Government of Tamil Nadu
Tamil Nadu Urban Development Fund

City Corporate and Business Plan

Rajapalayam Municipality

FINAL REPORT

March 2007

Wilbur Smith Associates Private Limited

Abbreviations and Acronyms

BOT	:	Build, Operate and Transfer
BPL	:	Below Poverty Line
BT	:	Black Top
CAA	:	Constitution Amendment Act
CAGR	:	Compounded Annual Growth Rate
CC	:	Cement Concrete
CCP	:	City Corporate Plan
CMA	:	Chennai Metropolitan Area
CMDA	:	Chennai Metropolitan Development Authority
CMWSSB	:	Chennai Metropolitan Water Supply and Sewerage Board
CPHEEO	:	Central Public Health Environmental Engineering Organization
CSC	:	Community Structure Component
CUA	:	Chennai Urban Agglomeration
DIC	:	District Industries Centre
DPR	:	Detailed Project Report
DWCUA	:	Development of Women and Children in Urban Areas
ELSR	:	Elevated Storage Reservoir
FOP	:	Financial and Operating Plan
FY	:	Financial Year
G.S.T. Road	:	Grand South Trunk Road
gm	:	Grams
GoI	:	Government of India
GoTN	:	Government of Tamil Nadu
gpcd	:	Grams per Capita per Day
GLSR	:	Ground Level Storage Reservoir
ISP	:	Integrated Sanitation Program
Ha	:	Hectares
HH	:	Households
HSC	:	House Service Connection
IPT	:	Intermediate Public Transport
kg	:	Kilograms
LCS	:	Low Cost Sanitation
Lit	:	Liters
LL	:	Lakh Liters
LPA	:	Local Planning Area
lpcd	:	Liters Per Capita Per Day
m	:	Meters
ML	:	Million Liters
MLD	:	Million Liters per Day
MSW	:	Municipal Solid Waste
MT	:	Metric Ton
MTC	:	Metropolitan Transport Corporation
NGO	:	Non-Governmental Organizations
NH	:	National Highway
Nos	:	Numbers
NSDP	:	National Slum Development Program

O&M	:	Operation and Maintenance
OHT	:	Overhead Tanks
PSP	:	Public Stand Post
PWD	:	Public Works Department
SDBC	:	Semi-Dense Bituminous Concrete
SFC	:	Second Finance Commission
SH	:	State Highway
SI	:	Sanitary Inspector
SJSRY	:	Swarna Jayanti Shehari Rozgaar Yojna
SO	:	Sanitary Officer
Sq. km	:	Square Kilometers
STP	:	Sewage Treatment Plant
SWM	:	Solid Waste Management
TCS	:	Thrift & Credit Societies
TNEB	:	Tamil Nadu Electricity Board
TNRDC	:	Tamil Nadu Road Development Corporation
TNSCB	:	Tamil Nadu Slum Clearance Board
TNUDP	:	Tamil Nadu Urban Development Project
TNUIFSL	:	Tamil Nadu Urban Infrastructure Financial Services Limited
tpd	:	Tons per Day
TWAD	:	Tamil Nadu Water Supply and Drainage Board
UGD	:	Underground Drainage
ULB	:	Urban Local Body
USEP	:	Urban Self Employment Program
UST	:	Urban Skill Training
UWEP	:	Urban Wage Employment Program
VAMBAY	:	Valmiki Ambedkar Awas Yojana
W	:	Watts
WBM	:	Water Bound Macadam

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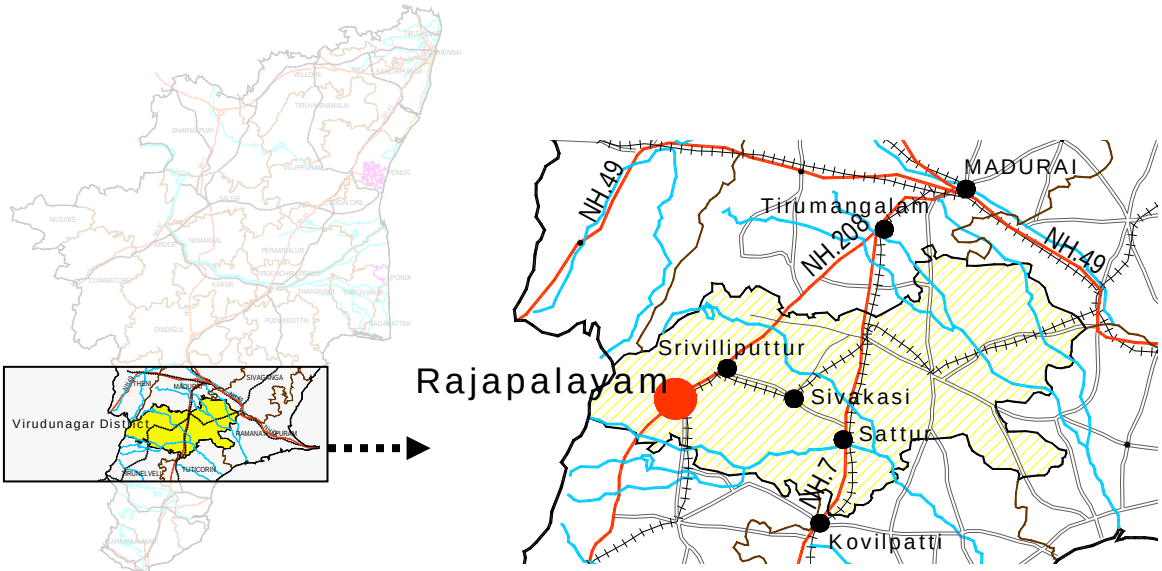
I. BACKGROUND

A. Profile of Rajapalayam

Western Ghats in the Backdrop

1. Rajapalayam is constituted as a Municipality in 1940 during the British rule and is upgraded as a second grade municipality in 1955. It is further upgraded to a first grade municipality in 1975 and later became a selection grade municipality in 1988. During the post independence period, the town has experienced considerable growth in manufacturing industries, especially in cotton and ginning industries, along with trading activities. Concentration of these activities, mixed with residential developments has resulted in the expansion of the city limits from 9.75 sq. km in 1971 to the present 11.36 sq. km. Rajapalayam is one of the important trade centers for several adjoining villages due to its strategic location on the NH 208 connecting Kollam in Kerala to Thirumangalam near Madurai.The linkage and connectivity shown in **Figure 1.1.**

Figure 1.1: Linkage and connectivity



1. Objectives of the study

2. The main objective for the City Corporate Plan is emphasis on issues of priority local concerns for livability, and the implied requirements in terms of

   (i) Enhancing City Productivity
   (ii) Reducing Poverty

(iii) Improving Urban Governance & Management
(iv) Enhancing Financial Sustainability

3. The objective of the assignment is to formulate a Plan comprising of appropriate policies and actions that are implementable to accomplish the objectives of the CCP.

2 Scope of Work

4. The scope of services for converting CCP to Business Plan broadly covers the following areas.

(i) Financial Assessment of Urban Local Bodies;
(ii) Assess Levels of service, coverage and quality of municipal services in both poor and non-poor localities;
(iii) Outline issues in revenue realizations, quality of existing assets in relation to service levels and coverage, and institutional constraints;
(iv) Prepare a Financial and Operating Plan (FOP);
(v) Indicate and assess areas for expenditure reduction, revenue mobilization and management;
(vi) Prepare a draft Memorandum of Understanding between Urban Local Body and TNUIFSL for effective implementation and monitoring of the Business Plan;
(vii) Initiate consultations with council and local stakeholders on the priorities;
(viii) Finalize Business Action Plan for the City, with a resolution from the council on the priorities and commitment to implement revenue and management improvement measures; and
(ix) Identify the obligations on the part of the ULB/TNUIFSL/TNUDF/Government for successful implementation of the Business Plan;

B. City Corporate cum Business Plan

5. The Corporate Plan is a strategic plan, which sets out in detail the policy and investment options. The plan sets out baseline for the performance of the municipality, its priorities and aims for future. The Business Plan is the tool to implement projects and reforms to be undertaken by the ULB. In addition, the Business Plan would formulate strength for additional resource mobilization to enhance the credit worthiness of the ULB.

1. City Corporate cum Business Planning Approach

6. The approach of the Corporate Plan cum Business Plan is iterative in nature and is presented in **Figure 1.2**

7. For the formulation of the City Corporate Plan cum Business Plan, the future vision of the city was developed through a participatory approach, initiated in July 2002. Public Consultations were conducted at the town level with the Municipal Councilors, officials, line agencies and identified stakeholders.

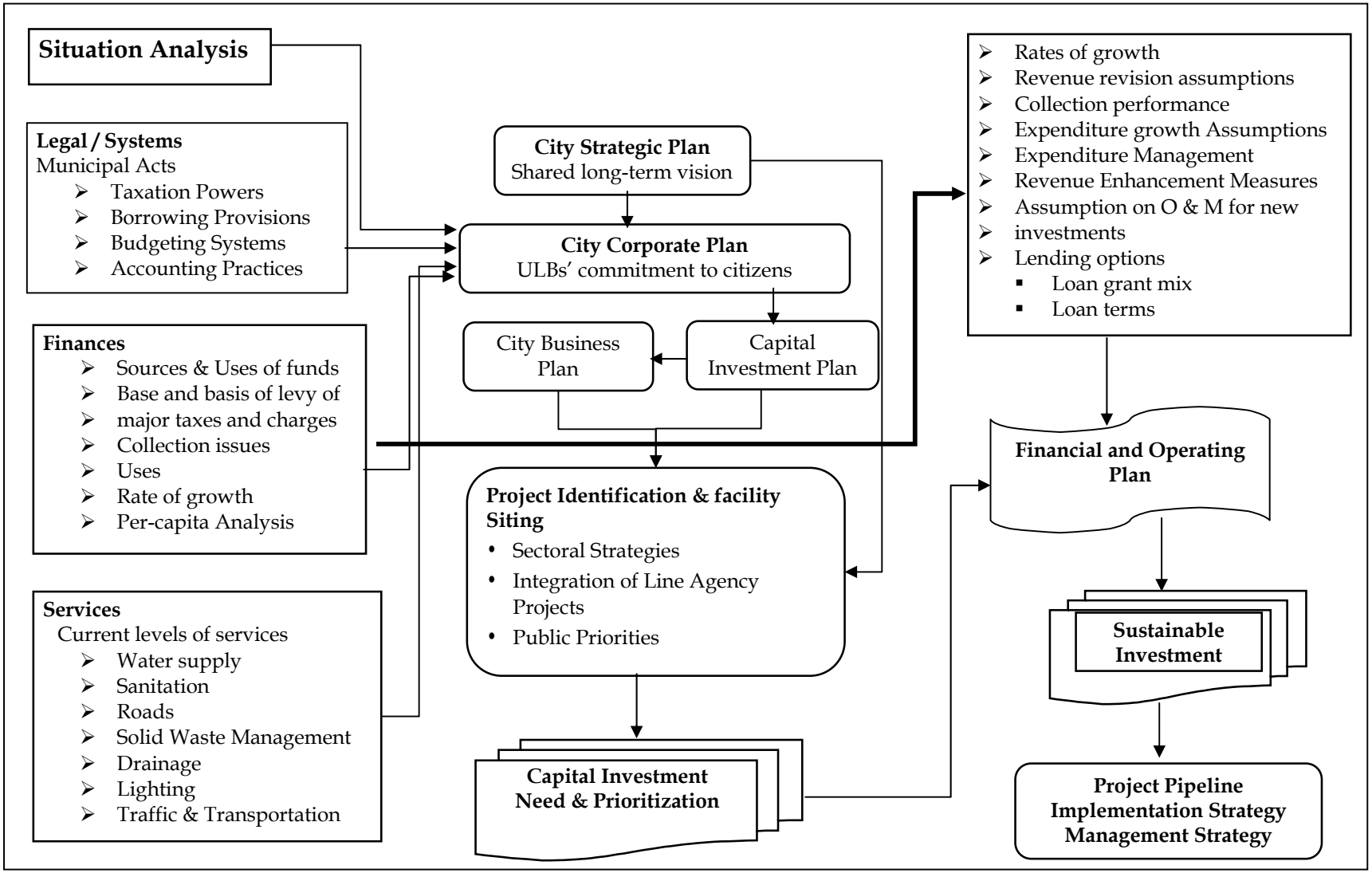
2. Source of Data

8. A varied list of organizations apart from Rajapalayam municipality were consulted for putting together the data presented in the report and used for analysis by the consultants through the City Corporate cum Business Plan preparation process.

9. The census data for the town was collected by the directorate of Census Operations Tamilnadu. Institutions and organizations like DTCP, DIC, TWAD board, IMA, Local NGOs, Private organizations etc have provided the necessary data for the respective services.

10. The municipality has provided the necessary data with respect to infrastructure at the ward level. This was instrumental in preparation of the Business Plan, which includes Capital Investment Program for the municipality and prioritizing the needs at the local level.

Figure 1.2: Approach to Business Plan



C. Vision for Rajapalayam Town

11. The vision for the city is to achieve improved service levels and better quality of life for the citizens of Rajapalayam. Specific goals and service outcomes have been framed to focus the town as a textile town (presented in Table 1.1 below).

Table 1.1: Goals and Service Outcomes

Sr. No	Goal	2011	2016	2026
A. Water Supply				
1	Network cover for general households	100%	100%	100%
2	Network cover for Slum households	100%	100%	100%
3	Per Capita Supply	90lpcd	130 lpcd	
4	Hours of supply			24 hours / daily
5	Quality of Water	Safe & Good	Safe & Good	Safe & Good
6	Un accounted water	20%	15%	12%
7	O&M Cost Recovery	100%	100%	100%
8	Collection Efficiency	100 %	100 %	100 %
B. Sewerage				
1	Coverage (Access)	100%	100%	100%
2	Treatment and Disposal	100%	100%	100%
3	Recycling and Reuse	25%	40%	50%
4	Customer Satisfaction	Good	Good	Good
C. Storm Water Drain and Water Bodies				
Macro Drainage				
1	Flood Alleviation Recommendation	100%		
Micro Drainage				
1	With in the Town (Preparation and Implementation Plans)	100%	100%	100%
D. Solid Waste Management				
1	Collection with in the Town	100%	100%	100%
2	Door to Door Collection - %	100%	100%	100%
3	Source Segregation - %	75%	100%	100%
4	Collection - %	90%	100%	100%
5	Scientific Disposal	80%	100%	100%
6	Waste to Energy Generation		50%	100%
7	Cost Recovery of O & M - %	50%	75%	100%
8	Private Sector Participation	Modest protocols in place	Complete in the Disposal	Complete in the Disposal

Sr. No	Goal	2011	2016	2026
E. Traffic and Transportation				
1	Road Network as % of Total Area	12%	15%	15%
2	Average Speed -km/'h with in the town	20	30	35
3	Sidewalks length to Total road length	Half of the requirement	75% of the requirement	95% of the requirement
4	Road accidents	Reduced by 25%	Reduced by 50%	Reduced by 70%
Roads Coverage				
1	Municipality	80%	100%	100%
Safety				
1	To reduce traffic accidents by traffic management measures With in the Town	100%	100%	100%
Parking				
1	Construction of parking complexes at proposed locations	100%	100%	100%
Decongestion				
1	Development of Outer Ring Road	100%		
F. Street Lighting				
1	Energy saving mechanisms	80%	100%	100%
2	Adequate lighting in Non-lit areas	80%	100%	100%
G. Poverty Alleviation				
1	Network Coverage for slum households	90%	95%	100%
2	UGD coverage for slum households	60%	100%	100%
3	Adequately lit slums	100%	100%	100%
4	Adequate road link for the slums	100%	100%	100%
5	Pucca houses for all slum households	80%	100%	100%
6	Education for all in slums	100%	100%	100%

D. Report Structure

12. This report is the Final Report and comprises of following structure:

(i) Project Brief and Scope of work. The current section detailing the project objective and the Scope of work of the project. Approach to the City Corporate Plan.

(ii) Chapter 2 gives the Profile of the ULB and in terms of its demographic characteristics, past trends and growth, population projections and future trends;

(iii) Chapter 3 deals with urban management, the institutions involved structure of

ULB -its political and executive wings. The chapter also outlines the reform agenda currently undertaken by the Municipal Corporation;

(iv) Chapter 4 elaborates planning and land use management and its growth directions of the town.

(v) Chapter 5 detailed on existing situation of infrastructure services, coverage, gaps, and issues confronting the same.

(vi) Chapter 6 presents the fiscal situation of the Rajapalayam Municipality

(vii) Chapter 7 deals with urban poverty including slums, demographic and socio-economic characteristics, availability of infrastructure services and gaps in the provision and delivery of services. Housing for urban poor is also discussed in this chapter;

(viii) Chapter 8 describes vision and sectoral strategies for the different infrastructure, facilities for the town along with the proposed interventions and costing for each of the sector.

(ix) Chapter 9 will deal with the elements that are essential in an asset management program for movable and immovable infrastructure. More specifically road networks, sidewalks, water supply networks, pumping, storage, treatment facilities and storm water drains.

(x) Chapter 10 deals with revenue generation through the non-traditional sources with minimum investment s and the enormous scope to control expenditure.

(xi) Chapter 11 describes Capital Investment Plan and Financial Operating Plan and sustainability of the proposed interventions including the suggested reforms to enhance the municipal revenues.

(xii) Chapter 12 outlines the various best practices world over regarding good urban governance. The strategies presented in this chapter, are an integrated whole and none of them can be seen are understood in an isolated section.

II. CITY DEMOGRAPHY

A. Geography and Climate

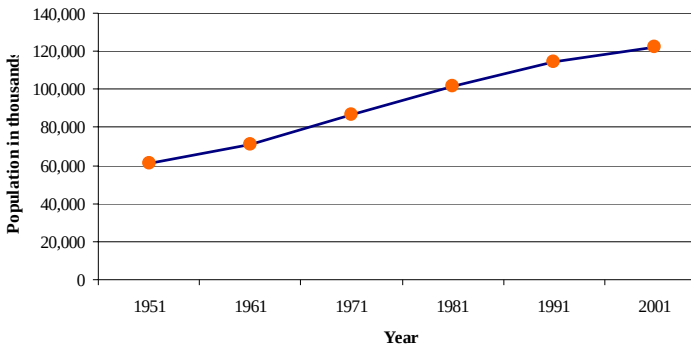
13. *Location & Transport Linkage:* Rajapalayam Municipality is located at a distance of 12 Km from Western Ghats (western side) and is at the foot of the Sanjeevi Hills (eastern side) Rajapalayam is located on NH 208 at a distance of 85 Km from Madurai on the North. Virudunagar, the district headquarters is at a distance of 50 km. A meter gauge railway line connects Rajapalayam to Kollam in Kerala and Madurai. State Highways also connect the town with other important towns in the region like Sankarankovil, Sivakasi, Sattur, Kovilpatti etc. Another state highway from the town leads to the Ayyanar falls on the River Mudangiyar near the Western Ghats.

14. *Physical & Geographical Character:* The town is situated at 9^0 2^1 N latitude and 77^0 33^1 E Longitude and forms part of the landscape of the Western Ghats. The city lies at the foot of the Sanjeevi Hill on the eastern side and has a gentle slope from North-East towards West. The Western Ghats are about 12 km on the western side and the average elevation of these hills is approximately 1200m above mean sea level (MSL). Ground water in the area is found in depths of 9 to 15m. The area is poor in ground water resources and hence the main crops are cotton, chillies, millets, groundnut etc. Bore wells in the area can draw considerable amount of water from a depth of 100' to 150'.

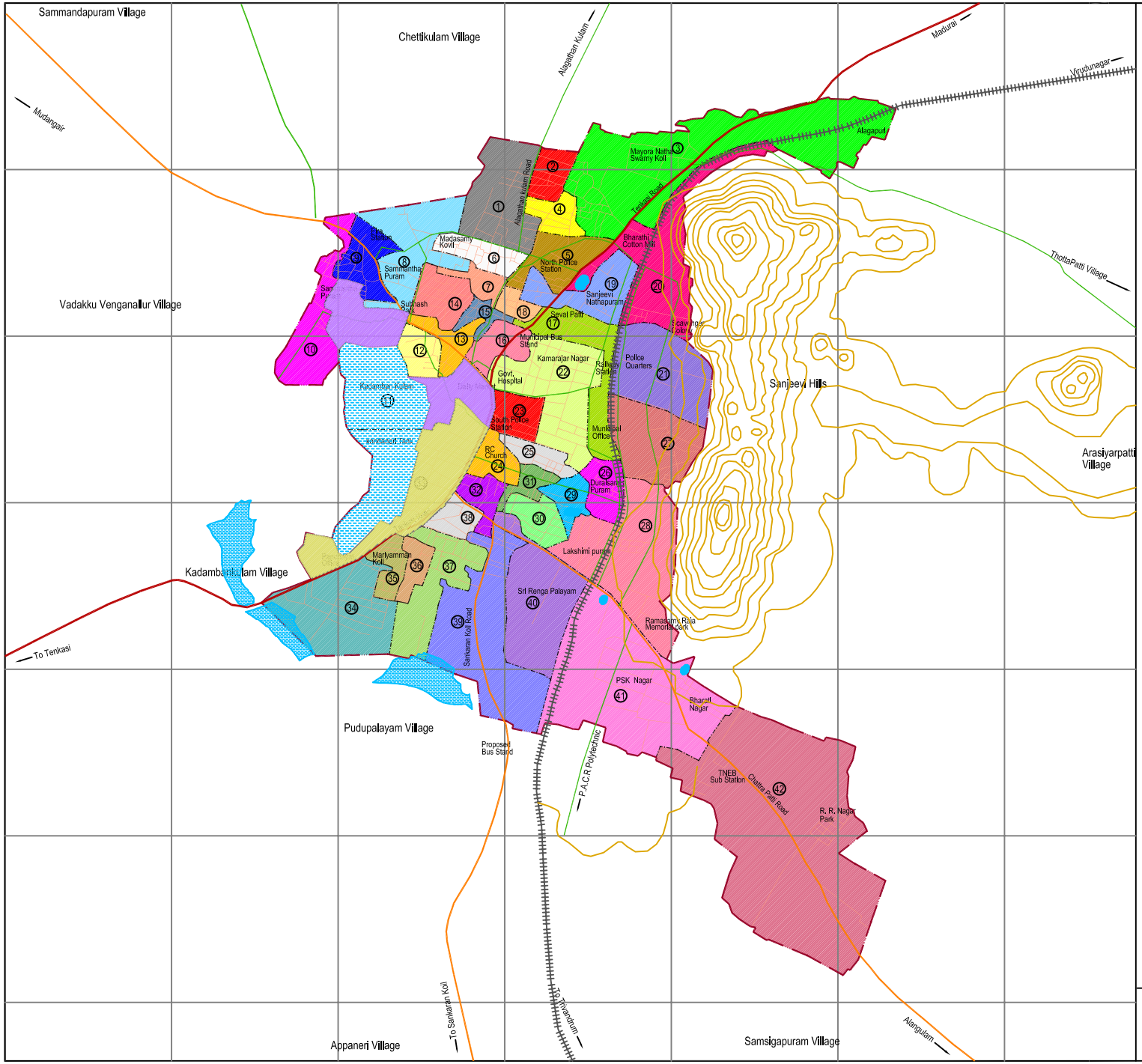
15. *Climate & Rainfall*: The climate of Rajapalayam town is hot and dry and the temperatures range between a maximum of 39^0C and a minimum of 26^0C. April to June is the hottest period and the lowest temperatures are recorded during the months of December and January. Temperatures start rising towards the end of February. The mean annual average rainfall for the town is approximately 830 mm. Majority of the rainfall is received during the North-east monsoon in the months of October to December.

B. Population Trends and Urbanization

Figure 2.1: Population Growth Rate



16. *Population Trends*: Rajapalayam is the largest town in the district of Virudunagar with a total population of 121,982 persons (Census-2001). The town has witnessed a decline in the growth rate during the past two decades. The growth rate for the decade 1981-91 was 12.36 percent and has come down to 6.81 percent for the following decade 1991-2001. The growth of population is presented in **Figure 2.1**



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

ADMINISTRATIVE BOUNDARY

N

Scale :

0 0.12 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. 2.1

17. The highest growth rate in population was during the decade 1941-51. The percentage growth of population during the previous decades was low when compared to the urban population of the state, but in par with the district's urban population.

18. When compared with towns of similar size, Rajapalayam is only next to Thiruvannamalai. The declining urban population growth rate is prevalent throughout the region and hence there cannot be any specific reason attributed to the same. The details of population and growth rate are listed in **Table 2.1.**

Table 2.1: Municipal Population and Growth Rate

Year	Population	Growth Rate
		(Decadal - %)-
1901	25,360	-
1911	28,412	12.03
1921	33,184	16.80
1931	38,693	16.60
1941	46,289	19.63
1951	60,861	31.48
1961	71,203	16.99
1971	86,952	22.12
1981	101,640	16.89
1991	114,202	12.36
2001	121,982	6.81

Source: Census of India

1. Density Pattern

19. The town comprises of 42 wards within its administrative boundary. The overall density of the town is 10,738 persons/ Sq. km during 2001. It has been noted that the density pattern of the city is guided mainly by the Transport Corridors, NH 208 and SH towards Mudangiyar, indicating the pattern of a high dense corridor development. The density pattern of the town follows the radiating roads in the town. The central areas are very dense while the peripheral areas are less dense. The areas in between are moderately dense (10,000 - 15,000 persons/ Sq. km). The town level densities are given in **Table 2.2.**

Table 2.2: Town Level Density

Year	Area	Population	Density
	Sq. Km		*Per/ Sq. Km*
1971	9.75	86,952	8,918
1981	11.36	101,640	8,947
1991	11.36	114,202	10,053
2001	11.36	121,982	10,738

Source: Analysis

The wards 2, 4, 6, 7, 9, 12, 13, 15, 16, 18, 23 to 26, 29, 30, 31, 32, 35, 36 and 38 have densities above 20,000 persons/ Sq. km and are adjacent to NH 208 and SH to Mudangiyar. In case of wards 2, 15, 16, 18, 26, 30 and 35, the high densities can be attributed to the location of slums. Except in Malaiyadipatti on the eastern side where

slums are located, all the other wards with slum localities have high densities ranging above 20,000 persons/ sq. km. The wards on the periphery of the town have low densities ranging between 2,000 persons/ sq. km to 10,000 persons/ sq. km. The density pattern (2001) is presented in **Table 2.3 and Map 2.2.**

Table 2.3: Ward Wise Density Pattern - 2001

Sl No.	Ward Number	Density
		Per/ Sq. Km
1	2, 4, 6, 7, 9, 12, 13, 15, 16, 18, 23 to 26, 29, 30, 31, 32, 35, 36 and 38	>20,000
2	1, 14, 19	15,001 – 20,000
3	5, 8, 10, 17, 20, 21, 27, 37	10,001 – 15,000
4	11, 22, 28, 34, 39	5,001 – 10,000
5	3, 33, 41, 42	<5,000

Source: Analysis

C. Economic Development

20. The transport corridors in the town have become the main centers of economic activity. The manufacturing activities, particularly textile mills are predominantly located along NH 208 within and outside the municipality on the northern side and on the Chattirapatti road on the south. These economic activities induce a lot of supporting activities within and outside the municipality resulting in the spread of ancillary units. In addition, this has also resulted in attracting a large number of migrating and floating populations. The connectivity with major cities in the region through rail and road has further induced rapid development of cotton manufacturing units in the influence of the project area resulting in a haphazard spatial development.

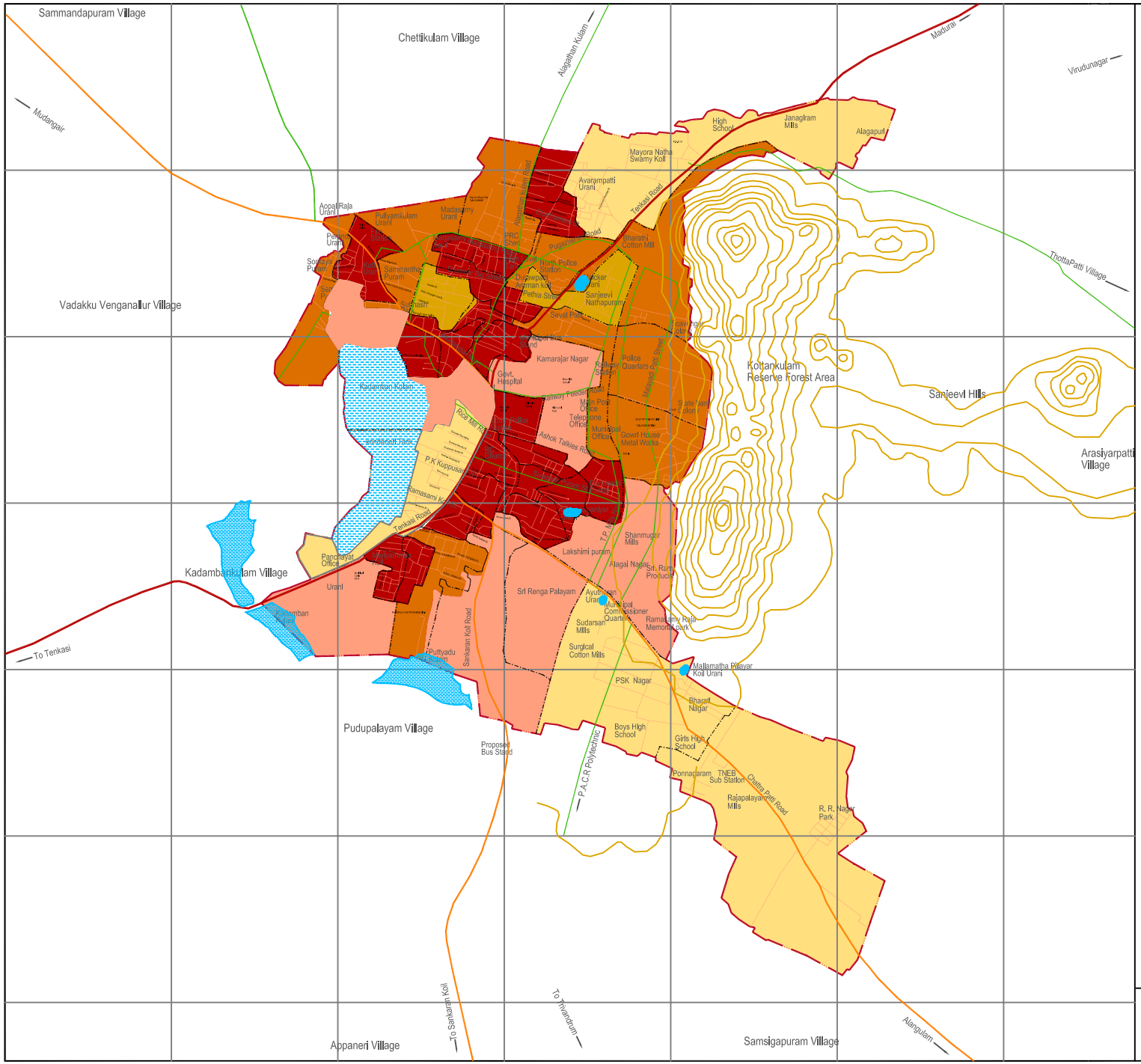
1. Sectoral Growth

21. As per census 2001, Rajapalayam has a total workforce of 47,680 persons constituting 35 percent of the total population. The tertiary sector accounts for 85 percent of the total workers. Primary sector and Secondary sector account for 8 and 6 percent of the total work force respectively. The workers in the town are primarily engaged in manufacturing and processing industries and trade and commerce. Over the years, there has been a marginal shift of workers from primary sector to tertiary sector though agriculture still plays a major role in the economy of the town. The occupational structure is presented in **Table 2.4**

Table 2.4: Occupational Details

Sector	1971	1981	1991	2001
	Persons			
Primary Sector	10,802	11,432	11,122	4,160
Secondary Sector	10,652	13,637	16,954	2,874
Tertiary Sector	9,388	13,179	14,844	40,646
Total Work force	**30,842**	**38,248**	**42,920**	**47,680**

Source: Census of India



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

- < 5000
- 5001 - 10000
- 10001 - 15000
- 15001 - 20000
- > 20000

WARD WISE DENSITY PATTERN

N

Scale :

0 0.12 0.25 0.50 1 Km 1.5 Km

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Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. **2.2**

2. Industrial Development

Cotton Mills

22. Rajapalayam is an important industrial town in the region with about 82 large and medium industries. There are ten textile mills in the town with approximate 75,000 spindles producing a variety of yarns and providing employment to about 5000 persons. In addition, there are several ancillary industries supporting the textile industries. Cotton mills, ginning factories, power looms, processing factories; surgical cotton mills and match industries are the major industries dotting the townscape. The textile industry attracts an average floating population of 15,000 persons per day. In addition, there are number of household industries located in the town and engaged mainly in the production of handloom textiles.

3. Primary Health

23. The public health department of Rajapalayam Municipality looks after the health care system. The town consists of a government hospital with 165 beds. The hospital is located centrally in the town on the NH 208 at the Tower Clock junction. The hospital consists of 15 doctors and 42 other personnel. The details of health facilities in local body are listed in **Table 2.5**

Table 2.5: Health Facilities in Local Body

Type	Numbers	Other Personnel	Doctors	Beds
Govt. Hospital	1	42	15	165
Maternity Centers	1	13	1	10
Health Centers F.A	3	25	3	-
Dispensaries	1	1	1	-

Source: Rajapalayam Municipality

24. Apart from this, a maternity home, three health centers and one dispensary are in existence in the town. There is one doctor each for the Maternity Home and the Dispensary. The three health centers have one doctor each. The maternity home consists of 10 and receives an average of 20 patients a day. The same for the health centers and the dispensaries are 30 and 15 respectively. In addition, there are private hospitals managed by private practitioners and other associated health related institutions within the city.

4. Education

25. The literacy rate has gone up from 50.5 percent in 1971 to 81.01 percent in 2001. This is on par with state's average indicating the increasing awareness levels among the people on the literacy aspects. There is one aided high school and one non-aided high school in the town. There are also seven higher secondary schools including PACM higher secondary

school at Kumarasamy Raja Nagar, which has about 1842 students, and the Dharmaraja Girls higher secondary school. The town also has 30 higher secondary schools and some private Nursery schools. The details of education facilities in local body are illustrated in **Table 2.6.**

Table 2.6: Social Infrastructure in Municipality

Ward No.	Boys	Girls
22	1	-
23	1	1
41	1	1
Others	2	-
Total	**5**	**2**

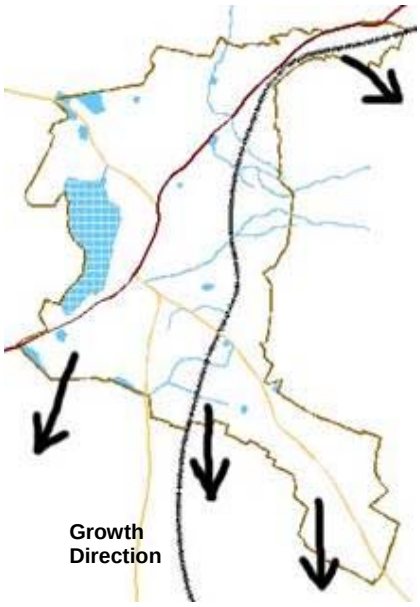
Source: Rajapalayam Municipality

26. Apart from these there are colleges, offering graduate level courses. There are two polytechnics, N.A. Manjammal Polytechnic for women and P.A.C. Ramasamy Raja Polytechnic. The town lacks arts/ science colleges and professional institutions.

E. Growth Trends and Projections

1. Growth Trends

Figure 2.3: Town Growth Trends



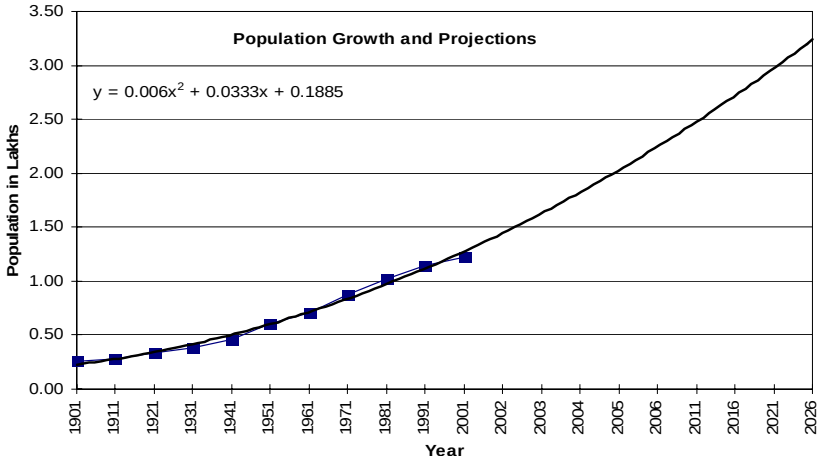
27. The urban area of Rajapalayam sets into two distinct parts, the old and the new areas. While the old town is primarily concentrated towards the west of Madurai -Tenkasi Road (NH 208), the newly developed areas are to the South-east of the National Highway. NH 208 runs across the town diagonally from the North-east to the South-west. The town growth trends are shown in **Figure 2.3**

28. The old town is characterized with narrow streets and lanes and is densely populated with dense built -up. The area is the commercial hub of the town comprising of the weekly market, schools, theatres and cotton mills.

29. The new town is characterized by a certain orderly development with medium density and is marked by a public and institutional land use. Important buildings include bus stand, railway station, government buildings and banking institutions.

2. Population Projection

Figure 2.4: Population Projection



30. The population projections are carried out using the **Polynomial Method** is considered appropriate as they best fit the trend. Increments for the decades 1901-11 to 1991-2001 are taken as the base and the projected population is estimated to be 1.45 lakhs in 2011 and 1.73 lakhs in 2026. The population projections at a five year interval are presented in **Table 2.7**, and the same are considered for further analysis.

Table 2.7: Population Projection

Year	Projected Population
2001	1,21,982
2005	1,34,788
2006	1,36,495
2011	1,45,210
2016	1,54,225
2021	1,63,540
2026	1,73,155

Source: Analysis.

III. URBAN GOVERNANCE

A. Institutions and Capacity

1. Institutional Arrangements and Policy Context

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

(i) Water Supply & Sewerage. The Tamil Nadu Water Supply and Drainage Board (TWAD) are responsible for creation of water and sewerage infrastructure in the state. However, Rajapalayam Municipality is responsible for the provision and delivery of services within the City.

(ii) Master Plan. The Town and Country Planning Department (TCPD) prepares the Master Plan and Comprehensive Development Plan (CDP) for the city/town, and the mandate of implementing the Master Plan /CDP lies with the ULB – growth is generally haphazard and unplanned, the CDP is rarely referred to. However, with a vision to achieve planned growth, revision of CDP is in progress.

(iii) Roads and Highways. Highways and Rural Works maintain the National and State Highways that pass through the town/city. Municipal roads are however created and maintained by the ULB.

(iv) 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.

(v) 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 (HUD Co) and partly through grants from GoTN and GoI.

32. In addition to involvement of various institutions in the development of local-level infrastructure, the Municipal Administration & Water Supply Department controls local-level governance through the Commissionerate of Municipal Administration (CMA).

33. *Policy Framework*. Rajapalayam Municipality is governed by the Tamil Nadu District Municipalities Act, 1920. The municipality is classified as a selection grade municipality Amendment to the Corporation Act (1971) and Amendment to the Municipalities Act (1920), provides impetus for environment improvement through Rain Water Harvesting.

2. Service Delivery and Performance of Urban Local Body

34. The Engineering Department is responsible for all Public Works, and maintenance of civic facilities. This Department is responsible for the following works:

(i) Public Works (Construction and maintenance of roads and storm water drains,
(ii) Maintenance of school buildings,
(iii) Construction and Maintenance of Public Conveniences,
(iv) Maintenance of other facilities viz., Bus stand, Markets, etc.
(v) Street Lighting (Maintenance of Street Lights)
(vi) Water Supply and Sewerage (Provision and operation and maintenance of water supply and sewerage system)
(vii) Parks and Gardens (Maintenance of parks and gardens)

B. Organization Structure of Urban Local Body

35. The structure of the Corporation consists of two Wings i.e., the Deliberative Wing and the Executive Wing.

1. Administrative Wing

36. The municipal council, the political arm of the municipality consists of 36 elected councilors, each representing a ward. The chairman (elected from among the councilors) heads the municipal council, which performs its duties as per the provisions of the District Municipalities Act. The political wing provides an overall direction to the municipality and performs its functions through a set of committees constituted for different purposes. The population as per the census being less than three lakhs[1], there is no wards committee in the local body. However, as per the act, three committees viz., taxation appeals committee, appointment committee, contract committee have been formed consisting of the chairman, the commissioner and elected representatives as members.

2. Executive Wing

37. The executive wing is responsible for day-to-day operations of the municipality, and is headed by the municipal commissioner. The commissioner is the administrative head of the municipality and is supported mainly by five departments in the operations. The organizational structure of the municipality comprises of five functional departments.

38. The Rajapalayam municipality of executive wing is responsible for day to day operations, and is headed by the municipal commissioner. The commissioner is the administrative head of the municipality and is supported mainly by five departments in the operations. The organizational structure of the municipality comprises of five functional departments.

[1] According to the Act, it is mandatory to have ward committees consisting of the elected councilors if the population of the town is more than 3 lakhs.

39. The municipality consists of a head that reports to the commissioner and functions as per the responsibilities prescribed in the Act and as delegated by the municipal commissioner. The function of clerical staff dealing under each department/ section of the Municipality is coded for the sake of work allocation and standardization.

40. 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:

(i) 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.

(ii) General Administration Department. The department is headed by the Commissioner and assisted by Assistant Commissioner (Personnel), Administrative officers, Public relation officer, Superintendent and other officers. 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.

(iii) Engineering and Water Supply Department. The Municipal Engineer heads the engineering department, and is assisted by Assistant Engineer, Junior Engineer and other staff. With regards to fieldwork, Scheme works are delegated to one Junior Engineer who also looks after regular works, related to Public Works, Drains, Street Lighting. The Assistant Engineer looks after the water supply and is assisted by electrician, operators and other staff. The Department is responsible for ensuring the quality and quantity of water supply to the municipality. A major function of the Municipality is formulation and execution of Works- like construction and maintenance of roads, buildings and other infrastructure systems.

(iv) Revenue and Accounts Department**.** The department is headed by the Revenue Inspector and assisted by junior assistant. The Accounts Section is responsible for supervising all financial transactions related to the CMC, advising the Revenue Officers 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. 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 (commonly called Khatha transfer); collection of duty; issuing notices for recovery of tax; and monitoring revenue collections of the ULB.

(v) Public Health Department. The department is headed by Sanitary Officer, and 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. The Sanitary Officer assisted by the Sanitary Inspectors and Sanitary Worker Supervisors, is responsible for services of Solid waste management and Malaria Control activities. Sanitary Worker Supervisors are in-charge of works execution at the field level, which includes monitoring and supervising the work of sanitary labourers in the wards under their charge and attending to specific local complaints. Besides, this department is responsible for the enforcement of the Public Health Act. The Public Health Department is vested with the responsibility of ensuring safe sanitation and cleanliness of the town. The department is also responsible for the maintenance of Municipal Dispensaries, Burial Grounds and slaughterhouses. One of the most crucial services of the municipality is maintenance of sanitation and cleanliness in the town. This involves mainly conservancy works involving sweeping of roads, garbage collection and disposal, cleaning of drains, and disinfecting of drains. Private contract was awarded for Solid Waste Management in certain areas of the town. Markets areas and main roads are cleaned every day

(vi) Town Planning Department. A town-planning officer heads this department, assisted by building inspectors, surveyors and junior assistants and other staff. 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. The Town-Planning Department's main function is to implement the master plan proposals, ensure orderly growth in the town and avoid unauthorized constructions and to formulate projects.

3. Institutional Strengthening and Capacity Building

41. The vacancy rate in Rajapalayam is 3.09 percent. **Table 3.1** summarizes the staff status in Rajapalayam.

Table 3.1: Municipality staff details.

Item	**Staff**
Sanctioned Positions	355
Vacant Positions	11
Filled Positions	228
Vacancy Rate %	3.09

IV. PLANNING AND LAND USE MANAGEMENT

A. Planning Efforts in the Past

1. Master Plan Outline

42. The first master plan prepared in 1975 covered an area of 11.36 Sq. km[2] and has addressed the issue of uncontrolled growth through a statutory land use plan. The plan also comprises of development control regulations for the land use, proposed. However, the master plan was not comprehensive as it failed to address several concurrent issues such as the infrastructure development, and circulation pattern along with the envisaged financial resources for such a development. In addition, the delay in the approval of the master plan, the plan was approved in 1983, further delayed and the actual implementation of the plan, making it ineffective.

43. The growing population and the subsequent demand for basic services have stressed the need for expanding the area of the town and a revised proposal for 2021 is under preparation by the Directorate of Town and Country Planning Sivagangai. While the commercial and residential areas have increased in the master plan proposals for 2011 and 2021, there are otherwise no major changes in land use of existing and proposed land use. This is mainly due to the prevailing importance of the town as an educational, heritage and trading centre for the surrounding areas.

2. Master Plan Implementation and Implications

44. The Town Planning Schemes/ Detailed Development Plans are proposed for certain pockets of residential areas in the town. Six Town Planning schemes covering an area of 2.73 Sq. Km are either sanctioned/ approved or in draft stage. The details of these plans are presented in **Table 4.1**. These Town Planning schemes are prepared for the areas identified by the Rajapalayam Local Planning Authority and are awaiting approval of the government. Apart from these, another seven schemes are in the draft stage.

Table 4.1: Details of Town Planning Schemes

Town Planning Scheme Area	**Area**
	Sq. Km
Railway station Area Town Planning scheme	0.5308
East of Railway Town Planning scheme	0.5451
Pudupalayam Town Planning scheme III	0.1485
Pudupalayam Town Planning scheme II	0.1994
Pudupalayam Town Planning scheme I	1.0830
PalyerPalayam Detailed development plan	0.2305

Source: Rajapalayam Municipality

[2] The area of the town increased from 9.75 Sq. km to the current 11.36 Sq.Km during 1971-81, which was captured in the preparation of the first master plan.

B. Land Use Management

1. Land Use Pattern – Current and Future

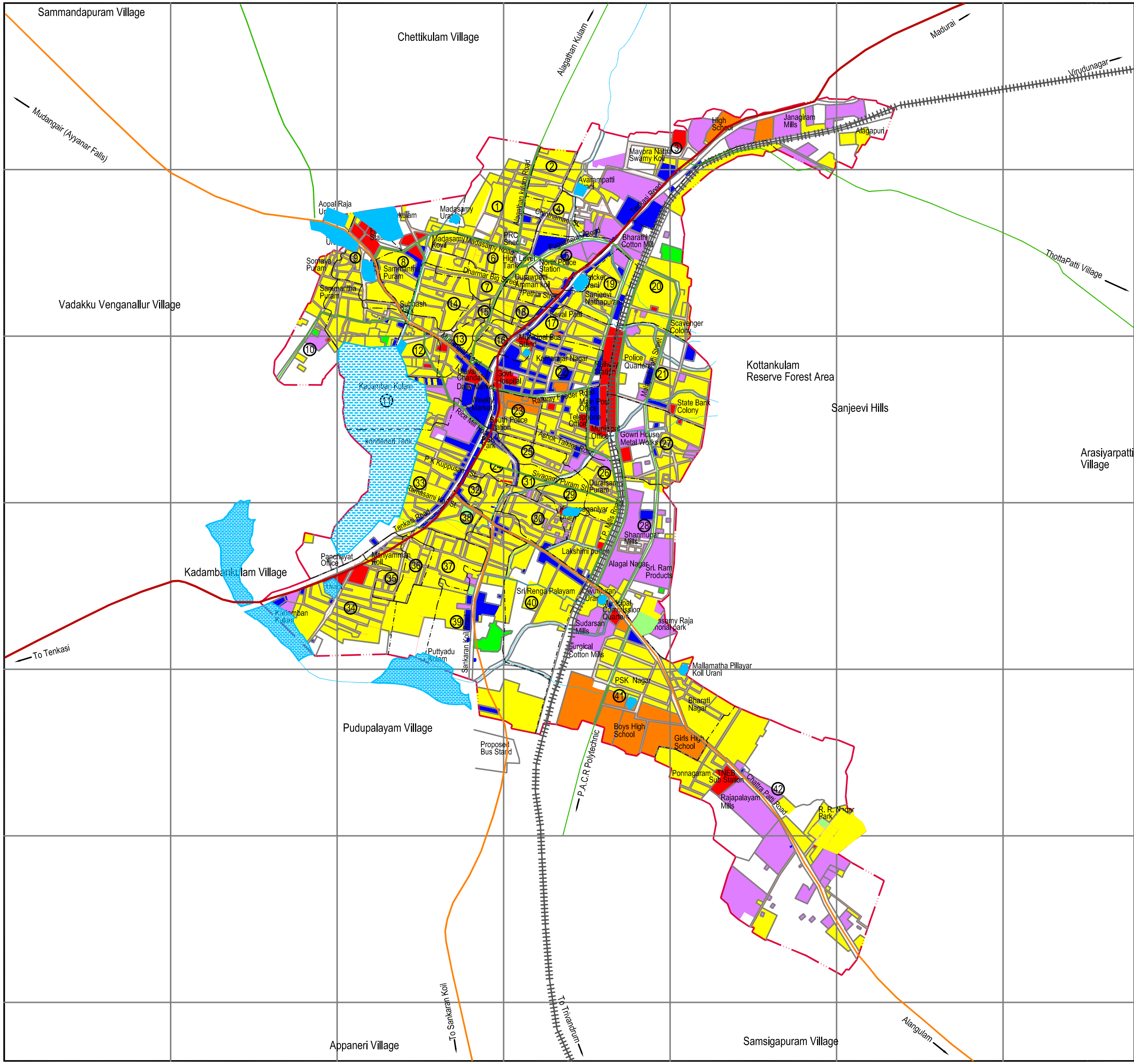
45.. Rajapalayam Local Planning Area (LPA) coincides with the municipal area and extends over an area of 11.36 sq.km. The land use is presented in **Table 4.2**. The land use structure has been worked out based on broad survey carried out by the consultants and the activity centers present. The structure would help in limiting congestion of certain areas through a conscious and judicious development of Core City and the peripheral wards, which have the maximum potential to grow in future. Considering the existing land uses and the activity zones, the potential future land use in terms of development has been worked out and is detailed out in the following sections. The existing and proposed land use is shown in **Map 4.1** and **Map 4.2.**

Table 4.2: Land Use 1991 and 2001 and Revised Master Plan Proposals

Land use Type	**Area**		**Total**	
	Sq. km		*%*	
	1991	**%**	**2001**	**%**
	Existing		**Proposed**	
Residential	4.28	37.68	4.96	43.66
Commercial	0.37	3.26	0.76	6.69
Industrial	0.81	7.13	1.25	11.00
Educational	0.26	2.29	0.26	2.29
Governmental	0.1	0.88	0.1	0.88
Recreational	0.05	0.44	0.05	0.44
Public & Semi- public	0.17	1.50	0.33	2.90
Tourist Facilities	0.05	0.44	0.05	0.44
Circulation	1.42	12.50	1.5	13.20
Agricultural	1.39	12.24	0	-
Other Vacant Land	0.35	3.08	0	-
Water Bodies	0.76	6.69	0.76	6.69
Urbanisable Area	1.35	11.88	1.34	11.80
Total Area of the Town	**11.36**	**100.00**	**11.36**	**100.00**

Source: Rajapalayam Municipality

46. *Residential*: - On the whole the residential land use growth is quite satisfactory, occupying about 44 percent of the total land use as is proposed in the master plan. However, certain wards have experienced tremendous growth resulting in saturation of densities and in such cases; the proposal is to redistribute the densities in the different wards. Though it is impractical to limit residential developments, the policies shall be formulated in such a way that a regulated FSI and non-conversion of residential to mixed or commercial land use would relieve the pressure on residential land uses in future



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

Land Use :

- Agriculture
- Residential
- Commercial
- Industrial
- Education
- Recreation
- Public

EXISTING LAND USE

Scale : 0 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH", 30, Khader Nawaz Khan Road, Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. 4.1

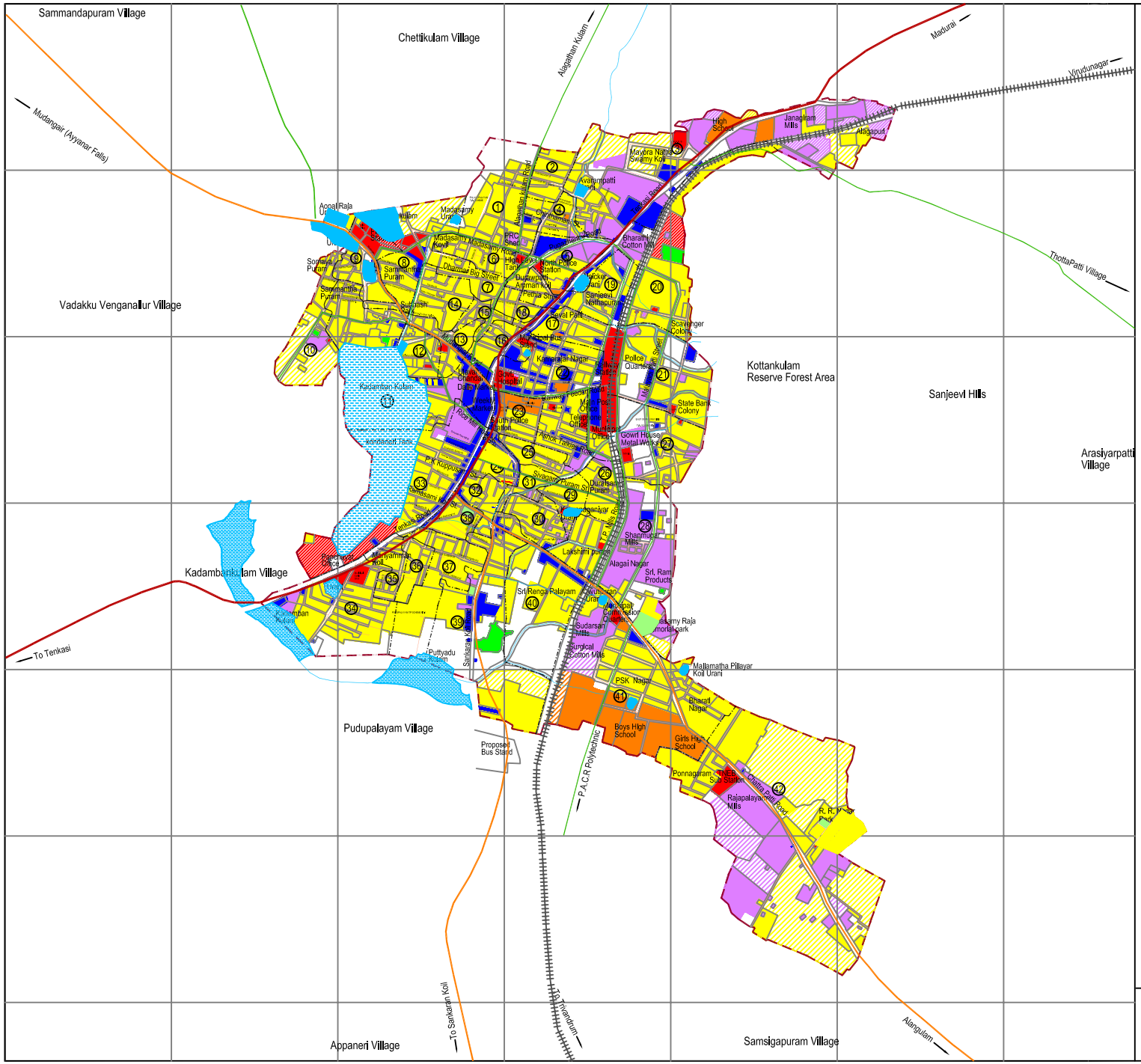
47. *Commercial:* - The commercial land use constitutes 6.70 per cent of the area and has doubled over the decade from 0.37 sq. km to 0.76 sq. km. Major commercial activities are concentrated on both sides of the Tenkasi-Madurai NH 208 Road. Ambalapuli Begum Market, Sivakamipuram market and AKD Raja weekly market are the three major markets in the town located at the centre of the town. The major commercial activities include wholesale and retail business of textiles, handlooms, leather goods, furniture shops, automobile spares, repair shops etc.

48. *Industrial:* - At present, the area under industrial use is around 1.25 sq. km, which is about 11 percent of the total area of the town. The industrial land use is very high compared to the towns of similar size explaining the industrial character of the town. The industrial land use predominantly comprises of cotton mills, power looms, ginning mills, processing factories and match industries. Industrial activities are largely concentrated to the eastern side of the town along the railway line and the state highway leading to Alangulam.

49. *Public and Semi-public:* - The land use under public activities is only two percent indicating a low coverage of this component. Majority of public and semi-public activities are concentrated between the NH 208 and the railway line. The major public places include government hospital. Municipal office, Telephone exchange, Fire station, PWD and Highway Guesthouse etc.

50. *Undeveloped areas:* - Majority of the vacant agricultural lands in the town was developed during the past decade, 1991-2001 as residential and industrial developments. An area of 1.39 sq. km. of agricultural land and 0.35 Sq. Km of vacant land are proposed for conversion into other uses by 2001 as per the proposed land use.

51. Water bodies in the town account for 7 percent of the total area of the town. The important water bodies being the Kadambankulam, Kondaneri Tank and Puliyamkulam Urani with Kadambankulam located in ward 11 and the Kondaneri Tank in ward 33, which are adjacent.



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

Land Use :

	Existing	Proposed
Agriculture		
Residential		
Commercial		
Industrial		
Education		
Recreation		
Public		

PROPOSED LAND USE

N

Scale :

0 0.25 0.50 1 Km 1.5 Km

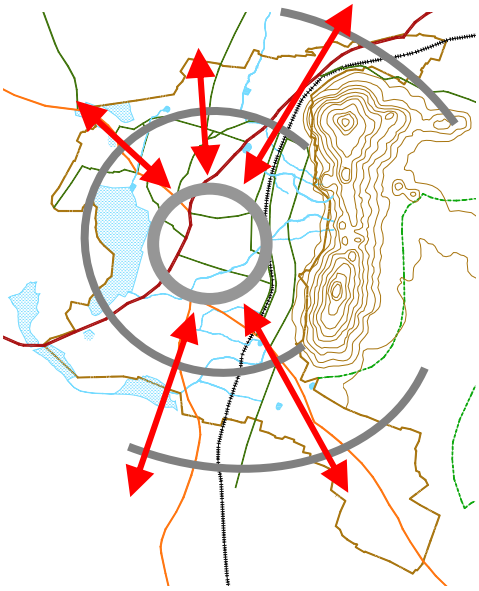
Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. **4.2**

2. Spatial Growth Trends / Urban Sprawl

Figure 4.2: Radial Growth Pattern



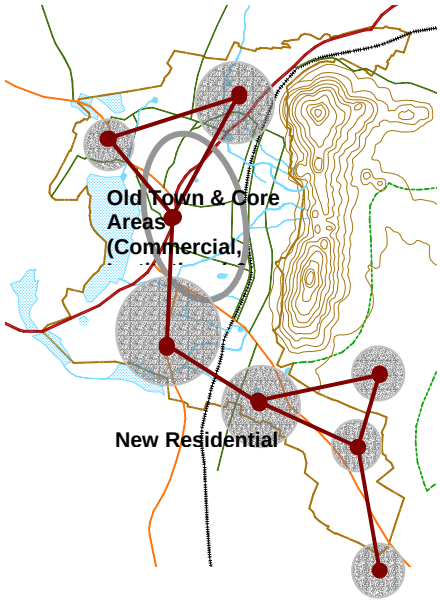
52. The urban area of Rajapalayam sets into two distinct parts, the old and the new areas. While the old town is primarily concentrated towards the west of Madurai-Tenkasi Road (NH 208), the newly developed areas are to the south-east of the National Highway. NH 208 runs across the town diagonally from the north-east to the south-west. The radial growth pattern is presented in **Figure 4.2**

53. The old town is characterized with narrow streets and lanes and is densely populated with dense built -up. The area is the commercial hub of the town comprising of the weekly market, schools, theatres and cotton mills.

54. The new town is characterized by a certain orderly development with medium density and is marked by an public and institutional land use. Important buildings include bus stand, railway station, government buildings and banking institutions.

3. Spatial Distribution of Population

Figure 4.3 Population Distribution



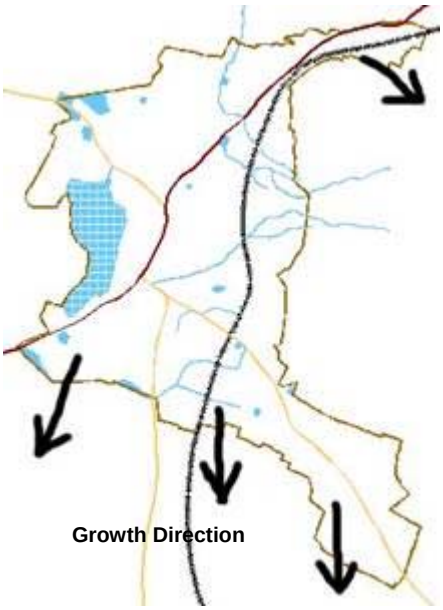
55. While the core town (near the Govt. Hospital) comprises of commercial and institutional activities, the residential areas are originating radially from this point. Large number of population resides to the east of the railway line running between Virudunagar and Kollam. While the areas to the east of the NH 208 are old residential settlements, those to the west of the highway are new developments. The pictorial explanation of population distribution is presented in **Figure 4.3.**

56. Of late, new residential localities have developed to the east of the railway line viz, State Bank colony, scavenger colony, police quarters etc.

57. During the late 80's, certain small pockets of residential areas have developed towards the south-east of the town which are primarily industrial areas. These areas are inhabited by the industrial workers and can be classified as low-income areas. By the mid 90's these areas have developed into organized residential layouts and the current development is mainly towards these areas.

4. Development Patterns – Growth Areas and Direction

Figure 4.4: Growth Directions



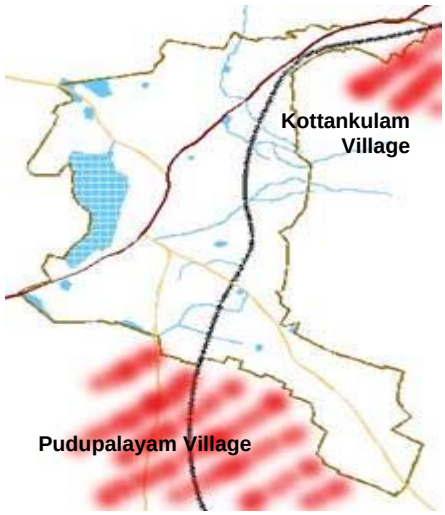
58. The transport corridors and their proximity to existing services are guiding the spatial growth of the town. While the present area of the town is more or less developed, the future growth patterns are clearly towards the southern areas on the periphery of the municipality. The town growth direction is presented in **Figure 4.4**

59. New areas such as PSK Nagar, R.R Nagar, Ponnagaram etc, located on the south of the town towards Pudupalayam village, are some of newly developed areas. The national highway and the state highways leading to Sanakarankovil and Alangulam bound these areas.

60. The eastern boundary of the town is bordered by the hills restricting the growth in this direction. However, for a balanced development of the town, it is advisable to promote developments in the peripheral areas towards Alagapuri considering the location of industrial activities.

5. Proposal for Extension of Town Limits

Figure 4.5: Town Proposed Extension Areas



61. Rajapalayam town consists of the villages of Rajapalayam, Inam Chettikulam, Sammandapuram, North Venganallur, Pudupalayam, Inam Thoppupatti, Samsihapuram, Kottankulam part and Kadambankulam. The average density of the town is approximately 10,738 persons per Sq. Km and the residential density is about 24,578 persons per sq. km. The town proposed extension areas is presented in **Figure 4.5.**

62. Considering the commercial and industrial activities in the town and the density pattern in the town, the municipality is contemplating a proposal for the inclusion of Pudupalayam and Kottankulam villages into the municipal area.

63. *Pudupalyam* village towards the south-east shares a common boundary with the town. An area of 0.288 sq. km is proposed for inclusion in the municipal limits. There are three major industries located here with a workforce of about 400 persons.

64. *Kottankulam* village towards the north-east of the town shares a common boundary with the town. An area of 0.64 sq. km is proposed for inclusion to the municipal limits.

65. Considering the above factors and the need to have an orderly and controlled urban development, it is pertinent to include additional area into the municipal limits.

C. Key Developmental Issues

(i) The Sanjeevi Hill forms a natural constraint on the eastern side for any development. The growth patterns indicate the formation of a linear pattern around the Sanjeevi Hill. Adding parts of Kottankulam village on the north-east to the town might result in constraints for infrastructure development. Considering these, the development can be guided towards the western areas of the town.

(ii) The proposed land use plan designates very limited formal open spaces for the town. Further, it allows for extensive development towards the Hills. The contemplated developments have not prioritised the conservation of Urani’s and Kanmoi's on which the initial settlements were developed. An integrated effort for conservation of these water bodies is through an effective networking of open spaces and water bodies.

(iii) Inordinate delay in finalising the detailed development plans for certain areas of the town has resulted in haphazard development in the peripheral areas. Delay in

the preparation, finalisation and approval along with ineffective implementation program is primarily responsible for haphazard and unwarranted developments.

(iv) Public participation has never been considered as part of the planning process till recently. All the master plans and other development plans have never reflected the needs and wishes of the dwellers of the town. There were no sincere efforts on part of the municipality or the Local Planning Authority to involve the public in the plan preparation process.

V. INFRASTRUCTURE SERVICES

A. Physical Infrastructure

1. Water Supply

66. *Existing Situation:* Rajapalayam municipality meets its water supply requirements through surface and sub-surface sources. The sub-surface sources are the bore wells at the head works, which are used during summer months. A treatment plant of design capacity 6.18 MLD is located near the Ayyanar Kovil on the banks of Mudangiyar River. The present system is supplying 8 MLD of water through three tanker lorries to the residents of the town with an average gross per capita supply of 59.35 lpcd. Out of the total number of 41,706 households, 38 percent of the households are receiving potable water through house service connections.

67. *Source.* The town is served by both ground and surface sources of water. Due to the inadequate availability of water from the main source, the Mudangiyar River, tapping of ground water through bore wells, hand pumps and open wells is practiced to augment the current supplies.

68. The only source of water for the region is Mudangiyar River, at a distance of 12.4 km from the town. Water is directly transferred to the summer storage tank through a diversion weir and is further treated at the treatment plant at a distance of 3 km. The present water supply system was commissioned in the year 1974 for a design population of 125,000. Since the population of the town is 121,982 as per 2001 census, it can be inferred that the project has reached its saturation[3] stage.

69. *Yield and Reliability:* - Of the wells in use, the water from the wells to the west of NH 208 is brackish and can be used only for non-potable uses. However the water from the wells to the east of NH 208 near to the Sanjeevinatha Malai is reported to be potable.

70. The average yield during normal season is 59.53 lpcd. Considering an optimum operation and utilization of these local sources depending upon the availability of ground water and controlled drawl, the present yield from the bore wells and open wells is 1.64 MLD. This effectively serves a population of about 15,000 to 20,000 during any season. However, not withstanding these groundwater sources and with the long term goal of conservation of groundwater sources, the assessment of the demand and capital facility requirements does not take into consideration such other local sources which can only supplement the system

71. *Treatment facility:* - Water treatment is carried out at Mudangiyar Head Works. There is one treatment plant with four slow sand filters and a clear water storage reservoir established in 1974 to cater to 1.25 lakh population for the year 1991.

[3] Municipality has under gone agreement with TWAD and Govt. of Tamilnadu to execute the scheme II, at an estimated cost of Rs. 22 crores and will be complete by the June 2006.

72. Water from Mudangiyar river is transmitted to the summer storage tank and is further transmitted to the treatment plant. The summer storage tank has a capacity of 48 million cubic feet. Water from SS tank is filtered through the four slow sand filter beds and is stored in the clear water reservoir of capacity 0.136 ML, which is further, transmitted into the distribution system.

73. The designed treatment plant is for a capacity of 6.18 MLD in 1974. Since then, no further augmentation was done. However, in 1996 an improvement scheme was proposed for the augmentation of the entire water supply system with estimated cost of Rs.22.51 crore. The proposal was prepared to serve a population of 1.87 lakhs for the year 2026. It also proposed that with additional two numbers of slow sand filters, four overhead tanks, 111.73 km of distribution length and the treatment facility be augmented by 46 million cubic feet.

74. *Storage Capacity:* - Water from the clear water reservoir at the treatment plant is transmitted through gravity mains consisting of 12.39 km length comprising of both reinforced cement concrete and cast iron pipes. The transmitted water is stored in the elevated service reservoirs (ESRs) located in the town. Currently the water is distributed through three ESR's in the town. The total storage capacity is of the order of 2.96 ML, about 37 per cent of the total water supplied. Two reservoirs, each with a capacity of 1.138 ML are located at Manthan Kovil street catering to the population of zones I and II. The third reservoir of capacity 0.681 ML is located at Kamaralvasam serves the population residing in zone III. The details of storage capacities are illustrated in **Table 5.1**

Table 5.1: Details of Water Storage Capacity in Municipality

Location	**Capacity 2002-03**	**Capacity 2004-05**
	ML	*ML*
Manthan Kovil (Zone I)	1.138	1.138
Manthan Kovil (Zone II)	1.138	1.138
Kamaralvasam (Zone III)	0.681	0.681
Total	**2.957**	**2.957**

Source: Rajapalayam Municipality

75. *Feeder main Distribution Network.* Water from the Summer Storage tank is transmitted to the treatment plant through transmission mains (24” diameter Cast Iron pipes) of length 12.39 km. The filtered water from the Clear Water Reservoir is transmitted to the elevated service Reservoirs in Rajapalayam town through Trunk (Gravity) Mains (9.41 km length 18” diameter Reinforced Cement Concrete pipes and 16” diameter Cast Iron pipes).

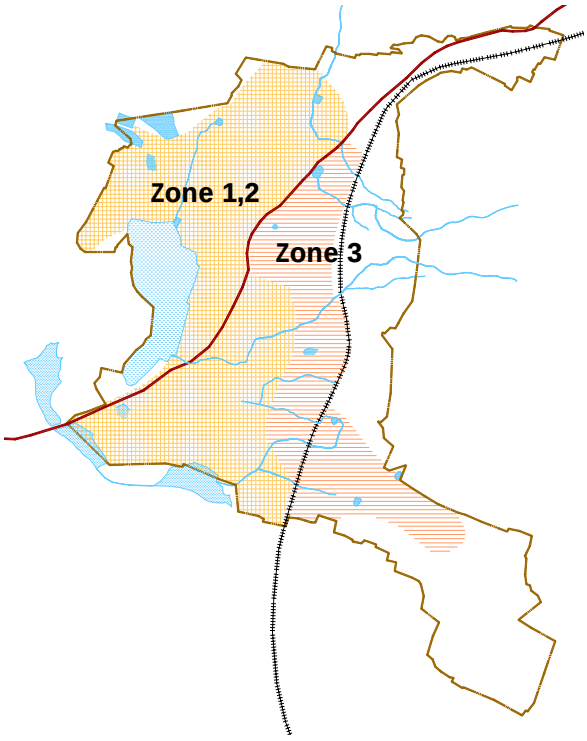
76. Feeder mains branch out into the town from the service reservoirs at Manthan Kovil street and Kamaralvasam street and extend to a length of 21.03 km. These feeder mains are of 160 mm, 200-mm PVC pipes and 250 mm AC pipes. The distribution network branches out from the feeder mains and covers a total length of 87.54 km. The details of Feeder mains are given in **Table 5.2.**

Table 5.2: Details of Feeder Main Pipe

Feeder Mains	**Pipe length**
Diameter	*Km*
10"	2.749
8"	8.754
6"	9.525

Source: Rajapalayam Municipality

Figure 5.1: Pipe Water Supply Coverage Areas



77. *Distribution Network:* - There are three water supply zones in the town mainly covering the areas to the west of the Railway line. Zones I and II covers the wards to the east of the National Highway and Zone III covers the wards to the west of the NH 208 and east of the railway line. While zone I and II cater to a population of 80,541 persons, Zone III caters to the needs of 41,491 persons. The distribution network map shown in **Map 5.1**

78. Wards 20, 21, 27 and 28, which are to the east of the railway line towards the hills and ward 42 are yet to be provided with piped water supply. Water is supplied to these wards either through public stand posts or through water tankers. The distribution network covers about 61 percent of the road length in the town. The low percentage against the accepted norm of 85 percent is due to the uncovered areas on the eastern side of the town. The details of distribution network are presented in **Table 5.3** and the water supply coverage areas are presented in **Figure 5.1**

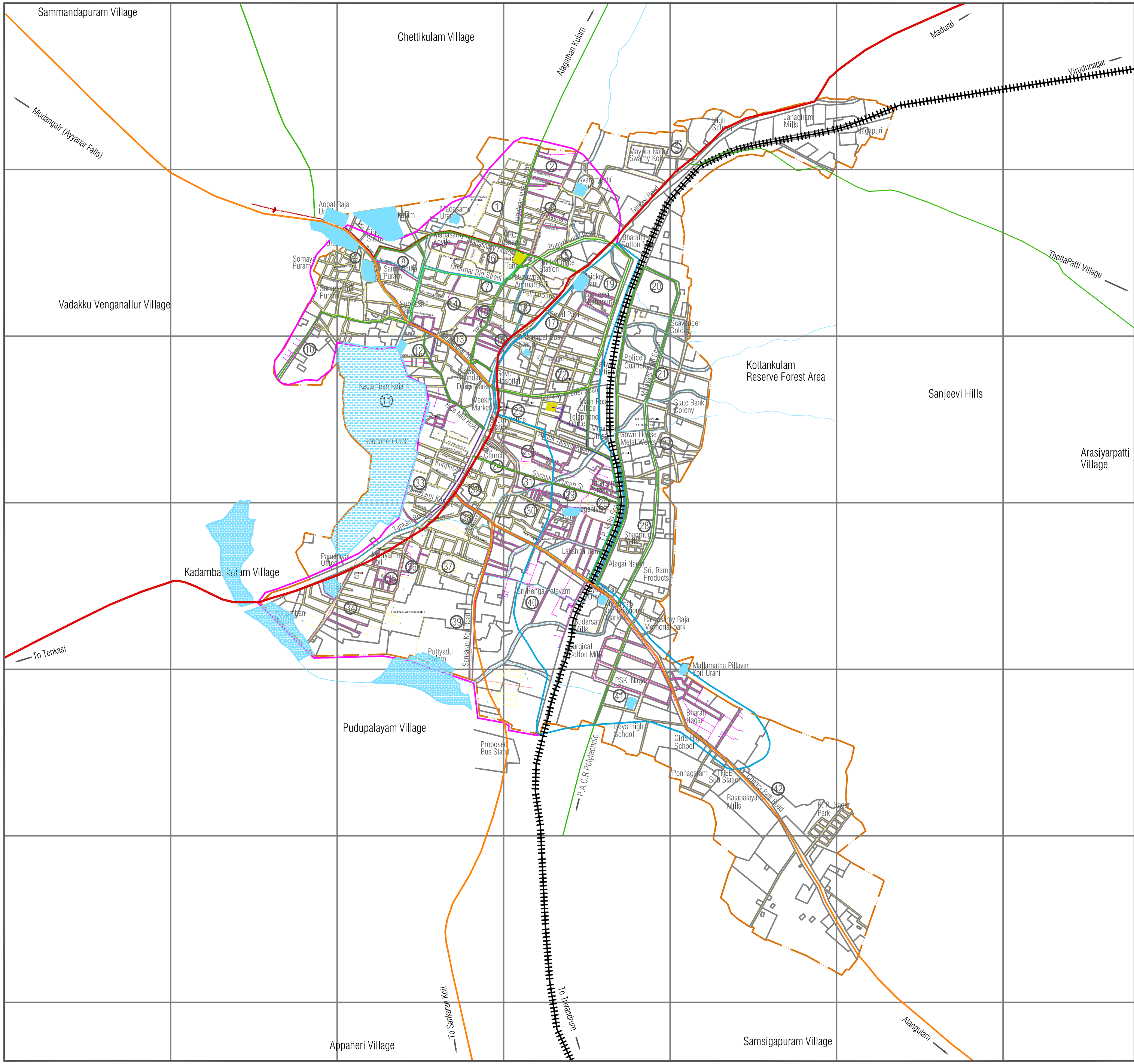
Table 5.3: Details of Distribution Network

Component			**Numbers**
No. of Water supply Zones			3
		2002-2003	**2004-2005**
		km	*km*
Distribution Network Length [4]		63.97	87.50
Zone	**Wards Served**	**Population Served**	**Capacity/Demand Ratio**
Manthan Kovil (Zone I)	Part 6,7,8,9, Part 19	40,500	0.15
Manthan Kovil (Zone II)	1-5, Part 5, 10-18	40,041	0.52
Kamaralvasam (Zone III)	20-21, 26-36	41,491	0.57

Source: Rajapalayam Municipality

[4] The municipality has extended the distribution network around 24 Km during 2002-03 to 2004-05

RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN



Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

Hand Pump - 592 Nos
Public Fountains - 251 Nos
OHT (High Level Tank) Location

Power Pump
Public Well

Distribution Network

- 3" Sub - Main
- 4" Sub - Main
- 6" Sub - Main
- 8" Feeder - Main
- 10" Feeder - Main
- 12" Feeder - Main
- 14" Feeder - Main
- 24" Clear Water Main
- End - Cub

Notes :

- Boundary : Zone I, II (11.00 Lakh Litre each OHT)
- Boundary : Zone III (6.00 Lakh Litre OHT)

WATER SUPPLY

N

Scale : 0 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH", 30, Khader Nawaz Khan Road, Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. 5.1

79. *House Service Connections:* - All the water supply service connections are of ½" and ¾" diameter pipes. There are 15,867 connections, out of which 15,391 are residential connections. All the commercial and industrial connections are metered. The numbers of commercial and industrial connections are 326 and 150 respectively. The house service connections are charged at a flat rate of Rs. 50 per month for residential connection. Rs. 100 per month for commercial and industrial connections respectively. One time connection fee of Rs. 5,000 is collected for residential and Rs. 10,000 is collected for commercial and industrial respectively. The details of service connections are illustrated in **Table 5.4**

Table 5.4: Details of Service Connections

Head	**2002-03**	**2004-2005**	**Total**
			%
Domestic	13,544	15,391	97.00
Non – domestic	292	326	2.05
Industrial	150	150	0.95
Total	**13,986**	**15,867**	**100.00**

Source: Rajapalayam Municipality

80. Distribution network in the slums is 139 percent of the total road length. 9.64 km of the network is in the slums of the town. However, slums in Malaiyadipatti area (wards 20, 21, 27) together with other areas are yet to be provided with piped supply. 44 numbers of public stand posts and 63 hand pumps augment the supply.

81. *System Coverage and Adequacy.* The gross per capita supply in the town is 59.35 lpcd. During summer, water is supplied once in two days owing to the shortage in supply from the source. The main issues pertaining to this is the evaporation loss at the summer storage tank near the head works. The municipality estimates evaporation losses at a minimum of 6 percent of the total water extracted.

82. The system at present is catering to 75 percent of the total population and area of the town. Water is supplied through tankers for the remaining 25 percent population. Against a total of 41,706 property tax assessments and 32,445 households in the town, there is 15,867 service connections (15,391 domestic connections). The service coverage is 38.04 percent with respect to property tax assessments and 48.90 percent with respect to households.

83. There is a significant water loss in the urban water supply distribution cycle, from the supply end (source / treatment plant) till it reaches the consumer end. Rajapalayam municipality indicated the system losses as ranging from 10 percent to 15 percent. It is to be noted that, the ability to identify sources and the amount of loss is constrained because the system lacks metering and the network maps and consumer databases are inadequate or not available.

84. Water losses are due to leakage from old, damaged, corroded pipe lines/ connections and leaking joints, overflow at overhead tanks, theft, illegal tapping of water, unregistered connections, faulty meters and unrecorded supply due to poor records and billing errors. In Rajapalayam, the losses are more during transmission at the summer storage tank. The Municipality puts the evaporation losses at 5 to 10 percent. During the transmission for a

length of 12.39 km, a minor leak was observed close to the treatment plant.

85. No major leaks were observed in the distribution network during the reconnaissance survey and the field visits. The distribution network mostly of cast iron material is intact and though aged, no corrosion or pressure loss is reported. However, lack of adequate database and location maps of the network can only hide the losses, as the leaks can be underground too.

86. Though there is a need to affect a leak detection study and implement the recommended options, for the program to yield results, it is necessary to have sufficient and reliable database regarding the water supply systems. A good information base, willingness to follow-up on systematic replacement of leaking pipes, defective meters and connections as well as tariff revisions, etc are critical to the success of the program. Control on unaccounted for water and loss minimization can be achieved through prevention of illegal tapping, water metering, education and information management, promotion of water conserving household appliances etc.

Service Adequacy and Key Issues.

87. Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.5**.

Table 5.5: Performance Indicators for Water Supply

Indicator	**Current Situation**	**Benchmark**
Per Capita Supply	59.35 LPCD	70.0 LPCD
T & D losses / Total Supply	15 %	10 %
Supply Frequency	Once in 2 Days	Daily
Population served by Piped Water Supply to total population	90.54%	100 %
Distribution Network Reach (% of Road Length)	60.67 %	85 %
Treatment capacity/ Total Supply	98.77%	100 %
Storage capacity/ Total supply	36.51 %	33 %
% of P.T. Assessments with House Service Connections	38.04 %	100 %

Source: Analysis

(i) The gross average supply in the city is 59.35 litres per capita. Though the system, from the design capacity shows its adequacy, the share of unaccounted for water is large. This results in the reduction of supply levels and reliability of the service. The evaporation losses in the summer storage tank have also added to the problem.

(ii) The frequency of supply is once in every two days at an average of 2-4 hours. The existing water supply scheme from the Mudangiyar head works was designed and executed in 1974 for a design population of 1.25 lakhs and is exhausted with growing population and already existing uncovered areas.

(iii) The existing number of House Service Connections is just 38 percent of the total P.T. Assessments. About 10 percent of the population are yet to be covered with piped water supply system.

(iv) About 25 percent of the population in the town are still supplied water through tankers due to the inadequate distribution network. The existing zone of the town does not cater to the topography of the town.

Ongoing / Proposed sub Projects.

88. The scheme was designed and administrative approval was obtained in 1998. Technical sanction for the same was approved towards end of 1999. The proposed improvement scheme outlines the saturation of the existing scheme and proposes to augment the head works, transmission mains, and treatment works, storage facilities and the distribution network:

89. The proposal[5] was prepared to serve a population of 1.87 lakhs for the year 2026. The salient features include

(i) Construction of Diversion Weir at the downstream confluence point of Mudangiyar River and Malattar River;
(ii) Construction of off take well at the Head works;
(iii) Construction of Watchman Quarters at Head works;
(iv) Raw water gravity mains from proposed off take chamber at head works to Summer Storage (SS) Tank;
(v) Augmentation of Treatment works by 3.214 MLD;
(vi) Clear water gravity mains from the Treatment plant to the Storage reservoirs (including the pumping room and the sump) in the town;
(vii) Construction of Elevated Service Reservoirs and laying of Distribution Network in areas that are not covered.

90. *Storage at Source: A* new Summer Storage Tank is proposed adjacent to the existing one to give a total capacity of 2577 ML from the existing 1218 ML. The existing tank is also slated from improvements in the form of bund provision. The existing clear water reservoir at the treatment plant shall be augmented by another 0.75 lakh litres. In addition to the existing treatment facility, another two Slow Filter Beds are proposed to augment the facility.

91. *Distribution Network* Proposed for augmentation with replacements for eroded network and an additional 24.23 km to cover all the zones except zone VI.

[5] It has come to implementation stage over the last two years. Except for the construction of the weir, rest of the project components have been already taken up through loan funding and proposed to be completed by the financial year 2004-05.

2. Sewerage and Sanitation

92. *Under Ground Drainage*: Rajapalayam does not have a sewerage system for disposal of sullage and night soil. The safe disposal system consists of septic tanks, low cost sanitation units and public conveniences.

93. The town consists of 17,360 septic tanks serving approximately 73,170 persons. Apart from these, there are 1,451 low cost sanitation units serving a population of about 7,255 persons. With respect to the Property Tax Assessments, the coverage is as low as 45.10 percent. This is an area of concern, as the rest of the population does not have safe disposal facilities resulting in open defecation. The details of sewerage and sanitation is presented in **Table 5.6**

Table 5.6: Sewerage and Sanitation Details

Description	2002-03	2004-05
Total Population of Town	121,982	134,788
Septic Tanks	14,634	17,360
Low Cost Sanitation Units	1,451	1,451
Number of Units (ISP)	560	560
Number of Units (Others)	112	112

Source: Rajapalayam Municipality

94. With only 45.10 percent of the Property Tax assessments covered with safe sanitation – a large portion of the population is devoid of the service and is a potential urban environmental risk to the town.

Service Adequacy and Key Issues

95. Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.7**

Table 5.7: Performance Indicators for Sewerage and Sanitation

Indicator	Current Situation	Benchmark
% P.T. Assessment Covered with Septic tanks	41.62%	90.0 %
% P.T. Assessment Covered with Low Cost Sanitation	3.48%	10.0 %
% P.T. Assessment Covered with Safe Disposal facility-Total	45.10 %	100.0 %

Source: Analysis

(i) The absence of safe sanitation facilities for has resulted in occasional outbreak of water borne diseases in the town. The associated impacts on human health to city dwellers will increase and consequent health risks would be on the rise.

(ii) Absence of safe disposal systems has led to disposing of sullage and night soil into the storm water drains and other natural water course in the town. In addition, the Kanmoi's and Uranis's are also being polluted due to the disposal of human wastes.

3. Storm Water Drainage and Rejuvenation of Water Bodies

96. The city has an effective network of storm water drains running to a length of approximately 272.40 km. This is approximately 188.80 percent of the total road length in the town.

Spill over of Drain water

97. *Strom Water Drains:* Of these open pucca and kutcha drains covers a length of 130.56 km (47.9 percent), and 76.86 km (28.2 percent) respectively. Closed drains covers the remaining length of 64.98 km, constituting the balance 23.9 percent.

98. Apart from these storm water drains, there is other drainage channel running to a length of 3.5 km. These are part of the natural drainage system of the town and effectively function as storm water drains too. All these drains discharge storm water in to the Kondaneri tank/ Kadambankulam on the western side of the town. However, the mixing of sullage and night soil into storm water is becoming a potential threat to the environmental quality of these tanks. The details of drains are illustrated in **Table 5.8**. The water bodies and natural drains are shown in **Map 5.2**

Table 5.8 Details of Drains

Tertiary Drain Type	**Length - 2002-03**	**Length - 2004-05**	**Total length**
	km	*km*	*%*
Open Drains- Pucca	140.06	130.56	47.93
Open Drains- Kutcha	85.96	76.86	28.22
Closed Drains		64.98	23.85
Total	**226.02**	**272.40**	**100.00**

Source: Rajapalayam Municipality

Service Adequacy and Key Issues.

99. *Service Adequacy:* At 188.80 percent of the total road length, the storm water drains cover the entire town adequately. The inadequacy of the service is with respect to the extent of *kutcha* drains in the town at 28.22 percent of total drains length. Wards 5 and 6 have adequate *pucca* drains.

100. While the wards 3, 27, 34, 21, 39, 35, 42 and 41 present a very good coverage of above 170 percent of the road length in the respective ward, it is important to note that these wards still have several areas to be connected with effective road network. Further, these wards also have more than 60 percent of their respective drain lengths as *kutcha* type. These wards need to take up up-gradation of the existing drains to *pucca* type apart from new formations as and when new roads are laid. Up-gradation of existing drains has to be

taken up in all the wards. New formations are warranted immediately in wards 9, 37, 23, 26, 7, 1, 8, 22, 11, 24, 10, 36, 29, 13, 18 and 15.

101. *Low Lying Areas.* The topography of the town suggests the slope from north-east towards west and south. The slope pattern in the adjoining areas of the Kondaneri tank/ Kadambankulam on the western side of the town are the low lying areas apart from the areas on the southern side. These areas on the south towards the Sankarankovil road are the newly developing areas of the town without adequate infrastructure facilities. Proper storm water drainage facilities are absent in these areas making them prone to water stagnation. It is observed that storm water drainage water from wards 34, 35, 36, 37 and 40 run into the open low lying areas of ward 39 on either side of Sankarankovil road.

102. Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.9** below

Table 5.9: Performance Indicators for the Drains

Indicator	Current Situation	Benchmark
Storm Drain network/ Total Road Length	188.80 %	> 150.0 %
% Kutcha Drains	28.22 %	100.0 %
% Pucca Closed Drains	23.85 %	100.0 %

Source: Analysis

(i) In the absence of a sewerage system and inadequate sanitation facilities, a large amount of the domestic sewage is let into the storm water drains. This has resulted in pollution of the final disposal points (urani's/ odai's) In addition; the storm water drains and natural drainage channels are susceptible to uncontrolled solid waste dumping resulting in blockage and stagnation.

(ii) Silting and constriction due to uncontrolled solid waste dumping and encroachments on the banks of odai’s and urani’s are interrupting the storm water thereby spilling into neighbouring areas.

(iii) Several areas in wards to the south of the town 34, 35, 36, 37, 39, 40, 41 and 42 are yet to be provided with good infrastructure like roads, street lights, drains etc. These are some of the newly developed areas, which are low lying. Regular stagnation of Storm Water Drainage waters in these areas has become the root cause for health risks.

4. Solid Waste Management

Existing Situation

103. Efforts to improve the solid waste management in the town were made by the health department. The town is divided into 7 divisions and the waste generated is collected and dumped at the disposal site located at Arasiyarpatti village (6.37 acres). The site is about 8 km from the town. The total quantity of solid waste generated in the town is 51.25 tons per day and about 55 tons of the waste generated per day is collected with a collection efficiency of 107 percent as per the estimates of the municipality. The details of municipal waste generation is illustrated in **Table 5.10**

Table 5.10: Details of Municipal Solid Waste Generation

Type	**Quantity 2002-03**		**Quantity 2004-05**	
	Tons	*%*	*Tons*	*%*
Domestic	15.73	30.7	15.73	30.7
Commercial	20.44	39.9	20.44	39.9
Industrial	12.50	24.4	12.50	24.4
Markets	2.50	4.9	2.50	4.9
Hazardous/ Hospital waste	0.06	0.1	0.06	0.1
Total	**51.23**	**100.0**	**51.23**	**100.0**

Source: Rajapalayam Municipality

104. Majority of waste generated is by the domestic households and collected through street sweeping. Per capita generation in Rajapalayam is 380 grams per day and is on the higher side for a town of similar size. Solid waste generated in Rajapalayam is mainly organic in nature. The other major components being inert material mixed with paper and plastic. Apart from these, bio-medical waste also mixes with the domestic solid waste generated by the city. The location of dust bins and disposal site is shown in **Map 5.3**

105. *Domestic waste* per household varies from area to area in the town and on average, ranges between 350 to 500 grams. On the whole about 15.73 tons of domestic waste is generated. The commercial waste includes the waste from hotels and eating establishments, shops, trading units, small time street traders' etc. The daily waste segregated is about 20.44 tons, which is 39.9 percent of the total waste generated in the town. It mainly comprises of paper (9 percent), plastics (16 percent) and other inorganic, which are finding their way to the disposal yard along with the domestic waste.

106. *Industrial waste* generated is mainly from the cotton, jute and other ancillary industry in the town. Around 12.5 tons of the waste is generated by these industries every day. This is 24 percent of the total waste generated in the town. This waste comprises of cotton pieces, which are inorganic.

107. Rajapalayam has a private weekly market on the Mudangiyar road with a separate storage depot of capacity 15 tons. There is another daily market run by the municipality. The markets segregate 2.5 tons waste. Waste generated by hospitals is 0.06 tons, constituting 0.1 percent of waste generated.

108. Bio-Medical waste is at present tackled by the medical practitioners association only. A proposal for installing an incinerator in the town is underway and is expected to be in place shortly once a suitable site for the same is decided. About 0.06 tons of bio-medical waste is generated from the hospitals and clinics in the town every day. Street sweeping and drain cleaning is conducted every day and organic waste generated by the slaughter house, mutton stall, beef stalls, fish stalls, kalyana mandapam's etc is also collected on a day-to-day basis

109. The entire town is planned to be brought under door-to-door to collection and avoid the usage of dustbins and the municipality has achieved this for the last five years. 3,371 households daily cover door-to-door collection. Municipal sanitary workers segregate the waste during primary collection. The total quantity of waste generated is 55 tons in mixed form. Both municipality and private contractor carry out the collection. Fifty litterbins are provided with capacity of 0.45 tons. The waste is lifted through manual operation.

110. *Primary Collection.* The town has 50 dustbins of 0.45 tons capacity each and 16 secondary collection points each of capacity 1 ton. These dustbins cover the entire population of the town. The spacing between the dustbins and collection points with respect to the total road length is 2.19 km, which is on the higher side considering the privatization of collection across 30 percent of the road length in the town.

111. The system of primary collection followed is cleaning, sweeping; scrapping and collection of MSW by tri-cycle / handcarts and transfer to secondary collection points. In the other wards where door-to-door collection is yet to be introduced, waste is collected from the community dustbins.

112. *Private Participation.* Efforts to improve the solid waste management in Rajapalayam town were made by the municipality by way of introducing private participation in primary collection. The contractor is entrusted with the responsibility of collecting the waste from the doorsteps and dustbins, street sweeping and cleaning etc and transferring the same to the nearby collection points. The private contractor handling 29 wards and 59 streets with monthly payment of Rs. 443,618/- per month. As per the estimates of the municipality, by privatising just a part of the municipal area, and reducing the temporary staff, the savings were to the tune of Rs. 51.46 lakhs per year.

113. *Secondary Collection:* - The municipality has six sanitary inspectors, nine sanitary supervisors, and field assistants under the supervision of the municipal health officer to monitor the solid waste management system in the town. There are at present 16 collection points of 1 ton capacity with partitions for the segregated waste collected door-to-door to be dumped and further transferred to the disposal yard. At present the temporary dustbins (50 numbers) are also being used as collection points/ transfer points and the inadequacy of the system in this area is being felt clearly, with overloaded transfer vehicles and left over waste. The fleet of vehicles available for the purpose includes trucks, tractors and mini trucks as presented in **Table 5.11.**

Table 5.11: Details of Secondary Waste Transfer Vehicles

Vehicle Type	Owned/Rented	Number	Capacity	Total trips	Age
			Tons		*Years*
Tractors	Owned	7	2.5	2	5
Mini Trucks	Owned	4	3	2	0
Tippers	Owned	1	4	2	8
FEL/JCB	Owned	1	-	-	-
Others (Auto)	Owned	1	-	-	-
Push carts	Owned	50	0.45	2	2

Source: Rajapalayam Municipality

114. Fourteen vehicles are available with the municipality of which, the municipality uses 7 tractors, four mini-lorries and one tipper for the purpose of secondary collection. As per the estimates of the municipality the entire waste generated is collected and transferred to the disposal site. However, the rated capacity of the fleet of vehicles with the municipality is 33.5 tons which is 65.4 percent of the waste being generated. Adopting a density factor of 0.35[6], the total vehicle carrying capacity with the municipality is 49 percent of the waste being generated. On an average, each vehicle is making two trips per day to collect and transfer the waste. Though the system of primary collection is privatized for efficient management, the inadequacies with respect to the secondary collection coupled with the lack of adequate number of transfer stations has put the entire system at bay

Figure 5.2: Composting at Disposal Site

115. Land filling and composting is done at the disposal site about 8 km from town. The land available at present is 6.37 acres but this land is not sufficient for the years 2026. The technology adopted here is composting and vermi culture. The production of composting is two MT. The quantity of vermin compost is generated around 260 Kg. The municipality has proposed to acquire 13.98 acres additional land for compost yard. The scientific composting photo graph is shown in **Figure 5.2**

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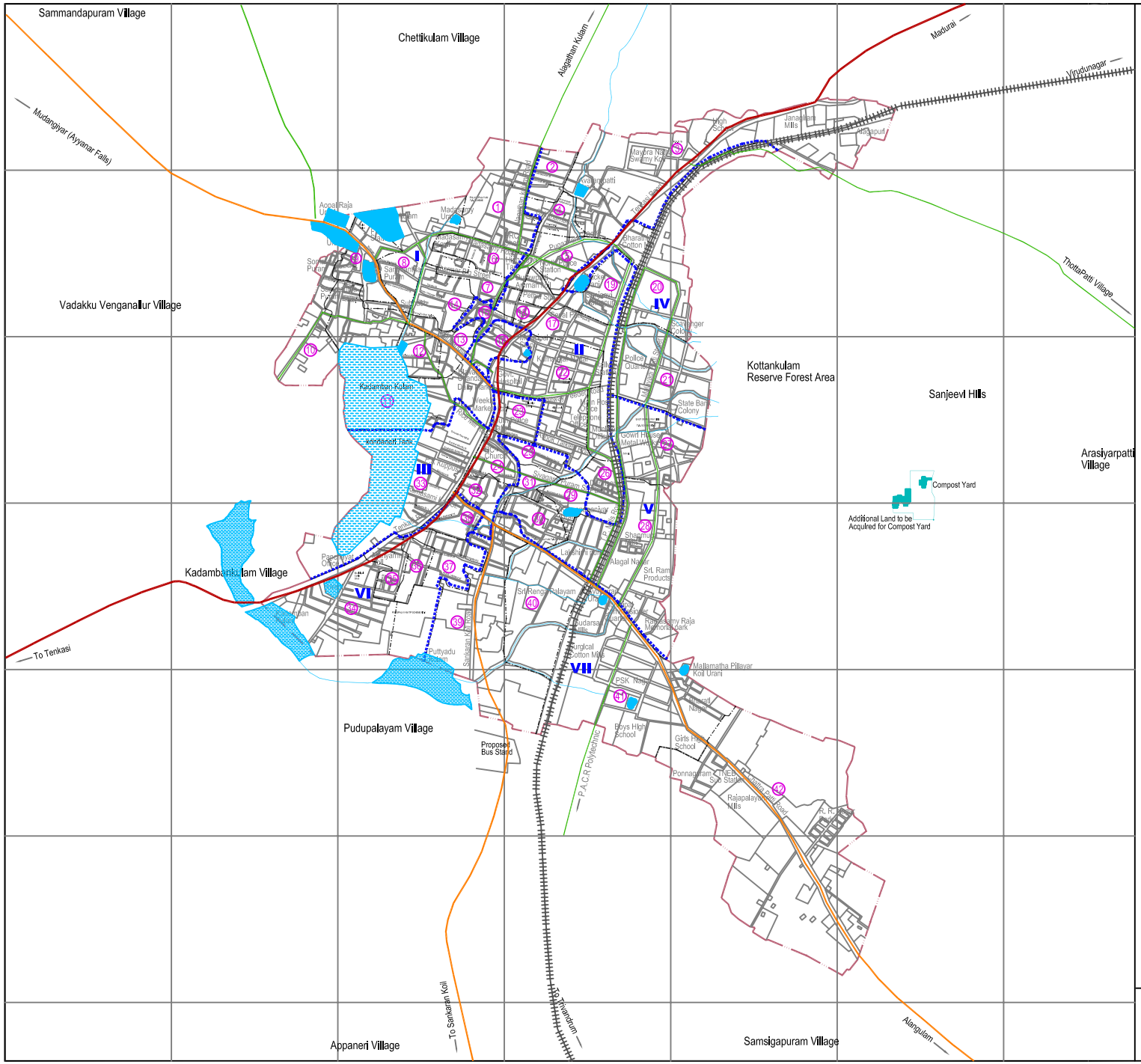
6 The Solid waste Management studies conducted in several towns of Tamilnadu (Palani, Mamallapuram, Kodaikanal, Rameswaram, Erode etc have put the density factor for un-compacted waste at an average of 0.18 – 0.2. When compacted the same is observed to be in the range of 0.35 – 0.4.



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road

- Temporary Collection Points With Bins
- Temporary Collection Points Without Bins
- Compost Yard
- Sanitary Divisions

Notes :

Sanitary Divisions

Division No	Ward Nos
I	1, 6, 7, 8, 9, 10, 11, 12, 13, 14
II	2, 3, 4, 5, 15, 17, 18, 19, 22
III	16, 23, 24, 32, 33
IV	20, 21, 25, 26
V	27, 28, 29, 30, 31
VI	34, 35, 36, 37, 38
VII	39, 40, 41, 42

SOLID WASTE

N

Scale :

0 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. 5.3

116. The involvement of private sector in the primary collection not only ensured better efficiency through organized “door to door” collection in the core areas of city but also segregation of waste at source. This is of greater significance since different methods are involved for disposing each type of waste. Some may be recyclable as glass bottles, plastics but non-biodegradable. In this regard, dustbins play a meagre role in the residential areas compared to the commercial areas of the city which have floating population, hawkers etc

117. The average distance between dustbins is much beyond the accepted norms of 100m which can be acceptable when 100 percent door to door collection is followed. The collection performance and vehicle capacity adequacy ratio indicates the need to increase the numbers of vehicles. The other alternative is privatization of solid waste transport. The area coverage per collection point shall not exceed a maximum of 0.16 Sq. km and the equated alternative for such intermediate collection points is the introduction of Dual Loaded Dumper Placers (DLDPs). The Performance indicators are presented in **Table 5.12.**

Service Adequacy and Key Issues

Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.12** below

Table 5.12: Performance Indicators for Solid Waste Management

Indicator	**Current Situation**	**Benchmark**
Per-Capita Generation	380 gm	< 350 gm
Collection Performance (% Collected to Generated)	107.0 %	100.0 %
% Rated vehicle capacity to total waste generated	65.40 %	>= 105.0 %
Dust Bin Capacity Adequacy Ratio (% of Waste Generated)	43.9 %	100.0 %
Area Coverage per Collection Point/Transfer Station	0.71 Sq. Km	0.16 Sq. km

Source: - Analysis

(i) *Open dustbins and loading of waste in transport vehicles*: Though effectively operated the system of open bins is not considered a healthy practice. Moreover, the transportation of the waste right from collection to shifting to the disposal site is exposed inviting a large number of health concerns. It has been often reported that the community bins in the areas under the management of the municipality as well as the transport vehicles are over spilling.

(ii) *Inappropriate Siting and Lack of effective technology for scientific disposal of waste at the Composting Yard*: The disposal site is located near the Sanjeevi Hill about eight km away from the town on a hilly terrain. The site is accessible from the Thottapatti village road on the north and the Chattirapatti road on the south, without any proper roads on a rough, bouncy and jarring terrain. Any infrastructure at the disposal site is absent and crude dumping is resorted to due to lack of an effective scientific method of disposal. This has exposed the entire process to open air and life threatening parasites.

(iii) *Lack of any scientific method for Bio-medical waste disposal:* There has not been any bio-medical waste disposal plant (Incinerator) till now. Though the Medical Practitioners Association agreed to bear a part of the cost of procuring the incinerator, delay in finding a site for the location of the incinerator is compounding the problem.

5. Transportation and Traffic Management

Exiting Situation-Roads

118. *Overview:-* The area under roads accounts to 1.5 sq. km, which are about 13.2 percent of the total area of the Municipality. The municipality has a total road length of 144.28 km covering about 85 percent of the town. About the surface condition, around 99.86 percent of the road length is surfaced with asphalt. The density of roads in the town is approximately 12.7 km/ sq. km of area of the town. The average width of the roads in the town is 1.76m.

119. The major roads in the town are radial in character and the minor roads follow a grid pattern. All the important roads radiate from the centre of the town outwards to the respective regional destinations

120. The road network comprises of black topped and cements concrete roads. Surfaced roads constitute 99.9 percent of the total network with gravel roads constituting 0.1 percent. Of the surfaced roads, 40 percent of the roads are concrete paved roads and the rest are BT road. The average width of the concrete roads in the town is 2.2 meter, which varies from 1 meter to 2.5 meter. Except the wards 13, 16, 17, 25 and 35 all the other wards of the town have concrete roads with the minimum in ward 41 at 17.2 percent of the total road length of the ward to a maximum of 52.4 percent in ward 7. Details of municipal roads are illustrated in **Table 5.13** and road network is shown in **Map 5.5.**

Table 5.13: Details of Municipal Roads

Surface type	**Length (2002-03)**		**Length (2004-05)**	
	Km	*%*	*Km*	*%*
Cement Concrete	52.7	36.51	52.67	36.51
Bituminous / Tar	79.8	55.32	79.82	55.32
Earthen Roads	0.2	0.13	0.19	0.13
NH / SH	11.60	8.04	11.60	8.04
Total	**144.28**	**100.00**	**144.28**	**100.00**

Source: Rajapalayam Municipality

121. Bituminous roads constitute 79.82 percent of the total roads in the town which excludes the National Highways and State Highways. The average width is 4.1 m, it is minimum in ward 37 at 3.1m and maximum in ward 22 at 5.3m. BT roads are minimum in ward 36 at just 16 percent of the total road length. There are no Bridges in the town. There are 214 culverts constructed running across the channels located in the town.

122. *National Highways / State Highways.* National Highway No.208 from Tenkasi to Tirumangalam runs across the town from the Northeast to Southwest. The total length of NH 208 within the town is 5.20 km (Km 67/2 – 72/4). There are three State Highways running through the town, which total to 6.2 km. These roads connect the town with important regional destinations like Alangulam, Sankarankovil, and Sivakasi etc. These are Chattirapatti Road (3.40 km from km 0/0 – km 3/4), Tirunelveli – Rajapalayam Road (1.40 km from km 84/0 – km 85/4), Rajapalayam – Ayyanarkovil Road (Mudangiyar Road 1.40 km from km 0/0 – km 1/4). All the three roads connect to the NH 208 creating chaotic situation near the intersections.

Service Adequacy and Key Issues

123. *Service Adequacy.* The per-capita road length in the town is 1.07m. The peripheral areas on the North-east and the south-east of the town falling under wards 3, 39, 40, 41 and 42 are yet to be connected with effective road network. While both the conditions of the average width of the roads being above 9.72m and the road density below 12.70 km are satisfied, the degree of connectivity can be inferred satisfactory with respect to the available width of the roads as well as areas connected. Such wards are 17, 33, 27, 22, and 37.

124. The average width of roads is on the higher side than the road density specifically as in case of wards 42, 3, 28, 34, and 20 it can be inferred that there are areas which are not developed or areas which needs effective connectivity with roads. Since most areas of the town are completely developed, the inference that proper connectivity to the areas in these wards has to be provided is clear. It should also be mentioned that the very high road widths in these wards is also due to the presence of NH 208 and the State Highways with good margin available.

125. The areas are in most probable cases slum localities, Low-income group settlements, and old & core areas of the town and highly dense areas. The wards 16, 5, 35, 13, 25, 14, 9, 26, 30, 24, 6, 2, 12, 32, 23, 29, 38, 36, 4, 31, 15, 18 and 7 are most slum localities. Hence the wards deficient in coverage needs new formations and those deficient in road widths needs widening and the others needs specific improvements.

Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.14** below.

Table 5.14: Performance Indicators for Roads

Indicator	Current Situation	Benchmark
Road Density	12.70 Km/ Sq. km	10.0 – 15.0 Km/ Sq. km
Per capita Road Length	1.07 m	1.75 m
% CC Roads to Total Road Length	36.5 %	5.0 %
% Municipal Surfaced Roads	99.9 %	100.0 %

Source: Analysis

(i) *Narrow lanes with heavy built-up in the central areas of the town*: The central areas have narrow lanes and are surrounded by heavily built up areas. These roads carry large volumes of traffic. These factors make these lanes highly susceptible to air pollution and delayed travel times.

(ii) *Improper Connectivity in Peripheral Areas*: Recent developments were towards the peripheral areas of the town towards north-east, south and south-east. While the growth in these areas has been considerable, the connectivity of these roads with the main corridors is inadequate. While 80 percent of the town area is well connected, the rest lacks surfaced roads.

(iii) *Major Operation & Maintenance costs on roads*: During monsoon, the black cotton soil of the region has made the roads with bituminous/ tar top highly susceptible to damages. The condition of the roads worsens with every monsoon resulting in periodic re-laying involving considerable O & M expenditure.

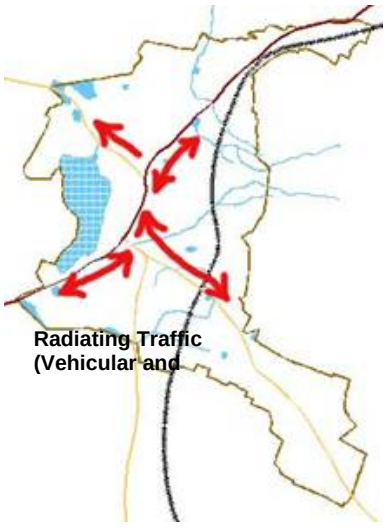
(v) *Encroachments and informal activities on major Roads*: The margins of roads are encroached upon in several sections of major roads of the town by small time street vendors, illegal parking and other informal activities. With no margins left on the roads, the effective carriageway of the roads is reduced drastically leading to congestion and accidents.

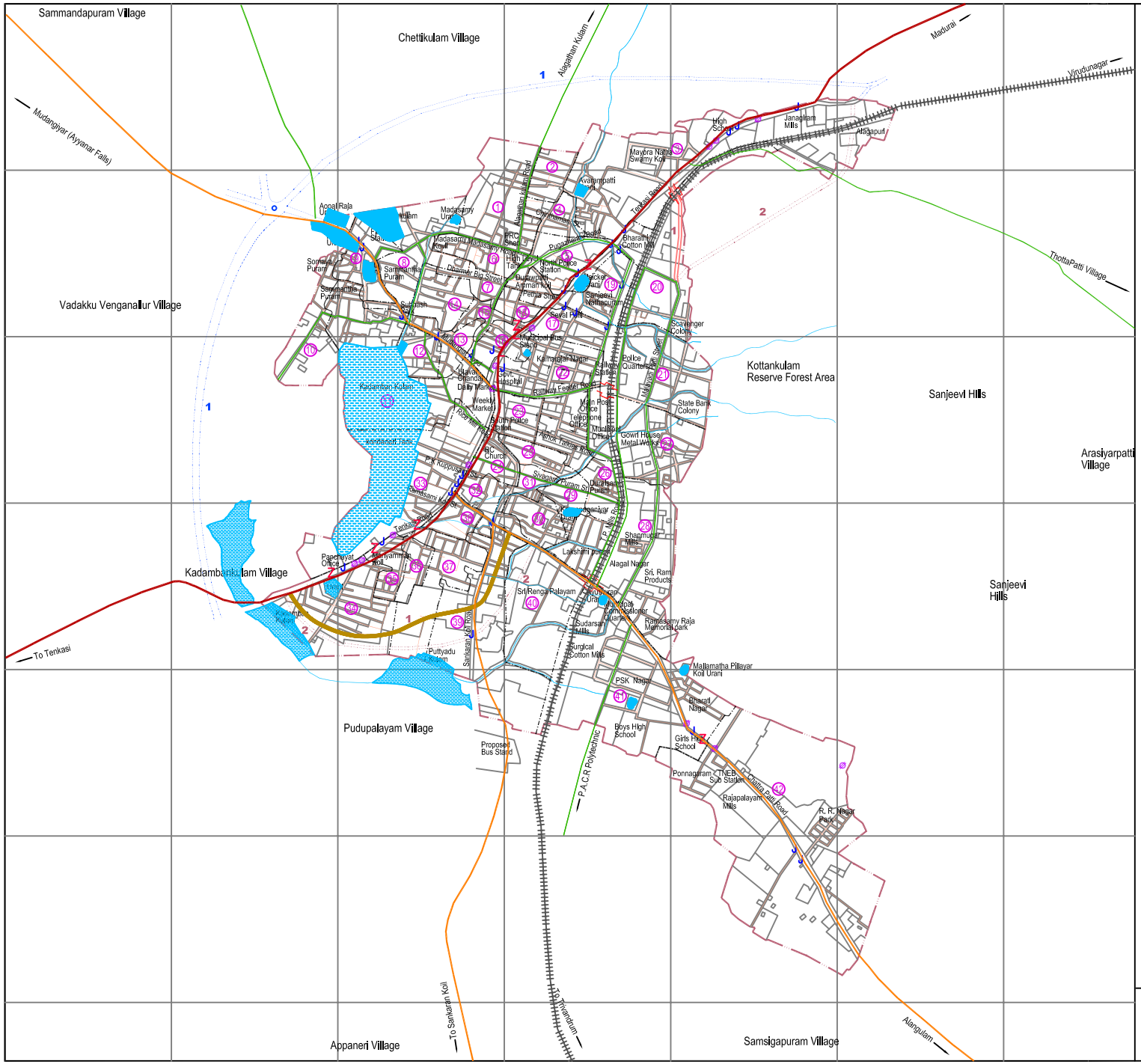
(vi) *Several Critical Junctions with Poor Visibility*: The Tenkasi-Madurai NH 208 passes through the town and is highly congested due to the commercial activities extending onto the margins of the roads. This has made the road highly susceptible to several accidents. Several other important roads in the town also have sharp turns and encroachments creating poor visibility for riders on these roads.

6. Traffic and Transportation.

Figure 5.3: Travel behavior & Pattern

126. *Traffic management:* - Rajapalayam being an industrial town is the origin and destination to a sizeable amount of heavy traffic. Further, the population of the town since is mainly involved in trade business and industrial activities are expected to have a large number of 2-wheelers than 4-wheelers. The traffic management plan is shown in **Map 5.5**





RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

- Z Fatal
- Grievous
- J Minor
- Direction Of Traffic Flow
- Proposal - 1 : Outer Ring Road 1
- Proposal - 1 : Inner Ring Road 1
- Proposal - 2 : Circular Road 2
- Sub - Way

TRAFFIC & TRANSPORTATION

N

Scale :

0 0,25 0,50 1 Km 1,5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. 5.5

127. There is also substantial pedestrian traffic at several places in the town. Pedestrian activities are concentrated in the commercial areas of the town on the NH 208 and State Highways. The concentration of all the commercial and trading activities at the centre of the town coupled with the radial pattern of the roads make a large number of trips to originate and end at the Clock Tower Junction.

128. The road pattern also makes a lot of thorough traffic to pass through the town. All the regional traffic too has to pass through the centre of the town owing to the non-availability of any ring roads/ bye-pass roads.

129. The presence of bus stand also adds to the problem of traffic congestion in the core area. Considering the acute traffic congestion and the delay in the travel time, the municipality is proposing to construct a new bus Stand near Pudupalayam village on the Sankarankovil road. This site was earlier being used as solid waste disposal site. Disposal at this site has been discontinued for the past one-year. Construction of new bus stand at this site, to a certain extent, would relieve the core area from congestion.

130. *Road-Rail Crossings:* There is one level crossing on the Chattirapatti Road in the south connecting the town with Alangulam. This road carries heavy vehicular traffic mainly originating from the surrounding industries in the area. It has been observed that the traffic flow at this crossing has not been smooth due to frequent closure of the level crossing leading to time loss and traffic congestion. Another level crossing is present on the connecting road from Scavenger colony in ward 20 to Tenkasi Road in ward 19. The approach to the level crossings in both the cases has been very poor without adequate space and improper pavement condition

131. *Intersections:* - There are four important junctions in the town where major roads like the State Highway and National Highways meet. These are:

(i) NH 208 and Mudangiyar Road Junction
(ii) NH 208 and Chatrapatti Road Junction
(iii) Chattirapatti Road and Sankarankovil Road Junction
(iv) TP Mills Road and NH 208 Junction

132. While junctions 1 and 4 are four-arm junctions, the other junctions are three-arm junctions. In case of the first junction, there is intense roadside parking on all the branches. A clock tower is located at the centre of this junction. The second junction is a three-arm junction with the approach roads having a carriage way width of 7m each. P.S.A.Rangaswamy Statue is located near this junction. Intense commercial activities are prevalent around this junction creating a lot of parking problems. The third junction on the Chattirapatti Road is also a three-arm junction with 7-m. carriageway width on all the approach roads. A sharp turn with poor visibility and the culvert near this junction has been the major traffic bottlenecks.

133. *Parking Facilities:* - In the absence of any assigned parking facilities in the municipal area, abrupt and indiscriminate roadside parking is noticed. This has led to reduction in the effective carriageway of the roads leading to congested travel and accidents. Major parking problems were observed near the railway station, Bus Stand, Clock Tower

Junction and near the Government Buildings along the Railway line.

134. Public transport system in the town is operated private service operators plying mini-buses between various localities in and around the town. There are about 10 to 15 such mini buses plying within the municipal limits. Apart from these mini-buses, there are a number of Autos operating in the town. These autos are the most widely used mode of public Transport. Pedestrian mode of transport is also significant in the town.

Service Adequacy and Key Issues

(i) *Absence of Organised Traffic lots in the Town*: The town does not have any organised parking facilities and this has added to the already existing congestion on the roads

(ii) *Discontinuous Road sections in several areas of the town*: Except for NH 208, State Highways and some major roads, several roads have discontinuous sections creating traffic problems and intense traffic movements on the internal roads of the town

(iii) *Absence of Bye-pass Roads/ Ring Roads for regional Traffic*: The absence of bye-pass road to NH 208 makes all the regional traffic like heavy trucks, Regional Transport buses etc to enter the town and pass through it. The absence is clearly felt with increasing number of accidents on the NH 208.

7. Street Lighting

Exiting Situation

135. The Municipality maintains around 4,725 street lights with an average spacing between each lamp post of 30.54 m. Around 60 percent of the luminaries in the town are tube lights. High power lamps in the town constitute 40 percent of the total number. These include sodium vapours lamps and mercury lamps. The details of street lighting are presented in **Table 5.15.**

Table 5.15: Details of Street Lighting

Type of Luminary	**Number (2002-03)**		**Number (2004-05)**	
		%		*%*
High Mast Lamps	1	0.02	1	0.02
Halogen Lamps	39	0.84	39	0.83
Mercury Vapour Lamps	462	9.93	462	9.78
Sodium Vapour Lamps	1274	27.38	1532	32.42
Tube Lights	2877	61.83	2691	56.95
Total	**4653**	**100.00**	**4725**	**100.00**

Source: Rajapalayam Municipality

136. While the average spacing for the town is 30.54 m, the better off roads with adequate lighting are wards 26, 34, 35, 28, 42, 21, 16, 27, 33, 2, 40, 29, 22, 20, 25, 39 and 38. All the other wards are deficient in adequate lighting facilities with the average spacing ranging above 40 m in most of the cases. In case of wards 42, 28, 34, 20, 40 and 39 where the average spacing of lampposts is less than 30 m, there are uncovered areas with respect

to the road network. It is imperative to note that only 20 percent of the town is adequately lit. While the service inadequacy is clearly felt, the issue lies with creation of effective road network in the town; this will form the base for the provision of other services.

137. With respect to the composition of lights in the town, though there are a good number of high power lamps in the town, in several wards they are on the higher side of 40 percent of the total lights. While the accepted norm for high power lamps in a town is 20 percent, Rajapalayam has 43 percent high power lamps. This aspect needs consideration from the Energy Savings' point of view.

Service Adequacy and Key Issues

Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.16** below

Table 5.16: Performance Indicators for Street Lighting

Indicator	Current Situation	Benchmark
Spacing between Lamp Posts	30.54 m.	< 30.0 m.
% Tube Lights	56.95 %	70.0 – 80.0 %
% High Power Lamps	42.22 %	20.0 – 30.0 %

Source: Rajapalayam Municipality

(i) *Inadequately lit Roads/ Roads without luminaries.* The luminaries in the town are spaced at an average distance of 30.54 m. This is also due to the non-provision of streetlights in the newly developed areas of the town in the northern and southern areas.

VI. FINANCES OF RAJAPALAYAM MUNICIPALITY

1. Municipal Fund

138. *Overview*. Rajapalayam Municipality maintains a municipal fund for managing the finances of the Municipality. The accounts of the municipal fund were maintained on a cash based single entry system till the FY 1999-2000. The financial status of the Municipality has been reviewed for the past four years, commencing from the financial year 2000-01. This section contains a description of the municipal finances, the sources and uses of funds, and an assessment of municipal finances based on important financial indicators. Currently the urban local bodies of Tamilnadu maintain three separate funds, namely General Fund (Revenue Fund), Water & Drainage Fund and Education Fund. For the purpose of this analysis, Education fund has clubbed in to General fund. For further analysis, the items of each fund are categorized under the following major heads.

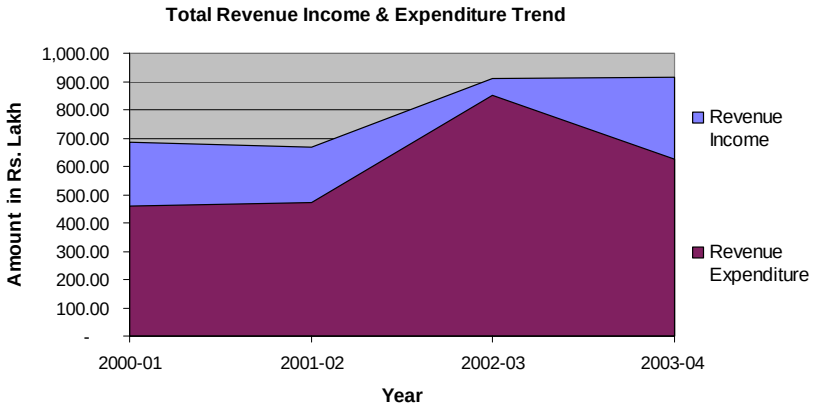
139. *Revenue Account*: All recurring items of income and expenditure are included under this head. These include taxes, charges, salaries, maintenance expenditure, debt servicing etc.

140. *Capital Account*: Income and expenditure items under this account are primarily non-recurring in nature. Income items include loans, contributions by GoTN, other agencies and capital grants under various State and Central Government programs, revenue account transfer for capital works and income from sale of assets. Expenditure items include expenses booked under developmental works and purchase of capital assets.

141. *Deposits and Advances*: Under the municipal accounting system, certain items are compiled under advances and deposits. These items are temporary in nature and are essentially adjustments for the purpose of recoveries and payments. Items under this head include library cess, income tax deductions, pension payments, provident fund, payment and recoveries of advances to employees and contractors, etc.

2. Financial Status

Figure 6.1: Total Revenue Income and Expenditure Trend



142. Revenue income of Municipality has grown to Rs. 914.90 Lakh in the FY 2003-04 from Rs. 686.25 Lakh in FY 2000-01, at a high annual growth of 10.06 percent. Revenue expenditure increased at an average annual rate of 10.88 percent from Rs. 459.03 Lakh to Rs. 625.72 Lakh during the assessment period.

The revenue account maintains surplus during the entire assessment period and maintained a maximum surplus of Rs. 289.19 Lakh in 2003-04. The trends for the revenue fund are presented in **Table 6.1**.

Table 6.1: Summary of Municipal Fund

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
Revenue Account				
Revenue Income	686.25	666.30	909.18	914.90
Revenue Expenditure	459.03	471.83	851.05	625.72
Surplus/Deficit	*227.22*	*194.47*	*58.12*	*289.19*
Capital Account				
Capital Income	146.82	175.15	333.87	504.31
Capital Expenditure	272.43	524.82	876.02	378.97
Surplus/Deficit	(125.61)	(349.67)	(542.15)	125.34
Fiscal Status	*101.61*	*(155.20)*	*(503.53)*	*395.03*
Advances & Deposits				
Extraordinary Income	202.08	77.26	94.33	73.16
Extraordinary Expenditure	26.48	61.60	10.76	10.61
Surplus/Deficit	175.60	15.66	83.57	62.55
Overall Fiscal Status	*277.22*	*(139.54)*	*(419.96)*	*457.58*

Source: Rajapalayam Municipality & Analysis.

Note: Figures in parentheses indicates a deficit. Capital Income includes revenue account transfer for capital works.

Figure 6.2: Total Capital Income and Expenditure Trend

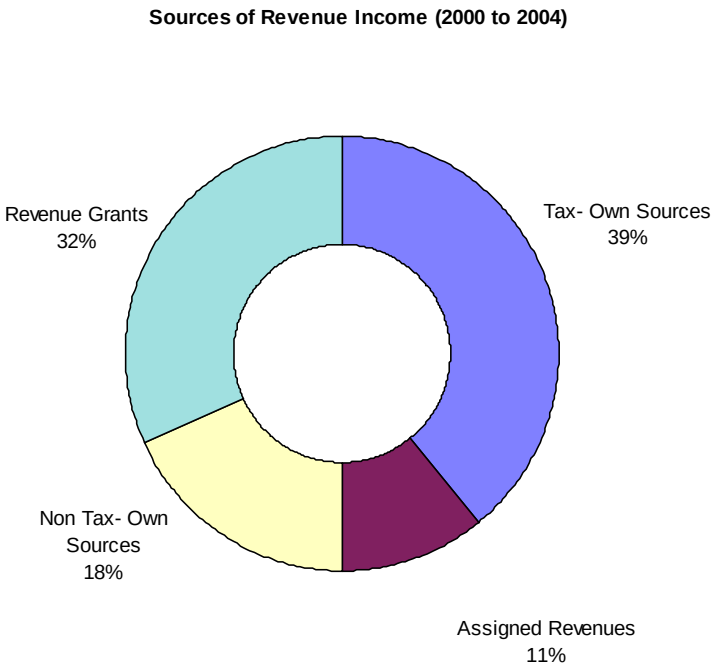
143. Capital income comprises of loans, grants and contribution in the form of initial deposit for water supply connections, revenue account transfer and sale proceeds of assets. Majority of the capital income is in the form of loans and grand and contribution. The capital account has witnessed deficit except during 2003-04.

144. The following sections present detailed review of revenue and capital accounts, primarily aimed at assessing the municipal fiscal status and providing a base for determining the ability of Municipality to sustain the planned investments.

3. Revenue Account

145. The revenue account comprises of two components, revenue income and revenue expenditure. Revenue income comprises of internal resources in the form of tax and non-tax items and external resources in the form of shared taxes/ transfers and revenue grants from the State Government. Revenue expenditure comprises of expenditure incurred on establishments, operation & maintenance and debt servicing.

Figure 6.3 Source of Income (2000 to 2004)



146. *Revenue Income*. The revenue sources of Municipality can be broadly categorized as own sources, assigned revenues and grants. The source-wise income generated during the review period is presented in **Table 6.2**. The base and basis of each income source has been further elaborated in the following section. The revenue income of Rajapalayam Municipality has increased from Rs. 545.32 Lakh in 2000-01 to Rs. 750.91 Lakh in 2003-04 – a Compound Annual Growth Rate (CAGR) of about 11.25 percent. The high growth attributed to inconsistent transfer of assigned revenue and state finance commission grants to ULB during the review period.

Table 6.2: Sources of Revenue Income

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
Own Sources				
Tax	251.75	232.83	234.00	239.90
Non Tax	75.33	121.61	148.90	115.23
Assigned Revenue	53.54	31.46	116.11	87.54
Grants	164.70	113.88	235.91	308.24
Total (excl. W&D a/c)	**545.32**	**499.78**	**734.94**	**750.91**

Source: Rajapalayam Municipality & Analysis.

147. Own-source income includes income from resource mobilization activities of Municipality in the form of taxes, income from municipal properties and markets, building permit fee, trade licenses, income from fees and fines, etc. Own revenue sources are further classified as tax revenue and non-tax sources that are generated by various sections of the Municipality. The salient features of this revenue head is detailed below.

148. Own Sources/Tax. This item head comprises of income sourced primarily from property tax (General purpose tax, Lighting tax, Scavenging tax and Education tax excluding Water and Drainage tax), professional tax and other taxes. The property tax is the largest revenue-generating item. Own sources of tax income is presented in **Table 6.3**. Average income from own sources constituted 57.57 percent of the total revenue income during the review period and has increased at an average compounded annual growth rate of 12.78 percent. Tax sources contributed 39.13 percent of the revenue income and non-tax sources contribute 18.44 percent of the revenue income.

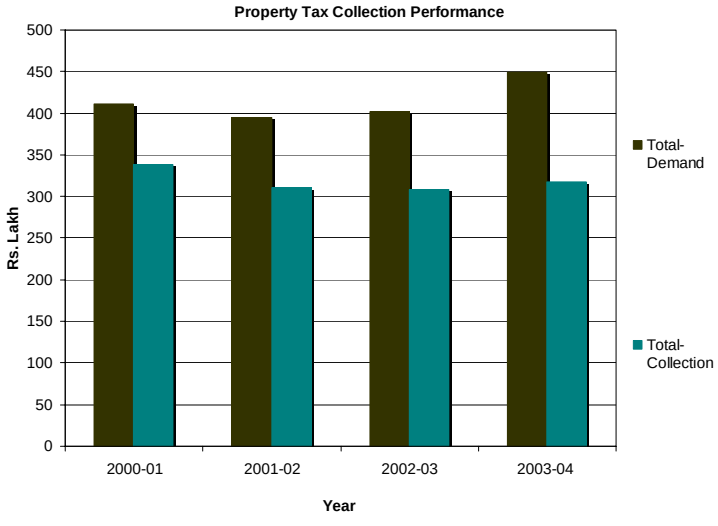
Table 6.3: Own Sources of Revenue Income

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
Taxes				
Property Tax (excl. W&D tax)	231.46	212.67	211.17	217.00
Profession Tax	20.28	20.14	22.83	22.89
Other Taxes	0.01	0.01	-	0.01
Non - Taxes				
Income from ULB's. properties	3.01	3.11	3.43	15.72
License Income (Trade, etc.)	7.29	5.60	13.12	14.70
Income from Fees and Fines	29.24	29.07	44.08	31.88
Miscellaneous Income	35.80	83.83	88.28	52.93
Total	**327.08**	**354.43**	**382.91**	**355.13**

Source: Rajapalayam Municipality & Analysis.

(i) *Property Tax*: This is the most important category of own source income to the Municipality. Rajapalayam Municipality levies a consolidated property tax of 19 percent of the Annual Rateable Value (ARV). During the assessment period, the numbers of property tax assessments increased at an average growth rate of 4.31 percent per annum. Property tax income (collection) however has decreased at a CAGR of about 2 percent during the assessment period.

Figure 6.4: Property Tax Collection Performance



(ii) The average collection performance of Property Tax for the review period is 77 percent and the same is presented in **Table 6.4**. The property tax levied is 19 percent of the Annual Rental Value (ARV) and includes the general tax (12%), water and drainage tax (6%) and education tax (1%). It is observed that the Municipality maintained a Low arrear collection of average about 43 percent.

Table 6.4: Property Tax – Demand Collection and Balance Statement

Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	83.98	78.70	81.07	116.81
Demand	327.58	316.25	320.71	332.29
Total	*411.56*	*394.95*	*401.78*	*449.10*
Collection (Rs. Lakh)				
Arrear	54.28	33.26	29.54	35.58
Demand	284.01	277.57	279.10	281.58
Total	*338.29*	*310.83*	*308.64*	*317.16*
Collection Performance (%)				
Arrear	65%	42%	36%	30%
Demand	87%	88%	87%	85%
Total	***82%***	***79%***	***77%***	***71%***

Source: Rajapalayam Municipality & Analysis.

(iii) The total property tax collection performance of the Municipality has declined significantly during the assessment period. The maximum arrear collection was achieved during the FY 00-01 and the same was as low as 23 percent during FY 03-04. There are a total of 40,957 assessed properties in the Municipality and this has increased at an average growth rate of 4.31 during the review period. The ARV per property during the FY 03-04 is Rs. 4,337 and the tax per property is Rs. 824.

(iv) *Professional Tax*: Professional tax is collected by municipality from all registered organisations, companies or firms, public or private, individuals and State & Central Government departments. Currently 1,385 assesses are registered with the Municipality. Based on the demand, the average tax per professional is about Rs. 2,131/- per annum. No average arrear collection was made during the assessment period and average current collection is around 83 percent during the same period. The details of Demand Collection and Balance statement are provided in **Table 6.5**.

Table 6.5: Profession Tax – Demand Collection and Balance Statement

Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	1.28	1.40	1.67	0.90
Demand	22.86	22.78	26.21	26.43
Total	*24.14*	*24.18*	*27.88*	*27.33*
Collection (Rs. Lakh)				
Arrear	-	-	-	-
Demand	20.28	20.14	22.83	22.89
Total	20.28	20.14	22.83	22.89
Collection Performance (%)				
Arrear	-	-	-	-
Demand	89%	88%	87%	87%
Total	***84%***	***83%***	***82%***	***84%***

Source: Rajapalayam Municipality & Analysis.

149. Own Sources/Non Tax. This item head comprises of income from Municipal properties, fees on Municipal services (building permission, etc.), income from interest on investment and miscellaneous services. On an average, through the assessment period, own source/non tax income constitutes 18.44 percent of the total revenue income. Income from remunerative enterprises, income from fees and fines constitute the major revenue sources under this item head. Income through non-tax own sources of the Municipality has grown over the assessment period at a CAGR of about 15.22 percent.

Remunerative Enterprises: Income from remunerative enterprises is the non-tax income in the form of rentals from assets like shopping complexes, market fee, parking fee and income from other real assets owned by the Municipality. Income from the remunerative assets of the municipality contributed just below one percent of the revenue income during the assessment period and registered a high CAGR of about 73.43 percent. The average revenue mobilized during the review period under this item head is Rs. 6.32 Lakh.

150. Assigned Revenues. This item head comprises of income from Government of Tamil Nadu (GoTN)/State transfers of Municipal income collected by the state line department. Transfers are in the form of Municipality's share of taxes levied and collected by GoTN from establishments/operations within the municipal limits. Surcharge on transfer of immovable properties and entertainment tax, are the major items on which these revenues are realized by Municipality.

Table 6.6: Income from Assigned Revenue

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
Entertainment Tax	21.58	6.35	38.73	10.95
Surcharge on Stamp Duty	31.79	25.12	77.37	75.61
Other Transfers	0.17	-	0.01	0.98
Total	**53.54**	**31.46**	**116.11**	**87.54**
Share in total Revenue Income (%)	9.82	6.30	15.80	11.66
Growth (%)		*(41.23)*	*269.03*	*(24.61)*

Source: Rajapalayam Municipality & Analysis.

151. Income through assigned revenues contributes around 10.89 percent of revenue income and it is growing at an average compounded annual growth rate of 17.81 percent during the review period. It is observed (**Table 6.6**) that the inflow from this account head has been inconsistent due to delays in transfers and deductions at source towards municipality debt repayment commitments and/ or other dues payable to GoTN.

(i) *Entertainment Tax*: The Commercial Tax (CT) Department collects entertainment tax from six cinema halls (with a total capacity of 69,000 seats) functioning within Municipal limit. The CT Department transfers 90 percent of the total tax collection to Municipality, and retains 10 percent towards management charges. Entertainment tax accounts for around 2.99 percent of total revenue income.

(ii) *Stamp Duty*: Surcharge on stamp duty is another assigned revenue source,

accounting for 7.86 percent of revenue income during the assessment period. It is levied in the form of a surcharge on stamp duty applicable on all properties registered or transferred within Municipality limits. The Registration Department collects and 90 percent of the collections are transferred to Municipality.

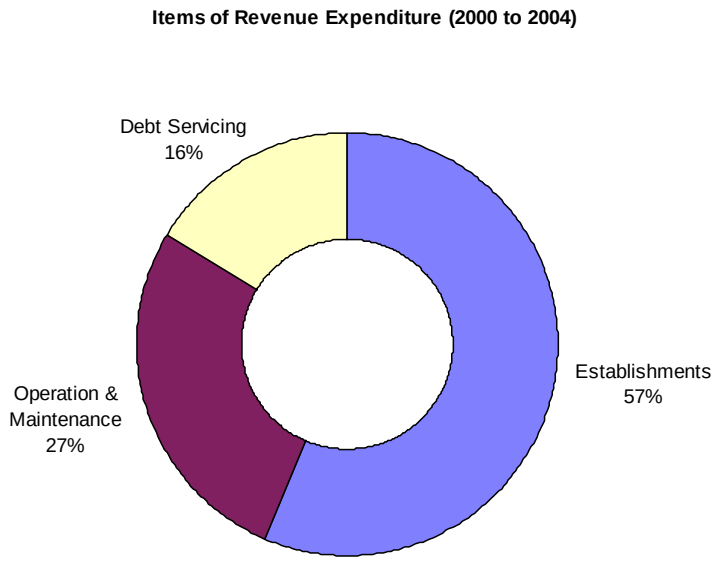
152. Revenue Grants and Contribution. This item mainly comprises revenue grants and compensations from the State Government under various heads. The regular grants include the SFC grants and the others include aid grants, grants for services like roads, buildings, maternity and child welfare, public health, contributions for elementary and secondary schools and etc. Grants which are for specific purposes are ad-hoc in nature. In case of Rajapalayam Municipality, revenue grants and contributions constitute about 31.53 percent of the total revenue income and have registered an average annual growth rate of 23.23 percent. SFC Devolution is major item of grants, which is transferred as part SFC recommendation. As per SFC recommendation, 12% of state revenue under pool B is transferred to each local body based on a formula recommended by SFC. The fluctuation in SFC grant is due to delay and deduction at source.

Table 6.7: Income from Revenue Grants

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
State Finance Commission Grant	100.16	110.45	204.20	308.24
Other Grants	64.54	3.43	31.71	-
Total	*164.70*	*113.88*	*235.91*	*308.24*
Share in total Revenue Income (%)	30.20	22.79	32.10	41.05
Growth (%)		*(30.86)*	*107.16*	*30.66*

Source: Rajapalayam Municipality & Analysis.

Figure 6.5: Items of Revenue Expenditure (2000 to 2004)



153. *Revenue Expenditure*. Revenue expenditure of Municipality has been analyzed based on expenditure heads broadly classified under the following departments- General Administration and Tax collection, Public Works and Roads, Street Lighting, Public Health & Conservancy, Town Planning and Miscellaneous Items. Water supply and drainage revenue expenditure is analyzed separately and the same is presented in the following section. Revenue expenditure is further classified under Establishment, Operation & Maintenance and Debt Servicing.

Table 6.8: Sector wise Revenue Expenditure

Item	2000-01	2001-02	2002-03	2003-04
	Amount in Rs. Lakh			
Establishment	279.78	265.62	288.89	278.97
Operation & Maintenance	98.18	102.78	169.19	195.72
Debt Servicing	17.22	33.84	291.05	78.77
Total (excl. W&D A/C)	**395.18**	**402.24**	**749.13**	**553.46**
Growth (%)		*1.79*	*86.24*	*(26.12)*

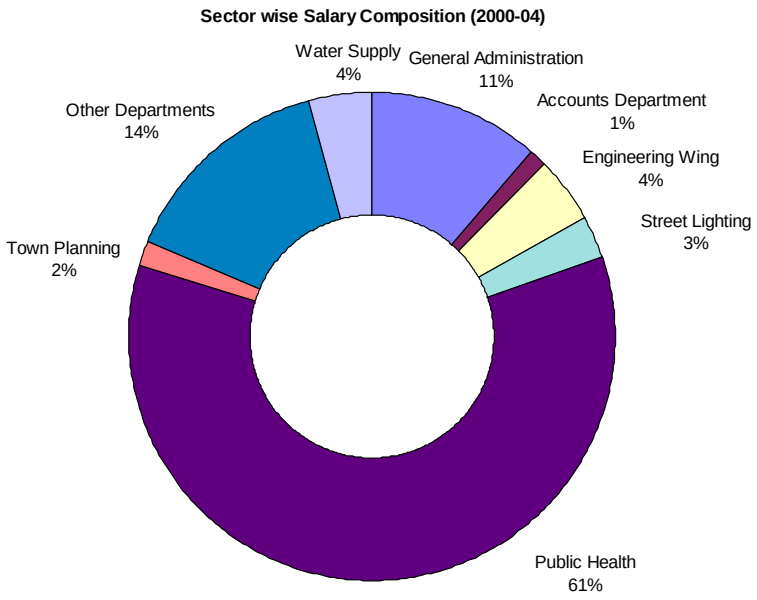
Source: Rajapalayam Municipality & Analysis.

154. Establishment Expenditure. Establishment expenditure alone accounts for about 57 percent of revenue expenditure, excluding water supply and drainage account. About 43 percent of the total revenue income is utilized for payment of salaries excluding water supply and drainage staff salary and other related expenses. Apart from this about 16.46 percent of the total revenue expenditure utilized for debt servicing during the review period.

155. For the assessment period, revenue expenditure grew at an average rate of 11.88 percent; while growth in revenue income was 11.25 percent during the same period. This indicates that revenue expenditure of Municipality has to be controlled; otherwise this will end in deficit.

156. Further, while expenditure on establishment grown at negative annual average rate of 0.10 per cent, expenditure on O&M grew at an average rate of 25.85 percent per annum indicating that the Operations and maintenance expenditure have to be controlled.

Figure 6.6: Sector Wise Salary Composition (2000 to 2004)



157. The following table presents sector / department wise salary expenditure during the assessment period. Since, the department wise establishment expenditure is not furnished in the account statement (consolidated figures only available in the 2000 series), consultant used the third SFC questionnaires for working out the department wise salary. Over 61 percent spent for conservancy staffs salary and around 14 percent for other department salary (excluding engineering, street lighting, water supply, general admin & public health departments). Water supply staff salary contributes only 4 percent of the total expenditure incurred towards establishments.

Table 6.9: Sector wise Salary

Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
General Administration	26.58	25.57	24.32	24.15
Accounts Department	2.61	2.50	2.19	2.17
Engineering Department	10.12	9.88	9.02	8.97
Water Supply	9.18	9.00	8.70	8.51
Street Lighting	6.34	6.30	5.71	5.64
Public Health Conservancy	146.63	134.61	122.44	122.37
Town Planning	4.02	3.98	3.85	3.79
Other Departments	33.61	31.75	30.81	30.70
Total	**239.09**	**223.59**	**207.04**	**206.30**

Source: SFC Questionnaire Document

158. Establishment expenditure of all sections (excluding water & drainage account) accounts for an average of 57 percent of revenue expenditure. Though the growth rate of establishment expenses has fallen the actual results of privatization efforts are yet to reflect on accounts. In the coming years, these expenses are expected to go down due to the reforms taken up by the Municipality. It is necessary that the Municipality goes ahead with such privatization initiatives so as to improve upon and allocate more amounts for the O&M and debt servicing.

159. Operations & Maintenance. Operation and maintenance expenditure of all sections together accounts for 27.09 percent of revenue expenditure and had increased at an average rate of 25.85 percent per annum.

160. Street lighting, public works and roads conservancy are the major expenditure items. O&M expenses are dominated by power charges for street lighting, while that for the upkeep of roads has been very minimal. Street lighting sector can be put for privatization and implement energy conservation measures to curtail the costs on repairs, replacements and power charges.

161. Debt Servicing. A review of the outstanding loan statement of Municipality, as on March 31, 2005, i.e., at the start of the FY 2004-05 reveals that the net outstanding debt liabilities of Municipality are at Rs. 3,057.84 Lakh. **Table 6.10** details out the agency wise outstanding loans.

Table 6.10: Out standing Loan Statement

Item	**Loan Amount**	**Outstanding**
	Amount in Rs. Lakh	
Government of Tamil Nadu	1,575.70	1575.70
TNUIFSL	115.00	114.64
IDSMT	599.67	570.96
WSPF	51.00	51.00
Other Loans	926.99	745.54
Total	*3,268.36*	*3,057.84*

Source: Rajapalayam Municipality & Analysis.

162. The total amount of loans drawn by the Municipality till date is Rs. 3,268.36 Lakh, majority of it from Government of Tamilnadu. It needs mention that the ratio of outstanding loans to current demand of property tax is about 920 percent. The ratio in terms of ARV (estimated at Rs. 4,337) is 1.72; thereby indicating that the Municipality is capable of leveraging additional debt to finance its projects as this is below the threshold of 2 to 3 (generally considered by Financial institutions).

163. Debt servicing accounted for around 14.43 percent of revenue expenditure (including all funds) during the review period and the DSR (as % of revenue income) is around 12.05 percent, which is well below the threshold level of 25 percent, as considered by financial institutions. The Municipality has to start to focus upon sustainable debt servicing after having cut down establishment costs to improve its credit rating and capability towards leveraging additional debts.

4. Water Supply and Drainage Account

164. As mentioned earlier, local bodies in Tamilnadu maintain a separate water supply and drainage fund. Hence to maintain the consistency and also to assess the cost recovery aspect, the consultants have analyzed the water fund separately. The details are provided in the following table and the water supply and drainage revenue fund expenditure trend is plotted on a graph.

Table 6.11: Revenue Account Status of Water Supply and Drainage Fund

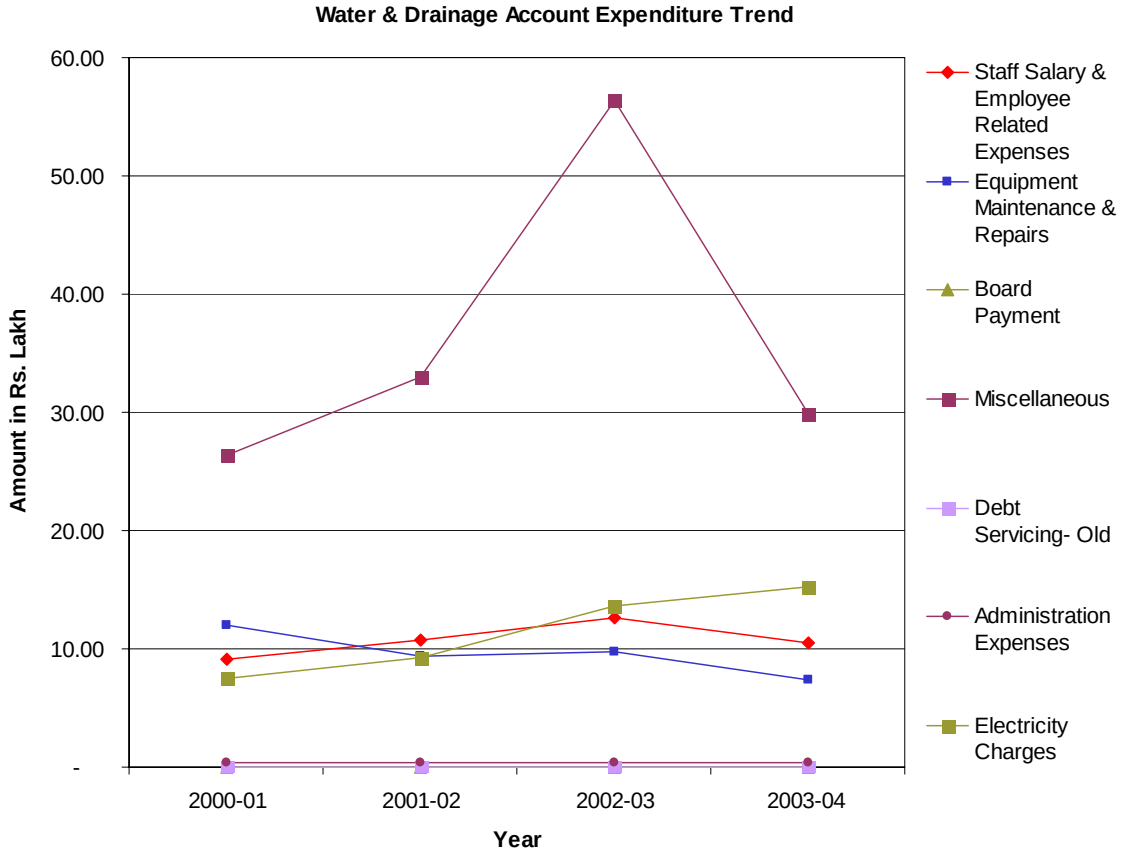
Item	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	Amount in Rs. Lakh			
Revenue Income				
Water & Drainage Tax	106.83	98.16	97.47	100.16
Water Charges	33.92	67.97	70.98	62.72
Water Supply & Sanitation Grant	-	-	-	-
Other Income	0.18	0.39	5.79	1.12
Total	*140.93*	*166.52*	*174.24*	*163.99*
Revenue Expenditure				
Establishments	9.48	11.15	13.04	10.90
Electricity Charges	7.52	9.20	13.60	15.30
Board Payment	-	-	-	-
Miscellaneous	46.85	49.25	75.28	46.06
Debt Servicing- Old	-	-	-	-
Total	*63.85*	*69.59*	*101.92*	*72.26*
Surplus/Deficit	**77.08**	**96.93**	**72.32**	**91.74**
Recovery (%) excl. tax	53%	98%	75%	88%

Source: Rajapalayam Municipality & Analysis.

165. Salaries of staff directly working in the water supply department are booked under this head, while salaries of other engineering staff performing administrative functions related to water supply are booked under the engineering section of general fund. Expenditures incurred under this account comprised of 14.88 percent power charges and other operation & maintenance expenses accounts 24.11 percent and 14.69 percent on establishment costs.

About 46.32 percent is spent on miscellaneous water supply and drainage related expenditures it includes hire charges for supply of water through private lorries and tankers.

Figure 6.7: Water & Drainage Account Expenditure Trend



166. The cost recovery incase of excluding water and drainage tax income work out to 79 percent of the revenue expenditure incurred in the water supply and drainage fund account. Thus the above analysis indicates that the current tariff is not able to recover full share of the O & M expenses, when it is compared with only water charges. Major share of water supply income is derived by way of water and drainage taxes, which account for about 63 percent of water supply & drainage income.

167. There are a total of 15,867 water supply house service connections as of 2004-05 provided by the Municipality in the town. The average collection performance of water charges for the review period indicated in **Table 6.12**.

Table 6.12: Water Charges – Demand Collection and Balance Statement

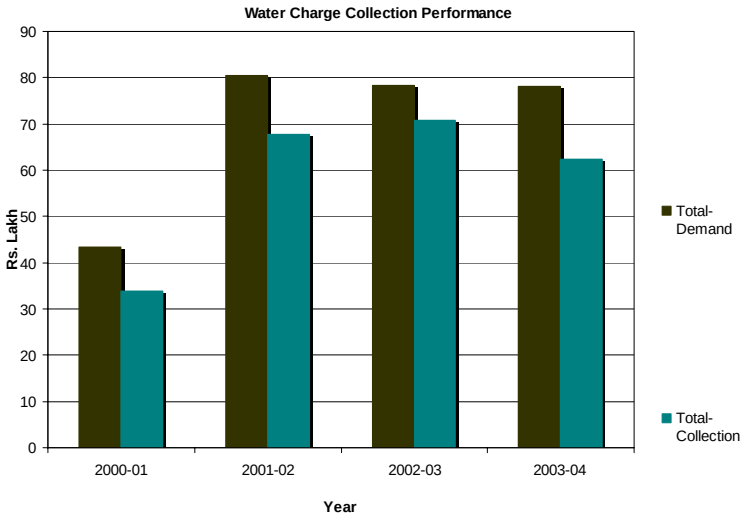
Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	6.80	9.50	7.10	7.22
Demand	36.56	71.00	71.14	71.01
Total	*43.36*	*80.50*	*78.24*	*78.23*
Collection (Rs. Lakh)				
Arrear	4.03	5.71	4.53	3.53

Item	2000-01	2001-02	2002-03	2003-04
Demand	29.79	62.06	66.22	58.78
Total	*33.82*	*67.77*	*70.75*	*62.31*
Collection Performance (%)				
Arrear	59%	60%	64%	49%
Demand	81%	87%	93%	83%
Total	***78%***	***84%***	***90%***	***80%***
Total no of Connections (Nos)	8,947	13,117	13,563	13,805
Growth in Connections (%)	*46.61%*	*3.40%*	*1.78%*	*14.94%*

Source: Rajapalayam Municipality & Analysis.

Figure 6.8: Water Charge Collection Performance

168. The numbers of House Service Connections stand at just 39 percent of the PT assessments indicating the large numbers of unauthorized connections in the Municipality. The unauthorized connections and unassessed properties need to be brought under the user charges and municipal tax gambit to effect cost recovery on the investments.



5. Capital Account

169. *Capital Income*. Capital income comprises of loans, grants and own sources like revenue account surplus transfer for capital works. The detailed components of capital income are presented in **Table 6.13**. An analysis of this account indicates that loan amount have contributed the maximum share of income under this account. While on an average 76 percent of the capital income is in the form of loans and about 21 percent in the form of grants and balance from transfer from revenue account for capital works and sale of municipal property.

Table 6.13: Status of Capital Account - General

Item	2000-01	2001-02	2002-03	2003-04
	Amount in Rs. Lakh			
Capital Income				
Capital Loans	118.59	142.23	175.35	422.29
Capital Grants and Contribution	23.61	30.02	129.14	52.71
Own Sources	0.94	-	19.51	19.51
Total (excl. W & D a/c)	*143.14*	*172.25*	*324.00*	*494.52*
Capital Expenditure				
General	3.96	7.20	207.52	67.28

Item	2000-01	2001-02	2002-03	2003-04
	Amount in Rs. Lakh			
Public Works and Roads	235.62	381.38	194.67	194.30
Street Lighting	9.80	-	1.22	-
Public Health & Conservancy	-	-	-	-
Education	-	-	6.82	-
Others	9.02	0.46	1.13	27.50
Total	*258.39*	*389.05*	*411.36*	*289.08*
Surplus/Deficits (excl. W &D a/c)	*(115.25)*	*(216.80)*	*(87.36)*	*205.44*

Source: Rajapalayam Municipality & Analysis.

170. *Capital Expenditure*. The majority of capital expenditure has been directed towards general purpose includes all item of works excluding water supply and drainage and roads over the past four years, this is due to fact TNUDF/TUFIDCO had funded most of the municipalities for roads during the assessment period. About 76 percent of the capital expenditure was utilized for public works and roads.

171. Analysis of capital income and capital expenditure notes that the account was in surplus during the FY 2003-04, indicating lesser utilization of allocated funds or just start of utilization of allocated funds.

172. Water supply and drainage capital account status is detailed in **Table 6.14**. Capital income is mainly from water supply connection charges, other than that capital grants were also received during the FY 01-02 & FY 02-03. Capital account is deficit during the entire review period.

Table 6.14: Status of Water Supply and Drainage Capital Account

Item	2000-01	2001-02	2002-03	2003-04
	Amount in Rs. Lakh			
Capital Income				
Capital Loans	-	-	-	-
Capital Grants and Contribution	-	1.00	8.90	-
Own Sources	3.68	1.90	0.97	9.79
Total	*3.68*	*2.90*	*9.87*	*9.79*
Capital Expenditure				
Water supply	-	4.65	403.33	21.27
Drainage &Sanitation	14.03	131.12	61.33	68.62
Total	*14.03*	*135.77*	*64.66*	*89.89*
Surplus/Deficits	*(10.36)*	*(132.87)*	*(454.79)*	*(80.10)*

Source: Rajapalayam Municipality & Analysis.

6. Assets and Liabilities

173. Current assets and liabilities of Rajapalayam Municipality include monies due to Municipality from debtors and monies due from Municipality to creditors, respectively. **Table 6.15** present a summary of the current assets and liabilities of Rajapalayam Municipality.

174. The current assets include outstanding arrears in property tax, water charges and profession tax and lease rental (non tax items) dues. The total current assets due to municipality are Rs. 832.93 lakh.

175. Current liabilities include the payment of power charges due to TNEB, Salaries Payable, PF and other contribution due, tax /cess payable to government, other payables and deposits. The net liability of Rajapalayam Municipality is Rs. 572.25 lakh. The current ratio is the ratio of total current assets to total current liabilities, which is used to measure short term liquidity of a ULB. The idea behind measuring this ratio is to assess whether the ULB has enough liquid assts to pay off its current obligations when they fall due. Intuitively one would expect that this ratio should be over 1. In case of Rajapalayam Municipality the current ratio is 1.46 and this is more than one is comfortable current ratio.

Table 6.15: Summary of Current Assets and Liabilities status

Description	**Amount (Rs. Lakh)**
A. Current Assets	
Property Tax Recoverable	174.94
Profession Tax Recoverable	5.87
Water Charges Recoverable	22.25
License/Lease/Rental/other Recoverable	0.57
Other Recoverable	515.32
Cash on Hand /Bank	113.98
Total – Current Assets	*832.93*
B. Current Liabilities	
Salaries Payable	0.22
PF and Other Contribution	8.67
TNEB	-
Library Cess Payable	0.48
Other Payables	381.41
Recoveries from Staff	13.36
Deposits	168.10
Total – Current Liabilities	*572.25*
Net Status	**260.67**

Source: Rajapalayam Municipality & Analysis.

7. Key Financial Indicators and Issues

176. A set of key financial indicators has been derived using the financial data procured from the Municipality for the assessment period. **Table 6.16:** present these indicators. These indicators are used to assess the municipal performance with regards resource mobilization, fund utilization, financial performance and collection efficiencies.

Table 6.16: Key Financial Indicators

	Indicators	**Value**	**Unit**
A	**<u>Resource Mobilization</u>**		
1	Per Capita Income	648	Rs. p.a
2	Sources of Funds		

	Indicators		Value	Unit
	a	Share of Own Sources in Total Revenue Income (RI)	66.10	%
	b	Share of Property Tax in Total Revenue Income	41.14	%
	c	Share of Revenue Grants & Subsidies in Total RI	25.18	%
3	Growth in Revenue Income		10.06	% p.a
4	Growth in Own Sources of Revenue Income		2.86	%
5	Per Capita Own Income		290	Rs. P.a
B	**Fund Application**			
1	Per Capita Expenditure		491	Rs. p.a
2	Uses of Funds			
	a	Share of Establishment Expenditure in Total RE	50.87	%
	b	Share of O&M Expenditure in Total Revenue Expenditure	34.70	%
	c	Share of Establishment Expenditure to Total RI	36.45	%
3	Growth in Establishment Expenditure		0.19	%
4	Growth in O&M Expenditure		16.34	%
5	Growth in Total Revenue Expenditure		18.89	% p.a
C	**Liability Management**			
1	Per Capita Liability (2004-05 estimated)			
	a	Outstanding Debt per Capita	2,447	Rs.
	b	Outstanding Non-Debt Liability per Capita	39	Rs.
	c	Total Outstanding Liability per Capita	2,486	Rs.
2	As a Proportion of Property Tax Current Demand (2003-04 estimated)			
	a	Outstanding Debt as % of P.T Demand	920.83	%
	b	Outstanding Non-Debt Liability as % of P.T Demand	14.86	%
	c	Total Outstanding Liability as % of P.T Demand	935.09	%
3	As a Proportion of Property Tax Own Revenue Income (2003-04 estimated)			
	a	Outstanding Debt as % of Own Revenue Sources	589.04	%
	b	O/s Non-Debt Liability as % of Own Revenue Sources	9.51	%
	c	Total O/s Liability as % of Own Revenue Sources	598.54	%
4	Non-Debt Liability as % of Total Liability		1.59	%
5	Debt Servicing Ratio (D.S/ Revenue Income)		12.05	%
D	**Performance Indicators**			
1	Operating Ratio		0.75	Ratio
2	Growth in Per Capita Own Income		1.95	% p.a
3	Growth in Per Capita Grant		22.24	% p.a
4	Growth in Per Capita Total Revenue Income		9.17	% p.a
5	Growth in Per Capita Establishment Expenditure		(0.74)	% p.a
6	Growth in Per Capita O&M Expenditure		18.04	% p.a
7	Growth in Per Capita Revenue Expenditure		9.98	% p.a
8	Capital Utilization Ratio		2.16	Ratio

	Indicators		Value	Unit
E	**Efficiency Indicators**			
1	Tax Collection Performance			
	a	Property Tax	77%	%
	b	Water Charges	83%	%
	c	Sewer Charges	NA	%
	d	Profession Tax	83%	%
2	No. of P.T Assessments per Tax Collection Staff		3,723	Nos.
3	Property Tax Demand per Assessment		4,337	Rs. p.a
4	No. of Municipal Staff per 1000 Population		2.46	Nos.
5	Annual Revenue (Own Source) per Municipal Staff		11.57	Rs. Lakh p.a
6	Population per Residential P.T Assessment		3.48	Persons

Source: Analysis.

177. *Resource Mobilization Indicators*. These indicators summarize the performance of the Municipality with regards sources of funds. Rajapalayam Municipality derives about 66.10 percent of its revenue income from own sources, while grants account for just about 25.18 percent of the revenue income.

178. *Fund Application Indicators*. These indicators are a measure to ascertain the utilization from the municipal fund. Around 51 percent of the revenue expenditure is spent on establishment heads, only about 35 percent for O&M of municipal assets and services. Leaving only 14 percent utilized for debt servicing. Establishment expenditure accounts for about 36 percent of the total revenue generated by the Municipality.

179. *Liability Management Indicators*. These indicators are a measure to ascertain the utilization from the municipal fund regards to debt servicing. The ratio of debt servicing to revenue income is only 12.05 percent during the assessment period. The per capita average outstanding debt works out to a very high 2,447 rupees and per capita non debt liability is 39 rupees. Out standing debt to property demand is high at 920 percent and non debt liability is 15 percent times the property tax demand for the current year.

180. *Overall Financial Performance Indicators*. These indicators are a measure to assess the overall financial performance of the Municipality with regards operational performance and effective growth in revenue income and expenditure. The average operating ratio during the assessment period was a healthy 0.75 and the capital utilization ratio was high at 2.16 indicating frequent utilization of revenue surpluses in asset creation. The indicators of growth in per capita income and expenditure item heads indicate the effective growth, giving a performance measure relative to the growing population. Rajapalayam Municipality has demonstrated 9.17 percent annual growth in per capita revenue income during the assessment period, while the per capita revenue expenditure has grown at 9.98 percent during the same period. This indicates that as population increase revenue fund will be in deficit, there is a need for controlling operation and maintenance expenditure.

Service Adequacy and Key Issues

Key issues and conclusions are based on the review and assessment municipal finances and discussions with relevant municipal officials.

181. These indicators are essentially a measure to assess Municipal efficiency with regards revenue base coverage and realization. Rajapalayam Municipality has maintained a good collection performance both with regards property tax and water charges (77 percent and 83 percent respectively). The average population per residential assessment at 3.48 indicates that the property tax base has a wide coverage.

(i) Maintenance and Reporting of Accounts. The State Government deducts debt due by the ULB and then transfers funds (SFC devolution) the ULB records do not capture such apportionment. ULB's do not maintain department/sector wise salary expenditure as mentioned in the ULB's Accounting Manual.

(ii) Revenue Realization. Taxes and charges are major own sources of revenue income. Being more dynamic in nature and within the control of the ULB, these revenue incomes have potential to contribute more to the municipal fund. Besides low tax rates and charges levied, the actual demand itself is not established. Key issues regarding the above comprise:

(iii) Low water supply coverage witnessed there are chances of illegal/ unauthorized connections in the town; and

(iv) High per capita Revenue expenditure witnessed during FY 02-03. Financial transaction trends not commensurate with population growth trends, resulting in reduction in per capita expenditure levels,

(v) Fund Application. Key issues regarding application from the municipal fund comprise:

(vi) About 51 percent of the total expenditure is on establishment-related heads, leaving relatively lower amounts for expenditure on operation and maintenance of services.

VII. URBAN BASIC SERVICES FOR POOR

A. Overview

182. The city presents a range of activities in industrial and commercial sectors. Growth in such activities along with possibilities of absorption in industrial, allied as well as service sectors and scope of employment in trade and business activities, hawking, retailing, carting etc. have attracted rural poor to the town. There are 10 slums and houses 13.4 percent of the total population.

183. The total population residing in the slum localities of Rajapalayam is 16,369 persons and the number of households is 4326. While the extent of area under the slums and the ownership of the same was not available to arrive at any basic conclusions. The total number of households in the slums accounts to 10.17 percent of the total households in the town. The details of slums is given in **Table 7.1**

Table 7.1: Details of Slums

S No	Location	Ward No.	Household	Population	No. of BPL Households	% BPL Households
1	Mela Avarampatti	2	400	1,489	163	34.32
2	Kela Avarampatti	3	364	1,701	40	11.33
3	Somaiyapuram	9	95	442	18	6.79
4	Somaiyapuram	10	372	1,851	143	16.31
5	Kumaran Street	16	609	1,978	85	73.28
6	Ooranipatti Street	16	316	1,065	89	36.63
7	Mission Koil Street	17	242	1,214	118	25.88
8	Malaiyadi patti	21	109	500	66	9.17
9	Malaiyadi patti	27	148	642	59	18.5
10	Duraisamypuram	26	479	1,804	161	54.58
11	Thoppupatti Street	30	369	1,280	126	58.33
12	Thiruvananthapuram Road, Mangapuram	34	216	588	70	22.58
13	Mangapuram	34	187	439	79	43.89
14	Mangapuram	35	420	1,376	70	53.03
Total			**4326**	**16,369**		**28.12**

Source: Rajapalayam Municipality

1. Water Supply

184. Distribution network in the slums is 139 percent (9.64 km) of the total road length. There are 44 public stand posts and 63 hand pumps augment the supply. However, slums in Malaiyadipatti area (wards 20, 21, 27) and the areas to the east of the railway line in the town do not have piped water supply system. The water supply details is given in **Table 7.2**

2. *Sanitation*

185. There are 267 low cost sanitation units and eleven public convenience systems (of which six are ISP units). Each public convenience system has eight seats and ISP units have 10 major + six minor seats and all together there are 136 seats catering to the population living in the slums. The slums located near the commercial core of the town lack sanitation facilities. The sanitation facilities in the slums are poor at 120 slum dwellers per seat of public convenience with lack of Storm Water Drainage facilities, un-cleaned filth and solid waste. Such conditions can easily make many of these locations easy prey to water borne diseases like malaria, hepatitis B, typhoid, gastro enteritis etc.

186. Rajapalayam municipality has in recent years constructed public toilets in certain slum localities under the Integrated Sanitation Program. All the sanctioned (6 nos) units are constructed. The community maintains these units themselves through a nominal user charge. Further the reconnaissance survey also indicated the willingness on part of the slum dwellers to pay and maintain if provided with public toilets near their neighborhood. The sanitation details is given in **Table 7.2** and location of slums in **Map 7.1**

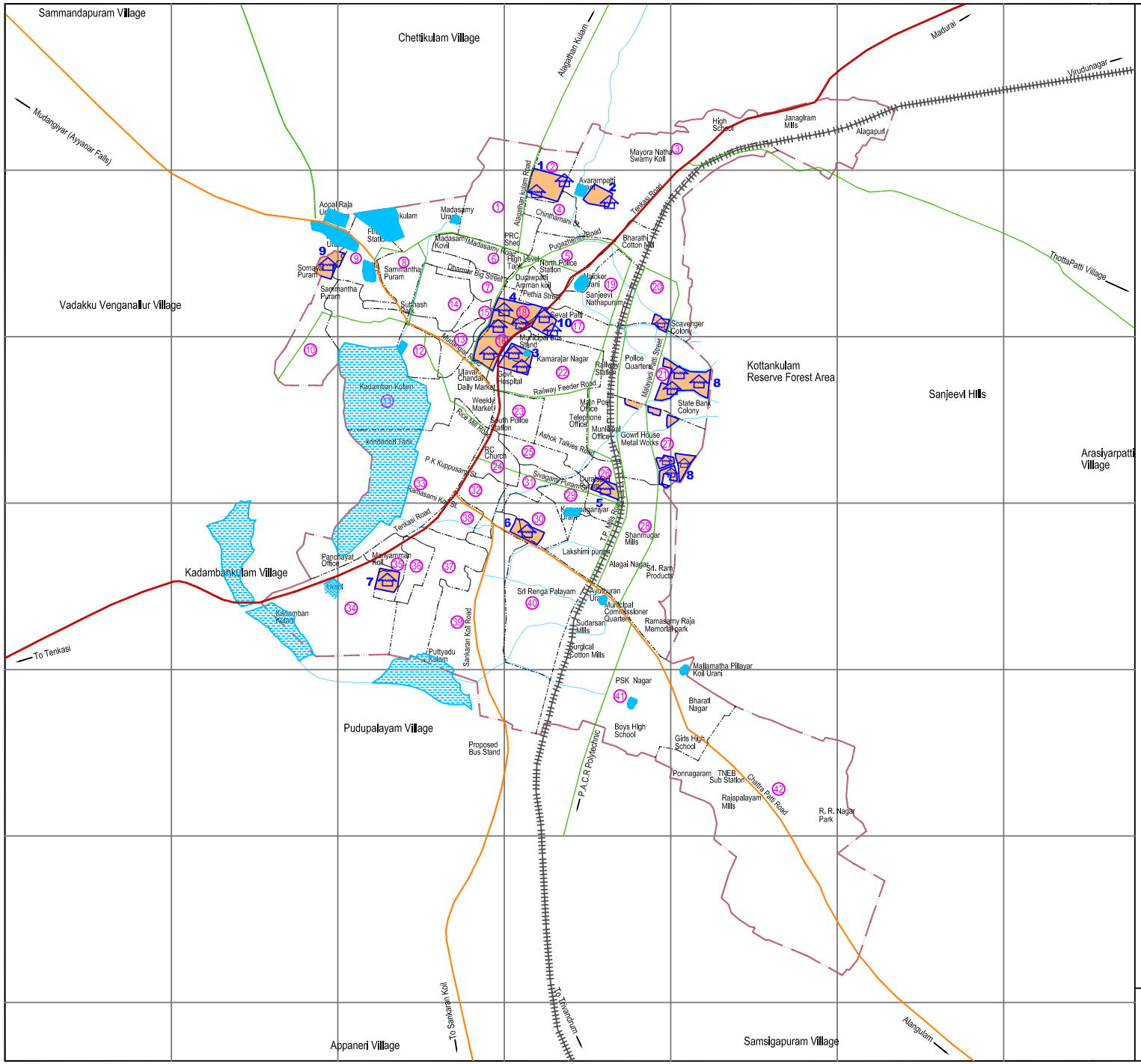
3. *Roads and Street lights*

187. The Municipality has laid bituminous and cement concrete roads in most slums giving a good connectivity with other areas of the town. A total of 2.80 km of bituminous and 3.65 km of cement concrete roads are provided in slum localities. For the available road length, streetlights are adequately provided at an average of one light for every 10 m. (**Table 7.2)**

Table 7.2: Details of Infrastructure Available in Slums

Slum Name	**Ward No.**	**Length of Roads**		**Water Supply**			**Public Conveniences**	**Street Lights**		
		CC	**BT**	**Piped**	**PSP**	**HP**		**MV**	**SV**	**Tu**
		Km	*Km*	*Km*	*Nos.*	*Nos.*		*Nos.*	*Nos.*	*Nos.*
Mela avarampatti	2	0.63	0.82	1.20	5	8	1 (16)	30	21	80
Kela avarampatti	3	0.13	0.30	1.08	6	8	2 (16)	4	18	50
Somaiyapuram	9,10	0.50	0.12	1.62	4	9	2 (24)	4	17	50
Kumaran and Ooranipatti	16	0.61	0.14	1.80	7	8	-	10	37	101
Mission Koil St.	17	-	-	-	-	-	-	-	-	-
Malaiyadi patti	21.27	0.21	0.33	-	-	12	3 (48)	2	3	10
Duraisamypuram	26	0.70	0.40	1.42	6	8	1 (8)	14	53	122
Thoppupatti St.	30	0.45	0.31	0.95	4	3	1 (16)		2	9
Thiruvanantha puram Road	33,34	0.20	0.17	0.70	7	3	-	8	8	19
Mangapuram	34,35	0.23	0.23	0.87	5	4	1 (8)	10	9	22
Total		3.65	2.80	9.64	44	63	11(136)	82	168	463

Source: Rajapalayam Municipality



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

- Approved Slum Area

Notes :

Slum Area Names :

1. Mela Avarampatti
2. Kela Avarampatti
3. Urani Street
4. Kumaran Street
5. Duraisamypuram
6. Thoppupatti Street
7. Mangapuram
8. Malaiyadipatti
9. Somaiyapuram
10. Mission Koil Street

LOCATION OF SLUMS

N

Scale :

0 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. **6.1**

B. Poverty Alleviation and Community Development

1. Policies, Targets and Programs

188. Slum improvement programs indicate that by improving basic infrastructure and access to municipal services, there is a significant impact on the quality of life of slum residents, both poor and non-poor. To alleviate the problems of slum dwellers and to reduce urban poverty, a set of programs are initiated and are being implemented by the municipality with assistance from state and central government. Two major slum improvement programs are implemented in Rajapalayam viz., Swarna Jayanti Shehri Rojgar Yojna and National Slum Development Program apart from the other programs like the Integrated Sanitation Program.

189. The SJSRY is planned to provide employment to the urban poor by helping to provide self-employment or provisions for wage employment. It is funded on 75:25 basis between Centre and State Governments. The target groups will be a minimum of 30 percent women beneficiaries. The proportion of the Schedule Caste and Schedule Tribe will be the same proportion as in total population of the town. Three percent is reserved for handicaps.

190. Given the complexity of the social, economic and physical environment in which a growing number of urban poor eke out their livelihoods, it is clear that the formulation of anti-poverty measures and the design of slum improvement programs is a difficult issue. A review of slum improvement programs indicate that by improving basic infrastructure and access to municipal services, there is a significant impact on the quality of life of slum residents, both poor and non-poor. To alleviate the problems of slum dwellers and to reduce urban poverty, a number of programs are initiated and being implemented by the municipality with assistance from state and central government.

191. Some of the major slum improvement programs implemented in Rajapalayam include;

(i) Swarna Jayanti Shehri Rojgar Yojna (SJSRY)
(ii) Development of Women and Children in Urban Areas (DWCUA)
(iii) Urban Skill Training
(iv) National Slum Development Program (NSDP)
(v) Thrift and Credit Societies (TCS)
(vi) Integrated Sanitation Program (ISP)
(vii) Valmiki Ambedkar Awas Yojna (VAMBAY)
(viii) Balika Samruddhi Yojna (BSY)

2. Government Assisted Schemes

192. *Swarna Jayanti Shehri Rojgar Yojna (SJSRY):* This program is to provide employment to the urban poor through provisions for self-employment or wage employment. It is funded on a 75:25 basis between central and state governments. The target groups will be a minimum of 30 percent women beneficiaries. The proportion of the Schedule Caste and Schedule Tribe population will be the same proportion as is in the total population of the

town. Three percent is reserved for handicapped. This program is implemented on a whole town basis with special emphasis on urban poor clusters.

(i) Urban Wage Employment Scheme
(ii) Urban Self Employment Programme
(iii) Under Skill Training.

193. A task force is formed for the implementation of the SJSRY in the town.

194. *Urban Wage Employment Program:* Urban Wage Employment scheme for urban poor started in 1998. 22,972 person-days of work were generated in 1999/ 2000 under this scheme. During 2000/ 01, twenty works worth Rs. 10.83 lakhs were taken up to construct cement concrete roads on seventeen streets, construction of water tank in MGR Nagar, construction of compound wall in Sengunthar street and construction of compound wall around the Kayalkudi Burial ground. The works done under the scheme and fund allocation for the same has been gradually decreasing against the increasing urban poor

195. *Urban Self-Employment Program (USEP):* - The municipality has been conducting training programs for the Below Poverty Line population on options of self-employment. This program is decided by the selection of beneficiaries who are finalized by the Task force on the recommendations of the Community Structures and the UPE Cell. In these programs, the Council is not involved because of the non-involvement of the Urban Local Body funds. While Rs. 1.20 lakhs was disbursed among 48 identified beneficiaries during 1997-98, the amount disbursed went up to 13.77 lakhs during 1998-99.

196. The amount is disbursed in the form of loans where the maximum unit cost will be Rs. 50,000/-. The maximum allowable subsidy is 15 percent of the project cost subject to a limit of Rs. 7,500/-. The beneficiary is required to contribute 5 percent of the project cost as margin amount. Units like, Polythene bag making, small time business shops, petty shops, tea stalls, crockery shops, cycle shops, mobile laundries were set up by the beneficiaries. During the year 1999-2000 the disbursement was Rs. 0.99 lakhs among 62 beneficiaries and during the year 2000/ 01, a total of Rs. 1.25 lakhs was disbursed among 12 beneficiaries

197. *Development of Women and Children in Urban Areas (DWCUA):* This scheme is distinguished by the special incentive extended to urban poor women who decide to set up self-employment ventures as a group as opposed to individual effort. Groups of poor women shall take up an economic activity suited to their skill, training, aptitude and local conditions. Besides generations of income, their group shall strive to empower the urban poor women by making them independent as also providing a facilitation atmosphere for self-employment.

198. A total of Rs. 41,600/- was utilized under this program during the year 1998-99 and another Rs. 80,000/- during 2000-01. 50 percent of the total amount is given to the beneficiaries in the form of loans by banks, while the rest of the amount was disbursed by the municipality from the grants received from the central and state governments. Each group that has benefited has ten individuals. The beneficiary groups have taken up units like Rice shops, Shoe shops, Readymade garment shops, Spice Powder Production etc.

199. With the subsidies from the Central and State governments, money was also disbursed as part of the Skill Training Program, Infrastructure development Program, Community Structure program and Thrift and Credit Society Program

200. To be eligible for subsidy under this scheme, the Development of Women and Children in Urban Area group should consist of at least 10 urban poor women. The group shall select an organizer from amongst the members. The group will also select its own activity. The Development of Women and Children in Urban Area group society shall be entitled to a subsidy of Rs. 1, 25,000 or 50 percent of the cost of project which ever is less. Under this program over the past four years 90 members got benefited

201. *Thrift and Credit Societies:* The Development of Women and Children in Urban Area group sets itself up as a Thrift and Credit Society, in addition to its other entrepreneurial activity. The group is entitled to a lump-sum grant of Rs. 25,000/- as revolving fund at a maximum rate of Rs. 1000/- per individual. For the year 1998-99 only two groups formed with 20 members each and availed the opportunity. A total of Rs. 20,000/- was utilized. During the year 2000-01, only one group with 20 members utilized the scheme.

202. *Urban Skill Training:* The intention is to provide training to the urban poor in the service and manufacturing trades as well as in local skills and crafts, to ensure salaried employment ventures or secured salaried employment with enhanced remuneration. The unit cost allowed for training would be Rs. 2000/- per trainee, including material cost, trainer's fees, other miscellaneous expenses to be incurred by the training institution and the monthly stipend, to be paid to the trainee.

203. The total training period for skill up gradation may vary from two to six months, subject to a minimum of 300 hours. Over the past four years, municipality training is imparted to at least 20 individuals. Computer Training was focused upon during the year 1998-99 among 14 beneficiaries and five individuals were benefited during the year 2000-01 through training in car driving incurring an expenditure of Rs. 2000/- each.

204. *National Slum Development Program:* - Under this program, the funding of the works are shared between the (Centre + State-50 percent, Municipality-50 percent). The works are finalized by the decision of the council. They are inspected by the RDMA through the Regional Engineer. Slums are given importance under two categories, Permanent and Non-Permanent. In any case, they are finalized as slums by the Slum Clearance Board. Permanent Slums are be identified by the quality of roads and Storm Water Drainage. Special Priority is given to the following:

(i) Improvement of Drinking water Supply system;
(ii) Laying/Relaying of roads
(iii) Provision of streetlights.
(iv) Storm Water Drainage facilities
(v) Improvement and new Public Conveniences with water Supply.
(vi) Welfare (education, etc.); and
(vii) Shelter Up gradation (individual water connections).

205. Special emphasis is to be given to water supply and sanitation facilities including drainage facilities. The SJSRY community structures of Community Development Societies,

Neighborhood Group, etc have to forward the final requirements to the council for decision. The funds allocated are decided based on the slum population. Over the years, the allotment for the town has been Rs. 12.94 lakhs annually. During 2001-02, ten works were taken up (construction of Over Head Tank, water tanks, Storm water drains, noon meal centre and Rainwater Harvesting Structures etc) and completed incurring an expenditure of Rs. 12.17 lakhs. For the year 2002-03, eight works are taken up and are placed before the council for tender disposal

206. *Integrated Sanitation Program (ISP):* The ISP is a World Bank funded sanitation program through the PMU/ TNUDP-II. The program envisages integrating learning of the health and environmental aspects along with the sanitation activities of the slum communities. Priority is given to the Below Poverty Line population.

207. The program is based on demand driven community participation. Under this program, the recipient community is made aware of various environmental and sanitation aspects. For successful implementation, the program is co-ordinated at the local level through the community organizers (COs) of the SJSRY scheme. The program is generally funded by way of grants. Of the identified amount, a maximum of 50 percent is provided by TNUDP-II as grant in case of selection grade municipalities. Remaining amount is generally funded through funds under the sanitation component of VAMBAY scheme. In case of Grade I, Grade II & Special grade municipalities, up to 80 percent of the identified amount for the construction of these complexes is given as grant by TNUDP-II. The ceiling per ISP is Rs. 10 lakhs. The whole program is planned around the events of sanitation at the Sanitation Complex itself. It is at this place where the community meets as a social group. The major components of the program include:

(i) Identification of the recipient Community of Below Poverty Line Population.
(ii) Provision of an Integrated Complex with Toilet, Bathing, Washing and Meeting Room facilities with special provision of sanitation facilities for children. 16 toilets (10 major +6 minor) are provided for the community. Separate facilities for bathing of 10 units are also provided. A separate platform is also provided for washing clothes as well. Each unit of ISP is constructed at a cost of about Rs. 10 lakhs.
(iii) Awareness program consisting of information, education, communication activities.

208. *VAMBAY/ LCS/ NRY:* This is a housing program, where the central Govt. bears 50 percent of the total subsidy. The rest of the amount is to be borne by the Urban Local Body. So far, the allotments have been in the field of sanitation due to the allocation of 20 percent of the total allotment for construction of sanitary complexes.

209. 1,451 Low Cost sanitation units were constructed as part of the scheme through funds from TUFIDCO. Against a total loan amount of Rs. 30.67 Lakhs, Rs. 11.5 Lakhs is the outstanding amount at the end of the year 2001-02. The loans are given to the beneficiaries through the Urban Local Body. The task of collection of the monthly installments on the loan also rests with the Urban Local Body, which it pays back to TUFIDCO.

210. As part of the NRY scheme, TUFIDCO has over the years given loans to the beneficiaries of the municipality totalling to Rs. 42.53 Lakhs. Loans are disbursed to the beneficiaries by the municipality and the paybacks of the beneficiaries are deposited by the Urban Local Body with TUFIDCO. At the end of the financial year 2001-02, the outstanding amount is

of the order of Rs. 12.68 Lakhs

211. *Balika Samruddhi Yojana (BSY):* Under this program, Rs. 30,000/ per year was sanctioned for the years 1997-98 and 1998-99 respectively. Rs. 42,500/- was spent under the scheme wherein every female child born after 1-10-1998 from the Below Poverty Line families was given cash of Rs. 500/-. At present, instead of disbursing cash, a fixed Deposit is being opened in a bank on the name of the female child for a period of 18 years or till the time she gets married.

Service Adequacy and Key Issues

212. The following are a set of indicators, for which the current situation and the desired values are presented. The desired values can be used as benchmarks by the municipality to check its performance annually/ periodically and set targets for itself to be achieved in the next financial year. This will also aid in preparation of the Annual CCP Progress Reports by the municipality. The indicators in slums are presented in **Table 7.3.**

Table 7.3: The Performance Indicators in Slums

Indicator	Current Situation	Benchmark
Slum population as % to Total Town Population	13.42 %	< 10.0 %
Household size in Slums	4 persons	4 persons
% Slum Households to Total Households	13.33 %	< 6.5 %
Slum Population per Public Stand Post/ Hand Pumps	24 Persons	100 Persons
Slum Population per Seat of Public Convenience/ ISP complex	24 Persons	60 Persons

Source: Rajapalayam Municipality

(i) *Lack of Community Involvement*: Community participation is the key in successful implementation of Slum Improvement Programs. In most of the cases, community is not fully involved resulting in poor performance of the programs and their sustainability even when the number of slums are on the lower side.

(ii) Lack of Need-based Fund Allocation in Slum Development Programmes**.**

(iii) *Inadequate Access to Sanitation:* The poorest of poor households do not have the means to afford individual toilets. Similarly, slum households that live on rented properties are unwilling to invest in individual toilets. The issue is to devise strategies to ensure adequate access to toilets to all households in the town.

(iv) Tenure Security and Sustainability.

(v) *Non-conducive living conditions in the slum localities:* The sanitary conditions in the slum localities are very poor with a meagre one seat of public convenience for every 120 persons. The environmental condition of the water bodies, along which the slums are located, is degraded with large quantities of solid waste and sewerage being disposed into them. All these factors have actually deteriorated the living condition in these slums

VIII. INFRASTRUCTURE DEVELOPMENT AND SERVICE PROVISION

A. Rationale, Need and Demand

213. Infrastructure assessment of the town indicates inadequate service levels, for present scenario, which will further enhance given the future growth; (i) Per capita water supply work out to be 56 lpcd instead of 90 lpcd. The coverage of water supply connections with respect to property tax assessments is as low as 38.04 percent; (ii) Rajapalayam lacks safe sanitation disposal facility, Underground drainage system; (iii) Waste collection efficiency of the local body based on rated capacity of the vehicle is a low 50 percent; (iv) Surfaced roads within the Urban Local Body is approximately 94 percent; missing links, network deficiency and lack of traffic management systems causes congestion within the Urban Local Body area and reduces the carrying capacity of the roads; (v) Drainage network of the town covers 188 percent of the total road length; which has been indicated that the drainage system in the town is satisfactory.

Approach and design criteria.

214. The Urban Local Body should increase the level of coverage of all facilities, to meet the service norms based on State Norms, CPHEEO Norms, UDPFI Norms or other applicable criteria. Based on this, considering the current deficits and the future requirements for the Urban Local Body, strategies and action plan are suggested.

Component Selection Criteria.

215. The total investment in the Urban Local Body depends on several parameters like, the level of current basic needs, the town's affordability, and the assessed implementation capacity of the town or its agencies. Overall, project component selection is influenced by affordability and implementation capacity. In the interest of integrated town development, another criterion considered in project component selection has been to ensure inter-sector linkages and optimization. For instance, water supply, sanitation and sewerage have been seen as a composite sector and not in isolation from each other.

Least Cost Solutions and Component Selection.

216. In formulating project components, the preferred option was developed based on least cost options, taking into account meeting service delivery targets, and whole-life costs, including considerations on achievable operation and maintenance arrangements, given available resources in terms of skills and facilities.

1. Water Supply

217. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.1.**

Table 8.1: Goals and Service Outcomes – Water Supply

S.No	Goal	2011	2016	2026
1	Network cover for general households	100%	100%	100%
2	Network coverage for urban slum households	100%	100%	100%
3	Per capita supply	90 lpcd	130 lpcd	
4	Hours of supply			24 hours / daily
5	Quality of water	Safe & Good	Safe & Good	Safe & Good
6	Un accounted water	20%	15%	12%
7	O&M Cost Recovery	100%	100%	100%
8	Collection Efficiency	100 %	100 %	100 %
9	Customer Satisfaction	Good	Good	Good

218. The Rajapalayam municipality should increase the supply levels in terms of coverage, to achieve an average gross supply of 90 lpcd and to cater 100 percent of the population. If leak detection and mitigation are carried out as part of the plan, the unaccounted for water is expected to reduce to a maximum of 10 percent of the total supply.

219. *Source Development:* - To meet the future requirements, the only source for the town, the Mudangiyar River needs to be tapped effectively. An additional diversion weir at the confluence point of the River Malattar and River Mudangiyar is proposed as part of the RWSIS. The scheme proposed 10.024 MLD when conceived. However, the projection puts this figure at 14.61 MLD. The additional drawl from the Mudangiyar River is proposed to be stored in a new summer storage tank. The combined storage capacity of both the summer storage tanks is put at 2577 ML. The treatment facilities are also proposed for augmentation to a total of 9.39 MLD from the existing 6.18 MLD. However, ideal conditions would demand a treatment capacity of 100 percent of water supplied. The details of service levels for future is presented in **Table 8.1**

220. *Augmentation of Transmission Mains:* Considering the future requirements an additional transmission main is proposed from the treatment plant to the town through a distance of 12 km.

221. *Storage Adequacy:* - Another four elevated service reservoirs are proposed for addition to the existing three numbers to cater to the future requirements. This increases the Storage capacity to 4.87 ML from the existing 2.96-ML. The storage available is sufficient for the present water availability. This addition as also envisaged in Rajapalayam Water Supply Improvement Scheme (RWSIS) will suffice the future requirements.

222. *Extension and Replacement of the Distribution System:* - To cater to the increasing demand and to effect an equitable distribution of water in all the zones (Proposed 7 zones against the existing 3 zones) of the town, the RWSIS puts the requirement at 112 km. However, the future population additions and the development of new links in the town apart from the present uncovered areas require a total length of 149 km of distribution network for supply through gravity system.

Table 8.2: The Service Levels for Future and Project Identification

Description	**Unit**	**Based on CPHEEO Norms**
		2026
Population	Nos.	1,73,155
Per capita	Lpcd	90
Losses in transmission and treatment	%	15
Description	**Unit**	**Gaps Up To 2026**
Total demand at source	MLD	18.12
Daily Per Capita Supply (Source development till 2026) SS Tank	MLD	10.12
Feeder mains and Transmission Mains	Km	12.40
Roads Covered with Distribution Network	Km	55.87
Elevated Storage capacity w.r.t Supply (2026)	ML	3.08
Rehabilitation for existing Network	Km	32.73
Treatment capacity (2026)	ML	11.31
Local source development	MLD	10.12
Daily Per Capita Supply (Source development till 2026) SS Tank	Km	12.40

Source: - Analysis.

223. Considering the above requirements, capital investments in water supply have to be planned to address issues focusing upon:

(i) Increase in the storage and distribution of existing facilities to meet growing demand;
(ii) Rehabilitation of existing facilities to avoid the higher costs of deferred maintenance.

224. *Operation & Maintenance Plan.* Adoption of an O & M Plan and Schedule, including options of using the private sector for O & M (e.g. management contract).

225. *Asset Management Plan.* To address the condition assessment and the performance of the water supply assets, it is necessary that an asset management plan be prepared for the assets of water supply in Rajapalayam.

226. *Tariff Revision.* Future capital investments on system up-gradation being imminent, the tariff structure shall be revised from time to time to enable cost recovery and to service the additional debt from the capital investments. Simultaneously, installation of modern metering equipment shall be taken up in the municipality to affect a proper monitoring system and ensure cost recovery.

227. *Performance Monitoring.* It is important to monitor the performance of the sector over the years for better service delivery and consumer satisfaction. Certain key indicators are suggested to assess the performance of the system and also to ensure sustainability of the operations.

228. *Institutional Strengthening and Capacity Building.* For effective service delivery, it is necessary that the entire area of the town be divided into coverage zones. RWSIS

proposed seven zones and these would suffice the requirements as well as help in having a better control over the supply mechanisms. Training to the field staff of the department needs to be imparted for effective operation and maintenance of the system.

2. Sewerage and Sanitation Project Identification

229. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.3.**

Table 8.3: Goals and Service Outcomes - Sewerage

S.No	Goal	2011	2016	2026
1	Coverage (Access)	100%	100%	100%
2	Treatment & Disposal	100%	100%	100%
3	Recycle & Reuse	25%	40%	50%
4	Customer Satisfaction	Good	Good	Good

230. Sixty six percent of the population is covered with sanitation facilities. The town does not have any sewerage system and the sanitation facilities include septic tanks and Low Cost Sanitation units. Only 37 percent of the Property Tax Assessments have any such facility. Sewage and sullage generally flow into the storm water drains and finally into the *uranis*. The poor and slum dwellers lack adequate safe sanitation facilities and hence are prone to health related diseases.

231. Based on-site visits and assessment of the sanitation situation prevalent in the ULBs, sewerage systems were designed to discharge sewage/night soil. The design basis and treatment options are detailed below.

232. The design of the sewerage system shall be made as per the design criteria prescribed by the Manual on Sewerage and Sewage Treatment, published by the Central Public Health & Environmental Engineering Organization (CPHEEO), Ministry of Urban Development and Poverty Alleviation (MoUD& PA), GOI.

233. The design parameters to be adopted for designing a sewerage system are as mentioned below:

234. *Design Period*. The sizing of the components of a sewerage scheme may be done for the design period as under

(a)	Trunk, main and branch sewers and appurtenances.	:	30 years
(b)	Pumping stations		
	i. Civil works	:	30 years
	ii. Mechanical and electrical equipment	:	15 years (Addition or replacement after 15 years).
(c)	Pumping mains	:	30 years (To be also decided on techno - economic analysis for different design periods).
(d)	Treatment units	:	30 years (To be of modular designs to facilitate construction in phases).

235. *Design Sewage Flow.* The sewage flow is generally estimated based on the water supply. 80% of the water supply shall be assumed as the sewage generation from the individual houses.

236. *Ground Water Infiltration.* Infiltration may be allowed at following rates for sewers laid below ground water table.

(i) 5,000 to 50,000 litres per day per hectare, or
(ii) 500 to 5000 litres per day per km length and per centimeter diameter of sewer, and
(iii) 250 to 500 litres per day per manhole.

237. *Peak Factor.* Peak sewage flow shall be the average sewage flow multiplied by the peak factor. Table 2 gives the peak factors as recommended by the Manual on Sewerage and Sewage Treatment shall be adopted.

Peak Factor for Sewage Flow.

Population	**Peak Factor**
Up to 20,000	3.00
20,000 to 50,000	2.50
50,000 to 750,000	2.25
Above 750,000	2.00

238. *Velocities in Sewers.* The minimum self-cleansing velocity of 0.6 m/s at present peak flow and 0.8 m/s at ultimate peak flow shall be maintained. Maximum or non-scouring velocity shall be restricted to 3.0 m/s.

Maximum Permitted Depth of Flow

Maximum Permissible Depth of Flow.

Diameter	**Depth of Flow (d) to Convey Design Flow**
Upto 400 mm	0.50 d
Upto 900 mm	0.67 d
Above 900 mm	0.75 d

239. *Minimum Pipe Diameter*. Minimum pipe diameter for the sewers shall be 200 mm.

240. *Pipe Materials*. The following type of materials shall be generally adopted for the diameters indicated against each:

- Stone ware Pipes: For diameters up to 375 mm and depth up to 3.0 m.
- Non-Pressure RCC pipes NP3 class: For depths > 3.0 m and diameters > 375 mm and up to 1,000 mm.
- GRP or HDPE Pipes: For diameters greater than 1,000 mm.

241. *Institutional Strengthening for Program Implementation.* Capacity building measures need be taken in the form of information dissemination among the poor and slum dwellers about the importance of safe disposal facilities. While such mediums like audio-visual

communication shall be adopted for the purpose, community gatherings and meetings shall also be given importance. Since the new programs are envisaged towards community participation in operation and maintenance, such measures will strengthen the institutional setup. The details of future requirements of sewerage and sanitation are illustrated in **Table 8.4**

Table 8.4: Requirement until 2026 in Sewerage and Sanitation

Description	Unit	Gaps Up To 2026
Under Ground Drainage		
Length of Under Ground Drainage	km	135
STP Capacity	MLD	14.5
Road Rehabilitation due to Water Supply and Sewerage Project	km	135
Public Conveniences	Units (ISP)	0

Source: Analysis

242. *Sewerage Planning* The municipality's role is more of secondary nature, with the building permission rules of town planning department playing the primary role. Hence stringent building permissions are necessary and are issued only on ensuring that safe disposal facility is adequately provided. The future plans shall be directed towards catering to the town's requirements by the year 2026. The program can be phased in the same way as that of the water supply system so that the investment can be made judiciously.

243. It is important to mention that the town has a large number of household units involved in manufacture of handlooms from the yarn produced in the cotton mills of the town. The process involves use of chemicals and dyes and the wastewater are directly discharged into the drains. This is more prevalent in Avarampatti, Sammandapuram, Somiayapuram and Malaiyadipatti areas. Since the final discharges of the drains are the Kondaneri tank and Kadambankulam, environmental degradation of these tanks is on the writing. Such measures that avoid the discharge of this wastewater into the drains are necessary. It is pertinent that either the discharge of industrial wastewater is checked or the household units are allowed to shift to assigned areas and contemplate the provision of treatment plant for the industrial wastewater of the town.

244. *Coverage of Low Income Areas.* Currently, a majority of the low-income areas are devoid of safe sanitation facilities. Though the Slum Improvement Program have created infrastructure in the form of public conveniences, the operation and maintenance of these facilities is not satisfactory and hence could not be sustainable. Hence, it is recommended that low cost sanitation units and public conveniences be provided under the ISP program format for the poor and the slum dwellers. In addition, the O & M can be given to the local communities to ensure their sustainability.

245. *Requirement for future.* The capital investments under this sector for this Business Plan are recommended to take up the under ground drainage system. It is estimated that by the year 2026, there will be a requirement of 135 km length of under ground drainage line and 14.5 MLD of sewerage treatment plant.

3. *Storm Water Drainage & Rejuvenation of Water Bodies Project Identification*

246. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.5.**

Table 8.5: Goals and Service Outcomes – Storm Water Drain and Water Bodies

S.No	Goal	2011	2016	2026
Macro Drainage				
1	Flood Alleviation Recommendation	100%		
Micro Drainage				
1	With in the Town (Preparation and Implementation Plans)	100%	100%	100%

247. *Primary Drain Rehabilitation and Improvement.* A significant reduction in depth and width are noticed due to siltation and encroachment of drain bunds. To alleviate these, a rehabilitation and improvement program is recommended. The program shall aim at the following;

(i) Improvement measures such as widening and deepening
(ii) Construction of side walls to confirm to uniform cross-section in built up areas
(iii) Diversion of drains at critical sections
(iii) Construction of cross-drainage works

248. *Storm Water Drainage Rehabilitation.* The low lying areas identified are to be relieved of the problem in future by undertaking a storm water drainage rehabilitation program. As a part of this program, the leading/ connections between secondary and tertiary drains to primary drains have to be improved and strengthened. In addition, control of weed growth, limiting the dumping of solid and construction waste and controlling the encroachments and built-up on *Odai* edges have to be encouraged to effect a smooth and effective functioning of the storm water drainage system

249. In accordance with the above, the municipality shall desilt the primary drains on a regular basis before the onset of the monsoon. The construction of new drains and connecting links shall be taken up as a priority. The strengthening of the existing drains with lining and side walls are immediate measures. The details of future requirements of storm water drains are illustrated in **Table 8.6**

Table 8.6: Requirement until 2026 in Storm Water Drains and Nallas & Lakes

Description	Unit	Gaps Up To 2026
Up gradation of Kutcha to Pucca		
Kutcha to Pucca Open	km	131.89
Kutcha to Pucca Closed	km	2.51
New Pucca Open Drains	km	48.84
Lakes conservation /Tanks regeneration and Nalla strengthening		

Description	Unit	Gaps Up To 2026
Water Bodies Conservation	Nos.	8
Desilting and Strengthening of Primary Drains	km	3.5

Source: Analysis

250. *Improvement Works and Construction of Tertiary Drains:* - Improvement works in the town shall mainly comprise of up-gradation of *kutcha* drains to *pucca* drains. It is proposed to construct tertiary drains to all the major arterials and important roads to increase the coverage and to facilitate proper draining of storm water into natural drains.

4. Solid Waste Management Project Identification

251. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.7**

Table 8.7: Goals and Service Outcomes – Solid Waste Management

Sl. No	Goal	2011	2016	2026
1	Collection with in the Town	100%	100%	100%
2	Door to Door Collection - %	100%	100%	100%
3	Source Segregation - %	75%	100%	100%
4	Collection - %	90%	100%	100%
5	Scientific Disposal	80%	100%	100%
6	Waste to Energy Generation		50%	100%
7	Cost Recovery of O & M - %	50%	75%	100%
8	Private Sector Participation	Modest protocols in place	Complete in the Disposal	Complete in the Disposal

252. *Existing Service Level.* Storage of waste at source is one of the important recommendations of MoEF. The introduction of door-to-door collection by the municipality has led to implementation of source segregation. The system of primary collection is partly privatized and the municipality and the private contractor cover about 50 percent of the households of the town. In all the other areas where door-to-door collection is absent, the households store the un-segregated waste in open containers and dispose off the same at the community collection points. Recovery of waste that is saleable such as newspaper, glass bottles, and recyclable plastic is observed in the domestic sector. Similar to the domestic households, major hotels and restaurants also store waste in open containers. The people collecting solid waste from households but not by the households do segregation of waste themselves

253. *Improvement Strategies.* Highest priority has to be accorded for segregation & storage at source irrespective of the area of generation so as to facilitate an organized and environmentally acceptable waste collection, processing and disposal. Source segregation of recyclable and biodegradable will not only provides an efficient way for resource recovery, but also will also substantially reduce the pressure & pollution in landfill sites.

254. In order to achieve the above objective, a 'Bin system of Solid Waste Storage' at source is being recommended. As per this system, each household shall be directed to keep separate bins/ containers for biodegradable and non-biodegradable waste generated within their premises.

255. The bins can be of 10-15 litres capacity made of plastic/ reinforced plastic/ LDPE or metal bins of individual choice, but should be provided with lid. The segregated waste so stored in these bins will have to be transferred to the collection point or to the dumper placer provided for each area. The details of steps to be taken up for the municipal solid waste is presented in **Table 8.8**

Table 8.8: Measure to Handle Municipal Solid Waste

Source	**Storage of Segregated waste**	
	Bio-Degradable	**Non-Bio-degradable**
1. Households	10-15 litres capacity plastic/ reinforced plastic/ LDPE/ metal bin with lid	A bin or Bag of suitable size
2. Hotels, Restaurants	60 litres capacity-LDPE/ HDPE	A bin or Bag of suitable size
3. Shops, Offices, Institutions	Suitable container not exceeding 60 liters	A bin or Bag of suitable size
4. Market Stalls	40-60 liters bin-LDPE/ HDPE	A bin or Bag of suitable size
5. Function Halls	Bin/ Skip matching to Municipal Collection system	A bin or Bag of suitable size
6. Hospitals, Nursing homes	60 litres capacity bin for non-infectious bio-degradable waste	Store waste as per Bio-medical Waste Mgmt Handling Rules 1998
7. Construction/ Demolition waste	-	Store with in premises and deposit in the notified Site by the local body or to the municipal Vehicle
8. Garden Waste	Store with in premises	Deposit in large community bin or to the municipal vehicle

256. Construction waste has to be stored at the premises of the construction either in skips or suitable containers and has to be directly emptied to the notified disposal site by the generator. Meat and fish markets should store waste in non-corrosive bins of maximum 100-litres capacity each and transfer contents to large container to be kept at the market just before lifting of such large containers. Slaughterhouses should keep separate containers for animal waste and other wastes. It is also being recommended that this system of source segregation and storage is encouraged through community education and awareness campaigns and hence no capital investments are envisaged in this regard.

257. *Primary Collection and Street Sweeping.* Existing Service Level: Waste is generally collected door-to-door by either the municipal or private solid waste workers. The waste collected is deposited at collection points except in areas where door-to-door collection is not implemented. In such areas people dispose the waste into the dustbins located at every odd point on the roads. The community storage facilities comprise of all types of collection bins such as concrete, steel and masonry bins, including the solid waste *chowks*.

258. *Improvement Strategies:* - The following measures have been recommended for improving the primary collection practices of Rajapalayam.

(i) Implementation of 100 % 'Door-to-door collection';
(ii) Installation of 'Community Storage Bins' in areas where door-to-door collection could not be implemented.
(iii) Introduction of multi-bin hand carts/ Tri-cycles.
(iv) Placement of dumper containers of sufficient number in markets and ensuring that all the vendors place the waste in the containers.
(v) Introduction of bio-medical waste management facility with support from Indian Medical Association.

259. It is recommended that the community be involved in primary collection through segregation at household level to minimize the number of times of waste handling. Non-biodegradable waste shall be collected separately from premises where door to door collections are organized. Present system of primary collection should be supplemented by introducing multi-bin carts (Push carts / Tricycles) covering the entire area of the town, of which 80% will be handled by private contractors and the rest by the municipality. The details of proposed primary collection system are summarized in **Table 8.**

Table 8.9: Proposed Primary Collection

Mode of collection	Area of collection	Primary Collection Vehicle	Secondary storage
Door to Door	1. Residential colonies of High & Middle income group	Multi-bin cart/ tricycle- with two bins for Biodegradable waste and one for recyclable	1. Bio-degradable in Skips/ wheel containers 2. Non-biodegradable- Sell or hand over to waste collector
	2. Hotels/ Restaurants	Closed vehicle to collect biodegradable	Direct transport to Disposal site
Large Community Bin System	Fruit & Vegetable Markets/ Transfer Stations	Carrying bins to Transfer point	Skip / Dumper Placer
Small Community Bin System	Slums/urban poor Colonies	Carrying bins to Transfer point	Transfer contents of biodegradable to community bins

Source: Analysis

260. Since further areas and eventually the entire town are proposed to be brought under privatization, it is considered that there would not be any further requirement to induct conservancy workers. The existing street sweeping operations in Rajapalayam are satisfactory and to ensure operational efficiency of the system, the following measures are suggested.

(i) Markets and other areas of the city shall be swept at least twice a day and sweeping should be done on Sundays and holidays in core areas and denser areas.
(ii) Sweepings shall be collected separately as degradable and non-biodegradable waste

and deposit in containers kept at various locations and a separate crew equipped with appropriate implements may do de-silting of larger drains.

261. *Collection and Transportation.* Existing Service Level: There are 16 secondary collection points, and fleet of vehicles comprising of tractor trailers and mini trucks numbering 14 in total. On an average each vehicle makes 2 trips a day.

262. It has been observed that the numbers of collection points are either inadequate at certain locations or improperly located at several locations. While one collection point can cover an area of 0.16 Sq. km[7], in Rajapalayam on an average one collection point is catering to an area of 0.71 sq. km. Inadequate number and inappropriate location of the secondary collection points are important issues with respect to collection system in Rajapalayam.

263. *Improvement Strategies.* In view of the criticality of the information on vehicle movement in assessing the collection and disposal efficiency of the local body, it is recommended that a standard register at the disposal site and transfer station be maintained. The register shall contain information on each of the vehicle trips at both the locations and the origin of waste collection. A summary of this information shall be prepared at the end of the day, to be verified by the health officer.

264. In addition to the above it is also recommended that dual loaded dumper placers (DLDPs) be introduced to improve the collection efficiency and to cover at least 70 percent area of the town. The introduction of dual loaded dumper placers shall eliminate the need of the secondary collection points except in places where dual loaded dumper placers cannot be introduced. Instead of these collection points, in the long run, transfer stations with advanced segregation and recycling facilities may be introduced.

265. *Requirements.* Additional 5 dual loaded dumper placers with 21 containers will be required for transporting approximate 68 tons of waste generated in Rajapalayam by the year 2026. The future requirement for solid waste management is illustrated in **Table 8.10**

Table 8.10: Requirement until 2026 in Solid Waste Management

Description	Unit	Gaps Up To 2026
Primary collection		
Hand Carts	Nos.	130
Push Carts (Street Sweeping)	Nos.	240
Secondary collection		
Dumper bins (7 cum)	Nos.	21
Transportation Vehicles		
Dumper Placer	Nos.	5
Land Fill		
Additional area Required for Land Fill	acre	5

Source: Analysis

266. *Processing & Disposal.* Existing Service Level: While composting of the bio-degradable waste is introduced recently, major issues of processing and disposal are pertaining to the

[7] The norm of 0.16 Sq. km is arrived at based on minimum comfortable walking distance to drop waste in a bin and the minimum time required for door-to-door collection by one hand cart.

unscientific methods of disposal of non-biodegradable waste and the associated impacts on the neighborhood.

267. *Improvement Strategies.* The characteristics and quantity of solid waste generated in the town primarily influence the disposal options. A review of the available solid waste sample result indicates that nearly 40 percent of the waste generated in Rajapalayam is organic in nature. In terms of the quantity around 51.2 tons of waste is generated every day and is expected to go up to 68 tons by the year 2026. Considering these aspects, it is recommended to develop a landfill site for safe disposal of solid waste for Rajapalayam. Based on the successful implementation of the door-to-door collection and source segregation practices in the city, the options of energy from waste and composting projects can be developed. The disposal strategies for Rajapalayam will be to

(i) Compost the organic fraction of the waste
(ii) Sanitary land filling of inorganic fraction of waste and the compost rejects

268. *Requirements:* - Area requirements for the land fill sites are worked out based on the generation trends and sustainable waste management practices. With a per capita generation rate of 380.04-gm/ day, the city generates around 51 tons of waste. Following similar trends, Rajapalayam shall be generating around 68 tons of solid waste at a rate of 395.54-gm/ cap/ day by the year 2026. The base year (2001) waste generation trends when projected to the design year 2026, Rajapalayam shall be requiring 11.01 Acres (for a generation of 68-tons/ day) of landfill area. The area requirements for landfill are presented in **Table 8.11**

Table 8.11: Future Requirement for landfill Site

Year	**Estimates [1]**	
	Waste Generation,	**Land Fill Area [2],**
	Tons/ day	*Acres*
2001	46.36	
2006	51.87	
2011	55.74	
2016	59.79	
2021	64.04	
2026	68.49	11.01
[1]. Estimates are based on present per capita generation of 380gm/ capita/ day		
[2]. Land fill areas are on cumulative basis		

Source: Analysis

269. The above analysis is based on CPHEEO design assumptions for sanitary landfills, wherein a landfill height of 4.5m and a bulk density of 0.82 Tons/ m^3 are assumed. However, the actual height of landfill depends on the geological/ geographical conditions of the site and technology of landfill development.

5. *Roads and Traffic Management Project Identification*

270. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.12**.

Table 8.12: Goals and Service Outcomes –Roads, Traffic and Transportation

S.No	Goal	2011	2016	2026
1	Road Network as % of Total Area	12%	15%	15%
2	Average Speed -km/'h with in the town	20	30	35
3	Sidewalks length to Total road length	Half of the requirement	75% of the requirement	95% of the requirement
4	Road accidents	Reduced by 25%	Reduced by 50%	Reduced by 70%
Roads Coverage				
1	Municipality	80%	100%	100%
Road Safety				
1	To reduce traffic accidents by traffic management measures With in the Town	100%	100%	100%
Parking				
1	Construction of parking complexes at proposed locations	100%	100%	100%
Decongestion				
1	Development of Outer Ring Road	100%		

271. 13.20 percent of the total area of the town is under roads with a total length of about 144.28 km of which 132.68 km are Municipal roads. 99 percent of the roads in the town are surfaced. Accordingly, strategies are formulated to have 100 percent coverage of surfaced roads including up-gradation of roads. The percentage of bituminous roads in the town is very high at 63 percent and the overall system gets affected with load and pressure on the remaining roads resulting in frequent O & M costs and traffic congestion. The deficiencies in Rajapalayam with respect to the road infrastructure pertain mainly to the width of roads and density of roads. The following strategies are hence formulated to enhance the coverage of road network and the level of service in Rajapalayam.

272. *Roads Planning.* The newly developing areas lack the facility and shall increase to a minimum of 10 percent though the norm can be in the range of 15-20 percent. The road widening projects can provide succor to a certain extent in increasing the area under roads, but is limited to certain commercial corridors only. Road planning shall also ensure that road; parking and traffic infrastructure provision matches the city's present and future needs for both private and public transport. The details of future requirements of roads and traffic & transportation are summarized presented in **Table 8.13**

Table 8.13: Requirement until 2026 in Roads and Traffic & Transportation

Description	Unit	Gaps Up To 2026
Up gradation		
Relaying of Black top	km	22.86
New Formation		
Black Top	km	24.42
Traffic and Transportation		
Widening/ Strengthening	km	3.00
Junction Improvement	Nos.	4
Bye-pass Road (Regional Outer Ring Road)	km	17.00
Road Over Bridge	Nos.	1

Source: Analysis

273. *Asset Rehabilitation.* Upgrading shall be undertaken to extend, refurbish and enhance the roads. Plans would be phased so as to optimize cost and surface condition and shall include upgrading earthen roads to bituminous topped roads. This phased up-gradation would considerably reduce the costs on new formations.

274. *Widening and Strengthening of Road structures.* With due consideration to the growing traffic intensity it has been proposed to upgrade all the major roads with specific focus on the State and National Highways and some minor roads.

Proposals under Traffic & Transportation.

(i) *Intersections:* - There are four important junctions in the town where major roads need improvements. These are:

- Gandhi Statue intersection
- Sankarankovil road and Chattirapatti road intersection
- Tenkasi road and Chattirapatti road intersection
- Nehru statue intersection

(ii) Improvements to bottleneck junctions as follows.

- TP Mills Road & Ashok Theatre;
- Curves on TP Mill Road near Bharati Cotton mill;
- Srinivasa industries.

(iii) Seven narrow culverts are proposed for widening, the culverts as follows.

- TP Mill road near Central bank;
- Tiruvalluvar Thirumana manadapam;
- Aadhiparasakthi tailoring institute;
- E.B. Sub divisional office;
- Municipal maternity clinic;
- TP Mill road and Chattirapatti road and near Srinivasa industries;
- Chattirapatti road and narrow culvert on Sankarankovil road.

(iv) Traffic management measures proposed include parking regulations on Tenkasi-Madurai road particularly near Anantha lodge. One-way movement system introduction in cross roads connecting TP Mill Road and NH 208 in the central area of the town; diversion of buses reaching the bus stand to along TP Mills road, Railway feeder road and Tenkasi-Madurai road. Provision of traffic signs and markings to indicate parking regulations, one-way operations, turn restrictions and other control measures.

(v) Widening of Tenkasi-Madurai road, TP Mills road, and the road between Karuppa Gnaniyar road and TP Mills road. New formations and improvements to existing road from Sri Rangapalayam near National theatre to near Union office on Tenkasi road (southern side of NH 208) to form the link road between Chattirapatti road and NH 208. The link road is also as per the approved TP scheme for the area.

(vi) Formation of link of 6 meter width along Bhoopalpatti school to provide direct connection for the stretch of Bhoopalpatti street and formation of missing link across Karuppa Gnaniyar Urani connecting Vaithyanathapuram street to provide direct access to TP Mill Road.

(vii) Lorry parking area (truck terminal) to be provided in open land within the Mayooranatha temple compound behind Tamilnadu Warehousing Corporation with all required infrastructural facilities.

(viii) Railway Over Bridge on Chattirapatti road levels crossing within 10-year period.

(ix) Implementing the proposal of Highways department for a 2-lane road at length of 17 km towards western side of the town. The bye-pass road to the NH 208 outside the municipal limits across the Kondaneri tank, cutting Mudangiyar road at Shenbagathoppu junction and meeting NH 208 after Krishna oil mills.

6. Street Lighting Project Identification

275. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.14**

Table 8.14: Goals and Service Outcomes – Street Lighting

S.No	Goal	2011	2016	2026
1	Energy saving mechanisms	80%	100%	100%
2	Adequate lighting in Non-lit areas	80%	100%	100%

276. The strategic intervention in this sector is increasing the number of lampposts in the wards identified to reduce the average spacing between lampposts in the town to below 30m. Further, measures are to be adopted to minimize the power consumption charges which are observed to be on the higher side. The details of future requirements of street lighting are summarized presented in **Table 8.15**

Table 8.15: Requirement until 2026 in Street Lighting

Description	Unit	Gaps Up To 2026
Street Lighting		
Tube Light	Nos.	820
Power Saver Switches	Nos.	4
High Mast Lamps	Nos.	3

Source: Analysis

277. Further, to improve upon the O & M of the street lighting it is recommended to mechanize the system and involve private sector in the same. To reduce the power consumption, new technology bulbs are to be introduced with dimming systems during non-peak hours of operation to reduce the power consumption. The dimming system can be introduced from 11 PM to 4 AM and reduce the LUX by 50 percent.

7. Poverty Alleviation

278. *Goals and Service Outcomes:* The goals and service outcomes based on the proposed strategy for the horizon period is presented in **Table 8.16**

Table 8.16: Goals and Service Outcomes – Poverty Alleviation

S.No	Goal	2011	2016	2026
1	Water Supply Network Coverage for slum households	90%	95%	100%
2	UGD coverage for slum households	60%	100%	100%
3	Adequately lit slums	100%	100%	100%
4	Adequate road link for the slums	100%	100%	100%
5	Pucca houses for all slum households	80%	100%	100%
6	Education for all in slums	100%	100%	100%

279. Program Monitoring. While implementation of the program is important the monitoring of the same is more important for continuing of the process. This ensures the success of the program and hence further participation of the communities over the years, which will only lead to complete poverty alleviation.

B. Project Cost for Service Delivery

1. Water Supply

280. The capital costs estimated for the proposed interventions are to the tune of Rs. 2,077.4 lakh. The investment for the water supply sector is based on the requirements and demand for the year 2026. Accordingly, the gaps are identified and the projects are identified broadly as source development, storage capacity augmentation, transmission main, augmentation of distribution network, augmentation of treatment plant and rehabilitation for existing network. The total investment towards water supply is given in the **Table 8.17**

Table 8.17 Details of Identified Investment in Water Supply Sector

Component	**Total investment up to 2026**
	Rs. Lakh
Source development till 2026 SS Tank	1,012.43
Feeder mains and Transmission Mains – (12.4 km)	186.00
Roads Covered with Distribution Network	111.74
Elevated Storage capacity w.r.t Supply – 3.08 ML (2026)	169.64
Rehabilitation for existing Network (32.7 km)	65.46
Treatment capacity – 11.31 ML (2026)	531.77
Total	**2,077.04**

Source: Analysis

2. Sewerage and Sanitation

281. An investment of Rs. 3,591.84 lakh (base cost) for provision of under ground drainage system is envisaged in lieu with the environmental aspects. The investment components include sewer length of 134.97 km, STP, land and electrical equipment. The total sewerage and sanitation investments are presented in **Table 8.18**

Table 8.18 The Investments for Sewerage and Sanitation

Component	**Total investment up to 2026**
	Rs. Lakh
Under Ground Drainage	
Length of UGD (135 km)	2,024.61
STP & Land and Electrical equipment (14.5MLD)	217.49
Road Rehabilitation due to Water Supply and Sewerage Project (135 km)	1,349.74
Total	**3,591.84**

Source: - Analysis

3. Drainage, Ponds and Rejuvenation of Water Bodies

282. The investments are in line with up-gradation and new formation of roads. The components involved in this sector are up-gradation of the existing drains and new formations. The estimated cost for extension and augmentation of storm water drainage including the improvement measures to Odai's is about Rs. 26.25 lakh. While Rs. 1,625.29 lakh is proposed for up-gradation of drains, Rs. 586.04 lakh is proposed for new formations. Rs. 186.25 lakh is proposed for desilting and strengthening of Odai's and ponds. The proposed investments towards drains and nallahs are presented in **Table 8.19**

Table 8.19: The Investments for Drainage and Lake Development

Component	**Total investment up to 2026**
	Rs. Lakh
Up gradation of Kutcha to Pucca	
Kutcha to Pucca Open (132 km)	1,582.66
Kutcha to Pucca Closed (2.5 km)	42.63
New Pucca Open Drains (48.8 km)	586.04
Total	**2,211.33**
Tanks regeneration and Nalla strengthening	
Tanks/ Lakes conservation (8 nos)	160.00
Desilting & Strengthening of Primary Drains (3.5 km)	26.25
Total	**186.25**

Source. Analysis

4. Solid Waste Management

283. The total investment identified for this sector is Rs. 508.68 lakh. The requirements at the disposal site are planned for the horizon year 2026. And the other components of primary and secondary collection are planned for the immediate requirements. Rs. 89.23 lakh of this amount is proposed for augmentation of the primary and secondary collection system in the town.

284. Rs. 50.00 lakh of the total identified investment is for procuring Dual Loaded Dumper Placers and Rs. 11.55 lakh for the dumper bins. The major component investment is to develop the landfill site and compost yard around base cost of Rs. 396.25 lakh. The approximate compensation amount to acquire the land for land fill site is around 23.2 lakh. The investment for solid waste management sector is presented in **Table 8.20**

Table 8.20: The Investments for Solid Waste Management

Component	**Total investment up to 2026**
	Rs. Lakh
Solid Waste Management	
Hand Carts (130 nos)	10.40
Push Carts (240 nos)	17.28
Secondary collection	
Dumper bins - 7 cum (21 nos)	11.55
Dumper Placer (5 nos)	50.00
Cost of Development of Compost	67.50
Land Requirement for Future	23.20
Cost of Development of Land Fill	328.75
Total	**508.68**

Source: Analysis

5. Roads and Traffic Management

285. Rs. 804.62 lakh is proposed for new formation and up-gradation of existing roads to either bituminous or cement concrete surfacing, majority being upgradation from Water Bound Macadam or earthen roads. Rs. 21.00 lakh is proposed for widening and strengthening of identified road stretches in the town. New formation is proposed in undeveloped areas at a cost of Rs. 781.38 lakh. The cost of development of bypass road is Rs. 3,400.00 lakh to be borne by highways department. One ROB is proposed on Chetrapatti road level crossing and truck terminal also proposed to minimize the traffic problems with in the town. The investments for roads and traffic management are s presented in **Table 8.21.**

Table 8.21: Investments for Roads and Traffic Management

Component	**Total investment up to 2026**
	Rs. Lakh
Up gradation	
Earthen to Black Top	0.38
Relaying of Black top	22.86
New Formation	
Black Top	781.38
Total	**804.62**
Traffic and Transportation	
Widening/ Strengthening	21.00
Junction Improvement	20.00
Bye-pass Road (Regional Outer Ring Road)	3,400.00
ROB	850.00
Construction of Truck Terminal	800.00
Total	**5,091.00**

Source: Analysis

6. Street lighting

286. Rs. 219.95 lakh is identified for the provision of additional street lights in Rajapalayam. The Retrofit lights are introduced instead of tube light. For procurement of high power lamps, identified investment is around Rs. 14.68 lakh and Rs. 0.2 lakh is proposed for power saving switches. The street lighting sector investment is illustrated in **Table 8.22**

Table 8.22: Investments for Street Lighting

Component	**Total investment up to 2026**
	Rs. Lakh
Street Lighting	
Retrofit Light	205.07
Power Saver Switches	0.20
High Mast Lamps	14.68
Total	**219.95**

Source: - Analysis

7. Other Identified Projects

287. A total investment of Rs. 150.00 lakh is identified for funding various other projects as identified by the municipality in the end. This is towards construction of commercial complexes, construction of parks, plays grounds and electrical crematorium. Providing for an electrical crematorium at a cost of Rs. 70.00 lakh in one of the identified locations in the existing burial grounds of the town. The proposed investment is presented in **Table 8.23**

Table 8.23: Investments for All Other Project

Component	**Total investment up to 2026**
	Rs. Lakh
Construction of Commercial Complexes	60.00
Parks and Play Grounds	20.00
Electrical Crematorium	70.00
Total	**150.00**

Source: - Analysis

IX. ASSET MANAGEMENT PLAN

A. Overview

288. This asset management has the objective of defining and describing the key elements, and principles of an Asset Management System. This chapter will deal with the elements that are essential in an asset management program for movable and immovable infrastructure. More specifically road networks, sidewalks, water supply networks, pumping, storage, treatment facilities and storm water drains.

289. While the need for Asset Management is clearly felt, it is equally important to have appropriate management information on asset condition, infrastructure costs and performance, and the consolidated requirements for repairs and maintenance, as well as appropriate maintenance standards.

1. Asset Inventory

290. The first stage of implementation of an asset management program for municipal infrastructure relies on the essential element of inventory. The locations of few assets are presented in **Map 9.1**. For each element in each category of infrastructure it is fundamental to know about all as mentioned bellow:

(i) Available Assets
(ii) Location of Asset
(iii) Age of Asset
(iv) Quantity of Asset
(v) Physical Characteristics of Asset

291. Infrastructure Assets will include all movable and immovable equipment, properties including but not restricted to sectors like water supply drainage, sewerage, solid waste management, roads, street lighting etc. Unlike other assets of the municipality, these assets undergo constant use, wear and tear, addition, repair etc. This correspondingly changes their values and hence a constant value updating is necessary.

2 Information of Municipal Assets

Water Supply

292. The water supply assets of Rajapalayam municipality basically comprise of all the assets at the head works, treatment plant, transmission mains, pump rooms, pumping mains, storage tanks, feeder mains, distribution network including all valves, connections, meters, quarters for watchmen and all related facilities for the efficient delivery service of water. Since the municipality has its source and head works about 12 km away from the town, certain assets are located outside the municipal limits near the Ayyanar falls.

293. Transmission & Distribution Network. The transmission mains run to a length of 12.39 km from the Ayyanar falls to the town. This was laid in 1974 and 7.17 km of the mains are of CI material while the rest 5.22 km of RCC. The town has a distribution network running to a length of 85 Km the network basically comprises of PVC, Ac and CI material. The oldest networks are of CI which is laid when the system was commissioned in 1974. These are about 30 years old and are 19.25 km in length. The AC pipes in the town are 10-25 years old and are 4.68 km in length. Those laid during the recent years are of PVC and 61.08 km in length. The assets of water supply are presented in **Table 9.1**.

Table 9.1: Assets of Water Supply Details

Network Details & Dia	Material	Age (Years)	Length (Km)
Transmission Main Details			2.98
600 mm (24")	CI Pipes	> 25	2.98
Trunk Main Details			9.41
450 mm (18")	RCC Pipes	> 25	5.22
400 mm (16")	CI Pipes	> 25	4.19
Feeder Main Details			21.03
250 mm (10")	AC Pipes	10-25	2.75
200 mm (8")	PVC Pipes	< 10	8.75
160 mm (6")	PVC Pipes	< 10	9.53
Distribution Network Details			63.97
125 mm (5")	CI Pipes	> 25	1.72
100 mm (4")	CI Pipes	> 25	17.53
100 mm (4")	PVC Pipes	< 10	25.54
100 mm (4")	AC Pipes	10-25	1.93
90 mm (3")	PVC Pipes	< 10	17.26

Source: Rajapalayam Municipality

294. *Valves.* The municipality operates its water supply system through sluice valves. They are 170 in number and all of them are in working condition. The age of the valves correspond to the age of the distribution network. However, it is the reliability over the age of these valves that is more important. The fact that all the valves in the town are operational and functional through minimal repairs makes the reliability high. Though there a few number of air and scour valves present near the OHTs, they were not operational since years. The details of valves are presented in **Table 9.2**

Table 9.2: Details of Valves

Condition	Scour Valves	Air Valves	Sluice Valves
Working	NA	NA	170
Not Working	NA	NA	0
Total	NA	NA	170

Source: Rajapalayam Municipality

295. *Power Pumps.* While there are 11 power pumps installed near the summer storage tank, there are another 13 pumps in the town. These are of 75 HP capacity and all of them have RCC pump rooms. Of the 11 pumps at the summer storage tank 9 are installed during 1974-87 and the other 2 are installed recently in 1997-98. Within the town, 2 pumps near the OHTs are installed along with the system and the other 9 pumps are installed during

the recent past in an effort to improve the entire system. The details of pumps are illustrated in **Table 9.3.**

Table 9.3: Details of Pumps

Pumps	**No.**
Number	24
Capacity	75 HP
Age of Pumps	
0-10 Years	13
10-30 Years	11

Source: Rajapalayam Municipality

Sanitation

296. There is no specific sewerage system for the town and the population is dependent on septic tanks and low cost sanitation units. The role of the municipality in this sector is limited to provision of public convenience systems. There are a total off such units with 460 seats located mostly in the low income group settlement areas and slums. Of these five are pay & use toilets and located in commercial stretches. Except for these pay & use toilets all the other units are generally located on the edges of *Odais* or *Uranis* which are least maintained and are in non-operational state. Of late the new units being constructed (ISP complexes) are being given to the community and are being maintained by them properly.

Land and Buildings

297. The municipality owns 30 plots in the town. There is one plot near Arasiyarpatti village which the municipality owns and is being used for solid waste land fill and composting. There is another site on Sankarankovil road which was earlier being used as land fill site and now abandoned. Of the plots the municipality owns within the town limits 18 are vacant and the rest houses some either remunerative or non-remunerative services of the municipality. While some of them house the municipal office, Travellers bungalow, quarters, burial grounds, water tanks, ORS centres, noon meal centres, public toilets etc., certain others house shopping complexes. The area of the vacant plots with the municipality is about 0.6 Ha.

298. The buildings with the municipality can be classified as remunerative and non-remunerative asset's which are either acquired or purchased or gifted on which the municipality incurs considerable expenditure for operation and maintenance. They are maintained by the municipality under the general, water supply & drainage and elementary education funds separately. They include commercial complexes, Shops in the bus stand, markets, slaughter house, pay & use toilets etc which are all remunerative. Non-remunerative assets of the municipality are the office buildings, burial ground, compost yard, etc. The details assets are presented in **Tables 9.4**

Table 9.4: Details of Assets

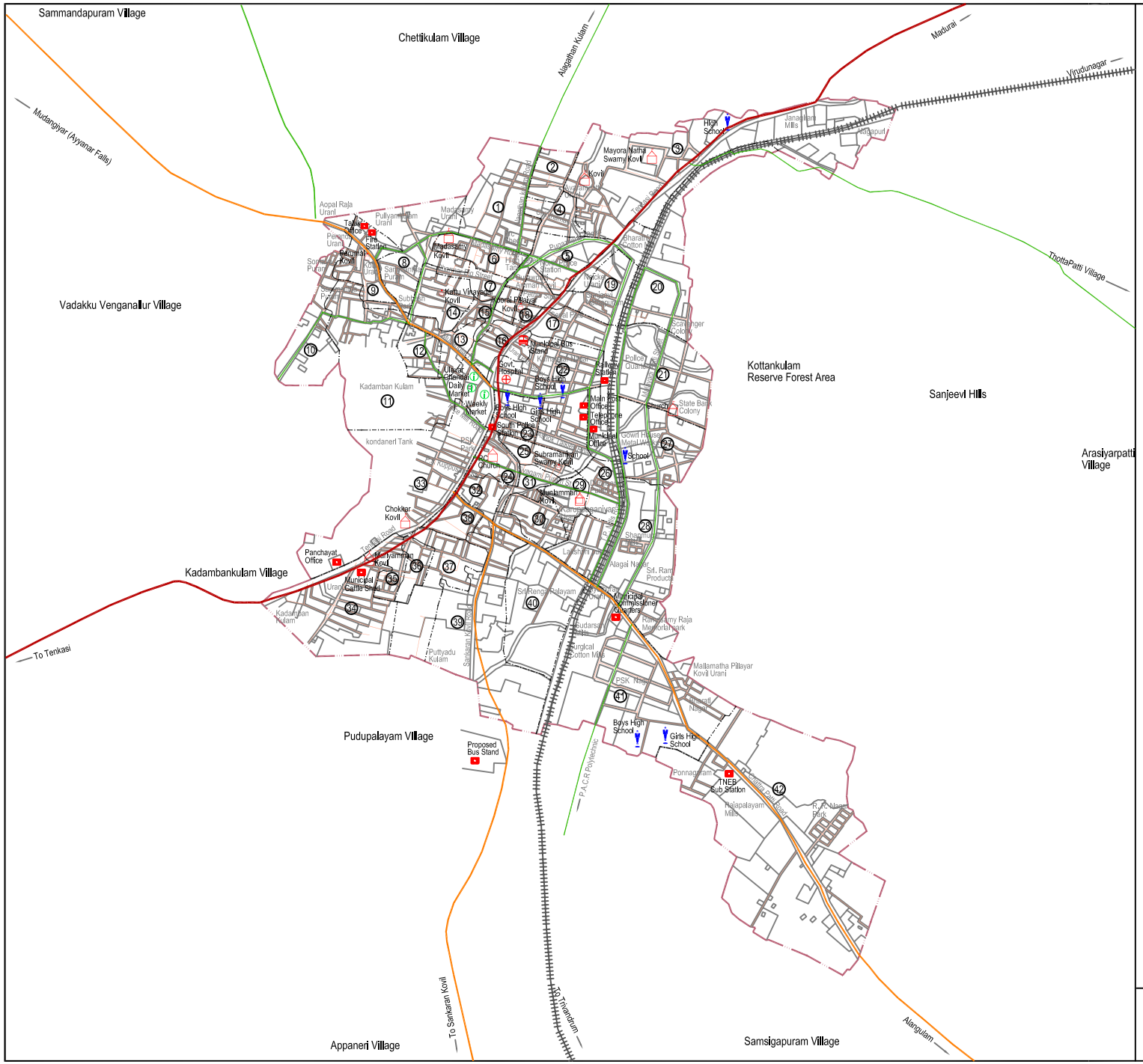
S. No.	Asset	Number	Present Usage
1	Municipal Office	1	Office, Godown, Car Shed
2	Out Reach Scheme (ORS) Centres	2	Hospital
3	Travelers Bungalow	1	Commissioner's Quarters
4	Travelers Bungalow Quarters	1	M.E. Quarters
5	Cattle Shed	1	Cattle Shed, Shelter house
6	Bus Stand	1	Bus Stand
7	Cycle Stand with Shopping Complex in Bus stand	1	Cycle stand/ Shops
8	Community Hall	1	Community purpose
9	Public Convenience Systems	51	Public Convenience
10	Parks	4	Parks
11	Scavengers Colony (75 Houses)	1	Residential Houses
12	Shopping Complexes	3	Ground Floor Shops
13	Maternity & Child Welfare Centre	1	Hospital
14	Noon Meal Centres	25	Noon Meal Centre
15	Market (A & B Blocks)	1	Daily Market
16	South Police Station	1	Police Station
17	Bharat Petrol Pump	1	Petrol Station

Source: Rajapalayam Municipality

299. The municipality has vehicles which are used for service delivery and for administration purposes. For service delivery under water supply and public health departments they have 5 mini trucks, 7 tractors, 1 auto, 1 sullage tanker and 4 water supply tankers. Apart from these there are 2 jeeps and 1 metador van with the municipality which are used for administrative purposes. On an average these vehicles are about ten years old. With effective maintenance, the vehicles are in good condition.

3 Strategies.

300. Condition Assessment Survey (CAS) establishes the existing condition of the asset and hence is a benchmark for comparison, not only between different assets, but for the same asset at different times. Condition Assessment Survey records the deficiencies in a system or component, the extent of the defect, as well as the urgency of the repair work; in some cases the estimated cost of repair is provided at the time of inspection. This type of systematic inspection is essential for asset management as it provides data for the "maintenance management", "service life prediction" and "risk analysis" enabling technologies, mentioned earlier.



RAJAPALAYAM CITY CORPORATE PLAN CUM BUSINESS PLAN

Legend :

- Municipal Boundary
- Ward Boundary
- Ward No.
- Forest Area Boundary
- Water Body
- Canal, Nala, Odai
- Hills
- Railways

Road Ways

- Ring Roads, NH Ways
- SH Ways
- Major Road
- Minor Road

- Hospital
- School
- Markets
- Temple
- Municipal Building
- Municipal Bus Stand

MUNICIPAL ASSETS

N

Scale :

0 0.25 0.50 1 Km 1.5 Km

Tamilnadu Urban Infrastructural Financial Services

Wilbur Smith Associates Private Limited
2-B, "NAWAZISH" , 30, Khader Nawaz Khan Road,
Nungambakkam, Chennai - 600 006, Tamil Nadu, India.
Telephone : + 91 (44) 2833 20 94/ 2833 03 82 Fax : + 91 (44) 2833 20 96
e-mail : wsa-urban-ch@dishnetdsl.net

Map No. **8.1**

301. The data collected in a Condition Assessment Survey should reflect the change in the reliability of the system as a whole. This implies that the state or condition of a system being inspected should then be linked to the change in reliability of the system or its components. In this way, programmed maintenance and repair for a given system can be based on updated reliability estimates.

302. While the above mentioned three tools are mostly innovative type there are specific Information technology tools that are necessary for accurate generation of MIS.

303. Creating a Geographical Information Systems (GIS) database of the assets identifiers.

304. Global Positioning Systems (GPS) technology assists for rapid and accurate data collection, precise identification of building or service locations, calculations of areas and lengths, estimation of building height, and more importantly the easy, clear and unambiguous documentation of physical location of identified defects and potential problems.

X. RESOURCE MOBILIZATION INITIATIVES

A. Scope in Savings and Revenue Generation

1. Infrastructure

305. The main objective of the Business Plan is to generate revenue through the non-traditional sources with minimum investments. There is enormous scope to control expenditure in water supply, solid waste management and street lighting sector etc. The analysis will find the options for the replacement of inefficient existing pumps in terms of energy efficiency through Cost Benefit Analysis. Regarding street lighting, the analysis will be towards introducing technology of street lighting with the help of private participation.

2. Assets

306. The major assets for the municipalities are the immovable assets. This is one potential area to develop the asset values and increase the municipal revenue. The analysis includes find out the various options to make use of vacant lands on BOT basis and revising of rents for the remunerative assets up to market values.

B. Sector Wise Savings

1. Water Supply

307. *Energy Saving*: A significant number of municipalities in Tamil Nadu rely on motive power for conveying water, either through significantly long distances (typically source to distribution point) or to meet contour gradient requirements within the distribution system. Pump Stations or Booster Stations achieve this objective by providing the necessary motive power to increasing the energy of the fluid to ensure water supply and distribution at required pressure and quantity.

308. Smooth functioning of the pump stations is highly critical, since they operate on a 24 hour basis and virtually form the heart of a system. Such pump stations consume a significant amount of electricity and result in high O & M costs for the Municipality that owns and operates such pumping system. It is common that over time, pumps and motors undergo severe wear and tear resulting in reduced operating efficiencies. This directly translates into higher power consumption for the same amount of output or even reduced output, which further results in a tangible increase in spending.

309. Energy Audit is an effective management tool to combat and control spiraling O &M and energy costs and to enable the municipality effectively use the system at the optimum cost possible. There is scope to control expenditure with effective energy management, leak detection and unauthorized tap connections. In case of Rajapalayam Municipality water is being supply through gravity and hence no energy saving is envisaged.

310. *Reduction in UFW*. Unaccounted for water (UFW) is the difference between the volume of water delivered into the distribution system and the water sold/ billed or accounted for by legitimate consumption. UFW includes losses, physical losses and non-physical or commercial losses.

311. The UFW is also refereed to as non-revenue water. In case of Rajapalayam property tax assessment to water connection is very low coverage only 39 percent. Consequently, there are chances of revenue leakages through unauthorized /illegal connections in the town, if regularized, this would generate significant amount of revenue for the Municipality. However, this cannot be quantified accurately in the absence of no of illegal connections in the town and hence municipality should take necessary action towards legalizing the illegal connections in the town.

312. *Staff*. The study also focused on existing manpower deployed at pump house. At head work Rajapalayam municipality deploys 19 staffs of which 2 are qualified electricians and four of them are helpers and hence no savings envisaged. The staff details at water supply head works are presented in **Table 10.1**

Table 10.1: Manpower deployment at head works

Items	Permanent	Temporary
Qualified Electricians	2	-
Helpers	4	-
Watchman	1	-
Others	-	12
Total	**7**	**12**

Source: Rajapalayam Municipality

2. *Solid Waste Management*

Compare to all sections public health division will maintain maximum number of workers and more number of vehicles. The vehicles will exhibits more operation and maintain cost. With respect to solid waste management, the analysis is focused on comparison of manpower with municipal staff to the private operator.

Savings in SWM Privatization. There are 150 permanent staff excluding consolidated pay members working as sanitary workers. The average salary per month for each sanitary worker is around Rs. 5,000.00 /-. Around 20 percent of workers are going to retire by 2010. By implementing complete privatization and redeployment of additional to the other department. It is estimated that the municipality would be saving around Rs 50 lakh per annum by 2010 and the details are presented in **Table 10.2**.

.

Table 10.2: Saving in Solid Waste Management Sector towards Privatization

Description		**2006**	**2008**	**2010**	**2012**	**2014**	**2016**
Waste Handled by Municipality in Tons	14.03						
Waste Handled by Private Contractor in Tons	30.97						
Total Expenditure by Municipality in per tone per annum in Rs	10,674,900						
Total Expenditure by Private Contractor per tone per annum in Rs	5,280,000						
Per ton cost handled by Municipality per day in Rs.	2,082						
Per ton cost handled by Private Contractor per day in Rs	4679						
100 % Privatization by the year 2010							
Projected Waste Generation by 2010 in Tons	68						
Total expenditure towards SWM (excluding Transportation) by Municipality per annum in Rs	7,60,862						
Total expenditure towards SWM (excluding Transportation) by Private Contractor per annum in Rs	1,70,487						
Savings per annum in Rs		5,394,900	6,061,709	6,810,936	7,652,768	8,598,650	9,661,444
		2005 to 10	**2010 to 15**	**2015 to 20**	**2020 to 25**	**2025 to 30**	**2030 to 35**
Existing nos of filled posts (Sanitary workers)	150						

Source: Analysis

3. Street lighting

313. In street lighting sector, there is large scope to minimize the expenditure towards power consumption and operation & maintenance. Related to street lighting the data has been collected as follows:

(i) Number and types of street lighting and its operation and maintenance.
(ii) Expenditure towards salaries and power charges.

314. Energy S*avings*: This section reviews the current level of energy consumption, maintenance and establishment charges incurred in street light maintenance. Rajapalayam Municipality maintains 4,686 light fixtures out of which around 57 percent fixtures are tube lights, about 33 percent sodium vapour lamps and remaining are mercury vapour lamps. As per the latest available data on energy consumption, the total cost of energy is Rs. 52.77 lakh per annum and average maintenance expenses of street lighting are Rs.19.87 lakh per annum.. The average cost of energy consumption per fixture is Rs. 1,126 per annum. The average maintenance expenditure per light works out to Rs. 424 per annum. There are four skilled wire mans and five helpers to operate and maintain entire street lighting in the town and all of them are permanent employees of the Municipality. The detail of expenditure towards street lighting is illustrated in **Table 10.3.**

Table 10.3: Expenditure trend in street lighting

Items	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
	Rs. Lakh				
Establishment	6.34	6.30	5.71	5.64	6.00
Energy Charges	17.77	25.97	52.78	52.77	37.32
Maintenance Expenses	36.18	22.62	12.12	8.57	19.87
Total	**60.29**	**54.89**	**70.61**	**66.98**	**63.19**

Source: Analysis.

315. Energy savings in street lighting could be achieved through replacement of existing conventional tube lights with energy efficient retrofit tube lights, installing power saver devices and privatizing the operation and maintenance of street lighting. There are 4,686 florescent tube light fixtures installed in Rajapalayam town. The 40 Watt fluorescent tube lights with ballasts will consume an additional 10-13 watts. To reduce the energy consumption, 28 Watt T-5 retrofit tube lights have to be introduced in place of existing conventional tube lights.

316. Based on the best practices followed in other parts of the country, retrofit tube lights are proposed in Rajapalayam. The new tube-lights have a higher luminary rating, longer life span, lower failure rate and perform better under the highly fluctuating voltage that plagues the town's electricity supply. The salient features of retrofit tube lights are presented in the following table. The details of retrofit tube lights are summarized in **Table 10.4**.

Table 10.4: Salient features of Retro fit tube lights

Description	Value
Tube type	E+28 W
Power consumption	28 W
Power Factor	0.95
Rated life of tube (burning hours)	18,000
Rated life of electronics (burning hours)	50,000
Stroking Voltage	Less than 120 volts

Source: Analysis.

317. The following table presents the comparison of present conventional florescent tube lights with proposed Retrofit tube lights. The comparison statement is summarized in **Table 10.5**.

Table 10.5: Comparison of conventional tube lights with retrofit lights

Description	40 Watts Tube Light	Retrofit light
Connecting load* (W)	52.5	30
Light output (Lm)	2,450	2,900
Annual energy consumption ** (KWH)	211	120
Energy charges @Rs. 3.50/-	738	422
Life of lamp (Hours)	4,000	18,000

Source: Analysis
* Including ballast loss of 12.5 W for conventional 40 Watts Tube lights.
** Calculated for 11 hrs daily burning.

318. The present street lighting system in Rajapalayam is challenged with poor lighting levels, inappropriate operation timings, poor quality of power and inefficient lighting devises.

(i) Operator switching streetlights require 1 to 1.5 hrs to operate all the switches in an area, resulting in some places lights are switched on/off almost 1 to 1.5 hrs prior and after the required time;
(ii) Lighting levels are higher than required standards;
(iii) During off peak hours (after 11 pm in night) lighting levels increase further due to increase in voltage;
(iv) Lighting devises are not mounted properly, thus unnecessarily distributing light to surrounding areas and providing less light on roads and pathways; and
(v) Selection and mounting of lamps is not done in a scientific manner, considering parameters like land use, type of road and illumination required as per Indian Standard Codes.

319. In order to address some of the above issues in the town, power saver devises have to be installed. The power saver devises save energy, by regulating voltage after peak hours. The built in timer automatically reduces voltage from 240V to 180 V after 10 pm. It also can reduce voltage stepwise up to 110 V in different time slots. This action optimizes the illumination level after peak hours. The programmable timer switch also controls street lighting operating hours as per desired timings. These power savers also act as protection

devises, which increase the life of lamps and luminaries.

320. The replacement of existing lights proposed to replace in a phased manner for next two years (2006 & 2007). Separate cash flow for street lighting was prepared to ascertain the savings due to the replacement of new energy efficient lights and installing power saver devices. The cash flows have been worked out considering privatization of streetlights.

321. The basis for preparing cash flows are as follows, no increase in fixtures, annual increment in energy cost at 3 percent, rate of interest at 8.5 percent and net energy savings share (profit share) between contractor and Urban Local Body with a mutually agreed percentage basis. In this case, it was assumed that the cost of savings in energy utilization was distributed between contractor and Urban Local Body at 80 percent and 20 percent respectively. Through street lighting energy consumption Urban Local Body can save a minimum of Rs. 11.53 lakh in 2008, out of which Rs. 2.31 lakh is transferred to municipality as per the above mentioned profit sharing arrangement, rest with private contractor. Further details are presented in the following table. Existing municipal skilled staffs shall be retained for overseeing the private contractors operation and maintenance work and hence no savings are envisaged from staff reduction or redeployment. Assumption for calculating energy savings are presented in **Table 10.6** and energy savings is tabulated in **Table 10.7.** The Internal Rate of Return (IRR) for 2012 is more than the discounted rate of 10 percent making the initiative viable.

Table 10.6: Assumption for calculating energy savings

Description	**Unit**	**Value**
No. of Street Lights in the Urban Local Body	Nos.	4,686
Total Annual Energy Cost for Street Lighting	INR Lakh	52.77
Energy Cost per Street light/annum	INR	1,126
Standard Cost as per Case Studies (30% saving)	INR	901
Annual Increment in Energy Cost	%	3
Transfer of Savings to Urban Local Body	%	20
Rate of Interest	%	8.50

Source: Analysis .

Table 10.7: Energy savings in street lighting

Year	Capital Cost	No. of Lights	Actual Energy Cost	Normative Energy Cost	Net Savings	Transfer of Savings to ULB	Net Cash flow
	Rs. Lakh	***Nos.***	*INR Lakh*				
2006		4,686	54.35	43.48		0.00	0.00
2007	22.00	4,686	55.98	44.79	11.20	2.24	-10.80
2008		4,686	57.66	46.13	11.53	2.31	11.53
2009		4,686	59.39	47.52	11.88	2.38	11.88
2010		4,686	61.18	48.94	12.24	2.45	12.24
2011		4,686	63.01	50.41	12.60	2.52	12.60
2012	29.44	4,686	64.90	51.92	12.98	2.60	-16.46
2013		4,686	66.85	53.48	13.37	2.67	13.37
2014		4,686	68.85	55.08	13.77	2.75	13.77
2015		4,686	70.92	56.74	14.18	2.84	14.18
2016		4,686	73.05	58.44	14.61	2.92	14.61
2017	39.39	4,686	75.24	60.19	15.05	3.01	-24.35
2018		4,686	77.50	62.00	15.50	3.10	15.50
2019		4,686	79.82	63.86	15.96	3.19	15.96
2020		4,686	82.22	65.77	16.44	3.29	16.44
						Total	**100.49**
						IRR 12	**97%**
						IRR 15	**101%**
						IRR 20	**101%**

Source: Analysis.

4. Assets

322. Details of remunerative assets owned by Rajapalayam municipality are presented in **Table 10.8**. Current year demands of remunerative assets were collected from municipality and the same were compared with the market rental value. From the following table it is apparent that the municipal remunerative assets are under valued. There is a wide scope of revenue maximization through lease and rentals from remunerative assets of Rajapalayam Municipality. The ULB should follow the market value as minimum for lease and rentals of remunerative assets. Through this process municipality can fetch additional revenue to the tune of Rs. 1.93 Lakh per annum. The rentals and lease amounts have to be revised every 3 year once to a minimum of 15 percent from FY 2006-07. The collection performance of leases and rentals are inconsistent over the assessment period and hence collection efficiency also to be improved.

Table 10.8: Additional Revenue Estimation from Remunerative Assets

Name of the Asset	**Ward No**	**No of Shops**	**Rental Value**	**Accruing Rentals**	**Market Value**	**Market Rentals**	**Additional Revenue**
			Shop/Month	*Rs./Annum*	*Rs./Sq.ft*	*Rs./Annum*	*Rs./Annum*
Old Bus Stand Building	22	35	1,500	630,000	1,800	756,000	126,000
Municipal Market 'AB' Block	15	28	600	201,600	700	235,200	33,600
Daily Market	17	41	750	369,000	800	393,600	24,600
Chokkan Urani Shops		15	450	81,000	500	90,000	9,000
Total Revenue				**1,281,600**		**1,474,800**	**193,200**

Source: Analysis.

C. Additional Resource Mobilization

1. Parking Fees

323. Land-use and economic activity drives the parking demand in Rajapalayam. Town attracts significant tourist and two-wheeler traffic, which puts up specific parking requirement. Private vehicles can be seen parked haphazardly along the roadside in the premises of Chatrapatti Road, Old Bus stand and market areas. Based on the field visit three locations were identified for on street parking of two wheelers. For estimating the parking fee, it was assumed that 40 percent of the total vehicle will be parked less than or equal to one hour and 60 percent of the total vehicle will be parked more than one hour. Vehicles that are parked more than an hour can be charged four rupees per vehicle and for other vehicles two rupees can be charged. An annual vehicle increment of two percent has been assumed to calculate the future revenue generation. The estimated parking fee is presented in **Table 10.9**.

Table 10.9: Estimated Parking Fee

Year	**Chatrapatti Road**	**Old Bus stand**	**New Bus stand**	**Total**
Approximate No of veh./day	200	175	150	525
	Rs. Lakh			
2007	3.07	2.68	2.30	**8.05**
2008	3.13	2.74	2.35	**8.21**
2009	3.19	2.79	2.39	**8.37**
2010	3.25	2.85	2.44	**8.54**
2011	3.32	2.90	2.49	**8.71**
2012	3.39	2.96	2.54	**8.89**
2013	3.45	3.02	2.59	**9.06**
2014	3.52	3.08	2.64	**9.24**
2015	3.59	3.14	2.69	**9.43**
2016	3.66	3.21	2.75	**9.62**
2017	3.74	3.27	2.80	**9.81**
2018	3.81	3.34	2.86	**10.01**
2019	3.89	3.40	2.92	**10.21**
2020	3.97	3.47	2.97	**10.41**

Source: Analysis.

2. Advertisement Fee

324. Lease amount fixed by the council for advertising on lamp posts and hoardings erected within the Municipal limit are accounted in advertisement fee. In case of Rajapalayam Municipality average revenue generated through the advertisement fee is very low (Rs. 31, 000). Hence, there is a scope to increase the advertisement fee by extending the coverage net. The following table (**Table 10.10**) presents detailed estimation of advertisement fee for Rajapalayam municipality. The total estimated advertisement fee is Rs. 5.84 lakh per

annum with an annual increment of 2 percent on total advertisement fee adopted to forecast the future revenue. This minimum increase is assumed to accommodate increase in nos of advertisement hoardings/ boards, which are going come in future.

3. Conservancy Fee

325. Conservancy establishment cost is work out to 61 percent of total establishment cost of Rajapalayam municipality, to meet at least a part of solid waste collection expenses conservancy fee is introduced. It is proposed to cover at least 70 percent of the residential properties and 100 percent of non domestic properties like hotels, lodges, commercial establishments and etc, in the town. For residential, properties Rs. 15 per month and non domestic properties Rs. 20 per month can be charged with a upward revision of 15 percent every 3 years once from 2006-07 is proposed. **Table 10.11** presents estimated additional revenue mobilization through conservancy fee for Rajapalayam municipality.

4. Summary

326. Summary of additional revenue mobilization through expenditure control measures and additional revenue generations are presented in **Table 10.12**.

Table 10.10: Estimation of Advertisement fee

Description	Unit	Major Arterial Roads	Other Roads	Markets/ Bus stands	Street Light poles
Average Size of Hoardings	Sq.m	10.00	5.00	10.00	
Average Rate/sq.m/half yearly	Rupees	75.00	50.00	100.00	50.00
Total Length of Road	Km	133			
Length of Road	%	20%	50%	-	-
Total Length of Road	Km	27	66.34	-	-
Spacing of Hoardings/Boards per km	Nos	5	5	-	-
Total no of Hoardings/Boards	Nos	133	332	50.00	2,363
Total Revenue per annum	**Rs. Lakh**	**2.00**	**1.66**	**1.00**	**1.18**

Source: Analysis.

Table 10.11: Estimation of Conservancy Fee

Description	Coverage	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Domestic (No)	70%	27,908	28,746	29,608	30,496	31,411	32,354	33,324	34,324	35,354	36,415	37,507
Non Domestic (No)	100%	3,544	3,650	3,760	3,873	3,989	4,108	4,232	4,359	4,489	4,624	4,763
*Total Revenue *(Rs. Lakh)*		*33.89*	*37.90*	*40.53*	*60.02*	*63.74*	*66.61*	*88.25*	*92.82*	*96.57*	*120.88*	*126.60*

Source: Analysis.

Note: * Out of the total estimated conservancy fee, about 85 percent of the current demand and 50 percent of the arrear demand collection was assumed.

Table 10.12: Estimated additional revenue from expenditure control and resource mobilization

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
	Rs. Lakh											
Expenditure Control Measures												
Energy Saving – Street lights	2.24	2.31	2.38	2.45	2.52	2.60	2.67	2.75	2.84	2.92	3.01	3.10
SWM - Privatization	53.9	57.2	60.6	64.3	68.1	72.2	76.5	81.1	86.0	91.1	96.6	102.4
Additional Resource Mobilization												
Leases/Rentals from Assets	1.93	1.93	2.22	2.22	2.22	2.56	2.56	2.56	2.94	2.94	2.94	3.38
Parking Fee	8.05	8.21	8.37	8.54	8.71	8.89	9.06	9.24	9.43	9.62	9.81	10.01
Advertisement Fee	5.84	5.95	6.07	6.19	6.32	6.44	6.57	6.70	6.84	6.98	7.11	7.26
Conservancy Fee	33.89	37.90	40.53	60.02	63.74	66.61	88.25	92.82	96.57	120.88	126.60	131.44
Total Revenue	**105.89**	**111.55**	**117.97**	**141.46**	**149.40**	**156.73**	**183.08**	**192.65**	**201.66**	**231.54**	**243.15**	**254.21**

Source: Analysis.

XI. CAPITAL INVESTMENT PLAN & FINANCIAL SUSTAINABILITY

A. Capital Investment Plan

Water Supply

327. *Water Supply*. TWAD is executing water supply project scheme II in Rajapalayam. The project supposes to complete by June 2006 and the design period is 2031.

Sewerage and Sanitation

328. An investment of Rs. 2,730 lakh (base cost) for provision of under ground drainage system is envisaged in lieu with the environmental aspects. Period of implementation for UGD is from 2008-2015 with around 45% of total investment, is estimated Rs. 1,437 lakh proposed core area of Rajapalayam and treatment plants after detailed study. The CIP is presented in **Table 11.1.**

Table 11.1: Investment Phasing for the Sewerage and Sanitation

Component	2008	2009	2010	2011	2012	2013	2014
	(Rs. Lakhs)						
Under Ground Drainage							
Length of UGD (135 km)	359	539	539		323	323	-
STP & Land and Electrical equipment (14.5 MLD)	-	-	-	323	-	-	-
Road Rehabilitation due to Water Supply and Sewerage Project	-	-	-	-	-	-	323
Total	**359**	**539**	**539**	**323**	**323**	**323**	**323**

Source: Analysis

Roads & Traffic and Transportation

329. Rs. 214.0 lakh is proposed for up-gradation of existing roads to either BT or CC surfacing, majority being up gradation form WBM or earthen roads. Rs. 3,400 lakh is the identified investment for the by pass road to the NH 208 outside the municipal limits across the Kondaneri tank, cutting Mudangiyar road at Shenbagathoppu junction and meeting NH 208 after Krishna oil mills. This project will be executed by National Highways and funding by the same agency. Road widening & strengthening and junction improvements will be taken up by 2008 – 10. Rs. 147.00 lakh sustainable investment identified towards the new formation of black top roads in 2010 – 16. The details of investment phasing is summarised in **Table 11.2**

Table 11.2: Investment Phasing for the Road Sector

Component	2008	2009	2010	2011	2012	2013	2014	2015
Up-gradation								
Earthen to Black Top		1						
Relaying of Black top		23						
New Formation								
Black Top			33					
WBM	-	-	-					
Traffic and Transportation								
Widening/ Strengthening	11	9						
Junction Improvement	20							
Total	**33.0**		**33**	**33**	**33**			
New Formation								
Black Top				16	16	16	33	33
Total				**16**	**16**	**16**	**33**	**33**

Source: Analysis

Storm Water Drainage & Natural Drains

330. The investments are in line with up-gradation and new formation of drains. The components involved in this sector are up-gradation of the existing drains and new formations. The estimated cost for extension and augmentation of storm water drainage including the improvement measures to Odais is about Rs. 425.00 lakh. However, only desilting of nallas is identified and the investment is Rs. 180.00 lakh during 2008-10. The investments are identified for up-gradation and new formation of drains is Rs. 245.0 lakhs. Up-gradation of drains will take up by 2010 – 11 and rest of the investment shall be taken up by 2013 – 16. The investment phasing for storm water drains and desilting and lake conservation is presented in **Table 11.3**

Table 11.3: Investment Phasing for Storm Water Drains and Natural Drains

Component	2008	2009	2010	2011	2012	2013	2014	2015
	(Rs. Lakhs)							
Up-gradation of Kutcha to Pucca								
Kutcha to Pucca Open			90					
Kutcha to Pucca Closed						67	45	45
Natural Drains	27							
Desilting & Strengthening of Primary Drains	63	90						
Total	**90.0**	**90.0**	**90.0**			**67**	**45.0**	**45.0**

Source: Analysis

Solid Waste Management

331. The total investment identified for this sector is Rs. 389.07 lakh. The requirements at the disposal site are planned for the horizon year 2026. In addition, the other components of primary and secondary collection are planned for the immediate requirements and demands. Rs. 80.63 lakh of this amount is proposed for augmentation of the primary and secondary collection system in the town.

332. Rs. 356.00 lakh is proposed for funding during this plan period of 2006-16. Rs. 89.23 lakh of the total identified investment is for procuring Dual Loaded Dumper placer, bins, pushcarts and handcarts. Rs.267.00 lakh is proposed for investment on creating infrastructure for landfill and composting facilities. 70 % of the total identified investment i.e., is for landfill development and compost development are the components identified in 2006-10. By the year 2006-08 and 2014-2016 the investments are identified towards purchasing of new vehicles and improvement of land filling site. The Capital Improvement Program for solid waste management sector is presented in **Table 11.4**

Table 11.4: Investment Phasing for the Solid Waste Management Sector

Component	2006	2007	2008	2009	2010	2014	2015
	(Rs. Lakhs)						
Hand Carts required for municipality	11						
Push Carts (Street Sweeping)	17						
Dumper bins required (7 cum)			11.5				
Dumper Placer			20	20		10	
Cost of Development of Compost	33	34				66	76
Cost of Development for land fill		17	20	20			
Total	**51**	**51**	**51**	**51**		**76**	**76**

Source: Analysis

Street Lighting

333. Rs. 219.95 lakh is identified for the provision of additional streetlights in Rajapalayam. Of this, Rs. 121.0 lakh is proposed for the plan period 2006-16. Of the total identified investment, Rs. 15.00 lakh is proposed for provision of High Power, Power Saver Switches and High Mast lamps during 2006-07 and 2008-16 investment identified for the Retrofit bulbs instead of tube lights. The Capital Improvement Program for Street lighting is presented in **Table 11.5**

Table 11.5: Investment Phasing for the Street Lighting Sector

Component	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(Rs. Lakhs)									
Replacement of Tube Lights With Retro Fit		12	12							
Retro Fit Tube Light				12	12	12	12	12	12	12
High Power										
Power Saver Switches	0.2									
High Mast Lamps	14.68									
Total	**15**	**9**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**

Source: Analysis

Other Identified Projects

334. A total investment of Rs. 150.00 lakh is identified for funding various other projects as identified by the municipality in the end. This is towards construction of commercial complexes, construction of parks & plays grounds and electrical crematorium and system modernization. Due to financial sustainability of municipality, the project can not execute by the municipality, however, the commercial complex will be execute by BOT basis.

Summary

335. The total estimated base cost of projects for all the sector is Rs. 3,846.00 lakh. The summary of sustainable investments is in the following **Table 11.6**

Table 11.6: Component wise Sustainable Investments

Sector	Capital Expenditure
Municipal Infrastructure	*Rs. Lakh*
Water Supply & Rejuvenation of Lakes	
Sewerage & Sanitation	2,730
Roads & Traffic and Transportation	214
Storm Water Drains & Desilting of Natural Drains	425
Solid Waste Management	356
Street Lighting	121
Others	
Sub-total (Municipal Infrastructure)	**3,846.00**
Non-Municipal Infrastructure	
Traffic Management – Other agency investment	3,400.00
ROB	850.00
Truck Terminal	800.00
Total	**5,050.00**

Source: Analysis

B. Financial Sustainability

1. Financial Sustainability

336. *Sustainability Analysis*. The sustainability analysis assumes that the municipality will carry out reforms indicated as assumptions for financial projections. A financial and operating plan (FOP) prepared for Rajapalayam Municipality then evaluates the municipal fund status for the following scenarios:

(i) Base Case Scenario. In the base case scenario, the finances of the ULB are forecast in a "do nothing" or "without project" scenario. Additional resources mobilized through various initiatives like expenditure control through energy savings, privatization etc. and further resources mobilized through introducing conservancy fee, parking fee, remunerative assets lease/ rental value appreciation and extending advertisement fee coverage are loaded on to the FOP. The revenue surplus thus generated indicates the ULB's capacity to service capital expenditure.

(ii) Full Project Scenario. The Full project investment scenario is based on investments identified for Rajapalayam, municipality and the requirement for upgrading the town's infrastructure is estimated and phased based on the construction activity and investment priority. Implications of this investment in terms of external borrowings required, resultant debt service commitment, and additional operation and maintenance expenditure are worked out to ascertain sub-project cash flows. Revenue surpluses from the Base Case Scenario are applied to sub-project cash flows emerging from full project investments – the municipal fund net surpluses indicates the ULB's ability to sustain full investments. FY 2020 is assumed as the reference year to determine the net surpluses and whether the Municipality maintains a debt/revenue surplus ratio as an indication of the ULB's ability to sustain investments.

(iii) Sustainable Investment Scenario. The sustainable investment scenario is worked out when the full project investment scenario indicates inability of the municipality to sustain the full identified investment. In this case, the identified investment is sized down to immediate felt need for the municipality to sustain on its own. Implications of this investment in terms of external borrowings required, resultant debt service commitment, and additional operation and maintenance expenditure are worked out to ascertain sub-project cash flows. Revenue surpluses from the Base Case Scenario are applied to sub-project cash flows emerging from sustainable investments – the municipal fund net surpluses indicates the ULB's ability to sustain the investments. FY 2020 is assumed as the reference year to determine the net surpluses and whether the Municipality maintains a debt/revenue surplus ratio as an indication of the ULB's ability to sustain investments. The outcome of this scenario will give an indication of the actual level of investment sustainable by the municipality without any additional external support.

2 Basic Assumptions for Projections

337. The FOP is based on a whole range of assumptions related to income and expenditure. These are critical to ascertain the investment sustenance and would also provide a tool to test certain specific policy decisions regarding revenue and expenditure drivers on the overall municipal fiscal situation. This section elucidates the key assumption adopted for the three FOP scenarios.

338. In order to determine the financial viability of the project, two instruments were used – the Modified Internal Rate of Return (MIRR) and the Financial and Operating Plan (FOP). The MIRR determines the rate of return based on surplus cash flows from project account being invested at market rates. The FOP is a cash flow stream of the ULB based on the regular municipal revenues, expenditures, and applicability of surplus funds to support project sustainability. The FOP horizon is determined to assess the impact of full debt servicing liability resulting from the borrowings to meet the identified interventions. The proposed capital investments are phased over ten years investment from FY 2006-07 to 2015-16 implying that the last loan draw down would occur in FY 2020-21. Considering a five-year moratorium period, the debt servicing commitment will commence in the FY 2011-12 for the first phase (1st five year) and 2016-17 for the second phase (2^{nd} five year) of investment.

339. *Revenue Income*. The assumptions for forecasting revenue income comprise:

(i) Taxes and charges. In cases like property related taxes, water charges and sewerage charges, where the base and basis of revenue realization are known and predictable, the likely revenue is forecast based on certain assumptions regarding growth in number of assessments, revision in ARV (in case of property-related taxes), revision in charges/tariffs and improvement in collection efficiencies. The assumptions with regards basis for forecasting revenue income of taxes and charges are the same for base case and investments scenarios (full project as well as sustainable project scenarios). However, the tax base (number of connections) varies for the base, full project and sustainable investment scenarios, assuming that the new investments in water supply and sewerage schemes will result in increased coverage of the infrastructure systems. In the sustainable investment scenario, the increase in tax base is scaled down pro rata with the scaled down (sustainable) investment. **Table 11.7, Table 11.8, Table 11.9 & Table 11.10** lists the assumptions adopted with regards forecasting income from property tax, water charges, drainage charges and conservancy fee respectively under the three FOP scenarios. The investment scenarios include both full project and sustainable investment scenarios.

Table 11.7: Key assumptions for forecasting income from Property Tax

Description	Current Level	Base Case Scenario	Investment Scenarios
Annual growth in number of assessments (%)	4.31%	4.00%	4.00%
Average ARV per Property (Rs. Per Annum)	4,337	4,337	4,337
Tax Rate (% of ARV)	19%	19%	19%
Periodic increase in ARV (%)			
2006-07	-	30.00	30.00
2011-12	-	30.00	30.00
2016-17	-	30.00	30.00
Collection Performance (% of Demand)			
Arrears	43.00	50.00	50.00
Current	87.00	85.00	85.00

Source: Analysis.

Table 11.8: Key assumptions for forecasting income from Water Charges

Description	Current Level	Base Case Scenario	Investment Scenarios
% water connections to property tax assessments	38.74%	80%	80%
Monthly water charge per connection (Rs.)			
Domestic	41.00	60.00	60.00
Non Domestic	81.00	100.00	100.00
Industrial	121.00	150.00	150.00
Periodic revision in water charges			
2009-10	-	15.00	15.00
2011-12	-	15.00	15.00
2015-16	-	15.00	15.00
2018-19	-	15.00	15.00
Collection Performance (% of Demand)			
Arrears	58%	50%	50%
Current	86%	85%	85%
One time connection fee (Rs.)			
Domestic	2,000	2,000	2,000
Non Domestic	3,000	3,000	3,000
Industrial	5,000	5,000	5,000
Periodic revision of one time connection fee	-	20 % - 3 yrs once	20 % - 3 yrs once

Source: Analysis.

Table 11.9: Key assumptions for forecasting income from Sewerage Charges

Description	Current Level	Base Case Scenario	Investment Scenarios
% Sewerage connections to PT assessments	-	-	80.00
Monthly sewerage charge per connection (Rs.)			
Domestic	-	-	50.00
Non Domestic	-	-	100.00
Industrial	-	-	200.00
Periodic revision in sewerage charges			
2006-07	-	-	15.00
2009-10	-	-	15.00
2011-12	-	-	15.00
2015-16	-	-	15.00
2018-19	-	-	15.00
Collection Performance (% of Demand)			
Arrears	-	-	50.00
Current	-	-	85.00
One time connection fee (Rs.)			
Domestic	-	-	3,000
Non Domestic	-	-	5,000
Industrial	-	-	5,000
Periodic revision of one time connection fee	-	-	20 % - 3 yrs once

Source: Analysis.

Table 11.10: Key assumptions for forecasting income from Solid Waste conservancy fee

Description	Current Level	Base Case Scenario	Investment Scenarios
% Coverage to PT assessments			
Domestic	-	-	70.00
Non Domestic	-	-	100.00
Monthly conservancy fee per PT assessment (Rs.)			
Domestic	-	-	10.00
Non Domestic	-	-	15.00
Periodic revision in conservancy fee			
2006-07	-	-	15.00
2009-10	-	-	15.00
2011-12	-	-	15.00
2015-16	-	-	15.00
2018-19	-	-	15.00
Collection Performance (% of Demand)			
Arrears	-	-	50.00
Current	-	-	80.00

Source: Analysis.

(ii) Other revenue income from own sources. All revenue income from own sources other than property-related taxes, and water and sewerage charges, where the base and basis is not clearly defined, are forecast based on the observed trend during the assessment period (2000-01 to 2003-04), subject to minimum and maximum annual growth rates of 5 percent and 20 percent, respectively. Though the income from the municipal properties and markets past trend witnessed a high growth trend, on a conservative side 20 percent has been adopted.

Table 11.11: Key growth rate assumptions for income from other own sources

Description	Current Level	Assumption
Profession Tax	4.12 %	5.00 %
Other taxes & Charges	(8.83 %)	5.00 %
Income from Municipal Properties and Markets	73.43 %	20.00 %
License Income (Trade, etc.)	26.35 %	20.00 %
Income from Special Services	--	5.00 %
Income from Sale Proceeds	17.45 %	17.45 %
Income from Fees and Fines	2.93 %	5.00 %
Income from Interest on Deposits	16.63 %	6.00 %
Income from Investments(Excl. Interest)	--	5.00 %
Miscellaneous Income	13.19 %	13.00 %

Source: Analysis.

(iii) Assigned Revenue. Items of assigned revenue such as surcharge on stamp duty, entertainment tax share, etc. are forecast based on the observed trend during the assessment period (2001 to 2003-04), subject to minimum and maximum annual growth rates of 5 percent and 15 percent, respectively. Entertainment tax observed trend during the assessment period was negative growth rate, which attributes to inconsistent transfer of ULB share during the review period. Hence a nominal growth rate of 5 percent assumed to forecast the revenue. In case of surcharge on stamp duty witnessed a high growth rate of 80.33 percent during the review period. This high growth rate attributed to uneven transfers of stamp duty to municipality. Considering the property value appreciation in the town a maximum of 15 percent has been adopted to forecast the revenue.

Table 11.12: Key growth rate assumptions for income from assigned sources

Description	Current Level	Assumption
Entertainment Tax	(20.24 %)	5.00 %
Surcharge on Stamp Duty	33.48 %	15.00 %
Other Transfers	80.33 %	10.00 %
Total- Assigned Revenue	**17.81 %**	

Source: Analysis.

(iv) Grants and Contributions. Revenue income in the form of grants and contributions are also forecast based on the observed trend during the review period (2000 - 01 to 2003-04), subject to minimum and maximum annual growth rates of 5 percent and 15 percent respectively. Although SFC devolution observed trend was very high, due to inconsistent transfer of grant to ULB. Considering the states tax revenue growth trend forecast, population growth trend and reforms measures initiated by

the municipality will fetch more devolution fund. In this perspective a maximum of 15 percent growth per annum adopted.

Table 11.13: Key growth rate assumptions for income from grants & contributions

Description	Current Level	Assumption
State Finance Commission Grant	45.45 %	15.00 %
Other Grants	(100.00 %)	5.00 %
Total- Grants & Contribution	**23.23 %**	

Source: Analysis.

(v) Additional Revenue Income due to Sub-Projects. The sub-projects – in case of water and sewerage projects – are expected to fetch additional revenue by way of increase in number of assessments and levy of user charges (in cases where a new sewerage system is proposed). The sewerage charge is adopted as per **Table 11.9** starting from 2007-08 and a revision of 15 percent is proposed every three years, beginning from 2007-08. The additional revenue income due to water supply and sewerage sub-projects is computed based on the proposed number of new connections, proposed tariffs and assumed collection performance. In addition solid waste conservancy fee also planned to levy on property assessments.

340. *Revenue Expenditure*. Key assumptions for forecasting revenue expenditure comprise:

(i) Expenditure on Municipal Services. Expenditure on municipal services including general administration, revenue collection and service delivery are forecast based on the observed trend during the assessment period (2000-01 to 2003-04), subject to minimum and maximum annual growth rates of 5 percent and 15 percent, respectively.

Table 11.14: Key growth rate assumptions for forecasting revenue expenditure

Description	Current Level	Assumption
General Administration & revenue Collection		
Staff Salary and Employee Related Expenses	(2.01 %)	8.00 %
Allowances to Elected Representatives	(8.32 %)	5.00 %
General Expenses	5.43 %	5.43 %
Pensions and Gratuities	14.06 %	14.06 %
Education - Staff Salary	-	5.00 %
Miscellaneous	(33.02 %)	15.00 %
Total-General Admin. & Revenue Collection	**(0.10 %)**	
Municipal Services excl. W&D		
General Expenses	(21.13 %)	5.00%
Public Works and Roads	0.11 %	5.00%
Public Health and Conservancy	330.43 %	10.00%
Contractor Payment Conservancy	33.58 %	10.00%
Street Lighting (including Electricity Charges)	4.37 %	10.00%
Education	10.13 %	10.00%
Vehicle and Equipment Maintenance	(100.00 %)	5.00%
Miscellaneous	45.25 %	10.00%
Total- Municipal Services excl. W&D	**4.21 %**	

Source: Analysis.

Table 11.15: Key growth rate assumptions for forecasting water supply revenue expenditure

Description	Current Level	Assumption
Staff Salary & Employee Related Expenses	4.89 %	5.00%
Administration Expenses	1.41 %	5.00%
Equipment Maintenance & Repairs	(14.94 %)	5.00%
Board Payment	--	--
Electricity Charges	26.70 %	15.00%
Vehicle Maintenance & Repairs	0.94 %	5.00%
Miscellaneous	4.34 %	5.00%
Total- Water Supply & Drainage	**32.67 %**	

Source: Analysis.

(ii) Outstanding Non-debt liabilities. The outstanding non-debt liabilities like payments due to employees, TNEB, TWAD, State Government cess, etc. are assumed to be cleared in equal installments over a 5-year period from 2006-07 to 2010-11. Wherever data was provided by the ULB, it was considered for preparing the FOP.

(iii) Outstanding Debt Liabilities. The outstanding debt liabilities are proposed for clearance over a 10-year period beginning 2006-07 to 2016-17 with the furnished interest rate adopted otherwise at a constant interest of 9.50 percent per annum was assumed.

(iv) Additional O&M Expenditure due to Sub-Projects. While each sector identifies the O&M costs applicable for asset maintenance (manpower, consumables, power charges, etc.), a proportion of the capital cost was derived for projections. **Table 11.16** presents the assumptions regarding O&M expenditure on new assets.

Table 11.16: Assumptions for O&M Expenditure

Sector	As % of Capital Cost
Water Supply	6.00
Sewerage & Sanitation	4.00
Roads and Traffic Management	3.00
Storm Water Drainage	2.00
Solid Waste Management	10.00
Street Lighting	10.00
Slum Upgradation	1.00
Others	2.00

Source: Analysis.

(v) Additional Debt Servicing Expenditure due to Sustainable Investment. The loans for the sustainable investments are assumed to spread over 20 years, carrying an interest burden as indicated in **Table 11.17**, with a five year moratorium on interest and principal repayment – interest during the moratorium period being capitalized. Considering a five-year loan draw down schedule (2006-07 to 2010-11) and a 20-year tenor, debt servicing will commence from 2011-12 for a period of 15 years. According to the project implementation schedule, the loan drawn and repayment schedule will differ.

Table 11.17: Proposed Financing Pattern

Infrastructure Type	Loan	Grant	ULB + Consumer	Interest Rate
	Percentage			
Water Supply	50	30	20	8.50
Sewerage & Sanitation	50	30	20	8.50
Roads and Traffic Management	60	30	10	8.50
Storm Water Drainage	60	30	10	8.50
Solid Waste Management	60	30	10	8.50
Street Lighting	60	30	10	8.50
Slum Up gradation	60	30	10	8.50
Others	80	10	10	8.50

Source: Analysis.

341. *Capital Account*. In case of capital account, only regular capital grant expected during the forecast period based on past trend are considered in the base case scenario, as this scenario is aimed at ascertaining the ULB's capacity to generate internal resources that would be leveraged to undertake identified sub-projects. In the identified investment and sustainable investment scenarios, sub-project cash flows are loaded onto the FOP and their impact on municipal finances in corresponding scenarios are tested. Key assumptions regarding capital account are investment phasing and project financing/funding structures.

342. *Capital Expenditure*. The estimated expenditure for implementing sub-projects is phased over a five-year period beginning 2006-07. Based on the above phasing the actual investment requirement over the five-year period is ascertained adopting a physical contingency of seven percent and a price contingency of six percent per annum. Following tables presents the base full project cost and implementation schedule.

Table 11.18: Summary of estimated investment requirement and phasing schedule

Sector	**Total Investment**	**Investment Phasing (%)**									
	Rs. Lakh	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Municipal Infrastructure											
Water Supply	2,181.11	0%	30%	30%	0%	0%	0%	20%	20%	0%	0%
Sewerage & Sanitation	3,591.84	0%	0%	10%	15%	15%	15%	15%	15%	15%	0%
Roads	824.62	0%	0%	10%	10%	10%	10%	10%	10%	20%	20%
Storm Water Drains	2,237.57	0%	0%	10%	10%	10%	0%	0%	30%	20%	20%
Solid Waste Mgmt	508.67	10%	10%	10%	10%	0%	0%	0%	0%	30%	30%
Street Lighting	241.75	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Slum Upgradation	0.00	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Others	950.00	0%	0%	0%	20%	20%	20%	20%	20%	0%	0%
Sub Total – ULB Investment	***10,535.56***										
Other Agency Infrastructures											
Bypass & ROB	4,250.00										
Sub Total –Other Agency Investment	***4,250.00***										
Grand Total Investment	**14,785.56**										

Source: Analysis.

Table 11.19: Summary of phased investment in full project investment scenario

Sector	**Total Investment**	**Investment Phasing – Rs. Lakh at Current Price**									
	Rs. Lakh	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Municipal Infrastructure											
Water Supply	2,181.11	-	654	654	-	-	-	436	436	-	-
Sewerage & Sanitation	3,591.84	-	-	359	539	539	539	539	539	539	-
Roads	824.62	-	-	82	82	82	82	82	82	165	165
Storm Water Drains	2,237.57	-	-	224	224	224	-	-	671	448	448
Solid Waste Mgmt	508.67	51	51	51	51	-	-	-	-	153	153
Street Lighting	241.75	24	24	24	24	24	24	24	24	24	24
Slum Upgradation	0.00	-	-	-	-	-	-	-	-	-	-
Others	950.00	-	-	-	190	190	190	190	190	-	-
Sub Total – ULB Investment	***10,535.56***	***75***	***729***	***1,395***	***1,110***	***1,059***	***835***	***1,272***	***1,943***	***1,328***	***789***
Other Agency Infrastructures											
Bypass & ROB	4,250.00										
Sub Total –Other Agency Investment	***4,250.00***										
Grand Total Investment	**14785.56**										

Source: Analysis.

343. *Capital Income*. Capital income is forecast based on actual requirement to meet proposed capital expenditure.

Table 11.20: Financing pattern for proposed projects

Sl.	Sector	Govt. Grant	Financial Institution Loan	ULB Share	Consumer Contribution	Other Dept
		% Share				
	Municipal Infrastructures					
1	Water Supply	30.00	50.00	10.00	10.00	-
2	Sewerage & Sanitation	30.00	50.00	10.00	10.00	-
3	Roads and Traffic Management	30.00	60.00	10.00	-	-
4	Storm Water Drainage	30.00	60.00	10.00	-	-
5	Solid Waste Management	30.00	60.00	10.00	-	-
6	Street Lighting	30.00	60.00	10.00	-	-
7	Slum Upgradation	30.00	60.00	10.00	-	-
8	Others	10.00	80.00	10.00	-	-
	Other Agencies owned Infrastructures					
9	Traffic & Transportation	-	-	-	-	100

Table 11.21: One-time charges for water & sewerage connections

Sl.No	Description	Water Supply	Sewerage
1	Domestic	2,000	3,000
2	Non Domestic	3,000	5,000
3	Industrial	5,000	5,000

344. In summary, the following key assumptions were made while preparing the cash flows:

(i) Revenue Income.

- *Property Tax*: projected based on ARV per property; number of assessments to grow at a nominal 3 percent per annum; ARV for all properties revised once in 5 years beginning 2006-07 at 30 percent; and collection performance assumed at 50 percent against arrears demand and 85 percent against current demand.

- *Water Charges*: At a nominal 4 percent per annum (proportionate to property tax assessment growth rate) regular connections are envisaged in the base case scenario and increase in water connections is a result of the availability of additional water for distribution – it is assumed that 80 percent of the property tax connections would have water connections by FY 2010 (on going scheme), the current rate of water charge is maintained till 2005-06, and from 2006-07 a 15 percent increase is assumed every 3 years; collection performance is assumed at 50 percent against arrears demand and 85 percent against current demand; and new

(one-time) connection charges are collected as per the current rate till 2005-06, and from 2006-07 a 20 percent increase in every 3 years.

- *Sewerage Charges*: No new connections envisaged in base case scenario and sewer connections are provided under the Project – it is assumed that 80 percent of the property tax connections would have water connections by FY 2017; monthly flat rate of Rs. 50, Rs. 100 & Rs. 200 per connection for domestic, non domestic and industrial connections respectively, it is assumed for sewerage charge starts from 2009-10, and from then on a 15 percent increase is assumed every 3 years; collection performance is assumed at 50 percent against arrears demand and 85 percent against current demand; and new (one-time) connection charges are adopted as per **Table 11.21**

- *Conservancy Fee*: In base case scenario and investment scenarios, it is assumed that 70 percent of the residential property tax assessments and 100 percent of non domestic property assessments would have to be brought under the conservancy fee coverage net. Monthly conservancy fee of Rs. 15 & Rs, 20 per property assessment s has been proposed for residential and non domestic properties respectively. It is assumed for conservancy fee starts from 2006-07, and from then on a 15 percent increase is assumed every 3 years; collection performance is assumed at 50 percent against arrears demand and 85 percent against current demand.

- *All other revenue income items*. (including municipal own sources, grants and assigned revenues): past trend is adopted, subject to minimum and maximum ceilings of 5 and 20 percent per annum, respectively.

(ii) Revenue Expenditure.

- Past trend is adopted, subject to minimum and maximum ceilings of 5 and 20 percent per annum, respectively.
- Additional O&M expenditure is estimated based on ascertained percentages of capital costs.
- All outstanding non-debt liabilities are to be cleared off in the next 5 years.
- All outstanding debt liabilities are to be cleared off in the next 15 years at an interest rate provided by the ULB, otherwise at an average interest rate of 9.50 percent. (Since, the existing DSR is more than 30 percent, it proposed to clear existing outstanding debt for 15 years)
- New loans are to be serviced over a 20-year tenor (including a five-year principal plus interest moratorium) at interest rates indicated in **Table .11.22**

(iii) Capital Expenditure.

- Capital expenditure is forecast based on the identified investments.
- The base costs estimated are at 2005-06 prices, which are then indexed by 7 percent for physical contingencies, and 6 percent for price contingencies. Based on the investment phasing, interest during construction at a rate of 8.5 percent indexed after working out the price contingencies.

(iv) Capital Income.

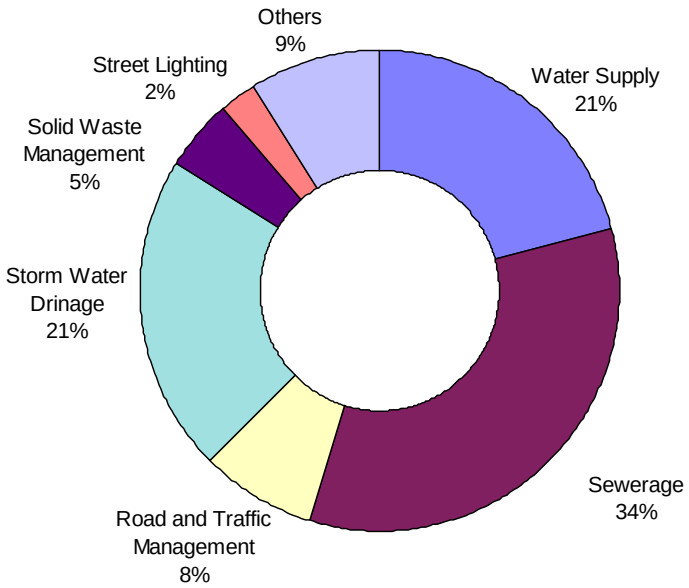
- Capital Income is ascertained based on assumed project financing patterns as detailed in **Table 11.23**.

3. Project Cash Flows and FOP Results

345. The base case scenario is worked out considering only the revenue account transactions to assess the municipal capacity to generate revenue surpluses that could be leveraged to undertake capital investments. Detailed cash flows are worked out for each of the sub-projects based on the assumptions with regards investment phasing, financing pattern, additional O&M expenditure and additional income due to proposed capital investments, for the Full Project scenarios and Sustainable investment scenarios. The net project cash flows are then loaded onto the base case scenario to test their impact on the overall municipal fiscal situation.

346. *Base Case Scenario*. The base case scenario results indicate that under the past-trend based assumptions adopted, Rajapalayam municipality would end up with a positive cumulative surplus of Rs. 16,921 lakh by the end of FY 2019-20 (refer **Table 11.22**). With reforms and additional resource mobilization initiatives like energy saving in street lighting and privatization of solid waste management activity and parking fee, levying of new charges like conservancy fee municipality can reach above said cumulative surplus. Base case with out reforms and with out additional resource mobilization initiatives municipality would end up with a positive closing balance of Rs. 15,490 lakh.

Figure 11.1: Full Project Financing Pattern



347. *Full Project Sustenance Scenario*. **Table 11.23** presents a summary of total project cash flows due to the full project scenario. Rajapalayam municipality would accumulate a negative closing balance of Rs. 11,549 lakh by the end of 2019-20 due exclusively to the full project investment. The total net project cash flows due to full project when loaded onto the base case Scenario FOP indicate that Rajapalayam municipality would end up with a positive closing balance of Rs. 5,372 lakh by the FOP horizon year 2019-20, though the account represents positive closing balance debt servicing ratio is more than 30 percent of the revenue income. Hence, full project cannot be invested as per FIs norms. **Table 11.22** presents a summary of the municipal fiscal status in the Full Project scenario. The full project (municipal share) investment proposed for Rajapalayam is to the tune of Rs.10,536 lakh,

out of which 34 of the total investment proposed for sewerage and 21 percent for storm water drain construction and improvement. However, the water supply project cost is estimated for Rajapalayam most of the works are already under implementation. This clearly indicates that the ULB need of a sewerage system and better storm water drainage facility in future.

Table 11.22: Financial Operating Plan Results - Rajapalayam Municipality

Item Heads	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Rs. Lakh														
Base Case - Municipal Fund															
Opening Balance	346	818	1,147	1,517	1,938	2,440	3,011	3,810	4,751	5,810	6,998	8,373	10,131	12,110	14,377
Revenue Income*	1,059	1,269	1,363	1,472	1,616	1,754	2,049	2,275	2,486	2,718	3,017	3,526	3,885	4,325	4,772
Additional Revenue Mobilization**	0	72	76	80	84	88	93	97	102	108	114	119	126	133	140
Total Revenue Income	1,059	1,341	1,439	1,552	1,699	1,842	2,141	2,373	2,588	2,826	3,131	3,645	4,011	4,458	4,912
Revenue Expenditure	586	1,013	1,069	1,130	1,197	1,271	1,342	1,431	1,529	1,637	1,756	1,887	2,032	2,191	2,367
Status	**473**	**328**	**370**	**422**	**502**	**571**	**799**	**941**	**1,059**	**1,188**	**1,375**	**1,758**	**1,979**	**2,267**	**2,545**
Closing Balance	***818***	***1,147***	***1,517***	***1,938***	***2,440***	***3,011***	***3,810***	***4,751***	***5,810***	***6,998***	***8,373***	***10,131***	***12,110***	***14,377***	***16,922***
Project Account - Full Project Scenario															
Total Net Project Cash Flow (after deducting ULB equity from cash flow)	-	178	303	34	460	312	(26)	(791)	(2,049)	(3,255)	(4,564)	(5,950)	(7,756)	(9,532)	(11,550)
Overall Closing Balance	***818***	***1,324***	***1,820***	***1,973***	***2,900***	***3,323***	***3,784***	***3,960***	***3,761***	***3,743***	***3,809***	***4,181***	***4,354***	***4,845***	***5,372***
Project Account - Sustainable Investment Scenario															
Total Net Project Cash Flows (after deducting ULB equity from project cash flow)	-	180	383	535	1,182	1,387	1,160	1,110	921	649	518	327	(20)	(276)	(568)
Overall Closing Balance	***818***	***1,327***	***1,900***	***2,473***	***3,622***	***4,398***	***4,970***	***5,862***	***6,731***	***7,647***	***8,891***	***10,458***	***12,090***	***14,101***	***16,354***
Financial Viability Ratios															
Sustainable Investment Scenario															
Debt Equity Ratio- New Projects	0.45	0.52	2.10	1.08	2.42	(5.85)	2.75	3.11	2.63	-	-	-	-	-	0.45
Debt Service Coverage Ratio (DSCR) – Min.150%	457%	604%	684%	838%	888%	877%	906%	893%	867%	941%	1060%	1174%	1308%	1443%	457%
Operating Ratio (<1)	0.77	0.74	0.71	0.65	0.65	0.62	0.60	0.59	0.59	0.57	0.54	0.53	0.51	0.50	0.77

Item Heads	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Rs. Lakh														
DSR (Max. 30%)	28%	26%	26%	26%	26%	27%	27%	29%	31%	29%	26%	24%	23%	22%	28%
Full Project Investment Scenario															
Debt Equity Ratio- New Projects	0.53	2.02	5.33	1.58	3.32	2.90	4.18	5.06	3.60	-	-	-	-	-	0.53
Debt Service Coverage Ratio (DSCR) – Min. 150 %	456%	524%	459%	542%	534%	489%	431%	343%	303%	287%	295%	296%	308%	319%	456%
Operating Ratio (<1)	0.77	0.73	0.74	0.71	0.72	0.67	0.65	0.67	0.69	0.68	0.64	0.63	0.60	0.59	0.77
DSR (Max. 30%)	28%	29%	34%	34%	36%	40%	43%	51%	55%	53%	49%	46%	43%	42%	28%

Source: Analysis.

Note: * including projected regular capital grant and with out project scenario regular connection deposit fee.

** excluding conservancy fee, since it is loaded on to the SWM sub project cash flow.

Table 11.23: Summary of Full Project Cash Flow.

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		Rs. Lakh													
	Full Sub Project Cash Flow														
1	Water Supply *	159.0	354.2	292.6	328.2	295.9	221.1	64.8	(190.4)	(414.0)	(600.6)	(828.7)	(1,061.6)	(1,251.8)	(1,444.5)
2	Sewerage	0.0	0.0	(78.4)	371.1	435.9	394.7	175.0	(209.8)	(641.9)	(1,004.9)	(1,371.8)	(1,938.4)	(2,465.4)	(3,158.2)
3	Roads and Traffic Management	0.0	0.0	(7.7)	(27.2)	(59.9)	(117.3)	(202.1)	(320.0)	(496.0)	(740.4)	(1,007.3)	(1,286.8)	(1,579.9)	(1,896.7)
4	Storm Water Drainage	0.0	0.0	(20.8)	(70.7)	(152.7)	(243.0)	(334.6)	(519.7)	(802.8)	(1,186.2)	(1,594.1)	(2,007.6)	(2,462.1)	(2,949.0)
5	Solid Waste Management	29.7	52.5	65.8	84.6	97.7	110.1	140.2	170.6	180.1	159.8	108.3	55.2	22.6	(18.7)
6	Street Lighting	(2.0)	(9.1)	(22.1)	(41.7)	(68.6)	(104.7)	(150.9)	(208.3)	(278.2)	(361.9)	(456.1)	(555.2)	(659.4)	(769.2)
7	Slum Upgradations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Others	0.0	0.0	0.0	(18.7)	(63.6)	(138.1)	(245.3)	(388.7)	(515.1)	(652.1)	(800.7)	(961.7)	(1,136.3)	(1,313.3)
	Total Sub Project Cash Flow	***186.7***	***397.5***	***229.4***	***625.7***	***484.8***	***122.8***	***(552.8)***	***(1,666.3)***	***(2,968.0)***	***(4,386.3)***	***(5,950.4)***	***(7,756.1)***	***(9,532.4)***	***(11,549.6)***
	Total Full Project Cash Flow														
	Opening Balance		187	398	229	626	485	123	(553)	(1666)	(2968)	(4386)	(5950)	(7756)	(9532)
A	**Sources of Fund**														
1	Debt Drawdown	73	671	1,418	1,247	1,297	1,097	1,725	2,868	2,172	1,424	-	-	-	-
2	Equity Drawdown	9	94	195	166	173	149	238	383	287	178	-	-	-	-
3	Govt. Grant	9	94	195	166	173	149	238	383	287	178	-	-	-	-
4	User Charges	65	130	157	314	370	425	547	597	665	841	910	948	1,126	1,159
5	New Connection Fees	128	237	71	623	217	230	175	184	316	247	259	109	136	44
	Total- Inflow	**284**	**1,228**	**2,036**	**2,515**	**2,231**	**2,049**	**2,923**	**4,414**	**3,727**	**2,868**	**1,169**	**1,058**	**1,262**	**1,203**
B	**Disposition of Funds**														
1	Project Capex	91	945	1,950	1,658	1,731	1,491	2,382	3,832	2,870	1,780	-	-	-	-
2	Operation & Maintenance	-	9	70	171	241	313	387	515	677	831	952	1,009	1,070	1,134
3	Debt Servicing-	-	-	-	-	-	514	591	698	814	886	1,781	1,854	1,968	2,086

	Principal Repayment														
4	Interest During Construction	6	63	184	290	400	93	240	484	668	789	-	-	-	-
	Total- Outflow	**98**	**1,017**	**2,204**	**2,119**	**2,372**	**2,411**	**3,598**	**5,528**	**5,029**	**4,286**	**2,733**	**2,863**	**3,038**	**3,220**
	Net Cash Flow	***187***	***211***	***(168)***	***396***	***(141)***	***(362)***	***(676)***	***(1113)***	***(1302)***	***(1418)***	***(1564)***	***(1806)***	***(1776)***	***(2017)***
	Closing Balance	*187*	*398*	*229*	*626*	*485*	*123*	*(553)*	*(1666)*	*(2968)*	*(4386)*	*(5950)*	*(7756)*	*(9532)*	*(11550)*

Source: Analysis.

Note: *Ongoing schemes addition connection deposit and tariff revenue has been considered in sub project cash flow

Table 11.24: Summary of base cost sustainable investment and phasing schedule

Sector	Total Investment	Investment Phasing (%)									
	Rs. Lakh	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Municipal Infrastructure											
Water Supply	-	0%	30%	30%	0%	0%	0%	20%	20%	0%	0%
Sewerage & Sanitation	2,730	0%	0%	10%	15%	15%	15%	15%	15%	15%	0%
Roads	214	0%	0%	10%	10%	10%	10%	10%	10%	20%	20%
Storm Water Drains	425	0%	0%	10%	10%	10%	0%	0%	30%	20%	20%
Solid Waste Mgmt	356	10%	10%	10%	10%	0%	0%	0%	0%	30%	30%
Street Lighting	121	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Slum Upgradation	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-
Total – ULB Investment	***3,846.00***										

Source: Analysis

Table 11.25: Summary of sustainable project investment -base cost

Sector	Total Investment	Investment Phasing – Rs. Lakh at Current Price									
	Rs. Lakh	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Municipal Infrastructure											
Water Supply	-	-	-	-	-	-	-	-	-	-	-
Sewerage & Sanitation	2,730	-	-	359	539	539	323	323	323	323	-
Roads	214	-	-	33	33	33	16	16	16	33	33
Storm Water Drains	425	-	-	90	90	90	-	-	67	45	45
Solid Waste Mgmt	356	51	51	51	51	-	-	-	-	76	76
Street Lighting	121	12	12	12	12	12	12	12	12	12	12
Slum Upgradation	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-
Total – ULB Investment	***3,846.00***	***63***	***63***	***545***	***724***	***673***	***352***	***352***	***419***	***489***	***166***

Source: Analysis

Table 11.26: Summary of sustainable investment project cash flow

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		Rs. Lakh													
	Sustainable Sub Project Cash Flow														
1	Water Supply	159.0	343.4	645.2	894.5	1,083.2	1,280.6	1,524.2	1,778.9	2,043.1	2,358.9	2,688.0	3,028.9	3,429.8	3,846.7
2	Sewerage	0.0	0.0	(78.4)	371.1	435.9	28.7	(203.4)	(548.8)	(939.4)	(1,298.4)	(1,664.8)	(2,156.2)	(2,628.9)	(3,139.3)
3	Roads and Traffic Management	0.0	0.0	(3.1)	(10.9)	(23.9)	(43.3)	(68.7)	(102.0)	(148.3)	(209.8)	(276.2)	(345.5)	(417.9)	(495.4)
4	Storm Water Drainage	0.0	0.0	(8.3)	(28.3)	(61.1)	(97.2)	(133.8)	(182.8)	(244.9)	(320.6)	(399.3)	(479.0)	(563.4)	(651.6)
5	Solid Waste Management	29.7	52.5	65.8	84.6	97.7	110.1	140.2	170.6	190.2	205.8	207.5	209.4	233.9	256.0
6	Street Lighting	(1.0)	(4.6)	(11.1)	(20.8)	(34.3)	(52.3)	(75.4)	(104.1)	(139.1)	(180.9)	(228.1)	(277.6)	(329.7)	(384.6)
7	Slum Upgradations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Sustainable Sub Project Cash Flow	***187.7***	***391.3***	***610.1***	***1,290.3***	***1,497.5***	***1,226.5***	***1,183.0***	***1,011.7***	***761.5***	***555.0***	***327.2***	***(19.9)***	***(276.2)***	***(568.1)***
	Total Sustainable Project Cash Flow														
	Opening Balance		*190*	*360*	*521*	*1146*	*1326*	*1429*	*1461*	*1335*	*1198*	*1050*	*868*	*506*	*283*
A	**Sources of Fund**														
1	Debt Drawdown	55	483	817	502	483	349	748	883	582	225	-	-	-	-
2	Equity Drawdown	9	179	300	171	173	132	291	327	185	38	-	-	-	-
3	Govt. Grant	27	283	478	289	281	206	445	518	329	113	-	-	-	-
4	User Charges	67	104	159	322	377	431	555	603	671	852	918	954	1,137	1,182
5	New Connection Fees	128	121	188	623	217	230	175	184	316	247	259	109	136	140
	Total- Inflow	***286***	***1,170***	***1,941***	***1,908***	***1,532***	***1,348***	***2,214***	***2,514***	***2,083***	***1,475***	***1,178***	***1,063***	***1,273***	***1,322***
B	**Disposition of Funds**														
1	Project Capex	91	945	1,595	962	938	688	1,484	1,727	1,095	376	-	-	-	-
2	Operation & Maintenance	-	9	70	162	216	267	312	407	516	599	659	698	740	785
3	Debt Servicing-	-	-	-	-	-	261	293	337	391	412	701	726	756	792

	Principal Repayment														
4	Interest During Construction	5	46	115	158	199	30	93	168	218	237	-	-	-	-
	Total- Outflow	**96**	**1,000**	**1,780**	**1,282**	**1,353**	**1,245**	**2,182**	**2,640**	**2,219**	**1,623**	**1,360**	**1,425**	**1,497**	**1,577**
	Net Cash Flow	190	170	161	625	180	103	32	(126)	(137)	(148)	(182)	(362)	(223)	(254)
	Closing Balance	*190*	*360*	*521*	*1146*	*1326*	*1429*	*1461*	*1335*	*1198*	*1050*	*868*	*506*	*283*	*29*

Source: Analysis.

Note: *Ongoing schemes addition connection deposit and tariff revenue has been considered in sub project cash flow.

XII. URBAN GOVERNANCE

A. Urban Governance

348. This chapter outlines the various best practices world over regarding good urban governance. The strategies presented in this chapter, are an integrated whole and none of them can be seen are understood in an isolated section. Commitment of the municipality to civic, secure and transparent administration will realize the dream of any city/town where the citizens will be those who govern and the municipality as an institution is one who facilitates and provides the service.

1. Current Initiatives

349. The other initiatives that are being adopted by the municipality to enhance its performance and capacity building are computerization of its activities and involving private sector in the delivery of civic services.

350. *Computerization*. GoTN has initiated steps to computerize municipal administration in the state. The entire process consists of four modules: Revenue and Taxation, Record Maintenance, Personnel Management System, Financial Management System.

351. As a start up, data relating to property tax has been computerized and the assessments are now handled by using computers. The billing and collection system of the property taxes is also computerized in the town. However, the computerization efforts are slow owing to the absence of technical capabilities with the municipality.

352. *Private Sector Participation.* The municipality has initiated the involvement of private sector in service delivery through part privatization of the solid waste collection system. The initiative has received good response from the citizens of the town and further privatization of certain other components of services is in active consideration of the municipality.

2. Strategies

353. *Decentralization*. In conformity to the 74th CAA, the Government of Tamil Nadu has made necessary legislative changes to devolve functional domains of the 18 listed items in the 12th schedule of the constitution. However only seven functions are made obligatory functions of urban local bodies and important functions like urban planning including town planning, regulation of land use and construction of buildings, slum improvement, urban poverty alleviation remain discretionary functions with rather little say for ULB. Consequently, the funds and concerned staff continue to remain under the control of the State Government. Financial powers as envisaged in the 12th Schedule of the Constitution also need to be immediately devolved to urban local bodies.

354. The local bodies should have control over the land in their jurisdiction and other

infrastructure including roads in their area. They should have power to remove encroachment from public land, construct and maintain roads within their respective municipal areas.

355. The municipality shall divide the area into zones/ divisions for better service delivery and management control. Such a mechanism is already being implemented in water supply and public health sectors.

356. *Urban Environmental Management*. The costs of maintaining a healthy urban environment needs to be recovered through various municipal taxes and user charges following the "Polluter Pays" principle. For this, the functional role of the ULB as envisaged in Item 8, 12th Schedule of the Constitution have to be resolved keeping in view the role of Tamil Nadu Pollution Control Board and the organizational and fiscal strength of the ULB.

357. *Access of Urban Services to Poor*. Since "Ability-to-Pay" for the full cost of environmental infrastructure services' provision is the important criterion, cross-subsidization of tariffs, innovative project structuring and user/ community participation are the means towards ensuring access of these services to the poor. Again, the functional and financial role of ULB with respect to the items 10 and 11 of 12th Schedule against those of central and state government agencies need to be resolved.

358. *Streamlining and Strengthening of Revenue Base of Local Bodies*.

(i) The recommendations of the State Finance Commissions must be made mandatory and should be implemented as a matter of course. Law enforcement powers should be given to local bodies to compel payments of taxes and other charges levied by them.
(ii) Property Tax base should be de-linked from rental value method and should be linked to Unit Area or Capital value method.
(iii) Fiscal powers of municipal bodies to fix tax rates, fee structure and user charges should be strengthened through specific guidelines and notifications. Prepare model guidelines for the town to allow greater flexibility in levying taxes, fees and user charges, borrowing funds and incurring expenditures.
(iv) The annual report of the municipality shall devote a section highlighting the amounts of subsidy given to a particular service, how was the subsidy funded and who were its beneficiaries.
(v) Adopting Zero-based budgeting shall be carried out supported by the already computerised accounting system for continual monitoring of budgets and cash flow management.
(vi) Implementation of MIS to provide relevant information on accounts, commercial and operating systems for better decision making and information dissemination to citizens.
(vii) Auditing of Accounts should be carried out effectively and regularly to promote transparency and accountability.
(viii) Application of e-governance is equally important for municipal finance. Adequate software in the financial management is required at different levels.

359. *Transparency and Civic Engagement in Municipal Management*

(i) Laws/ rules/ regulations specific to town/ local issues should be tried to facilitate effective implementation. These should be lucid and easily understood.
(ii) Participatory mechanisms should be so structured that they have legal entity and administrative power. Local bodies should be responsive and innovative and involve community participation in civic engagement.
(iii) Specific code of conduct for municipal executives and elected representatives.
(iv) Public education, resource mobilisation, good leadership and transparent processes apply in municipal finance and development work.
(v) Closer networking with media and their engagement in creating public awareness and creating demand for good governance. Cautious engagement of private sector with continuous monitoring is necessary.
(vi) Setting in place an active and online public Grievances' Redressal System, with automated department wise complaint loading and monitoring system.
(vii) Instruments to improve the efficiency of local bodies through enhanced technical, administrative, and financial capacities.
(viii) Credit Enhancement options other than state guarantees need to be adopted.
(ix) Preparation of annual Environmental Status Reports through a multi-stakeholder consultation process.

360. *Capacity Building of Local Bodies*

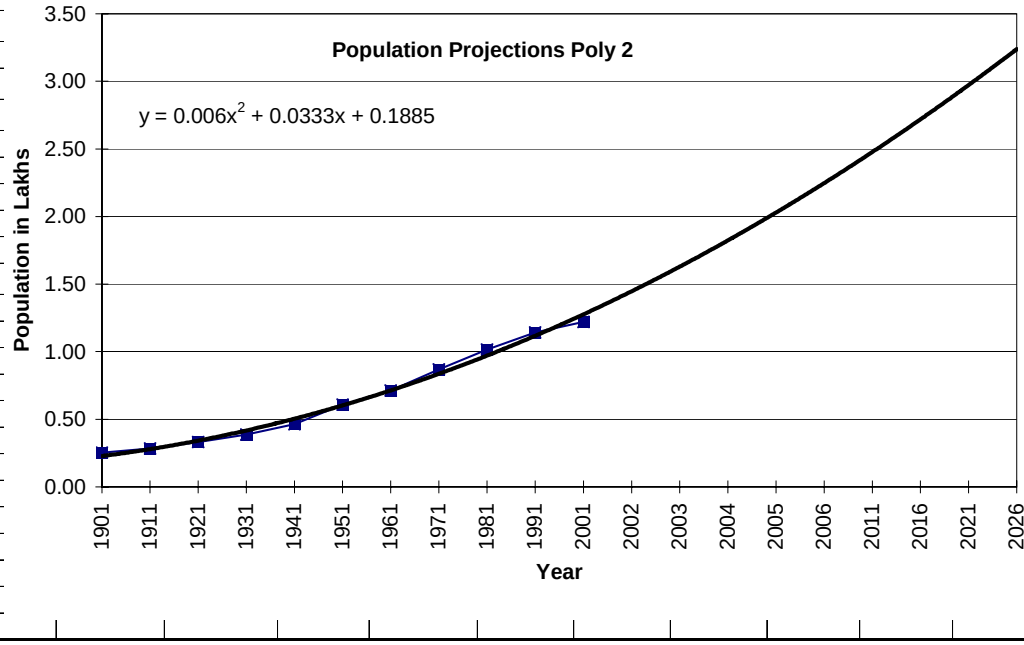
(i) The municipality shall maintain data to generate indicators as suggested in this document for evaluating their performance.
(ii) Prepare and conduct capacity building programs for elected representatives, especially women representatives with a view to enable them to focus on gender based issues.
(iii) Promote the creation of interactive platforms for sharing municipal innovations, experiences among municipal managers.
(iv) Better Human Resource Management through assessment of the training needs of personnel involved in urban administration to enhance the management and organizational capabilities.
(v) Assessment of fund requirement and resource persons to tackle the training needs of all the personnel.
(vi) Development of Training Material in the local language and Impact and Evaluation Studies of the Training Programs.
(vii) Capacity building to position the ULB in a better place to employ highly qualified staff and seek superior quality of out-sourced services.

Appendices I: Ward Level Densities**.**

Ward No.	Area (Sq. Km)	Population	Households	Density (2001)	Literate Population (2001)
1	0.31	3430	1164	11211	2679
2	0.08	2894	242	34245	1541
3	0.93	2837	1013	3037	1786
4	0.08	3054	1436	38490	2095
5	0.16	2216	821	13940	1757
6	0.10	2098	754	20870	1613
7	0.06	1985	845	35052	1702
8	0.30	3147	979	10620	2294
9	0.14	2812	825	20064	1952
10	0.23	2791	693	12039	1966
11	0.61	3235	1575	5328	2673
12	0.08	4098	1022	49730	2978
13	0.09	2706	788	31520	2142
14	0.13	2307	784	18438	1965
15	0.05	2533	888	54373	1849
16	0.10	3105	1341	32232	1943
17	0.22	3080	1238	14239	2192
18	0.04	1993	691	45070	1648
19	0.19	3295	1019	17727	2581
20	0.42	4499	1471	10642	2568
21	0.35	4977	1437	14157	3732
22	0.39	1983	1173	5114	1618
23	0.09	2381	734	25311	1744
24	0.08	2376	1028	29203	1807
25	0.07	2163	926	30385	1641
26	0.10	3073	1012	30538	1797
27	0.28	4232	1008	14979	2871
28	0.54	3520	1138	6485	2620
29	0.07	2432	932	33143	1751
30	0.10	3177	1119	31496	2245
31	0.06	2040	1106	37004	1606
32	0.08	2151	793	27825	1723
33	0.63	2748	1347	4354	2367
34	0.41	2745	1207	6696	1959
35	0.08	2692	830	34570	1526
36	0.06	2531	795	39652	1910
37	0.25	2814	972	11259	2202
38	0.07	1916	719	26630	1461
39	0.55	3832	1393	6929	2796
40	0.38	3381	1136	8887	2642
41	0.86	3385	1008	3928	2860
42	1.54	3318	1138	2154	2699
Total	**11.36**	**121982**	**42540**	**10738**	**89501**

Appendices II: Population Projection.

1- Rajapalayam Municipality - Population Growth												
	Year	**Population**				**Variation**	**Type 1 Arthmetic Increase method**	**Type 2 Incremental Increase method**	**Poly 2**	**Poly 3**	**Poly 4**	**Poly 5**
		Male	Female	Actuals	lakhs		Projected in Lakhs					
1	1901		25,360	25,360	0.25					0.27	0.25	0.25
2	1911		28,412	28,412	0.28	3,052				0.27	0.29	0.29
3	1921		33,184	33,184	0.33	4,772				0.31	0.33	0.32
4	1931		38,693	38,693	0.39	5,509				0.39	0.39	0.38
5	1941		46,289	46,289	0.46	7,596				0.49	0.47	0.46
6	1951		60,861	60,861	0.61	14,572				0.61	0.59	0.56
7	1961		71,203	71,203	0.71	10,342				0.74	0.73	0.66
8	1971	43,845	43,107	86,952	0.87	15,749				0.88	0.88	0.77
9	1981	51,769	49,871	101,640	1.02	14,688				1.02	1.03	0.86
10	1991	57,943	56,259	114,202	1.14	12,562				1.16	1.17	0.90
11	2001	61,080	60,902	121,982	1.22	7,780				1.28	1.27	0.87
11.1	2002			129,739	1.30		1.21	1.23	**1.30**	1.29	1.27	0.86
11.2	2003			131,410			1.20	1.24	**1.31**	1.30	1.28	0.85
11.3	2004			133,093			1.19	1.25	**1.33**	1.31	1.29	0.84
11.4	2005			134,788			1.18	1.26	**1.35**	1.32	1.29	0.83
11.5	2006			136,495			1.17	1.27	**1.36**	1.33	1.29	0.81
12	2011			145,210			1.12	1.32	**1.45**	1.38	1.30	0.73
12.5	2016			154,225			1.07	1.37	**1.54**	1.42	1.28	0.60
13	2021			163,540			1.03	1.43	**1.64**	1.45	1.23	0.43
13.5	2026			173,155			0.98	1.48	**1.73**	1.48	1.15	0.21
13.6	2027			175,114			0.97	1.50	**1.75**	1.48	1.13	0.16
14	2031			183,070			0.93	1.54	**1.83**	1.49	1.03	(0.06)
14.4	2035			191,218			0.89	1.59	**1.91**	1.50	0.90	(0.33)



Appendix III: List of Prioritized Projects for Implementation

Improvement of BT Roads and Construction of Storm Water Drain at Wards 1 and 2

This work is taken up to undertake widening of roads, formation of CC pavements, Upgradation of existing roads and construction of storm water drains in the wards 1 and 2.

The ward 1 is an Educational zone and the ward 2 has one slum area comprising more dwellers. It is proposed to widen the roads and construct of storm water drains in the following important roads in the wards 1 and 2.

1. Subbaraja madam street
2. Madasamy Koil cross streets
3. Kalyanasundaranar Road
4. Alagathan kulam Road

Subbaraja madam street, Madasamy koil cross streets are important roads connecting ward 1 and Madurai-Tenkasi NH. There are many schools in ward 1 and these roads link them.

Kalyanasundaranar Road, Alagathan kulam Road are major roads in ward 2 and heart of the three wards in Averampatti Slum Area. These roads connect important streets like Cholaraja patti, Bharathiyar street, Kattabomman street, Kambar street, Alagathan kulam village and a major link road between Melavaerampatti and Kelaaverampatti. It also leads to Madurai-Tenkasi NH and Mudangiyar road (State highway) The existing roads are having average width of 5.00m and it is necessary to widen and improve the road to enhance free movement of public and transport.

This project also proposes to provide CC pavement in Cholarajapatti and Madasamy Koil cross street. The up gradation of roads are to be taken in the existing BT road, these roads need to be upgraded with Bituminous macadam surface with PC Seal coat in 11 street to a length of about 1.90 Km. The storm water drain is proposed to be constructed in six streets to length of 1.114 Km. Overall 4.274 Km of length is covered in these two wards.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 3, 4 and 5

This work is taken up to undertake widening of roads, formation of CC pavements, Upgradation of existing roads and construction of storm water drains in the wards 3, 4 and 5.

It is proposed to construct storm water drain to a length of 1.625 Km in five streets and road works to be taken up for 4.192 Km in 24 Streets. The ward 3, 4 in Kelaaverampatii are important slum areas having thick population of slum dwellers and the ward 5 has important link road to Madurai-Tenkasi NH and Mudangiyar Road.

It is proposed to provide CC pavements in 6 streets in the slum areas. Widening of road is proposed to taken up in four streets. Keelaaverampatti road and Kalyana Sundaranar road are important connecting roads in the three wards in the Averampatti. Drowpathi Amman Koil street in ward 5 is an important link road to Averampatti slum wards and Madurai-Tenkasi NH. It is also a link road to Municipal Health post at Madasamy Koil Street and north police station.

It is proposed to upgrade 14 roads by providing WBM III grade metal surface, Bituminous Macadam Surface with PC seal coat. All the roads like Kattabomman street, Kambar street, Manimekalai street, Chinthamani street, Valaiyapathi street and Keeloaverampatti cross streets have thick population and connecting slum wards one to one in all directions. In ward 5, Dharmapuram Pappuraja street and north police station road are being important streets and has heavy vehicular traffic.

Improvement of BT Roads and Construction of Storm Water Drain at Ward 6, 7 and 8

It is proposed to construct storm water drain to a length of 1.606 Km in five streets and road works to be taken up for 3.844 Km in 11 Streets.

The wards 6 and 7 are mostly commercial areas and have important public places like Pon vizha maidan, Kottai Thalaivasal. Both wards have heavy vehicular traffic and public movement. Three major roads namely Periyakadai Bazzar, Periya Kadai veethi and Manikathan road are having commercial and Educational institutions. Periyakadai bazaar and Periyakadai veethi are adjacent to each other and many trade activities like flour mills, tailoring shops and hotels are located along these roads. The sub-registrar office is located along Periya Kadai Bazzar street and it connects Mudangiyar state highway and leads to the junction of Railway feeder road and Madurai – Tenkasi road NH. Along the Manikathan road educational institutions are located this road act as connecting road for many schools, charities and marriage halls. So, it is necessary to widen and upgrade the road to improve its standard.

It is also proposed to upgrade Periyamanthai street, Gnanasambandar street, South agraharam, Dharmar big street, Ambaiya Raja street and Kottai Thalaivasal street. These streets connect Manikathan road, Mudangiyar road and Periyakadai bazaar.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 9, 10 and 11.

The works include widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 9, 10 and 11.

It is proposed to construct storm water drain to a length of 1.451 Km in four streets and road works to be taken up for 4.016 Km in 16 Streets.

These three wards cover vast area and large residential with major Muslim population live in these extension areas. Three wards are collectively called as ‘Sammanthapuram’. It is necessary to provide formation of new roads, construction of storm water drains and culvert in the extension areas and to upgrade the existing old BT roads into Bituminous Macadam surface.

All the three wards are connecting each other and have two municipal schools, two Mosques, many Poultry farms and one Arabic college. Most of the internal roads lead to Mudangiyar state highway, which connect to Ayyanar falls in the west and Madurai-Tenkasi road in the East.

Kurinchi Nagar and Theeder nagar are fast developing extension areas. These require infrastructure like road and storm water drain and necessary provisions for the same are made in this project.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 12, 13, 14 and 15

The works include widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 12, 13, 14 and 15.

It is proposed to construct storm water drain to a length of 0.750 Km in two streets and road works to be taken up for 3.535 Km in 18 Streets.

It is proposed to widen and up grade Rice Mill road which is major link road between Tenkasi main road (NH) and Mudangiyar road (SH). This road is important since most commercial activities like trade shops, Flour & Rice mills are along this road and there is heavy vehicular traffic and public movement. The AKDR market is one of the biggest private market for vegetables, Crocery items, automobile spare parts and other business activities and this market located in this road. Also, AKDR Educational Charity is one of the important trust situated along the road. Since the road was laid five years ago, there is a need to widen and upgrade the road for easy, smooth and convenient flow of traffic, public movement, transport of trade activities. Another road namely sub-registrar office road is important and requires widening and up gradation. Kattuvinayakar street, Thambapillai street, Vallalar street, Kavimani street are the important roads connecting the above roads needs to be upgraded by providing Bituminous Macadam roads.

There are two slum wards Chinna Suraikaipatti and Periya Suraikaipatti slum which require improvements to roads and storm water drainage.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 16, 17 and 18

The work includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 16, 17 and 18.

It is proposed to construct storm water drain to a length of 0.675 Km in four streets and road works to be taken up for 3.493 Km in 19 Streets.

The ward 16 and the part of ward 17 fall under category of slums and have many slum dwellers. These require improvements to road and storm water drain. In ward 18, Sevalpatti connect many hospitals and marriage halls and leads to T.P Mills road, and Kamarajar Nagar. Considering many hospitals in the town situated in Kamarajar Nagar, it is necessary to upgrade the roads and construct storm water drain to accommodate the public particularly patients and aged.

The tenth ward municipal school road in ward 16 is connect road between Mudangiyar road and Madurai-Tenkasi road. The tenth ward municipal school is located in the Kumaran street is one of the major road leading to Bus stand, 10^{th} ward school. Hence it is necessary to improve the roads and construct storm water drains.

All the other roads proposed in this project in and around the wards 16,17 and 18 are connecting one to one another and leads to all major roads.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 19, 20 and 21

The work includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 19, 20 and 21.

It is proposed to construct storm water drain to a length of 0.600 Km in two streets, five culverts in various places and road works to be taken up for 6.281 Km in 22 Streets.

Sanjeevinathapuram street connects the Bus route roads T.P Mills road at one end and Madurai Main road at another end. Hence there is continuous flow of light vehicles and use of pedestrians in this road. Hence, it is proposed to widen the road and up gradation from Bituminous macadam road with PC seal coat.

The wards 20 and 21 are two wards out of five wards in the Malaiyadi patti which is one of the biggest slum area having many small scale industries with developing extension areas. It is proposed to formation of new roads in the Nethaji Nagar and Malaiyadi patti church road. It is proposed to widen and upgrade three major roads in the Malaiyadipatti wards. T.P Mills road to AAS Nagar has one railway crossing and is major entry point to Malaiyadipatti from T.P Mills road for heavy vehicles transport. In church road a big church is being located, the public used this road frequently. Hence both roads require to be upgraded in this project. This project also includes many diversion roads which are leading to Chatrapatti road and T.P mills road both are major Bus routes from 40 feet road and 60 feet road in the Malaiyadipatti.

Improvement of BT Roads and Construction of Storm Water Drain at Ward 22

The work includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 22.

It is proposed to construct storm water drain to a length of 0.840 Km in four streets, five culverts in various places and road works to be taken up for 3.993 Km in 9 Streets.

The ward 22 namely Kamaraj Nagar is the located in the core area. In this ward there are many educational institutions, hospitals, marriage halls, Rajapalayam milk society, lodges, hotels of high service quality like Anantha lodge, Ashoka lodge, Jai Santham lodge and commercial trades etc.

The proposal includes widening and up gradation of Railways Feeder Road. The railway station is located in this road. The road connects Municipal office, Telephone Exchange, Head Post office and leads to Chatrapatti road and Tenkasi road. There is a junction with four roads including this road. Others being Mudangiyar state highways road, Madurai and Tenkasi roads. Considering the commercial activities on this road and with heavy vehicular traffic, there is a need to improve the road by widening and up gradation of road with bituminous macadam road. The Seeniyappa Nadar street is the Bus route road connect Rajapalayam bus stand and many hospitals are located along this road. The Kamarajar Nagar III zone water tank road is another important road and require up gradation.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 23, 24, 25, 26, 29 and 30.

The works includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 23, 24, 25, 26, 29 and 30.

It is proposed to construct storm water drain to a length of 0.917 Km in three streets, and road works to be taken up for 5.119 Km in 18 Streets.

The proposed wards comprise many textile yarn small scale units and link roads to Ambalapuzhi bazaar which one of the major commercial and textile merchant trade takes place.

The proposal includes widening and upgrading of eight roads in these wards. Subramaniaswamy koil street, South Vaidayanathanpuram street, Sivagamipuram, Sankarapandiyapuram, Pavadi street and Kattu street. Most of the people in these locations are entrusted with the textile units and it is popular for commercial and trade activities. It also has many printing press and tailoring units. All the roads in the wards are linked to the Ambalapuzhi bazaar and Jawahar maidan in the Chatrapatti road which is popular public place. Thoppu patti savadi streets are important public places were many community meetings are held in the Chavadi located in this street and also two government aided public schools are also located here. Hence, there is a need to widen the road and upgrade them to enhance the trade and public very much convenient and smooth.

The proposal include up gradation of important roads. The Ambalapuzhi bazaar to Jawahar maidan road is important road that connect with Tenkasi main road NH and Chatrapatti state highways road. Another road Karuppaganaiyar Koil street to Muniyamman pottal inter connects T.P Mills road and Chatrapatti road which are major bus route roads.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 27 and 28

The works includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in wards 27 and 28.

It is proposed to construct storm water drain to a length of 1.120 Km in four streets, and road works to be taken up for 4.494 Km in 11 Streets.

Both wards are in Malaiyadi patti slum area which is biggest slum sector in the Rajapalayam town. These wards comprises two big industries one is Gowri Metal House which famous export house and another is Arumuga textile mills. These wards also consists of many match industries and other small scale industries.

The proposal includes widening and up gradation of five important roads and two new formation roads near Gowri metal house and Arumuga mills. Malaiyadipatti 40 feet road, Padma hospital road and Lakshmiyapuram road are major roads inter connecting T.P Mills road and Chatra patti road both are major Bus route roads. Another two being Soundrapandi nagar and Poo mariamman koil street having more slum populated area have small scale match factory activities and yarn units. Hence it is very much felt – need to widen the above roads and needs to be upgrade with bituminous macadam road.

The Arumuga mill road and the road behind Gowri metal house require new formation roads due to industrial importance. Necessary storm water drains provisions are made in these above streets.

This project also includes the upgradation of Roads in Alagai Nagar and its cross streets as the area having thick population of workers and labourers and having vehicular traffic and given priority.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 31, 32, 33, 34 and 35.

The works includes widening of roads, formation of CC pavements, up gradation of existing roads and construction of storm water drains in the wards 31, 32, 33, 34 and 35.

It is proposed to construct storm water drain to a length of 0.50 Km in two streets and three culverts at important disposal points and road works to be taken up for 5.057 Km in 18 Streets.

It is proposed to widening and upgrade important roads like Thiurvanathapuram main road which is connecting Tenkasi main road and important places like Union office, al women's police station, Department of Highways office, Government Hospital etc , Jawahar maidan road is inter connecting road between Tenkasi road and Chatrapatti road. Popular public place named 'Jawahar Maidan', Sivagamipuram road has many small scale textile units and also leads to Ambalapuzhi bazaar, a major trading activities takes place. Chokkar koil street is located in the Tenkasi NH road, the famous Chokkar Koil, PSK Memorial Hall, Mariamman Koil are situated in this main road with considerable amount of public flow. Hence it is necessary to give priority in this project.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 36,37 and 38

The works includes widening of roads, formation of CC pavements, up gradation of existing roads and construction of storm water drains in the wards 36, 37 and 38.

It is proposed to construct storm water drain to a length of 0.690 Km in two streets and road works to be taken up for 3.076 Km in 16 Streets.

Ward 36 is now developing as new extension area and in this project, new CC Pavement road are proposed in six streets along with proper storm water drain to a length of 0.50 Km to improve the infrastructure the area. It is also proposed to widening and upgrade the Mapillai Subbaiah street main road which is connecting Tenkasi NH road and inter connecting the Sankaran Koil road Bus route road, Kothanda Ramar Koil street which has a Ramar temple, also newly constructed Working women Hostel is situated in this road and also connected Tenkasi NH bus route road. Singaraja kottai big street is one of the important road in this town interconnecting Sankaran Koil road SH to Tenkasi Road NH.

This project also includes the Upgradation of BT road with Bituminous macadam road for Mariamman Koil Post office road to Tenkasi Road, Jawahar maidan road, Mugilvannam pillai street are having many factories, mini offset presses, many public places etc having official, industrial and community importance with NH-SH link have been given priority.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 39 and 40

The works includes widening of roads, formation of CC pavements, upgradation of existing roads and construction of storm water drains in the wards 39 and 40.

It is proposed to construct storm water drain to a length of 0.824 Km in four streets and three cross culverts in the important disposal points and road works to be taken up for 5.033 Km in 23 Streets.

The ward 39 is situated in the Sankaran koil road SH and ward 40 is situated at Chatrapatti SH Road. Both wards are now fast developing areas with extension roads. It is proposed to provide CC pavement in 10 streets in the extension areas to a length of 1.010 Km. The proposals include widening and upgradation of the major roads like Ganapathiyapuram streets which leads to PSK Nagar in the Chatrapati SH were many reputed educational institutions like high school, polytechnic college, post office, E.B. office etc. It is also a major link road between Chatrapati road and INTUC Nagar, the fast developed area.

All the other roads included in this project INTUC Nagar streets, Sankaran Koil road VII, VIII streets, Sankaran Koil Burial ground road which belongs to more than five communities having the public importance and access to the two state highways roads and now having the importance of the newly construction of 'A' class bus stand is only a walkable distance are given priority of upgradation of existing BT road into bituminous macadam roads.

Improvement of BT Roads and Construction of Storm Water Drain at Wards 41 and 42

The works includes widening of roads, formation of CC pavements, up gradation of existing roads and construction of storm water drains in the wards 41 and 42.

It is proposed to construct storm water drain to a length of 1.50 Km in two streets and six cross culverts in the important disposal points and road works to be taken up for 5.903 Km in 9 Streets.

In ward 41, 42 many major educational institutions and major industries like renowned RAMCO Group of Mills and Industries are located. Due to the Industrial development, both wards rapidly developed with extension areas are formed. So, the priority is given for formation of new roads in these wards, construction of storm water drain with suitable cross culverts in the Rajiv Gandhi Nagar, PSK Nagar in ward 41, Andalpuram and Ponnagaram are the fast development areas in ward 42. It is proposed to form the new roads with storm water drains and culverts.

It is also proposed to upgrade the existing B.T roads. The roads proposed for upgradation in wards 41 and 42 are PSK Nagar main road which leads PACR Polytechnic college, Bharathi nagar, Sudarsan garden, RR Nagar, Andalpuram in which places Schools, Municipal Noon Centres, inter connecting roads for Chatrapati road, Alankulam, Bus route and industrial route for many Mills and Industries. Hence, priority is given for taking up above works in this project.

Formation of Scheme Road from PACR Salai to Tenkasi Road (Bye Pass Road)

The works includes formations of scheme road from PACR Salai to Tenkasi road (Bye pass road). It is proposed to form a scheme road to a length of 2.100 Km.

The heavy vehicular traffic in the town causes severe congestion and pollution. Considering the well wish of the public and transport convenience and smoothness. it is proposed to form a scheme road from PACR Salai to Tenkasi road which leads to the new bus stand. Sankaran koil road which leads to Tirunelveli. This project includes the estimate for formation of new road with bituminous macadam with PC Seal coat with CMP machineries.

Improvement of BT Roads at Head Works and Compost Yard (Inner Road)

The works includes formation of new roads at Head works and Compost yard (inner Road).

It is proposed to form the new BT roads in the Municipality Water source Head works to a length of 1.30 KM and to the Municipal Compost Yard to a length of 1.10 KM

Rajapalayam municipality has largest summer storage tank, located 6th Mile near Ayyanar temple 12 km from the town. At the headwork's, the earthen road (1.30 km) is in very bad condition especially in the monsoon season. Hence this road requires upgradation.

There is proposal for up gradation of another earthen road to be taken up under this project is the Compost yard road located near Thottiyapatti about 8 km from the town. At present, Solid Waste Management scheme is going on progress, it is very hazardous for the drivers of tippers and tractors to dump the waste in the compost yard because the approach road and inner roads of the compost yard are have many pot holes and undulations. Under solid waste management scheme, Pump room, watchman room, Office Room and Drivers rest room with water facilities are provided in compost yard and compost preparations is going on rapid growth. Hence it is necessary to provide new formation with BT surface for smooth operation of the scheme. The above works are given top priority in this project

Improvement of BT Roads and Construction of Storm Water Drains and RCC Culverts at Madasamy Koil Street and Pugalenthi Salai

The works include widening of roads, upgradation of existing roads and construction of storm water drains at Madasamy Koil street and Pugalenthi salai.

The proposals include construction of storm water drain to a length of 0.50 Km in Madasamy Koil Road and one cross culverts in the important disposal points and road works to be taken up for 1.430 Km. in three roads.

Madasamy Koil road and Pugalenthi Salai are major roads, and these roads were last laid five years back. Hence, it is felt-need to upgrade the roads with bituminous macadam surface and construct storm water drain are provided in this project.

Improvement of BT Roads and Construction of Storm Water Drains at 60 feet Road at Malaiyadi patti.

The works include widening of roads, upgradation of existing roads and construction of storm water drains at 60 feet road at Malaiyadipatti.

It is proposed to construct storm water drain to a length of 0.50 Km and three cross culverts in the important disposal points and road works to be taken up for 1.175 Km.

The 60 feet road in Malaiyadi patti which is situated in the major slum covering four wards 20,21,27 and 28. It is one important and major road having route to two large-scale industries and so many small scale industries like Match factories and yarn textile units. A proposal of converting this to Bye-Pass road enroute to Chatrapati road, Madurai main road and Sankaran Koil road is under study. Considering the above factors of importance of being Industrial and Transport activities, this road is given top priority in this project for upgradation and construction of storm water drain. The road is proposed for widening to enhance the transport with free and convenient movement and smooth use of Public.

The estimate in this project covers this road with upgradation with bituminous macadam surface with PC seal coat with CMP Machineries.

Improvement of Odai Project Identification

It is proposed to take up the improvement of Odai located in the municipal limit and construction of storm water drain and culverts in the National Highways road in the Municipal limit.

In Rajapalayam town, the rainwater from Sanjeevi hills, rainwater from streets, main roads, and sullage drain water flows into various odais. These odais have no proper structure; the rainwater and sullage water are stagnated due to the formation of silt to a depth of 0.60m to 2.50m. So it is necessary to improve the odai with removal of silt, construction of retaining wall, providing wearing coat for the free flow of water to a length of 10.466 Km

Construction of Storm Water Drain and Culvert at NH and Highway Road

It is also proposed to construct storm water drain and culverts in the National Highway road in the municipal limit. In the Madurai-Tenkasi NH road, there is no proper storm water facilities to drain out the rain water. Due to lack of such facility, the rainwater stagnates on the NH Road. It leads to deterioration of NH road and it causes inconvenience to public and vehicular traffic. To preserve the NH road and free and smooth flow of traffic, it is proposed to construct storm water drain and culverts in the places wherever necessary to a length of 6.100 Km.

In the year 2008-09, it is proposed to undertake works such as improvement to existing BT Roads, formation of new BT roads in the developed and extension areas, providing cement concrete pavements, conversion of CC slabs into cement concrete pavements, improvement of existing storm water drains and construction of new drains and culverts in the developed areas.

In all 42 wards, it is necessary to improve the existing BT roads which are very badly damaged as they are laid over five years before to a length of 21.43 Km to an estimated cost of Rs. 660 lakhs. In Rajapalayam Municipality, it is necessary to form the new roads in the extension areas to improve the infrastructure. It is proposed to form the new roads in the wards 1, 2, 11, 20, 21, 35, 37, 39, 40, 41 and 42, which have recently developed. The total length of new road formation is 6.212 Km.

It is necessary to provide cement concrete pavement in the small streets already laid with CC pavement which are damaged due to pipe line laying cutting and cable laying cutting and laid over ten years before. It is also to provide new cement concrete pavements in the newly developed areas in the small lanes and streets to a length of 3.118 Km with an estimated cost of Rs.41.00 lakhs.

It is also necessary to convert the CC slab lanes into cement concrete pavements which are damaged and were laid ten years back to an length of 4.85 Km.

It is proposed to construct and improve the storm water drain in all 42 wards for a length of 61.14 Km at an estimated cost of Rs. 539.00 lakhs and 271 numbers of culverts in the road crossings in various streets for better traffic and for the smooth convenience of public.

It is also proposed to construct storm water drain and culverts in the scheme road PACR salai to Tenkasi road which is one of major road to be formed in the 2006-07 proposal. It is major bus route road connecting new bus stand, Chatrapatti road, Sankaran Koil road to a length of 2.10 Km.

Other Projects

This proposal is one of the long time plea by the public, industrialists, politicians, representatives of local body to construct an over bridge at the railway crossing at PACR Salai to avoid heavy traffic congestion at peak hours which affected the entire public. Many Educational institutions, major industries, residential blocks, polytechnic college are situated in this road. Dense traffic and public movement like students, office goers, business people causes heavy traffic arrest during entire day is seen. Hence it is very much felt and necessary to construct the over bridge in this junction. It is proposed to construct a Railway over bridge at PACR Salai

It is proposed to construct a shopping complex

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts		***1- Income and Expenditure Statement***			
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**
		Rs. Lakh			
	Opening Balance				
	REVENUE ACCOUNT				
I	**Revenue Income**				
A	**Tax- Own Sources**				
1	Property Tax (General Purpose) - 63% of Total PT	213.65	196.31	194.93	200.31
2	Property Tax (Education Purpose) - 5% of Total PT	17.80	16.36	16.24	16.69
3	Profession Tax	20.28	20.14	22.83	22.89
4	Other Taxes & Charges	0.01	0.01	-	0.01
	Tax- Own Sources	*251.75*	*232.83*	*234.00*	*239.90*
B	**Assigned Revenues**				
1	Entertainment Tax	21.58	6.35	38.73	10.95
2	Surcharge on Stamp Duty	31.79	25.12	77.37	75.61
3	Other Transfers	0.17	-	0.01	0.98
	Assigned Revenues	*53.54*	*31.46*	*116.11*	*87.54*
C	**Non Tax- Own Sources**				
1	Income from Municipal Properties and Markets	3.01	3.11	3.43	15.72
2	License Income (Trade, etc.)	7.29	5.60	13.12	14.70
3	Income from Special Services	-	-	-	-
4	Income from Sale Proceeds	0.61	0.90	0.78	0.99
5	Income from Fees and Fines	29.24	29.07	44.08	31.88
6	Income from Interest on Deposits	6.71	35.66	24.95	10.64
7	Income from Investments(Excl. Interest)	-	-	-	-
8	Miscellaneous Income	28.48	47.27	62.54	41.30
	Non Tax- Own Sources	*75.33*	*121.61*	*148.90*	*115.23*
D	**Revenue Grants**				
1	State Finance Commission Grant	100.16	110.45	204.20	308.24
2	Other Grants	64.54	3.43	31.71	-
	Revenue Grants	*164.70*	*113.88*	*235.91*	*308.24*
	Total- Revenue Income (Excl. W&D Fund)	**545.32**	**499.78**	**734.94**	**750.91**
E	**Water and Drainage Fund**				
1	Water & Drainage Tax - 32% of Total PT	106.83	98.16	97.47	100.16
2	Water Charges	33.92	67.97	70.98	62.72
3	Drainage Charges	-	-	5.33	0.03
4	Income from Interest on Deposits	0.18	0.39	0.46	1.09
5	Water Supply & Sanitation Grant	-	-	-	-
6	Other Income	-	-	-	-
	Total- W&D Fund Revenue Income	**140.93**	**166.52**	**174.24**	**163.99**

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts		***1- Income and Expenditure Statement***			
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**
		Rs. Lakh			
	Total- Revenue Income	**686.25**	**666.30**	**909.18**	**914.90**
II	**Revenue Expenditure**				
A	**General Administration**				
1	Staff Salary and Employee Related Expenses	235.42	218.05	207.47	221.49
2	Allowances to Elected Representatives	1.98	1.82	1.75	1.52
3	General Expenses	4.98	9.94	6.18	5.83
4	Pensions and Gratuities	32.85	33.01	71.30	48.76
5	Education - Staff Salary	-	-	-	-
6	Miscellaneous	4.55	2.80	2.19	1.37
	Establishment	*279.78*	*265.62*	*288.89*	*278.97*
B	**Operation & Maintenance**				
1	General Expenses	4.41	3.34	3.55	2.16
2	Public Works and Roads	11.19	14.97	9.61	11.23
3	Public Health and Conservancy	0.53	1.08	30.28	42.16
4	Contractor Payment- Conservancy	-	-	28.32	37.83
5	Street Lighting (including Electricity Charges)	53.95	48.59	64.90	61.35
6	Education	0.75	0.77	0.94	1.00
7	Vehicle and Equipment Maintenance	14.30	13.18	13.69	-
8	Miscellaneous	13.05	20.84	17.91	39.99
	Operation & Maintenance	*98.18*	*102.78*	*169.19*	*195.72*
C	**Debt Servicing**				
1	Public Works and Roads	-	-	-	-
2	Public Health and Conservancy	-	-	-	-
3	Others	17.22	33.84	291.05	78.77
	Debt Servicing	*17.22*	*33.84*	*291.05*	*78.77*
	Total- Revenue Expenditure (Excl. W&D Fund)	**395.18**	**402.24**	**749.13**	**553.46**
D	**Water and Sanitation Fund**				
1	Staff Salary & Employee Related Expenses	9.13	10.74	12.66	10.54
2	Administration Expenses	0.35	0.41	0.38	0.37
3	Equipment Maintenance & Repairs	12.00	9.40	9.71	7.38
4	Board Payment	-	-	-	-
5	Electricity Charges	7.52	9.20	13.60	15.30
6	Vehicle Maintenance & Repairs	8.52	6.88	9.23	8.76
7	Miscellaneous	26.33	32.96	56.34	29.91
8	Debt Servicing- Old	-	-	-	-
	Total- W&D Fund Revenue Expenditure	**63.85**	**69.59**	**101.92**	**72.26**
	Total- Revenue Expenditure	**459.03**	**471.83**	**851.05**	**625.72**
	Operating Surplus (W&D Revenue Fund)	77.08	96.93	72.32	91.74
	Operating Surplus (Revenue Account)	227.22	194.47	58.12	289.19
	Closing Balance-(Revenue Account)	227.22	421.69	479.81	769.00
	Transfer to Capital Account	**-**	**-**	**19.50**	**19.50**

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts		***1- Income and Expenditure Statement***			
Head of Account		**2000-01**	**2001-02**	**2002-03**	**2003-04**
		Rs. Lakh			
	CAPITAL ACCOUNT				
III	**Capital Income**				
A	**Capital Loans**				
1	Public Works and Roads	82.59	142.23	133.50	422.29
2	Street Lighting	-	-	-	-
3	Public Health & Conservancy	-	-	-	-
4	Education	-	-	-	-
5	Others	36.00	-	41.85	-
	Capital Loans	*118.59*	*142.23*	*175.35*	*422.29*
B	**Capital Grants and Contribution**				
1	Public Works and Roads	-	10.13	10.64	4.17
2	Education	-	-	-	-
3	Others	23.61	19.89	118.51	48.54
4	Eleventh Finance Commission Grants	-	-	-	-
	Capital Grants and Contribution	*23.61*	*30.02*	*129.14*	*52.71*
C	**Own Sources**				
1	Transfer from Revenue Account	-	-	19.50	19.50
2	Sale of Municipal Property	0.94	-	0.01	0.01
	Own Sources- Capital	*0.94*	-	*19.51*	*19.51*
	Total- Capital Income	**143.14**	**172.25**	**324.00**	**494.52**
	Water and Drainage Fund				
D	**Capital Loans**				
1	Water Supply	-	-	-	-
2	Sewerage & Sanitation	-	-	-	-
	Capital Loans W&D Fund	-	-	-	-
E	**Capital Grants and Contribution**				
1	Water Supply	-	1.00	8.90	-
2	Sewerage & Sanitation	-	-	-	-
	W&D -Capital Grants and Contribution	-	*1.00*	*8.90*	-
F	**Own Sources**				
1	Water Connection Charge	3.68	1.90	0.97	9.79
2	Sewerage Connection Charge	-	-	-	-
	W&D Own Sources- Capital	*3.68*	*1.90*	*0.97*	*9.79*
	Total W&D Fund- Capital Income	**3.68**	**2.90**	**9.87**	**9.79**
	Total- Capital Income	**146.82**	**175.15**	**333.87**	**504.31**

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts		***1- Income and Expenditure Statement***			
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**
		Rs. Lakh			
IV	**Capital Expenditure**				
1	General	3.96	7.20	207.52	67.28
2	Remunerative Schemes	-	-	-	-
3	Public Works and Roads	235.62	381.38	194.67	194.30
4	Street Lighting	9.80	-	1.22	-
5	Public Health & Conservancy	-	-	-	-
6	Education	-	-	6.82	-
7	Others	9.02	0.46	1.13	27.50
	Total - Capital Expenditure Excl W&D Fund	**258.39**	**389.05**	**411.36**	**289.08**
	Water and Drainage Fund				
8	Water Supply	-	4.65	403.33	21.27
9	Sewerage & Sanitation	14.03	131.12	61.33	68.62
	Total W&D Fund- Capital Expenditure	**14.03**	**135.77**	**464.66**	**89.89**
	Total - Capital Expenditure	**272.43**	**524.82**	**876.02**	**378.97**
	Operating Surplus (W&D Capital Account)	(10.36)	(132.87)	(454.79)	(80.10)
	Operating Surplus (Capital Account)	(125.61)	(349.67)	(542.15)	125.34
	Operating Surplus (Over all excl.revenue a/c transfer)	101.61	(155.20)	(503.53)	395.03
	EXTRAORDINARY ACCOUNT				
V	**EA Income**				
1	Cash at Bank/ in Hand	90.32	61.04	41.64	64.15
2	Tax & Royalty				
3	Cess Income	37.95	-	41.08	-
4	Cash Deposit	7.93	-	7.96	1.94
5	Staff Advance	64.85	1.93	-	0.01
6	Security Deposit	-	12.23	-	2.36
7	Miscellaneous	1.02	2.07	3.64	4.71
	Total- EA Income	**202.08**	**77.26**	**94.33**	**73.16**
VI	**EA Expenditure**				
1	Cess Transfers	-	19.00	-	-
2	Other- Deposits	-	2.82	-	0.07
3	PF and Pension	-	13.38	-	-
4	Miscellaneous	26.48	26.40	10.76	10.54
	Total- EA Expenditure	**26.48**	**61.60**	**10.76**	**10.61**
	Operating Surplus (Extraordinary Account)	**175.60**	**15.66**	**83.57**	**62.55**

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***2- Income and Expenditure -Sectoral Contribution***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage to Total				
	Opening Balance					
	REVENUE ACCOUNT					
I	**Revenue Income**					
A	**Tax- Own Sources**					
1	Property Tax (General Purpose) - 63% of Total PT	39.18	39.28	26.52	26.68	**32.91**
2	Property Tax (Education Purpose) - 5% of Total PT	3.26	3.27	2.21	2.22	**2.74**
3	Profession Tax	3.72	4.03	3.11	3.05	**3.48**
4	Other Taxes & Charges	0.00	0.00	-	0.00	**0.00**
	Tax- Own Sources	*46.17*	*46.59*	*31.84*	*31.95*	**39.13**
B	**Assigned Revenues**					
1	Entertainment Tax	3.96	1.27	5.27	1.46	**2.99**
2	Surcharge on Stamp Duty	5.83	5.03	10.53	10.07	**7.86**
3	Other Transfers	0.03	-	0.00	0.13	**0.04**
	Assigned Revenues	*9.82*	*6.30*	*15.80*	*11.66*	**10.89**
C	**Non Tax- Own Sources**					
1	Income from Municipal Properties and Markets	0.55	0.62	0.47	2.09	**0.93**
2	License Income (Trade, etc.)	1.34	1.12	1.79	1.96	**1.55**
3	Income from Special Services	-	-	-	-	**--**
4	Income from Sale Proceeds	0.11	0.18	0.11	0.13	**0.13**
5	Income from Fees and Fines	5.36	5.82	6.00	4.25	**5.36**
6	Income from Interest on Deposits	1.23	7.13	3.40	1.42	**3.29**
7	Income from Investments(Excl. Interest)	-	-	-	-	**--**
8	Miscellaneous Income	5.22	9.46	8.51	5.50	**7.17**
	Non Tax- Own Sources	*13.81*	*24.33*	*20.26*	*15.35*	**18.44**
D	**Revenue Grants**					
1	State Finance Commission Grant	18.37	22.10	27.78	41.05	**27.33**
2	Other Grants	11.84	0.69	4.32	-	**4.21**
	Revenue Grants	*30.20*	*22.79*	*32.10*	*41.05*	**31.53**
	Total- Revenue Income (Excl. W&D Fund)	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
E	**Water and Drainage Fund**					
1	Water & Drainage Tax - 32% of Total PT	75.80	58.95	55.94	61.07	**62.94**
2	Water Charges	24.07	40.82	40.74	38.24	**35.97**
3	Drainage Charges	-	-	3.06	0.02	**0.77**
4	Income from Interest on Deposits	0.13	0.24	0.26	0.66	**0.32**
5	Water Supply & Sanitation Grant	-	-	-	-	**--**
6	Other Income	-	-	-	-	**--**
	Total- W&D Fund Revenue Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***2- Income and Expenditure -Sectoral Contribution***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage to Total				
	Total- Revenue Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
II	**Revenue Expenditure**					
A	**General Administration**					
1	Staff Salary and Employee Related Expenses	59.57	54.21	27.70	40.02	**45.37**
2	Allowances to Elected Representatives	0.50	0.45	0.23	0.28	**0.37**
3	General Expenses	1.26	2.47	0.82	1.05	**1.40**
4	Pensions and Gratuities	8.31	8.21	9.52	8.81	**8.71**
5	Education - Staff Salary	-	-	-	-	**--**
6	Miscellaneous	1.15	0.70	0.29	0.25	**0.60**
	Establishment	*70.80*	*66.04*	*38.56*	*50.41*	**56.45**
B	**Operation & Maintenance**					
1	General Expenses	1.12	0.83	0.47	0.39	**0.70**
2	Public Works and Roads	2.83	3.72	1.28	2.03	**2.47**
3	Public Health and Conservancy	0.13	0.27	4.04	7.62	**3.02**
4	Contractor Payment- Conservancy	-	-	3.78	6.83	**2.65**
5	Street Lighting (including Electricity Charges)	13.65	12.08	8.66	11.08	**11.37**
6	Education	0.19	0.19	0.13	0.18	**0.17**
7	Vehicle and Equipment Maintenance	3.62	3.28	1.83	-	**2.18**
8	Miscellaneous	3.30	5.18	2.39	7.23	**4.52**
	Operation & Maintenance	*24.84*	*25.55*	*22.58*	*35.36*	**27.09**
C	**Debt Servicing**					
1	Public Works and Roads	-	-	-	-	**--**
2	Public Health and Conservancy	-	-	-	-	**--**
3	Others	4.36	8.41	38.85	14.23	**16.46**
	Debt Servicing	*4.36*	*8.41*	*38.85*	*14.23*	**16.46**
	Total- Revenue Expenditure (Excl. W&D Fund)	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
D	**Water and Sanitation Fund**					
1	Staff Salary & Employee Related Expenses	14.30	15.43	12.42	14.58	**14.18**
2	Administration Expenses	0.55	0.59	0.38	0.51	**0.51**
3	Equipment Maintenance & Repairs	18.79	13.51	9.52	10.22	**13.01**
4	Board Payment	-	-	-	-	**--**
5	Electricity Charges	11.78	13.22	13.35	21.17	**14.88**
6	Vehicle Maintenance & Repairs	13.34	9.89	9.05	12.12	**11.10**
7	Miscellaneous	41.24	47.37	55.28	41.40	**46.32**
8	Debt Servicing- Old	-	-	-	-	**--**
	Total- W&D Fund Revenue Expenditure	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Total- Revenue Expenditure	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Operating Surplus (W&D Revenue Fund)					
	Operating Surplus (Revenue Account)					
	Closing Balance-(Revenue Account)					
	Transfer to Capital Account					

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***2- Income and Expenditure -Sectoral Contribution***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage to Total				
	CAPITAL ACCOUNT					
III	**Capital Income**					
A	**Capital Loans**					
1	Public Works and Roads	57.70	82.57	41.20	85.39	**66.72**
2	Street Lighting	-	-	-	-	**--**
3	Public Health & Conservancy	-	-	-	-	**--**
4	Education	-	-	-	-	**--**
5	Others	25.15	-	12.92	-	**9.52**
	Capital Loans	*82.85*	*82.57*	*54.12*	*85.39*	**76.23**
B	**Capital Grants and Contribution**					
1	Public Works and Roads	-	5.88	3.28	0.84	**2.50**
2	Education	-	-	-	-	**--**
3	Others	16.49	11.55	36.58	9.82	**18.61**
4	Eleventh Finance Commission Grants	-	-	-	-	**--**
	Capital Grants and Contribution	*16.49*	*17.43*	*39.86*	*10.66*	**21.11**
C	**Own Sources**					
1	Transfer from Revenue Account	-	-	6.02	3.94	**2.49**
2	Sale of Municipal Property	0.66	-	0.00	0.00	**0.17**
	Own Sources- Capital	*0.66*	-	*6.02*	*3.95*	**2.66**
	Total- Capital Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Water and Drainage Fund					
D	**Capital Loans**					
1	Water Supply	-	-	-	-	**--**
2	Sewerage & Sanitation	-	-	-	-	**--**
	Capital Loans W&D Fund	-	-	-	-	**--**
E	**Capital Grants and Contribution**					
1	Water Supply	-	34.42	90.17	-	**31.15**
2	Sewerage & Sanitation	-	-	-	-	**--**
	W&D -Capital Grants and Contribution	-	*34.42*	*90.17*	-	**31.15**
F	**Own Sources**					
1	Water Connection Charge	100.00	65.58	9.83	100.00	**68.85**
2	Sewerage Connection Charge	-	-	-	-	**--**
	W&D Own Sources- Capital	100.00	65.58	9.83	100.00	**68.85**
	Total W&D Fund- Capital Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Total- Capital Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***2- Income and Expenditure -Sectoral Contribution***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage to Total				
IV	**Capital Expenditure**					
1	General	1.53	1.85	50.45	23.27	**19.28**
2	Remunerative Schemes	-	-	-	-	**--**
3	Public Works and Roads	91.18	98.03	47.32	67.21	**75.94**
4	Street Lighting	3.79	-	0.30	-	**1.02**
5	Public Health & Conservancy	-	-	-	-	**--**
6	Education	-	-	1.66	-	**0.41**
7	Others	3.49	0.12	0.27	9.51	**3.35**
	Total - Capital Expenditure Excl W&D Fund	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
	Water and Drainage Fund					
8	Water Supply	-	3.42	86.80	23.66	**28.47**
9	Sewerage & Sanitation	100.00	96.58	13.20	76.34	**71.53**
	Total W&D Fund- Capital Expenditure	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
	Total - Capital Expenditure	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Operating Surplus (W&D Capital Account)					
	Operating Surplus (Capital Account)					
	Operating Surplus (Over all excl.revenue a/c transfer)					
	EXTRAORDINARY ACCOUNT					
V	**EA Income**					
1	Cash at Bank/ in Hand	44.70	79.00	44.14	87.69	**63.88**
2	Tax & Royalty	-	-	-	-	**--**
3	Cess Income	18.78	-	43.56	-	**15.58**
4	Cash Deposit	3.93	-	8.44	2.65	**3.75**
5	Staff Advance	32.09	2.50	-	0.01	**8.65**
6	Security Deposit	-	15.82	-	3.22	**4.76**
7	Miscellaneous					
	Total- EA Income	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
VI	**EA Expenditure**					
1	Cess Transfers	-	30.84	-	-	**7.71**
2	Other- Deposits	-	4.58	-	0.64	**1.30**
3	PF and Pension	-	21.72	-	-	**5.43**
4	Miscellaneous	100.00	42.86	100.00	99.36	**85.55**
	Total- EA Expenditure	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Operating Surplus (Extraordinary Account)					

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***3- Income and Expenditure -Growth Trends***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage increase over previous year				
	Opening Balance					
	REVENUE ACCOUNT					
I	**Revenue Income**					
A	**Tax- Own Sources**					
1	Property Tax (General Purpose) - 63% of Total PT	--	(8.12)	(0.70)	2.76	**(2.02)**
2	Property Tax (Education Purpose) - 5% of Total PT	--	(8.12)	(0.70)	2.76	**(2.02)**
3	Profession Tax	--	(0.69)	13.36	0.26	**4.31**
4	Other Taxes & Charges	--	5.26	--	--	**5.26**
	Tax- Own Sources	--	*(7.52)*	*0.51*	*2.52*	**(1.50)**
B	**Assigned Revenues**					
1	Entertainment Tax	--	(70.58)	510.14	(71.73)	**122.61**
2	Surcharge on Stamp Duty	--	(20.99)	208.05	(2.28)	**61.59**
3	Other Transfers	--	--	--	9,324.50	**9,324.50**
	Assigned Revenues	--	*(41.23)*	*269.03*	*(24.61)*	**67.73**
C	**Non Tax- Own Sources**					
1	Income from Municipal Properties and Markets	--	3.07	10.48	358.12	**123.89**
2	License Income (Trade, etc.)	--	(23.11)	134.19	12.02	**41.03**
3	Income from Special Services	--	--	--	--	**--**
4	Income from Sale Proceeds	--	47.40	(13.29)	26.75	**20.29**
5	Income from Fees and Fines	--	(0.55)	51.61	(27.67)	**7.79**
6	Income from Interest on Deposits	--	431.74	(30.02)	(57.37)	**114.79**
7	Income from Investments(Excl. Interest)	--	--	--	--	**--**
8	Miscellaneous Income	--	65.98	32.31	(33.96)	**21.44**
	Non Tax- Own Sources	--	*61.43*	*22.45*	*(22.61)*	**20.42**
D	**Revenue Grants**					
1	State Finance Commission Grant	--	10.27	84.88	50.95	**48.70**
2	Other Grants	--	(94.69)	824.57	--	**364.94**
	Revenue Grants	--	*(30.86)*	*107.16*	*30.66*	**35.65**
	Total- Revenue Income (Excl. W&D Fund)	**--**	**(8.35)**	**47.05**	**2.17**	**13.62**
E	**Water and Drainage Fund**					
1	Water & Drainage Tax - 32% of Total PT	--	(8.12)	(0.70)	2.76	**(2.02)**
2	Water Charges	--	100.37	4.43	(11.64)	**31.05**
3	Drainage Charges	--	--	--	(99.39)	**(99.39)**
4	Income from Interest on Deposits	--	115.36	17.04	136.31	**89.57**
5	Water Supply & Sanitation Grant	--	--	--	--	**--**
6	Other Income	--	--	--	--	**--**
	Total- W&D Fund Revenue Income	--	**18.16**	**4.64**	**(5.88)**	**5.64**

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***3- Income and Expenditure -Growth Trends***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage increase over previous year				
						-
	Total- Revenue Income	**--**	**(2.91)**	**36.45**	**0.63**	**11.39**
II	**Revenue Expenditure**					
A	**General Administration**					
1	Staff Salary and Employee Related Expenses	--	(7.38)	(4.85)	6.76	**(1.82)**
2	Allowances to Elected Representatives	--	(7.88)	(3.72)	(13.13)	**(8.24)**
3	General Expenses	--	99.71	(37.86)	(5.57)	**18.76**
4	Pensions and Gratuities	--	0.47	116.00	(31.61)	**28.28**
5	Education - Staff Salary	--	--	--	--	--
6	Miscellaneous	--	(38.57)	(21.67)	(37.54)	**(32.59)**
	Establishment	--	*(5.06)*	*8.76*	*(3.43)*	**0.09**
B	**Operation & Maintenance**					
1	General Expenses	--	(24.33)	6.23	(38.97)	**(19.02)**
2	Public Works and Roads	--	33.79	(35.85)	16.90	**4.95**
3	Public Health and Conservancy	--	105.21	2,690.96	39.23	**945.14**
4	Contractor Payment- Conservancy	--	--	--	33.58	**33.58**
5	Street Lighting (including Electricity Charges)	--	(9.93)	33.55	(5.47)	**6.05**
6	Education	--	3.14	21.92	6.21	**10.43**
7	Vehicle and Equipment Maintenance	--	(7.83)	3.90	--	**(1.97)**
8	Miscellaneous	--	59.71	(14.07)	123.32	**56.32**
	Operation & Maintenance	--	*4.69*	*64.61*	*15.68*	**28.33**
C	**Debt Servicing**					
1	Public Works and Roads	--	--	--	--	--
2	Public Health and Conservancy	--	--	--	--	--
3	Others	--	96.52	760.08	(72.94)	**261.22**
	Debt Servicing	--	96.52	760.08	(72.94)	**261.22**
	Total- Revenue Expenditure (Excl. W&D Fund)	--	**1.79**	**86.24**	**(26.12)**	**20.64**
D	**Water and Sanitation Fund**					
1	Staff Salary & Employee Related Expenses	--	17.60	17.88	(16.76)	**6.24**
2	Administration Expenses	--	16.67	(5.96)	(4.95)	**1.92**
3	Equipment Maintenance & Repairs	--	(21.61)	3.23	(23.95)	**(14.11)**
4	Board Payment	--	--	--	--	--
5	Electricity Charges	--	22.29	47.89	12.47	**27.55**
6	Vehicle Maintenance & Repairs	--	(19.20)	34.08	(5.06)	**3.27**
7	Miscellaneous	--	25.18	70.92	(46.91)	**16.40**
8	Debt Servicing- Old	--	--	--	--	--
	Total- W&D Fund Revenue Expenditure	--	**9.00**	**46.45**	**(29.11)**	**8.78**
	Total- Revenue Expenditure	--	**2.79**	**80.37**	**(26.48)**	**18.89**
	Operating Surplus (W&D Revenue Fund)					
	Operating Surplus (Revenue Account)					
	Closing Balance-(Revenue Account)					
	Transfer to Capital Account					

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***3- Income and Expenditure -Growth Trends***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage increase over previous year				
	CAPITAL ACCOUNT					
III	**Capital Income**					
A	**Capital Loans**					
1	Public Works and Roads	--	72.21	(6.14)	216.32	**94.13**
2	Street Lighting	--	--	--	--	--
3	Public Health & Conservancy	--	--	--	--	--
4	Education	--	--	--	--	--
5	Others	--	--	--	--	--
	Capital Loans	--	19.93	23.29	140.83	**61.35**
B	**Capital Grants and Contribution**					
1	Public Works and Roads	--	--	5.02	(60.78)	**(27.88)**
2	Education	--	--	--	--	--
3	Others	--	(15.75)	495.75	(59.04)	**140.32**
4	Eleventh Finance Commission Grants	--	--	--	--	--
	Capital Grants and Contribution	--	*27.15*	*330.19*	*(59.18)*	**99.38**
C	**Own Sources**					
1	Transfer from Revenue Account	--	--	--	-	-
2	Sale of Municipal Property	--	--	--	44.44	**44.44**
	Own Sources- Capital	--	--	--	*0.02*	**0.02**
	Total- Capital Income	**--**	**20.33**	**88.10**	**52.63**	**53.69**
	Water and Drainage Fund					
D	**Capital Loans**					
1	Water Supply	--	--	--	--	--
2	Sewerage & Sanitation	--	--	--	--	--
	Capital Loans W&D Fund	--	--	--	--	--
E	**Capital Grants and Contribution**					
1	Water Supply	--	--	792.07	--	**792.07**
2	Sewerage & Sanitation	--	--	--	--	--
	W&D -Capital Grants and Contribution	--	--	*792.07*	--	***792.07***
F	**Own Sources**					
1	Water Connection Charge	--	(48.27)	(48.99)	909.52	**270.75**
2	Sewerage Connection Charge	--	--	--	--	--
	W&D Own Sources- Capital	--	(48.27)	(48.99)	909.52	**270.75**
	Total W&D Fund- Capital Income	--	**(21.12)**	**240.49**	**(0.81)**	72.85
	Total- Capital Income	**--**	**19.30**	**90.62**	**51.05**	**53.66**

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts		***3- Income and Expenditure -Growth Trends***				
	Head of Account	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Average**
		Percentage increase over previous year				
IV	**Capital Expenditure**					
1	General	--	81.91	2,782.00	(67.58)	**932.11**
2	Remunerative Schemes	--	--	--	--	**--**
3	Public Works and Roads	--	61.87	(48.96)	(0.19)	**4.24**
4	Street Lighting	--	--	--	--	**--**
5	Public Health & Conservancy	--	--	--	--	**--**
6	Education	--	--	--	--	**--**
7	Others	--	(94.90)	145.76	2,331.96	**794.27**
	Total - Capital Expenditure Excl W&D Fund	--	*50.56*	*5.74*	*(29.73)*	*8.86*
	Water and Drainage Fund					
8	Water Supply	--	--	8,573.74	(94.73)	**4,239.51**
9	Sewerage & Sanitation	--	834.37	(53.23)	11.88	**264.34**
	Total W&D Fund- Capital Expenditure	--	*867.51*	*242.24*	*(80.66)*	*343.03*
	Total - Capital Expenditure	**--**	**92.64**	**66.92**	**(56.74)**	**34.27**
	Operating Surplus (W&D Capital Account)					
	Operating Surplus (Capital Account)					
	Operating Surplus (Over all excl.revenue a/c transfer)					
	EXTRAORDINARY ACCOUNT					
V	**EA Income**					
1	Cash at Bank/ in Hand					
2	Tax & Royalty	--	--	--	--	**--**
3	Cess Income	--	--	--	--	**--**
4	Cash Deposit	--	--	--	(75.66)	**(75.66)**
5	Staff Advance	--	(97.02)	--	--	**(97.02)**
6	Security Deposit	--	--	--	--	**--**
7	Miscellaneous					
	Total- EA Income	**--**	**(61.77)**	**22.09**	**(22.44)**	**(20.71)**
VI	**EA Expenditure**					
1	Cess Transfers	--	--	--	--	**--**
2	Other- Deposits	--	--	--	--	**--**
3	PF and Pension	--	--	--	--	**--**
4	Miscellaneous	--	(0.28)	(59.26)	(2.01)	**(20.51)**
	Total- EA Expenditure	--	**132.68**	**(82.54)**	**(1.38)**	**16.25**
	Operating Surplus (Extraordinary Account)					

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts			*4- FOP Assumptions*		
	Head of Account	**SAGR**	**CAGR**	**CAGR**	**Variable**
		% pa	*% pa*	*Rs. pc/ pa*	*%pa*
	Opening Balance				
	REVENUE ACCOUNT				
I	**Revenue Income**				
A	**Tax- Own Sources**				
1	Property Tax (General Purpose) - 63% of Total PT	(2.02)	(2.13)	(2.92)	
2	Property Tax (Education Purpose) - 5% of Total PT	(2.02)	(2.13)	(2.92)	
3	Profession Tax	4.31	4.12	3.27	5.00%
4	Other Taxes & Charges	5.26	(8.83)	(9.56)	5.00%
	Tax- Own Sources	*(1.50)*	*(1.59)*	*(2.39)*	
B	**Assigned Revenues**				
1	Entertainment Tax	122.61	(20.24)	(20.89)	5.00%
2	Surcharge on Stamp Duty	61.59	33.48	32.40	15.00%
3	Other Transfers	9,324.50	80.33	78.87	10.00%
	Assigned Revenues	*67.73*	*17.81*	*16.86*	
C	**Non Tax- Own Sources**				
1	Income from Municipal Properties and Markets	123.89	73.43	72.03	20.00%
2	License Income (Trade, etc.)	41.03	26.35	25.33	20.00%
3	Income from Special Services	--	--	--	5.00%
4	Income from Sale Proceeds	20.29	17.45	16.50	17.45%
5	Income from Fees and Fines	7.79	2.93	2.10	5.00%
6	Income from Interest on Deposits	114.79	16.63	15.68	6.00%
7	Income from Investments(Excl. Interest)	--	--	--	5.00%
8	Miscellaneous Income	21.44	13.19	12.28	13.00%
	Non Tax- Own Sources	*20.42*	*15.22*	*14.29*	
D	**Revenue Grants**				
1	State Finance Commission Grant	48.70	45.45	44.28	15.00%
2	Other Grants	364.94	(100.00)	(100.00)	5.00%
	Revenue Grants	*35.65*	*23.23*	*22.24*	
	Total- Revenue Income (Excl. W&D Fund)	**13.62**	**11.25**	**10.35**	
E	**Water and Drainage Fund**				
1	Water & Drainage Tax - 32% of Total PT	(2.02)	(2.13)	(2.92)	
2	Water Charges	31.05	22.73	21.74	
3	Drainage Charges	(99.39)	(99.39)	--	
4	Income from Interest on Deposits	89.57	81.27	--	15.00%
5	Water Supply & Sanitation Grant	--	--	--	5.00%
6	Other Income	--	--	--	5.00%
	Total- W&D Fund Revenue Income	**5.64**	**5.18**	**4.33**	

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts			***4- FOP Assumptions***		
	Head of Account	**SAGR**	**CAGR**	**CAGR**	**Variable**
		% pa	*% pa*	*Rs. pc/ pa*	*%pa*
	Total- Revenue Income	**11.39**	**10.06**	**9.17**	
II	**Revenue Expenditure**				
A	**General Administration**				
1	Staff Salary and Employee Related Expenses	(1.82)	(2.01)	(2.81)	8.00%
2	Allowances to Elected Representatives	(8.24)	(8.32)	(9.06)	5.00%
3	General Expenses	18.76	5.43	4.57	5.43%
4	Pensions and Gratuities	28.28	14.06	13.14	14.06%
5	Education - Staff Salary	--	--	--	5.00%
6	Miscellaneous	(32.59)	(33.02)	(33.56)	5.00%
	Establishment	*0.09*	*(0.10)*	*(0.91)*	
B	**Operation & Maintenance**				
1	General Expenses	(19.02)	(21.13)	(21.77)	5.00%
2	Public Works and Roads	4.95	0.11	(0.70)	5.00%
3	Public Health and Conservancy	945.14	330.43	326.94	10.00%
4	Contractor Payment- Conservancy	33.58	33.58	--	10.00%
5	Street Lighting (including Electricity Charges)	6.05	4.37	3.53	10.00%
6	Education	10.43	10.13	9.24	10.00%
7	Vehicle and Equipment Maintenance	(1.97)	(100.00)	(100.00)	5.00%
8	Miscellaneous	56.32	45.25	44.08	10.00%
	Operation & Maintenance	*28.33*	*25.85*	*24.84*	
C	**Debt Servicing**				
1	Public Works and Roads	--	--	--	
2	Public Health and Conservancy	--	--	--	
3	Others	261.22	66.00	64.66	
	Debt Servicing	261.22	*66.00*	64.66	
	Total- Revenue Expenditure (Excl. W&D Fund)	**20.64**	**11.88**	**10.98**	
D	**Water and Sanitation Fund**				
1	Staff Salary & Employee Related Expenses	6.24	4.89	4.04	5.00%
2	Administration Expenses	1.92	1.41	0.59	5.00%
3	Equipment Maintenance & Repairs	(14.11)	(14.94)	(15.63)	5.00%
4	Board Payment	--	--	--	5.00%
5	Electricity Charges	27.55	26.70	25.68	15.00%
6	Vehicle Maintenance & Repairs	3.27	0.94	0.13	5.00%
7	Miscellaneous	16.40	4.34	3.50	5.00%
8	Debt Servicing- Old	--	--	--	
	Total- W&D Fund Revenue Expenditure	**8.78**	**4.21**	**3.37**	
	Total- Revenue Expenditure	**18.89**	**10.88**	**9.98**	
	Operating Surplus (W&D Revenue Fund)				
	Operating Surplus (Revenue Account)				
	Closing Balance-(Revenue Account)				
	Transfer to Capital Account				

Appendix IV: Municipal Finance						
17- Rajapalayam Municipality - Abstract of Accounts			***4- FOP Assumptions***			
		Head of Account	**SAGR**	**CAGR**	**CAGR**	**Variable**
			% pa	*% pa*	*Rs. pc/ pa*	*%pa*
		CAPITAL ACCOUNT				
	III	**Capital Income**				
	A	**Capital Loans**				
	1	Public Works and Roads	94.13	*72.28*	--	
	2	Street Lighting	--	--	--	
	3	Public Health & Conservancy	--	--	--	
	4	Education	--	--	--	
	5	Others	--	*(100.00)*	--	
		Capital Loans	61.35	52.71	--	
	B	**Capital Grants and Contribution**				
	1	Public Works and Roads	(27.88)	(35.82)	--	5.00%
	2	Education	--	--	--	5.00%
	3	Others	140.32	27.16	26.13	15.00%
	4	Eleventh Finance Commission Grants	--	--	--	5.00%
		Capital Grants and Contribution	99.38	*30.70*	*29.64*	15.00%
	C	**Own Sources**				
	1	Transfer from Revenue Account	-	-	--	
	2	Sale of Municipal Property	44.44	(76.03)	(76.22)	
		Own Sources- Capital	0.02	*174.46*	*172.24*	
		Total- Capital Income	**53.69**	**51.17**	**49.95**	
		Water and Drainage Fund				
	D	**Capital Loans**				
	1	Water Supply	--	--	--	
	2	Sewerage & Sanitation	--	--	--	
		Capital Loans W&D Fund	--	--	--	
	E	**Capital Grants and Contribution**				
	1	Water Supply	792.07	(100.00)	--	5.00%
	2	Sewerage & Sanitation	--	--	--	5.00%
		W&D -Capital Grants and Contribution	*792.07*	*(100.00)*	--	
	F	**Own Sources**				
	1	Water Connection Charge	270.75	38.63	37.50	
	2	Sewerage Connection Charge	--	--	--	
		W&D Own Sources- Capital	*270.75*	*38.63*	*37.50*	
		Total W&D Fund- Capital Income	**72.85**	**38.63**	**37.50**	
		Total- Capital Income	**53.66**	**50.88**	**49.66**	

Appendix IV: Municipal Finance					
17- Rajapalayam Municipality - Abstract of Accounts		***4- FOP Assumptions***			
	Head of Account	**SAGR**	**CAGR**	**CAGR**	**Variable**
		% pa	*% pa*	*Rs. pc/ pa*	*%pa*
IV	**Capital Expenditure**				
1	General	932.11	157.12	155.03	
2	Remunerative Schemes	--	--	--	
3	Public Works and Roads	4.24	(6.22)	(6.98)	
4	Street Lighting	--	(100.00)	(100.00)	
5	Public Health & Conservancy	--	--	--	
6	Education	--	(100.00)	--	
7	Others	794.27	45.00	43.82	
	Total - Capital Expenditure Excl W&D Fund	*8.86*	*3.81*	*2.97*	
	Water and Drainage Fund				
8	Water Supply	4,239.51	113.88	--	
9	Sewerage & Sanitation	264.34	69.73	68.36	
	Total W&D Fund- Capital Expenditure	*343.03*	*85.72*	*84.21*	
	Total - Capital Expenditure	**34.27**	**11.63**	**10.73**	
	Operating Surplus (W&D Capital Account)				
	Operating Surplus (Capital Account)				
	Operating Surplus (Over all excl.revenue a/c transfer)				
	EXTRAORDINARY ACCOUNT				
V	**EA Income**				
1	Cash at Bank/ in Hand				
2	Tax & Royalty	--	--		
3	Cess Income	--	(100.00)		
4	Cash Deposit	(75.66)	(37.49)		
5	Staff Advance	(97.02)	(95.07)		
6	Security Deposit	--	(56.09)		
7	Miscellaneous				
	Total- EA Income	**(20.71)**	**(28.73)**		
VI	**EA Expenditure**				
1	Cess Transfers	--	(100.00)		
2	Other- Deposits	--	(84.46)		
3	PF and Pension	--	(100.00)		
4	Miscellaneous	(20.51)	(26.43)		
	Total- EA Expenditure	**16.25**	**(26.28)**		
	Operating Surplus (Extraordinary Account)				

Appendix V: Reform Agenda for Rajapalayam Municipality

Accounting Reform

What system of accounting does the ULB follow?

Cash-based, single entry

Modified accrual

Accrual, double entry yes

If it is accrual, double entry-based, since when has this system been followed? Year 2000

If case –based or modified accrual, give a time schedule for change over to accrual, double entry system.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

E.Governance applications (using IT, GIS and MIS)
Has there been any initiative towards the use of E-Governance applications or setting up of an E.governance cell within the ULB?

Yes

If yes for what services is the ULB using these applications and in what way?

Services using E-governance applications	Details
a. Property tax collection	Public can pay their taxes on line
b. Professional tax collection	Public can pay their taxes on line
c. Water charges collection	Public can pay their taxes on line
d. Non-tax collection	Public can pay their taxes on line
e. Birth and death	Public can know the status of the registration of birth and death
f. Building applications	Status of Registration of building applications and issue of building permission
g. Trade license fees	
h. Using information screen	Public can know status of tax dues, collection and registered of birth and death on line

Property tax reform 2004-05

What is the total number of properties in the city?	45299
What are the numbers of properties assessed for purpose of taxation?	40419
What are the number of properties which paid taxes in the fiscal? Year 2003/04?	38396
What is the basis of taxation?	
Annual rateable value (ARV)	
Unit area values to determine ARV	Yes
Unit area values to directly determine property values or property tax	
Capital valuation	

What is the amount of tax demanded?

2003/04	2004/05
332.29	337.47

What is the amount of tax collected?

2003/04	2004/05
280.52 lakhs	265.61

Achieving the target of 85% tax collection to tax demanded

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2005	2006	2007				

Levy of Uses charges

Water supply

Percentage of households covered by municipal/parastatal water supply	80%
Per capital domestic water supply	66
Average number of hours of water supply	2 hrs

Percentage of non-revenue water to total water released 0.001

Percentage of water supplied free 20%

Percentage of water lost due to leakage and thefts 0.02%

Total cost (Operation & Maintenance and debt repayment) incurred in delivering water

2003/04	2004/05
Rs.63.74	Rs.77.75

Total recoveries from the sale of water

2003/04	2004/05
Rs.62.0	Rs.72.3

Achieving cost recovery target (full O & M recovery)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2007	2008	2009				

Other services

Service	User charge
a. Water connection charges 18.15 lakhs/63.74	28%
b. Charges for water supply through lorry 0.65 lakhs/63.74	1%

Achieving cost recovery target (full O & M recovery)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008				

Services to the Urban Poor

Percentage of households living in unauthorized tenements/ temporary structures 10%

Percentage of households living in unauthorized tenements/ Temporary structures without access to

Municipal water supply 9%

Sanitation	0.2%
Primary education	9%
Primary health	3%

Reaching the services to the Urban poor

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2005	2006	2007	2008			

Internal earmarking of budgets for the urban poor

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2005	2006	2007				

II REFORM AGENDA AT THE LEVEL OF THE STATE GOVERNMENT

Implementation of the Constitution Seventy-Fourth) Amendment Act 1992

What is the status of implementation of the following as per the Act? specify

a.	Constitution of municipalities	yes
b.	Composition of municipal councils	yes
c.	Reservation of seats for women, SCs, and Sts	yes
d.	Constitution of District Planning Committees (DPCs)	yes
e	Constitution of Metropolitan Planning Committees (MPCs)	
f.	Incorporation of schedule 12 into the State Municipal Act	

If schedule 12 has been incorporated into the State Municipal Act, has it been incorporated fully or partially?

Fully	Partially
	yes

which of the functions of schedule 12 have been incorporated into the State Municipal Act and transferred to ULBs?

Functions listed in 12th schedule	Functions incorporated	Transferred to (defacto)ULB
1. Urban planning including town planning	yes	
2. Regulation of land use and construction of buildings	yes	
3. Planning for economic and social development		

4. Roads and bridges	yes	
5. Water supply for domestic, industrial and commercial purposes	yes	
6. Public health, sanitation, conservancy and solid waste management	yes	
7. Fire services		
8. Urban forestry, protection of the environment and promotion of ecological aspects		
9. Safeguarding the interests of weaker sections society including the handicapped and mentally retarded		
10. Slum improvement and up gradation	yes	
11. Urban poverty alleviation		
12. Provision of urban amenities and facilities parks gardens, and playgrounds	yes	
13. Promotion of cultural, educational. and aesthetic aspects		
14. Burials and burial grounds, cremations, cremation grounds and electric crematoriums	yes	
15. Cattle pounds. prevention of cruelty to animals		
16. Vital statistics including registration of births and deaths	yes	
17. Public amenities including street lighting, parking lots. bus stops, and public conveniences	yes	
18. Regulation of slaughter houses and tanneries	yes	

Has the transfer of functions been accompanied by transfer of staff?

	No

If no has the ULB been given the powers to recruit staff for managing the transferred functions?

	No

Give a time schedule for transferring the schedule 12 functions to the ULB

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007					

If the DPC/MPC has been constituted attach a copy of the Act?

If the DPC/MPC has not been constituted has the legislative process for their constitution been initiated?

yes	yes

If no give a time-schedule for constituting DPC/MPC

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Repeal of Urban Land (Ceiling and Regulation) Act 1976

Current status of the Act in the State	Repealed	yes
	Not Repealed	

If not repealed, give a time schedule for its repeal

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Rent control reforms 2004/05

a. Number of properties under rent control	No
b. Percentage to total number of properties	No
Current rental ceiling below which properties qualify to be under rent control	No

State the provision in the existing laws, which allow property owners to seek vacation of housing units, upon conclusion of the tenancy period

TDM Act 1920

State the provision in the existence laws which allow tenancy to be transferred
Time schedule for undertaking reform of rent control laws

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

Outline the nature of proposed reform of rent control laws

Stamp duty rationalization 2005

Current duty rates as applicable to property related transaction (sale, purchase. transfer etc)

>10%	No	No	No

Any surcharge on the base rate

>2%	No	No

Time-line for reducing stamp duty rates to 5 percent or less than 5 percent

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

Public disclosure law

Is there any provision in respect of public disclosure (public screening or review of municipal budget proposals) in the existing state municipal act

	No

If yes state the provision and comment on its adequacy

Give the timeline for enactment of a public disclosure law or incorporation of relevant provision in the existing state level municipal statute

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

Community participation law

Is there any provision in the State Municipal Acts regarding the involvement of civil society, industry and business in Municipal affairs e.g. in setting priorities, budgeting provisions etc?

	No

Time schedule for enactment of a community participation law or incorporation of relevant provision in the existing state level municipal statute.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

City Planning Function

who is responsible for city (urban) planning function for the city?

Urban Local body (ULB)	yes
City-based special purpose agency	
State level town & Country planning organization	

Time schedule for formal association of ULB with the city planning functions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006						

Who which agency is responsible for provision of the following services?
Water supply and sewerage

Urban Local body

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

Schedule for transferring to municipality this function where it is not a municipal function

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Public transport - State level special purpose agency
Schedule for transferring this function to the Municipality where it is not a municipal function

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

OPTIONAL REFORM AGENDA

Revision of bye laws to streamline the approval process for construction of buildings, development of sites etc.
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Simplification of legal and procedural frame works for conversion of agricultural land for non agricultural purposes
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Introduction of property title certification system in ULBs
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008	2009	2010		

Earmarking at least 20-25 percent of developed land in all housing projects (both public and private agencies) for EWS/LIG category with a system of cross subsidization

Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2008	2009	2010	2011	2012		

Introduction of computerized process of registration of land and property.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006						

Revision of bye laws to make rain-water harvesting mandatory in all buildings to come up in future and for adoption of water conservation measures.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Bye laws on reuse of reclaimed water
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008				

Administrative reforms i.e. reduction in establishment by introducing voluntary retirement schemes, non filling up of posts falling vacant due to retirement etc., and achieving specified milestones in this regard
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008				

Structural reforms
Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008				

Encouraging public private partnership

Time schedule

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2006	2007	2008				