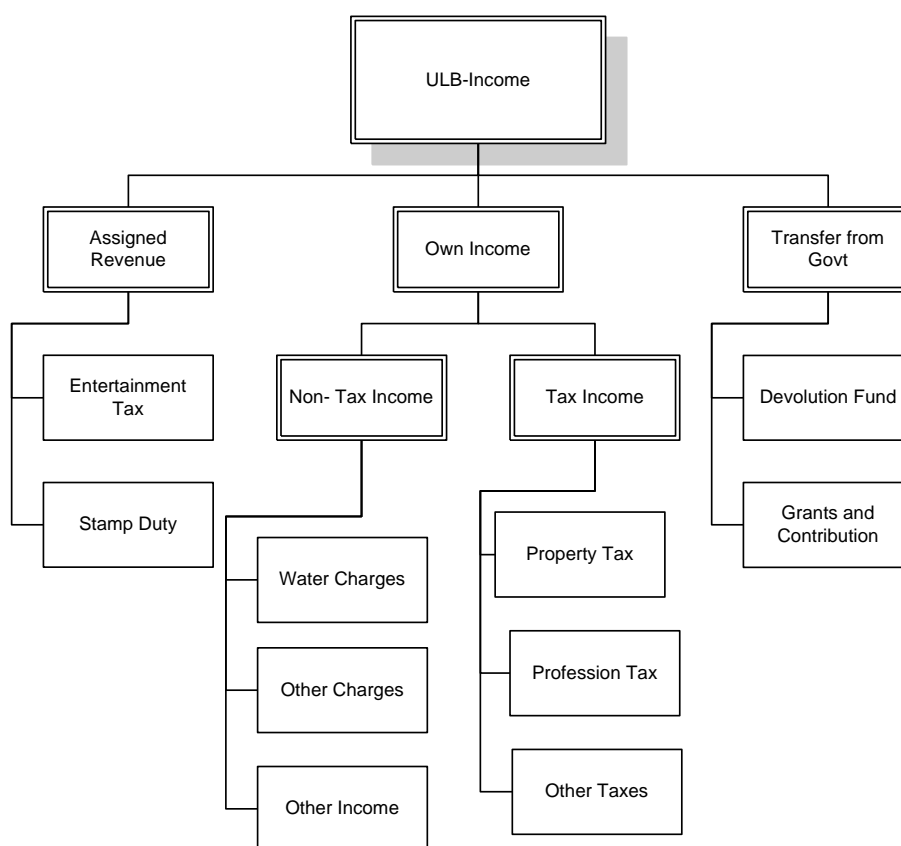
6.2 Revenue streams of ULB in Tamil Nadu

Revenue of ULBs in Tamil Nadu can be categorised along three areas:

- **Own Revenue** - comprising taxes (property tax and professional tax), user charges (water, sewerage, solid waste etc.) and other non-tax income (lease and rents, sale & hire charges etc)
- **Assigned Revenue** - Income generated revenues shared with the ULB
- **Grants and Contributions** - Grants and transfers made by GoTN

Exhibit 6.2 provides a detailed classification of the revenue streams.

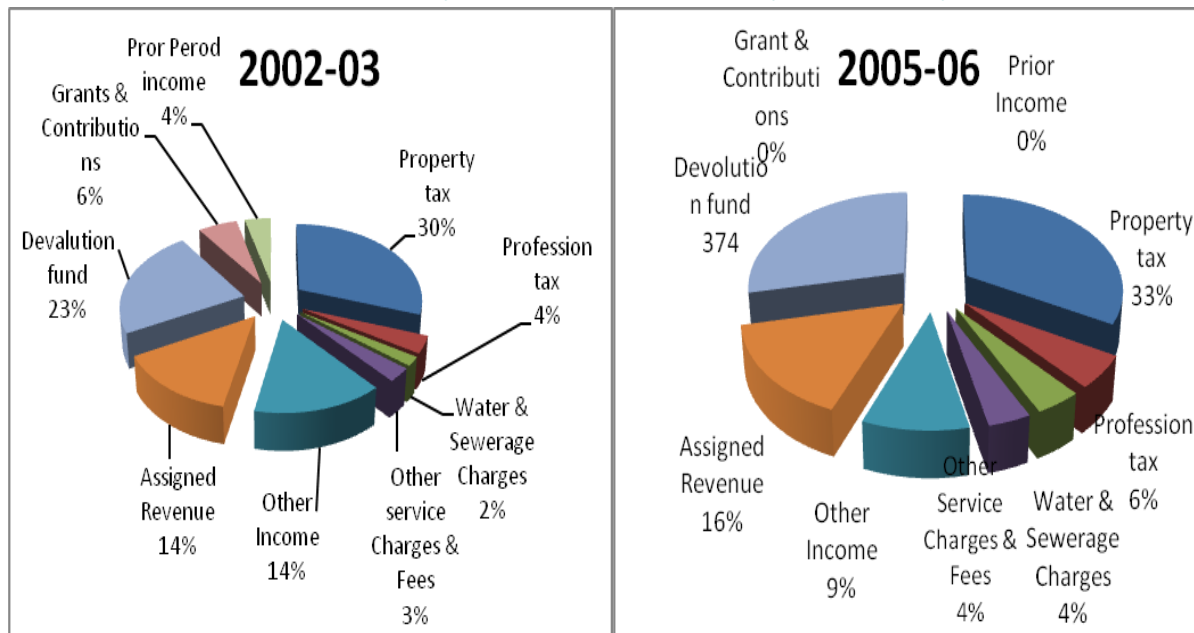
Exhibit 6.2 Revenue streams - ULBs in Tamil Nadu



6.3 Revenues

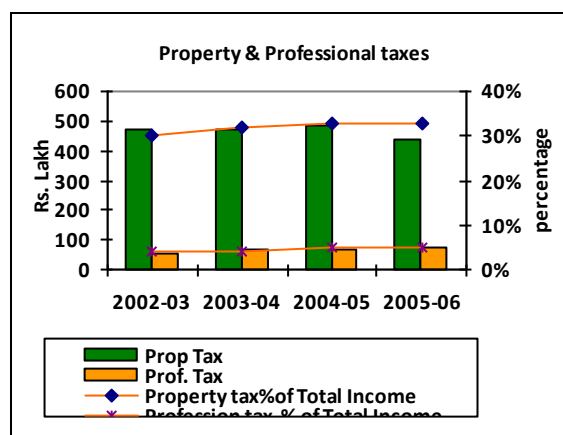
Exhibit 6.3 provides details of revenue of Tiruvottiyur Municipality along various heads between FY 2003 and FY 2005.

Exhibit 6.3 Analysis of Revenues of Tiruvottiyur Municipality



6.3.1 Tax Income

Tax income has grown at a CAGR of 2.5% during 2002-05 aided by a growth of 9% in professional tax. Its share in total income increased from 4% in FY03 to 5% in FY06. Property tax decreased at a CAGR 1% FY03' to -10% FY06' Share of property tax in total income increased from 30% in FY03 to more than 33% in FY06.



6.3.2 Property Tax

Property tax alone accounted for almost a third of income of Tiruvottiyur Municipality for all three years under consideration and is an important contributor of revenues to Tiruvottiyur Municipality. Following are the key issues / observations with respect to property tax. Exhibit 6.4 provides a summary.

Exhibit 6.4 Property tax - analysis of key revenue drivers

Year	Collection Efficiency			Properties		Growth Rate Of properties	Growth Rate of Current Demand
	Arrears	Current	Total	Numbers	Tax/property		
2002-03	41%	68%	53%	29449	1722	NA	NA
2003-04	30%	73%	52%	30183	1704	2%	1%
2004-05	23%	69%	47%	31515	1662	4%	2%
2005-06	31%	73%	52%	32120	1659	2%	2%
2006-07	31%	76%	54%	32948	1617	3%	0%

Source: Tvr-M

- Increase in share of property tax – Property tax increased in absolute terms from Rs 469 lakh in FY03 to Rs 438 lakh in FY06. Its share in total income also increased from 30% to 33% in respective years.
- Decline in demand per property – Number of properties increased from around 30,000 in FY03 to more than 33,000 in FY06, hence registering a growth of about 3%. Demand per property has however declined from 1722 to 1617. The municipality should take steps to bring more properties under its tax bracket. Last revision of property tax was undertaken in October 1998. Quinquennial Revision due in 2003 has not been undertaken yet.
- Low Collection Efficiencies – Total collection efficiency increased marginally by a per cent over the period of past four years. Current collection efficiency also increased from 68% to 76%. Arrears collection efficiency is a cause of concern for the municipality. It ranged from a low of 31% in FY06 to a high of only 41% in FY03. The municipality should take steps to improve its collection efficiencies in property tax.
- Aging of arrears – No arrears are outstanding for more than eight years, but 20% of the arrears are outstanding for more than five years. Tiruvottiyur Municipality may need to review the arrears, as some of these may not be collectable and would require provisioning.
- Break-up of assesses - Residential segment contributes more than 80% of the total assessments, but even less than 30% of the total property tax demand. Industrial assesses account for nearly 27% of the property tax collection. Exhibit 6.5 below gives the detailed break-up of assesses for property tax.

Exhibit 6.5 Property Tax - breakup of assesseees

Category of Property	Number of Assessments	%	Annual Tax Demand (Rs. lakh)	%
Residential	15969	80.3	102.34	29.0
Commercial	3684	18.5	41.33	11.7
Industrial	94	0.5	94.19	26.7
State Government Properties	33	0.2	28.00	0.8
Public Sector Undertakings	49	0.2	112.37	31.8
Charitable & Religious Institutions	37	0.2	0.00	0.0
Educational Institutions	23	0.1	0.00	0.0
Total	19889	100.0	353.03	100.0

6.3.3 Professional tax

Exhibit 6.6 provides an analysis of key drivers for professional tax revenue.

Exhibit 6.6 Professional Tax - revenue drivers

Year	Collection Efficiency			Assesses		Growth rate of Assesses	Growth Rate of Current Demand
	Arrears	Current	Total	Numbers	Tax demand/assessee		
2002-03	27%	73%	54%	12508	444	NA	NA
2003-04	23%	79%	56%	12688	495	1%	13%
2004-05	22%	90%	62%	3712	1799	-71%	6%
2005-06	10%	95%	62%	3712	1802	0%	0%
2006-07	15%	92%	64%	16300	456	339%	11%

Source: Tvr-M

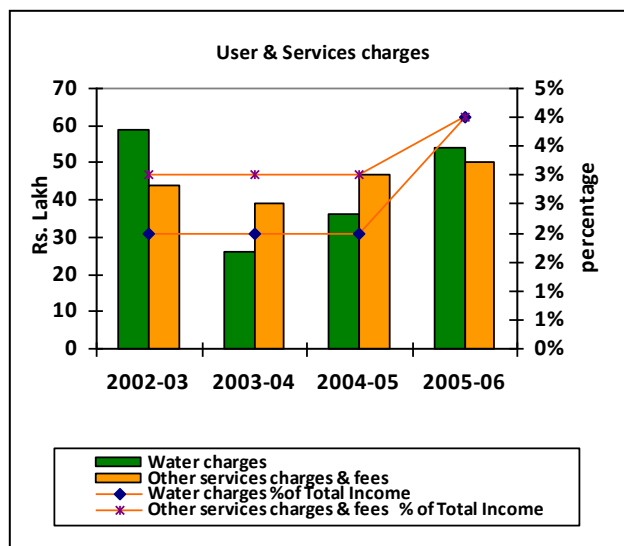
- Share of professional tax in total income has increased marginally from 3.0% to 4.0% of total income
- Increase in demand per property - Average demand per assessee increased over this period. It reflected a very high jump in FY04 due to decline in number of properties assessed in this year. This is sudden dip is due to change in methodology of assessing number of assessees in the municipality. From FY04 onwards, an industry is calculated as one assessee, instead of number of employees counting to number of assessees.
- Low collection efficiencies - Collection efficiency is a cause of concern. Arrears collection efficiency has declined and ranged from a low of 10% to a high of only 27%. Collection efficiency in current demand increased steadily to reach 95% from 73%. Due to this overall collection efficiency increased steadily. An ageing analysis reveals that nearly 18% of arrears are more than 5 years old.
- Composition of professional tax assessments - Exhibit 6.7 below shows the composition of assessments. Tiruvottiyur Municipality should take steps to widen its tax base through a closer scrutiny of traders.

Exhibit 6.7 Professional Tax – assessee break up

Category	Number of Assessments	%	Annual Tax demand (Rs in Lakh)	%
State/Central/Quasi Govt. Employees	1080	29.1	12.96	19.0
Traders	2618	70.5	7.54	11.0
Private employers/ Companies	14	0.4	47.74	70.0
Total	3712	100.0	68.24	100.0

6.3.4 User Charges / Fees

User charges have grown by 6%, aided by marginal increase in collection of water charges. Share of water charges in total income has remained almost constant at around 1%. Share of other service charges and fees in total income has increased from 3% in FY03 to 4% in FY06. As a result the share of total user charges/fees in total income also increased by almost 1% from 3% in FY03 to 4% in FY06.



6.3.5 Water charges

Exhibit 4.8 provides an analysis of key drivers for water charges.

Exhibit 6.8 Water charges - revenue drivers

Year	Collection Efficiency			Numbers	Connections water charges per assessee	Growth rate of Connections	Growth Rate of Current Demand
	Arrears	Current	Total				
2002-03	21%	51%	32%	2060	966	NA	NA
2003-04	27%	44%	33%	2105	964	2%	2%
2004-05	15%	23%	18%	2127	954	1%	0%
2005-06	31%	48%	36%	2127	973	0%	2%
2006-07	33%	57%	40%	3500	587	65%	-1%

Source: Tvr-M

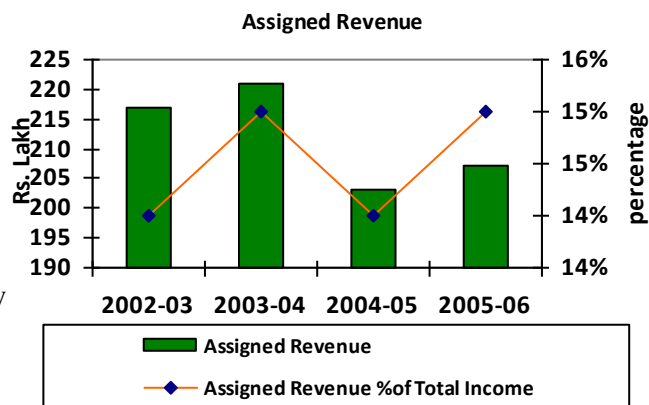
- No. of connections - Number of connections increased from 2060 in FY03 to 2127 in FY06. and accounted for only 10% of the assessed properties. Thus, there exist a lot of scope for the municipality to increase its revenue by increasing connections.
- Water tariff per connection has declined from around Rs 966 in FY03 to Rs 954 in FY05 and then dipped to Rs 587 in FY06. Billing is done on flat rate, which varies from Rs 75 per month for residential connection to Rs 225 per month for commercial and industrial connections. Refer exhibit 6.9 for details of type of connections and water charges.
- Collection efficiency - Arrears collection efficiencies have ranged from a low of 16% (FY05) to a high of only 34% (FY06). Current collection efficiency has declined steadily from 51% in FY03 to 57% in FY07. The overall collection efficiency of 32% in FY07 was quite low. It then increased to 38% in FY06, but it needs significant improvement. This improvement cannot be achieved until the municipality converts its water connections into metered connections.

Exhibit 6.9 Water charges - category wise connections and tariff

Connections	Metered	Un-metered	Total	%	Billing system
Domestic	0	2052	0	0%	Flat
Commercial	0	75	0	0%	Flat
Total	0	2127	0	100%	

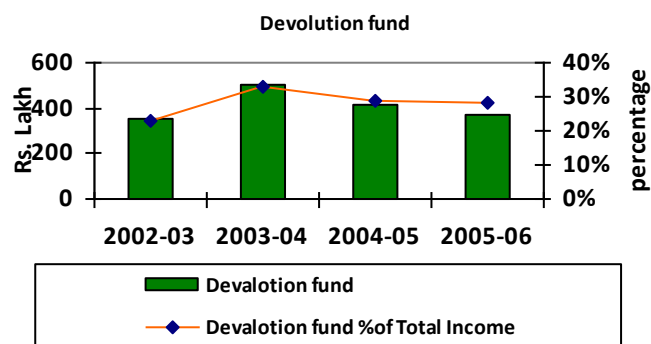
6.3.6 Assigned Revenue

Assigned Revenue (which includes transfers of stamp duty and entertainment tax) decreased marginally from Rs 217 lakh in FY03 to Rs 207 lakh in FY06.. Share of assigned revenue in total income is almost stagnant at 14%, with an increase by around 2% in FY06



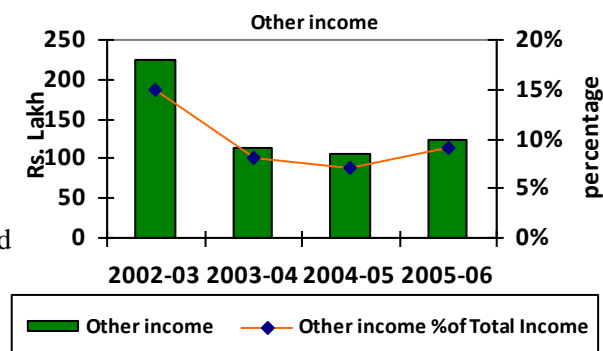
6.3.7 Devolution Fund

Devolution fund increased from slightly more than Rs 350 lakh in FY03 to Rs 374 lakh in FY06. Share of this fund in total revenue of the municipality has increased from 23% to 28% in respective years.



6.3.8 Other Income

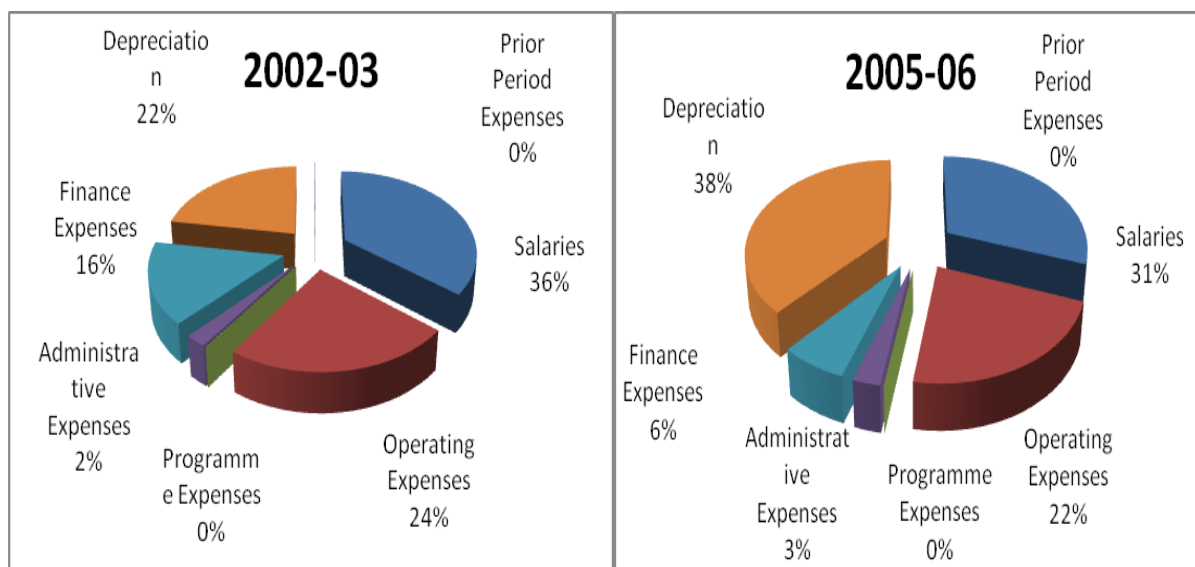
Other Income, which includes sale and hire charges, declined from Rs 226 lakh in FY03 to slightly above Rs 123 lakh in FY06. Its share in total income of the municipality reduced to half from 15% in FY03 to around 9% in FY06.



6.4 Analysis of Costs

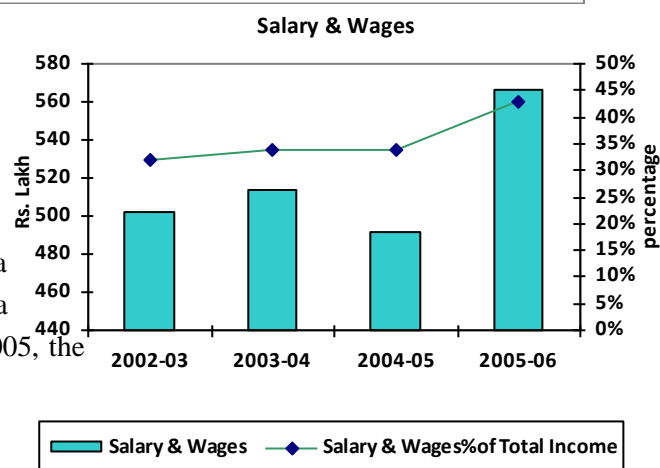
Exhibit 6.10 provides details of costs of Tiruvottiyur Municipality along various heads between FY03 and FY05. Total expenditure has shown a fluctuating trend over past three years.

Exhibit 6.10 Costs (as a % of income) – FY03 and FY05



6.4.1 Salary and wages

While salary and wages account for more than a third of total expenditure incurred by the municipality, it has fluctuated marginally around Rs 500 lakh over this period. This has been due to a lack of addition in staff over the last few years and a number of posts remaining vacant. As of March 2005, the number of employees was 468.



6.4.2 Operations and Maintenance

Repairs and maintenance form the other major component of total expenditure. In absolute terms, repairs and maintenance expenditure has increased from Rs 330 lakh in FY03 to Rs 410 lakh in FY06. Its share in total expenditure has increased from 24% to 29% in FY03 and FY05, respectively. Exhibit 6.11 provides details of sector wise composition. Though water and sewerage form the major proportion of operating expenses, there has been a downward trend in expenditure between FY03 to FY06. Overall repairs and maintenance has grown at a CAGR of 8.5% over the period.

Exhibit 6.11 Repair and maintenance expenditure - Sector wise break up

Item	FY2003	%	FY2004	%	FY2005	%	FY2006	%
Roads	58	17%	101	21%	49	13%	72	18%
Water & Sewerage	170	51%	178	37%	116	30%	120	29%
Street Lights	61	19%	91	19%	69	18%	66	16%
Others	43	13%	109	23%	156	40%	152	37%
Total	331	100%	480	100%	390	100%	410	100%

6.4.3 Power costs

Exhibit 6.12 gives the details of power costs out of the total repair and maintenance expenditure relating streetlights. Power costs account for nearly 80% of repair & maintenance costs of operating streetlights.

Exhibit 6.12 Power costs - Street Lights (Rs in Lakh)

Item	FY2002	%	FY2003	%	FY2004	%	FY2005	%
Water	170	100%	124	100%	82	100%	85	100%
Power	0	0%	0	0%	0	0%	0	0%
Non Power	170	100%	124	100%	82	100%	85	100%
Street Lights	75	100%	118	100%	86	100%	108	100%
Power	61	81%	91	77%	69	80%	66	61%
Non Power	14	19%	27	23%	17	20%	43	39%
Total	245		242		168		194	

Power costs have declined marginally from 19% of O & M expenditure in FY03 to nearly 18% of O&M expenditure in FY05.

6.5 Trends in Capital Expenditure

Exhibit 6.13 gives details of capital expenditure by Tiruvottiyur Municipality over the last five years and estimated capital outlay to address the felt needs of Tiruvottiyur Municipality over the next ten years.

Exhibit 6.13 Capital Expenditure (Rs in Lakh) - Last five years

Sector	Actual				
	2000-01	2001-02	2002-03	2003-04	2004-05
Roads	1.15	1.30	0.90	1.50	2.04
Storm Water drains	0.19	0.00	0.69	2.08	0.62
Water Supply	0.67	0.90	0.90	0.81	0.77
Sanitation/ Solid Waste Management	0.03	0.00	0.00	0.00	0.00
Street Lights	0.09	0.23	0.17	0.31	0.18
Remunerative Enterprises & Others	0.00	0.00	23.50	0.00	0.00
Education	0.11	0.16	0.04	0.05	0.36
Sewerage	0.06	0.50	0.59	0.57	0.25
Total	2.29	3.10	26.78	5.32	4.22

6.6 Loans and Finance charges

Exhibit 6.14 gives the details of outstanding loans of Tiruvottiyur Municipality at the end of year 2006.

Exhibit 6.14 Loan Statement (Rs in Lakh)

S No	Lending Agency	Amount of Loan (Rs in Lakh)	Year of drawal	Interest Rate %	Repayment period (years)	Purpose / Scheme	Moratorium period	Outstanding loan amount 05-06'
1	2	3	4	5	6	7	8	9
1	TUFIDCO	280.00	1998		23	Special roads		
2	TUFIDCO -spl roads	865.10	2001	16%	20	Storm water drainage	5	258.04
3	TUFIDCO	253.35	2005	8%	10	Various Purpose		
4	TNUDF	206.57	1997	15%	15	Various Purpose		170.71
5	Government Loan	503.98				Various Purpose		747.25*
	TOTAL	2109.00						1176.00

Source: Tvr -Mply

*Expected Written off

7. Vision & Strategic plan, CIP and Asset Management plan

This section articulates a strategic plan for urban development in Tiruvottiyur town and crystallizes the Capital Investment Plan (CIP) for urban infrastructure needs of the town in the short term (5 years) and long term (20 years). The strategic plan and CIP follow from an analysis and articulation of the potential themes for economic development for the town, a SWOT analysis of the current status of the town and the expectations elucidated by stakeholders of the town namely, elected municipal council representatives and public stakeholders during our consultations with them.

7.1 Potential themes for economic development

The key economic development themes for Tiruvottiyur town are articulated below:

7.1.1 Guide growth of the town by exploring scope for extension of town limits

Tiruvottiyur has a significant presence of small scale industry and several large industrial units. Against 64% of land being developed area – CMDA envisages that developed area would be 72% by 2026; residential development to grow by 3% and industrial use by 2%. Given the expected population growth, there is clearly very little additional land available for handling and planning for this growth in an orderly manner. Therefore, there appears to be case for evaluating scope for bringing in adjoining areas to direct future growth, as aspect that also figured high in our consultations with the council and with public stakeholders.

7.1.2 Significant gaps in urban infrastructure – water, sanitation and roads need to be addressed on priority

While water supply and UGD projects on the anvil with DPRs being under preparation by CMWSSB, there is a need for a comprehensive plan for flood management and storm water drains required. Tiruvottiyur is constrained by low lying areas on both sides in the vicinity of the coast and the Buckingham canal. Further, the road length per sq.km at 5.9 km / sq.km is among the lowest road densities among suburban areas in Chennai. This lack of adequate connectivity and road networks is evident in the visible congestion and traffic snarls that is evident. Given this scenario, widening and strengthening arterial roads including development of elevated sections as suggested as part of Chennai City Development Plan are critical in managing the future growth of the town.

7.1.3 Explore scope for shifting small scale industries to a newly created industrial estate / park in the town

Apart from the large industrial units within Tvr-M, there are a number of small scale and ancillary units within the town. Given the haphazard nature of the growth, several industrial units are located fairly close to residential areas. There is a need to explore the scope for creating a industrial cluster separately within the town where all these units can be shifted. Apart from releasing land for other development, this could enable provision of necessary infrastructure for the industries in one place.

7.2 SWOT analysis

A brief SWOT analysis of the town is presented below:

Strengths <ul style="list-style-type: none"> Proximity to Chennai Presence of an industrial base Rail connectivity to rest of Chennai Nearness to both the major ports of Chennai and Ennore 	Weakness <ul style="list-style-type: none"> Several areas of town narrow and congested Small scale units in town facing problems Significant gaps in infrastructure and unplanned residential developments Significant / visible slum population
Opportunities <ul style="list-style-type: none"> One of the fastest growing large suburbs Gateway for rest of Northern Chennai Improving arterial road connectivity could improve commercial base of town Proposed developments along Ennore port could trigger further residential developments. 	Threats <ul style="list-style-type: none"> Overall development of North Chennai has been relatively slow Continued negligence of infrastructure may actually lead to outward migration of high income groups / professionals Persistent threat of cyclonic and flood related events in view of location

7.3 Strategic plan – focus areas and time horizon

The focus of the City Corporate Plan exercise and the strategic plan is on provisioning of urban services in 8 areas including

- Water Supply
- Sewerage and Sanitation
- Roads, Transportation and street lighting
- Solid Waste Management
- Urban services for the Poor
- Social infrastructure and other urban amenities

The strategic plan for urban service delivery involves identification of interventions to address the gaps in service delivery between the prevailing levels and the required levels of services in the short term (covering a period of 5 years starting 2007-08 up to 2011-12) and long term (covering a period of 20 years starting 2007-08 up to 2026-27). The geographical coverage of the plan includes the area under the jurisdiction Tiruvottiyur municipality as of March 2007.

7.4 Population projections underlying the strategic plan

Exhibit 7.1 provides the population projections that form the basis of arriving at the sector wise service delivery gaps, interventions required and capital investment estimates.

Exhibit 7.1 Population projections and related estimates - Tiruvottiyur town

	Unit	Baseline	Projected		
		2007	2012	2017	2027
Population	nos	249637	282,321	321,222	412,788
Households (Estd.)	nos	57703	66428	75582	97127
Assessed Properties	nos	32948	42,348	64,244	82,558
Road length	km	127	127	157	177

The population projections have been arrived at as an average of the population projected based on Arithmetical Increase Method, Geometric Increase Method and Incremental Increase Method. A household size of 4.5 is assumed (in line with Census 2001), while properties are assumed to be 20% of population by 2012, 21% by 2017 and 22% by 2027. This translates to a 5% growth in properties as against a 2.7% growth in population.

7.5 Water Supply

7.5.1 Service Goals and Reform targets

Exhibit 7.2 provides the service goal/outcomes and reform targets based on the proposed strategy for the horizon period. As observed, Tvr-M falls significantly short of norm of 135 LPCD. Current level of water supply is only 22 LPCD.

On the reform agenda, at 34% the current collection efficiency requires significant improvement. Connection efficiency (as measured by connections / assessed properties) also is fairly low. Tvr-M appears to have a high level of public fountain access which would require some level of rationalization. While user charges are already being collected, the same need to get progressively linked to usage through implementation of metering / graded tariffs.

Exhibit 7.2 Water supply - Service Goals and Reform Targets

FACTOR	Unit	Baseline	Target		
		2007	2012	2017	2027
Service Goals					
Per capita supply at doorstep	LPCD	22	135	135	135
Storage capacity / Total demand	%	6%	50%	50%	50%
Distribution network / Road length	%	20%	80%	80%	90%
Frequency of supply	hours/day	2	2	2	24X7
Reform targets					
Current collection efficiency	%	34%	75%	90%	90%
House Service Connections / Assessed Properties	%	10%	40%	60%	75%
Population per water fountain	nos.	179	200	200	200
Implementation of graded / metered tariff	Yes / No	No	Yes	Yes	Yes
User charge collection - % of O&M plus debt servicing	%	n.a	60%	100%	100%

As of FY ending 2006, Tvr-M has a distribution network of **26 km**. Given a total road length of **116.13 km** as of 2006, distribution network covers 22% of the town. There are around 2300 House Service Connections (HSC) in Tvr-M thereby translating to **7%** of assessed properties (at 33000) in Tvr-M. Out of the 48 wards in Tvr-M, 16 wards have good ground water table and presently have not been provided with HSC's or Public Fountains by Tvr-M. The balance 32 wards have around 2300 House Service Connections and 95 public fountains.

7.5.2 Baseline status and gaps – short term & long term

Exhibit 7.3 provides the baseline status on water supply and the requirements and gaps in the short, medium and long term. As seen in the table, Tiruvottiyur appears inadequately placed in terms of water supply and storage, and also requires interventions to address distribution network gaps.

Exhibit 7.3 Water Supply - Baseline status and gaps (short term and long term)

	Unit	Baseline	Required / Target			Incremental addition		
			2012	2017	2027	2012	2017	2027
Gross Water Supply	MLD	5.40	38.11	43.36	55.73	33	5	12
Storage Capacity	ML	1.40	19.06	21.68	27.86	18	3	6
Distribution network	km	26	102	126	159	76	24	33
HSCs	Nos.	2,375	26,571	45,349	72,845	24,196	18,778	27,496
Public fountains	Nos.	1,395	1,412	1,606	2,064	17	195	458

With a requirement of about 55.73 MLD in 2026, Tvr-M needs to augment water supply significantly from the current levels. As against a road network of about 116 km of roads in Tvr-M, as only about 26 km is covered. These are likely to be addressed under the ongoing scheme comprehensive water supply scheme being carried out by CMWSSB. Also given the potential for future development and addition of another 50 km of new road formation, these would also need to be covered in the medium to long term. House service connections could potentially grow more 70000 connections during the next two decades and the distribution network should be equipped to address this requirement.

7.5.3 Interventions – short term

CMWSSB is presently undertaking comprehensive water supply scheme for Tvr-M with the objective of providing 90 LPCD of water. Preliminary estimates provided to Tvr-M indicate a capital outlay of the order of Rs. 74 crore for carrying out this project. The DPR is expected to be ready shortly. Officials at Tvr-M indicate that this project will be taken up on priority with JNNURM funding given the poor water service levels in the municipality. Tvr-M expects that this project will be completed within the next 3-4 years. The description of this project and the components are described below.

a) Implementation of comprehensive protected water supply in all wards (DPR currently under preparation) at an estimated outlay of Rs. 74 crore. This outlay is based on initial estimates provided by CMWSSB to Tvr-M and exact details of the scope of the DPR are not available. An assessment of normative gaps that need to be addressed are highlighted below.

- **Supply augmentation, Transmission and primary storage** for supply of at least 38 MLD (by 2012).
- **Local storage and pumping** - Additional 8 ML of storage capacity by 2012.
- **Investments in pumping and distribution network** - Comprehensive provision of protected piped water supply in all wards covering about 102 km of roads in the short term.
- **Rapid scale up in House service connections** – which would potentially need to increase nearly 8-fold in the next 5 years to more than 26,000 connections

- b) **Completion of ongoing addition to storage capacity** - Tvr-M is currently implementing two additional ground level sumps with a capacity of 1.5 lakh litres each at an outlay of Rs. 27 lakh. Tvr-M needs to implement the proposed water supply scheme on priority in order to plug the significant deficit in water supply access currently faced.

7.5.4 Interventions – medium to long term

The proposed water supply scheme and the capital investment estimates are expected to address ultimate population requirements for in supply augmentation. Tvr-M is expected to source bulk water from CMWSSB to meet ultimate population requirements and we have not factored any capital investments for the long term. However, we have provided for addition of distribution network (estimated at 57 km) considering the scope for new roads/layout formation and for additional storage requirements. Tvr-M should strive towards 24x7 water supply in the medium to long term. This would require comprehensive metering of all HSC connections and implementing user charges on the basis of consumption. Given that Tvr-M is yet to even meet access targets, we have provided for investments in metering only during 2018-27. The following capital investments have been arrived at for the medium-long term based on normative gaps.

- Addition in Distribution network of an estimated 57 km at an outlay of Rs. 173 lakh.
- Augmentation of public fountains at an outlay of Rs. 163 lakh
- Metering of water supply connections involving an outlay of Rs. 728 lakh during 2018-27

7.5.5 Water supply - Capital Investment summary

Water supply investments are primarily required in extending the distribution network coverage. The total outlay and phasing of investments for water supply is given in Exhibit 7.4 below.

Exhibit 7.4 Water Supply - Capital Investment outlay and phasing

CAPEX PLAN AND PHASING	Rs. lakh								TOTAL
	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	
ONGOING / PROPOSED PROJECTS									
Ground Level Sumps	27	-	-	-	-	27			27
Comprehensive water supply scheme	-	2,467	2,467	2,467	-	7,400			7,400
Others - based on normative estimates									-
Public fountains					4	4	49	114	167
Pumping and Distribution network							73	100	172
Metering								1,457	1,457
TOTAL CAPEX - Water supply	27	2,467	2,467	2,467	4	7,431	121	1,671	9,223

7.6 Sanitation

7.6.1 Service Goals and Reform targets

Exhibit 7.5 provides the service goal/outcomes and reform targets based on the proposed strategy for the horizon period.

Exhibit 7.5 Sanitation - Service Goals and Reform Targets

	Unit	Baseline	Target		
		2007	2012	2017	2027
SERVICE GOALS					
UGD Network					
Availability	Yes/no	No	Yes	Yes	Yes
Design capacity	LPCD	-	120	120	120
Sewer network - % of road length	%	44%	80%	80%	80%
Storm Water Drains					
Drain length / Road length	%	8%	100%	100%	130%
Public Conveniences					
Slum population per PC seat	Nos.	40	100	100	100
REFORM TARGETS					
Sanitation coverage - % of population	%	n.a	100%	100%	100%
Current collection efficiency	%	48%	70%	90%	90%
Connections / Assessed Properties	%	15%	40%	60%	75%

7.6.2 Baseline status and gaps – short term & long term

Exhibit 7.6 provides the baseline status on sanitation and the requirements and gaps in the short, medium and long term.

Exhibit 7.6 Sanitation- Baseline status and gaps (short term and long term)

	Unit	Baseline + Ongoing	Required			Gap		
			2012	2017	2027	2012	2017	2027
Sewer Length	Km	110	102	126	141	-	24	16
Storm Water Drains	km	3500	26571	45349	72845	23071	18778	27496
Public convenience seats	nos	10	127	157	230	117	30	73
Household connections	nos	920	372	372	372	-	-	-

As can be seen from Exhibit 7.6 there are significant gaps in sanitation particularly in storm drain coverage and access through public conveniences, which are immediate priorities apart from the proposed UGD scheme.

7.6.3 Interventions required – short term

There are significant gaps in sanitation in the immediate term and the following actions are required within the next 5 years.

- a) **Comprehensive Underground Drainage scheme.** A DPR for UGD scheme for a length of around 118 km, is under preparation by CMWSSB at a project cost of around Rs.28.5 Crore and the work is expected to be completed by 2009. The 118 km long UGD project is being carried out in 5 phases. The project has been commenced is expected to be completed within the next 2-3 years.
- b) **Phased implementation of pucca Storm water drainage** – Coverage of all parts of the town in a phased manner to cover 127 km of storm drain construction and rehabilitation.

7.6.4 Interventions - medium / long term priorities

The proposed investments in UGD and storm water drains recommended in 7.6.3 above will take care of the sanitation requirements in the medium to long term as well. However, additional investments will required to take care of growing population and increase in road length due to new formations / layouts in the areas of public conveniences, addition to sewer and storm drain network. We have provided for investments on a normative basis, depending on demand outlined in Exhibit 7.6 above.

7.6.5 Project components and Capital Investment

Exhibit 7.7 provides a summary of capital outlay and phasing for sanitation in Tiruvottiyur town.

Exhibit 7.7 Sanitation - Capital Investment outlay and phasing

Rs. lakh

CAPEX PLAN AND PHASING	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	TOTAL
Ongoing / Proposed									
UGD Scheme	-	951	951	951		2,853			2,853
Others - normative estimates									-
Sewer laying						-	145	93	238
Storm water drains	351	351	351	351	351	1,757	453	1,088	3,298
Total	351	1,302	1,302	1,302	351	4,610	598	1,181	6,389

7.7 Solid Waste Management

7.7.1 Service goals and reform targets

Exhibit 7.8 provides the service goal/outcomes and reform targets based on the proposed strategy for the horizon period.

Exhibit 7.8 Solid Waste Management - Service Goals and Reform Targets

	Unit	Baseline	Target		
		2007	2012	2017	2027
Collection efficiency	%	100%	90%	90%	100%
Door-to-door collection	%	100%	100%	100%	100%
Source Segregation	%	30%	60%	100%	100%
Scientific disposal	%	0	50%	100%	100%
Conservancy fee	Yes / no		yes	yes	yes

7.7.2 Baseline status and gaps – short term & long term

Exhibit 7.9 provides the baseline status in solid waste management and the requirements and gaps in the short, medium and long term. As can be seen, Tvr-M has a marginal gap in terms of land available for disposal vis-à-vis municipal norm of 1 acre per 10000 population (2020).

Exhibit 7.9 Solid Waste Management - Baseline status and gaps (short term and long term)

	Unit	Baseline + Ongoing	Required			Incremental gap		
			2012	2017	2027	2012	2017	2027
Waste generation per capita	gms	441	550	575	600			
Waste Generated	MT	110	155	185	248			
Primary collection								
Number of trips	Nos.	4	4	4	4			
Vehicle capacity	MT	0.20	0.20	0.20	0.20			
Tricycle equivalents – new	Nos.	135	194	231	310	59	37	79
Tricycle equivalents – replacement	Nos.			135	194		135	194
Secondary collection / Transfer								
Number of trips	Nos.	1.82	3.00	3.00	3.00			
Vehicle capacity	MT	60.50	51.76	61.57	82.56		1.07	22.06
Replacement of vehicles	MT		4.00	30.25	25.88	4.00	30.25	25.88
Disposal								
Land	Acres	12.00			41.28			29.28
Compost yard development	Acres				16.51			
Land fill development	Acres				24.77			

The gaps in primary collection and secondary collection have been arrived at on a normative basis in terms of tricycle equivalents for primary collection and tonnage requirement for secondary collection, given the assumptions relating to waste generation per capita and the no. of trips.

7.7.3 Interventions – short term

Ongoing / proposed projects

Tvr-M is in the process of implementing its solid waste management action plan. Some of the ongoing / recently completed projects are detailed below:

a) Development of compost yard

- The development of a compost yard exclusively for Tvr-M is being carried out at an estimated cost of Rs.80 lakh. Around 12 acres of land has been identified in Sathangadu for this purpose and construction has commenced.

b) Equipment

- Most of the equipment available with Tvr-M are in good condition. We have provided for equipment purchase in the capital investment plan based on normative gaps shown in Exhibit 7.9.

7.7.4 Interventions - Medium / Long term

a) Land acquisition and development of sanitary land fill

- Given that Tvr-M has only about 12 acres land, it would require an additional 29 acres to meet the criteria of 1 acre per 10000 population for 2027. We have provided for acquisition of land of 29 acres in the capital investment plan at an outlay of Rs. 293 lakh.
- An additional Rs. 495 lakh has been provided for waste processing facility / landfill.

b) Equipment procurement. The capital investment estimates for equipment for primary collection and secondary collection have been arrived at based on normative gaps identified in Exhibit 7.9.

- Primary collection-vehicle procurement / replacement at an outlay of Rs. 111 lakh
- Secondary collection – vehicle procurement / replacement an outlay of Rs. 317 lakh

7.7.5 Project components and Capital Investment

Exhibit 7.10 provides a summary of the project components, capital outlay and phasing for Solid Waste Management in Tiruvottiyur town.

Exhibit 7.10 Solid Waste Management - Capital Investment outlay and phasing

CAPEX PLAN AND PHASING	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	TOTAL
ONGOING / PROPOSED PROJECTS	80					80			80
Compost Yard development									
FUTURE NEEDS									-
Primary collection	15					15	43	68	126
Secondary collection			16			16	125	192	333
Land acquisition				293		293			293
Development cost - Compost Yard									-
Development cost - Landfill site							248		248
TOTAL-SOLID WASTE MANAGEMENT	95	-	16	293	-	404	416	260	1,079

7.8 Roads, Transportation and Streetlights

7.8.1 Service goals and reform targets

Exhibit 7.11 provides the service goal/outcomes and reform targets for the horizon period.

Exhibit 7.11 Transportation and street lighting - Service Goals and Reform Targets

	Unit	Baseline	Target		
		2007	2012	2017	2027
Roads and Transportation					
Municipal roads as % of Total Area	%	6.4%	6.4%	8%	9%
Surfaced roads to Total roads	%	100%	100%	100%	100%
Pedestrian walkways to Total road length	%	Negligible	20%	40%	50%
Street Lights					
Distance between streetlights	Metres	27	30	30	30
Proportion of high power lamps	%	21%	30%	35%	40%
Proportion of lights with energy saving devices	%	6.4%	30%	35%	40%
			6.4%	8%	9%

7.8.2 Baseline status and gaps

Gaps in transportation are significant given that only 76% of road network is surfaced. Further with the proposed sewerage scheme, even the existing surfaced roads would need to be restored and re-surfaced. A substantial number of roads covering erstwhile unapproved layouts also need to be covered with surfaced roads and street lighting. Exhibit 7.12 provides the baseline status and interventions in transportation and street lighting in the short term and long term.

Exhibit 7.12 Transportation- Baseline status and gaps

	Unit	Gaps (physical requirements)			
		Total	up to 2012	2013-17	2018-27
TRANSPORTATION					
Municipal road network					
Upgrading non-surfaced roads to BT roads	Km	28	28		
Re-surfacing of roads after UGD scheme	Km	100	100		
New road formation / Surfacing	Km	50	-	30	19
Re-laying all roads between 2018-27	Km	127			127
Road facilities					
Bus shelters up gradation	Nos	40		40	
Pedestrian walkways	km	116	25	38	51
Subways	nos	5		5	

Street lights	Baseline	Required			Gap		
		up to 2012	2013-17	2018-27	up to 2012	2013-17	2018-27
Street lights	4685	4,238	5,245	5,894	-	1,007	649
High power lamps	978	1,271	1,836	2,357	293	564	522
Tube lights	3707	2,966	3,409	3,536	-	443	127
Lights with Energy savers	na.	1,271	1,836	2,357	293	564	522

7.8.3 Interventions required

a) Road upgradation, surfacing and restoration

- Tvr-M has nearly 116 km of roads of which only 76% are surfaced. Therefore there is a substantial gap with respect to access to surfaced roads. Further, with the proposed UGD scheme, even the existing surfaced roads would require re-surfacing and restoration.

b) Road facilities –

- The gaps in Tvr-M with respect to specific road facilities are highlighted in Exhibit 2.12 above and need to be addressed to meet the service level targets outlined in exhibit 2.11.

c) Roads maintained by Highways Department and National Highways Authority of India

- Two highway roads of about 11 km roads passing through Tvr-M are maintained by the State Highways department. The arterial road network through Tiruvallur comprising the Tiruvottiyur High Road and Ennore High Road are heavily congested. Specific interventions suggested in the City Development Plan prepared for Chennai Metropolitan Area include an elevated road along Tiruvottiyur high road from Toll gate to Eranavoor bridge and ROB at Tondiarpet-Tiruvottiyur crossing. The Ennore - Manali Road Improvement Project (EMRIP)

under Port connectivity Scheme has also been undertaken by NHAI. In order to implement this scheme, new body in the name of Chennai - Ennore Port Authority been formed. The State Government have handed over the Northern Inner Ring Road, Manali Oil refinery road and Thiruvottiyur - Ponneri - Panchetti Road for this scheme. The Project cost is Rs. 309 Crore. This Project consists of the following works.

- ❖ Sea protection works on Ennore Expressway
- ❖ Widening Ennore Expressway (7.5 km) to 4 lane with service roads on both sides
- ❖ Upgradation and widening of Thiruvottiyur - Ponneri - Panchetti Road (9 km)
- ❖ Strengthening of Manali Oil refinery road (5.4km) and Inner Ring road (8.10 Km)

7.8.4 Capital outlay and phasing

Exhibit 7.13 provides the details of the capital outlay for transportation and street lighting requirements

Exhibit 7.13 Transportation and Street lighting - Capital Investment outlay and phasing (Rs. Lakh)

	Cost per	Phasing (Outlay)			Total
	Unit	up to 2012	2013-17	2018-27	
TRANSPORTATION					
Municipal road network					
Upgrading non-surfaced roads to BT roads	Rs.15.00 lakh	332	-	-	332
Re-surfacing of roads after UGD scheme	Rs.12.00 lakh	2,488	-	-	2,488
New road formation / Surfacing	Rs.25.00 lakh	-	453	292	745
Re-laying all roads once between 2018-27	Rs.15.00 lakh	-	-	1,907	1,907
Road facilities				-	
Bus shelters upgradation			200		200
Pedestrian walkways		76	113	153	341
Subways			250		250
New bus stand		332	-	-	332
TOTAL		2,895	1,016	2,352	6,263

Street lights	Cost per unit	Phasing (Outlay)			TOTAL
		up to 2012	2013-17	2018-27	
Street lights					
High power lamps	0.12	35	68	63	166
Tube lights	0.08	22	42	39	103
Lights with Energy savers	0.05	15	28	26	69
TOTAL		72	138	128	338

	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	TOTAL
Transportation			965	965	965	2,895	1,016	2,352	6,263
Street Lights	14	14	14	14	14	72	138	128	338
TOTAL	14	14	979	979	979	2,967	1,154	2,480	6,601

7.9 Urban services for the poor

In Tiruvottiyur Municipality there are 73 notified slums is located. As per a presentation made by Tvr-M for funds access under IHSDP, the population of the slum is 37180 with 7436 households.

7.9.1 Service levels goals and outcomes

Exhibit 7.14 gives a snapshot of the service level goals and outcomes of Tvr-M with respect to provision of urban services for the poor

Exhibit 7.14 Urban Services for poor – Service level goals and outcomes

	Unit	Target		
		2012	2017	2027
Road Coverage for slum household	%	100%	100%	100%
Sanitation coverage for slum households	%	100%	100%	100%
Streetlights	%	100%	100%	100%
Pucca houses for all slum households	%	100%	100%	100%

7.9.2 Proposed projects

Tvr-M has taken up a comprehensive proposal for upgradation of slums at an outlay of Rs. 170 lakh under BSUP in 2006.

7.9.3 Capital outlay and phasing

Exhibit 7.15 provides the summary of capital outlay and phasing of investments for provision of urban services for the poor.

Exhibit 7.15 Urban Services for the poor - Capital outlay and phasing

ONGOING PROJECT	2008	2009	2010	2011	2012	2008-12	2013-2017	2018-2027	TOTAL
BSUP –Slum development	-	-	57	57	57	170			170
Comprehensive slum rehabilitation and development covering 73 slums and 37180 persons	-	-	-	-	2,394	2,394	11,971	-	14,365
Total	-	-	57	57	2,451	2,564	11,971	-	14,535

7.10 Social infrastructure and other urban amenities

Exhibit 7.16 provides the summary of interventions, capital outlay and phasing of investments for provision of other urban service amenities in Tvr-M. Apart from the ongoing Gasifier crematorium and slaughter house projects, Tvr-M intends to develop a swimming pool in one of its parks. Capital requirements for improvement of school buildings and health care centres have also been provided for.

Exhibit 7.16 Social infrastructure and other urban amenities – Capital outlay and phasing

	Phasing								TOTAL
	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	
Healthcare Rs. 10 lakh per centre every 5 years	14	14	14	14	14	70	70	140	280
Schools Rs. 2 lakh per school every year	24	24	24	24	24	120	120	240	480
Others Slaughter House	20					20			20
Stalls		20	20	10		50			50
Gasifier crematorium	25	30				55			55
Parks and Swimming pool Development of 2 parks		20	20	20		60			60
Swimming pool			200			200			200
TOTAL	83	108	278	68	38	575	190	380	1145

7.11 Capital Investment Plan – summary

7.11.1 Priority projects

The critical priority projects to be implemented by Tvr-M in the short term (2008-12) are summarized below in Exhibit 7.17.

Exhibit 7.17 Priority projects - FY 2008-12

Sl. No	Sector	Project	Cost Rs. Lakh	Status
1	Water supply	Comprehensive scheme to provide 135 LPCD and house service connections in all wards	7400	DPR getting ready. Project to be implemented under JNNURM.
2	Sanitation	Underground Drainage Scheme	2900	Project under implementation
3	Sanitation	Flood management and storm water drains	1757	Proposed. DPR required
4	SWM	Land acquisition and development of compost yard	80	Under implementation
5	Roads	Restoration of roads after UGD completion	2900	Proposed
6	Remunerative assets	Slaughter house and gasifier crematorium	60	Under implementation
7	Remunerative assets	Swimming pool	200	Proposed
7	Slum upgradation	Project being implemented under BSUP	844	Under implementation

7.11.2 CIP summary

Exhibit 7.18 provides a summary of sector wise phasing of investment needs of Tvr-M.

Exhibit 7.18 Capital Investment Plan summary

Segment	2008	2009	2010	2011	2012	2008-12	2013-17	2018-27	TOTAL
Water Supply	27	2467	2467	2467	4	7431	121	1671	9223
Sanitation	351	1302	1302	1302	351	4610	598	1181	6389
Solid Waste Management	95	0	16	293	0	404	664	260	1327
Transportation and street lights	14	14	979	979	979	2967	1154	2480	6601
Urban Services for the poor	0	0	57	57	2451	2564	11971	0	14535
Others	83	108	278	68	38	575	190	380	1145
TOTAL (BY ULB)	571	3891	5099	5166	3824	18551	14698	5972	39221

7.11.3 Technical assistance requirements

A list of project / sector specific technical assistance requirements needed from CMA/TNUISFL is given below:

1. Comprehensive GIS for the town with updated information on all urban assets including roads, water supply, sanitation etc.
2. DPR and technical assistance for digitization of layout records and town planning information
3. DPR for flood management and integrated storm water drains.
4. Comprehensive Transportation and Traffic study
5. DPR for roadmap for 24x7 supply
6. DPR for solid waste management with focus on scientific disposal and mechanised handling of waste with private sector participation

7.11.4 Interventions required from other agencies/departments of GoTN

Specific initiatives required departments and agencies of GoTN (other than Tvr-M) are detailed below:

1. **Highways department / NHAI/TNRDC** – i) Completion of EMRIP project (TNRDC)– Rs. 309 crore and ii) proposed strengthening of TH road at a cost of Rs. 22 crore (SH) iii) Elevated road along Tiruvottiyur high road from Toll gate to Eranavoor bridge (SH) and iv) ROB at Tondiarpet-Tiruvottiyur crossing (Railways/SH). Projects iii and iv have been recommended in the Chennai CDP submitted under JNNURM. Further, public consultations indicate the need for pedestrian subways at Matthumanthai, WIMCO gate, Anna Nagar Gate
2. **CMWSSB** – Execution of comprehensive water supply and plan for 24x7 water supply
3. **CMA** –Technical assistance in GIS application, e-governance and accounting systems
4. **CMDA (along with Tvtr-M)** - Dissemination of land use plan and exploring scope for extending town limits
5. **Department of industries/CMDA/Tvr-M** – Conduct a study to evaluate scope for progressively shifting small scale industries under a separate industrial area.

7.11.5 Reform targets

Exhibits 7.19 summarises the reform targets for Tvr-M.

Exhibit 7.19 Service level and reform targets – a summary

FACTOR	Unit	Baseline	Target		
		2007	2012	2017	2027
WATER SUPPLY					
<u>Service Goals</u>					
Per capita supply at doorstep	LPCD	22	135	135	135
Storage capacity / Total demand	%	6%	60%	60%	60%
Distribution network / Road length	%	20%	90%	100%	100%
Frequency of supply	hours/day	2	2	2	24X7
<u>Reform targets</u>					
Current collection efficiency	%	34%	75%	90%	90%
House Service Connections / Assessed Properties	%	10%	40%	60%	75%
Population per water fountain	nos.	179	200	200	200
Implementation of graded / metered tariff	Yes / No	No	Yes	Yes	Yes
User charge collection - % of O&M plus debt servicing	%	n.a	60%	100%	100%
SANITATION					
<u>Service Goals</u>					
<i>UGD Network</i>					
Availability	Yes/no	No	Yes	Yes	Yes
Design treatment capacity per capita	lpcd	-	120	120	120
Sewer network - % of road length	%	-	80%	80%	80%
<i>Storm Water Drains</i>					
Drain length / Road length	%	9%	100%	100%	130%
<i>Public Conveniences</i>					
Slum population per PC seat	Nos.	40	100	100	100
<u>Reform targets</u>					
Sanitation coverage - % of population	%	9%	100%	100%	100%
User charges - Current collection efficiency	%	-	70%	90%	90%
Household connections / Assessed Properties	%	-	40%	60%	75%
SOLID WASTE MANAGEMENT					
Collection efficiency	%	100%	90%	90%	100%
Door-to-door collection	%	100%	100%	100%	100%
Source Segregation	%	30%	60%	100%	100%
Mode of disposal	%	0	50%	100%	100%
Conservancy fee	Yes / no		yes	yes	yes
TRANSPORTATION AND STREET LIGHTS					
Municipal roads as % of Total Area	%	10%	11%	12%	13%
Surfaced roads to Total roads	%	100%	100%	100%	100%
Street Lights - Distance between streetlights	M	25	30	30	30
Street Lights - Proportion of high power lamps	%	21%	30%	35%	40%
Street Lights - Proportion of lights with energy savers	%	NA	30%	35%	40%
URBAN SERVICES FOR POOR					
Road Coverage for slum household	%	100%	100%	100%	100%
Sanitation coverage for slum households	%	100%	100%	100%	100%
Streetlights	%	100%	100%	100%	100%
Pucca houses for all slum households	%	100%	100%	100%	100%

7.12 Asset Management

This section details the asset management plan for various urban service areas and assets owned by Tvr-M and follows from a review of the asset register of the municipality particularly relating to its land and buildings and open space areas (such as parks)

In the following paragraphs we analyse the information provided to us on land and building assets available with Tvr--M and outline specific observations and suggestions on maintaining and updating these assets. The Asset Management Plan for core services areas namely Water Supply, Sanitation, Solid Waste Management and Transportation follows largely from the Capital Investment Plan outlined in the earlier paragraphs and is outlined below under sections 7.13.1 to 7.13.5 below. Specific actions relating to asset management and reform steps in these areas are also summarized in Exhibit 7.24.

7.12.1 Land and Building assets in Tvr-M

Details of information on assets of Tvr-M have been compiled and enclosed as Annexures as shown below:

- Annexure VII – Land details as per Schedule I of asset register
- Annexure VIII - Building details as per Schedule II of asset register
- Annexure IX – Ward wise details of road -

Exhibit 7.22 and 7.23 summarises the details of land and building assets in Tvr-M as shown in schedule I and II of the asset register of the municipality.

This section details the asset management plan for various urban service areas and assets owned by Tvr-M and follows from a review of the asset register of the municipality particularly relating to its land and buildings and open space areas (such as parks).

Exhibit 7.20 Details of land assets

Sl.No	Particulars	No of sites	Area in SM
	Basic Amenities	11	290,430
1	Water Bodies	8	102726
2	Toilets	3	187704
	Social	7	35360.5
1	Burial Ground	2	21425
2	Maternity centre / Hospital	3	10760
3	Market	2	3175.5
4	Noon Meal centre	6	1895
5	Parks & Playground	4	4139.28
6	Schools	6	23347
7	Office Building	5	21904.5
8	Vacant Place	6	2736.58
9	Others	3	7484.00
	Total	48	387,297

Exhibit 7.21 Summary of Building details

Particulars	No of sites	Total area	Plinth area
		Area in sm	
Basic Amenities	35	177.67	2075
Water bodies	1		1.12
Toilets	34	177.67	2074
Social	13	0	1923
Burial ground	2		49
Maternity centre	9	0	1854
Bus shelters	2	0	20
Schools	14	0	4780
Office Buildings	9	0	3409
Remunerative Purpose	5	8100	1603
Others	4		182
Total	80	8277.67	13,972

We observe that the asset register of Tvr-M has not been updated. Several items in the asset register reflect status as of year 2000, when the asset register was initially created. We recommend the following actions in terms of managing the land and building assets of Tvr-M

1. There are several discrepancies between the land details shown in land schedule and in the buildings schedule. We therefore strongly suggest a zero base validation and updation exercise covering the asset register be taken up on priority.
2. Tvr-M should prepare and implement an annual maintenance plan (along with an assessment of cost implications) for all land and building assets. This maintenance plan should precede budget preparation process and should feed into the budget, so that the plan is adequately funded.
3. Tvr-M should progressively move towards achieving revenue realisations in line with market trends from all its remunerative assets including shops, markets etc. This is achievable through a combination of a) periodic increases in rates charged and b) improvement and better maintenance of the assets through periodic and planned maintenance.

Specific actions relating to management of assets in water supply, sanitation, solid waste management and roads are outlined below and are summarized in Exhibit 7.24

7.12.2 Water Supply

Short term

- a) Review and update asset register to reflect the latest status and establish process along with accountability for updating asset register on a periodic basis.
- b) Provide a ward wise report on capital works undertaken online on a quarterly basis.
- c) Undertake an independent study to assess loss levels in transmission, storage points and distribution and develop a roadmap for providing 24x7 water supply.
- d) Conduct periodic IEC campaigns on water conservation and rainwater harvesting practices.
- e) Review losses and illegal connections and widen the base of house service connections.

Long term

- a) Undertake a comprehensive GIS mapping of the water supply network of the town.
- b) Implement metering and metering-based-tariff /graded water tariff at household level
- c) Implement 24x7 water supply on a pilot basis in select zones / wards and replicate the same in a phased manner within a ten-year timeframe.

7.12.3 Sanitation

Short term

- a) Create baseline information database on sanitation assets and performance of the municipality. Establish processes and accountability for periodic updation and dissemination.
- b) Conduct IEC campaigns and public consultations to educate citizens on the benefits of Underground drainage scheme.
- c) Ensure adequate upkeep of sanitation assets including public conveniences and storm water drains through encouraging community level participation and feedback
- d) Disseminate information on tariffs a transparent manner and undertake a focused program to mobilise connection deposits
- e) Use a combination of incentives and penalties to encourage timely payment of user charges.


Long term

- a) GIS mapping of sanitation assets
- b) Implementation of Graded tariffs

Exhibit 7.22 Asset Management Plan and timeline

Sl.No	ASSET MANAGEMENT / DEVELOPMENTAL ACTIVITIES	Responsibility	Short Term	Medium term	Long Term
			2007-12	2013-17	2018-27
WATER SUPPLY					
1	Create Baseline information on water supply assets / performance	Tvr-M			
2	Accountability and process for periodic updation / dissemination	Tvr-M			
3	IEC campaigns for water conservation and rainwater harvesting	Tvr-M			
4	Leak detection plan / Losses assessment	Tvr-M			
5	Implementation of usage based / graded tariffs	Tvr-M			
6	Incentives / penalties to encourage timely payment of water charges	Tvr-M/CMA			
7	GIS mapping of water supply assets/connections	Tvr-M / CMA /CMWSSB			
8	Roadmap for 24x7 water supply	CMWSSB / Tvr-M			
9	Metering at household level and usage based tariffs	CMWSSB / Tvr-M			
10	Piloting 24x7 water supply	CMWSSB / Tvr-M			
11	Implementation of 24x7 water supply	CMWSSB / Tvr-M			
SANITATION					
1	Create Baseline information on sanitation assets / performance	Tvr-M			
2	Accountability and process for periodic updation / dissemination	Tvr-M			
3	IEC campaigns and public consultations on UGD benefits	Tvr-M			
4	Mobilisation of public deposits	Tvr-M			
5	Initiate and encourage Community participation for upkeep of sanitation assets	Tvr-M			
6	Incentives / penalties to encourage timely payment of water charges	Tvr-M/CMA			
7	Implementation of graded tariffs	Tvr-M			
8	GIS mapping of sanitation assets/connections	Tvr-M/CMA/CMWSSB			
SOLID WASTE MANAGEMENT					
1	IEC activities	Tvr-M			
2	Review and updation of SWM action plan	Tvr-M/CMA			
3	Door to Door Collection	Tvr-M			
4	Source Segregation	Tvr-M			
5	Identified transfer / collection points	Tvr-M			

Sl.No	ASSET MANAGEMENT / DEVELOPMENTAL ACTIVITIES	Responsibility	Short Term	Medium term	Long Term
			2007-12	2013-17	2018-27
6	Synchronisation of primary/secondary collection	Tvr-M			
7	Conservancy fee for primary collection	Tvr-M			
8	Commercial exploitation of waste	Tvr-M			
9	Increased mechanisation of handling waste	Tvr-M			
10	Development of scientific landfill site	Tvr-M/CMA			
TRANSPORTATION					
1	Baseline data on road assets	Tvr-M			
2	Accountability and process for periodic updation / dissemination	Tvr-M			
3	Policy on road digging and right of way	Tvr-M/CMA			
4	Stakeholder coordination mechanism for synchronised road development	Tvr-M			
5	Energy saving in street lights	Tvr-M			

 Interventions requiring technical assistance/support in DPR preparation

7.12.4 SWM

Short term

- a) Conduct IEC activities to back other initiatives like door-to-door collection to facilitate effective segregation of waste at source.
- b) Review and updated the Solid Waste Management Action Plan and prepare a detailed feasibility report for comprehensive Solid Waste Management in the town
- c) Implement door-to-door collection and source segregation in all wards.
- d) Identify transfer points / collection points for every ward and streamline primary and secondary collection trips

Long term

- a) Progressively enable greater mechanisation of waste handling.
- b) Implement a nominal conservancy fee for primary collection.
- c) Focus on commercial exploitation opportunities for revenue enhancement by exploring scope for privatising compost yard management and other options including bio-gas and formal sale of scrap/recyclable material
- d) Shift from indiscriminate dumping of non-biodegradable waste to explore potential for development of a shared landfill site for safe disposal of non-biodegradable waste.

7.12.5 Roads

- a) Create a baseline database on road assets at a ward level covering street wise details of length of road, road assets (storm drains, culverts etc), surface and condition
- b) Establish process and accountability for periodically updating this database with details of works done on these roads and disseminating information on the same on Tvr-M's website.
- c) Clarify policy on road digging and repair and communicate the same to all agencies. Take stern action on agencies digging without prior permission from the ULB.
- d) Create a coordination committee comprising 'right of way' users including telecom companies, Tamil Nadu Electricity Board, TV cable operators, Traffic police and ULB officials to plan development and maintenance of road assets in a synchronised manner.
- e) Provide ducts for cables and other utilities along all arterial and major roads to minimise road digging.
- f) Adopt energy saving measures including implementation of energy savers in all high power street lights.

8. Project profiles, analysis of risks and ESA considerations

This section follows from the Capital Investment Needs identified in the previous section and provides brief profiles of priority projects that need to be executed by Tvr-M in the short term. These project profiles provide a) Need for the project b) Project cost and phasing c) current status and technical assistance requirements d) possible financial mix and risk factors and e) illustrative classification based on environmental and social framework adopted by TNUDF.

8.1 Project profiles of select priority projects

8.1.1 Water supply

Sector	Water Supply
Project Description	Comprehensive water supply scheme for provision of 135 LPCD supply and house service connections
Project Status	Concept stage / DPR preparation / Sanctioning and appraisal / Implementation
Need for the project	This project aims to provide house service connections and achieve 135 LPCD of water supply
Technical assistance	DPR under final stages.
Project Components	<p>This outlay is based on initial estimates provided by CMWSSB to Tvr-M and exact components and scope of DPR are not available. An assessment of normative gaps that need to be addressed are highlighted below.</p> <ul style="list-style-type: none"> • Supply augmentation, Transmission and primary storage for supply of at least 38 MLD (by 2012). • Local storage and pumping - Additional 8 ML of storage capacity by 2012 • Investments in pumping and distribution network - Comprehensive provision of protected piped water supply in all wards covering about 102 km of roads in the short term. • Rapid scale up in House service connections – which would potentially need to increase nearly 8-fold in the next 5 years to more than 26000 connections
Project Cost	~ Rs. 7400 lakh
Revenue impact	Direct incremental revenue impact as Tvr-M intends to levy house connection deposits and user charges.
Financing mix	Being structured as a combination of grant, loan and own funds.
Remarks	Given the large size and the complexity of the project, it is important to follow best practices in contracting out this project. Stringent quality considerations must be adopted in selecting contractors. The contract could be structured on a BOT format where the contractor is also responsible for maintaining the network, so that that the risk of non-performance is shared. Further incentives and penalties should be built into the contract to ensure timely completion of the project. Considerations for moving to 24x7 supply in the future should be taken into account at the design stage.
ESA analysis and tentative rating	<p>E2 -Expected to have only moderate environmental issues. Mostly generic impacts in nature</p> <p>S3 - No social issues expected. Hence socially benign no social mitigation measures required, need to submit SSR</p>

8.1.2 Sanitation

Sector	Sanitation
Project Description	Implementation of Underground Drainage (UGD) Scheme
Project Status	Sanctioning and appraisal
Need for the project	Tvr-M has only partial UGD scheme and there is significant pollution due to release of sullage water in open drains.
Technical assistance	The DPR for the project has already been prepared by CMWSSB
Project Components	5 pumping stations 10013 m sewer length STP spread over 50 acres in Sathangadu
Project Cost	Rs. 2900 lakh
Revenue impact	Tvr-M intends to levy user charges for connections and mobilise public deposits to part finance the project
Financing mix	Loans, own funds, Grant and public deposits.
Remarks	UGD schemes require significant pre-construction development work including acquisition of land for pumping stations and STP. Further design considerations are critical. Several UGD schemes faces delay risk. Further given the resistance to user charges and deposits, Tvr-M could face resistance for the proposed UGD scheme.
ESA analysis and tentative rating	E1 – Project could have major environmental impacts thus necessitating Environmental Assessment Reports (EAR), S1 or S2 – is likely to have PAPs and hence need fairly detailed assessment.

Sector	Sanitation
Project Description	Storm water drains and flood mitigation
Project Status	Proposed. A Detailed Project Report needs to be prepared covering a) identification of potential water catchment points b) Identify arterial canal networks that need to be developed/strengthened based on a review of flooding and water flow patterns and c) specify ward level guidelines for storm water drain construction in terms of linkages and gradient of local storm water drain construction initiatives.
Need for the project	Storm water drain coverage in the town is only 9 % of the road length and hence there is a need for a comprehensive project to address the storm water drain requirements of the town. There are significant low lying areas in town which would need protection.
Technical assistance	DPR required for comprehensive flood management and storm drain network.
Project components	This project would involve <ul style="list-style-type: none"> Construction of new Pucca concrete storm water drains along the road along with interlinking to Buckingham canal. Cost estimated arrived at based on a normative length of 127 km of existing storm water drains. Rehabilitation and desilting of existing storm water drains.
Project Cost	Rs. 1757 lakh
Revenue impact	Non-remunerative project.
Financing mix	Given the size of the project and the non-remunerative of the project proposals, implementation of the project would require significant grant support.
Remarks	Storm drains have often tended to fail due to poor maintenance. There is a need

	for a pre-construction DPR for comprehensive design and guidelines for ward level storm drains. This should be backed by a clear O&M strategy involving local community participation at the project implementation stage itself.
ESA analysis and tentative rating	E2 -Expected to have only moderate environmental issues. Mostly generic impacts in nature S3 - No social issues expected. Hence socially benign no social mitigation measures required, need to submit SSR

8.1.3 Solid waste management

Sector	Solid waste management
Project Description	Land acquisition and compost yard development
Project Status	Proposed.
Need for the project	Tvr-M has shortage of land for disposal and is in the process of acquiring 12acres of land for development of an integrated compost yard.
Project Components	This project would involve <ul style="list-style-type: none"> • Acquisition of land • Development of compost yard at Rs. 80 lakh
Project Cost	Rs. 80 lakh
Revenue impact	The project could enable earnings through sale of compost manufactured.
Remarks	The project could be clubbed with collection and transfer responsibility in select wards. Further, Tvr-M could develop an integrated facility along with other ULBs such as Manali and Kathivakkam to optimise land use and capital costs.
ESA analysis and tentative rating	E1 or E2 – Project could have major environmental impacts thus necessitating Environmental Assessment Reports (EAR), particularly if dumping of non-biodegradable waste is also being done in the location. S1 or S2 – may have PAPs and hence need fairly detailed assessment.

8.1.4 Roads and transportation

Sector	Roads
Project Description	Upgradation of road network post UGD implementation
Project Status	Concept stage / DPR preparation / Sanctioning and appraisal / Implementation
Need for the project	Since UGD scheme is expected to be implemented over the next few years, there is a need to restore the entire road network post implementation
Project components	Details have already been outlined in section 7.8.3 under the following components <ul style="list-style-type: none"> • Conversion of Non-BT to BT surface (28 km @ Rs. 332 lakh) • Road upgradation and restoration after UGD implementation (100 km @ Rs. 2488 lakh) • Road facilities at Rs. 25 lakh
Project Cost	Rs. 2900 lakh
Revenue impact	Non-remunerative project
Financing mix	Combination of loans (30%), grant (50%) and own funds
Remarks	The road network upgradation should comprehensively take into account storm water drain design and other road assets including pedestrian foot paths, signages and road medians as appropriate.
ESA analysis and tentative rating	E2 -Expected to have only moderate environmental issues. Mostly generic impacts in nature S3 - No social issues expected.

9. Reform agenda and Technical assistance

This section outlines the reform agenda for Tvr-M in the areas of a) capacity building and systems b) measures for improving financial performance and c) summary of targets on select operational and financial indicators

9.1 Urban sector reform in Tamil Nadu – an overview

Tamil Nadu is considered a pioneer in the area of urban reforms. Tamil Nadu has constituted three successive State Finance Commissions for improving resources of local bodies and devolution of funds from the State to Urban Local Bodies and has conducted three successive elections to Urban Local Bodies on due dates. Apart from this, other key reform initiatives undertaken by Tamil Nadu in the urban sector are given below

- a) Reduction in stamp duty on transfer of property from 15 to 8 percent.
- b) Implementation of accrual accounting system in all Urban local bodies
- c) Introduction of modified area based property tax system
- d) Computerization of sub-registrar's offices
- e) Repeal of the Land Ceiling Act, while a reformed Rent Control Act is being considered
- f) Commitment to levy user charges and improvement in collections for water and sanitation services.
- g) Creation of TNUDF to provide access to capital markets in a non-guarantee mode.

Apart from setting in motion a process for financial devolution through creation of SFC, Tamil Nadu has also moved a fair bit towards delegating a number of functions to the ULBs. The 12th Schedule of the Constitution provides for 18 functions to be undertaken by ULBs.

- 1. Urban planning, including town planning;
- 2. Regulation of land-use and construction of buildings;
- 3. Planning for economic and social development;
- 4. Provision of roads and bridges;
- 5. Provision of water supply for domestic, industrial, and commercial purposes;
- 6. Provision of public health, sanitation conservancy, and solid waste management;
- 7. Provision of fire services;
- 8. Promotion of urban forestry, protection of the environment, and promotion of ecology;
- 9. Safeguarding of the interests of weaker sections of society, including the handicapped and mentally retarded;
- 10. Slum improvement and upgrading;
- 11. Urban poverty reduction;
- 12. Provision of urban amenities and facilities such as parks, gardens, and playgrounds
- 13. Provision of cultural, educational and aesthetic aspects
- 14. Provision of burials and burial grounds, and cremations, cremation grounds, and electric crematoriums;
- 15. Provision of cattle pounds, and prevention of cruelty to animals
- 16. Recording of vital statistics including registration of births and deaths

17. Provision of public amenities including street lighting, parking lots, bus stops and public conveniences
18. Regulation of slaughterhouses and tanneries.

While not mandatory, the provisions direct state governments to decide the powers and functions to be devolved to local bodies. Tamil Nadu has delegated functions 2 to 6 and 8 to 18 to ULBs⁵. Though Urban Planning as a function is vested with the Department of Town and county planning, both the political and administrative heads namely the Chairman and the commissioner are typically involved in the process of preparing master plans.

9.2 Reform agenda – interventions required at the state level

As observed above, GoTN has ushered in a number of reforms in the urban sector. However, there is a need to persist with this direction. The stage is set for the state to usher in a set of second generation reform that furthers the vision of the 74th Constitutional amendment in empowering and strengthening local governance. In this regard, we have outlined below a set of possible reform areas and interventions below:

1. **Implement recommendations of the Third State Finance Commission** – The recommendations relating to the revenue buoyancy of the ULBs including property tax reform and devolution income and transfer are particularly critical for the financial stability of the ULBs and need to be implemented on priority.
2. **Maintain reasonable stability of tenure of key officials** – We recommend that except for extraordinary circumstances, there should be a minimum tenure of at least 2 years for all the key positions including Commissioner, Municipal Engineer, Manager, Town Planning Inspector, Sanitary and public health head and Accountant. Further, guidelines need to be clarified and enforced for formal charge handover whenever there is a transfer of officials to ensure continuity of city level vision, projects and streamlined service delivery.
3. **Carry out an Independent assessment of skill gaps and manpower needs of Tvr-M** - There is a need for an independent review of the skill requirements in various grades of municipal bodies to ascertain the appropriate manpower plan in terms of skill sets and experience/seniority. This is particularly relevant given the recent developments and the growing service delivery expectations in the urban sector specifically in urban planning, municipal accounting and systems, e-governance and modern practices in infrastructure service delivery including potential for public-private partnerships.
4. **Address critical operational areas through focused training and capacity building interventions** - Three areas stand out in terms of criticality and the need for significant training interventions. These include:

⁵ Source: *Local Governments Finances and Bond Markets*. ADB. 2003

- **Engineering and project development** – A number of new grant and loan schemes (both central and state) including the UIDSSMT are available for ULBs to tap into for meeting their asset creation requirements. However, there seems to be very little understanding of the scope and potential of using these schemes for implementing local level projects. GoTN and CMA should conduct periodic training and awareness programs for senior management personnel including Commissioners, Managers and Engineering staff. This would enable them work towards developing projects that can leverage such schemes. Agencies like TNUIFSL and TUFIDCO should also take the lead in organising such awareness programs.
 - **Accounting and Finance** – Though accrual accounting has been implemented in Tvr-M and is under operation for more than 5 years. Computerised Financial and Administrative systems are in place or are in various stage of implementation/upgradation. There is a therefore a need for continued emphasis on training to bring the accounting and finance staff up to speed on these developments.
 - **Use of CAD/GIS applications in Town Planning/Engineering** – CMA and GoTN should initiate a state-wide program to train Town planning and engineering staff on CAD and GIS applications.
- 5. Build on GoTN's pioneering position in implementing accrual accounting by launching a drive improve the timeliness and quality of information dissemination** - While all ULBs in Tamil Nadu have implemented a double entry accounting system, there is scope for improvement in the quality of accounting in the areas of classification and recording, consolidation and dissemination of information. Several ULBs have redundant systems involving manual and computerised book keeping and errors often creep into MIS. Often, the DCB statements and accounting statements are not reconciled. The recent initiative of the setting up of the Debt Monitoring Cell at the CMA level is a positive step in getting the loan records at the ULB right. It still takes significantly long time for accounts to be closed and this need to be remedied. GoTN and CMA should continue its thrust in this area to ensure that the real advantages of accrual accounting is realised. In this regard, we recommend that
- CMA, GoTN should continue its focus **on technical assistance to ULBs to improve their accounting systems and practices**. Proper training should be given to the staff on the concepts of double entry book keeping. Apart from the municipal staff, the LFA should also be given training in auditing the new computerised systems being implemented. Currently there is a dual system in operation and this seems to be creating significant reconciliation issues.
 - CMA, GoTN should **insist and implement closing of accounts and audit of the same within a fixed time period** subsequent to the completion of financial year.
 - TNUDF could consider a **grading system to categorise ULBs** on the basis of quality of accounting and reporting practices.
- 6. Create technical standards with specific applicability to municipal projects construction and execution. These are particularly required in 2 areas:**
- **Integrated road asset creation and management** – The quality of road construction particularly in urban areas is inconsistent ranging from well-laid roads in select areas to

poorly designed roads that does not last even a single monsoon season. In this regard **CMA along with the State Highways department** should

- ❖ **Standards** - Define standards for urban roads construction covering technical specifications (construction material, equipment use, process for road construction)
 - ❖ **Procurement guidelines** - Review procurement guidelines for empanelment / selection of contractors including incentives and penalties to ensure adequate accountability
 - ❖ **Showcase project** - Identify one major arterial high-density road corridor (typically maintained by the State Highways department) in all district headquarters for development in an integrated manner covering strengthening/widening, encroachment removal, de-bottlenecking through junction improvements and grade separators, streamlining parking, guidelines for right of way for road users (such as TNEB, BSNL etc) and aesthetics/signages. Implementation of such projects could potentially have a demonstration effect and could contribute to widespread replication and adoption.
 - **Flood management and interlinked storm drains** – Storm water drains are among the most expensive assets to be created by ULBs and yet least priority gets accorded to maintaining storm drains and keeping them clean. Further there is inadequate planning and sub-optimal drain construction in an isolated manner without a detailed review of interlinking needs with arterial canals and water bodies. In this regard, we recommend that
 - ❖ TNUIFSL and CMA should considering initiating a technical assistance study at a city level for all the district headquarters and other flood-prone and coastal towns (such as Tiruvottiyur) in Tamil Nadu in a phased manner to develop a blueprint for an integrated water and flood management plan covering a) identification of potential water catchment points (including restoration of water bodies), b) Identify arterial canal networks that need to be developed/strengthened based on a review of flooding and water flow patterns and c) specify ward level guidelines for storm water drain construction in terms of linkages and gradient of local storm water drain construction initiatives.
- 7. PPPs** - It is necessary to encourage a deeper involvement of private sector (beyond financing) in the areas of design, development and operation of infrastructure. PPPs have been found to be very effective in addressing efficiency and asset management (through pre-defined service levels and accountability for operations and maintenance) aspects of infrastructure development. In this regard,
- CMA, GoTN should develop a framework for PPP including specific policies and guidelines in urban infrastructure and in land development / remunerative projects.
 - TNUIFSL should provide comprehensive assistance covering necessary capacity building (in terms of evaluating mechanisms - BOT, SPV etc) and financing for developing projects through private sector participation.
 - CMA, GoTN along with TNUIFSL should develop model concessions involving Private sector in various areas including Solid waste, STP O&M, Maintenance of head works for water supply, Street light maintenance and remunerative projects

8. Initiate formal and independent Information Systems and Security Audits, given the implemented and ongoing e-governance initiatives of ULBs in Tamil Nadu –

- ULBs should be required to establish the practices of an independent system audit to be conducted annually. This would enable ULBs to establish greater accountability and build in robust processes for disaster recovery and security of the IT architecture of the ULB

9. Facilitate creation of a formal institutional mechanism to manage functional overlaps among nodal agencies/state level agencies and the ULB – As described earlier in section 5.4 – role of other agencies, ULBs shares responsibility for a number of service delivery areas with other agencies/departments of the state including Department of Town Planning, Department of Highway, Tamil Nadu Electricity Board, Tamil Nadu Water and Drainage Board, Road Transport Corporations etc.

- In order to overcome the limitations of these overlaps and to enable operation of these various organs of the state in a coordinated manner, each ULB should be mandated to facilitate creation of a formal steering committee at the city level comprising of 8-10 officials from all government departments/agencies. This committee could meet regularly (once every 2-3 months) to discuss and share information on respective projects/areas and could pave the way for better communication and effective service delivery.

9.3 Measures for improving financial performance

Overall income of Tvr-M grew at a 14.5 % CAGR, driven largely by significant growth in Devolution fund income. Own income of the municipality grew at a moderate 4.4 %, while expenditure actually declined during the period at a CAGR of – 6.8% due to a steep decline in operating expenses and finance expenditure. However, this presents only part of the picture. Current collection efficiencies in property tax and water user charges are abysmally low at 59% and 35% respectively.

Tvr-M's ability to improve on its financial performance hinges primarily on its ability to sustain and improve on the revenue growth noticeable in recent years. While there is potential for expenditure control in certain areas (as in the case of energy costs), the focus of cost management should be to shift expenditure from administration to better asset management and O&M. The following paragraphs outline select interventions for improvement of financial and operating performance.

9.3.1 Revenue enhancement

Property tax

Specific recommendations for improving property tax revenue and collections are detailed below. Recommendations in bold are actions that can be implemented immediately by the municipality without any significant investment and can enable the municipality to show immediate results

Issues	Recommended Interventions
Rate of taxation and monitoring	<ol style="list-style-type: none"> 1. Implementation of quinquennial ARV revision as recommend by SFC and removal of distortions in rates wherever existent. 2. Apart from collection efficiency, the ratio of assessments to population and growth of assessments should also be tracked and monitored at the highest level. 3. There should be changes instituted to the policy of Vacant Land tax to introduce steep step up in taxes for vacant land particularly in peri-urban areas to incentivise development. Vacant land are often prone to abuse in the form of encroachments, poor maintenance and dumping of garbage. Therefore an increase in Vacant land tax can be ploughed back for supporting the costs municipalities often incur in managing and preventing such abuses. 4. Property tax information of various residential units should be published online in the same manner as the guideline values that are published
Increasing assessments	<ol style="list-style-type: none"> 5. Move to GIS-based database to track, update and retrieve property tax information 6. It should be made compulsory for all new building constructions to display the building permission details obtained from the municipality for construction. The municipality should actively encourage its citizens to report unauthorised buildings construction and should disseminate online information on action taken on such constructions to dissuade such activity. Capturing information on unauthorised construction at the initial stages through such efforts would go a long way in preventing the rampant growth of unauthorised and unassessed constructions in our towns and cities. 7. Conduct a one-time survey to compile database of properties and initiate sample checks in all wards on an ongoing basis. The Commissioner should undertake ‘surprise checks’ on a regular basis in various wards to provide a sense of enforcement both to the municipal officials and to citizens for encouraging compliance. 8. Reconcile and link assessment information with building permissions issued and initiate a drive to bring unassessed properties under the tax net. 9. Reconcile manual and computerised registers to identify and bring in left-out assessments into the tax net. 10. Blanket exemptions should be reviewed. Revenue loss due to exemptions should be compensated by GoTN. 11. A strong coordination between departments within the municipality by itself bring significant increase in assessment base and collection efficiency. The Revenue department should reconcile its information across various databases on households and other commercial properties available within the municipality. Specific suggestions in this regard are listed below: <ul style="list-style-type: none"> ○ The Property tax database should be regularly updated based on the status of Building permissions issued by Town Planning department

Issues	Recommended Interventions
	<ul style="list-style-type: none"> ○ Whenever the Engineering department provides water and sewage connections, it should check with the Revenue department for compliance of those assesses with respect to property tax dues. The water and sewage assesses databases should be regularly updated and reconciled with the property tax database. ○ Whenever, the Health Department issues D&O and Trade licenses, they should check on the status of property tax assessment and professional tax assessment status for these license. ○ The D&O licenses and Trade licenses should only be provided for applicants with a clear property tax assessment status and compliance. <p>12. E-governance efforts should be undertaken towards creation of an integrated database that provides for access of information across various departments would enable effective reconciliation of information.</p> <p>13. Along with the above internal coordination, Tvr-M should also coordinate with other GoTN departments including TNEB and Commercial taxes department for improving assessment information. This can be done by obtaining and reconcile addresses and properties data of such departments with that of the municipality to identify and update missing data in the property tax database. Apart from improving property tax assessment, such cross-department interaction would facilitate mutual benefits and aid effective working relationships among them.</p> <p>14. There is a need for greater recognition of effort and contributions to improvement in assessment increase and collection efficiency. Municipal officials should be given targets and appreciated with monetary and non-monetary recognition for contribution.</p> <p>15. Similarly, the municipal council should be encouraged to contribute to improvement in collection efficiency. Top 20 default cases in each ward should be brought to notice of individual council members and Council members contributing to improvement in collection efficiency could be recognised through resolutions praising their efforts.</p>
Improving collection efficiency	<p>16. Draw a systematic plan for sending demand notices and ensure despatch of demand notices on time.</p> <p>17. Conduct ward wise analysis of collection efficiency to focus more on troublesome wards/ areas.</p> <p>18. Involve council members and resident welfare associations / NGOs as pressure groups to act against wilful defaulters.</p> <p>19. Simplify payment of property tax dues by providing multiple options; a) payment through banks b) additional facilitation / e-governance counters, c) mobile vans and door-to-door collection drives, d) online payment option and e) payment through credit cards etc.</p> <p>20. Make it compulsory for clearing property tax dues for provision of water and sewerage connections.</p> <p>21. Initiate a One-time drive and settlement scheme for arrears.</p> <p>22. Prepare a list of top100 defaulters and disseminate the information</p>

Issues	Recommended Interventions
	<p>online and through other media to put pressure on such defaulters.</p> <p>23. Municipalities should be made to report details of Litigation cases on a quarterly basis to CMA and the actions taken on them. Municipal officials should be given targets for settlement of litigation cases in a time-bound manner.</p> <p>24. Moot creation of a special tribunal for speedy completion of litigation cases.</p> <p>25. Wherever possible initiate steps for out-of-court settlement to facilitate speedy clearance of such cases.</p> <p>26. Make provisions and take steps for writing off bad debts to clear up arrears history and database</p> <p>27. Encourage greater accountability among bill collection staff by introducing targets and incentivise the same by recognition of top performers.</p> <p>28. The linking of grants to improvement in collection efficiency as in the case of JNNURM and UIDSSMT should be institutionalised for receipt of state government grants too.</p>
Incentivise on-time payment	<p>29. Implement Payment Due Date and penalties to incentivise on-time payment</p> <p>30. Encourage self-disclosure and payment.</p>

Professional Tax

Tvr-M should improve collection efficiency to more than 95% and should explore options for enhancing revenues by taking the following steps.

<p>31. Tvr-M should focus on <u>widening its professional tax base</u> by bringing more traders and independent professionals within the ambit of professional tax. Specifically, Tvr-M should consider tapping into databases of potential professional tax assesses including</p> <ul style="list-style-type: none"> • Professional associations including Institute of Chartered Accountants of India (ICAI), the Bar Council, Medical Council etc. • Databases of Commercial Taxes Department, GoTN to get details of sales tax registrations within Tvr-M. • Yellow pages and other local commercial directories to identify and bring in more professionals within the ambit of professional tax. 	
<p>32. A Targeted approach should be followed to widen the tax base for professional tax. In particular, the municipality should focus on gathering information on the following groups that could potentially add to the professional tax assessment base.</p>	
<ul style="list-style-type: none"> • Banks (Commercial and Cooperative) • Government Staff • Doctors • Engineers • Surveyors • Contractors • Advocates 	<ul style="list-style-type: none"> • Architects • Chartered Accountants (Firms) • Income Tax Practitioners • Computer Hardware Shops • Computer Education Institutes • Medical Shops • Private Companies

<ul style="list-style-type: none"> • Business Entities (other than companies) • Stock Broking concerns • Hospitals • Schools and other educational institutions • Cinema Theatres • Clubs 	<ul style="list-style-type: none"> • Chit Funds • Pawn Brokers • Laboratories • Internet Browsing Centres • Stockists and Distributor
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User charges

With the proposed UGD system and recent implementation of the Combined Water supply scheme, user charges would need increased monitoring and follow-up given their potential to contribute to Tvr-M's revenue. Specifically Tvr-M should

1. **Increase penetration of connections for water supply.** As of FY 2006, Tvr-M has about 2127 connections (FY ending 2006), which accounts for only 10 % of the properties assessed. Tvr-M should target to increase this to at least 40 % in the next 5 years progressively going up to 75% in the next decade.
2. **Providing water fountains only in areas with a predominantly low income population to minimise revenue loss.**
3. **Improve revenue per connection through implementation of either a graded water tariff scheme (as is being considered by CMA, GoTN) or a metering based tariff.** While the metering based system would be a better system in principle (charges on the basis of usage) and in terms of incentivising water conservation, ULBs have faced resistance in implementation of metered tariffs. Tvr-M could also consider implementation of meter based tariffs through involvement of Self Help Groups as meter readers.
4. **Adopt measures to improve collection efficiency.** Overall collection efficiency at 48% needs to be improved. TVR-M should consider stiff penalties for non-payment of user charges. Specifically TVR-M should consider implementation of late payment fines and in case of extreme overdue situations, disconnecting supply.

Public private partnerships (PPP)

Well-structured PPPs apart from relieving ULBs of some investment burden could also be a potential revenue enhancement option, particularly in structuring remunerative projects. In particular, Tvr-M could

1. Develop its proposed remunerative projects such as swimming pool through PPP
2. Actively encourage corporate / NGO partnerships for city beautification projects including bus stops, street lighting, parks

9.3.2 Measures for cost management

Energy efficiency

Tvr-M needs to take steps to address its power costs which have shown a steep increase over the last three years. The following steps are needed in this direction:

1. Tvr-M should conduct a **comprehensive energy audit** to identify areas for reducing power consumption and related costs.
2. Tvr-M should implement **automatic time based dimmers** on street light network and ensure that all **pumps / motors are energy efficient**.
3. Tvr-M indicated that leakages in its water supply network are in the region of 25-30%, which adds to overall cost of service delivery. A focused study is needed to assess the level of leakages and to recommend measures to minimise the same.

10. Sustainable financial and operating plan

10.1 Financial and Operating Plan (FoP)– time horizon, basis and assumptions

10.1.1 Time-horizon

The FOP has been prepared for a 20-year period i.e., FY 2008-2027.

10.1.2 Demographic projections

Exhibit 10.1 provides the population projections that form the basis of developing the Capital Investments and other revenue and cost projections for the municipality.

Exhibit 10.1 Population projections and related estimates - Thiruvottiyur town

	Unit	Baseline	Target		
		2007	2012	2017	2027
Population	nos	249637	282321	321222	412788
Households	nos	57703	66428	75582	97127
Slum Population	nos	37180	37180	37180	37180
Slum Households	nos	7436	7436	7436	7436
Assessed Properties	nos	32948	42348	64244	82558
Road length	km	127	127	157	177

10.1.3 Revenues

Exhibit 10.2 provides details of the assumptions for projecting revenues for Thiruvottiyur

Exhibit 10.2 Revenue related assumptions

Segment	Revenue driver	Basis / Assumptions
Property Tax	Baseline property tax / property (2006)	Rs. 533 per year
	Growth in tax rate	30% once in 5 years 2008 onwards
	Assessments growth	Population growth. As per trend captured in Exhibit 10.1
Professional Tax	Baseline tax / assessee (2006)	Rs. 1802 per year
	Growth in tax rate -	30% every 5 years from 2008
	Growth in assessments -	Population growth
Water charges	Penetration (Connections / properties)	Baseline – 22%. Connections growth assumed to reach 60% by 2013 and 80% by 2027.
	Deposit and user charges	Connection deposit assumed at Rs. 3000 and Rs. 8000 for household and commercial connections respectively and user charges assumed at Rs. 75 per month and Rs. 200 per month for residential and commercial connections respectively. Tariffs are

		escalated at 5% annually
Sewerage charges	Penetration (Connections / properties)	Connections growth assumed to reach 50% by 2011 and 80% by 2027.
	Deposit and user charges	Connection deposit assumed at Rs. 3000 and Rs. 8000 for household and commercial connections respectively and user charges assumed at Rs. 75 per month and Rs. 250 per month for residential and commercial connections respectively. Tariffs are escalated at 5% annually
Devolution Income	State sales tax	States' sales tax projections assumed to grow at 5%. 10% of sales tax receipts assumed to devolve to ULBs and to the municipality based on 2001 population base.
Assigned revenue and other income	Growth over baseline income (2006)	6% growth during projection period

10.1.4 Expenditure

Exhibit 10.2 provides details of the assumptions for projecting expenditures for Thiruvottiur

Exhibit 10.3 Expenditure related assumptions

Segment	Revenue driver	Basis / Assumptions
Staff Costs	Growth over base salary	10% annually
Operating Expenditure	Existing asset base – Growth on base O&M expenditure of 2006	Assumed to grow at 5% annually
	For new capital investments – O&M has been assumed as a % of capital costs given in Exhibit 10.4 CIP	
	Water Supply	3.00%
	Sewerage and Sanitation	3.00%
	Solid Waste Management	8.00%
	Transportation & Street lighting	20.00%
	Urban services for poor	2.00%
	Others	2.00%
Administrative expenditure	Growth over average base expenditure during 2002-06	5%
Interest expenditure	Refer section 10.1.6 below.	

10.1.5 Assets

The addition to assets is as per the Capital Investment Plan given below

Exhibit 10.4 Capital Investment Plan

Segment	Outlay	Phasing						
		2008	2009	2010	2011	2012	2013-17	2018-27
Water Supply - Project	7400	0	2467	2467	2467	0	0	0
Water Supply - Net	1823	27	0	0	0	4	121	1671
Sewerage & Sanitation - Project	2853	0	951	951	951	0	0	0
Sewerage & Sanitation - Net	3536	351	351	351	351	351	598	1181
SWM	1327	95	0	16	293	0	664	260
Transportation and Street lighting	6601	14	14	979	979	979	1154	2480
Urban services for poor	14535	0	0	57	57	2451	11971	0
Others	1145	83	108	278	68	38	190	380
TOTAL	39221	571	3891	5099	5166	3824	14698	5972

10.1.6 Liabilities

The Financial and Operating Plan allows for 3 types of loan – short, medium and long term. The assumptions relating to loans are given below:

Exhibit 10.5 Loan related assumptions

Segment		Type of loan	
Water Supply		Medium term	
Sewerage and Sanitation		Long term	
SWM		Medium term	
Lighting		Short term	
Urban services to poor		Long term	
Others		Medium term	
Type of loan	Tenure years	Moratorium years	Interest rate %
Long	20	5	9
Medium	10	3	10.5
Short	8	2	10.5

10.2 Estimation of borrowing capacity and investment capacity

We have arrived at the borrowing capacity based on the Income and expenditure projections including debt servicing of existing loans as of FY ending 2005. We have arrived at the borrowing capacity of Thiruvottiyur as the minimum of

- NPV of 30% of revenue projections and
- NPV of 50% of operating Surplus projections.

10.3 Project specific cash flows

As part of the FoP, we have also prepared project specific cash flow projections for the proposed water supply and underground drainage projects, apart from consolidated financial projections. A summary of the assumptions and the computations for water supply and Underground drainage scheme is enclosed below:

10.3.1 Water Supply

Based on preliminary information available we evaluated the financial viability and potential returns (measured by DSCR and DS/TR) for the comprehensive water supply scheme in Thiruvottiyur. Data and underlying assumptions into the model are listed below:

- a) **Project Scope:** Comprehensive water supply covering all wards to provide residential and commercial house service connections. The project is expected to be completed during a three year period from 2009-11.
- b) **Investment** assumed at Rs. 74 crore. This is based on the estimates provided to Thiruvottiyur by CMWSSB which is in the process of preparing the DPR for the project. We do not have access to the DPR and project components of the project and this is a preliminary estimate arrived at based on our assessment and discussions with Thiruvottiyur. **Capital** structure is assumed at 33% debt, 34% Equity and 33% Grant (under JNNURM). Debt assumed to be for 20 years (with a 5 year moratorium) and 10% interest rate.
- c) **Residential user charge realization and connection deposits** assumed at Rs. 75 per month and Rs. 3000 initially escalated at 5 % and 2% annually respectively. **Commercial user charge realization and connection deposits** assumed at Rs. 200 per month and Rs. 8000 initially escalated at 5% and 2% annually respectively. In addition, 50% of the property tax allocated to water supply and drainage account (20% of total property tax assumed to be allocated to water supply and drainage account) is assumed to be available for debt servicing and O&M for the project.
- d) **Connections** are assumed to increase to 34161 by 2012 and to 75953 by 2027 for the whole of Thiruvottiyur.
- e) **O&M costs** are assumed at 3% of capital costs with a 5% annual escalation and **bulk water** would be supplied to the concessionaire at Rs. 4.5 per KL by CMWSSB. This is in addition to the base O&M costs that are incurred currently and have been assumed to increase at 5% annually during the projection period.

Results

The cash flows based on the above assumptions translate to an average DSCR of 1.33 and average DS/TR of 22%. TE/TR for the project works out to about 29.21 %. However, Thiruvottiyur would need to substantially improve its connection penetration (currently at 22%) and its collection

efficiency in order to service the debt on the project. The debt servicing under the above conditions is extremely sensitive to both these parameters.

10.3.2 Underground Drainage scheme

Based on preliminary information available we evaluated the financial viability and potential returns (measured by DSCR and DS/TR) for the comprehensive Underground Drainage scheme in Thiruvottiyur. Data and underlying assumptions into the model are listed below:

a) **Project Scope:** Comprehensive Underground Drainage scheme covering all wards to provide residential and commercial house service connections. The project is expected to be completed during a three year period from 2009-11.

b) **Investment** assumed at Rs. 28.53 crore. This is based on the estimates provided to Thiruvottiyur by CMWSSB which is in the process of preparing the DPR for the project. **Capital** structure is assumed at 33% debt, 34% Equity and 33% Grant (under JNNURM). Debt assumed to be for 20 years (with a 5 year moratorium) and 10% interest rate.

c) **Residential user charge realization and connection deposits** assumed at Rs. 75 per month and Rs. 3000 initially escalated at 5 % and 2% annually respectively. **Commercial user charge realization and connection deposits** assumed at Rs. 250 per month and Rs. 8000 initially escalated at 5% and 2% annually respectively. In addition, 50% of the property tax allocated to water supply and drainage account (20% of total property tax assumed to be allocated to water supply and drainage account) is assumed to be available for debt servicing and O&M for the project.

d) **Connections** are assumed to increase to 37,266 by 2012 and to 75,953 by 2027.

e) **O&M costs** are assumed at 3% of capital costs with a 5% annual escalation. This is in addition to the base O&M costs that are incurred currently and have been assumed to increase at 5% annually during the projection period.

Results

The cash flows based on the above assumptions translate to an average DSCR of 9.69 and average DS/TR of 8%. TE/TR for the project works out to about 79.76%.

10.4 Possible financing mix for achieving full investments

Based on these criteria, the borrowing capacity of Thiruvottiyur works out to Rs. **16,931** lakh. At an aggregate level, assuming loans to be equivalent to **50%** of investment, sustainable investment capacity works out to Rs. **33,862 lakh**, which translates to about 86 % of the total investment requirement (including slum rehabilitation).

If we exclude slum rehabilitation and urban services for poor projects which are largely grant funded, the borrowing capacity translates to **137%** of the total investment requirement. Hence Thiruvottiyur is well placed to meet its capital investment requirements. Exhibit 10.6 provides a possible financing mix.

Exhibit 10.6 Possible financing mix

Segment	Outlay	Suggested Financing %			Sustainable structure		
		Loan	Grant/Private	Own	Loan	Grant	Own/Private
Water Supply - Project	7400	33%	34%	33%	2,466	2,492	2,442
Water Supply - Balance	1823	50%	40%	10%	912	729	182
Sewerage & Sanitation - Project	2853	33%	34%	33%	951	961	941
Sewerage & Sanitation - Net	3536	50%	30%	20%	1,768	1,061	707
SWM	1327	50%	30%	20%	664	398	265
Transportation and Street lighting	6601	50%	20%	30%	3,300	1,320	1,980
Urban services for poor	14535	0%	80%	20%	-	11,628	2,907
Others	1145	0%	90%	10%	-	1,031	115
TOTAL	39221	26%	50%	24%	10,061	19,619	9,540

10.5 Financial and Operating Plan

Exhibit 10.7 below provides a summary of the financial projections for 10 years.

Exhibit 10.7 FOP projections

Income	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Own income	806	1,219	1,565	1,611	1,658	2,727	3,178	4,101	4,256	4,537	5,013	4,832
Property Tax	533	911	1,214	1,243	1,273	1,302	1,339	1,870	1,920	1,971	2,021	2,071
Profession Tax	67	90	120	123	126	129	132	177	181	186	191	196
Water Charges	33	37	41	45	49	583	663	874	917	1,019	1,308	1,121
Sewerage Charges	-	-	-	-	-	492	812	936	981	1,092	1,212	1,148
Service Charges & Fees	50	52	55	58	61	64	67	70	74	77	81	85
Other Income	123	129	136	143	150	157	165	173	182	191	201	211
Assigned Revenue	207	219	233	247	261	277	294	311	330	350	371	393
Devolution Fund	751	823	905	994	1,083	1,179	1,290	1,412	1,545	1,691	1,851	2,025
Grants & Contributions	-	-	-	-	-	-	-	-	-	-	-	-
Total Income	1,764	2,262	2,702	2,852	3,002	4,183	4,762	5,825	6,131	6,578	7,234	7,250
Expenditure												
Salaries	566	623	685	753	829	912	1,003	1,103	1,213	1,335	1,468	1,615
Operating Expenses	410	431	478	495	731	1,088	1,163	1,064	1,123	1,189	1,262	1,343
Administrative Expenses	35	37	38	40	42	44	47	49	51	54	57	59
Finance charges	712	44	53	173	335	511	643	753	861	952	1,027	1,080
Depreciation	-	268	286	408	569	732	852	945	1,037	1,130	1,222	1,315
Total Expenditure	1,723	1,401	1,540	1,870	2,506	3,287	3,707	3,913	4,286	4,660	5,036	5,413
Surplus	41	861	1,163	982	495	896	1,055	1,912	1,844	1,918	2,198	1,837

10.5.1 Summary

Exhibit 10.8 below provides a summary of the results of the Financial and Operating Plan.

Exhibit 10.8 FOP summary

Estd. Revenues – FY 2008 (Rs. Lakh)	2,702
Estd. Revenues – FY 2016 (Rs. Lakh)	7,234
Estd. Revenues - FY 2027 (Rs. Lakh)	15,703
Revenue CAGR % - FY 2008-17	11.6%
Revenue CAGR % - FY 2008-27	9.7%
Average TE (excluding depreciation)/TR (%)	48%
Average DS/TR (%)	17%
Average DSCR	2.59
Borrowing Capacity	16931
Investment Requirement	39,221
Investment Capacity (at 50% loan)	33,862
IC/IR (including Urban Service for Poor)	86%
IC/IR (without USP investment)	137%

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