

Government of Tamil Nadu
Tamil Nadu Urban Development Fund

City Corporate and Business Plan

Dindigul Municipality

FINAL REPORT

June 2007

Wilbur Smith Associates Private Limited

Currency Equivalent

Currency Unity	:	Indian Rupee/s (Re/Rs)
Re. 1.00	:	US\$ 0.022
US\$ 1.00	:	Rs. 45
	:	
	:	

Abbreviations and Acronyms

BOT	:	Build, Operate and Transfer
BPL	:	Below Poverty Line
BT	:	Bituminous
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 Organisation
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	:	Litres
LL	:	Lakh Litres
LPA	:	Local Planning Area
Lpcd	:	Litres Per Capita Per Day
M	:	Meters

ML	:	Million Litres
MLD	:	Million Litres per Day
MSW	:	Municipal Solid Waste
MT	:	Metric Ton
MTC	:	Metropolitan Transport Corporation
NGO	:	Non-Governmental Organisations
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 Kilometres
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. Introduction

1. As part of TNUDP- II, The City Corporate Plan was prepared for Dindigul Municipality during 2000 – 01. The CCP mainly focused on the vision, strategies, activities and projects to be carried out by the ULB to enhance the service delivery. Though the CCP provide appropriate investment strategies with a capital investment program the ULB is not in a position to implement the same due to lack of clear implementation schedule, resource mobilization or expenditure control to sustain proposed investments. Considering this, TNUIFSL has proposed to update the CCP and formulate Business Plan comprising of a robust implementation schedule and activities to be initiated by the municipality to enhance its sustaining capacity to improve its credit worthiness.

1. *Objectives of the study*

2. The main objective for the City Corporate Plan was emphasizes on issues of priority local concerns for livability, and the implied requirements in terms of
 - (i) Enhancing City Productivity
 - (ii) Reducing Poverty
 - (iii) Improving Management
 - (iv) Enhancing Financial Sustainability
3. The objective of the assignment is to formulate a Business Plan comprising of appropriate policies and actions that are practically 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;
- (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 comprising of projects and reforms to be under taken by the ULB. In addition, the Business Plan would formulate strength for additional resource mobilization to enhance the credit worthiness of the ULB.

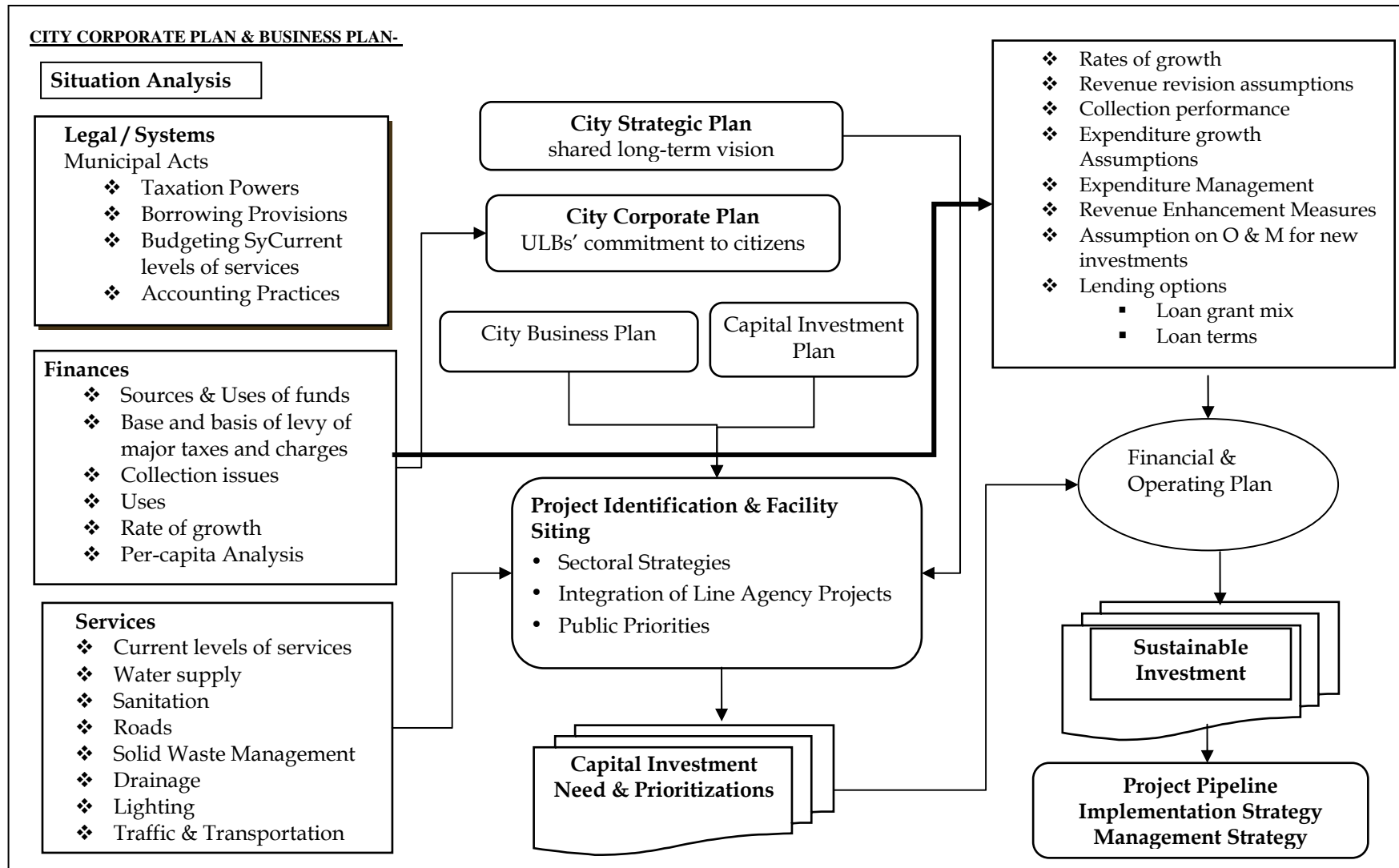
1. City Corporate cum Business Planning Approach

6. The approach of the Corporate Plan cum Business Plan is iterative in nature and is presented in **Figure 1.1**.
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. 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 organisations apart from the ULB 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 is made available by the directorate of Census operations Tamilnadu. Institutions and organisations like DTCP, DIC, TWAD board, IMA, Local NGOs, Madurai Kamraj University, Private organisations 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 1.1: Approach to Business Plan



C. Report Structure

11. This report is the Draft 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 cum Business 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, in which the structure of ULB and its political and executive wings. The institutions and capacity also briefed in this section.
- (iv) Chapter 4 elaborates planning and land use management and its growth directions of the town.
- (v) Chapter 5 detailed on existing situations of infrastructure services and also identified the issues towards the respective services.
- (vi) Chapter 6 deals with urban poor settlements, its infrastructure services available in poor settlements and up lift programs.
- (vii) Chapter 7 describes detailed analysis of infrastructure needs and demands. The projects also identified till 2026 for all the sectors.
- (viii) Chapter 8 describes the Asset Management Plan.
- (ix) Chapter 9 describes regarding resource mobilization initiatives. The analysis mainly focused on saving in respective sectors.
- (x) Chapter 10 describes Financial Operating Plan and Municipal Sustainability.

(xi)

II. CITY DEMOGRAPHY

A. Geography and Climate

12. Dindigul town, located at a distance of 420 kms from Chennai is in the central part of Tamil Nadu State, famous for its traditional lock and trunk manufacturing industry. The city serves as the district headquarter of Dindigul district, carved out of the erstwhile Madurai district. The town is approximately 65 kms from Madurai and 85 kms from Trichy. The Municipality, extending over an area of 14.01 sq.km. houses a population of 196,619 as per Census 2001.
13. *Linkage and connectivity.* Dindigul is well connected by Rail and Road to all major cities of the State. Major roads NH 7, NH 45 and SH 10 pass through the centre of the city. Dindigul is linked with Trichy and Chennai by NH45 and to Salem and Bangalore by NH7. The town is connected by radial roads with nearby towns like Palani, Natham, Badalakundu, Karur and Madurai city. NH By-pass connects NH7 and NH45 outside the Municipal limits. Dindigul is major railway junction for all South bound trains from Chennai. The town serves as transit for Kodaikanal, a major tourist hill-station in the State. Nearest Airhead is Madurai (65 kms) or Trichy (85 kms).
14. *Physical and Geographical Characteristics.* The town is located on the undulating plains of south Tamil Nadu. The town has grown at the base on Rockfort, a prominent rock hill towards the west of the town. The rock type Granite with intrusions of Permatite and Quartzite represents the area.
15. The area is mostly covered by thin vener soil, which is mostly black clayey soil with red soil. The subsoil water level varies from 6m to 10m below ground level. The City is about 265 m above mean sea level. The City is situated on 9⁰55' north latitude and 78⁰7' east longitude.
16. *Climate and Rainfall.* The climate of the town is generally Hot and Dry, although the climate vary across the district because of the precense of Hilly and Plain terrain. March to July, are the hottest months, while December-January marks winter, with a maximum temperature of 37⁰c in summer and 29⁰c in winter. Rainfall is irregular and intermitant, with an average of approximately 81.2 cm per annum, during northeast monsoon periods from October to December.

B. Population Trends and Urbanization

17. Population Trends. Dindigul Municipality, covering 14.01 sq.kms, accomodates a total population of 196,619 persons (Census 2001). Population growth over past few deacades is indicated in **Table 2.1**.

Map: 2.1: Municipal Area including the Wards

Table 2.1: Population Growth in Dindigul

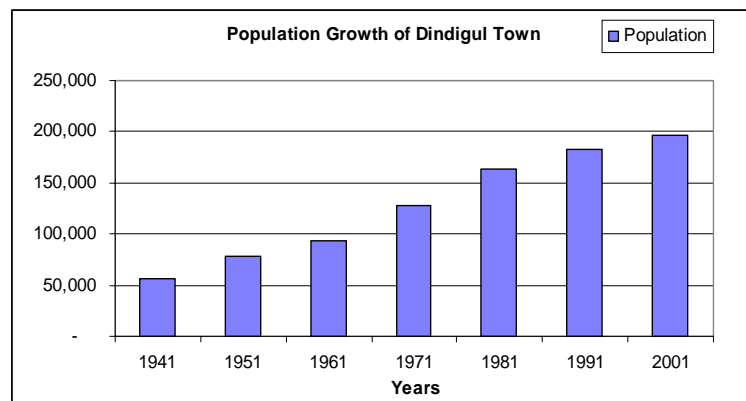
Year	Population	Decadal Growth Rate	Compounded Annual Growth Rate
	Nos.	%	%
1901	25,182	-	-
1911	25,052	(0.52)	(0.05)
1921	30,922	23.43	2.13
1931	43,617	41.05	3.50
1941	56,275	29.02	2.58
1951	78,361	39.25	3.37
1961	92,947	18.61	1.72
1971	128,429	38.17	3.29
1981	164,103	27.78	2.48
1991	182,477	11.20	1.07
2001	196,619	7.75	0.70
2004*	214,849	-	2.90

* - Based on ULB estimates for 2004.

Source: Census Reports, ULB estimates.

Figure: 2.1 Population Growth

18. The town experience growth rates in the range of 40 percent to 28 percent upto the 1970's. However the growth rate has declined to approximately 11 percent in the 1980's and further down to 8 percent in the 1990's, attributed to stagnation in growth due to lack of economic opportunities in the town as compared to adjacent City (Madurai City).



19. Compounded Annual Growth rate for the town has reduced from 3.3 percent in 1961-71 to approximately 0.70 percent in 1991-2001.
20. The ULB estimates for floating population indicates an annual count of approximately 21,500 persons.
21. *Population Density.* The population density for Dindigul indicates a growing trend. The ULB is divided into 48 wards over an area of 14.01 sq.kms (**Map 2.1**). The Town has a average density of 153 persons per ha. The town density ranges from high of approximately 400 persons and above in wards 7, 8,25,36,43 and 45. Low and Moderate density observed in the town is 45 to 100 persons/ha in wards 1,5,12,16,19,31 – 34 and 46. As compared to the average density of the town, 30 wards within the ULB have a higher population density, thus indicating concentration of population towards the central areas and along the major roads.

22. High Density Pattern within the ULB is noticed along the Transport Corridors (Madurai-Dindigul-Trichy Road), in wards like 24, 25, 26 and 45. It is observed that high density pattern is also observed in areas adjacent to the Madurai Railway line, near Aranamanaikulam. Population growth is observed in the Northern periphery of the ULB, adjacent to the Trichy Road, attributed to the development of planned layouts and newly developing residential areas.
23. A notable increase in town average density is noticed since 2001, approximately 8 percent. The ULB areas have been unchanged since its inception as Special Grade Municipality in 1988.
24. Ward wise analysis of the ULB indicates that some of the wards above 400 person per ha have almost reached saturation levels, with 6 wards of 48 wards having very high density. Of the 16 wards having density below city average, 8 wards are located on the ULB periphery. The remaining lesser density wards are either constrained by land-use or other physical characteristics. The summary of density pattern is tabulated below in **Table 2.2**. The ward density of 2004 is furnished in **Map:2.2**

Table 2.2: Summary of Density Pattern

Range <i>(Persons per Ha)</i>	Density Pattern	Number of Wards <i>Nos.</i>
Above 401	Very High Density	6
250 - 400	Very High Density	10
150 - 250	High Density	16
101 – 150	Medium Density	6
Below 100	Low and Moderate Density	10

Source: Analysis

Map: 2.2 Ward Density Map of Dindigul Municipality (2004)

C. Economic Development

1. Sectoral Growth

25. According to Census 2001, Dindigul town's urban workforce participation rate (WPR) (percentage of main and marginal workers to the total population) is 35.24 percent (including 1.45 percent marginal workers). Dindigul WPR in 1991 was 32.75 percent (including 0.22 percent marginal workers). The positive growth in WPR in urban area, by more than 2.5 percent over the last decade, can be attributed to the growth in the Secondary and Tertiary Sector. However, the increasing marginalization of workers is a cause of concern. In the absence of a detailed breakdown of sector/category-wise workers for 2001, the figures for 1991 are used to examine the composition of the workforce. **Table 2.3** presents the category-wise workforce composition in Dindigul, according to Census 1991 and 2001.
26. Dindigul, being the Headquarter Town, it is noticed that there is growth in the Secondary and Tertiary sectors of employment, with corresponding decrease in Primary Sector. Given, the fairly good literacy rate of the town, the increase in Secondary sector is expected.

Table 2.3: Occupational pattern

Sr. No	Year	1991	2001
	Population	182,477	196,619
	Sector		
	<i>Primary Sector</i>		
1	Cultivators & Agricultural Laborers	1,543	697
2	Livestock & Mining	378	-
	Sub-Total- Primary	1,921	697
	<i>Secondary Sector</i>		
3	Household Industry	3,117	5,985
4	Other than Household Industry	11,775	-
4	Construction	2,222	-
	Sub-Total- Secondary	20,283	5,985
	<i>Tertiary Sector</i>		
5	Trade & Commerce	19,360	-
6	Transport & Communication	4,734	-
7	Other Services/ Other Main Workers	13,069	59,887
	Sub-Total- Tertiary	37,163	59,887
8	Marginal Workers	398	2,837
	Total Workforce	59,765	69,408
9	Non- Workers	122,712	127,547
10	Work Force Participation Rate	32.75 %	35.24 %

Source: Census Reports

Note: * Includes the figures of Livestock & Mining, HH & Industry and the tertiary sector.

2. *Industrial Development*

27. The City, once a centre for lock and trunk manufacturing, has failed to take advantage of its special talent thus registering a decline of business opportunities in the area. Other industries like leather, handloom and agro opportunities have gained some significance. The district is rich in certain mineral deposits and presents a scope for economic exploitation.
28. This district has only two industrial estates at Dindigul and Battalagundu with the extent of 50.2 acres, 84 bigger sheds, 20 tiny sheds and 8 developed plots. This is not sufficient to meet further new industrial development of the district.
29. Other industries like leather and lock manufacturing which employs approximately 8000 people (cumulative), are in sinking stages unless some revival policies is worked out by the government. There are almost 60 leather tanneries located in the adjacent villages and approximately 165 industries engaged in lock manufacturing. Handloom industry is also an important sector, providing considerable employment. Approximately 70 percent of the Large Scale units, in the district, are cotton-spinning units. These are encouraging ancillary units, and promotion of down stream industries in this district, like textile products, paper and paper products and leather finished products, etc. Although the industry is witnessed a decline in the past, but with the necessary incentives and attentions the sector holds potential for enhancing City's economic growth.
30. Based on Industrial Potentiality Survey Report for Dindigul, it is understood that the total number of Small Scale Industrial (SSI) units was accounted 11,029 in the district as on March 2001. The SSI sector has registered a growth rate of 333% in 2000 over 1991. As far as the concentration of SSI and large-scale industries are concerned, the development is only in and around Dindigul, Palani, Vedasandur and Attoor taluks in the district.
31. The climate condition of the region favors horticulture and agro production. This district is concentrated with the non-food crops like, Coffee, flowers, tobacco, and Eucalyptus etc. Coffee accounts for 14.2 %, flowers for 15.32%, tobacco for 10.2% of the total non-food crops of the district. Dindigul town is famous for wholesale trading in fruits, like Orange, Pineapple, Sappota and Guava, and vegetables like Onion, etc. Fruits and Vegetable produced here are exported outside the country.
32. In the Local Planning Area, there are eleven large and medium scale industries including Hoisery and Readymade garments, Textile and Leather. Regional Tourist location, like Palani and Kodiakanal, are close to Dindigul Town which serves as a Transit.

D. Socio-Economic Profile

1. *Employment*

33. Major employment in the City is provided by secondary and tertiary sector, mainly being industrial estates, handloom, trading and commerce activities. Approximately 90 percent

of the workforce is employed in tertiary sector.

2. *Income and Expenditure*

34. Collection of Commercial tax is used as a surrogate indicator to measure the City's economic output since, data related to domestic products, indicators of economic output, is published at National and State level, but not available at city level. The detail of commercial tax collection is available for Dindigul for FY 1999-2000 (**Table 2.4**), which indicates a fluctuating collection performance.

Table 2.4: Details of Commercial Tax Collection.

Years	Commercial Tax Collection	Growth
	<i>Rs. Lakh</i>	<i>Percent</i>
1995-96	3,334.42	-
1996-97	3,264.87	(2.1)
1997-98	3,161.59	(3.2)
1998-99	3,205.57	1.4
1999-00	3,181.59	(0.7)

Source: Commercial Tax Office, Dindigul.

3. *Social Capital*

35. *Markets.* At present, there is one main market called Gandhi Market having approximately 350 shops selling vegetables, fruits, flowers and food grains., located near Kumaran Park. There are other 4 daily markets in Dindigul located at different location, namely Bangarpur Market, Thiruva Ratha Vedhi, Merai Ratha Vedhi and Bharathipuram Daily Market .The ULB has constructed a new commercial complex, at Kamaraja Bus Stand, and rented the shops for retail and shopping purpose.
36. *Other Assets.* The ULB maintains two slaughter houses; however, there is no system for solid waste management and effluent treatment in this slaughterhouse. In addition to this, there are number of unorganized shops where slaughtering takes place thus resulting in unhealthy and unhygienic practices. Besides, there is a severe a lack of infrastructure facilities in these areas.Apart from this the ULB owns and operates three toilet blocks at different locations on Pay-and-Use Basis.

4. *Health*

37. The ULB operates and maintains four dispensaries, five maternity homes, eight family planning centres, three Siddha and one ayurvedic centre. The facilities are ill maintained and need strengthening and upgradations.
38. There is a Government District Headquarter Hospital in Dindigul having a total bed strength of approximately 350 beds. Apart from this, the town has more than five private hospitals, 35 maternity centres, 15 laboratries and one blood bank. The famous St. John Mission Hospital along Trichy Road with a bed strength of 250 beds is one of the major hospitals, catering to the health need of the City. The town is dependent on Madurai City (60 kms) for advanced health care systems.

5. Education

39. The ULB operates 20 schools consisting of one high school, one higher secondary school and 18 primary schools. Apart from these, there are 35 high schools, 12 higher secondary schools and two matriculation schools run by private institutions. There are two higher secondary school run by the state government offering schooling to the towns and the surrounding areas. The details of student strength in schools is presented in **Table: 2.5**.

Table 2.5: Student Strength in Schools (1994)

Classification of Schools	Nos.	Male	Female	Totals
	<i>Nos.</i>	<i>Nos.</i>	<i>Nos</i>	<i>Nos.</i>
Primary Schools	36	7,845	5,010	12,915
Higher Elementary School	117	7,819	7,262	15,081
High School	4	1,830	1,030	2,860
Higher Secondary School	8	19,805	9,458	29,263

Source: Dindigul Municipality

40. Apart from this, the town boasts of 4 institutions of Higher Education, including One Private Engineering College, One Polytechnic and Two Arts and Science College. The town also houses, one Institute of Technical Training.

E. Growth Trends and Projections

41. Population Projection for Dindigul Town, is in coherence with the population projection adopted as a part of Detailed Project Report for Combined Cauvery Water Supply Scheme for Dindigul. The various methods analyzed were.
- Arithmetical Increase Method.
 - Geometric Increase Method.
 - Incremental Increase Method.
 - Semi Log -Line of Best-Fit Method.
42. City population was projected to 2026 using above methods and Best-Fit Method, in coherence with above mentioned projects, was adopted for the design calculations. The population projection of dindigul municipality is tabulated in **Table: 2.6**.

Table 2.6: Population Projection

Year	Projected Population	Decadal Growth Rate	Compounded Annual Growth Rate
	<i>Nos.</i>	<i>Percent</i>	<i>Percent</i>
2006	218,468	-	0.84
2011	227,793	15.86	0.84
2016	237,515	-	0.84
2021	247,633	9.79	0.84
2026	258,147	-	0.84

Source: Population Projection, Analysis.

III. URBAN MANAGEMENT

A. Organization Structure of Urban Local Body

43. Bifurcation of Dindigul district from Madurai district, witnessed an surge in development activities and growth of Dindigul Town, given its Status as District Headquarters. Due to rapid growth and development of the town residentially as well as commercially, the municipality was upgraded to Selection Grade Municipality in 1988. The municipality is governed by the Tamil Nadu District Municipalities Act, 1920. The organizational setup of the municipality comprises of a Political Wing and an Executive Wing. The Political Wing is an elected body of Councilors from different wards in the town and is headed by the Chairman. The Executive Wing, headed by the Commissioner looks after the day to day functioning of the municipality and supports the Political Wing in the decision-making process.

1. Political Wing

44. The Municipal Council, the political arm of the municipality consists of 48 elected councilors, each representing a ward, of which 16 are women representatives. The Vice-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.

2. Executive Wing

45. 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 by different departments in the operations. The organizational structure of the Municipality comprises of four functional departments. The organization chart of Dindigul municipality is shown **Figure 3.1**.

B. Institutions and Capacity

1. Institutional Arrangements. 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. Each department 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 details of municipal departments and functions are illustrated in **Table 3.1** while the details of existing manpower in municipality are listed in **Table 3.2**

Figure 3.1: Organization Chart of Dindigul Municipality

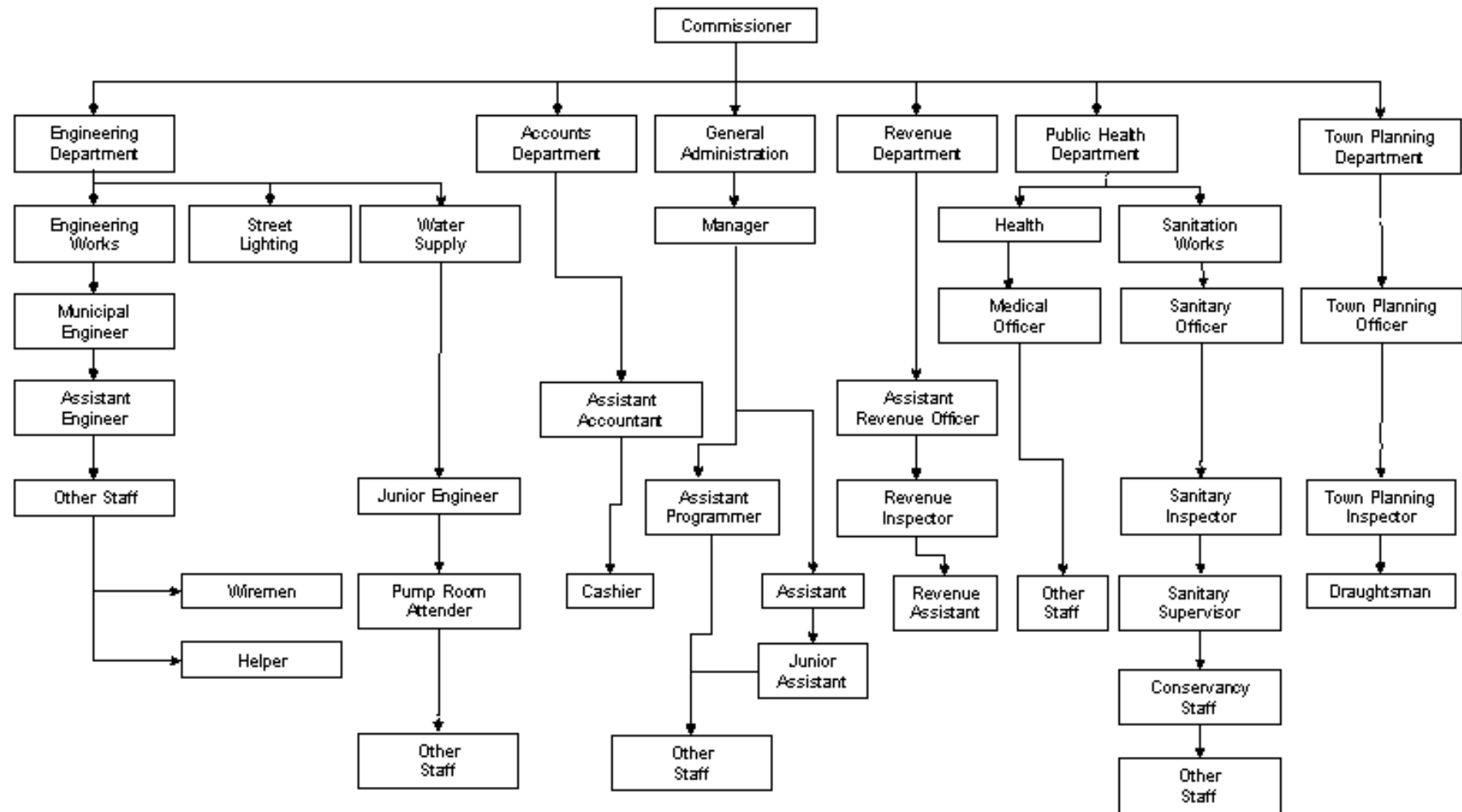


Table 3.1: Municipal Departments and Functions

Department	Functions
General Administration	Establishment, Records, Accounts, Correspondence, Treasury
Engineering	Works, Water Supply and Operation and Maintenance
Public Health	Preventive Health Care, Conservancy, Vital Statistics
Revenue	Billing and Collection of Taxes, Charges and Fees
Town Planning	Administration of Master Plan

Table 3.2: Existing Manpower in Municipality

Sl. No.	Name of the Post	No. of Posts Sanctioned	Staff in Position	Posts Vacant
			Permanent	
A	General Administration	27	23	4
B	Engineering	23	22	1
C	Water Supply	64	58	6
D	Street Light	14	12	2
E	Public Health	510	422	89
F	Town Planning	18	18	-
G	Other Staff	38	26	12
Total		694	581	113

Source: Dindigul Municipality.

46. The vacancy rate in Dindigul Municipality is 16.28 percent. **Table 3.3** summarizes the staff status in the ULB.

Table 3.3: Municipal Staff Details.

Item	Staff
Sanctioned Positions	694
Vacant Positions	113
Filled Positions	581
Vacancy Rate %	16.28

Source: Dindigul Municipality

2. Policy Context

47. The enactment of the 74th CAA provides an entirely new framework for the governance of the Urban Local Body. The Act provides for mandatory elections and a substantially larger devolution of functions to the Urban Local Bodies, including several new areas hitherto not under their control.
48. The Tamil Nadu Urban Local Bodies Bill, 1997, proposed to bring into effect a common legislation governing all Urban Local Bodies in the State including Municipalities and City Corporations. This new bill provides for several changes when compared to the existing Act and devolves more powers and functions to the Urban Local Bodies.
49. The Tamil Nadu Urban Local Bodies Bill has particularly focused upon issues related to finances, taxation, levy of tolls, levy of fines, by- laws, service charges for solid waste removal, and specific provision for urban planning. The Provisions are presented in **Table 3.4**.

Table 3.4: Details of Municipal Acts

S. No	Head	Provisions under TN Urban Local Bodies Bill, 1997
A	Finance	Specific provision for issue of bonds – Sec. 66 (1)
B	Monetary Limit for Sanction of Estimates	The limit has been enhanced to Rs. 500 lakh – Sec. 76
C	Taxation	Property Tax to be collected based on the carpet area and use of the building, used as a base; additional factors such as location, type of construction and age of the building to be loaded on to the base- Sec. 83 & 84 Specific provisions have been made with respect to water, sewerage & education tax. Water Tax- not to exceed 30 % of the Property Tax- Sec. 89 Sewerage Tax- Not to exceed 15 % of the Property Tax- Sec. 90 Education Tax- Not to exceed 5 % of the Property Tax- Sec. 91
D	Tolls	Provisions to levy tolls on any road or bridge- Sec. 95
E	Powers to assess escaped assessment	Powers to assess escaped assessment only up to 6 years (12 half years- Sec. 97)
F	Non filing of return and/ or non-payment of property tax	(i) Levy of fine for non- filing of returns- Sec. 82 (6) (ii) Levy of fine for non- payment of property tax- Sec. 99 (1) (iii) Levy of fine for filing a false return- Sec. 99 (2)
G	compulsory connections to the Underground Drainage System	Provision made to make connection to Underground Drainage System compulsory, if connection available- Sec. 155 (3)
H	Disconnection of water supply	Disconnection of water supply in case of non- payment of property tax, water charges or for any other valid reasons- Sec. 160
I	Bylaws to regulate Industrial Wastes	Provision made to draft bylaws to control Pollution- Sec. 161
J	Modern methods for clearance of solid wastes	Specific provision to introduce modern methods & to collect service charges for solid waste removal & disposal- Sec. 176 & 177
K	Urban/ Town Planning	Specific provisions made to include Urban Planning & Town Planning as a function of the council- Sec. 40 (2) ***- includes Regulation of land use and construction of buildings Planning for economic and social development Fire services Urban Forestry, protection of environment and promotion of ecological aspects

*** Subject to delegation by Government after consulting with the concerned administrative departments.

Note: Amendment for levy of profession tax on trade, profession and employment as per the Tamil Nadu Municipal Law (2nd Amendment) Act, 1998.

50. 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) and Chennai Metro Water Supply and Sewerage Board (CMWSSB), an apex body of the State, are the responsible agencies for creation of water and sewerage infrastructure, while the ULBs maintain the same – the ULBs, however, continue to face a shortage in quality staff to maintain the system.
- (ii) Master Plan/Comprehensive Development Plan. The Local Planning Authority, with assistance from the Town and Country Planning Department (TCPD), prepares the Comprehensive Development Plan (CDP) for the town, and the mandate of implementing the 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. The Public Works Department (PWD) maintains 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. The important ruling by the Supreme Court, regarding municipal solid waste, is yet to achieve its objective.
- (v) Slum Up gradation. The Tamil Nadu Slum Clearance Board (KSCB) develops improvement schemes for notified/regularized slum settlements in the city/town. Infrastructure provision is financed partly through loans from the Housing and Development Corporation (HUDCo) and partly through grants from GoTN and GoI.

51. In addition to involvement of various institutions in the development of local-level infrastructure, the Urban Development Department controls local-level governance through the Directorate of Municipal Administration (DMA). The District Commissioner (DC) is also involved in various administrative and operational activities of the ULB – approval on major projects is sought from the DC.

3. *Service Delivery and Performance of ULB*

52. The Tamil Nadu District Municipalities Act, 1971, governs the management of Dindigul Municipality. The ULB is responsible for provision of services and basic amenity to the citizens, which include:

- (i) Distribution of potable water;
- (ii) Operation and maintenance of drainage and sewerage systems;
- (iii) Public lighting;
- (iv) Sanitation and Public Hygiene;
- (v) Construction and maintenance of bus terminals, roads, culverts, and bridges;
- (vi) Maintenance of public parks and gardens;
- (vii) Ensuring systematic urban growth, through town planning;
- (viii) Regulation of building construction; and
- (ix) Licensing of commercial activities, etc.

53. The ULB consists of four functional Departments (refer **Table 3.1**). Each Department consists of a Head who reports to the Commissioner and functions as per the responsibilities prescribed in the Act and as delegated by the Municipal Commissioner.

General Administration Department

54. The General Administration Department, headed by the Manager oversees the administrative functions of the Municipality including the accounts and budgeting. The other functions of the Department include, (i) Public Relations and Redressal of Public Grievances; (ii) Appointments and Transfers; (iii) Council Subjects; (iv) Correspondence; (v) Record Maintenance; (vi) Maintenance of Accounts, etc.
55. The General Administration Department is further divided into three sections viz.
- (i) Establishment Section.
 - (ii) Dispatch/ Typing and Record Maintenance Section, and
 - (iii) Accounts Section.
56. *Establishment Section.* An Assistant who reports to the Manager heads the Establishment Section. The responsibilities of this section include, (i) Appointments; (ii) Leave Sanctions and Records; (iii) Correspondence related to Establishment affairs.
57. *Dispatch, Typing and Records Maintenance Section.* A Junior Assistant is responsible for the Numbering and Delivery of all inward correspondence. He handles and maintains all records of all Departments. He is assisted by an attender to dispatch correspondence to all Departments.
58. *Accounts Section.* The Accounts section headed by the Accountant who carries out functions relating to finances, and accounts of all the Departments except Water Supply and Drainage. In Alandur municipality, the post is vacant and Assistant Accountant (AA) is in charge for the operations. The Accounts Section also monitors the grants and State Government transfers and devolution, and manages Debt Servicing, Provident Fund Accounts, Pensions, Salaries, Advances, etc.
59. The AA is responsible for the accounting function of the municipality- his function includes the recording of transactions, maintaining the accounts and compilation of accounts. Junior Assistants assist AA in carrying out the task. A major function of the Assistant Accountant is the preparation of the Annual Budget. The Manager oversees all the activities of this Section.
60. The following are the set of rules for different departments of the local body:
- (i) The Tamil Nadu Municipal General Service Rules, 1970
 - (ii) The Tamil Nadu Municipal Engineering and Water Works Service Rules, 1970
 - (iii) The Tamil Nadu Municipal Engineering Service Rules, 1997
 - (iv) The Tamil Nadu Municipal Town Planning Service Rules, 1970.
 - (v) The Tamil Nadu Municipal Medical Service Rules, 1970.
61. Functions. The specific functions of the Accounts Section include, (i) Receipt of Cash and Cheques; (ii) Scrutiny of Bills; (iii) Maintenance of Records/ Registers and Account Books, Payments, etc.

62. *Revenue Section.* The main function of the Revenue Section is the collection of taxes and charges as levied by the Municipality. The Section serves Demand Notices to the tax payers and charge sheet in the case of default.
63. The Revenue Section is under the purview of the Manager and is headed by a Revenue Officer. The section consists of Revenue Inspectors and assistants in carrying out its functions.
64. *Functions.* This department is solely responsible for the revenue management functions of the Municipality. The function of the department is two-fold, (i) Levy, Assessment and Collection of Taxes, Fees and Charges; and (ii) Accounting of Collections. The various revenue sources of the Municipality include Taxes, Fees, Charges, and Rents.

Engineering Department

65. 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 & Gardens (Maintenance of parks and gardens).
66. The Engineering Department co-ordinates with Tamil Nadu Water Supply & Drainage Board (TWAD) and other state government agencies to implement water supply and other developmental works. The Department is responsible for ensuring the quality of works and their timely completion.
67. The Municipal Engineer (of Executive Engineer Level) 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 Junior Engineer looks after the water supply and is assisted by electrician, operators and other staff.
68. *Functions.* A major function of the Municipality is formulation and execution of Works-like construction and maintenance of roads, buildings and other infrastructure systems.
- (i) Original Works. Capital Works under specific schemes or Master Plan Proposals, includes new construction whether entirely of new works or of major additions/modifications to existing assets like buildings, roads, infrastructure network, etc.
 - (ii) Maintenance Works. Maintenance and Repair of existing buildings and infrastructure systems, and construction of Minor Works. These works involve the co-ordination of various functional departments within the local body, including the

Engineering, Administration and Accounts Departments, Council, etc. Based on the functions, the department has four Sections viz, Public Works; Street Lighting; Water Supply; and Parks and Gardens.

Public Health Department

69. The department is headed by a Sanitary Officer who is assisted by Sanitary Inspectors and several other staff in carrying out the departmental functions. There are 16 Sanitary Inspectors who co-ordinate the entire conservancy work. 20 Sanitary Supervisors and 380 sanitary workers assist them. The sanitary workers sweep the roads and clean choked drains on a daily depending upon the prevailing activities. Private contract was awarded for SWM in certain areas of the town. Markets areas and main roads are cleaned every day. There is one Malaria control Inspector responsible for work of Malaria Control, who co-ordinate the work of 20 Mazdoor.
70. *Functions.* 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 Slaughter Houses.
71. *Maintenance of Sanitation.* 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.
72. For the transportation of the garbage collected to the disposal point, the municipality employs own as well as hired vehicles. The maintenance and upkeep of the vehicles is also the responsibility of the Public Health Department. The garbage is transported to a dumping yard situated about 12 km from the town.
73. The municipality has privatized 5 wards for the solid waste management while the remaining wards are handled by the local body itself.

Town Planning Department

74. 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. The department is vested with the powers to issue Building Licenses, grant Planning Permissions, collect Development Charges and Encroachment Charges etc. The department is headed by One Town Planning Officer and consists of five Town Planning Inspectors and other staff.
75. *Functions.* With regard to day-to-day operations, the Town Planning Department is responsible for issue of building permissions and licenses.

4. Institutional Strengthening and Capacity Building

Following Set of Reforms are recommended for Institutional Strengthening and Capacity building for ULB.

- (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 Urban Local Body in a better place to employ highly qualified staff and seeks superior quality of out-sourced services.

C. Municipal Financial Management

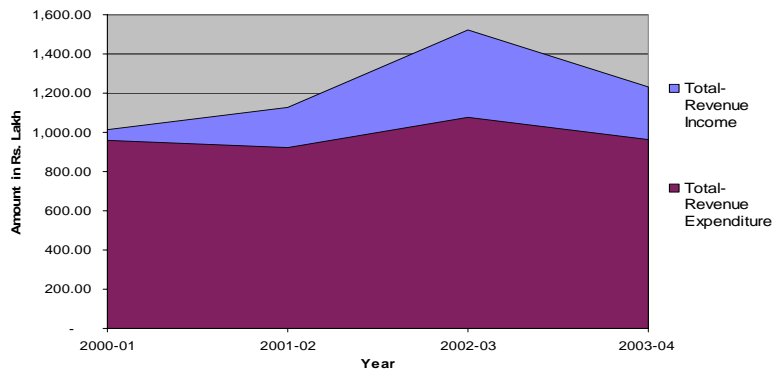
1. Municipal Fund

76. *Overview.* Dindigul 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.
77. *Revenue Account:* All recurring items of income and expenditure are included under this head. These include taxes, charges, salaries, maintenance expenditure, debt servicing etc.
79. *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.

2. *Financial Status*

80. Revenue income of Municipality has grown to Rs. 1,232.35 Lakh in the FY 2003-04 from Rs. 1,015.41 Lakh in FY 2000-01, at a high annual growth of 6.67 percent. Revenue expenditure increased at an average annual rate of 0.11 percent from Rs. 959.76 Lakh to Rs. 962.96 Lakh

Figure 3.1: Total Revenue Income and Expenditure Trend



during the assessment period. The revenue account maintains surplus during the entire assessment period and maintained a maximum surplus of Rs. 443.07 Lakh in 2002-03, the high surplus attributing to the inconsistent transfer of SFC devolution fund and, stamp duty. The trends for the revenue fund are presented in **Table 3.5**.

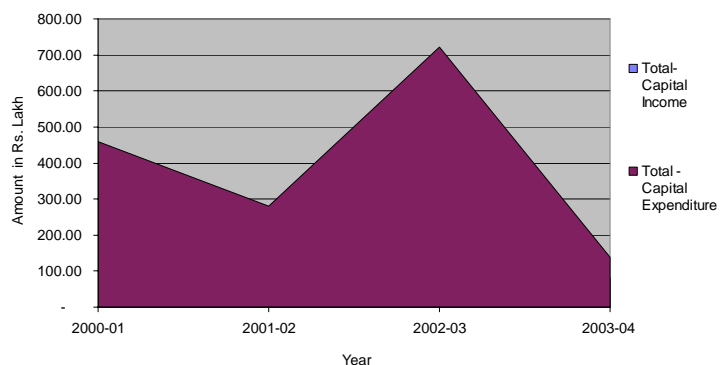
Table 3.5: Summary of Municipal Fund

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Revenue Account				
Revenue Income	1,015.41	1,126.77	1,521.23	1,232.35
Revenue Expenditure	959.76	921.68	1,078.16	962.96
<i>Surplus/Deficit</i>	55.65	205.09	443.07	269.39
Capital Account				
Capital Income	318.97	148.35	95.05	80.17
Capital Expenditure	459.94	280.80	721.77	139.89
<i>Surplus/Deficit</i>	(140.97)	(132.45)	(626.71)	(59.72)
<i>Fiscal Status</i>	(134.73)	14.58	(183.64)	209.67
Advances & Deposits				
Extraordinary Income	214.97	174.38	264.78	84.23
Extraordinary Expenditure	5.06	4.34	49.09	47.62
<i>Surplus/Deficit</i>	209.91	170.04	215.70	36.61
<i>Overall Fiscal Status</i>	75.18	184.62	32.05	246.28

Source: Dindigul Municipality & Analysis.

Note: Figures in parentheses indicates a deficit

Figure 3.2: Total Capital Income and Expenditure Trend



81. Capital income comprises of loans, grants and revenue account transfers, contribution in the form of initial deposit for water supply connections and sale proceeds of assets. Majority of the capital income is in the form of grants. The capital account has

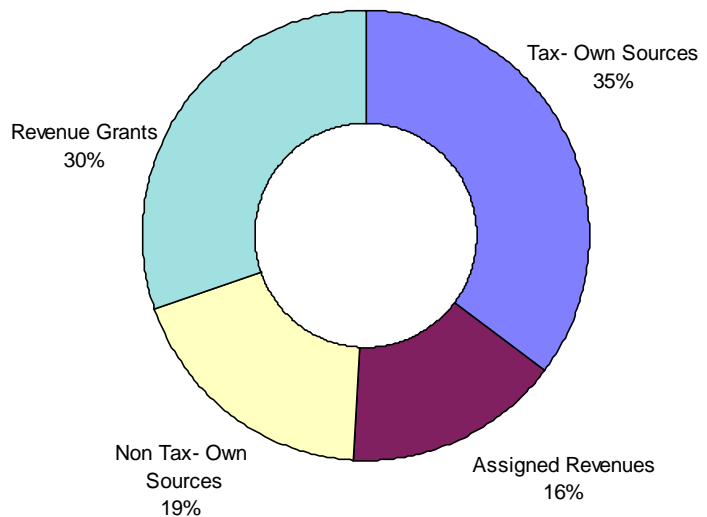
witnessed deficit during the entire assessment period

82. 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*

83. 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 3.3: Source of Income (2000 to 2004)



84. *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 3.** The base and basis of each income source has been further elaborated in the following section. The revenue income of Dindigul Municipality has increased from Rs. 811.55 Lakh in 2000-01 to Rs. 1,038.52 Lakh in 2003-04 – a high Compound Annual Growth Rate (CAGR) of about 8.57 percent. The high growth attributed to non transfer of assigned revenue to ULB during the FY 2002-03.

Table 3.6: Sources of Revenue Income

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Own Sources				
Tax	322.72	346.39	331.06	400.22
Non Tax	203.34	222.62	264.45	68.47
Assigned Revenue	108.02	105.34	253.63	186.23
Grants	177.47	251.89	453.49	383.60
Total (excl. W&D a/c)	811.55	926.24	1,302.63	1,038.52

Source: Dindigul Municipality & Analysis.

85. Own-source income includes income from resource mobilisation activities of Municipality in the form of taxes, income from municipal properties and markets, building permit fee, trade licences, 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.

- (ii) 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 3.7**. Average income from own sources constituted 54.28 percent of the total revenue income during the review period and has decreased at an average compounded annual growth rate of 3.78 percent. Tax sources contributed 35.28 percent of the revenue income and non-tax sources contribute 19 percent of the revenue income.

Table 3.7: Own Sources of Revenue Income

Item	2000-01	2001-02	2002-03	2003-04
<i>Amount in Rs. Lakh</i>				
Taxes				
Property Tax (excl. W&D tax)	294.02	300.29	290.04	351.50
Profession Tax	28.70	46.10	41.02	48.72
Other Taxes	-	-	-	-
Non - Taxes				
Income from ULB's. properties	109.33	99.88	82.33	17.41
License Income (Trade, etc.)	14.32	10.92	13.10	15.96
Income from Fees and Fines	14.11	52.49	66.32	4.38
Miscellaneous Income	65.58	59.32	102.70	30.72
Total	526.07	569.01	595.51	468.69

Source: Dindigul Municipality & Analysis

- *Property Tax:* This is the most important category of own source income to the Municipality. Dindigul Municipality levies a consolidated property tax of 17 percent of the Annual Rateable Value (ARV).

Figure 3.4: Property Tax Collection Performance

86. The average collection performance of Property Tax for the review period is 56 percent and the same is presented in **Table: 3.8**. The property tax levied is 17 percent of the Annual Rental Value (ARV) and includes the general tax (9%), water and drainage tax (4%) and education tax (4%). It is observed that the Municipality maintained a Low arrear collection of average about 38 percent.

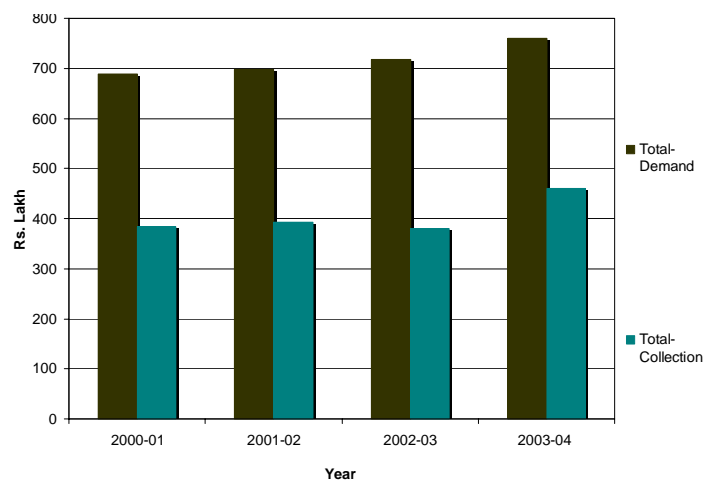


Table 3.8: Property Tax – Demand Collection and Balance Statement

Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	307.10	303.71	307.38	339.47
Demand	381.20	394.24	410.89	421.00
<i>Total</i>	<i>688.30</i>	<i>697.95</i>	<i>718.27</i>	<i>760.47</i>
Collection (Rs. Lakh)				
Arrear	129.29	109.86	84.65	150.59
Demand	255.13	282.76	294.57	308.98
<i>Total</i>	<i>384.42</i>	<i>392.62</i>	<i>379.22</i>	<i>459.57</i>
Collection Performance (%)				
Arrear	42%	36%	28%	44%
Demand	67%	72%	72%	73%
<i>Total</i>	<i>56%</i>	<i>56%</i>	<i>53%</i>	<i>60%</i>

Source: Dindigul Municipality & Analysis.

The current property tax demand collection performance of the Municipality has increased significantly during the assessment period. The maximum arrear collection was achieved during the FY 03-04 and the same was as low as 28 percent during FY 03. Currently there are 35,184 assessed properties in the Municipality. The ARV per property during the FY 04 is Rs. 7,109 and the tax per property is Rs. 1,209.

- *Professional Tax:* The municipality also collects professional tax from all registered organizations, companies or firms, public or private, individuals and State & Central Government departments. Low average arrear collection of 31 percent observed during the review period and the average current collection is around 93 percent during the same period. The details of Demand Collection and Balance statement are provided in **Table: 3.9**.

Table 3.9: Profession Tax – Demand Collection and Balance Statement

Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	16.73	27.75	24.82	25.03
Demand	25.09	32.09	41.05	47.21
<i>Total</i>	<i>41.82</i>	<i>59.84</i>	<i>65.87</i>	<i>72.24</i>
Collection (Rs. Lakh)				
Arrear	3.61	14.01	6.05	7.10
Demand	25.09	32.09	34.97	41.62
<i>Total</i>	<i>28.70</i>	<i>46.10</i>	<i>41.02</i>	<i>48.72</i>
Collection Performance (%)				
Arrear	22%	50%	24%	28%
Demand	100%	100%	85%	88%
<i>Total</i>	<i>69%</i>	<i>77%</i>	<i>62%</i>	<i>67%</i>

Source: Dindigul Municipality & Analysis.

- (ii) 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 19 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 declined over the assessment period at a negative CAGR of about 30.43 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 8.06 percent of the revenue income during the assessment period and registered at a negative CAGR of about 45.80 percent. The average revenue mobilized during the review period under this item head is Rs. 77.24 Lakh.
- (ii) 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 3.10: Income from Assigned Revenue

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Entertainment Tax	47.43	22.04	65.60	21.78
Surcharge on Stamp Duty	55.81	83.30	187.14	164.45
Other Transfers	4.79	-	0.90	-
Total	108.02	105.34	253.63	186.23
Share in total Revenue Income (%)	13.31	11.37	19.47	17.93
<i>Growth (%)</i>		<i>(2.49)</i>	<i>140.78</i>	<i>(26.58)</i>

Source: Dindigul Municipality & Analysis.

Income through assigned revenues contributes around 15.52 percent of revenue income and it is growing at an average compounded annual growth rate of 19.91 percent during the review period. It is observed (**Table 3.10**) 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.

- *Entertainment Tax*: The Commercial Tax (CT) Department collects entertainment tax from 12 cinema halls (with a total capacity of 7,350 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 3.84 percent of total revenue income during the assessment period.
- *Stamp Duty*: Surcharge on stamp duty is another assigned revenue source, accounting for 11.52 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.

- (iii) **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 Dindigul Municipality, revenue grants and contributions was constitute about 30.20 percent of the total revenue income and have registered a high average annual growth rate of 29.37 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 3.11: Income from Revenue Grants

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
State Finance Commission Grant	150.38	219.44	422.44	383.60
Other Grants	27.09	32.44	31.05	-
Total	177.47	251.89	453.49	383.60
Share in total Revenue Income (%)	21.87	27.19	34.81	36.94
<i>Growth (%)</i>		<i>41.93</i>	<i>80.04</i>	<i>(15.41)</i>

Source: Dindigul Municipality & Analysis.

4. *Assets and Liabilities*

87. *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 analysed separately and the same is presented in the following section. Revenue expenditure is further classified under Establishment, Operation & Maintenance and Debt Servicing.

Figure 3.6: Items of Revenue Expenditure (2000 to 2004)

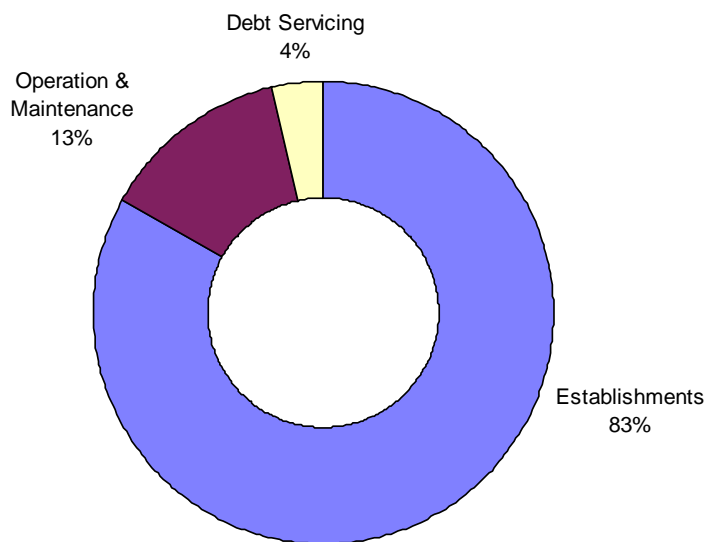


Table 3.12: Sector wise Revenue Expenditure

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Establishment	611.96	581.03	607.00	645.24
Operation & Maintenance	76.56	100.56	118.18	102.50
Debt Servicing	18.79	19.15	73.12	-
Total (excl. W&D A/C)	707.31	700.74	798.30	747.73
<i>Growth (%)</i>		<i>(0.93)</i>	<i>13.92</i>	<i>(6.33)</i>

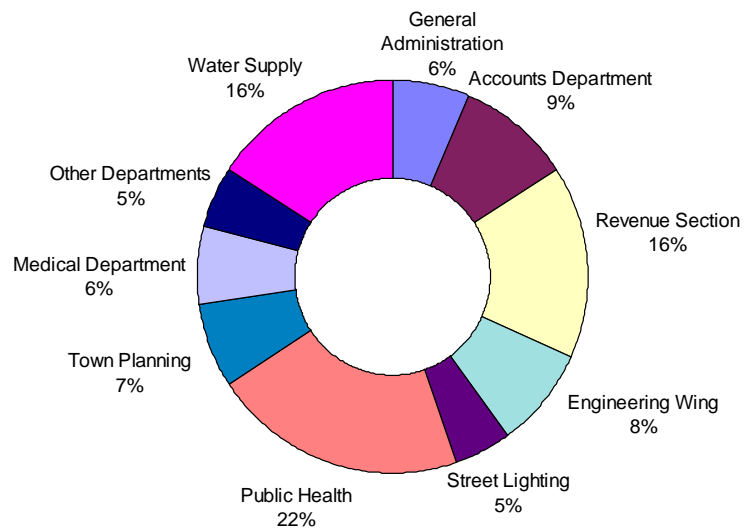
Source: Dindigul Municipality & Analysis.

(i) Establishment Expenditure. Establishment expenditure alone accounts for about 82.94 percent of revenue expenditure, excluding water supply and drainage account. About 61.72 percent of the total revenue income is utilised for payment of salaries excluding water supply and drainage staff salary and other related expenses. About 3.64 of the total revenue expenditure were utilized for Debt servicing from general fund during the review period.

For the assessment period, revenue expenditure grew at an average rate of 1.87 percent; while growth in revenue income was 8.57 percent during the same period. Further, while expenditure on establishment grown at annual average rate of 1.78 per cent, expenditure on O&M grew at an average rate of 10.21 percent per annum indicating that the Operations and maintenance expenditure need to be controlled.

Figure 3.7: Sector Wise Salary Composition (2000 to 2004)

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 22 percent spent for public health department salary and around 16 percent for water supply department staff salary and for revenue section.

Table 3.13: Sector wise Salary

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
General Administration	30.80	31.19	31.25	31.43
Accounts Department	46.20	46.78	46.88	47.15
Revenue Section	77.00	77.98	78.13	78.59
Engineering Department	41.09	41.59	41.67	41.91
Street Lighting	23.11	23.39	23.44	23.58
Public Health	102.67	103.97	104.18	104.78
Town Planning	25.68	37.42	37.50	37.72
Medical Department	38.43	28.59	28.65	28.82
Other Department	25.60	24.95	25.00	25.14
Water Supply	77.05	77.98	78.14	78.59
Sewerage	25.67	25.99	26.05	26.20
Total	513.30	519.83	520.89	523.91
<i>Growth (%)</i>		<i>1.27%</i>	<i>0.20%</i>	<i>0.58%</i>

Source: SFC Questionnaire Document.

Establishment expenditure of all sections (excluding water & drainage account) accounts for an average of 82.94 percent of revenue expenditure. Establishment expenditure of the Municipality has been consistently above 75 percent and there haven't been any major efforts on part of the Municipality towards containing the establishment expenditure.

It is necessary that the Municipality have to initiate privatisation initiatives to improve upon and allocate more amounts for the O&M

- (ii) Operations & Maintenance. Operation and maintenance expenditure of all sections together accounts for 24.40 percent of revenue expenditure and had increased at an average rate of 1.60 percent per annum.

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 minimal. Street lighting sector can be put for privatisation and implement energy conservation measures to curtail the costs on repairs, replacements and power charges.

- (iii) 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. 1,796.96 Lakh. **Table: 3.14** details out the agency wise outstanding loans.

Table 3.14: Out standing Loan Statement

Item	Outstanding
	<i>Amount in Rs. Lakh</i>
IUDP	49.35
TUFIDCO - Spl. Road Works	139.42
MUDF (Transferred to TUFIDCO)	129.25
LIC - Water Supply	1,378.97
IDSMT	99.97
Total	1,796.96

Source: Dindigul Municipality & Analysis

It needs mention that the ratio of outstanding loans to current demand of property tax is about 427 percent. The ratio in terms of ARV (estimated at Rs.) is 1.39; 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).

Debt servicing accounted for around 2.70 percent of revenue expenditure (including all funds) during the review period and the DSR (as % of revenue income) is around 2.09 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

88. 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 analysed 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 3.15: Revenue Account Status of Water Supply and Drainage Fund

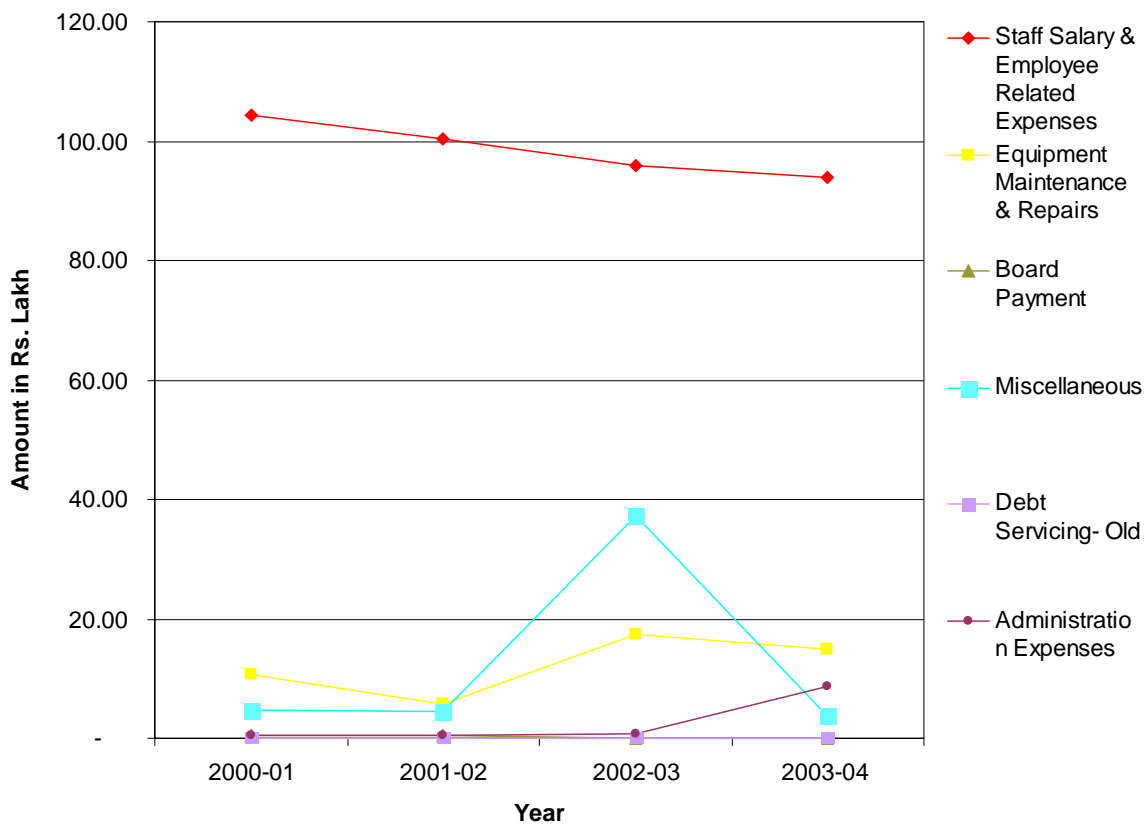
Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Revenue Income				
Water & Drainage Tax	90.40	92.33	89.18	108.07
Water Charges	112.31	107.23	89.15	84.61
Water Supply & Sanitation Grant	-	-	39.75	-
Other Income	1.14	0.97	0.52	1.15
<i>Total</i>	<i>203.85</i>	<i>200.53</i>	<i>218.60</i>	<i>193.83</i>
Revenue Expenditure				
Establishments	104.87	100.84	96.59	102.69
Electricity Charges	119.05	95.37	127.04	75.20
Board Payment	0.38	0.41	-	-
Miscellaneous	28.15	24.31	56.22	37.34
Debt Servicing- Old	-	-	-	-
<i>Total</i>	<i>252.45</i>	<i>220.94</i>	<i>279.86</i>	<i>215.23</i>
Surplus/Deficit	(48.60)	(20.41)	(61.26)	(21.40)

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
<i>Recovery (%) excl. tax</i>	45%	49%	46%	40%

Source: Dindigul Municipality & Analysis.

89. 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 42.67 percent power charges and 42.35 percent on establishment costs and other operation & maintenance expenses accounts 10.17 percent and. No debt servicing was made during the assessment period from water and drainage account

Figure 3.8: Water & Drainage Account Expenditure Trend



90. The cost recovery in case of excluding water and drainage tax income work out to only 45 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 even a 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 46.73 percent of water supply & drainage income.
91. There are a total of 17,500 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: 3.16**. This indicating low coverage (50% to PT assessment) and very less number of legal service connections against the service provided

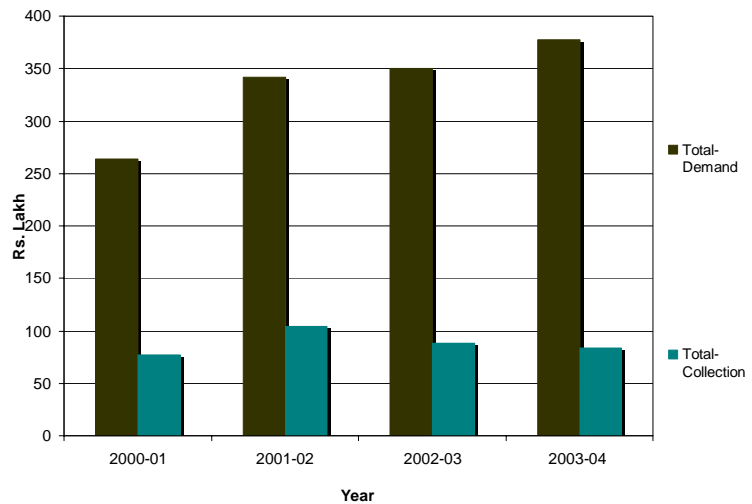
Table 3.16: Water Charges – Demand Collection and Balance Statement

Item	2000-01	2001-02	2002-03	2003-04
Demand (Rs. Lakh)				
Arrear	151.80	186.73	221.35	262.45
Demand	111.79	154.88	129.22	114.58
<i>Total</i>	<i>263.59</i>	<i>341.61</i>	<i>350.57</i>	<i>377.03</i>
Collection (Rs. Lakh)				
Arrear	30.86	58.25	34.37	42.55
Demand	46.00	46.02	53.75	40.71
<i>Total</i>	<i>76.86</i>	<i>104.27</i>	<i>88.12</i>	<i>83.26</i>
Collection Performance (%)				
Arrear	20%	31%	16%	16%
Demand	41%	40%	42%	36%
<i>Total</i>	<i>29%</i>	<i>31%</i>	<i>25%</i>	<i>22%</i>

Source: Dindigul Municipality & Analysis.

Figure 3.9: Water Charge Collection Performance

92. The numbers of House Service Connections stand at 50 percent of the PT assessments indicating the large numbers of unauthorised connections in the Municipality. The unauthorised connections and unassessed properties need to be brought under the user charges and municipal tax gambit to affect cost recovery on the investments.



5. *Capital Account*

93. *Capital Income.* Capital income comprises of loans, grants and contributions. The detailed components of capital income are detailed in **Table: 3.17**. An analysis of this account indicates that loans have contributed the maximum share of income under this account. While on an average, 52 percent of the capital income is in the form of loans and balance amount in the form of grants and own sources.

Table 3.17: Status of Capital Account - General

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Capital Income				
Capital Loans	161.96	74.34	78.63	-
Capital Grants and Contribution	107.61	-	0.47	80.17
Own Sources	49.40	58.06	-	-
<i>Total (excl. W & D a/c)</i>	<i>318.97</i>	<i>132.40</i>	<i>79.10</i>	<i>80.17</i>

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Capital Expenditure				
General	7.84	18.04	9.95	2.24
Public Works and Roads	346.26	189.27	464.91	73.93
Street Lighting	9.96	3.09	-	-
Public Health & Conservancy	-	-	-	-
Education	0.01	0.01	6.48	-
Others	-	-	-	-
<i>Total</i>	364.08	210.43	481.34	76.17
<i>Surplus/Deficits (excl. W & D a/c)</i>	<i>(45.11)</i>	<i>(78.03)</i>	<i>(402.23)</i>	<i>4.00</i>

Source: Dindigul Municipality & Analysis.

94. *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 TNUDE/TUFIDCO had funded most of the municipalities for roads during the assessment period. Hence, there is a sudden major jump in spending on roads.
95. Analysis of capital income and capital expenditure notes that the account was in deficit except during FY 04. This indicating a lesser utilisation of allocated funds or just start of utilisation of allocated funds during the FY 03-04.
96. Water supply and drainage capital account status is detailed in **Table: 3.18**. Capital income is mainly from water supply grants. Capital account is deficit during the entire review period.

Table 3.18: Status of Water Supply and Drainage Capital Account

Item	2000-01	2001-02	2002-03	2003-04
	<i>Amount in Rs. Lakh</i>			
Capital Income				
Capital Loans	-	-	-	-
Capital Grants and Contribution	-	15.95	15.95	-
Own Sources	-	-	-	-
<i>Total</i>	<i>-</i>	<i>15.95</i>	<i>15.95</i>	<i>-</i>
Capital Expenditure				
Water supply	71.23	25.89	89.30	37.30
Drainage & Sanitation	24.63	44.49	151.13	26.42
<i>Total</i>	95.86	70.37	240.43	63.72
<i>Surplus/Deficits</i>	<i>(95.86)</i>	<i>(54.42)</i>	<i>(224.48)</i>	<i>(63.72)</i>

Source: Dindigul Municipality & Analysis.

6. Assets and Liabilities

97. Current assets and liabilities of Dindigul Municipality include monies due to Municipality from debtors and monies due from Municipality to creditors, respectively. **Table: 3.19** presents a summary of the current assets and liabilities of Dindigul Municipality.
98. 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. 615.36 Lakh.

99. 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 Dindigul Municipality is Rs. 165.04 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 assets to pay off its current obligations when they fall due. Intuitively one would expect that this ratio should be over 1. In case of Dindigul Municipality the current ratio is 3.73 and this is well above the benchmark level hence ULB is maintaining a comfortable current ratio.

Table 3.19: Summary of Current Assets and Liabilities status

Description	Amount (Rs. Lakh)
A. Current Assets	
Property Tax Recoverable	315.28
Profession Tax Recoverable	19.88
Water Charges Recoverable	280.20
License/Lease/Rental/other Recoverable	-
Other Recoverable	-
Cash on Hand /Bank	-
<i>Total – Current Assets</i>	<i>615.36</i>
B. Current Liabilities	
Salaries Payable	30.0
PF and Other Contribution	45.47
TNEB	21.54
Library Cess Payable	30.14
Other Payables	-
Recoveries from Staff	-
Deposits	37.89
<i>Total – Current Liabilities</i>	<i>165.04</i>
Net Status	450.32

Source: Dindigul Municipality & Analysis.

7. Key Financial Indicators and Issues

100. A set of key financial indicators has been derived using the financial data procured from the Municipality for the assessment period. **Table: 3.20** presents these indicators. These indicators are used to assess the municipal performance with regards resource mobilization, fund utilization, financial performance and collection efficiencies.

Table 3.20 Key Financial Indicators

	Indicators	Value	Unit
A	<u>Resource Mobilization</u>		
1	Per Capita Income	613	Rs. p.a
2	Sources of Funds		
	a Share of Own Sources in Total Revenue Income (RI)	61.21	%
	b Share of Property Tax in Total Revenue Income	33.73	%
	c Share of Revenue Grants & Subsidies in Total RI	25.85	%

	Indicators	Value	Unit
3	Growth in Revenue Income	6.67	% p.a
4	Growth in Own Sources of Revenue Income	(2.10)	%
5	Per Capita Own Income	272	Rs. P.a
B	<u>Fund Application</u>		
1	Per Capita Expenditure	493	Rs. p.a
2	Uses of Funds		
	a Share of Establishment Expenditure in Total RE	72.90	%
	b Share of O&M Expenditure in Total Revenue Expenditure	24.40	%
	c Share of Establishment Expenditure to Total RI	58.22	%
3	Growth in Establishment Expenditure	1.15	%
4	Growth in O&M Expenditure	1.60	%
5	Growth in Total Revenue Expenditure	0.78	% p.a
C	<u>Liability Management</u>		
1	Per Capita Liability (2004-05 estimated)		
	a Outstanding Debt per Capita	1,428	Rs.
	b Outstanding Non-Debt Liability per Capita	67	Rs.
	c Total Outstanding Liability per Capita	1,496	Rs.
2	As a Proportion of Property Tax Current Demand (2003-04 estimated)		
	a Outstanding Debt as % of P.T Demand	729.00	%
	b Outstanding Non-Debt Liability as % of P.T Demand	34.23	%
	c Total Outstanding Liability as % of P.T Demand	763.23	%
3	As a Proportion of Property Tax Own Revenue Income (2003-04 estimated)		
	a Outstanding Debt as % of Own Revenue Sources	463.24	%
	b O/s Non-Debt Liability as % of Own Revenue Sources	21.75	%
	c Total O/s Liability as % of Own Revenue Sources	484.99	%
4	Non-Debt Liability as % of Total Liability	4.48	%
5	Debt Servicing Ratio (D.S/ Revenue Income)	2.09	%
D	<u>Performance Indicators</u>		
1	Operating Ratio	0.81	Ratio
2	Growth in Per Capita Own Income	(6.42)	% p.a
3	Growth in Per Capita Grant	25.74	% p.a
4	Growth in Per Capita Total Revenue Income	3.73	% p.a
5	Growth in Per Capita Establishment Expenditure	(1.36)	% p.a
6	Growth in Per Capita O&M Expenditure	(4.09)	% p.a
7	Growth in Per Capita Revenue Expenditure	(2.64)	% p.a
8	Capital Utilization Ratio	3.61	Ratio
E	<u>Efficiency Indicators</u>		
1	Tax Collection Performance		
	a Property Tax	56	%
	b Water Charges	27	%
	c Sewer Charges	NA	%
	d Profession Tax	69	%
2	No. of P.T Assessments per Tax Collection Staff	2,513	Nos.

	Indicators	Value	Unit
3	Property Tax Demand per Assessment	7,109	Rs. p.a
4	No. of Municipal Staff per 1000 Population	3.34	Nos.
5	Annual Revenue (Own Source) per Municipal Staff	0.65	Rs. Lakh p.a
6	Population per Residential P.T Assessment	6.11	Persons

Source: Analysis.

101. *Resource Mobilization Indicators.* These indicators summarize the performance of the Municipality with regards sources of funds. Dindigul Municipality derives about 61.21 percent of its revenue income from own sources, while grants account for just about 25.85 percent of the revenue income.
102. *Fund Application Indicators.* These indicators are a measure to ascertain the utilization from the municipal fund. Around 72.90 percent of the revenue expenditure is spent on establishment heads, only about 24.40 percent for O&M of municipal assets and services. Leaving only 2.70 percent utilized for debt servicing. Establishment expenditure accounts for about 58 percent of the total revenue generated by the Municipality.
103. *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 2.09 percent during the assessment period. The percapita average outstanding debt works out to 1,428 rupees and percapita non debt liability is 67 rupees. Out standing debt to property demand is around 729 percent and non debt liability is 34 percent times the property tax demand for the current year.
104. *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 0.81 and the capital utilization ratio was high at 3.61 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. Dindigul Municipality has demonstrated 3.73 percent annual growth in per capita revenue income during the assessment period, while the per capita revenue expenditure has come down at 2.64 percent during the same period. This indicates that as population increases revenue fund will be in surplus, however percapita revenue expenditure witnessed a negative growth trend which is evident that the poor management of infrastructure in the town.
105. *Efficiency Indicators.* These indicators are essentially a measure to assess Municipal efficiency with regards revenue base coverage and realization. Dindigul Municipality has maintained an average collection performance both with regards property tax and water charges (56 percent and 27 percent respectively). The average population per assessment at 6.11 indicates that the property tax base has a low coverage.
106. Key issues and conclusions are based on the review and assessment municipal finances and discussions with relevant municipal officials.
- (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:
- Low water supply coverage witnessed there are chances of illegal or unauthorized connections in the town; and
 - 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,
- (iii) Fund Application. Key issues regarding application from the municipal fund comprise:
- About 73 percent of the total expenditure is on establishment-related heads, leaving relatively lower amounts for expenditure on operation and maintenance of services.
- (iv) Efficiency. Key issues regarding collection efficiency comprise:
- Average water charges arrear collection is very low (21 percent) and hence, cost recovery was very poor.

IV. PLANNING AND LAND USE MANAGEMENT

A. Planning Efforts in the Past

1. Master Plan Outline

107. Government of Tamil Nadu has notified a Local Planning Area for Dindigul, extending over an area of 198.81 sq.km under the Town and Country Planning Act, 1971. The LPA apart from Dindigul Municipality includes 21 other Town Panchayat's and Village Panchayat's.

2. Master Plan Implementation and Implications

108. First Master Plan for Dindigul City was prepared by the LPA and received the final approval in 1994. Given the trends in development and spatial growth, it was concluded in the review of detailed development plans that the master is not conducive for development, and a Revised City Development Plan for Dindigul City, for 2021, is under preparation by the LPA. The Plan is Approved and is awaiting Publication.

109. Planned efforts at sector level are regulated by Detailed Development Plans, to assist the implementation of Master Plan. The preparation of Town Planning Schemes is replaced by preparation of detailed development plans under Town and Country Planning Act, 1971. In Dindigul there are 13 Town Planning (TP) schemes and 2 number of indicated schemes. The total number of approved DDP's is 24, consented by the government/ DTCP. The details of Town planning schemes are presented in **Table 4.1**. The LPA of Dindigul is illustrated in **Map: 4.1**.

Table 4.1: Details of Town Planning Schemes

S. No.	Schemes	Status	Area <i>Hectares</i>
1	Pensioner's Street North	Approved	40.64
2	Balakrishnapuram Race Course Part-I	Approved	46.64
3	Balakrishnapuram Race Course Part-II	Approved	75.89
4	Bodinaickenpatti	Approved	52.02
5	Gandhiji	Approved	49.46
6	Thiruvalluvar	Approved	29.15
7	Sowashtra Puram	Approved	15.49
8	Paraikulam	Approved	24.41
9	Aranmanaikulam	Approved	8.66
10	Bharathipuram	Approved	64.17
11	Mettupatti	Approved	54.13
12	Dindigul West	Approved	23.48
13	Rock Fort area	Approved	52.23
	Total		536.37

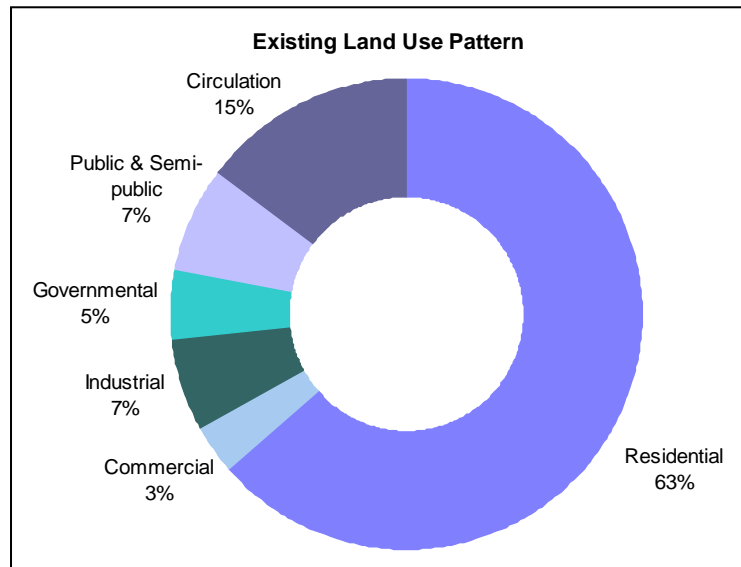
Source: Dindigul Municipality

B. Land Use Management

1. *Land Use Pattern – Current and Future*

110 *Existing Land Use.* Review of the land use pattern of Dindigul City, for 2001, indicates that approximately 55 percent of land is being put to developed Use. Presently, approximately 64 percent of developed area is put to Residential use, served by 15 percent area under Transportation and 3.2 percent area under Commercial Use.

Figure: 4.1 Existing Land Use



111 The town being predominantly residential, 64 percent area under the same, area under other uses have been put to pressure, low area allocations for area under Public and Semi Public Use and for area under Recreational and Educational Use. Land use pattern for Dindigul City as existing in 2001 is as follows in the **Table 4.2**. Most of the Institutional and Public Areas of the town are located along the Trichy-Karur Road, around Thiruvallur Area, in the central area of the Town. The Existing Land Use is furnished in **Map: 4.2**

112 Industrial Growth is witnessed along Natham Road, beyond the Railway lines, along Palani Road, towards the town periphery and along Thodicombu Road, towards the towns periphery.

Table 4.2: Existing Land use Pattern, 2001

Land use Type	Area (2001)	% to Developed area	UDPFI Norms*
	<i>Sq. km</i>	<i>Percent</i>	<i>Percent</i>
Residential	4.87	63.60	40 – 45
Commercial	0.25	3.22	3 – 4
Industrial	0.50	6.54	8 – 10
Education	0.36	4.71	10 – 12
Public & Semi- public	0.55	7.23	18 – 20
Transportation/ Circulation	1.12	14.69	12 – 14
<i>Sub-Total (Developed Area)</i>	7.65	<i>100.00</i>	
Water Bodies	0.43		
Vacant land	3.23		
Government Land	0.28		
Agriculture	2.42		
<i>Sub-Total (un-Developed Area)</i>	6.36		
Total	14.01		

* - Urban Development Plan formulation and Implementation Guidelines

Source: Master Plan for Dindigul, LPA Dindigul.

Map: 4.1: Dindigul Local Planning Area

Map: 4.2: Land Use Map of Dindigul Municipality

2. *Proposed Land Use Pattern*

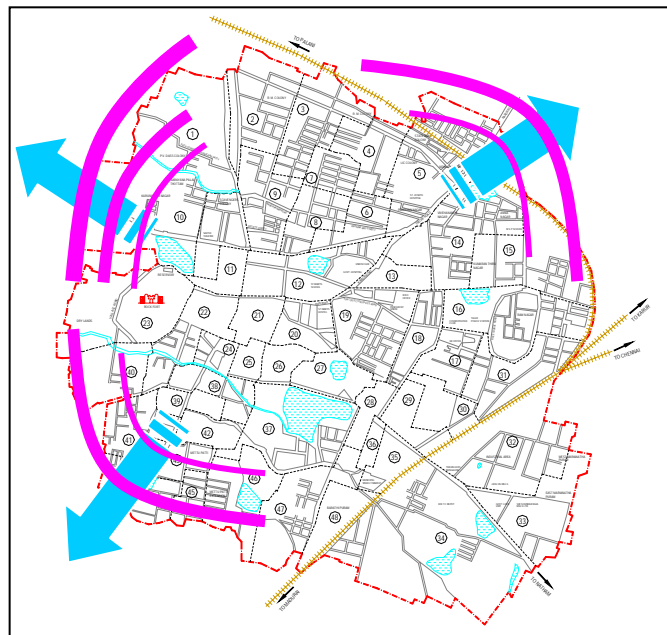
- 114 The Local Planning Authority has proposed Revised City Development Plan for Dindigul City for 2021. Review of the proposed land use pattern indicates that approximately 26 sq. km additional land is proposed to be developed. However, the proposal is still under consideration. Discussions, have indicated that de-limitation of the Municipal Boundary can be an alternative, to ease demand for developed land within the municipal area.
- 115 Approximately 60 percent of developed area is proposed to be put to Residential use, served by 20 percent area under Circulation, and Public and Semi Public Use. Also, six percent area is proposed under Commercial Use and 10 percent under Industrial Use. There are approximatey 9 major water bodies (0.4 sq.km), maintained by the Public Works Department (PWD) and have been retained over the Plan period.

3. *Development Patterns – Growth Areas and Direction*

- 116 Historically, development of the town was noticed around the existing central areas of the town, at the foothills of the Rockfort and along on the Madurai-Thodicombu Road. Growth was witnessed near the railways line, near the areas of Race Course Areas and Natham Road.

Figure: 4.3: Development Patterns of Growth Areas.

- 117 As in Case of most of the cities, Dindigul’s growth pattern is also guided along the major transport corridors, Two National Highways, Two State Highways and Other Major District Roads. Spatial trend of growth within the LPA is noticed along the NH 7 (towards madurai on one side and towards Karur on the other Side), along SH Road (towards north along Thadikambu Road). Sporadic development is also noticed along Natham Road in the south. Over the recent years, development towards the northern side, along Thodicombu Road and Trichy Road have gained significance, with efforts for planned development being put in place through detialed development plans.



- 118 Accelerating the development for Dindigul environs the lands identified, under the Revised Development Plan for Dindigul town, 2021, for immediate development for Residential uses are along Karur – Trichy Road and Madurai Road, along the towns major arterial roads. Residential development is also expected to pick-up in the areas of north

and north-northeast, near the By-pass road in areas like Chettinayakkanpatti, Seelapatti and in the East, near Balakrishnapuram Villages. Other villages, indicated as vulnerable for development are Kurumpatti, Adipanoothu, Thottanoothu, Mullipadi and Vellodu.

119. *High Density Low Income Areas.* Major low income areas include Nettu Street (Ward 26), areas towards South along Madurai Road (Water Tank Road, Severiyar Palayam – Ward 45), areas near Railway Line (Ward 35 and 47), and some areas beyond the railway line along Natham Road.

4. *Growth Constraints and Developmental Potentials*

120. *Constraints.* One of the major constraint for growth in Dindigul, is the high population density in the developed and centrally located wards (25 wards of a total of 48 wards have density above 200 persons per Ha), thus making it saturated. This has put excess pressure on the infrastructure services and deteriorated the quality of life in the recent years, in these wards. Also, to pressure of the congested areas, the ULB needs to improve connectivity and other basic services in the peripheral and less developed wards. Efforts have been initiated planned development through DDP's to develop potential areas, like Poochinaikenpatti and Parappapillaikulam. The areas have been suggested for DDP's and the drafts are under preperation.
121. The Roackfort, towards the east of the town, also acts a physical constraint for growth beyond the area. Uptill recently, precense of the the railway line, towards the southwest of the Town, was a major contrait for development. Although, discussions have indicated that, growth is picking up in the area, along Natham Road.
- 122.. *Development Potentials.* One of the major deviations from the development palttern, was the formation of the By-pass road, thus channelizing growth towards the north and northeast, towards and along the By-pass road. The Master Plan has also indicated areas, towards this side which are vulnerable for development, like Chettinayakkanpatti, Seelapatti, etc.
123. Post implementation of combined Cauvery Water Supply Project, availability of water is expected to increase in the western side and beyond the railway line, which is expected to facilitate higher intensity development in towards that side of the Town.
124. Growth potential needs to be explored at regional level, within the LPA. Given high population density within the ULB limits, which is resulting in high real estate prices and increased pressure on urban services. There is need to capitalize on the growth potentials of adjoining villages in the LPA, through transporation linkages and demarkation of special development areas.
125. The regional development potentials of the region is linked to its economic and industrial base, hence a comprehensive program to review and revamp sick industries in the region is required. This is being duely addressed in the Master Plan, thus the lands in Pallapatti, Adiyanoothu, Pillayarnatham and Sinthalagandu villages in and around exisiting tanneries are retained for similar use and allied uses. Keeping the trend of Industrial activities of Karur Road in adjacent Taluk's, the Industrial uses are suggested on this Arterial Road (NH 7). The above initiatives need to be supported with appropriate fiscal and strategic

policies. This inturn will induce development potentials in the region.

C. Key Developmental Issues

126. Key Issues are elaborated below:

- (i) High Population density pattern noticed inside the ULB limits (in almost 25 wards) is deteriorating the quality of life. This is also resulting in high real estate prices within the ULB Area, thus channelizing development towards the peripheral areas. The lack of availability of services, in these areas is a cause of concern. Currently, increased demand for Urban Services is proving as bottleneck for present development of the Town.
- (ii) In the newly developing housing layouts, many of the layout owners have not handed over the layout roads and open spaces by gift deed to ULB under the Act, which has resulted in the ULB not being able to provide civic services in these layouts.

V. INFRASTRUCTURE SERVICES

A. Physical Infrastructure

1. Water Supply

Existing Situation

127. *Source.* Water requirement for Dindigul Municipality is drawn from two sources. One is from Kamaraj Sagar Reservoir at Athoor (scheme commissioned in 1962) – a surface water source situated about 22km from the municipality and the second from Vaigai river bed at Sithargalnatham Village near Peranai Regulator (scheme commissioned in 1985) which is located about 45km away from the town. The two schemes are designed to serve Dindigul Municipality as well as enroute villages with total design capacity of 17.5 MLD. The ULB is earmarked 8 MLD and 12 MLD during Summer and Other seasons respectively. Present supply from the schemes is only 11.9 MLD.
128. Apart from this, the combined Cauvery Water Supply Scheme to Dindigul Town and way-side Town and Village Panchayats in under advanced stage of implementation. The Scheme has proposed allocation of 18 MLD for Dindigul Town. The scheme is expected to be commissioned in 2006.
129. *Athoor Water Supply Scheme.* Athoor water supply scheme head works is located at Kamaraj Sagar reservoir constructed across Koolayar River. This reservoir is meant exclusively for water supply to Dindigul town and 8 wayside villages. Kamaraj Sagar reservoir (Earthen Dam) was constructed in the year 1962. The municipality is able to draw 9.60 MLD of raw water from the reservoir, treat and pump for Town use.
130. During 1995-96 drought, 6 open wells were constructed in the Athoor Treatment Plant Campus to supplement the supply during summer. These wells are 12m in dia and about 10.5m in depth. Apart from this there are seven seepage wells available in this location, which were constructed along the earlier surplus course. These are also open wells, which are 4.5m in diameter and about 6m in depth. During drought periods the water from these 7 seepage wells and 6 open wells is pumped into the clear water reservoir of the treatment plant and further pumped to the town through the clear water transmission system from the treatment plant. During normal periods water from these wells is not pumped.
131. Normally a quantity of 9.60 MLD is pumped from this head works. Out of this 5.70 MLD is supplied to Dindigul Municipality and the following 8 wayside villages consume the balance 3.90MLD, through independent connections to the respective villages from the pumping main. The villages have their own service reservoirs and distribution arrangements.
132. *Peranai Water Supply Scheme.* Following the inadequacy of the Athoor Scheme, Peranai Improvement Scheme was implemented during the year 1982. The source of supply for this scheme is the subsoil water from Vaigai riverbed about 2.5km upstream of Peranai regulator and at Sithargalnatham village about 13km from Nilakottai. Under this scheme 6

nos. of infiltration well of size 4.50m dia and 7.00m depth have been constructed in Vaigai riverbed. Water from these infiltration wells is pumped to a nearby collection well located at the bank of the river using 5HP submersible pump sets. The water thus collected is pumped using 2 nos. 60HP turbine pumps, to Dindigul over a distance of about 45km using 2 boosters at Nilakottai and Kuttiyapatty enroute.

- 133. During normal years a total quantity of 7.50 MLD is abstracted and pumped, of which 5.60 MLD is supplied to Dindigul town. The balance 1.90 MLD is consumed by the following 18 wayside villages.
- 134. The wayside villages drawing water from the Athoor System and Peranai System are expected to pay for the water drawn from these systems. Flow meters have been installed by the municipality in the mains leading to the villages, excepting for the first three villages in the Peranai System, based on which future billing is intended to be made for the respective village panchayats. The respective villages have their own distribution arrangements. However, there is no effective mechanism to regulate the quantities for each village. As they are drawing from a continuously pumping main the possibility of wastage in the villages exists during normal times. The total quantity of water drawn from both Athoor and Peranai Scheme and the quantity of water supplied to Dindigul Municipality and to the wayside villages are summarised in **Table 5.1**.

Table 5.1: Details of Quantity of Water Abstracted and Supplied.

Source	Athoor Scheme	Peranai Scheme	Total
Quantity pumped (in MLD)	9.60	7.50	17.10
Quantity consumed by wayside villages (in MLD)	3.90	1.90	5.80
Quantity of water supplied to Dindigul Municipality (in MLD)	5.70	5.60	11.30

Source: Dindigul Municipality

- 135. *Combined Cauvery Water Supply Scheme.* The Combined Cauvery Water Supply Scheme to Dindigul, adjoining Panchayat Unions and the wayside town and village Panchayats is under implementation by TWAD Board. According to this project River Cauvery is being tapped near Pudupalayam and Renganathan Pettai, near Karur, by constructing 2 nos. of collection wells of 6m dia and 11m depth. The water collected, is chlorinated and is pumped to Dindigul over a distance of 84.24 km using turbine pumps. This scheme in which an allotment of 18.00 MLD is proposed for Dindigul Town for the ultimate year 2031, is under Trail run. The scheme is expected to be commissioned in 2006.
- 136. *Raw Water Transmission.* Water drawn from the Athoor Kamaraj Sagar reservoir is transmitted by Raw Water Mains to the treatment plant located at 500m near the earth dam bund.
- 137. *Water Treatment Plant .* The water drawn from reservoir is subjected to full treatment. The Treatment operations followed in this plant are pre-chlorination, flocculation, clarification and filtration. The treatment capacity of the plant is 10 MLD.
- 138. The plant consists of 2 nos. of flocculation tanks of size 5.50m x 5.50m x 3.65m, 2 nos. of settling tanks of size 20.00m x 8.50m x 3.80m and 4 nos. filter beds of size 5.60m x 5.00m

- x 2.40m. The type of filtration adopted is rapid sand filtration. Water thus treated is collected in a clear water reservoir of capacity 4.00 lakh litres and then pumped to Dindigul town over a distance of 22km. Disinfection is done both at treatment plant and at the reservoirs in the town.
139. Peranai scheme and the Cauvery Scheme being sub-surface water sources, no treatment is involved in this scheme. Disinfection for both sources, is done at the reservoirs in the Town.
 140. *Clear Water Pumping and Transmission.* At Athoor WTP, the treated water stored in the clear water reservoir at the treatment sited is pumped to the town using 170 HP centrifugal pump of capacity 9540 lpm against 55m head. The treated water is pumped through a 450mm diameter CI pumping main over a distance of about 22km to Dindigul town a ground level reservoir at Rockfort at Dindigul.
 141. From Peranai Source, the sub-surface water abstracted from the infiltration wells is pumped in a collection cum suction well in the river margin at Sithargal Natham. The water thus collected is pumped using two numbers of 60HP turbine pumps of capacity 3100 lpm against 59.5m head each. The water is pumped to Dindigul town through a 500mm CI/AC main over a distance of about 42km. There are two booster stations en route. One is at Nilakottai, 12.98 km away from the source point at Sithargal Natham and another at Kuttiyapatti at about 22.05 km from Nilakottai. From Kuttiyapatti water is pumped directly to overhead tanks located at different places in southern part of the town.
 142. The leakage study¹ was carried out to estimate the leakage in the pumping mains. The 450mm dia pumping main from Athoor has a leakage of 6.57%. The leakage in the 500mm dia AC Peranai Main in different reaches varies from 2.54 to 5.72%. The leakage in the other 350mm AC/ 250mm AC mains leading to different overhead tanks are found to be between 1.27% to 3.13%. These are considered to be at a reasonable level.
 143. *Storage and Distribution system.* As a part Athoor Scheme and Peranai Schemes, the town is served by Seven Overhead Tanks (OHT's) and One Ground Level Service Reservoir (GLSR), with a design capacity of 5.725 ML and 3.20 ML respectively. 48 Wards in the Town is distributed into Eight Water Distribution Zones. The details of reservoirs is tabulated in **Table: 5.2**
 144. Clear water pumped from Athoor is directly received into the ground level reservoir located at an elevation at Rockfort. The water stored in Rockfort reservoir is pumped again to four overhead tanks situated at different places in northern part of the town apart from distribution directly to the zone on the western part of the town. Given the elevated location of the GLSR, it serves as a distribution zone. Clear water from Peranai is directly pumped from the second booster at Kuyttiapatti to the overhead tanks located at three locations in the southern part of the town. There exists a facility to transfer some quantity of water from Athoor to Kuttiyapatti Booster, through a tapping from the Athoor Main near Kuttiyapatti Booster in the Peranai System. The Location of service reervoirs is furnished in **Map: 5.1**

¹ Detailed Project Report for Improvement to Water Supply in Dindigul Municipality , TNUIFSL, 2004.

Map: 5.1: Water Supply – Location of Service Reservoirs

Table 5.2: Service Reservoirs – For Athoor Scheme and Peranai Scheme

Reservoir	Nos	Capacity
	<i>Nos.</i>	<i>Lakh Litres</i>
Ground Level Service Reservoir		
Athoor Scheme	1	32.00
Peranai Scheme	-	-
Overhead Tanks		
<i>Athoor Scheme</i>	3	17.25
Mettupatti	1	10.00
R. M. Colony	1	5.00
Old Bus Stand	1	10.00
New Bus Stand	1	2.25
<i>Peranai Scheme</i>	4	40.00
Round Road	1	15.00
Sandaipatti	1	10.00
Kullanampatti	1	5.00
Total GLSR	1	32.00
Total OHT	7	57.25

Source: Dindigul Municipality.

145. The details of the population demand and storage required and available for each zone to meet the present demand is listed out in **Table 5.3**.

Table 5.3: Distribution Zones

Reservoirs	Wards Served	Zone Served	ESR	GLSR	Zone Population.
			<i>Lakh Litres</i>		<i>Nos</i>
Rockfort	10(0.35),11,22,23,24(0.55), 38(0.25) 9(0.5),40,41,44	Zone I	-	32.00	32,127
Mettupatti	37(0.75),38(0.75),39(0.5), 42,43,45, 46	Zone II	10.00	-	22,319
Sandaipatti	28(0.5),35,36,37(0.25),47, 48	Zone III	10.00	-	20,110
Old Bus Stand	6(0.4),8(0.4),12,20,21, 24(0.45),25,26, 27(0.75)	Zone IV	10.00	-	25,472
New Bus Stand	4(0.2),5(0.15),13,14(0.15), 19,27(0.25), 28(0.5), 29, 30	Zone V	2.25	-	21,984
Round Road	4,5,6(0.6),7,8(0.6),14(0.85), 15-17,18	Zone VI	15.00	-	50,356
Kullanampatti	32,33,34	Zone VII	5.00	-	15,496
R. M. Colony	1,2,3,9,10(0.65)	Zone VIII	5.00	-	26,985
Total	48 wards	8 Zones	57.25	32.00	214,849

Source: Dindigul Municipality/Analysis.

146. As a part the Combined Cauvery Scheme, One receiving sump (GLSR) and Three Elevated Service Reservoirs with a design capacity of 2.5 ML and 2.2 L respectively, have been constructed. Since, the scheme is under trial run, the Reservoirs have not been put for distribution use. The service reservoirs for cauvery scheme is listed in **Table: 5.4**.

Table 5.4: Service Reservoirs – For Cauvery Scheme

Reservoir	Nos	Capacity
	<i>Nos.</i>	<i>Lakh Litres</i>
Ground Level Service Reservoir		
MVM Nagar	1	25.00
Overhead Tanks		
Anna Nagar	1	15.00
MVM College	1	4.00
Kodagana Illam	1	3.00
Total GLSR	1	25.00
Total OHT	3	22.00

Source: Dindigul Municipality.

147. *Distribution System.* The present rate of supply in Dindigul is 62 lpcd. Due to inadequate supply, operational constraints and inadequate control of flow within the zone supply could not be effected in the entire town daily, resulting in supplies to parts of the town once a week and during summer once in 10 days.
148. The town is served with a distribution Network of upto 131 kms of length. The distribution pipes laid originally during the advent of the scheme in 1962 consists mainly of CI and AC mains of 80mm dia. to 200mm dia. Distribution pipe lines subsequently laid consist mainly of PVC pipes of 90mm dia. Distribution network within the ULB covers all wards, except the fringe areas, some extension areas and low income areas. Approximately 0.36 MLD is supplied to these areas by water tanker supply, by means of 10 lorries (Capacity – 9,000 litres each). The tankers maintain a trip rate of approximately 2 to 3 trips per day.
149. Presently, water is supplied to approximately 80,000 population at 57 lpcd during normal season, which comes down to 45 lpcd during Summer season.
150. The leak detection studies² conducted in the distribution system indicate an average leakage of 5.02% to 31.30% in the PVC mains and 28.05% to 58.13% in the AC mains and requires remedial steps for containing the leakage within acceptable level. The leakage in CI mains, which are the oldest mains, is 17.98 to 27.63%. The house service connections are heavily corroded and as such the leakage in them is high. One of the main reasons for high leakage levels is the improper house service connection and improper ways of rectification and repairs in the mains.
151. As a part of the Cauvery Scheme, additional 35 kms of distribution network, in areas proposed under the three service reservoirs, has been constructed and is presently functional. Discussions have indicated that post implementation of the Scheme, the frequency of water supply to the ULB will be Alternative days.
152. *Service Connections.* There are about 17,500 service connections of which 8,595 service connections are metered and about 8,905 connections are unmetered. Of the metered connections, 93.75 percent (8057 nos.) connections are Domestic, 4.65 percent (400 nos.) connections are Commercial and 1.61 percent (138 nos.) connections are Industrial. The

² Detailed Project Report for Improvement to Water Supply in Dindigul Municipality, TNUIFSL. 2004.

ULB maintains 528 public fountains.

153. House Service Connection numbers are low given capacity constraint in the existing system. Hence, it is proposed to increase approximately 25,000 connections more after implementation of the Cauvery Scheme.
154. *Water Tariff.* The present tariff structure (Flat Rate) is Rs. 45 per month for Residential connection, Rs. 90 per month for Commercial and Institutional connection, and Rs. 150 per month for Industrial connection. Flat rate system is followed for all types of connections irrespective of metered provisions (49 percent connections are metered), since most of meters are not in function. Tariff Revision for water supply has been proposed under the Cauvery Scheme, and will be implemented as soon as the Scheme is commissioned. **Table: 5.5** indicates the deposit and tariff charges..

Table 5.5: Water Tariff-Deposit Details

Type of Connections	Existing Tariff	Proposed Tariff		
	Deposit Amount	Flat Rate/Month	Deposit Amount	Flat Rate/Month
	Rs.	Rs.	Rs.	Rs.
Residential	2,000.00	45.00	8,000.00	100.00
Commercial	5,000.00	90.00	15,000.00	200.00
Industrial	5,000.00	150.00	15,000.00	200.00

Source: Dindigul Municipality.

Service Adequacy and Key Issues

155. Key issues/indicators are based on review and discussions and data analysis presented in **Table 5.6.**

Table 5.6: Water Supply Indicators

Indicator*	Units	Service Status (2005-06)	Norms
Population covered (covered by Scheme supply)	Percent	58**	90
Per Capita Supply	lpcd	135	90
Treatment Capacity (% of Supply)	Percent	105	100
Storage Capacity (% to Supply)	Percent	45	33
Distribution Network Reach (% of Road Length)	Percent	110	> 100
Houses/PT Assessments with Water Connection	Percent	75 [#]	85
Slum Population Per Public Stand Post	Persons	180	150
Frequency of Supply	-	Alternate Days	Daily

* - Service Status indicators are Post Cauvery Scheme Commissioning. ** - Scheme coverage based on HSC's (present connections +10,000 nos. proposed connections).

[#] - Discussions with officials have indicated that there is an immediate demand for atleast 10,000 more HSC's presently, which have been taken into account to generate Service Status Indicator.

Source: Dindigul Municipality.

- (i) Existing Source Augmentation. For Peranai Scheme, Due to scouring of the riverbed and mining of sand one or two wells are found to be tilted and also for most part the pumping mains from these wells leading to the common collection well stand exposed.
- (ii) Inequitable Supply. Only 58 to 60 percent of the population will be covered through HSC's after implementation of Cauvery Scheme, thus indicating a gap in the distribution system. This primarily because of the high number so Slum Population and low assessment coverage.
- (iii) Refurbishment of the Existing System in the Core Areas. Leak Detection Studies have indicated that there is upto 31 percent leakage in the PVC mains and upto 58 percent leakage in the AC mains. The house service connections are heavily corroded and as such the leakage in them is high. One of the main reasons for high leakage levels is the improper house service connection and improper ways of rectification and repairs in the mains. Hence, the system needs a comprehensive rehabilitation measure based on Detail Study.
- (iv) Need for Asset Management Action Plan. It is required to maintain a O & M Schedule, for Water Supply Assets, for regular maintenance and energy consumption optimization.

Ongoing / Recently completed Projects.

156. *Ongoing Works*. Presently, The Combined Cauvery Water Supply Scheme has been implemented at a cost of Rs. 8,318 lakhs. The Scheme is presently under Trial run and is awaiting commissioning. The Scheme has been implemented by TWAD Board, on Cost Sharing Basis, through Financial Tie-up with TNUDF. The ULB's share of the Project Cost is approximately Rs. 3500 lakhs, a part of which is planned to be recovered through Public Contribution. Post implementation the Scheme is expected to suffice the Water Supply Demand for Dindigul upto 2031. Works being undertaken for augmentation of supply and increasing the coverage of supply, like,
- (i) Source Augmentation – Approximately 18 MLD of Additional water is proposed to be supplied to Dindigul Town, through 85 kms of Clear Water Pumping Main from Source.
 - (ii) Increasing Storage Capacity – One GLSR and Three ESR's have been constructed under the Cauvery Scheme, and await commission.
 - (ii) Extension of Distribution network, for approximately 35 kms, has been taken up to increase coverage;

2. Sewerage and Sanitation

Existing Situation

157. *Under Ground Drainage System*. Dinsigul Town is not provided with an Underground Drainage System. Although, given the population and density of the town, there is a proposal for UGD system. Detailed Project Report for the UGD scheme covering 35 wards, is under preparation by the TWAD Board. Details of the Proposal is indicated in **Map: 5.2**.

Map: 5.2: TWAD Board's Proposal for UGD scheme for Dindigul Municipality

158. *Sanitation Facilities.* Existing Sanitation systems include Water Seal Latrines with Septic Tank arrangement. The night Soil and Sullage is disposed by means of Soak Pit arrangement. Field visits have indicated that in certain areas, the sullage is let into the Storm Water Drains. The ULB provides services for cleaning and emptying of Sullage Tanks based on request.

Field Visits and Discussions have indicated that, in several parts of the Town like, Northeastern, Central and Northwest areas, the storm water combined with sullage and industrial wastewater are let into the Drains and is discharged into the Natural Tanks located within the ULB limits. In case of overflowing, surplus Storm Water is discharged from these Tanks to larger Tanks located outside the municipal limits. Presently, the Ayyakulam Kanmoi with an extent of more than 4 acres, is being used a wastewater and Sewage farm.

159. The Railway Areas, located towards the South East of the Town, is equipped with its own Sewage Treatment Plant to treat the sewage collected from the Railway Quarters. The treated effluent is let into nearby channels for irrigation purpose. Similarly, sewage water collected from RM Colony and surrounding areas, in the north, is collected and pumped to the nearby Channels for irrigation purpose near northern side of Palani Road, located outside the ULB limits.

Sanitation facilities include Septic Tanks (approximately 30,880 units), Public Convenience Blocks (75 units accommodating approximately 618 seats), and Low Cost Sanitation Units (approximately 182 units). 9 Public convenience blocks are being maintained on 'Pay and Use' basis by private contractors. The ULB is also planning to construct 15 more units of LCS. It is estimated that approximately 80 percent of the Public Convenience Blocks, are being used by the Slum population.

Service Adequacy and Key Issues

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

Table 5.7: Sewerage and Sanitation Indicators

Indicator	Units	Service Status (2004-05)	Norms
Population Coverage by Sanitation Facilities	<i>Percent</i>	75	100
Slum Population per seat of Public Convenience	<i>Nos.</i>	210	-

Source: Analysis

- (i) Lack of UGD System. Although the Town has a population of approximately 2.14 lakhs, it is not provided with a protected sewage disposal system.
- (ii) Sewage Disposal into Drains. Lack of proper disposal facility results in Night Soil and Sullage being disposed off into Storm water Drains in many areas of the town. The discharge from these drains is let-off into natural Channels and subsequently in the Kanmoi's. Thus, untreated disposal of Sullage can result into potential health hazard.

- (iii) Inadequate and Ill-Maintained Public Sanitation. There is a high dependency by slum population on public conveniences, the seat per person is limited and most slum dwellers resort to open defecation; public awareness regarding safe sanitation is very poor.

3. Drainage, Ponds and Lake Development

Existing Situation

161. *Storm Water Drains*. Dindigul is provided with 213 kms network of Storm Water Drains, which is approximately 142 percent of Road Network of the City. The Storm water from drains is discharged into Natural Channels, subsequently flowing into Kanmoi's (Tanks). Surplus Storm water from these tanks is discharged into Kanmoi's, being used for irrigation purpose and located beyond municipal limits.
162. The ULB maintains the Storm Water Drains inside the municipal limits, while the Natural Drains are maintained by the PWD. **Table 5.8** provided further details regarding the types of Storms Water Drains in the City.

Table 5.8: Municipal Storm water drainage

Drain type	Length (km)	Percent
Open Drains (Pucca)	181.08	84.81
Open Drains (Kutchra)	-	-
Closed Drains (Pucca)	32.43	15.19
Total	213.51	100.00
Storm Water Drain Adequacy (% to road length)	-	142.00

Source: Municipality

163. *Drainage System*. The town is located at 10⁰ 20' north latitude and 78⁰ 00' east longitude. The town is located at the foot of Sirumalai Hills, at an elevation of 265 m above MSL. The topography of the District is mainly undulating.
164. *Rainfall*. On an average, Rainfall is irregular and intermittent, with an average of approximately 81.2 cm per annum. The town gets its rains mainly during northeast Monsoon periods in the months of October, November and December. The region has received excessive rainfall in 2005.
165. *Roadside Drains*. Municipality built Pucca roadside Drains runs to approximately 213.5 kms. The average width of these drains is approximately 0.60 m.
166. Due to absence of UGD system, in the Northeast area and the Central part of the town, the storm water combined with sullage and industrial wastewater are let into the Drains and is discharged into the Arnamanaikulam Tank located in the central part of the Town. The surplus sewage water from the Tank passes through the Channel to Paraipatti Kanmoi and Nagasamundaram Kanmoi, both used for Irrigation.
167. In the Northwestern and some of the Central parts of the Town, storm water mixed with sullage passes through the Channels and gets discharged into Gopalamundaram Tank.

The surplus water from this Tank passes to the nearby Kanmoi's (Lakes), like Ayyakulam Kanmoi and others, and are used for irrigation.

168. The ULB has provided one side as well as both sides drains along the roads in the more denser Area. Of the total roadside drains, approximately 181 kms of Open Drains are provided in the City.
169. *Primary Drains.* Natural Water Channels, serve as the Primary Drains and discharge surplus Storm Water from the Tanks located inside the Town, to larger Kanmoi's situated outside the ULB Limits, like Paraipatti Kanmoi, Nagasamundaram Kanmoi and Ayyankulam Tank. Areas towards the North and Extension Areas, collect and pump sewage water into the nearby Channels for irrigation purpose near northern side of Palani Road, located outside Municipal Limits. The width of the Primary Drains varies within a range of 3.5 m to 5.5 m.
170. *Disposal.* The Primary Drains discharge surplus storm water and sullage collected, into Paraipatti Kanmoi, Nagasamundaram Kanmoi and Ayyankulam Tank. Presently, the Ayyakulam Kanmoi with an extent of more than 4 acres, is being used a wastewater and sewage farm.
171. *Lake Development.* Discussions with the concerned officials have indicated that there are approximately 11 Water Bodies, of varying sizes, within the ULB area. Of these, two major Water Bodies, Arnamanaikulam Tank and Gopalamundaram Tank, served as major discharge for storm water drains. PWD is the responsible agency for maintenance of these Tanks, within the LPA Area. Most of the Tanks in the LPA area are being used for Irrigation Purpose.

Service Adequacy and Key Issues

172. Key Issues/observation based on Indicators is elaborated below.
- (i) Silting and Solid Waste Accumulation. Silting and uncontrolled solid waste dumping cause blockage and stagnate water channels/wastewater runoff. Consequently, drains choke and overflow into neighbouring areas. Tanks around the city, which acted as flood moderators, have also witnessed Silting. Sometimes the storm water and domestic sewage over loads the open drainage system and inundates the low-lying areas of the town
- (ii) Ill maintained Water Bodies. Area under water bodies account for approximately 0.43 sq. km, within the ULB, is not being put to productive use as Summer Storage Tanks. Presently, the tanks are in dilapidated condition, with encroachments along sides, and are only being used for recharge purpose. Misuse of water bodies is also noticed in terms of uncontrolled solid waste dumping.

Map: 5.3: Water Bodies in Dindigul

4. *Solid Waste Management*

Existing Situation

173. The collection, transportation and disposal of municipal solid waste is an obligatory function of the ULB. The municipal solid waste mainly comprises waste from households, markets, commercial establishments, hotels, hospitals and industries in the town. The Public Health department of the ULB is headed by a Health Officer and a Medical Officer, who are responsible for the Solid Waste Management in the City. For the efficient administration and for day-to-day operational purposes, the ULB is divided into fifteen divisions and there are 16 sanitary Inspectors, 17 supervisors and 451 sanitary workers working under the public health division. Apart from this, approximately 105 workers manage collection and transportation of waste in Wards managed by Private Contractor.
174. *Waste Generation.* The ULB generates approximately 68 MT of solid waste per day, at the rate of approximately 345 gms per capita, which is par compared to the Norms, of approximately 400 gms per capita, for Cities of similar size. Influx of floating population (proximity to Palani religious center) is cited as reason for high generation of solid waste, especially commercial waste.
175. *Domestic Waste.* In Dindigul, the major source of waste generation has been the households. The quantum of waste generated from households is collected by means of Door-to-Door collection system. The household waste mainly consists of organic waste such as vegetable waste, food, etc., which can be easily disposed.
176. *Commercial Waste.* Commercial establishments like Hotels, Restaurants, Shops, Trading units, small time Street Traders, Kalyan Mandapams, etc., generate solid waste which mainly comprises of paper, plastics, food left-overs and other in-organics. Dindigul has approximately 6 Daily Markets, 1 Weekly Market and 2 slaughter houses. Waste Collection in the Market Areas and the Bus Stand are managed by means of Contract Employees (40 contract workers).
177. *Industrial Waste.* As there are no Major Industries in the ULB Area, the waste from the existing units is not mixed with the municipal waste.
178. *Hospital and Clinical Waste.* The urban local body is maintaining a few health post and maternity homes. In addition, the town being a district Headquarter has some institutions of health. Hazardous waste are thus, collected and disposed separately, through Incineration (at the Government Hospital). Other hospital wastes are collected and disposed-off to the dump site once in three days, by tricycles provided by the ULB. The Sourashtra Association of IMA, Dindigul, collects hospital waste from private hospitals, for which vehicle is provided by the ULB. The Association is responsible for O & M of the vehicle.
179. *Waste from Other Sources.* The municipality also collects waste generated from street sweeping, drain desilting and construction. Of the available sanitary workers, approximately 200 are engaged in garbage cleaning, and remaining for storm water drain cleaning, sullage collection and disposal, road sweeping and health.

180. *Waste Collection.* Presently, Collection of waste is managed by Municipal Sanitary Workers and Private Contractor. Waste collection in some slums are being handled by the ULB. Discussions with officials, indicates that the ULB manages to collect approximately 72 MT of solid waste daily.
181. The ULB has engaged 363 sanitary workers (against sanctioned posts of 451 sanitary workers) for collection of the garbage from Dustbins and Dumper Bins, using Handcarts and Tricycles.
182. The ULB is served with approximately 80 Dumper Bins at various locations in the Town. Primary collection is managed through 49 Handcarts (Carrying Capacity - 100 kgs/Handcart) and 20 Tricycles (Carrying Capacity – 300 kgs/Tricycle). There are 20 Collection Points around the City with a carrying capacity of 2.5 MT each.
183. *Privatization Efforts in Collection of Waste.* Efforts have been initiated through engagement of Private Contractor (for 11 Wards – Ward Nos. 14, 15, 16, 17, 18, 19, 27, 28, 29, 30, 31) and for collection of waste from bus stand and some commercial areas. The Private contractor has engaged approximately 105 contract laborers for waste collection and transportation. The ULB has also engaged approximately 40 sanitary workers on contract basis for collection of waste in some commercial areas and bus stand area Presently, the ULB manages Door-to-Door household waste collection in 37 wards and rest is managed by the Private Contractor.
184. *Waste Transportation.* In Dindigul, as in most of the ULB's in the state, waste transportation is being carried out using open vehicles. Transfer of garbage to collection points is done by Handcarts, operated by sanitary workers, both in ULB maintained wards and Private contractor maintained wards. The waste is further transported to the Dumping Yard by means of Lorries, Mini-lorries, Tractors and Auto-Minidor (owned and operated, by ULB and Private Contractor).
185. Transportation of Waste is managed by 15 vehicles (10 vehicles operated by ULB and 5 vehicles operated by Private Contractor). Discussions with the officials have indicated that, a total of 72 MT of waste is collected and transported to the Dump site, based on varying number of trips assigned and undertaken by these vehicles. **Table 5.9** indicates details of Waste Transportatation vehicles.
186. Although, with the consideration of bulk density of 180 kg/cum, the total rated capacity of the available fleet in the ULB is approximately 30 MT, indicating a low collection performance of 33 percent. However, adopting the bulk density of 350 kg/cum³, it is estimated that the ULB can collect upto 68 MT of solid waste, which indicates a collection efficiency of approximately 64 percent.

³ The Solid Waste Management studies conducted in several towns of Tamil Nadu (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.

Table 5.9: Vehicle Fleet and Transportation Capacity

Type of Vehicles	Municipal Vehicles	Total Trips/Day	Vehicle Capacity	Vehicle Capacity	Bulk Density	Rated Capacity of Vehicles
	<i>Nos.</i>	<i>Nos.</i>	<i>MT</i>	<i>Cu.m</i>	<i>Tons/cu.m</i>	<i>MT</i>
Municipal Vehicles						
Dumper Placer	1	5	4.00	4.50	0.18	3.60
Lorry	1	6	3.00	7.00	0.18	3.24
Mini Lorry	3	7	2.00	5.50	0.18	7.56
Tractor	-	-	-	-	-	-
Auto Minidor	5	7	0.80	1.50	0.18	5.04
<i>Sub Total</i>	<i>10</i>					<i>19.44</i>
Private Contract Vehicles						
Dumper Placer	-	-	-	-	-	-
Lorry	-	-	-	-	-	-
Mini Lorry	2	7	2.00	5.50	0.18	5.04
Tractors	3	7	1.50	4.50	0.18	5.67
Auto Minidor	-	-	-	-	-	-
<i>Sub Total</i>	<i>5</i>					<i>10.71</i>
Total	15					30.15

Source: Dindigul Municipality / Analysis.

187. *Privatization Efforts in Transportation.* As mentioned above, Collection and Transportation of Municipal Waste in 11 wards of the ULB is maintained by Private Contractor, by means of 5 vehicles. Discussions with officials has indicated that the Private contractor has been engaged by the ULB on an annually renewable contract, on contract amount of approximately Rs. 1.42 lakh per month. Discussions have indicated that the municipality is able to make saving of upto 0.68 lakh per month on Salaries, through engagement of Private Contractor.
188. Discussions have also indicated that the ULB is actively considering privatization of waste management in rest of the Wards in Phased manner.
189. *Disposal.* At present, the ULB is not practicing any safe or scientific solid waste disposal methods. The waste collected from various localities, in all sanitary wards, in the city is directly disposed off by open dumping at Dump site, located outside the ULB limits. Site is located at about 5 km from the city and the total area of the site is 25 Acres. Based on information collected, it is indicated by the ULB that the Site is further usable for a period of atleast 10 to 12 years.

Institutional Set-Up

190. As described earlier that municipal solid waste management is an obligatory function of the ULB. In Dindigul, the Public Health department is headed by Health Officer, who is supported by Medical Officer and Sanitary Inspectors. The staff details of health department is presented in **Table: 5.10**.

Table 5.10: Staff Details of Health Department

Description of Post	Sanctioned Post	Filled Post	Vacant Post
Health Officer	1	1	-
Sanitary Officer	1	-	1
Sanitary Inspector	15	15	-
Assistant	1	1	-
Junior Assistant	2	2	-
OA	2	2	-
Sanitary Workers	451	363	88
Total	473	384	89

Source: Dindigul Municipality

191. The total sanctioned posts in the Solid Waste Management and Public Health is 473, out of which only 384 posts are filled.

Service Adequacy and Key Issues

192. *System Adequacy.* Although solid waste collection figures indicated by the ULB ranges from approximately 75 MT daily, actual garbage collection figures, based on actual vehicle capacity and garbage bulk density of 350 kg/cu.m, works out to approximately 68 MT daily. Collection performance based on vehicle rated capacity and bulk density of 180 kg/cu.m works out to be a poor 33 percent only. The performance indicators are illustrated in **Table: 5.11.**

Table 5.11: Municipal Solid Waste Indicators

Indicator	Units	Service Status - 2005	Norms
Per Capita Generation	Gms/Day	345	< 425
Garbage Collected (% collected to generated)	Percent	33	100
% Actual Carrying Capacity of Vehicles to Total Waste Generation (@ density of 0.35 tons/cu.m)	%	74	>= 100.0
Road Length per Conservancy Staff (Including Contract Laborers)	m	320	400 – 600
Conservancy staff per 1,000 population	Nos.	1.69	3

Source: Analysis

193. Based on the information collected and field visits, the key issues of solid waste management in Dindigul have been identified and presented in this section. Key indicators are used to assess service adequacy of the ULB.
- (i) Inadequate Collection Vehicles. Inadequate fleet size of the collection vehicles, mainly handcarts and tricycles, is hampering the collection efficiency. Besides, discussions have revealed that atleast 3 to 4 vehicles are under repair at any time, due to which the ULB has to arrange for vehicles on contract basis. Also additional transfer station and dumper bins needs to be located at various locations in the Town.
 - (ii) Collection Efficiency. Collection Performance based on vehicle rated capacity and bulk density of 180 kg/cu.m works out to 33 percent only, thus indicating that

- demand for waste transportation is being sufficed by more Vehicle Trips than actually indicated by ULB. This results in high fuel costs & O&M costs on the fleet.
- (iii) Future Inadequacy of Waste Dumping Facility. Based on the present method of disposal, Waste Dumping, it is estimated that the facility will reach its ultimate Capacity by 2016 to 2018, thus indicating a need to further land acquisition.
 - (iv) Lack of Scientific Waste Disposal. As the scientific disposal of waste is not followed, the waste is being disposed through open dumping. The waste is disposed improperly forming heaps of waste at the site, posing problem to environment and health of the local people. Though the data pertaining to the ground water quality around the site is not available, there is a probability of ground water contamination due to leaching.
 - (v) Occupation Health Hazards. The waste collection, loading and unloading operations have been done manually. The sanitary workers have not provided with any protective equipment posing health hazards.

5. Roads and Traffic Management

Exiting Situation

194. *Overview*. The ULB's role regarding roads comprises construction of major roads and maintenance of all roads in its jurisdiction, except roads belonging to PWD and Highway Department. The ULB is also responsible for implementing proposals from master plan with regards new major roads and road widening activities.
195. The existing road system comprises of 2 NH's, 1 SH and other major roads, totalling upto a road length of approximately 151 kms within the municipal limits. According to Dindigul Land Use for 2001, total area earmarked under Circulation and Transport Use in the Town is 1.12 sq.km, approximately 15 percent of the developed area.
196. Dindigul Municipality is maintaining 132 Kms length of surfaced and unsurfaced roads. With regards to the surface condition of municipal roads, about 93 percent of the total municipal road length have Surfaced Roads (comprising BT and CC surfaces). **Table 5.12** presents the road types along with their lengths.

Table 5.12: Distribution of Roads in Dindigul Municipality

Roads	Length	Distribution
	<i>Km</i>	<i>%</i>
Municipal Roads		
<i>Surfaced Roads</i>		
Black Topped	98.31	74.63
Cement Concrete	24.07	18.27
<i>Unsurfaced Roads</i>		
WBM	-	-
Cut Stone Slabs/Concrete Slabs	1.09	0.81
Earthen/Kutchra	8.28	6.29
Sub-Total	131.73	100.00
Other Departmental Roads		
Highways and Major District Roads	19.00	
Sub-Total	19.00	
Total	150.73	

Source: Dindigul Municipality

Service Adequacy and Key Issues

197. *System Adequacy.* The density of roads in the town is 9.40 km/sq. km. The per-capita road length maintained by the local body is 0.90 m, which is less than the standard of 1.75 m. The condition of major roads is good. However, minor roads and roads within individual residential colonies are in bad condition. Footpaths and parking facilities are lacking on the streets. The road indicators are illustrated in the **Table 5.13**.

Table 5.13: Municipal Roads Indicators

Indicator	Units	Service Status (2004-05)
Road Density	Km / Sq.km	9.40
Per Capita Road Length	M	0.90
Percent Municipal Surfaced Roads	Percent	93.80
Percent of Black Topped Roads to Total Road Length	Percent	77.83
Percent Annual Increase in Road Length over past 5 years	Percent	-

Source: Analysis.

198. Based on the information collected and field visits, the key issues for Roads and Traffic in Dindigul have been identified and presented in this section. Key indicators are used to assess service adequacy of Dindigul ULB.
- (i) Inadequate Coverage. There is only 0.9 m Per Capita road coverage as compared to a norm of 1.75 m Per Capita coverage, attributed to the relatively high population density. Inadequate coverage is noticed in the newly developed layouts, and the extension areas.
 - (ii) Encroachment. The margins of roads are encroached upon in several sections of major roads of the city by small time street vendors, illegal parking and other informal activities. With no margins left on the roads, the effective carriageway of the road is reduced drastically leading to congestion and accidents.
 - (iii) Absence of Street Furniture/Signage's. The roads lack signals, signages, and footpaths. Improper road sweeping results in most roads being covered with silty soil, which reduces the driving safety.

Map: 5.4: Road Network

6. *Traffic and Transportation*

Exiting Situation

199. *Rail Network.* Dindigul is an important Rail Junction, on south bound route from Chennai. The town has trade connections with Bangalore, which also results in higher mobility of people in express trains.
200. The railway line circumscribes the town along the Northern and Eastern periphery, thus posing as constraint to growth of the Town. Major Road-Rail crossing in the Town are Tricy Road, Karur Road and Palani.
201. *Road Network/Traffic Pattern.* The travel pattern in the City is guided by the road network and land use pattern in the town. The road pattern also makes a lot of through traffic to pass through the Town, due to the converging pattern of Major Regional Roads.
202. The road network pattern of Dindigul is distinctly revealed in Major Arterial Roads and Town Roads. Major Roads (NH's and others), form a clearly visible cross-hair pattern. Other MDR's and SH also converge at the centre of the Town. The Town Roads are forming a distinct grid pattern (formed by implementation of detailed development plans) in majority of the areas towards the north and west. Growth of the town is bound by the railway line along the Eastern and Northern periphery. Due to some incomplete linkages and inadequate widths especially in the central area, and railway lines, city roads suffer from bottlenecks and congestion. The Town is provided with One Rail Over Bridge, along Siluvathur Road.
203. Recent developments have been noticed along the north, outside the Municipal limits beyond the Railway line, primarily triggered by the development of NH By-pass Road. The By-pass road skirts the town from the northwest roadside connecting NH7 and SH8, and also Bathalagundu Road. Incomplete linkage in the southern side (connecting Madurai Road and Trichy road), has hindered the its effective utilization by regional traffic. The stretch along the south is proposed for approximately 11.20 kms.
204. Some of the major limitations noticed in the existing system of roads are incomplete linkages, inadequate road widths, inadequacy of pedestrian sidewalks, absence of cycle tracks, and absence of parking spaces and bus lay-by. Congestion is also caused by presence of commercial traffic, mainly trucks loading-unloading goods from markets, since the town is a regional centre for trade and commerce.
205. *Major Traffic Bottlenecks.* Major traffic bottlenecks include railway level crossings towards the East, constraint to growth of Town due to presence of Railway Line towards north and East, and ill-designed intersections. There are three railway level crossings on the major town roads that cause inordinate delays for the road users due to the frequent gate closure for long duration.
206. Major road intersections viz. Trichy Road - Metturajapati Road Junction, Madurai Road- Gandhiji Road Junction, Salai Road - Tiruvalluvar Salai Road Junction, Palani Road - West Car Street Junction, Karur Road - Sub- Collector Road Junction, Main Road- Salai

Road Junction, are critical and heavy pedestrian and traffic load is noticed. Also, some of these junctions are ill-designed and are prone to serious traffic congestion.

207. *Parking Facilities:* Inadequate parking facilities in the municipal area, abrupt and indiscriminate roadside parking was noticed. This has led to reduction in the effective carriageway of the roads leading to congested travel and accidents. Authorised parking stands in the Town are located at
- (i) Taxi Stand: Municipal Bus stand, Government Hospital, Railway Station, Mission Hospital, Municipal Office Road, Railway Station near T.N.G.T.C. Depot, Siluvathur Road, Railway Gate.
 - (ii) Commercial Vehicle Stand: Chatram Road, Bus stand, Palani Road
 - (iii) Lorry Stand: Near Sakthi Talkies, Palani Road
 - (iv) Jutkha Stand: New R.C.Church Main Road, T.N.G.T.C.Depot – Natham Road
208. *Bus Stand.* The Town is served with one Central Bus Stand, with area coverage of approximately 5.30 acres. The Bus Stand is centrally located in the Town. Dindigul is well connected to other major cities and rural area, through bus service operated by Tamil Nadu Government Transport Corporation (TNGTC) and through private buses. About 150 town service buses are operated from here on 128 routes.
209. Apart from these town 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 and Cycle Rickshaw is also significant in the town.
210. *Truck Terminal.* Presently, a truck terminal is functioning along the Palani Road with a capacity of approximately 40 trucks. Discussions and Site visit, indicated that there is no provision of facilities and the space is inadequate. It is proposed to develop a new complex, at junction of NH By-pass and Thodikombu Road, for which an area of approximately 3 acres is identified.

Service Adequacy and Key Issues

- (i) Traffic Congestion. Major roads leading to other important urban centers of the State follow radial pattern and converge towards the central area of the city resulting in over accumulation of traffic in the central area. Because of the inadequate widths especially in the central area and railway crossings, major radial roads suffer from bottlenecks and congestion.
- (ii) Absence of complete Peripheral Ring Road. In absence of a complete peripheral Ring Road, regional traffic is directed into the City thus causing congestion and delay due to Heavy Moving Vehicles.
- (iii) Traffic Bottlenecks. Absence of Rail Over Bridges causes traffic bottlenecks and congestion in the City. Absence of Sub-ways at important junctions is also noticed as a cause of congestion.
- (iv) Inadequate Parking Areas. Heavy congestion is created by high vehicular density in the City (Local Traffic and Floating Traffic), since it is not adequately served

with infrastructure facilities like Parking area. Traffic management measure and effective parking arrangements need to be implemented congestion problems effectively.

- (v) Absence of Proper Truck Terminus. The Present facility is inadequately served with space and facilities. Location for the new facility has been identified, by the project is yet to be sanctioned.

6. Street Lighting

Existing Situation – Street Lighting

211. The ULB is divided into Six Zones, for provision and maintenance of Street lighting. The Street light Section of the ULB is under the purview of the Assistant Engineer, Street lights, who manages operations in Six Zones with Wiremen and Helpers. The provision and maintenance of streetlights is an obligatory function of the ULB. The ULB installs new streetlight poles and TNEB draws electric cables to light them.
212. The ULB is provided with 5,383 street lights at approximately 28 m interval, to light the Town. Discussion indicated a high efficiency of operation with approximately 97.5 percent of the Street lights in working condition. SV lamps are provided along major corridors and 2 Nos. High Mast Lights are provided at major junctions. The municipal Streetlights details are presented in the **Table 5.14**.

Table 5.14: Composition of Streetlights

Type of Fixture	Numbers	Distribution
	<i>Nos.</i>	<i>%</i>
High Mast Lamps	6	0.04
Mercury Vapor Lamps	173	3.21
Sodium Vapor Lamps	770	14.12
Tubelights	4,551	82.63
Ordinary Bulbs	-	-
Total	5,500	100.00

Source: Dindigul Municipality

213. Tubelight constitutes more than 83 percent of the Total Light fixtures in the City followed by Sodium Vapor Lamps with about 14 percent. Only 2 high mast lamp is installed at major Road Junctions. Zone-wise distribution of tublight fixtures is indicated in **Table 5.15**

Table 5.15: Zone-wise Composition of Streetlights

Zone	40W Tube Lights	150W Sodium Lamp	250W Sodium Lamp	250W Mercury Lamp	High Mast Lamp	Total
Begambur	704	19	120	15	1	859
Nagal Nagar	795	18	93	10	-	916
Part VI	643	15	125	26	1	810
Nehruji Nagar	865	16	147	44	-	1072
Pandian Nagar	785	12	89	32	-	918
Malai Kottai	656	17	89	46	-	808
Total	4448	97	663	173	2	5383

Source: Dindigul Municipality

214. *ULB Initiatives for Power Saving.* The ULB has initiated measure for power saving through use of Retrofit fixtures and Power Saving Switches.
215. The ULB has installed Power Switches at 85 High Power Lamp Post locations, and have detected an estimated considerable saving on energy charges. Using of Power Saver Switches at more location across the ULB is under active consideration, and discussions have indicated that the ULB plans to install approximately 125 more Power Saver Switches.

Service Adequacy and Key Issues

The performance indicators are illustrated in **Table:5.16.**

Table 5.16: Municipal Street lights indicators

Indicator	Units	Current Situation
Spacing between Lamp Posts	Mt	28
Tube Lights (% to Total)	Percent	82.63
High Power Lamps (% to Total)	Percent	17.37

Source: Analysis

216. Key issues are related to power fluctuation and short circuit problems leading to low carrying capacity of the cables and improper street lighting in the newly formed extension areas and major junctions due to inadequacy of light poles.

B. Social Infrastructure

1. Primary Health

Existing Situation

217. The public health department of the ULB, headed by the municipal health officer, is responsible for all health activities. At present the major activities of this department are Maternity Homes and Dispensaries, Public Health and Solid Waste Management. The town has both government and private run hospitals and clinics. There are approximately 100 hospitals (major and minor), of which are 6 major hospitals, 48 maternity and family

planning centers, 15 laboratories and others clinics and dispensaries. The major hospitals are Government Hospital having a bed-strength of approximately 350 beds, and Saint John Mission's Hospital having a bed-strength of approximately 250 beds. The Town depends of Madurai City, at a distance of approximately 60 kms, for advanced health care facilities. Madurai is the base to 26 major hospitals.

218. The ULB maintains 4 dispensaries, 5 maternity homes, and 8 Family planning centres. Apart from these, there are Allopathy, 3 Siddha Dispenseries and 1 Ayurvedic Dispensary maintained by the ULB. There is one school health team that serve school going childrens and 19 Noon Meal Centres maintained by the ULB. The ULB's health department also manages programs for Malaria and Mosquito control.
219. *ULB assisted Programs and Schemes.* The ULB is implementing several health improvement schemes, viz., Malaria Eradication Program, Mother and Child Care Program, Family Welfare Program, Pulse Polio Program, and School Health Program. Some of the major programs are elaborated below.
- (i) Malaria Eradication Program. There is a separate wing in health department responsible for Control of Malaria and Mosquito control. There is 1 Mosquito Inspector, 1 Field worker and 22 Malaria Mazdoor for anti-mosquito activities. These workers are responsible for spraying insecticides and DDT, throwing of sawdust balls in the water stagnant areas, etc.
 - (ii) Mother and Child Care Program. The ULB has set-up several Health Posts and Maternity homes, giving importance to antenatal and check-up cases, instrumental delivery and high risk cases. Arrangements have also been made to recommend risk-identified cases on priority basis to Government Hospital for advanced treatment.
 - (iii) Schemes for Slums. The local body provides primary health to urban slum population through the funds provided under UBSP and DMSSS for health care services.
220. *Issues.* Some of the major issues relating to health care noticed in the town are Inadequate Bed Strength, Ill-Equipped and Inadequate Operation Theatres in the Government Hospital, and Ill-equipped ULB Dispenseries and Health Posts.

2. Education

- 221 Dindigul Town houses government education institutions along with aided and private institutions. The literacy rate in the town is 78.70 percent and is high as compared to the district figures of 69.83 percent.
- 222 Education deapartment of the ULB is under the purview of the Block Education Officer. For the ULB operated Schoold, provision of Staff and Services, and maintenance of School buildings is under the puvieu of the ULB.
- 223 The ULB maintains 20 schools consisting of one high school, one higher secondary school and 18 primary schools. Apart from these, there are 34 high schools and 12 higher secondary schools and 2 Matriculation schools, which are run by private institutions, and there are 2 higher secondary school run by the state government offering school education to the students of Dindigul and the surroundings. St.Marry's Higher Secondary School, a

well disciplined Institution is one of the oldest institutions in this city.

- 224 For provision of higher education, there are 2 Arts and Science colleges near Kurumpatti and Seelapadi for men and women separately and one private Engineering college, Polytechnic and one Institute for technical training. This district has the credit of having two Universities, viz, Mother Theresa University of Women at Kodaikanal and Gandhigram Rural Deemed University at Gandhigram.
- 225 *Issues.* Most of the Municipal schools are not maintained properly due to lack of funds. Besides, some of the schools are operated from rented buildings.

Map: 5.5: Location of Social Infrastructure

VI. URBAN BASIC SERVICES FOR POOR

A. Overview

- 226 Dindigul Town is identified as one of emerging industrial town in Tamil Nadu state. Urbanization and urban agglomeration always attracts urban poor. The town presents a range of activities in the industrial and commercial sectors. Growth in such activities, possibilities of absorption in industrial, allied and service sectors, scope of employment in trade and business activities, hawking, retailing, carting etc have attracted rural poor to the town.
- 227 The Tamil Nadu Slum Clearance Board (TNSCB) is the responsible authority for notifying and providing clearances to the Slums. The ULB is responsible agency for provision of Services to the urban poor residing in slums and within municipal limits.
- 228 As per Census 2001 and Data available from the ULB, Dindigul Town accommodates 15 slums, which are notified. ULB figures for Slum Population indicates that approximately 16,841 households reside in the Slums accommodating 85,235 persons. The share of Slum population in the Town's population increased from 16 percent to 43 percent from 1991 to 2001. Discussion with authorities have indicated that there are approximately 65 unauthorised slums in Dindigul.
- 229 Discussion with authorities has indicated that approximately 25 acres area is under slums. Slum-wise population details are tabulated in **Table 6.1**. The location of slums is furnished in **Map: 6.1**

Table 6.1 Ward Wise Settlements of Slums

S. No	Slum Names	Households <i>Nos.</i>	Slum Population <i>Nos.</i>
1	Nettu Street	1,154	5,919
2	Kamaraja Puram	860	4,248
3	Ayya Kulam	1,183	6,185
4	PV Dass Colony	693	3,637
5	Saveriyar Palayam	1,688	8,136
6	Chellandiyamman Koil St	1,388	6,835
7	Govindapuram	1,330	6,950
8	Mettupatty Water Tank Road	1,120	5,522
9	Kumaran Thiru Nagar	1,001	5,339
10	St.Xavier Street	1,027	5,477
11	Kakkan Nagar	1,195	5,651
12	Sukkan Medu	1,038	5,432
13	Vinobaji Nagar	1,041	4,978
14	Bharathi Puram	1,033	5,617
15	Mattanam Patty Road	1,090	5,309
Total		16,841	85,235

Source: Dindigul Municipality

Map: 6.1: Location of Slums

230 Dindigul town, being an important trade and commerce in the district and famous for its proximity to tourist towns, attracts migrants resulting in proliferation of illegal slums and squatter settlements. Most of the slums adjacent to transport corridors, in proximity of waterbodies, encroaching both private and municipal land.

1. Service Provision in Slums

231 *Housing.* Housing condition in Dindigul slums were found to be moderate or poor. A large proportion of households were found staying in kutcha houses and remaining households stay in pucca houses, where, percentage of households staying in R.C.C. is very less. Majority of households reside in houses with built area less than 100 Sq. ft. It was noticed, that residential status of most of the households was temporary, in the slums areas that have developed within last 10 years due to growth of the town.

232 *Infrastructure Provision.* Discussions with Officials in the ULB have indicated that most of Slums are provided with basic services and amenities. Approximately 50 percent of the Notified Slums are covered by Water Supply Connections/Hand Posts/Stand Posts and approximately 75 percent are covered by Metal and Cut Stone Slabs. Discussions have indicated that the major problem area in Slums is inadequate provision of Drains, which results in unhygienic condition and water logging. Other major area of concern indicated is the periodic maintenance of Roads in the Slums, which incurs higher cost since they are unsurfaced. All Notified slums have been provided with Electricity Connection and Street Lights.

B. Poverty Alleviation and Community Development

1. Policies, Targets and Programs

233 Given the complexity of the social, economic and physical environment in which a growing number of urban poor seek their livelihoods, it is clear that the formulation of anti-poverty measures and the design of slum improvement programs is a very important issue.

234 A review of Slum Improvement Programs indicates that, by improving basic infrastructure and access to municipal services, there is a significant impact on the quality of life of slum residents. To alleviate the problems of slum dwellers and to reduce urban poverty, a number of programs are initiated and are being implemented by the municipality with assistance from state and central government.

235 The major slum improvement programs being implemented in Sivakasi are the Swarna Jayanti Shehri Rojgar Yojna (SJSRY) and National Slum Development Programme apart from certain other programmes like the Integrated Sanitation Programme.

236 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 a 75 Percent and 25 Percent basis between centre and state. 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.

2. *Government Assisted Schemes*

- 237 *Urban Self-Employment Program (USEP)*: - This is one of the main components of SJSRY and the municipality has been conducting training programs for the Below Poverty Line population under this scheme. This program is decided by the selection of beneficiaries who are finalised by the task force based on the recommendations of the community structures and the UPE cell.
- 238 In these programs, the council is not involved because of the non-involvement of the Urban Local Body funds. Self-employment Scheme for Urban Poor was initiated and financial assistance is being provided to the beneficiaries.
- 239 *Urban Skill Training*: - Skill development through appropriate training is another element of this program. It is intended to provide training to urban poor in a variety of service and manufacturing trades as well in local skills crafts so that they can enter salaried employment ventures or secure employment with enhanced remuneration.
- 240 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. The total training period for skill up gradation may vary from two to six months, subject to a minimum of 300 hours.
- 241 *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 in a group as opposed to individual effort.
242. 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 strategy shall strive to empower to empower the urban poor women by making them independent as also providing a facilitation atmosphere for self-employment.
243. To be eligible for subsidy under this scheme, the Development of Women and Children in Urban Areas group should consist of at least 10 urban poor women. The group shall select an organiser from amongst the members. The group shall select an organiser from amongst the members. The group will also select its own activity.
244. The DWCUA 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. 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. This program is active form the past two years, with one group benefited during 2000-01 for Rs 0.4 lakh and two groups formed during 2001-02.
245. *Thrift and Credit Societies (TCS)*: - In thrift and credit societies two groups were formed each year during 2000-01 and 2001-02. However funds were allotted in time and the scheme remained on papers.

246. *National Slum Development Program*: - Under this program, the funding of the works is shared between the (Centre+State-50 Percent, Municipality-50 Percent). The works are finalised by the decision of the council. They are inspected by the RDMA through the Regional Engineer.
247. The slums given importance are of 2 types, both permanent and non-permanent. In any case, the Slum Clearance Board should approve them as slums. For permanent Slums, they are to be identified by the quality of roads and drainage. Special Priority is given to the following works:
- (i) Improvement of drinking water Supply system
 - (ii) Laying/Relaying of roads
 - (iii) Provision of Street Lights
 - (iv) Drainage facilities
 - (v) Improvement and new Public Conveniences with water Supply
 - (vi) Welfare (education, etc.); and
 - (vii) Shelter Up gradation (individual water connections)
248. *Integrated Sanitation Program*: - Integrated Sanitation Program is a World Bank funded sanitation program through the PMU/ Tamil Nadu Urban Development Programme-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.
249. 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 organisers (COs) of the SJSRY scheme. The program is generally funded by way of grants. Generally, of the identified amount 80 percent is provided by Tamil Nadu Urban Development Program - II as grant.
250. Generally, of the identified amount 80 percent is provided by Tamil Nadu Urban Development Program -II as grant. However, in case of special and selection grade municipalities, while 50 percent of the amount is provided as grant by Tamil Nadu Urban Development Programme-II.
251. The remaining 50 percent is generated by the ULB through 32 percent fund allocation from Sanitation component of VAMBAY scheme and the remaining 18 percent from its own funds. In case of Grade I, II municipalities, the entire 100% of the identified amount for the construction of these complexes is given as grant.
252. The whole program is planned towards community empowerment and 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:
253. Identification of the recipient Community of Below Poverty Line Population (mostly in slums). Tamil Nadu Urban Development Program takes up this process after an orientation program to the Urban Local Body. The recipient communities are identified in association

with the municipality and the community forwarded for approval by PMU/ Tamil Nadu Urban Development Program -II takes up IEC activities for the communities and the proposal.

- 254 Provision of an Integrated Complex with Toilet, Bathing, Washing and Meeting Room facilities with special provision of sanitation facilities for children. Sixteen seats (10 major +6 minor) are provided for the community. Separate facilities for bathing (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 lakh.
- 255 Awareness programs consisting of information, education and communication activities are also conducted within the same complex to create a strong awareness on the related issues of health, sanitation and environment. These are conducted as discussions with the leaders of community organisations, specialists from the associated fields of health, education in the form of camps etc. These activities are for information dissemination and education. The communication aspect consists of both formal as well as informal type, where formal events are organised by the communities themselves to propagate their experiences.
- 256 For the scheme since 2001-02, there was a contribution from Valmiki Ambedkar Awas Yojana funds of 32 Percent, 18 Percent own funds of Urban Local Body and 50 Percent grant from Tamil Nadu Urban Development Programme.
- 257 The municipality has so far constructed ten Integrated Sanitation Programme complexes under the programme since 2001-02 of which three complexes are constructed in the slum localities and the remaining seven are constructed both close to such slum locations and near public places of importance. The location of these complexes is mainly driven by the availability of land nearby.
- 258 *Valmiki Ambedkar Awas Yojana* - This is a housing program, where the central government funds 50 Percent of the total subsidy. The rest is expected from the Urban Local Body 20 Percent of the total allotment is designated for Sanitation component and so far, the allotments have been in the field of sanitation only mainly due to the Integrated Sanitation Program scheme. The remaining 80pPercent for shelter up-gradation has never been allotted or utilised.

C. Key Issues.

- 259 Key issues indicated below are based on discussions with officials and Site visits.
- (i) Uncontrolled growth of slum population in the town against reduced overall population growth is indicative of the fact that the economic livelihood of the slum dwellers has only worsened over the years and more Below Poverty Line population are taking to slum localities in the town.
 - (ii) The sanitary conditions in the slum localities are very poor with a meagre one seat of public convenience for every 112 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.

- (iii) The Slum development programs in the town till now have not followed a need-based allocation. Due to the present programme specific allocations, the allotments are either delayed are not utilised completely.

VII. INFRASTRUCTURE DEVELOPMENT AND SERVICE PROVISION

A. Rationale, Need and Demand

260. Infrastructure Assessment of the ULB indicates inadequate Service levels, for present scenario which will further enhance given the future growth, (i) Per Capita supply works out to be a satisfactory 100 lpcd to 110 lpcd, for summer season based on Population figures for 2004, which is not ensured on continual basis. Due to this, supply position within the ULB is unpredictable and ranges from Once in Three days to Once in Five days, depending on the Season; Water Connection Coverage as a proportion of Property Tax Assessments is a low 50 percent; (ii) Town is not served by UGD system, although it accommodates a population of above 2 lakhs, which need to be addressed on Priority basis; Uncontrolled flow of sewage into Drains is also a cause of severe health concern; (iii) ULB lacks scientific municipal solid waste treatment and disposal system catering to the waste collected; Waste Collection efficiency of the City based on rated capacity of the vehicle is a low 33 percent; (iv) Unsurfaced roads within the ULB is approximately 6 to 8 percent; missing links, network deficiency and lack of traffic management systems causes congestion within the ULB area and reduces the Carrying Capacity of the roads. The low levels of Service therefore provide a strong basis and need for the Project.
- (i) Approach and Design Criteria. The ULB should increase the level of coverage of all facilities, to meet the service norms based on State Norms, CPHEEO Norms, UDPMI Norms or other applicable criteria. Based on this, considering the current deficits and the future requirements for the ULB, strategies and action plan are suggested.
- (ii) Component Selection Criteria. The total investment in the ULB depends on several parameters like, the level of current basic needs, the city's affordability, and the assessed implementation capacity of the city or its agencies. Overall, project component selection is majorly influenced by affordability and implementation capacity. In the interest of integrated city 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.
- (iii) Least Cost Solutions and Component Selection. 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. Based on the considerations and screening referred to in the preceding section, priority components were selected and scrutinized and their financial, social and environmental impacts assessed to verify acceptability.

1. Water Supply

- 261 Considering the current deficits and the future requirements for water supply, the following strategies and action plan are suggested. For the provision of water supply the ULB should facilitate creation of capital assets so as to meet the future requirements.
- 262 *Design Criteria.* The ULB should cater to the supply levels in terms of coverage, to achieve an average gross supply of 90 lpcd and to cater to 100 percent of the population. Assuming that distribution network is extended to more than 120 percent of the Roads within ULB area, given high population density within the ULB, all the citizens will enjoy the required supply.
- 263 *Water Demand.* The total demand at the source in 2026 for a supply of 90 lpcd is about 29 MLD indicating a deficit of 3 MLD for the year. Considering the availability at source the per capita levels have been maximised to 90 lpcd against the requirements, and the demand for the future is assessed. The details of service levels for future is presented in **Table 7.1.**

Table 7.1: Design Criteria and Target Service Level

Description	Unit	Based on CPHEEO Norms
		2026
Population	In lakhs	2.58
Per capita	lpcd	90
Losses in distribution system	Percent	15
Losses in transmission and treatment	Percent	8
Total demand at source	MLD	28.91

Source: Norms.

- 264 The total water demand and net surplus or deficit for the ULB estimated for Base year (2005) and Ultimate Stage (2026) on standard water consumption rate of 90 lpcd. The total demand of water supply is tabulated in **Table: 7.2.**

Table 7.2: Water Demand – Dindigul Town

Description	Estimated Population	Water Demand (MLD)	Availability*	Surplus/ Deficit
	<i>In lakhs</i>	<i>@ 90 lpcd</i>	<i>MLD</i>	<i>MLD</i>
Base Stage (2005)	2.15	24.50	26.00	1.53
Intermediate Stage (2011)	2.28	25.51	26.00	0.49
Ultimate Stage (2026)	2.58	28.91	26.00	(2.91)

* - Present Availability Consideration – 8.00 MLD from Athoor Dam and 18 MLD from Cauvery Scheme.

Figures in “()”, indicates deficit.

Source: Analysis.

- 265 *Sector Approach.* Considering the above requirements, capital investments in water supply have to be planned to address issues focussing upon; (i) Augmentation of Source to meet the Per Capita Demand of Water.(ii) Increase in the storage and distribution of existing

facilities to meet growing demand, if required; (ii) Rehabilitation of existing facilities to avoid the higher costs of deferred maintenance.

- 266 *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).
- 267 *Asset Management Plan*:- To address the condition assessment and the performance of the water supply assets, it is recommended that an asset management plan be prepared for the assets of water supply in Dindigul Town.
- 268 *Water Management Plan*. Adoption of comprehensive strategy for Water Management, through leak detection, checking of Unaccounted-for-water and Strategy for Use of Recycled water for Non-potable use, *based on a Pilot Study for the ULB*.
- 269 *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.
- 270 *Performance Monitoring*:- It is important to monitor certain key indicators to assess the performance of the system and also to ensure sustainability of the operations.
- 271 *Institutional Strengthening and Capacity Building*:- Recruitment of trained engineering personnel for management of waterworks is an important issue confronting the ULB and as well of more importance is to keep them technically updated. It is necessary that periodic training be imparted to the operations staff of the ULB. Such training facilities are available along with training manuals at the TWAD Board and CMWSSB office. The availability of Madurai Theyagaraja University within the vicinity should hence reduce the burden on the municipality which can be consulted for training sessions

2. Sewerage and Sanitation

- 272 Considering the current deficiencies and the future requirements for the Sector, the following strategies and action plan is suggested. For the provision of UGD, the ULB has prepared a project for creation of capital assets, with assistance from TWAD, so as to meet the future requirements.
- 273 *Design Criteria*. The ULB should improve services through provision of safe and protected sewage treatment and disposal system, and increase the Service levels in terms of coverage, to achieve a gross population coverage of 100 percent through protected Sewerage and Sanitation System. Assuming that the Collection system is extended to more than 90 percent of the Road Length, it estimated that approximately 90 percent of the population will be covered under safe sewer system.
- 274 *Sewage Generation Demand*. The total Sewage Generation in 2011 and 2021 for a water supply of 90 lpcd is approximately 20.50 MLD and 22.30 MLD. Since, the Water Supply availability at source is ample, the Sewage generation has been considered at 90 lpcd against the requirements and the demand for future is assessed. The total Sewage Generation for year 2026, is estimated as 24.22 MLD. Environmental Screening and Social Assessment of the Project Components, in case of Sewage treatment, can be carried

out as separate Sub-Project and a Pilot Study for the ULB. The details of Service Levels for future is presented in **Table 7.3**.

- 275 *Coverage of Low Income Areas.* Currently, a majority of the low income areas are devoid of safe sanitation facilities. Though the Slum Improvement Programmes 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 Projects be taken up under the ISP program for the poor and the slum dwellers. And the O&M of the ISP units is to be given to the local communities to ensure their sustainability. Since new programmes are all envisaged towards community participation in O&M, such measures will strengthen the institutional setup.

Table 7.3: Design Criteria and Target Service Level

Description	Unit	Based on CPHEEO Norms
		2026
Population	In lakhs	2.58
Per capita Generation	Lpcd	90
Collection System Demand	Percent of Road Length	90
Treatment Capacity Demand	Percent of Generation	100
Total Sewage Generation	MLD	25

Source: Norms

- 276 *Sector Approach.* Considering the above requirements, capital investments in Sewerage and Sanitation have to be planned to address issues focussing upon; (i) Creation of Assets for Underground Drainage facility for the Town; (ii) Improve coverage of low income areas through provision of safe sanitation facilities; (iii) Rehabilitation of existing Sanitation facilities to avoid the higher costs of deferred maintenance.
- 277 *Institutional Strengthening and Capacity Building.* 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. It is also proposed to recruit trained engineering personnel for management of Sewer works, after the system is operational. It is necessary that periodic training be imparted to the operations staff of the ULB. Such training facilities are available along with training manuals at the TWAD Board and CMWSSB office.
3. *Drainage, Ponds and Lake Development*
- 278 Action Plans and Strategies for the Sector, address the current deficiencies, in terms of coverage, and the future requirement. For provision of Drainage, the ULB should facilitate creation of capital assets so as to meet the future requirements.
- 279 *Design Criteria.* The ULB should increase the Service levels in terms of coverage, to achieve coverage of 150 percent of Road Length, through Built Drains. The ULB is recommended to adopt strategy for rejuvenation of Lakes and Ponds, to be used as sources for re-charging and as Summer Storage, and through networking of Water Bodies, to increase Water Sustainability.

- 280 *Demand.* The Drainage demand for 2011, based on 150 percent Road Length is approximately 307.50 kms. The demand of storm water drainage for the year 2011 is given in **Table: 7.4.**

Table 7.4: System Demand for Storm Water Drainage

Description		Unit	Gaps Up To 2011
Storm Water Drainage Works			
New Formation - Pucca Open Drains		Kms	3.43
New Formation - Pucca Closed Drains		Kms	123.01
Primary Drains - De-silting and Strengthening		Kms	1.75
Lakes conservation /Tanks regeneration and Nalla strengthening			
Water Bodies Conservation	Nos.		5
Chinnakulam	Strengthening & Beautification		
Goplasamundaram Tank.	Desilting		
Parai Kulam	Strengthening & Beautification		
Pkulam	Strengthening & Beautification		
Ayyakulam Kanmoi	Desilting		

Source: Analysis.

- 281 *Sector Approach.* Considering the requirements, capital investments in Drainage have to be planned to address issues focussing upon; (i) Improvement Works and Construction of Tertiary Drains.(ii) Drainage Rehabilitation works for low lying areas, through improvement of networking of Secondary and Tertiary Drains to Primary Drains; (iii) Improvement and Rehabilitation of Primary Drains (1.75 kms), through widening, deepening, construction of Side-Walls and Cross-Drainage Works; (iv) Rejuvenation and Rehabilitation works for Water Bodies, through de-silting, bunding works and Intersection and Diversion of Sewage wherever required.
- 282 *Operation & Maintenance Schedule.* Adoption of an O&M Schedule for works varying from Drain Cleaning to Desilting, including options of using the private sector for O&M (e.g. management contract).

4. Solid Waste Management

- 283 *Design Criteria.* The ULB should increase the Service levels to meet the Norms recommended by Solid Waste Handling Rules, 2000 and the State Finance Commission Norms. The ULB should achieve 100 percent coverage, through Door-to-Door Collection and Segregation of Waste at Source.
- 284 *Solid Waste Demand.* The total Solid Waste Generation in 2011 for a Per Capita Generation of approximately 432 grams/day is estimated at 99 MT, indicating a need for Scientific Disposal of Waste. Since, the Population Density of the ULB is high, the Waste generation has been considered at 446 grams/day, with a growth of 2 percent per year against the generation, and the demand for future is assessed. The total Solid Waste Generation for 2026, is estimated at 115 MT. The Present Disposal system is Waste Dumping, which is creating Potential health and environment hazard considering the quantity of waste generation, hence further option for Scientific Waste Disposal and Composting can be explored on priority basis. The details of Service Levels for future are

presented in **Table 7.5**.

Table 7.5: Design Criteria and Target Service Level

Description	Unit	Based on CPHEEO Norms
		2026
Population	In lakhs	2.58
Per capita Waste Generation	Grams/day	446
Collection Type	-	Door-to-Door Collection and Segregation of Waste at Source
Collection Demand	Percent of Generation	100
Vehicle Capacity Adequacy	Percent of Rated Capacity	100
Treatment Type	-	Composting of Waste & Sanitary Landfill
Treatment Demand	Percent of Generation	100
Total Solid Waste Generation	MT	115

Source: Norms

- 285 *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 though on an ad-hoc basis. The system of primary collection is partly privatized and the private contractor covers about 30 percent of the households of the town.
- 286 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. Similar to the domestic households, major hotels and restaurants also store waste in open containers. However, it is noticed that the sanitary workers collecting solid waste from households, do segregation of waste themselves, except for waste collected from households.
- 287 *Approach for Primary Waste Collection and Street Sweeping.* The following measures have been recommended for improving the primary collection practices of the ULB;
- (i) Implementation of ‘Door-to-door collection’ through 100 percent privatization - In order to achieve the above objective, a ‘Bin system of Solid Waste Storage’ at source is being recommended. As per this system, each of the households shall be directed to keep separate bins/ containers for biodegradable and non-biodegradable waste generated within their premises. The segregated waste so stored in these bins will have to be transferred to the dumper placer provided for each area. Details of Collection system and Specifications of segregated waste are summarized in **Table 7.6**.

Table 7.6: Details of Specification of Segregated Waste

Source	Storage of Segregated waste	
	Bio-Degradable	Non-Bio-degradable
Households	10-15 liters capacity plastic/ reinforced plastic/ LDPE/ metal bin with lid	A bin or Bag of suitable size
Hotels, Restaurants	60 liters capacity-LDPE/ HDPE	A bin or Bag of suitable size
Shops, Offices, Institutions	Suitable container not exceeding 60 liters	A bin or Bag of suitable size
Market Stalls	40-60 liters bin-LDPE/ HDPE	A bin or Bag of suitable size
Function Halls	Bin/ Skip matching to Municipal collection system	A bin or Bag of suitable size
Hospitals, Nursing homes	60 liters capacity bin for non-infectious bio-degradable waste	Store waste as per Bio-medical Waste Management Handling Rules 1998
Construction/ Demolition waste	-	Store with in premises and deposit in the notified Site by the local body or to the municipal Vehicle
Garden Waste	Store with in premises	Deposit in large community bin or to the municipal vehicle
Meat and Fish Markets	Store within premises	Store in Non-corrosive bins of max. 100 liter capacity each; Transfer to large container just before lifting.
Slaughter Houses	Store within premises	Separate storage bins for animal waste and other wastes

Source: Norms.

- (ii) Source Segregation and Collection of Commercial Waste, through privatization; and Source Segregation and Collection of Hotels and Market Waste - 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-litre 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. Improvement of bio-medical waste management facility with support from Indian Medical Association is also recommended.
- (iii) Street Sweeping and Moping on Daily Basis - Since further areas and eventually the entire town is 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 Dindigul are satisfactory and to ensure operational efficiency of the system, the following measures are suggested. (a) 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; (b) 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.

- (iv) Community Participation and Enforcement of By-laws and Waste Collection and Handling Rules - It is recommended that the community be involved in primary collection through segregation at household level to minimize the number of waste handling operation. 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.

288 Since 100 percent of the ULB area is to be considered under door-to-door collection, no additional dust bins are proposed, except for slums areas / low income areas, which is estimated to constitute approximately 20 percent in 2011. The rest of the areas shall be privatized. In this scenario, the transportation activities can be under the purview of the ULB, through self-owned vehicles, rented vehicles or contractual arrangement. The existing dust bins shall be phased out in an organized manner according to the implementation of the system. Based on these assumptions, the equipments for primary collection is estimated, to meet the future Waste Generation.

289 *Approach for Waste Collection and Transportation.* The following measures have been recommended for improving the waste collection and transportation practices of the ULB;

- (i) Secondary Collection system – It is recommended to retain all Auto-Minidors, for secondary collection purpose, in places where Dual Loaded Dumper Placers cannot be introduced.
- (ii) Efficient Transportation System. It is also recommended that Dual Loaded Dumper Placers (DLDPs) be introduced to improve the collection efficiency and to cover 80 percent area of the town in phased manner. The introduction of Dual Loaded Dumper Placers shall eliminate the need of the Secondary Collection Points. Instead of these collection points, in the end, transfer stations with advanced segregation and recycling facilities may be introduced, in the future.

290 Presently, The Vehicle Capacity Adequacy Ratio 63 percent, achieved with help of more than 50 percent Privatized Fleet. This indicates an overall capacity deficiency of approximately 40 tons by 2011 for achieving 100% collection efficiency and a deficiency of 56 Tons respectively by the year 2026.

291 *System Demand.* Additional 4 Dual Loaded Dumper Placers with 21 numbers of Dumper Bins will be required for collection of approximately 115 tons of waste that will be generated in Dindigul Town by the year 2026. System Demand for Solid Waste Management is tabulated in **Table:7.7**

Table 7.7: System Demand for Solid Waste Management

Description	Unit	Quantity
		Year 2026
Primary collection		
Tricycle Bins required for ULB	Nos.	329
Push Carts (Street Sweeping)	Nos.	251
Secondary collection		
Dumper bins required (7 cum)	Nos.	41
Transportation Vehicles		
Dumper Placer	Nos.	5

Source: Analysis.

292 *Approach and Design for Disposal of Waste.* Based on the Generation of Solid Waste it is recommended to develop a landfill site for safe disposal of Solid Waste of the ULB. Based on the successful implementation of the door-to-door collection and source segregation practices in the city, the options of waste to energy and composting projects can be developed. The disposal strategies for the ULB will do with,

- (i) Composting the organic fraction of the waste - Approximately 60% of the waste generated in Dindigul is organic nature. In terms of the quantity, it is expected that approximately 69 tons of organic waste is to be generated which can be taken up for Composting. The land requirement for compost facility is estimated at 3.5 acres, which will accommodate Windrow Pads, Ancillaries and Circulation area.
- (ii) Sanitary land filling of inorganic fraction of waste and the compost rejects - Inorganic waste constitutes approximately 40 percent, quantifying to 46 tons, is proposed to be disposed through Sanitary landfill. The land requirement for Landfill facility is estimated at 17 acres. The Sanitary landfill is proposed for a volumetric capacity of 3.71 lakh cu.m, with at least Two Lifts (One Lift below ground and One Lifts above ground). Landfill facility design is based on CPHEEO design assumptions for Sanitary Landfills, wherein a landfill height of 5 m and a bulk density of 0.85 Tons/ m³ are assumed. However, the actual height of landfill depends on the geological/ geographical conditions of the site and technology of landfill development.
- (iii) Educating the community on 4R strategy (Reduce, Reuse, Recycle and Recover).

293 *Operation and Management Schedule.* Adoption of an O&M Schedule, including options of using the private sector for O&M (e.g. management contract). Information on vehicle movement is maintained at the Dumping site, which helps in assessing the collection and disposal efficiency of the local body. However, it is recommended to improve the value and quality of information. The register should contain information on each of the vehicle trips at both the locations and the origin of waste collection. The Schedule can be used for periodic maintenance of vehicles to defer Costs. A summary of this information shall be prepared at the end of the day, to be verified by the health officer.

294 *Approach for Optimal Manpower Utilization.* Since all areas under ULB is proposed to be brought under privatisation, it is considered that there would not be any further

requirement to induct conservancy workers. The existing street sweeping operations in the ULB are satisfactory and to ensure operational efficiency of the system, measures recommended in Subpara 260, is to be adopted.

- 295 *Institutional Strengthening and Capacity Building.* Recruitment of trained engineering personnel for management of Sewer works is an important issue confronting the ULB, and as well of more importance is to keep them technically updated. It is necessary that periodic training be imparted to the operations staff of the ULB.

5. *Roads and Traffic Management*

- 296 The ULB should increase the network, to achieve an average cover to cater to 100 percent of the population. Given the high density of population within the ULB area, and also limited area for development, it is proposed to emphasize on Strengthening and Widening Measures for Roads, thus addressing the issues of congestion and incomplete network.
- 297 *Implementation strategy.* Strategy shall focus to have 100% coverage of surfaced roads including up-gradation of roads. The percentage of concrete roads in the town is at 5 percent and since these CC roads are provided with minimum widths in core areas, 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 the ULB area with respect to the road infrastructure pertain mainly to the width of roads and density of roads.
- 298 *Roads Planning and Demand.* The current coverage is satisfactory at approximately 15 percent of ULB's area. However the newly developing areas lack the facility and shall increase to a minimum of 15 percent, so that the norms can be in the range of 15-20 percent. The road widening projects can provide success to a certain extent in increasing the area under roads, but is limited to certain commercial corridors only. Roads planning shall also ensure that roads, parking and traffic infrastructure provision matches the city's present and future needs for both private and public transport.
- 299 The Road Length demand for 2011, based road density of approximately 14.6 kms per sq km of area and Per Capita Road Length of 0.90 m, is approximately 205 kms, as against 150 kms for 2005. Service level based on Road Surface type is maintained at 5 percent for CC Roads, 85 percent for BT Roads and 10 percent for WBM Roads.
- 300 *Asset Rehabilitation.* Upgrading shall be undertaken to extend, refurbish and enhance the roads. Plans would be phased so as to optimise 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.
- 301 *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 major roads. It is also proposed to strengthen network through provision of Rail Over Bridges at required locations, to ease network congestion.
- 302 *Traffic Management Plan.* These shall focus of Junction Improvements, Traffic

management within Core Areas of the City, Regional level proposals, and others. . It has been observed that, in most of the major roads in the town pedestrians are forced to use the carriageway due to the absence or poorly maintained footpaths, and encroachment by shopkeeper wherever existing. Footpaths of 1.5m wide are proposed along the major roads where heavy pedestrian movements are observed. For traffic safety and convenience, appropriate signs, markings, lighting, guideposts are required to be provided on curves, intersections, public utility places, etc. Proposals for road furniture are made considering the importance of the road, safety and aesthetic. The design of the road furniture and quality proposed are of international standards. It is proposed to provide road furnitures like, Kilometer stones on the major roads; 200 m Furlong stones; Road painting using reflectorized thermoplastic road painting; High intensity grade inforatory; regulatory and cautionary sign boards; Street lights on all major roads within the municipal limits, which have been considered for improvement; High mast lighting at all major junctions; Stop signs and Place identification signs.

- 303 Proposals under Traffic and Transportation, focus at improving Citywide transportation network and linkages, and Provision of City and Regional Level Transport facilities. Improvement of Core City Areas is proposed in terms of Pedestrianisation, Signages and Strengthening.

6. *Electricity*

- 303 The ULB should increase the density of Street lights and the coverage along the roads depending upto usage and population density, to achieve an overall 100 percent of the Road Length. Given the high density of population within the ULB area, and also limited area for development, it is prposed to emphasize High Power Fixtures and Complete Coversion to Tube Lights.
- 304 The strategic intervention in this sector is in increasing the number of lamp posts in the wards identified to reduce the average spacing between lamp posts in the town to below 30 mt. Higher density area and commercial ares are proposed to be addressed to with specific interventions. Further, measures are also to minimise the power consumption charges which are observed to be on the higher side from the statement of accounts. Further, to improve upon the O&M of the street lighting it is recommended to mechanise the system and involve private sector in the same. The mechanisation would be towards introducing dimming systems during non peak hours of operation to reduce the power consumption.

7. *Poverty Alleviation*

- 305 The ULB should increase the coverage of services in Low Income Areas and Slum Areas, through implementation of government schemes and other innovative programs with public participation. Given the high share of slum population, within the ULB and also limited area for development, it is proposed to emphasize on provision of basic services, like water, sanitation and waste management, and improvement of quality of life through relocation and rehabilitation of Slums areas. Indicative norms for provision of Basic Services for low income areas, in future, for satisfactory quality of life is presented in **Table 7.8**

Table 7.8: Design Criteria and Target Service Level

Description	Unit	Based on Design Norms
Population	<i>In lakhs</i>	0.85
Households	<i>Nos.</i>	16,841
Water Supply Demand	<i>Lpcd</i>	90
Distribution Network Demand	<i>Percent of Road Length</i>	100
Sewer Network Demand	<i>Percent of Road Length</i>	100
Persons per Public Water Stand Post/Taps	<i>Persons</i>	75
Persons per Public Toilet Seat	<i>Persons</i>	30
Persons per Public Urinal	<i>Persons</i>	50
Daily Per Capita Waste Generation	<i>Gms per Day</i>	350
Size of each Dustbin/Container	<i>cu. m</i>	0.30
Spacing of Temporary Waste Storage Points	<i>m</i>	300
Per Capita Road Demand		
Population above 1000	<i>m</i>	0.25
Population below 1000	<i>m</i>	0.51
Percentage of Surfaced Roads in Municipalities	<i>Percent</i>	70
Percentage of Surfaced Roads to be provided with Storm Water Drains	<i>Percent</i>	50

Source: Norms

- 306 As a policy, notified/declared slums, those indicated by the ULB, are considered for slum up-gradation. The implementation of National Slum Development Program (NSDP) is in progress. The following types of infrastructure are provided: (a) roads and culverts, including concrete pavements for certain stretches; (b) surface/storm water drains; (c) water supply, with house service connections; (d) sewerage system with household latrines; and (e) external electrification. Strategic Intervention in this sector is in above mentioned area, through increasing coverage and provision of facilities.

B. Project Identification for Service Delivery

1. Water Supply

- 307 *Water Demand.* The total water demand and net surplus or deficit for the ULB, is estimated for Base year (2005) and Ultimate Stage (2026) on standard water consumption rate of 90 lpcd. Details of demand assessment post project implementation is indicated in Table 7.2..
- 308 The availability of water from the existing sources is approximately 26 MLD. Water demand for the present and ultimate stage population are 25.5 MLD (2011) and 28.9 MLD (2026) respectively. Based on the field investigation, it is felt that there is not much scope for identifying new potential sources in the vicinity of the existing head works, hence it is recommended to augment the existing sources.
- 309 Therefore, improvements to the existing source through rehabilitation measures is also recommended to improve the yield and ensure full utilisation. Besides, Cauvery Combined Water Supply Scheme is ready for commissioning, and will supply a quantum of 18.00 MLD to Dindigul. The combined supply will satisfy the water demand beyond 2021 for

Dindigul Municipality, thus leaving a demand gap of 2.90 MLD for 2026.

(i) Proposed Project Sub-Components

310 The projected demand for 2026 is compared with the optimum supply available from the existing source and the proposed project, to verify the adequacy and need to augment the capacity of certain components. **Table: 7.9** lists demand, supply and required augmentation of Water Supply System.

Table 7.9: Demand, Supply and Required Augmentation of Water Supply System for 2026

Component	Unit	Supply Status*	Demand					
			Year 2005		Year 2011		Year 2026	
			Demand	Surplus (Deficit)	Demand	Surplus (Deficit)	Demand	Surplus (Deficit)
Source Augmentation	MLD	26.00	24.47	1.53	25.51	0.49	28.91	(2.91)
Water Treatment Plant	MLD	28.00	23.04	4.94	24.05	3.95	26.14	1.86
Service Storage	ML	7.93	6.55	1.37	6.83	1.09	7.74	0.18
Distribution System	Km	166	218.50	(52.50)	227.80	(61.80)	258.15	(92.15)

* - Supply levels after commissioning of Combined Cauvery Scheme

Source: Analysis

311 It is proposed to augment additional quantity from same source beyond 2021, and transmit water to the City. It is also proposed to augment additional distribution network, for equitable distribution.

(ii) Cost Estimates and Phasing.

312 *Summary of Proposed Investments.* **Table: 7.10** tabulates the estimated cost of augmentation of Water Supply for Dindigul Town is **Rs. 450.62 lakhs**. Other than this TWAD board having proposal of 91.35 crores project for 764 habitations in Dindigul district and 52 habitations in Karur district in which Dindigul municipal share is Rs. 38.89 crores for water supply.

Table 7.10: Cost Estimates for Additional Augmentation of Water Supply System

Project Sub-Component	Unit	Quantity Deficit	Cost
			<i>Rs. lakhs</i>
System Rehabilitation			
Athoor & Peranai Pumping Main Replacement			50.00
Desilting & Strengthening of Bunds in Athoor			50.00
New Infrastructure			
Water Intake + Pumping	MLD	2.91	1.75
Raw Water Transmission	MLD	2.34	1.93
Clear Water Pumping	MLD	0.72	115.27
Distribution System	Kms	66.33	231.66
<i>Sub Total – New Infrastructure</i>			<i>350.62</i>
Total			450.62

Source: Analysis

2. Sewerage and Sanitation

313 Project Sub-components under this section, have been formulated for Creation of Assets for provision of UGD system for the town and and provision of public convenience systems in low income areas / Slum Areas.

(i) Proposed Project Sub-Components

314 *Proposed UGD Project Sub-Components.* The projected demand for 2026 is compared with the Sewage generation from the existing source, to verify the adequacy and need for creation of UGD Assets. **Table: 7.11** tabulates the demand, supply and required augmentation of UGD System.

Table 7.11: Demand, Supply and Required Augmentation of UGD System for 2026

Project Sub-Component	Unit	Existing Status	Demand					
			Year 2005		Year 2011		Year 2026	
			Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)
Population	<i>In lakhs</i>		2.15	-	2.28	-	2.58	-
Sewage Generation	<i>MLD</i>	-	19.66	-	20.50	-	23.23	-
New Infrastructure								
Sewage Pumping	<i>MLD</i>	-	19.66	(19.66)	20.50	(20.50)	23.23	(23.23)
Sewage Treatment Plant	<i>MLD</i>	-	19.66	(19.66)	20.50	(20.50)	23.23	(23.23)
Sewer Network	<i>Km</i>	-	154.00	(154)	164.00	(164)	186.00	(186)

Source: Analysis

315 *Proposed Sanitation Sub-Components.* The projected demand for 2026 for safe Sanitation facilities, mainly for the Low Income Areas and Slum Areas, is compared with the existing facilities, to verify the adequacy and need to build additional Public Convenience Blocks. Service indicators based on the existing facilities, indicates a Usage density of approximately 262 Persons per Public Convenience Seat for Slum population, as against desired figures of 60 Persons per Seat. Hence it is proposed to augment additional capacity. **Table: 7.12** illustrates the demand, Supply and required Public Convenience Seats.

Table 7.12: Demand, Supply and Required Public Convenience Seats for 2026

Project Sub-Component	Unit	Existing Status	Demand					
			Year 2005		Year 2011		Year 2026	
			Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)
		@ 262 Persons per Seat	@ 120 Persons/Seat		@ 85 Persons/Seat		@ 60 Persons/Seat	
Population	<i>In lakhs</i>		0.85	-	0.91	-	0.81	-
New Infrastructure								
Public Convenience Seats	<i>Nos</i>	326	710	(384)	1070	(744)	1352	(1026)

Source: Analysis

(ii) Cost Estimates and Phasing.

316 *Summary of Proposed Investments in Sewer System.* Estimated Cost of Augmentation of Sewerage and Sanitation System for Dindigul Town, is **Rs. 5,572.50 lakhs.**

317 Project Investment is tabulated below and includes two Sub-Components, (a) Project Investment for augmentation of Sewer System, and (b) Project Investment for augmentation of Sanitation Facilities.

(a) Sub Components and Cost Estimates for Augmentation of UGD System. Estimated Cost of Sewer system is approximately **Rs. 2376 lakhs.** Project Sub-components for UGD system include Sewer length of 186 kms, STP for treatment and disposal of approximately 23 MLD of Sewage, Sewage Pumping Stations and Electrical Equipments for the system. The Capital Improvement Program is presented in **Table 7.13.**

Table 7.13: Project Components and Cost Estimates for Sewer System, for 2026

Project Sub-Components	Unit	Quantity	Deficit	Cost
				<i>Rs. lakhs</i>
New Infrastructure				
Sewage Pumping	MLD		23.23	
Sewage Treatment Plant (MWSP Technology)	MLD		23.23	
Sewer Network	Km		185.87	
Rehabilitation of Pubic Convenience Blocks				
Total				2376.00

Source: Analysis

(b) Sub-Components and Cost Estimates for Sanitation Facilities. **Rs. 641.00 lakhs** is proposed to be invested in construction and rehabilitation of Pubic Convenience Blocks.

Table 7.14: Project Components and Cost Estimates for Augmentation of Sanitation System for 2026

Description	Quantity	Estimated Cost
	<i>Nos. of Seats</i>	<i>Rs. Lakh</i>
System Rehabilitation		
-	-	-
New Infrastructure		
Construction of Public Convenience Seats	1,026	641.19
Total		641.19

Source: Analysis

3. Drainage, Ponds and Lake Development

(i) Proposed Project Sub-Components

- 318 *Sub Component for improvement of Storm Water Drainage.* The Project demand for 2011 is compared with the existing Storm Waste Drainage Infrastructure, to verify the adequacy and need to augment the capacity of components. Proposed augmentation of required components of the system is indicated in **Table 7.15** below.

Table 7.15: Demand, Supply and Required Augmentation of Drainage System for 2011

Project Sub-Component	Unit	Existing Status	Demand			
			Year 2005		Year 2011	
			<i>Demand</i>	<i>Surplus/ (Deficit)</i>	<i>Demand</i>	<i>Surplus/ (Deficit)</i>
Road Length	Kms	151.00	151.00		205.00	
System Rehabilitation						
Strengthening of Open Pucca Drains	Kms	181.08	-	-	-	-
Strengthening of Closed Pucca Drains	Kms	32.40	-	-	-	-
Strengthening of Natural Drains	Kms	1.75	1.75	(1.75)	53.00	(1.75)
New Infrastructure						
Storm Water Drains	Kms	213.50	226.00	(12.50)	307.52	(126.44)
Open Pucca Drains	Kms	181.08	128.00	-	184.51	(3.43)
Closed Pucca Drains	Kms	32.40	85.40	(53.00)	123.01	(123.01)

Source: Analysis

- 319 It is proposed to augment additional quantity, (i) construction of additional length of approximately 123 kms of Closed Pucca Drains, (ii) construction of additional length of approximately 4 kms of Open Pucca Drains, and (iii) Strengthening, Desilting and Removal of encroachments of 1.75 kms of Natural Drains, and improve networking.
- 320 Based on Discussions and field visits, it is understood that the existing Closed Storm Water Drains are in good condition and do not require any major rehabilitation measures.
- 321 *Project Sub-component for Ponds and Lakes Development.* Proposed augmentation of required components of the system, includes desilting works, bunding works and

Beautification works, is indicated in **Table 7.16** below.

Table 7.16: Required Augmentation of Pond and Lakes development

Project Water Bodies	Use	Existing Status		Demand
		Area	Storage Capacity	Work Required
		<i>Sq. m</i>	<i>cu.m</i>	
Chinnakulam	Re-charge	16,200	32,400	De-Silting/ Bunding/ Beautification
Goplasamundaram Tank.	Re-charge	16,200	32,400	De-Silting/ Bunding/ Beautification
Parai Kulam	Ayacut / Irrigation	24,300	36,450	De-Silting/ Bunding/ Beautification
Pkulam	Ayacut / Irrigation	24,300	36,450	De-Silting/ Bunding/ Beautification
Ayyakulam Kanmoi	Ayacut / Irrigation	24,300	36,450	De-Silting/ Bunding/ Beautification

Source: Analysis

(ii) Cost Estimates and Phasing

322 *Proposed Investments in Storm Water Drainage System.* Estimated Cost of Augmentation of Drainage, Ponds and Lake Development for Dindigul is **Rs. 2,165.18 lakhs**.

323 Project Investment is indicated below in two parts, (a) Project Investment for augmentation of Storm Water Drainage System, and (b) Project Investment for deelopment of Lakes and Water Bodies.

(a) Sub Components and Cost Estimates for Augmentation of Storm Water Drainage System. Estimated Cost of laying of additional Storm Water Drains is approximately **Rs. 2,145.47 lakhs**. **Table 7.17** indicates estimated cost of laying of additional Drains for 2011.

Table 7.17: Project Components and Cost Estimates for Additional Augmentation of Storm Water Drains for 2011

Project Sub-Components	Unit	Quantity Deficit	Cost
			<i>Rs. lakhs</i>
System Rehabilitation			
Strengthening of Open Pucca Drains	Km	-	-
Strengthening of Closed Pucca Drains	Km	-	-
Strengthening of Natural Drains	Km	1.75	13.13
<i>Sub Total – System Rehabilitation</i>			<i>13.13</i>
New Infrastructure			
Open Pucca Drains	Km	3.43	41.20
Closed Pucca Drains	Km	123.01	2,091.15
<i>Sub Total – New Infrastructure</i>			<i>2,132.34</i>
Total			2,145.47

Source: Analysis

(b) Sub Components and Cost Estimates for Augmentation of Ponds and Lakes Development. Estimated Cost of Desilting and Rehabilitation measures for Ponds

and Lakes for 5 nos., is Rs. 19.71 lakhs. **Table 7.18** indicates estimated cost of Ponds and Lakes Improvement for Dindigul.

Table 7.18: Project Components and Cost Estimates for Improvement of Ponds and Lakes

Description	Estimated Cost
	<i>Rs. Lakh</i>
De-Silting, Bunding and Beautification	
Chinnakulam	3.34
Goplasamundaram Tank.	3.34
Parai Kulam	3.01
Pkulam	5.01
Ayyakulam Kanmoi	5.01
Total	19.71

Source: Analysis.

4. Solid Waste Management

324 The future trend of waste generation has been estimated based on the projected population and per capita waste generation. The per capita growth rate for the solid waste has been assumed to be 0.2 percent every year. Projected Waste Generation for Dindigul Town is tabulated below in **Table 7.19**.

Table 7.19: Projected Waste Generation

Year	Population	Waste Generation	
		Per Capita	Total Waste
		<i>Gms/Day</i>	<i>Tons/Day</i>
	<i>Nos.</i>		
2005	218,468	428.00	91.96
2011	227,793	432.30	98.47
2016	237,515	436.64	103.71
2021	247,633	441.02	109.21
2026	258,147	445.45	114.99

Source: Analysis

(i) Proposed Project Sub-Components

325 *Proposed Sub-Components for Solid Waste Management Initiative.* The Project demand for 2026 is compared with the existing Solid Waste Handling Infrastructure, to verify the adequacy and need to augment the capacity of components. Proposed augmentation of required components of the system is indicated in **Table 7.20** below.

Table 7.20: Demand, Supply and Required Augmentation of Solid Waste Management System for 2026

Project Sub-Components	Unit	Existing Status	Demand			
			Year 2011		Year 2026	
			Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)
Population	<i>In lakhs</i>	2.15	2.28	-	2.58	-
Solid Waste Generation	<i>MT</i>	92	99	-	115	-
Primary Collection Sub-Component						
Push Carts	<i>Nos</i>	49	251	(202)	-	-
Containerized Tri-Cycles	<i>Nos</i>	20	329	(309)	-	-
Secondary Collection Sub-Component						
Container Bins (2.5 MT Capacity)	<i>Nos</i>	20	41	(21)	-	-
Transportation Sub-Component						
Dual Load Dumper Placers	<i>Nos</i>	1	5	(4)	-	-
Solid Waste Disposal						
Disposal Site	<i>Acres</i>	25.00	17.50	7.50	20.50	4.50
Sanitary Land Fill Demand	<i>MT</i>	-	40.00	(40.00)	46.00	(46.00)
Landfill Area Demand	<i>Acres</i>	-	14.70	(14.70)	17.00	(17.00)
Compost Demand	<i>MT</i>	-	58.47	(58.47)	69.00	(69.00)
Compost Area Demand	<i>Acres</i>	-	2.80	(2.80)	3.50	(3.50)

Source: Analysis

- 326 Proposed Initiative for Solid Waste Management, is in line with that formulated and adopted by the ULB. The approach proposes to use Containerized Tricycles (150 kgs each) to convey garbage buckets to Dumper Bins. Garbage from Dumper Bins is transported directly to Land Fill Site, by means of Dumper Placers. It is proposed to implement segregation of waste at source and Door-to-Door collection system. The existing fleet of Lorries is proposed to be utilized for garbage cleaning in extended areas with prevailing system of sweeping and direct loading to Lorries. Based on the above system, the requirement to cater to the demand for Waste Management in Dindigul Town has been proposed to cater to year 2026. The proposed purchase of Bins, Trolleys, Vehicles and other Infrastructure facilities required are to be provided as tabulated above in **Table 7.20**

(ii) Cost Estimates and Phasing

- 327 *Summary of Proposed Investments in Solid Waste Management.* Estimated Cost of Augmentation of Bins, Trolleys, Vehicles, other Infrastructure facilities and Scientific Disposal Facility for Dindigul Town is **Rs. 631.25 lakhs.**
- 328 Project Investment is indicated below in two parts, (a) Project Investment for augmentation of Waste Management Equipment, including Primary Collection equipments, Secondary Collection equipments and Transportation Vehicles, and (b)

Project Investment for development of Scientific Landfill and Compost Facility.

- (a) Sub Components and Cost Estimates for Augmentation of Waste Management Equipment, including Bins, Trolleys and Transportation Vehicles. Estimated Cost of purchase of additional Primary Collection equipment, Secondary Collection Equipments and Transportation Vehicles, is approximately **Rs.90.81 lakhs**. **Table 7.21** indicates estimated cost of New Equipments to cater for 2011.

Table 7.21: Project Components and Cost Estimates for Additional Augmentation Solid Waste Management Equipments for 2011

Project Sub-Components	Unit	Quantity Deficit	Cost
			<i>Rs. lakhs</i>
System Rehabilitation			
-	-	-	-
New Infrastructure			
<i>Primary Collection Sub-Component</i>			
Push Carts	Nos	202	14.54
Containerized Tri-Cycles	Nos	309	24.72
<i>Secondary Collection Sub-Component</i>			
Container Bins (2.5 MT Capacity)	Nos	21	11.50
<i>Transportation Sub-Component</i>			
Dual Load Dumper Placers	Nos	4	40.00
<i>Sub Total – New Infrastructure</i>			90.81
Total			90.81

Source: Analysis

- (b) Sub Components and Cost Estimates for development of Scientific Landfill and Compost Facility. It is proposed to develop a Scientific Landfill and Compost facility in a phased manner and on module basis. Estimated Cost of development of the above facility is approximately **Rs. 540.43 lakhs**. **Table 7.22** indicates estimated cost development of Sanitary Landfill and Compost Facility to cater for 2026.

Table 7.22: Project Components and Cost Estimates for Additional Augmentation Solid Waste Management Equipments for 2026

Project Sub-Components	Unit	Proposed Capacity	Quantity Deficit	Cost
				<i>Rs. lakhs</i>
Solid Waste Disposal Site				
Site	Acres	20.50	-	-
Disposal Facility Development				
<i>Sanitary Landfill</i>				
Sanitary Landfill Development	MT	46.00	46.00	367.97
Sanitary Landfill Area	Acres	16.80	16.80	-
<i>Compost Facility</i>				
Compost Facility Development	MT	69.00	69.00	172.50
Compost Facility Area	Acres	3.50	3.50	-
<i>Sub Total – Disposal Facility Development</i>				540.43
Total				540.43

Source: Analysis

5. Roads and Traffic Management

(i) Proposed Project Sub-Components

- 329 *Roads.* The Project demand for Roads for 2011 is compared with the existing Road Infrastructure, to verify the adequacy and need to augment the capacity of components. The future trend of road network development is envisaged based on population growth and land use; efficient system of road network; segregation of traffic; designalizing of junction; and Upgradation, widening and strengthening of major junctions and corridors. Projected road demand, for internal city roads, for 2011 is indicated in **Table 7.23**. Road Demand for Upgradation and new formation for all Bus Route roads is indicated separately in Subpara-303, relating to Traffic and Transportation.

Table 7.23: Demand, Supply and Required Augmentation of Internal Roads for 2011

Project Sub-Component	Unit	Existing Status	Demand	
			Year 2005	Year 2011
			Demand	Surplus/ (Deficit)
Road Length	Kms	150.73	205.01	-
Concrete Road	Kms	24.07	24.07	-
BT Road	Kms	117.31	174.26	-
WBM Road	Kms	0.00	6.68	-
Earthen Road	Kms	9.35	0.00	-
System Rehabilitation				
<i>Upgradation of Internal Roads</i>				
BT Roads to Concrete Roads	Kms		0.00	-
WBM Roads to BT Roads	Kms		0.00	-
Earthen Roads to BT Roads	Kms		9.35	(9.35)
<i>Strengthening and Widening of Major Roads</i>				
Widening and Strengthening	Kms		36.00	(36.00)
New Infrastructure – New Roads Formation				
Concrete Road	Kms		24.07	-
BT Road	Kms		174.26	(56.95)
WBM Road	Kms		6.68	(6.68)
Earthen Road	Kms		-	-

Source: Analysis

- 330 It is proposed to augment additional quantity of road network, (i) New Formation of additional length of 57 kms of Black Top Roads; and (ii) New Formation of additional length of 7 kms of WBM Roads. Existing Network augmentation is proposed by means of strengthening, Re-surfacing and Upgradation of all City Roads and Internal Roads of approximately 36 kms of length.
- 331 *Traffic and Transportation.* Project Demand for Traffic and Transportation is considered on long-term basis. Proposed augmentation of sub-components; (i) Core City Renewal, (ii) Transport Network augmentation (Major Orbital Roads and Major Radial Roads), (iv) Rail Over Bridges/ Rail under Bridges, (v) Pedestrian Subways, and (vi) Other City level

Transport Facilities, of Traffic and Transportation system is indicated below.

- (i) City Renewal. As a part of improvement to traffic systems in the congested areas of the town, Salai Road and Hospital Street, are proposed to be strengthened by Re-surfacing, Parking Management measures and Improved Signage, to reduce Traffic Congestion and Pollution. Works identified under the Sub-Component is proposed to be undertaken by the ULB. Improvement works are proposed on approximately 4 kms of road length.
- (ii) Transport Network Improvement. Strengthening with upgradation, Provision of Pavements, Road Widening and New formation of incomplete linkages is proposed as a part of augmentation of Transport Network in Dindigul. The Proposals broadly identifies improvement to Major Orbital Roads (Widening and Strengthening of approximately 48 kms, and New Formation of approximately 11.5 kms) and improvements Radial Roads (Widening and strengthening of approximately 19 kms). Works identified under the Sub-component is proposed to be undertaken by the ULB and Other Agencies (i.e the Highway Department). It is proposed that the ULB can take up widening and strengthening of the NH and SH, and the other line agencies can take up the development of Phase II of the By-pass Road and Widening and Strengthening of Phase I of By-pass Road.

Table 7.24: Required Augmentation of Major Orbital and Radial Roads.

Project Roads	Existing Situation	Proposed Improvements	Length
			<i>Kms</i>
Major Orbital Roads			
System Upgradation - Widening and Strengthening			
Primary Bus Route Roads	Traffic Congestion; Road Side Parking; Inadequate Road Width and absence of Footpath.	Widening and Strengthening of existing Two Lane carriageway to Four Lane with 50 mm BM and 25 mm SDBC with 1.5 m gravel shoulder; Provision of Proper Direction Boards and Signage;	7.00
Secondary Bus Route Roads	Traffic Congestion; Road Side Parking; Inadequate Road Width and absence of Footpath; Absence of proper direction boards and signages	Strengthening of existing two lane carriageway with 50 mm BM and 25 mm SDBC with 1.5 m gravel shoulder; Provision of Proper Direction Boards and Signage;	26.00
By-pass Road, along existing alignment	Traffic Congestion at Junctions; Road Side Parking; Inadequate Road Width and absence of Footpath;	Widening and Strengthening of existing two lane carriageway to four lane with 50 mm BM and 25 mm SDBC with 1.5 m gravel shoulder; Provision of Direction Boards and Signage.	15.00
New Formation			
Phase II of By-pass Road	-	New Formation of Two lane Carriageway, as per NH Standards; Provision of Direction Boards	11.50

Project Roads	Existing Situation	Proposed Improvements	Length
			<i>Kms</i>
		and Signage.	
Major Radial Roads			
System Upgradation - Widening and Strengthening			
NH 7 and NH 45 (within municipal limits)	Traffic Congestion; Movement of Heavy Vehicles; Poor Road Quality and Width;	Widening and Strengthening of existing Two Lane carriageway to Four Lane with 50 mm BM and 25 mm SDBC with 1.5 m gravel shoulder;	7.00
SH Roads	Absence of direction boards and signages.	Provision of Proper Direction Boards and Signage.	12.00
New Formation			
-	-	-	-

Source: Field Visits, Discussions and Analysis.

- (iii) Flyovers/ROB's/RUB's. Dindigul serves as an important junction on Chennai-Kanyakumari Railway line, with diversions to Palani. Rail Line runs along the northern and eastern periphery of the town. The City is provided with only one ROB, along Silavathur Road. Three more ROB's, along Karur Road, Trichy Road and Railway Station Road, are proposed. It is proposed to augment the capacity of major transport corridors, through construction of these Rail Over Bridges and through Junction improvement. Apart from this, to improve the regional linkages, it is proposed to construct a ROB along Dindigul-Palani Road, outside the ULB Limits, which can be taken up by Highway Department.
- (iv) Junction Improvement. Dindigul Town is densely populated, although the city's roads system has as many ill-designed road intersections which lack in many characteristics such as road geometric features, channeling islands, parking lanes for turning vehicles, acceleration and deceleration lanes etc. To improve the City image and the carrying capacity of road junctions, it is proposed to provide grade separated pedestrian subways and Junction landscaping and improvement at selected Intersections.
It is proposed to construct 6 Underground Pedestrian Subways and Landscaping and improvement works at 6 Junctions along major Road Junction, namely Trichy Road – Metturajapatti Road Junction, Madurai Road – Gandhiji Road Junction, Salai Road – Thiruvallur Road Junction, Palani Road – West Car Street Junction, Karur Road – Sub Collected Road Junction, and Main Road – Salai Road Junction. Works identified under the Sub-component is proposed to be undertaken by the ULB.
- (v) Truck Terminal Facility. Citing the regional significance of the Town, as a centre for Trade and Commerce, a Truck Terminal facility is proposed to be developed. The facility is proposed for approximately 50 trucks, along Thodikombu Road, outside the ULB limits. It is proposed to shift the existing terminal, along Palani Road, to the new facility. It is proposed to be equipped with drivers rest shed, restaurants, dispensaries, workshop, petrol bunk, Weigh Bridge, fire station, police station and toilets in addition to the parking area for the trucks.

Map: 7.1 Traffic and Transport Proposals

(ii) Cost Estimates and Phasing

- 332 *Summary of Proposed Investments in Roads.* Estimated Cost of Upgradation and New Formation of City Roads for Road Demand for 2011, is **Rs. 2,360.30 lakhs.**

Table 7.25: Project Components and Cost Estimates for Augmentation of City Roads for 2011

Project Sub-Components	Unit	Proposed Capacity	Quantity Deficit	Cost
				<i>Rs. lakhs</i>
System Rehabilitation				
BT Roads to Concrete Roads	<i>Kms</i>		-	-
WBM Roads to BT Roads	<i>Kms</i>		-	-
Earthen Roads to BT Roads	<i>Kms</i>		9.35	187.00
New Infrastructure				
Concrete Road	<i>Kms</i>	24.07	24.07	187.00
BT Road	<i>Kms</i>	174.26	56.95	1,822.44
WBM Road	<i>Kms</i>	6.68	6.68	93.55
Earthen Road	<i>Kms</i>	-	-	-
Total				2,360.28

Source: Analysis

- 333 *Summary of Proposed Investments in Traffic and Transportation.* Estimated Cost of City Renewal, Augmentation of Transport Network, and provision of City and Regional Level Transport infrastructure for Dindigul Town is approximately **Rs. 17,080.00 lakhs**, which is to be shared by ULB and the Highways Department. Estimated Cost of Projects to be taken up by the ULB is approximately **Rs. 4,530.00 lakhs.**
- 334 Project Investment is classified below into two sub-components, based on the Implementing Agency for Projects, (a) Project Investment under ULB, and (b) Project Investment under Highway Department/Other Agency.
- (a) Sub Components and Cost Estimates for Project to be implemented by ULB. Estimated Cost of Provision of Parking and Signages, Improvement to City level Transportation Network, construction of ROB's and Improvement to Junctions is approximately **Rs. 4,530.00 Lakh.** Table 7.26 indicates estimated cost of Project proposed to be undertaken by the ULB.

Table 7.26: Project Sub-Components and Cost Estimates for Traffic and Transportation Project to be undertaken by the ULB.

Project Sub-Components	Units	Quantity	Cost
			<i>Rs. Lakh</i>
Roads			
<i>(i) City Renewal</i>			
Strengthening/Parking Management/Signage			
Along Salai Road, from Post Office to Petrol Pump near State Bank of India	<i>Kms</i>	1.00	20.00
Salai Road, from Main Road to Hospital Road	<i>Kms</i>	1.50	30.00
Hospital Street, from Anna Statue to Chatram Street	<i>Kms</i>	1.50	30.00
<i>(ii) Improvement of Major Orbital Roads</i>			
Widening and Strengthening			
Two Laning of Bus Route Roads	<i>Kms</i>	26	520.00
Four Laning of Major Bus Route Roads	<i>Kms</i>	7	1,050.00
New Formation			
-	<i>Kms</i>		
<i>(iii) Road Over Bridges/Road Under Bridges</i>			
Along Karur Road	<i>Nos.</i>	1	600.00
Along Trichy Road	<i>Nos.</i>	1	600.00
Along Railway Station Road	<i>Nos.</i>	1	600.00
<i>(iv) Pedestrian Subways</i>			
Trichy Road - Metturajapatti Road Junction	<i>Nos.</i>	1	150.00
Madurai Road - Gandhiji Road Junction	<i>Nos.</i>	1	150.00
Salai Road - Thiruvalluvar Road Junction	<i>Nos.</i>	1	150.00
Palani Road - West Car Street Junction	<i>Nos.</i>	1	150.00
Karur Road - Sub-Collector Road Junction	<i>Nos.</i>	1	150.00
Main Road - Salai Road Junction	<i>Nos.</i>	1	150.00
Transport Facilities			
<i>(i) Improvement of Road Junctions</i>			
Improvement of 6 Nos. Road Junctions, through Landscaping and Improvement of Road Geometrics.	<i>Nos.</i>	6	30.00
<i>(ii) Truck Terminal Facility</i>			
Provision of Truck Terminal on Thodikombu Road (Near By-pass Road Junction)	<i>Nos. of Bays</i>	50	150.00

Source: Analysis

- (b) Sub Components and Cost Estimates for Project to be implemented by Other Agencies/Highway Department. Estimated Improvement to City level Transportation Network through Widening and Strengthening of NH & SH, and Construction of Town By-pass Road, is approximately **Rs. 11,950.00 Lakh.** **Table 7.27** indicates estimated cost of Project proposed to be undertaken by the Highway Department/Other Agencies.

Table 7.27: Project Sub-Components and Cost Estimates for Traffic and Transportation Project to be undertaken by the ULB.

Project Sub-Components	Units	Quantity	Cost
			<i>Rs. Lakh</i>
Roads			
<i>(i) Improvement of Major Orbital Roads</i>			
Widening and Strengthening			
Four Laning of Existing By-pass Road	<i>Kms</i>	15	4,500.00
New Formation			
Phase II of By-pass Road, on southern side connecting Madurai Road and Trichy Road	<i>Kms</i>	11.5	4,600.00
<i>(ii) Improvement of Major Radial Roads</i>			
Four Laning of NH Roads	<i>Nos.</i>	7	1,050.00
Four Laning of SH Roads	<i>Nos.</i>	12	1,800.00
Total	<i>Nos.</i>	-	11,950.00

Source: Analysis

6. Street Lighting

(i) Proposed Project Sub-Components

- 335 The Project demand for 2011 is compared with the existing Streetlight Infrastructure, to verify the adequacy and need to augment the capacity of components. Proposed augmentation of required components of the system is indicated in **Table 7.28**.

Table 7.28: Demand, Supply and Required Augmentation of Street lighting for 2011

Project Sub-Component	Unit	Existing Status	Demand			
			Year 2005		Year 2011	
			Demand	Surplus/ (Deficit)	Demand	Surplus/ (Deficit)
Street Lights	<i>Nos</i>	5,383	4,522	-	6,834	1,451
System Rehabilitation						
-	<i>Nos.</i>	-	-	-	-	-
New Infrastructure						
Installation of New Poles	<i>Nos.</i>	-	-	-	1,451	(1,451)
Tube Light Fixtures	<i>Nos.</i>	4,448	3,618	-	5,467	(1,019)
High Power Fixtures	<i>Nos.</i>	933	904	-	1,362	(427)
High Mast Lights	<i>Nos.</i>	2	2	-	5	(3)
Power Saver Switches	<i>Nos.</i>	85	175	(90)	218	(133)

Source: Analysis

- 336 It is proposed to augment additional quantity, (i) Installation of New High Power Fixtures (427 Nos.), and Tube Lights Fixtures (1,019 Nos.); (ii) Installation of 3 High Mast Lights at Major Junction; and (iii) Installation of Power Saver Switches for energy optimization.
- 337 Based on Discussions and field visits, it is understood that the existing Street Lights are in good functional condition and do not require any major rehabilitation measures.

(ii) Cost Estimates and Phasing

- 338 Estimated Cost of Installation of New Poles, High Power Fixtures, Tube Lights along the entire Road Length, based on Norms, and Installation of High Mast Lights at Major Road Junction, with Power Saver Switches, is Rs. 104.87 lakh. **Table: 7.29** tabulates summary of proposed improvement and investments – Street Lighting

Table 7.29: Summary of Proposed Improvement and Investments – Street Lighting

Description	Units	Quantity	Estimated Cost
			<i>Rs. Lakh</i>
New Infrastructure Provision			
Provision of Tube Lights	<i>Nos</i>	1,019	45.86
Provision of High Power Fixtures	<i>Nos</i>	427	38.43
Installation of High Mast Lamps	<i>Nos</i>	3	13.92
Provision of Power Saver Switches	<i>Nos</i>	133	6.66

Source: Analysis.

7. *Urban Basic Services for Poor*(i) Proposed Project Sub-Components

- 339 The Project demand for Slums is compared with the existing Infrastructure, to verify the adequacy and need to augment the capacity of components. Proposed augmentation of required sub-components of the system; i.e Sub-component for Basic Services, is indicated in **Table 7.30**. Project Demand for Slum is considered on long-term basis.

Table 7.30: Demand, Supply & Required Augmentation of Basic Services for Urban Poor

Project Sub-Component	Unit	Existing Status	Demand - Year 2005	
			Demand	Surplus/ (Deficit)
<i>Slum Households</i>	<i>Nos</i>	16,841	16,841	-
Sub-Component for Basic Services				
(i) Water Supply				
Distribution Network Demand	<i>Kms.</i>	-	34	(34)
Public Stand Post/Water Taps	<i>Nos.</i>	183	1,136	-
(ii) Sewerage and Sanitation				
Sewer Network Demand	<i>Kms</i>	-	34	(34)
Public Toilet Seats	<i>Nos.</i>	84	2,841	-
Public Urinals	<i>Nos.</i>	156	1,705	-
(iii) Solid Waste Management				
Dustbins/ Temporary Waste Storage Points	<i>Nos.</i>	-	96	(96)
Tricycle Containers	<i>Nos.</i>	-	118	(118)
Push Carts	<i>Nos.</i>	-	27	(27)
(iv) Roads	<i>Kms</i>	12	11	-
(v) Storm Water Drains	<i>Kms</i>	-	6	(6)
(vi) Street Lighting	<i>Kms</i>	115	540	(425)

Source: Analysis

(ii) Cost Estimates and Phasing

- 340 Estimated Cost of Provision Infrastructure facilities in Slums, based on prescribed norms, is **Rs. 563.00 Lakh.**, as indicated in **Table 7.31**.

Table 7.31: Summary of Proposed Improvement and Investments – Urban Poor

Description	Units	Quantity	Estimated Cost
			<i>Rs. Lakh</i>
Basic Infrastructure Provision			
Water Supply	<i>Network in Kms</i>	34	85.24
Sewerage and Sanitation	<i>Network in Kms</i>	34	340.94
Solid Waste Management (provision of Push Carts, Tricycles, Storage Bins)	<i>Nos.</i>	-	15.07
Storm Water Drains	<i>Kms</i>	6	87.13
Street Lights	<i>Nos.</i>	429	34.32
Total			562.69

Source: Analysis.

8. *Other Municipal Projects*(i) Proposed Project Sub-Components**Table 7.32:** Summary of Proposed Improvement and Investments – Other Municipal Projects

Project Sub-Component	Unit	Quantity
		Year 2026
New Formation		
Construction of Commercial Complex	<i>Nos.</i>	1
System Modernization and E-Governance	-	1
GIS Mapping	-	1
Capacity Building	-	ULB

Source: Analysis

(ii) Cost Estimates and Phasing

- 341 *Summary of Proposed Investments.* Estimated Cost of Other Municipal Projects, based on the Town requirements, is **Rs. 250.00 lakhs** indicated in **Table: 7.32**

Table 7.32: Summary of Proposed Improvement & Investments- Other Municipal Projects

Component	Estimated cost
	<i>Rs. Lakh</i>
New Formation	
Commercial Complex	100.00
System Modernization and E-Governance	50.00
GIS Mapping	50.00
Capacity Building	50.00
Total	250.00

Source: Analysis

VIII. ASSET MANAGEMENT PLAN

A. Overview

342 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.

343 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

344 The first stage of implementation of an asset management program for municipal infrastructure relies on the essential element of inventory. For each element in each category of infrastructure it is fundamental to know about all as mentioned below:

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

345 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.

346 *Water Supply.* The water supply assets basically comprise of all the assets from the headwork's, treatment plant, sump, transmission mains, pumping mains, Feeder mains, distribution mains and sub mains, including all valves, connections, meters and all related facilities for the efficient delivery service of water.

347 For Dindigul Town, there are different types of fixtures related to intake works from the Reservoir, Transmission and Distribution of water. Asset Details have been elaborated in Chapter V. There are 585 Deep Bore wells and 475 Public taps/Hand Pumps spread in all the wards of the City.

- 348 *Sanitation.* Dindigul Town is not provided with UGD System. However, as discussed earlier proposal for provision of the same is under active consideration, which will result in Asset creation. A detailed study for Asset listing for UGD for the city is recommended along with preparation of an O&M Manual, to be taken up along with the Project
- 349 Municipal owned Assets for Sanitation system for the City consists of Public Toilets and Pay-and-Use Toilets, across all Wards. The ULB has provided 75 Toilets Blocks, which include Public toilets, Pay-and-Use Toilets, Bathrooms and FOL's. Recently, the ULB has added more block through ISP schemes in Low income Areas. Majority of the Toilet Block have been constructed in the 80's and 90's, hence most of the them are in dilapidated condition and in need for immediate repair and maintenance. The Structure are Pucca type, with RCC roof, or AC sheet roof occasionally.
- 350 *Building Assets.* Buildings are of 2 types; remunerative and non remunerative. Listed below are the remunerative assets of the municipality and their respective revenue. The details of remunerative assets are presented in **Tables 8.1**

Table 8.1: Remunerative Assets - Buildings

SI No.	Name of the Asset	Type	Accruing Rental/annum (Rs.)			Remarks
			04 - 05	03 - 04	02 - 03	
<i>Markets</i>						
1	Gandhi Maidan (361 Shops)	Weekly Market	850,434	-	-	
2	Merai Ratha Vedhi	Daily Market	85,650	150,000	150,000	Half yearly value for 04-05
3	Begampur Market	Daily Market	34,322	40,000	40,000	
4	Therai Ratha Vedhi		75,000	90,001	80,600	
5	Bharathipuram Daily Market	Daily Market	155,000	275,000	-	
6	New Commercial Complex, Kamaraja Bus Stand		214,623	356,300	-	
<i>Toilets</i>						
7	Kamaraja Bus Stand		321,600	320,000	460,000	
8	Gopala samithi		3,730	70,200	61,000	Mainly under repair in 04-05
9	Gandhi Market		22,000	132,000	-	Mainly under repair in 04-05
<i>Slaughter Houses</i>						
10	Slaughter House		205,000	204,000	365,101	
11	Souriar palayam Slaughter		70,000	147,000	91,400	

SI No.	Name of the Asset	Type	Accruing Rental/annum (Rs.)			Remarks
			04 - 05	03 - 04	02 - 03	
	house					
12	Bus Stand Weighing Bridge		-	150,000	90,100	

Source: Dindigul Municipality

- 351 Remunerative assets have been used to estimate the additional resource that could be mobilized and is presented in the **Chapter IX**.
- 352 Non-remunerative Assets mainly include Land, which are vacant or are being used as Social Capital for Parks, Playgound, Temples, Water Tanks or Open Areas. Some of the Land is also being put to Remunerative use through leasing, or through rentals from Buildings, Bus Stands etc.
- 353 Majority of the land owned by the ULB are of different types and are used for social benefits like parks and play fields for recreation, or burial Grounds, burning grounds etc. The ULB has also allocated land for Schools and Playgrounds.
- 354 *Other Assets.* Other assets of the Municipality include its solid waste management facilities of disposal site (Approximately 25 Acres) and a fleet of vehicles utilised by various departments of the ULB. Apart from this, the ULB currently also owns 49 pushcarts, 20 Tricycle Bins etc for the primary collection.
- 355 The ULB also owns about 132 km of roads of which 75 percent is BT surfaced. Approximately 5,400 street light poles and the associated fixtures also form the assets of the municipality.
- 356 In Odukkam, municipality having 100 Acres of land which can be promote as city level park for recreation for Dindigul people.

IX. RESOURCE MOBILIZATION INITIATIVES

A. Scope in Savings and Revenue Generation

1. Infrastructure

356 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

357 The major assets for the ULB's 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

358 *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.

359 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.

360 Energy Audit is an effective management tool to combat and control spiraling O&M and Energy costs and to enable the municipalities effectively utilize the system at the optimum cost possible. There is enormous scope to control expenditure with effective energy management, leak detection and unauthorized tap connections. Following table presents the detail of location wise no pumps, capacity and its energy consumption per annum. For

each of the pump house cost benefit analysis has been worked to ascertain the savings and the same is presented in the **Appendix I**. The details of estimation of efficiency of pump is illustrated in **Table: 9.1**

Table 9.1: Estimation of efficiency of pump

Location	Nos	Capacity	Age	No of Pumping Hours	Energy Charges per annum
		<i>HP</i>	<i>Yrs</i>	<i>Hrs</i>	<i>Rs. Lakh</i>
Peranani Headwork	2	60	15	8	1.92
Peranani Booster I	2	70	15	8	1.68
Peranani Booster II	2	60	15	8	1.43
Athur WS - Main PS	1	90	1.5	8	3.51
Athur WS – Booster I	1	40	5	8	0.024

Source: Analysis.

361 Cost benefit analysis of pumps has been worked out to compare the energy cost of existing pump and energy efficient pump with above recommended modification for a period of 15 years. The net energy saving percentage is more than 10 percent from current level, recommended for undertaking repair and rehabilitation works. The working details are presented in **Appendix I**. Since most of the pumps are running in good condition no saving is envisaged and hence no recommendation was made for repair and replacement of existing pumps.

362 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.

363 Waste is that water which having been obtained from a source and put into a supply and distribution system and into consumers' installation leaks or is allowed to escape or is taken there from for no useful purpose. Leakage is that part of waste that leaks or escapes other than by deliberate or controllable action. Leakage from reservoir, mains, communication pipes and consumers' supply pipes are of major concern for water managers. The above waste results in the reduction in the revenue to the urban local body. Thus the UFW is also referred to as non-revenue water. In case of Dindigul property tax assessment to water connection is very low coverage (50 %), consequently there are chances of revenue leakage's through unauthorized /illegal connections in the town. Which needs to be regularized, this could generate significant 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.

3. *Street lighting*

364 In street lighting sector, also there is 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

365 Energy *Savings*. This section reviews the current level of energy consumption, maintenance and establishment charges incurred in street light maintenance. Dindigul Municipality maintains 5,383 light fixtures out of which around 83 percent fixtures are tube lights. The energy charges presented in the table are actual payment made during that year. The average cost of energy consumption per fixture is Rs. 1,692 per annum and average maintenance expenses of street lighting are Rs. 3.82 lakh per annum. The average maintenance expenditure per light is works out to Rs. 71 per annum. There are six skilled wiremans and six helpers to operate and maintain entire street lighting in the town and all of them are permanent employee of the Municipality. Expenditure trend in street lighting is illustrated in **Table: 9.2**.

Table 9.2: Expenditure trend in street lighting

Items	2000-01	2001-02	2002-03	2003-04	Average
	<i>Rs. Lakh</i>				
Establishment	23.11	23.39	23.44	23.58	23.38
Energy Charges	91.95	57.73	78.04	98.46	81.55
Maintenance Expenses	4.13	3.11	3.81	4.23	3.82
Total	119.19	84.23	105.29	126.27	108.75

Source: Analysis.

366 Energy savings in street lighting could be achieved through following ways one by replacing 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 4,448 florescent tube light fixtures installed in Dindigul Municipality. These 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.

367 Based on the best practices followed in other parts of country, retrofit tube lights are proposed in Dindigul. 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: 9.3**.

Table 9.3: 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.

368 The following **Table: 9.4** presents the comparison of present conventional florescent tube

lights with proposed Retrofit tube lights.

Table 9.4 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 average burning.

- 369 The Present Street lighting system in Dindigul 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) During off peak hours (after 11 pm in night) lighting levels increase further due to increase in voltage;
 - (iii) Lighting devises are not mounted properly, thus unnecessarily distributing light to surrounding areas and providing less light on roads and pathways; and
 - (iv) 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.
- 370 In order to address some of the above issues in the town, power saver devises to be installed. This 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 optimized 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.
371. *Privatization Option.* Government of Tamil Nadu has initiated privatization of street lighting in most of the ULBs in Tamil Nadu. Private contractors have to replace all streetlights by energy efficient lights, installation of power saver devises at necessary location and maintains the same. The replacement of existing lights proposed to replace in 2006 itself. Separate cash flow for street lighting was prepared to ascertain the savings due to the replacement of new energy efficient lights.
- 372 The basis for preparing the cash flows are as follows, 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 ULB 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 ULB at 80 percent and 20 percent. Through street lighting energy consumption ULB can save minimum of Rs. 19.32 lakh in 2007, out of which Rs. 3.86 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 could be retained for overseeing the private contractors operation and maintenance work and hence no savings envisaged from the manpower reduction during the project implementation period.

Table 9.5: Assumption for calculating energy savings

Description	Unit	Value
No. of Street Lights in the ULB	Nos.	5,383
Total Annual Energy Cost for Street Lighting (FY 04-05)	INR Lakh	91.07
Energy Cost per Street light/annum	INR	1,692
Standard Cost as per Case Studies	INR	1,353
Annual Increment in Energy Cost	%	3
Transfer of Savings to ULB	%	20
Rate of Interest	%	8.50

Source: Analysis

Table 9.6: 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
	<i>Rs. Lakh</i>	<i>Nos.</i>	<i>INR Lakh</i>				
2006	36.03	5,383	93.80	75.04		-	-36.03
2007		5,383	96.62	77.29	19.32	3.86	19.32
2008		5,383	99.51	79.61	19.90	3.98	19.90
2009		5,383	102.50	82.00	20.50	4.10	20.50
2010		5,383	105.58	84.46	21.12	4.22	21.12
2011	48.21	5,383	108.74	86.99	21.75	4.35	-26.47
2012		5,383	112.00	89.60	22.40	4.48	22.40
2013		5,383	115.36	92.29	23.07	4.61	23.07
2014		5,383	118.83	95.06	23.77	4.75	23.77
2015		5,383	122.39	97.91	24.48	4.90	24.48
2016	64.52	5,383	126.06	100.85	25.21	5.04	-39.31
2017		5,383	129.84	103.88	25.97	5.19	25.97
2018		5,383	133.74	106.99	26.75	5.35	26.75
2019		5,383	137.75	110.20	27.55	5.51	27.55
2020		5,383	141.88	113.51	28.38	5.68	28.38
							181.40
						IRR 12	38%
						IRR 15	46%
						IRR 20	46%

Source: Analysis.

4. Assets

373 Details of remunerative assets owned by Dindigul Municipality are presented in **Table: 9.7**. 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 Dindigul 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 of Rs. 2.66 Lakh per annum. The rentals and lease amounts have to be revised every 3 year once minimum of 15 percent from FY 2006-07. The collection performance of leases and rentals are inconsistent over the assessment period. Annual account statement reveals very low collection performance, which needs to be attended immediately by municipality.

Table 9.7: Additional Revenue Estimation from Remunerative Assets

Name of the Asset	Nos of Shops	Annual Income	Market value	Additional Revenue
		Rupees/Annum	Rupees/Annum	Rs./Year
Gandhi Maidan	361	850,434	935,477	85,043
Merai Ratha Vedhi	-	1,71,300	188,430	17,130
Begampur Market	-	34,322	37,754	3,432
Therai Ratha Vedhi	-	75,000	90,000	15,000
Bharathipuram Daily Market	-	155,000	186,000	31,000
New Commercial Complex, Kamaraja Bus Stand	-	214,623	257,548	42,925
<u>Toilets</u>				
Kamaraja Bus Stand	-	321,600	353,760	32,160
Gopala Samithi	-	3,730	4,103	373
Gandhi Market	-	22,000	26,400	4,400
<u>Slaughter Houses</u>				
Slaughter House	-	205,000	225,500	20,500
Souriar Palayam Slaughter house	-	70,000	84,000	14,000
Total		21,23,009	23,88,972	2,65,963

Source: Analysis.

C. Additional Resource Mobilization

1. Parking Fees

374 Land-use and economic activity of the town drives the parking demand in Dindigul. Town attracts significant no of commercial vehicle traffic and personal traffic, which puts up specific parking requirement. Auto-rickshaws parked all major junctions in town cause blockage to the vehicular movement. Based on the field visit two areas were identified for 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 one hour two rupees and an annual vehicle increment of two percent were assumed to calculate the future revenue generation. The

estimated parking fee is presented in **Table: 9.8**.

Table 9.8: Estimated Parking Fee

Year	Hospital Rd	Along Major Roads	Along Minor Roads	Total
Approximate No of veh./day	100	150	100	350
	<i>Rs. Lakh</i>			
2007	1.53	2.30	1.53	5.37
2008	1.56	2.35	1.56	5.47
2009	1.59	2.39	1.59	5.58
2010	1.63	2.44	1.63	5.69
2011	1.66	2.49	1.66	5.81
2012	1.69	2.54	1.69	5.92
2013	1.73	2.59	1.73	6.04
2014	1.76	2.64	1.76	6.16
2015	1.80	2.69	1.80	6.29
2016	1.83	2.75	1.83	6.41
2017	1.87	2.80	1.87	6.54
2018	1.91	2.86	1.91	6.67
2019	1.94	2.92	1.94	6.80
2020	1.98	2.97	1.98	6.94

Source: Analysis.

2. Advertisement Fee

375 Lease amount collected as fixed by the council for advertising on lamp posts and hoardings erected within the Municipal limit are accounted in advertisement fee. In case of Dindigul Municipality average revenue generated through the advertisement fee is very low (Rs. 60,828). Hence, there is a scope to increase the advertisement fee by extending tax /fee coverage net. The following table (**Table: 9.9**) presents detailed estimation of advertisement fee for Dindigul Municipality. The total advertisement fee is Rs. 6.50 lakh per annum. Annual increment of 2 percent on total advertise fee assumed, to accommodate increase in no of advertisement hoardings/ boards.

3. Conservancy Fee

376 Conservancy establishment cost is work out to 22 percent of total establishment cost of Dindigul Municipality, to meet at least a part of collection expenses conservancy fee introduced. It is proposed to cover at least 50 percent of the residential properties and 100 percent of non domestic properties like hotels, lodges, commercial establishments and etc., For Residential, properties Rs. 15 per month and non domestic properties Rs. 50 per month have to be charged. Upward revision of 15 percent every 3 years once from 2006-07 proposed. **Table: 9.10** presents estimated additional revenue mobilized through conservancy fee for Dindigul Municipality.

4. Summary

377 Summary of additional revenue mobilization through expenditure control measures and additional revenue generations are presented in **Table: 9.11**.

Table 9.9: 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	150.73			
Length of Road	%	20%	50%	-	-
Total Length of Road	Km	30.15	75.37	-	-
Spacing of Hoardings/Boards per km	Nos	5	5	-	-
Total no of Hoardings/Boards	Nos	155	377	50.00	2,692
Total Revenue per annum	Rs. Lakh	2.27	1.89	1.00	1.35

Source: Analysis

Table 9.10: Estimation of Conservancy Fee

Description	Coverage	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Domestic (No)	50%	16,797	17,301	17,820	18,355	18,905	19,378	19,863	20,359	20,868	21,389
Non Domestic (No)	100%	2,986	3,076	3,168	3,263	3,361	3,445	3,531	3,619	3,710	3,803
<i>Total Revenue (Rs. Lakh)</i>		<i>46.58</i>	<i>53.80</i>	<i>58.33</i>	<i>73.48</i>	<i>77.90</i>	<i>81.03</i>	<i>96.57</i>	<i>100.89</i>	<i>104.37</i>	<i>123.19</i>

Source: Analysis

Table 9.11: Estimated additional revenue from expenditure control and resource mobilization

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	<i>Rs. Lakh</i>											
Expenditure Control Measures												
Energy Saving – Street lights	3.86	3.98	4.10	4.22	4.35	4.48	4.61	4.75	4.90	5.04	5.19	5.35
Additional Resource Mobilization												
Leases/Rentals from Assets	2.66	2.66	2.66	3.06	3.06	3.06	3.52	3.52	3.52	4.04	4.04	4.04
Parking Fee	5.37	5.47	5.58	5.69	5.81	5.92	6.04	6.16	6.29	6.41	6.54	6.67
Advertisement Fee	6.50	6.63	6.76	6.89	7.03	7.17	7.32	7.46	7.61	7.76	7.92	8.08
Total Revenue	18.39	18.74	19.1	19.86	20.25	20.63	21.49	21.89	22.32	23.25	23.69	24.14

Source: Analysis.

X. FINANCIAL OPERATING PLAN

A. Financial Sustainability

1. Financial Sustainability

378 *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 Dindigul 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 saving, privatization and etc and further resources mobilized through introducing conservancy fee, parking fee 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 Dindigul Municipality and the requirement for upgrading the town’s infrastructure is estimated and phased based on the construction activity. 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

- 379 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.
- 380 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.
- 381 *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 all three scenarios. However, the tax base (number of connections) varies for the three 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 10.1, Table 10.2, Table 10.3 & Table 10.4** list the assumptions adopted with regards forecasting income from property tax, water charges, drainage charges and SWM Conservancy fee respectively under the three FOP scenarios.

Table 10.1: Key assumptions for forecasting income from Property Tax

Description	Current Level	Base Case Scenario	Investment Scenarios
Annual growth in number of assessments (%)	-	3%	3%
Average ARV per Property (Rs. Per Annum)	7,109	7,109	7,109
Tax Rate (% of ARV)	17%	17%	17%
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	38%	50%	50%
Current	71%	80%	80%

Source: Analysis

Table 10.2: Key assumptions for forecasting income from Water Charges

Description	Current Level	Base Case Scenario	Investment Scenarios
% Water connections to property tax assessments	50%	50%	80%
Monthly water charge per connection (Rs.)			
Domestic	45.00	45.00	45.00
Non Domestic	90.00	90.00	90.00
Industrial	150.00	150.00	150.00
Periodic revision in water charges			
2006-07	-	15.00 %	15.00 %
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	21%	50%	50%
Current	40%	80%	80%
One time connection fee (Rs.)			
Domestic	2,000	2,000	2,000
Non Domestic	5,000	5,000	5,000
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 10.3: Key assumptions for forecasting income from Sewerage Charges

Description	Current Level	Base Case Scenario	Investment Scenarios
% Sewerage connections to PT assessments	-	-	80 %
Monthly sewerage charge per connection (Rs.)			
Domestic	-	-	50.00
Non Domestic	-	-	100.00
Industrial	-	-	100.00
Periodic revision in sewerage charges			
2006-07	-	15.00 %	15.00 %
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	-	-	50.00
Current	-	-	80.00
One time connection fee (Rs.)			
Domestic	-	-	7,000
Non Domestic	-	-	10,000
Industrial	-	-	10,000
Periodic revision of one time connection fee	-	-	20 % - 3 yrs once

Source: Analysis

Table 10.4: Key assumptions for forecasting income from Solid Waste conservancy fee

Description	Current Level	Base Case Scenario	Investment Scenarios
% Coverage to PT assessments			
Domestic	-	-	50.00
Non Domestic	-	-	100.00
Monthly conservancy fee per PT assessment (Rs.)			
Domestic	-	-	15.00
Non Domestic	-	-	50.00
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 15 percent, respectively. Profession tax was registered at a 19.29 percent CAGR during the review period and hence, it is predicted for future with growth rate of 10 percent. While the income from the municipal properties and markets past trend witnessed a low growth trend, it is assumed that it would grow at a growth rate of 10 percent.

Table 10.5: Key growth rate assumptions for income from other own sources

Description	Current Level	Assumption
Profession Tax	19.29 %	10.00 %
Other taxes & Charges	--	5.00 %
Income from Municipal Properties and Markets	(45.80 %)	15.00 %
License Income (Trade, etc.)	3.68 %	10.00 %
Income from Special Services	(35.20 %)	5.00 %
Income from Sale Proceeds	(73.30 %)	5.00 %
Income from Fees and Fines	(32.30 %)	5.00 %
Income from Interest on Deposits	(2.04 %)	6.00 %
Income from Investments(Excl. Interest)	--	5.00 %
Miscellaneous Income	(23.51 %)	5.00 %

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 was observed at negative growth trend, which attributes to inconsistent transfer of ULB share during the review period. Hence, a nominal growth rate of 5 percent has

been assumed to forecast the revenue. In case of surcharge on stamp duty witnessed a growth rate of 43.37 percent during the review period and hence it is assumed that it is going to grow at 15 percent.

Table 10.6: Key growth rate assumptions for income from assigned sources

Description	Current Level	Assumption
Entertainment Tax	(22.85 %)	5.00 %
Surcharge on Stamp Duty	43.37 %	15.00 %
Other Transfers	(100.00 %)	5.00 %
Total- Assigned Revenue	19.91 %	

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 low, owing to the inconsistent in transfer of grant to ULB. Considering the state 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 10.7: Key growth rate assumptions for income from grants & contributions

Description	Current Level	Assumption
State Finance Commission Grant	(36.64 %)	15.00 %
Other Grants	(100.00 %)	5.00 %
Total- Grants & Contribution	(29.30 %)	

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 10.3** 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.

382 *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 20 percent, respectively. The operation maintenance was grown at 10.21 percent during the assessment period; ULB should take essential action plan towards controlling the expenditure towards operation and maintenance of municipal services. Since most of the item heads are growing at very fast rate, on a conservative side at a maximum of 20 percent has been adopted to forecast the future expenditure trend.

However, this could be achieved only through expenditure reduction and privatization of municipal services. Although the expenditure trend of staff salary was on the higher side during the assessment period, considering the periodic revision and other increase at a rate of 8 percent has been adopted for future.

Table 10.8: Key growth rate assumptions for forecasting revenue expenditure

Description	Current Level	Assumption
General Administration & Revenue Collection		
Staff Salary and Employee Related Expenses	(0.84 %)	8.00%
Allowances to Elected Representatives	(2.81 %)	5.00%
General Expenses	19.55 %	20.00%
Pensions and Gratuities	4.47 %	5.00%
Education - Staff Salary	--	--
Miscellaneous	41.00 %	15.00%
<i>Total Establishment</i>	<i>1.78 %</i>	
Municipal Services excl. W&D		
General Expenses	36.68 %	20.00%
Public Works and Roads	7.99 %	8.00%
Public Health and Conservancy	11.07 %	11.00%
Street Lighting (including Electricity Charges)	6.39 %	7.00%
Education	(41.49 %)	10.00%
Vehicle and Equipment Maintenance	23.19 %	20.00%
Miscellaneous	(37.09 %)	5.00%
Total- Municipal Services excl. W&D	10.21%	

Source: Analysis

Table 10.9: Key growth rate assumptions for forecasting water supply & Drainage revenue expenditure

Description	Current Level	Assumption
Staff Salary & Employee Related Expenses	(3.49 %)	8.00%
Administration Expenses	175.47 %	15.00%
Equipment Maintenance & Repairs	11.51 %	12.00%
Board Payment	(100.00 %)	10.00%
Electricity Charges	(14.20 %)	20.00%
Vehicle Maintenance & Repairs	13.93 %	15.00%
Miscellaneous	7.81 %	5.00%
Total- Water Supply & Drainage	(5.18 %)	

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. Where data was provided by the ULB, it was considered for preparing the FOP.
- (v) 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 10.10** presents the assumptions regarding O&M expenditure on new assets.

Table 10.10: 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
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 10.11**, with a five year moratorium on interest and principal repayment – interest during the moratorium period being capitalized. Considering a ten-year loan draw down schedule (2006-07 to 2015-16) 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 10.11: Proposed Financing Pattern

Infrastructure Type	Loan	Grant	ULB + Consumer	Interest Rate
	<i>Percentage</i>			
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	50	30	20	8.50
Slum Upgradation	60	30	10	8.50
Others	60	10	30	8.50

Source: Analysis

- 383 *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.
- 384 *Capital Expenditure*. The estimated expenditure for implementing sub-projects is phased over a ten-year period beginning 2006-07. Based on the above phasing the actual investment requirement over the ten-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 10.12: Summary of estimated investment requirement and phasing schedule

Sector	Total Investment	Investment Phasing (%)									
		<i>Rs. Lakh</i>	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Water Supply	470.33	0%	0%	20%	25%	0%	0%	15%	15%	15%	10%
Sewerage & Sanitation	3371.00		35%	35%				18%	12%		
Roads	11840.28	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Storm Water Drains	2145.47	0%	10%	10%	10%	10%	10%	10%	10%	15%	15%
Solid Waste Mgmt	631.25	10%	10%	15%	10%	10%	10%	10%	10%	15%	0%
Street Lighting	104.87	10%	10%	15%	15%	10%	10%	10%	10%	10%	0%
Others	562.69	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Grand Total Investment	21,441.39										

Source: Analysis

Table 10.13: Summary of phased investment in full project investment scenario

Sector	Total Investment	Investment Phasing – Rs. Lakh at Current Price									
		<i>Rs. Lakh</i>	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Water Supply	470.33	-	-	94	118	-	-	71	71	71	47
Sewerage & Sanitation	3,371.00	1188	1188	0-	-	-	597	398	-	-	-
Roads	11840.28	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184
Storm Water Drains	2145.47	-	215	215	215	215	215	215	215	322	322
Solid Waste Mgmt	631.25	63	63	95	63	63	63	63	63	95	-
Street Lighting	104.87	10	10	16	16	10	10	10	10	10	-
Others	562.69	56	56	56	56	56	56	56	56	56	56
Grand Total Investment	21,441.39										

Source: Analysis.

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

Table 10.14: Financing pattern for proposed projects

Sl .	Sector	Government Grant	Financial Institution Loan	ULB Share/Beneficiaries	Other Department
		<i>% Share</i>			
Municipal Infrastructure					
1	Water Supply	30.00	50.00	20.00	-
2	Sewerage & Sanitation	30.00	50.00	20.00	-
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	50.00	20.00	-
7	Slum Upgradation	30.00	60.00	10.00	-
8	Others	10.00	60.00	30.00	-
Other Agency owned Infrastructure					
9	Traffic & Transportation	-	-	-	100

Source: Analysis

Table 10.15: One-time charges for water & sewerage connections

Sl.No	Description	Water Supply	Sewerage
1	Domestic	2,000	7,000
2	Non Domestic	6,000	10,000
3	Industrial	6,000	10,000

Source: Analysis

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

(i) Revenue Income .

- a. *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 80 percent against current demand.
- b. *Water Charges:* At a nominal 3 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 2013; 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 80 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.

- c. *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 2013; monthly flat rate of Rs. 50, Rs. 100 & Rs. 100 per connection for domestic, non domestic and industrial connections respectively, it is assumed for sewerage charge starts from 2007-08, and from then on a 15 percent increase is assumed every 3 years; collection performance is assumed at 50 percent against arrears demand and 80 percent against current demand; and new (one-time) connection charges are adopted as per **Table 10.3**.
- d. *Conservancy Fee*: In base case scenario and investment scenarios, it is assumed that 50 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. 20 & Rs. 50 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 80 percent against current demand.
- d. *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.

- a. Past trend is adopted, subject to minimum and maximum ceilings of 5 and 20 percent per annum, respectively.
- b. Additional O&M expenditure is estimated based on ascertained percentages of capital costs.
- c. All outstanding non-debt liabilities are to be cleared off in the next 5 years.
- d. All outstanding debt liabilities are to be cleared off in the next 10 years at an interest rate provided by the ULB, otherwise at an average interest rate of 9.50 percent.
- e. 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 10.10**.

(iii) Capital Expenditure.

- a. Capital expenditure is forecast based on the identified investments.
- b. 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.

(iv) Capital Income.

- a. Capital Income is ascertained based on assumed project financing patterns as detailed in **Table 10.11.** .

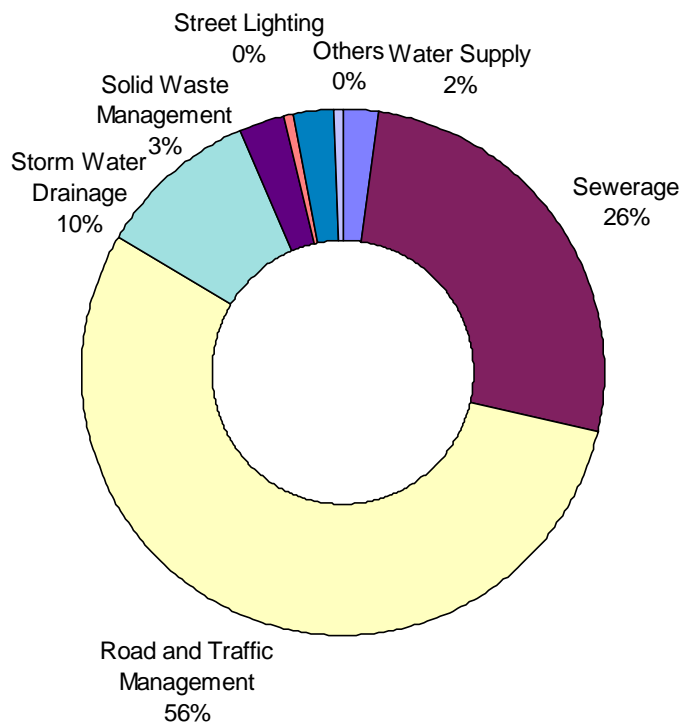
3. *Project Cash Flows and FOP Results*

387 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.

388 *Base Case Scenario.* The base case scenario results indicate that under the past-trend based assumptions adopted, Dindigul municipality would end up with a positive cumulative surplus of Rs. 15,156 lakh by the end of FY 2019-20 (refer **Table 10.16**). 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. 14,851 lakh.

Figure 10.1: Sector wise distribution of full Investment

(i) *Full Project Sustainance Scenario.* **Table 10.17** presents a summary of total project cash flows due to the full project scenario. Detailed sub-project cash flows are presented in **Appendix I**. Dindigul Municipality would accumulate a negative closing balance of Rs. 35,592 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 Dindigul Municipality would end up with a negative closing balance of Rs. 20,436 lakh by the FOP horizon year 2019-20. Though the debt servicing ratio is maintained below 30 percent, operating ratio is more

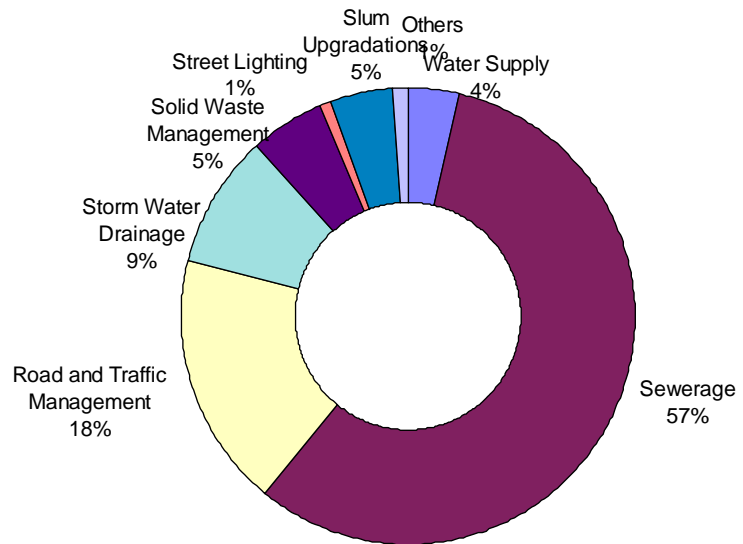


than one during the forecast period and hence ULB cannot sustain the entire identified investment. **Table 10.17** presents a summary of the municipal fiscal status in the Full Project scenario. The full project (municipal share) investment proposed for Dindigul is to the tune of Rs. 21,541 lakh, out of which 56 percent of the total investment is proposed for road and traffic management and 29 percent for sewerage system development.

Figure 10.2: Sector wise distribution of Sustainable Investment

389 *Implementable Investment.*

Table 10.19 presents a summary of project cash flows due to the sustainable project scenario. Detailed sustainable sub-project cash flows are presented in **Appendix I**. Dindigul Municipality would accumulate a negative closing balance of Rs. 9,804 lakh by the end of 2019-20 due exclusively to the sustainable project investment. The total net sustainable project cash flows due to sustainable



project when loaded onto the base case Scenario FOP indicate that Dindigul Municipality would end up with a positive closing balance of Rs. 5,351 lakh by the FOP horizon year 2019-20, which represents the extent of sustainability and Debt Servicing Ratio is maintained below 30 percent. The above chart represents sector wise sustainable investment distribution. Details of sector wise sustainable project phasing and investments presented in **Table 10.18**. **Table 10.20** elucidates sustainable investments funding options like loan, grant and ULB contributions. With out additional resource mobilization initiatives municipality can sustain to the tune of Rs. 8,723 lakh. With resources mobilization initiatives like energy savings in street lighting, introducing conservancy fee, privatization/ redeployment of conservancy staffs, levying parking fee and increase the remunerative assets rental/lease values to the market level would result in sustainability increases to the tune of Rs. 9,190.99 lakh (approximately 43 percent of the total investment proposed).

390. For the sustainability of the project investment for any town, priority importance is given to environmental infrastructure projects comprising of Sewerage and sanitation, solid waste management and water supply system and this is also based on the public consultation. The investment requirements are based on the minimum requirement for the town. Since health is a major issue, 100 percent of the required investment is proposed for sewerage and sanitation. Like wise for water supply and solid waste management 65 percent of the total investment is proposed. The remaining investment for water supply comprises of laying of distribution network in outer areas and these can be implemented in later stage.

Table 10.16: Financial Operating Plan Results - Dindigul Municipality

Item Heads	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Rs. Lakh</i>															
Base Case - Municipal Fund															
<i>Opening Balance</i>	325	969	1,364	1,759	2,171	2,645	3,160	3,902	4,758	5,680	6,663	7,768	9,463	11,248	13,170
Revenue Income*	1,789	1,961	2,088	2,249	2,473	2,697	3,104	3,456	3,793	4,165	4,644	5,349	5,914	6,601	7,304
Additional Revenue Mobilization	0	18	19	19	20	20	21	21	22	22	23	24	24	25	26
<i>Total Revenue Income</i>	1,789	1,980	2,107	2,268	2,493	2,717	3,125	3,477	3,815	4,188	4,668	5,373	5,938	6,626	7,330
<i>Revenue Expenditure</i>	1,145	1,585	1,712	1,856	2,019	2,203	2,383	2,621	2,893	3,205	3,563	3,678	4,153	4,704	5,343
Status	644	395	395	412	474	514	742	856	922	983	1,105	1,695	1,785	1,922	1,986
<i>Closing Balance</i>	969	1,364	1,759	2,171	2,645	3,160	3,902	4,758	5,680	6,663	7,768	9,463	11,248	13,170	15,156
Project Account - Full Project Scenario															
Total Net Project Cash Flow (after deducting ULB equity from cash flow)	0	(363)	(922)	(1,365)	(1,947)	(3,084)	(4,848)	(6,490)	(9,561)	(13,297)	(17,589)	(21,777)	(26,221)	(30,785)	(35,593)
Overall Closing Balance	969	1,001	836	806	698	76	(946)	(1,732)	(3,881)	(6,634)	(9,821)	(12,313)	(14,973)	(17,615)	(20,437)
Project Account - Sustainable Investment Scenario															
Total Net Project Cash Flows (after deducting ULB equity from project cash flow)	0	(179)	(427)	(420)	(400)	(765)	(1,258)	(1,214)	(2,219)	(3,394)	(4,618)	(5,852)	(7,179)	(8,461)	(9,805)
Overall Closing Balance	969	1,185	1,332	1,751	2,245	2,395	2,644	3,545	3,461	3,269	3,150	3,612	4,069	4,709	5,352

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

Table 10.17: Summary of Full Project Cash Flow.

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Rs. Lakh</i>															
Full Sub Project Cash Flow															
1	Water Supply	-	73	163	288	437	615	870	1,024	1,167	1,329	1,478	1,626	1,804	1,983
2	Sewerage	(29)	(119)	292	783	850	743	1,093	378	(387)	(1,150)	(1,992)	(2,906)	(3,798)	(4,718)
3	Roads and Traffic Management	(74)	(271)	(608)	(1,099)	(1,763)	(2,763)	(4,133)	(5,907)	(8,124)	(10,823)	(13,754)	(16,840)	(20,092)	(23,524)
4	Storm Water Drainage	-	(14)	(49)	(108)	(193)	(306)	(457)	(650)	(899)	(1,213)	(1,557)	(1,915)	(2,290)	(2,687)
5	Solid Waste Management	43	81	107	129	137	127	108	66	(6)	(90)	(180)	(278)	(358)	(445)
6	Street Lighting	(1)	(3)	(9)	(18)	(30)	(47)	(67)	(92)	(123)	(158)	(194)	(233)	(273)	(316)
7	Slum Upgradations	(3)	(12)	(25)	(43)	(68)	(133)	(209)	(299)	(402)	(520)	(598)	(679)	(764)	(853)
8	Others	-	(1)	(3)	(7)	(13)	(22)	(33)	(48)	(61)	(75)	(91)	(107)	(125)	(145)
	Total Sub Project Cash Flow	(64)	(267)	(131)	(75)	(643)	(1,786)	(2,829)	(5,529)	(8,835)	(12,700)	(16,888)	(21,333)	(25,896)	(30,704)
Total Full Project Cash Flow															
	<i>Opening Balance</i>	-	(64)	(267)	(131)	(75)	(643)	(1,786)	(2,829)	(5,529)	(8,835)	(12,700)	(16,888)	(21,333)	(25,896)
A	Sources of Fund														
1	Debt Drawdown	298	357	579	637	570	620	600	372	430	427	-	-	-	-
2	Equity Drawdown	1,306	1,614	2,255	2,465	2,373	2,583	2,621	2,141	2,480	2,480	-	-	-	-
3	Govt. Grant	688	841	1,210	1,323	1,254	1,333	1,337	1,032	1,199	1,202	-	-	-	-
4	User Charges	47	74	140	252	326	399	574	604	620	730	748	759	878	897
5	New Connection Fees	-	53	615	791	476	490	1,076	-	-	-	-	-	-	-
	Total- Inflow	2,338	2,939	4,799	5,469	4,999	5,425	6,208	4,150	4,729	4,838	748	759	878	897
B	Disposition of Funds														
1	Project Capex	2,292	2,812	4,043	4,426	4,197	4,568	4,593	3,584	4,150	4,153	-	-	-	-
2	Operation & Maintenance	-	81	180	338	518	693	892	1,103	1,285	1,498	1,705	1,807	1,915	2,030
3	Debt Servicing-	-	-	-	-	-	1,087	1,324	1,537	1,766	2,009	3,198	3,364	3,495	3,643

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		<i>Rs. Lakh</i>													
	Principal Repayment														
4	Interest During Construction	111	248	440	649	851	220	442	624	834	1,044	32	32	32	31
	Total- Outflow	2,403	3,141	4,663	5,413	5,566	6,569	7,251	6,849	8,035	8,704	4,936	5,203	5,442	5,705
	Net Cash Flow	(64)	(202)	136	55	(567)	(1,143)	(1,043)	(2,699)	(3,306)	(3,866)	(4,187)	(4,445)	(4,564)	(4,808)
	<i>Closing Balance</i>	<i>(64)</i>	<i>(267)</i>	<i>(131)</i>	<i>(75)</i>	<i>(643)</i>	<i>(1,786)</i>	<i>(2,829)</i>	<i>(5,529)</i>	<i>(8,835)</i>	<i>(12,700)</i>	<i>(16,888)</i>	<i>(21,333)</i>	<i>(25,896)</i>	<i>(30,704)</i>

Source: Analysis.

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

Table 10.18: Summary of sustainable project investment -base cost

Sector	Total Investment	Investment Phasing – Rs. Lakh at Current Price									
		<i>Rs. Lakh</i>	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
<u>Municipal Infrastructure</u>											
Water Supply	341	-	-	94	118	-	-	35	35	35	24
Sewerage & Sanitation	3,371	1188	1188	0-	-	-	597	398	-	-	-
Roads	1,658	178	178	178	178	178	154	154	154	154	154
Storm Water Drains	858	0-	150	150	150	150	43	43	43	64	64
Solid Waste Mgmt	489	63	63	95	63	63	32	32	32	47	-
Street Lighting	63	10	10	16	16	10	-	-	-	-	-
Slum Upgradation	422	56	56	56	56	56	28	28	28	28	28
Others	100	0-	10	10	15	15	15	15	10	10	-
<i>Total – ULB Investment</i>	7,302	1,495	1,655	599	596	472	869	705	302	338	270

Source : Analysis

Table 10.19: Summary of sustainable investment project cash flow

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		<i>Rs. Lakh</i>													
	Sustainable Sub Project Cash Flow														
1	Water Supply	0.0	72.9	163.4	287.7	436.6	614.6	872.5	1,035.7	1,195.2	1,381.2	1,562.4	1,743.6	1,956.4	2,171.1
2	Sewerage	(29.4)	(118.9)	292.0	782.9	849.9	778.2	1,206.9	584.0	(86.8)	(754.2)	(1,483.3)	(2,271.5)	(3,036.2)	(3,825.8)
3	Roads and Traffic Management	(11.0)	(40.7)	(91.2)	(164.9)	(264.5)	(410.5)	(606.6)	(857.2)	(1,167.4)	(1,542.7)	(1,949.0)	(2,376.2)	(2,825.9)	(3,299.8)
4	Storm Water Drainage	0.0	(9.9)	(34.5)	(75.6)	(134.9)	(205.5)	(289.1)	(386.9)	(502.3)	(637.5)	(780.7)	(928.8)	(1,082.0)	(1,241.5)
5	Solid Waste Management	42.7	80.6	107.1	129.0	137.3	129.7	121.4	98.7	58.4	17.1	(27.4)	(76.8)	(104.6)	(135.7)
6	Street Lighting	(0.5)	(3.0)	(7.8)	(16.2)	(28.1)	(42.6)	(58.0)	(74.5)	(92.1)	(110.7)	(130.2)	(150.5)	(171.7)	(193.8)
7	Others	(3.5)	(11.5)	(24.6)	(43.1)	(67.8)	(116.7)	(172.9)	(236.9)	(309.4)	(391.0)	(450.7)	(512.5)	(576.4)	(642.7)
	Total Sustainable Sub Project Cash Flow	0.0	(0.7)	(2.3)	(5.4)	(10.3)	(17.1)	(26.5)	(38.0)	(49.0)	(60.7)	(73.2)	(86.7)	(100.9)	(117.2)
	Total Sustainable Project Cash Flow														
	<i>Opening Balance</i>		(2)	(31)	402	894	918	730	1048	125	(953)	(2098)	(3332)	(4659)	(5941)
A	Sources of Fund														
1	Debt Drawdown	569	751	1,307	1,427	1,242	946	881	422	498	432	-	-	-	-
2	Equity Drawdown	177	218	427	472	389	305	273	83	97	79	-	-	-	-
3	Govt. Grant	320	412	739	808	692	510	466	188	225	195	-	-	-	-
4	User Charges	47	74	140	252	326	399	574	604	620	730	748	759	878	897
5	New Connection Fees	-	53	615	791	476	490	1,076	-	-	-	-	-	-	-
	Total- Inflow	1,113	1,507	3,228	3,750	3,124	2,650	3,270	1,297	1,439	1,435	748	759	878	897
B	Disposition of Funds														
1	Project Capex	1,067	1,381	2,472	2,707	2,322	1,780	1,639	714	842	730	-	-	-	-
2	Operation & Maintenance	-	44	99	206	327	436	530	625	689	762	828	878	930	986
3	Debt Servicing	-	-	-	-	-	543	627	689	754	819	1,154	1,208	1,230	1,255
4	Interest During	48	112	223	345	450	80	155	191	232	269	-	-	-	-

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		<i>Rs. Lakh</i>													
	Construction														
	Total- Outflow	1,115	1,537	2,794	3,258	3,100	2,839	2,952	2,220	2,518	2,580	1,982	2,086	2,160	2,241
	Net Cash Flow	(2)	(29)	433	492	24	(188)	318	(923)	(1078)	(1145)	(1234)	(1327)	(1282)	(1344)
	<i>Closing Balance</i>	(2)	(31)	402	894	918	730	1048	125	(953)	(2098)	(3332)	(4659)	(5941)	(7285)

Source: Analysis.

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

Table 10.20: Sustainable project funding option- Base cost -2006-11 (Rs. Lakh).

Sectors	Loan	Grant	ULB /Beneficiaries Contribution	Total
Water Supply	105.82	63.49	42.33	211.65
Sewerage & Sanitation	1188.00	712.8	475.20	2,376.00
Road and Traffic Management	532.81	266.41	88.80	888.02
Storm Water Drainage	360.44	180.22	60.07	600.73
Solid Waste Management	208.31	104.16	34.72	347.18
Street Lighting	31.46	18.88	12.58	62.92
Slum Upgradation	168.81	84.40	28.13	281.35
Others (construction of fruit market on 7.5 acres)	30.00	5.00	15.00	50.00
Total	2,625.65	1,435.36	756.83	4,817.85

Source: Analysis.

B. The City Corporate cum Business Plan Components

390 The phasing/ scheduling of investments have been carried out through an iterative process and the principles of phasing have taken into account:

- Priority needs, with developed areas getting priority over future development areas,
- Inter- and intra service linkages, viz. Water supply investments shall be complemented by corresponding sewerage/ sanitation improvements,
- Size and duration of the requirements, including preparation and implementation period,
- Project linked revenue implications, such as installing house connections where supply and distribution capacities have been increased.

391 The Capital Improvement Program involved the identification of public capital facilities to cater to the demand of the town populace by the year 2026 and was phased into the following stages.

1. Infrastructure Development

Water Supply and Rejuvenation of Water Bodies

392 *Water Supply.* Under this sector Rs. 341.0 lakhs identified for all component, which are Intake Pumping, Raw Water Transmission, Clear Water Pumping and Roads Covered with Distribution Network. The investment of lake rejuvenation components also included in water supply sector. This is worked out based on the base costs estimated in 2005.

393 The CIP for the Water supply sector is based on the requirements and demand for the year 2026. The priority is given to the Clear Water Pumping and Roads Covered with distribution network. The project will be taken up by 2008-09. The improvement of lakes is planned to take up in 2009-10. The phasing of the sustainable investment is presented in

the **Table 10.21**.

Table 10.21: Investment Phasing for the Water Supply Sector for phase I (2006-11)

Component	2008-09	2009-10	Total
	Rs. Lakhs		
Raw Water Transmission	3.68	24.16	27.84
Clear Water Pumping	92.22	23.05	115.27
Distribution Network	-	48.83	48.83
Improvements to Lakes	-	19.71	19.71
Total	95.90	115.75	211.65

Source: Analysis

Sewerage and Sanitation

- 394 An investment of Rs. 2376 lakhs for provision of under ground drainage system is envisaged in lieu with the environmental aspects i.e. Period of implementation for UGD is from 2007-2010. The sustainable CIP is presented in **Table 10.22**

Table 10.22: Investment Phasing for the Sewerage and Sanitation

Component	2007-08	2008-09	2009-10	Total
	<i>Rs. in Lakhs</i>			
Under Ground Drainage (year 2026)				
Road Length Covered	940	948	-	1888
Pumping Capacity Augmentation	110	-	-	110
Treatment Capacity Augmentation	150	228	-	378
Total	1200	1176		2376

Source: Analysis

Roads & Traffic and Transportation

- 395 Rs. 888.02 lakhs sustainable investment is proposed for up-gradation of existing roads to either earthen to BT surfacing, and new formation. Road widening & strengthening and junction improvements will be taken up by 2006 – 11. Around Rs. 80 lakhs identified towards core city renewal in 2007 – 08. The details of investment phasing are summarized in **Table 10.23**.

Table 10.23: Investment Phasing for the Road Sector

Component	2006-07	2007-08	2008-09	2009-10	2010-11	Total
	<i>Rs. in lakhs</i>					
Up-gradation						
Earthen to Black Top	93.50	93.50	-	-	-	187.00
New Formation						
Black Top	-	-	-	54.67	-	54.67
WBM	93.55	-	-	-	-	93.55
Widening/ Strengthening	-	-	141.51	115.78	-	257.29
Traffic and Transportation						
Core City Renewal	-	80	-	-	-	80.00
Major Orbital Roads	-	-	-	-	185.51	185.51
Junction Improvements	-	-	30.00	-	-	30.00
Total	187.05	173.5	171.51	170.45	185.51	888.02

Source: Analysis

Storm Water Drainage & Natural Drains

- 396 The sustainable investments are in line with desilting & strengthening of primary drains and new formation of drains. The components involved in this sector are new formations. The estimated cost for formation of storm water drainage is about Rs. 600.73 Lakhs. The new formation of pucca open drains and desilting & strengthening of primary drains will be taken up by 2007 and end by 2008. New pucca closed drains starts at the year 2007 - 16. The investment phasing for storm water drains is presented in **Table 10.24**.

Table 10.24: Investment Phasing for Storm Water Drains

Component	2007-08	2008-09	2009-10	2010-11	Total
	<i>Rs. Lakhs</i>				
Desilting & Strengthening of Primary Drains	13.13	-	-	-	13.13
New Pucca Open Drains	41.2	-	-	-	41.2
New Pucca Closed Drains	101.24	150.56	150.56	144.04	546.4
Total	155.57	150.56	150.56	144.04	600.73

Source: Analysis

Solid Waste Management

- 397 The total sustainable investment identified for this sector is Rs. 347.18 Lakhs. The requirements at the disposal site are planned for the horizon year 2011. In addition, the other components of primary and secondary collection are planned for the immediate requirements and demands. Rs. 90.81 lakhs of this amount is proposed for augmentation of the primary and secondary collection system in the town. Rs. 83.87 lakhs is proposed for investment on developing the land fill area and facility of compost. The Capital Improvement Program for solid waste management sector is presented in **Table 10.25**.

Table 10.25: Investment Phasing for the Solid Waste Management

Component	2007-08	2008-09	2009-10	2010-11	Total
	<i>Rs. in Lakhs</i>				
Push Carts Required	14.54				14.54
Containerized Tricycles (6 bins)	24.72				24.72
Container Bins (2.5 T) Capacity	11.55				11.55
Dual Loaded Dumper Placers	12	12		16	40
Land Fill Development				83.87	83.87
Compost Facility Development		51.75	86.25	34.5	172.5
Total	62.81	63.75	86.25	134.37	347.18

Source: Analysis

Street Lighting

- 398 Rs. 62.95 lakhs is identified for provision of additional streetlights in Dindigul. 100% investments are proposed for the plan period 2006-11. Of the total identified investment, Rs. 20.58 Lakhs is proposed for provision of Power Saver Switches and High Mast lamps. The Capital Improvement Program for Street lighting is presented in **Table 10.26**.

Table 10.26: Investment Phasing for the Street Lighting

Component	2006-07	2007-08	2008-09	2009-10	2010-11
	<i>Rs. in Lakhs</i>				
Tube Light	10.49	10.49	15.73	2.29	3.67
High Mast Lamps	-	-	-	13.92	-
Power Saver (Auto Timer) Switches	-	-	-	-	6.66
Total	10.49	10.49	15.73	16.21	10.33

Source: Analysis

Poverty Alleviation

- 399 Rs. 281.35 lakhs is identified for the slum infrastructure facilities in Dindigul. Of which, Rs. 59.58 lakhs is for sewer network, 15.97 lakhs for solid waste management facilities, 87.13 lakhs for storm water drainage and Rs. 34.32 lakhs for streetlights. An investment for solid waste management and streetlights starts in the year 2007 and ends in 2011. Water supply and sewer network starts in the year 2008. The Capital Improvement Program for Street lighting is presented in **Table 10.27**.

Table 10.27: Investment Phasing for the slum up gradation

Component	2007-08	2008-09	2009-10	2010-11	Total
	<i>Rs. in Lakhs</i>				
Water Distribution Network		38.36	38.36	8.52	85.24
Sewer Network		59.58			59.58
No. of Dustbins/ Temporary Waste Storage Points	3.69				3.69
No. of Tricycle Bins	9.43				9.43
No. of Push Carts	1.95				1.95
Storm Water Drains	8.71	17.43	17.43	43.57	87.14
Streetlights	34.32				34.32
Total	58.1	115.37	55.79	52.09	281.35

Source: Analysis

Summary

400. The total estimated sustainable base cost for Phase I projects for all the sector is Rs. 4817.85 lakhs. The summary of sustainable investments is in **Table 10.28**.

Table 10.28: Component wise Sustainable Investments

Sector	Capital Expenditure
Municipal Infrastructure	<i>Rs. Lakhs</i>
Water Supply & Rejuvenation of Lakes	211.65
Sewerage & Sanitation including slums	2,376.00
Roads & Traffic and Transportation	888.02
Storm Water Drains & Desilting of Natural Drains	600.73
Solid Waste Management	347.18
Street Lighting	62.92
Slum Up gradations	281.35
Others (construction of fruit market on 7.5 acres)	50.00
Total	4,817.85

Source: Analysis

17- Dindigul Municipality - Abstract of Accounts		I- Income and Expenditure Statement			
Head of Account	2000-01	2001-02	2002-03	2003-04	
	<i>Rs. Lakh</i>				
Opening Balance					
REVENUE ACCOUNT					
I Revenue Income					
A Tax- Own Sources					
1 Property Tax (General Purpose) - 59% of Total PT	207.69	212.12	204.88	248.29	
2 Property Tax (Education Purpose) - 16% of Total PT	86.33	88.17	85.16	103.21	
3 Profession Tax	28.70	46.10	41.02	48.72	
4 Other Taxes & Charges	-	-	-	-	
<i>Tax- Own Sources</i>	<i>322.72</i>	<i>346.39</i>	<i>331.06</i>	<i>400.22</i>	
B Assigned Revenues					
1 Entertainment Tax	47.43	22.04	65.60	21.78	
2 Surcharge on Stamp Duty	55.81	83.30	187.14	164.45	
3 Other Transfers	4.79	-	0.90	-	
<i>Assigned Revenues</i>	<i>108.02</i>	<i>105.34</i>	<i>253.63</i>	<i>186.23</i>	
C Non Tax- Own Sources					
1 Income from Municipal Properties and Markets	109.33	99.88	82.33	17.41	
2 License Income (Trade, etc.)	14.32	10.92	13.10	15.96	
3 Income from Special Services	0.29	0.14	0.11	0.08	
4 Income from Sale Proceeds	1.05	2.73	0.38	0.02	
5 Income from Fees and Fines	14.11	52.49	66.32	4.38	
6 Income from Interest on Deposits	3.81	1.76	3.75	3.58	
7 Income from Investments(Excl. Interest)	-	-	-	-	
8 Miscellaneous Income	60.42	54.70	98.46	27.04	
<i>Non Tax- Own Sources</i>	<i>203.34</i>	<i>222.62</i>	<i>264.45</i>	<i>68.47</i>	
D Revenue Grants					
1 State Finance Commission Grant	150.38	219.44	422.44	383.60	
2 Other Grants	27.09	32.44	31.05	-	
<i>Revenue Grants</i>	<i>177.47</i>	<i>251.89</i>	<i>453.49</i>	<i>383.60</i>	
Total- Revenue Income (Excl. W&D Fund)	811.56	926.24	1,302.63	1,038.52	
E Water and Drainage Fund					
1 Water & Drainage Tax - 25% of Total PT	90.40	92.33	89.18	108.07	
2 Water Charges	112.31	107.23	89.15	84.61	
3 Drainage Charges	-	-	-	-	
4 Income from Interest on Deposits	-	-	-	-	
5 Water Supply & Sanitation Grant	-	-	39.75	-	
6 Other Income	1.14	0.97	0.52	1.15	
Total- W&D Fund Revenue Income	203.85	200.53	218.60	193.83	
Total- Revenue Income	1,015.41	1,126.77	1,521.23	1,232.35	

17- Dindigul Municipality - Abstract of Accounts		I- Income and Expenditure Statement			
Head of Account	2000-01	2001-02	2002-03	2003-04	
	<i>Rs. Lakh</i>				
II Revenue Expenditure					
A General Administration					
1 Staff Salary and Employee Related Expenses	458.04	447.65	449.51	446.54	
2 Allowances to Elected Representatives	1.72	1.71	1.73	1.58	
3 General Expenses	10.70	23.76	23.65	18.29	
4 Pensions and Gratuities	130.97	98.72	123.20	149.32	
5 Education - Staff Salary	-	-	-	-	
6 Miscellaneous	10.53	9.20	8.92	29.51	
<i>Establishment</i>	<i>611.96</i>	<i>581.03</i>	<i>607.00</i>	<i>645.24</i>	
B Operation & Maintenance					
1 General Expenses	3.51	2.79	2.82	8.95	
2 Public Works and Roads	14.75	17.51	15.37	18.58	
3 Public Health and Conservancy	9.27	9.67	8.84	12.70	
4 Street Lighting (including Electricity Charges)	40.38	60.84	81.85	48.63	
5 Education	0.97	2.23	0.66	0.20	
6 Vehicle and Equipment Maintenance	7.11	6.79	7.62	13.30	
7 Miscellaneous	0.56	0.73	1.02	0.14	
<i>Operation & Maintenance</i>	<i>76.56</i>	<i>100.56</i>	<i>118.18</i>	<i>102.50</i>	
C Debt Servicing					
1 Public Works and Roads	14.29	18.23	69.59	-	
2 Public Health and Conservancy	-	-	-	-	
3 Others	4.50	0.92	3.53	-	
<i>Debt Servicing</i>	<i>18.79</i>	<i>19.15</i>	<i>73.12</i>	<i>-</i>	
Total- Revenue Expenditure (Excl. W&D Fund)	707.31	700.74	798.30	747.73	
D Water and Sanitation Fund					
1 Staff Salary & Employee Related Expenses	104.45	100.42	95.90	93.89	
2 Administration Expenses	0.42	0.41	0.69	8.80	
3 Equipment Maintenance & Repairs	10.79	5.63	17.38	14.96	
4 Board Payment	0.38	0.41	-	-	
5 Electricity Charges	119.05	95.37	127.04	75.20	
6 Vehicle Maintenance & Repairs	12.63	14.15	1.68	18.67	
7 Miscellaneous	4.73	4.53	37.17	3.71	
8 Debt Servicing- Old	-	-	-	-	
Total- W&D Fund Revenue Expenditure	252.45	220.94	279.86	215.23	
Total- Revenue Expenditure	959.76	921.68	1,078.16	962.96	
Operating Surplus (W&D Revenue Fund)	(48.60)	(20.41)	(61.26)	(21.40)	
Operating Surplus (Revenue Account)	55.65	205.09	443.07	269.39	

17- Dindigul Municipality - Abstract of Accounts		I- Income and Expenditure Statement			
Head of Account	2000-01	2001-02	2002-03	2003-04	
	<i>Rs. Lakh</i>				
Transfer to Capital Account	49.40	58.06	-	-	
CAPITAL ACCOUNT					
III Capital Income					
A Capital Loans					
1 Public Works and Roads	140.00	38.79	32.73	-	
2 Street Lighting	-	-	-	-	
3 Public Health & Conservancy	-	-	-	-	
4 Education	-	-	-	-	
5 Others	21.96	35.55	45.90	-	
<i>Capital Loans</i>	<i>161.96</i>	<i>74.34</i>	<i>78.63</i>	<i>-</i>	
B Capital Grants and Contribution					
1 Public Works and Roads	-	-	-	-	
2 Education	-	-	-	-	
3 Others	107.61	-	0.47	80.17	
4 Tenth/Eleventh Finance Commission Grants	-	-	-	-	
<i>Capital Grants and Contribution</i>	<i>107.61</i>	<i>-</i>	<i>0.47</i>	<i>80.17</i>	
C Own Sources					
1 Transfer from Revenue Account	49.40	58.06	-	-	
2 Sale of Municipal Property	-	-	-	-	
<i>Own Sources- Capital</i>	<i>49.40</i>	<i>58.06</i>	<i>-</i>	<i>-</i>	
Total- Capital Income	318.97	132.40	79.10	80.17	
Water and Drainage Fund					
D Capital Loans					
1 Water Supply	-	-	-	-	
2 Sewerage & Sanitation	-	-	-	-	
<i>Capital Loans W&D Fund</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	
E Capital Grants and Contribution					
1 Water Supply	-	15.95	15.95	-	
2 Sewerage & Sanitation	-	-	-	-	
<i>W&D -Capital Grants and Contribution</i>	<i>-</i>	<i>15.95</i>	<i>15.95</i>	<i>-</i>	
F Own Sources					
1 Water Connection Charge	-	-	-	-	
2 Sewerage Connection Charge	-	-	-	-	
<i>W&D Own Sources- Capital</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	
Total W&D Fund- Capital Income	-	15.95	15.95	-	
Total- Capital Income	318.97	148.35	95.05	80.17	

17- Dindigul Municipality - Abstract of Accounts		I- Income and Expenditure Statement			
Head of Account		2000-01	2001-02	2002-03	2003-04
<i>Rs. Lakh</i>					
IV Capital Expenditure					
1	General	7.84	18.04	9.95	2.24
2	Remunerative Schemes	-	-	-	-
3	Public Works and Roads	346.26	189.27	464.91	73.93
4	Street Lighting	9.96	3.09	-	-
5	Public Health & Conservancy	-	-	-	-
6	Education	0.01	0.01	6.48	-
6	Others	-	-	-	-
<i>Total - Capital Expenditure Excl W&D Fund</i>		364.08	210.43	481.34	76.17
Water and Drainage Fund					
7	Water Supply	71.23	25.89	89.30	37.30
8	Sewerage & Sanitation	24.63	44.49	151.13	26.42
<i>Total W&D Fund- Capital Expenditure</i>		95.86	70.37	240.43	63.72
Total - Capital Expenditure		459.94	280.80	721.77	139.89
Operating Surplus (W&D Capital Account)		(95.86)	(54.42)	(224.48)	(63.72)
Operating Surplus (Capital Account)		(140.97)	(132.45)	(626.71)	(59.72)
Operating Surplus (Over all excl. rev. a/c transfers)		(134.73)	14.58	(183.64)	209.67
EXTRAORDINARY ACCOUNT					
V EA Income					
1	Cash at Bank/ in Hand	130.89	83.92	192.52	-
2	Tax & Royalty				
3	Cess Income	13.00	28.80	35.84	30.14
4	Cash Deposit	29.72	4.58	28.42	4.71

17- Dindigul Municipality - Abstract of Accounts		2- Income and Expenditure -Sectoral Contribution				
Head of Account	2000-01	2001-02	2002-03	2003-04	Average	
	<i>Percentage to Total</i>					
Opening Balance						
REVENUE ACCOUNT						
I Revenue Income						
A Tax- Own Sources						
1 Property Tax (General Purpose) - 59% of Total PT	25.59	22.90	15.73	23.91	22.03	
2 Property Tax (Education Purpose) - 16% of Total PT	10.64	9.52	6.54	9.94	9.16	
3 Profession Tax	3.54	4.98	3.15	4.69	4.09	
4 Other Taxes & Charges	-	-	-	-	--	
<i>Tax- Own Sources</i>	39.77	37.40	25.42	38.54	35.28	
B Assigned Revenues						
1 Entertainment Tax	5.84	2.38	5.04	2.10	3.84	
2 Surcharge on Stamp Duty	6.88	8.99	14.37	15.83	11.52	
3 Other Transfers	0.59	-	0.07	-	0.16	
<i>Assigned Revenues</i>	13.31	11.37	19.47	17.93	15.52	
C Non Tax- Own Sources						
1 Income from Municipal Properties and Markets	13.47	10.78	6.32	1.68	8.06	
2 License Income (Trade, etc.)	1.76	1.18	1.01	1.54	1.37	
3 Income from Special Services	0.04	0.02	0.01	0.01	0.02	
4 Income from Sale Proceeds	0.13	0.29	0.03	0.00	0.11	
5 Income from Fees and Fines	1.74	5.67	5.09	0.42	3.23	
6 Income from Interest on Deposits	0.47	0.19	0.29	0.34	0.32	
7 Income from Investments(Excl. Interest)	-	-	-	-	--	
8 Miscellaneous Income	7.45	5.91	7.56	2.60	5.88	
<i>Non Tax- Own Sources</i>	25.06	24.03	20.30	6.59	19.00	
D Revenue Grants						
1 State Finance Commission Grant	18.53	23.69	32.43	36.94	27.90	
2 Other Grants	3.34	3.50	2.38	-	2.31	
<i>Revenue Grants</i>	21.87	27.19	34.81	36.94	30.20	
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 - 25% of Total PT	44.35	46.04	40.79	55.76	46.73	
2 Water Charges	55.09	53.47	40.78	43.65	48.25	
3 Drainage Charges	-	-	-	-	--	
4 Income from Interest on Deposits	-	-	-	-	--	
5 Water Supply & Sanitation Grant	-	-	18.18	-	4.55	
6 Other Income	0.56	0.48	0.24	0.59	0.47	
Total- W&D Fund Revenue Income	100.00	100.00	100.00	100.00	100.00	
Total- Revenue Income	100.00	100.00	100.00	100.00	100.00	

17- Dindigul Municipality - Abstract of Accounts		2- Income and Expenditure -Sectoral Contribution				
Head of Account		2000-01	2001-02	2002-03	2003-04	Average
<i>Percentage to Total</i>						
II Revenue Expenditure						
A General Administration						
1	Staff Salary and Employee Related Expenses	64.76	63.88	56.31	59.72	61.17
2	Allowances to Elected Representatives	0.24	0.24	0.22	0.21	0.23
3	General Expenses	1.51	3.39	2.96	2.45	2.58
4	Pensions and Gratuities	18.52	14.09	15.43	19.97	17.00
5	Education - Staff Salary	-	-	-	-	--
6	Miscellaneous	1.49	1.31	1.12	3.95	1.97
	<i>Establishment</i>	86.52	82.92	76.04	86.29	82.94
B Operation & Maintenance						
1	General Expenses	0.50	0.40	0.35	1.20	0.61
2	Public Works and Roads	2.09	2.50	1.93	2.48	2.25
3	Public Health and Conservancy	1.31	1.38	1.11	1.70	1.37
4	Street Lighting (including Electricity Charges)	5.71	8.68	10.25	6.50	7.79
5	Education	0.14	0.32	0.08	0.03	0.14
6	Vehicle and Equipment Maintenance	1.01	0.97	0.95	1.78	1.18
7	Miscellaneous	0.08	0.10	0.13	0.02	0.08
	<i>Operation & Maintenance</i>	10.82	14.35	14.80	13.71	13.42
C Debt Servicing						
1	Public Works and Roads	2.02	2.60	8.72	-	3.33
2	Public Health and Conservancy	-	-	-	-	--
3	Others	0.64	0.13	0.44	-	0.30
	<i>Debt Servicing</i>	2.66	2.73	9.16	-	3.64
	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	41.37	45.45	34.27	43.62	41.18
2	Administration Expenses	0.17	0.19	0.25	4.09	1.17
3	Equipment Maintenance & Repairs	4.27	2.55	6.21	6.95	5.00
4	Board Payment	0.15	0.19	-	-	0.08
5	Electricity Charges	47.16	43.17	45.40	34.94	42.67
6	Vehicle Maintenance & Repairs	5.00	6.41	0.60	8.67	5.17
7	Miscellaneous	1.88	2.05	13.28	1.72	4.73
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)					

17- Dindigul Municipality - Abstract of Accounts		2- Income and Expenditure -Sectoral Contribution				
Head of Account	2000-01	2001-02	2002-03	2003-04	Average	
	<i>Percentage to Total</i>					
Transfer to Capital Account						
CAPITAL ACCOUNT						
III Capital Income						
A Capital Loans						
1 Public Works and Roads	43.89	29.30	41.38	-	28.64	
2 Street Lighting	-	-	-	-	--	
3 Public Health & Conservancy	-	-	-	-	--	
4 Education	-	-	-	-	--	
5 Others	6.88	26.85	58.02	-	22.94	
<i>Capital Loans</i>	<i>50.78</i>	<i>56.15</i>	<i>99.40</i>	<i>-</i>	<i>51.58</i>	
B Capital Grants and Contribution						
1 Public Works and Roads	-	-	-	-	--	
2 Education	-	-	-	-	--	
3 Others	33.74	-	0.60	100.00	33.58	
4 Tenth/Eleventh Finance Commission Grants	-	-	-	-	--	
<i>Capital Grants and Contribution</i>	<i>33.74</i>	<i>-</i>	<i>0.60</i>	<i>100.00</i>	<i>33.58</i>	
C Own Sources						
1 Transfer from Revenue Account	15.49	43.85	-	-	14.83	
2 Sale of Municipal Property	-	-	-	-	--	
<i>Own Sources- Capital</i>	<i>15.49</i>	<i>43.85</i>	<i>-</i>	<i>-</i>	<i>14.83</i>	
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	-	-	-	-	--	
<i>Capital Loans W&D Fund</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>--</i>	
E Capital Grants and Contribution						
1 Water Supply	-	100.00	100.00	-	50.00	
2 Sewerage & Sanitation	-	-	-	-	--	
<i>W&D -Capital Grants and Contribution</i>	<i>-</i>	<i>100.00</i>	<i>100.00</i>	<i>-</i>	<i>50.00</i>	
F Own Sources						
1 Water Connection Charge	-	-	-	-	--	
2 Sewerage Connection Charge	-	-	-	-	--	
<i>W&D Own Sources- Capital</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>--</i>	
Total W&D Fund- Capital Income	-	100.00	100.00	-	50.00	
Total- Capital Income	100.00	100.00	100.00	100.00	100.00	

17- Dindigul Municipality - Abstract of Accounts		2- Income and Expenditure -Sectoral Contribution				
Head of Account		2000-01	2001-02	2002-03	2003-04	Average
<i>Percentage to Total</i>						
<u>IV Capital Expenditure</u>						
1	General	2.15	8.58	2.07	2.94	3.93
2	Remunerative Schemes	-	-	-	-	--
3	Public Works and Roads	95.11	89.95	96.59	97.06	94.68
4	Street Lighting	2.74	1.47	-	-	1.05
5	Public Health & Conservancy	-	-	-	-	--
6	Education	0.00	0.01	1.35	-	0.34
6	Others	-	-	-	-	--
<i>Total - Capital Expenditure Excl W&D Fund</i>		<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
<u>Water and Drainage Fund</u>						
7	Water Supply	74.31	36.78	37.14	58.54	51.69
8	Sewerage & Sanitation	25.69	63.22	62.86	41.46	48.31
<i>Total W&D Fund- Capital Expenditure</i>		<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
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. rev. a/c transfers)						
EXTRAORDINARY ACCOUNT						
<u>V EA Income</u>						
1	Cash at Bank/ in Hand	60.89	48.12	72.71	-	45.43
2	Tax & Royalty	-	-	-	-	--
3	Cess Income	6.05	16.52	13.54	35.78	17.97
4	Cash Deposit	13.82	2.63	10.73	5.59	8.19

17- Dindigul Municipality - Abstract of Accounts		3- Income and Expenditure -Growth Trends				
Head of Account	2000-01	2001-02	2002-03	2003-04	Average	
	<i>Percentage increase over previous year</i>					
Opening Balance						
REVENUE ACCOUNT						
I Revenue Income						
A Tax- Own Sources						
1 Property Tax (General Purpose) - 59% of Total PT	--	2.13	(3.41)	21.19	6.64	
2 Property Tax (Education Purpose) - 16% of Total PT	--	2.13	(3.41)	21.19	6.64	
3 Profession Tax	--	60.63	(11.02)	18.77	22.79	
4 Other Taxes & Charges	--	--	--	--	--	
<i>Tax- Own Sources</i>	--	7.34	(4.43)	20.89	7.93	
B Assigned Revenues						
1 Entertainment Tax	--	(53.54)	197.68	(66.80)	25.78	
2 Surcharge on Stamp Duty	--	49.28	124.65	(12.13)	53.93	
3 Other Transfers	--	--	--	--	--	
<i>Assigned Revenues</i>	--	(2.49)	140.78	(26.58)	37.24	
C Non Tax- Own Sources						
1 Income from Municipal Properties and Markets	--	(8.64)	(17.58)	(78.85)	(35.02)	
2 License Income (Trade, etc.)	--	(23.74)	19.92	21.86	6.01	
3 Income from Special Services	--	(52.38)	(23.07)	(25.72)	(33.72)	
4 Income from Sale Proceeds	--	159.63	(86.18)	(94.70)	(7.08)	
5 Income from Fees and Fines	--	271.90	26.34	(93.40)	68.28	
6 Income from Interest on Deposits	--	(53.84)	113.56	(4.65)	18.36	
7 Income from Investments(Excl. Interest)	--	--	--	--	--	
8 Miscellaneous Income	--	(9.48)	80.02	(72.53)	(0.66)	
<i>Non Tax- Own Sources</i>	--	9.48	18.79	(74.11)	(15.28)	
D Revenue Grants						
1 State Finance Commission Grant	--	45.93	92.51	(9.19)	43.08	
2 Other Grants	--	19.75	(4.30)	--	7.73	
<i>Revenue Grants</i>	--	41.93	80.04	(15.41)	35.52	
Total- Revenue Income (Excl. W&D Fund)	--	14.13	40.64	(20.27)	11.50	
E Water and Drainage Fund						
1 Water & Drainage Tax - 25% of Total PT	--	2.13	(3.41)	21.19	6.64	
2 Water Charges	--	(4.52)	(16.86)	(5.10)	(8.83)	
3 Drainage Charges	--	--	--	--	--	
4 Income from Interest on Deposits	--	--	--	--	--	
5 Water Supply & Sanitation Grant	--	--	--	--	--	
6 Other Income	--	(14.71)	(46.37)	120.52	19.81	
Total- W&D Fund Revenue Income	--	(1.63)	9.01	(11.33)	(1.32)	
Total- Revenue Income	--	10.97	35.01	(18.99)	9.00	

17- Dindigul Municipality - Abstract of Accounts		3- Income and Expenditure -Growth Trends				
Head of Account	2000-01	2001-02	2002-03	2003-04	Average	
	<i>Percentage increase over previous year</i>					
II Revenue Expenditure						
A General Administration						
1 Staff Salary and Employee Related Expenses	--	(2.27)	0.42	(0.66)	(0.84)	
2 Allowances to Elected Representatives	--	(0.81)	1.23	(8.56)	(2.72)	
3 General Expenses	--	122.05	(0.49)	(22.67)	32.96	
4 Pensions and Gratuities	--	(24.63)	24.80	21.20	7.13	
5 Education - Staff Salary	--	--	--	--	--	
6 Miscellaneous	--	(12.63)	(3.04)	230.93	71.75	
<i>Establishment</i>	--	(5.05)	4.47	6.30	1.90	
B Operation & Maintenance						
1 General Expenses	--	(20.28)	1.05	216.98	65.91	
2 Public Works and Roads	--	18.67	(12.21)	20.89	9.12	
3 Public Health and Conservancy	--	4.31	(8.61)	43.73	13.14	
4 Street Lighting (including Electricity Charges)	--	50.65	34.54	(40.59)	14.87	
5 Education	--	129.34	(70.53)	(70.36)	(3.85)	
6 Vehicle and Equipment Maintenance	--	(4.51)	12.15	74.57	27.40	
7 Miscellaneous	--	29.80	40.39	(86.33)	(5.38)	
<i>Operation & Maintenance</i>	--	31.35	17.52	(13.27)	11.87	
C Debt Servicing						
1 Public Works and Roads	--	27.57	281.73	--	154.65	
2 Public Health and Conservancy	--	--	--	--	--	
3 Others	--	(79.56)	283.70	--	102.07	
<i>Debt Servicing</i>	--	1.92	281.83	--	141.87	
Total- Revenue Expenditure (Excl. W&D Fund)	--	(0.93)	13.92	(6.33)	2.22	
D Water and Sanitation Fund						
1 Staff Salary & Employee Related Expenses	--	(3.85)	(4.50)	(2.10)	(3.48)	
2 Administration Expenses	--	(2.29)	67.78	1,175.09	413.52	
3 Equipment Maintenance & Repairs	--	(47.79)	208.51	(13.92)	48.93	
4 Board Payment	--	10.20	--	--	10.20	
5 Electricity Charges	--	(19.89)	33.21	(40.81)	(9.16)	
6 Vehicle Maintenance & Repairs	--	12.10	(88.14)	1,012.36	312.11	
7 Miscellaneous	--	(4.37)	720.88	(90.02)	208.83	
8 Debt Servicing- Old	--	--	--	--	--	
Total- W&D Fund Revenue Expenditure	--	(12.48)	26.67	(23.09)	(2.97)	
Total- Revenue Expenditure	--	(3.97)	16.98	(10.68)	0.78	
Operating Surplus (W&D Revenue Fund)						
Operating Surplus (Revenue Account)						

17- Dindigul Municipality - Abstract of Accounts		3- Income and Expenditure -Growth Trends				
Head of Account	2000-01	2001-02	2002-03	2003-04	Average	
	<i>Percentage increase over previous year</i>					
Transfer to Capital Account						
CAPITAL ACCOUNT						
III Capital Income						
A Capital Loans						
1 Public Works and Roads	--	(72.29)	(15.62)	--	(43.96)	
2 Street Lighting	--	--	--	--	--	
3 Public Health & Conservancy	--	--	--	--	--	
4 Education	--	--	--	--	--	
5 Others	--	61.89	29.11	--	45.50	
<i>Capital Loans</i>	--	(54.10)	5.77	--	(24.16)	
B Capital Grants and Contribution						
1 Public Works and Roads	--	--	--	--	--	
2 Education	--	--	--	--	--	
3 Others	--	--	--	16,784.65	16,784.65	
4 Tenth/Eleventh Finance Commission Grants	--	--	--	--	--	
<i>Capital Grants and Contribution</i>	--	--	--	16,784.65	16,784.65	
C Own Sources						
1 Transfer from Revenue Account	--	17.51	--	--	17.51	
2 Sale of Municipal Property	--	--	--	--	--	
<i>Own Sources- Capital</i>	--	17.51	--	--	17.51	
Total- Capital Income	--	(58.49)	(40.25)	1.35	(32.47)	
Water and Drainage Fund						
D Capital Loans						
1 Water Supply	--	--	--	--	--	
2 Sewerage & Sanitation	--	--	--	--	--	
<i>Capital Loans W&D Fund</i>	--	--	--	--	--	
E Capital Grants and Contribution						
1 Water Supply	--	--	-	--	-	
2 Sewerage & Sanitation	--	--	--	--	--	
<i>W&D -Capital Grants and Contribution</i>	--	--	-	--	-	
F Own Sources						
1 Water Connection Charge	--	--	--	--	--	
2 Sewerage Connection Charge	--	--	--	--	--	
<i>W&D Own Sources- Capital</i>	--	--	--	--	--	
Total W&D Fund- Capital Income	--	--	-	--	-	
Total- Capital Income	--	(53.49)	(35.92)	(15.66)	(35.03)	

17- Dindigul Municipality - Abstract of Accounts		3- Income and Expenditure -Growth Trends				
Head of Account		2000-01	2001-02	2002-03	2003-04	Average
		<i>Percentage increase over previous year</i>				
<u>IV Capital Expenditure</u>						
1	General	--	130.16	(44.87)	(77.48)	2.60
2	Remunerative Schemes	--	--	--	--	--
3	Public Works and Roads	--	(45.34)	145.63	(84.10)	5.40
4	Street Lighting	--	(68.95)	--	--	(68.95)
5	Public Health & Conservancy	--	--	--	--	--
6	Education	--	-	49,605.68	--	24,802.84
6	Others	--	--	--	--	--
<i>Total - Capital Expenditure Excl W&D Fund</i>		--	<i>(42.20)</i>	<i>128.74</i>	<i>(84.18)</i>	<i>0.79</i>
<u>Water and Drainage Fund</u>						
7	Water Supply	--	(63.66)	244.98	(58.23)	41.03
8	Sewerage & Sanitation	--	80.66	239.70	(82.52)	79.28
<i>Total W&D Fund- Capital Expenditure</i>		--	<i>(26.59)</i>	<i>241.64</i>	<i>(73.50)</i>	<i>47.19</i>
Total - Capital Expenditure		--	(38.95)	157.04	(80.62)	12.49
Operating Surplus (W&D Capital Account)						
Operating Surplus (Capital Account)						
Operating Surplus (Over all excl. rev. a/c transfers)						
EXTRAORDINARY ACCOUNT						
<u>V EA Income</u>						
1	Cash at Bank/ in Hand					
2	Tax & Royalty	--	--	--	--	--
3	Cess Income	--	121.62	24.44	(15.90)	43.38
4	Cash Deposit	--	(84.59)	520.52	(83.43)	117.50

17- Dindigul 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) - 59% of Total PT	6.64	6.13	3.21		
2 Property Tax (Education Purpose) - 16% of Total PT	6.64	6.13	3.21		
3 Profession Tax	22.79	19.29	16.01	10.00%	
4 Other Taxes & Charges	--	--	--	5.00%	
<i>Tax- Own Sources</i>	<i>7.93</i>	<i>7.44</i>	<i>4.48</i>		
B Assigned Revenues					
1 Entertainment Tax	25.78	(22.85)	(24.97)	5.00%	
2 Surcharge on Stamp Duty	53.93	43.37	39.43	15.00%	
3 Other Transfers	--	(100.00)	(100.00)	5.00%	
<i>Assigned Revenues</i>	<i>37.24</i>	<i>19.91</i>	<i>16.61</i>		
C Non Tax- Own Sources					
1 Income from Municipal Properties and Markets	(35.02)	(45.80)	(47.29)	15.00%	
2 License Income (Trade, etc.)	6.01	3.68	0.83	10.00%	
3 Income from Special Services	(33.72)	(35.20)	(36.98)	5.00%	
4 Income from Sale Proceeds	(7.08)	(73.30)	(74.04)	5.00%	
5 Income from Fees and Fines	68.28	(32.30)	(34.16)	5.00%	
6 Income from Interest on Deposits	18.36	(2.04)	(4.74)	6.00%	
7 Income from Investments(Excl. Interest)	--	--	--	5.00%	
8 Miscellaneous Income	(0.66)	(23.51)	(25.61)	5.00%	
<i>Non Tax- Own Sources</i>	<i>(15.28)</i>	<i>(30.43)</i>	<i>(32.34)</i>		
D Revenue Grants					
1 State Finance Commission Grant	43.08	36.64	32.88	15.00%	
2 Other Grants	7.73	(100.00)	(100.00)	5.00%	
<i>Revenue Grants</i>	<i>35.52</i>	<i>29.30</i>	<i>25.74</i>		
Total- Revenue Income (Excl. W&D Fund)	11.50	8.57	5.58		
E Water and Drainage Fund					
1 Water & Drainage Tax - 25% of Total PT	6.64	6.13	3.21		
2 Water Charges	(8.83)	(9.01)	(11.51)		
3 Drainage Charges	--	--	--		
4 Income from Interest on Deposits	--	--	--	6.00%	
5 Water Supply & Sanitation Grant	--	(100.00)	--	5.00%	
6 Other Income	19.81	0.29	(2.47)	5.00%	
Total- W&D Fund Revenue Income	(1.32)	(1.67)	(4.37)		
Total- Revenue Income	9.00	6.67	3.73		

17- Dindigul Municipality - Abstract of Accounts		4- FOP Assumptions			
Head of Account	SAGR	CAGR	CAGR	Variable	
	% pa	% pa	Rs. pc/ pa	%pa	
II Revenue Expenditure					
A General Administration					
1 Staff Salary and Employee Related Expenses	(0.84)	(0.84)	(3.57)	8.00%	
2 Allowances to Elected Representatives	(2.72)	(2.81)	(5.48)	5.00%	
3 General Expenses	32.96	19.55	16.26	20.00%	
4 Pensions and Gratuities	7.13	4.47	1.59	5.00%	
5 Education - Staff Salary	--	--	--	8.00%	
6 Miscellaneous	71.75	41.00	37.13	15.00%	
<i>Establishment</i>	<i>1.90</i>	<i>1.78</i>	<i>(1.02)</i>		
B Operation & Maintenance					
1 General Expenses	65.91	36.68	32.92	20.00%	
2 Public Works and Roads	9.12	7.99	5.02	8.00%	
3 Public Health and Conservancy	13.14	11.07	8.01	11.00%	
4 Street Lighting (including Electricity Charges)	14.87	6.39	3.46	7.00%	
5 Education	(3.85)	(41.49)	(43.09)	10.00%	
6 Vehicle and Equipment Maintenance	27.40	23.19	19.80	20.00%	
7 Miscellaneous	(5.38)	(37.09)	(38.82)	5.00%	
<i>Operation & Maintenance</i>	<i>11.87</i>	<i>10.21</i>	<i>7.18</i>		
C Debt Servicing					
1 Public Works and Roads	154.65	(100.00)	(100.00)		
2 Public Health and Conservancy	--	--	--		
3 Others	102.07	(100.00)	(100.00)		
<i>Debt Servicing</i>	<i>141.87</i>	<i>(100.00)</i>	<i>(100.00)</i>		
Total- Revenue Expenditure (Excl. W&D Fund)	2.22	1.87	(0.93)		
D Water and Sanitation Fund					
1 Staff Salary & Employee Related Expenses	(3.48)	(3.49)	(6.14)	8.00%	
2 Administration Expenses	413.52	175.47	167.89	15.00%	
3 Equipment Maintenance & Repairs	48.93	11.51	8.44	12.00%	
4 Board Payment	10.20	(100.00)	(100.00)	10.00%	
5 Electricity Charges	(9.16)	(14.20)	(16.56)	20.00%	
6 Vehicle Maintenance & Repairs	312.11	13.93	10.79	15.00%	
7 Miscellaneous	208.83	(7.81)	(10.34)	5.00%	
8 Debt Servicing- Old	--	--	--		
Total- W&D Fund Revenue Expenditure	(2.97)	(5.18)	(7.79)		
Total- Revenue Expenditure	0.78	0.11	(2.64)		
Operating Surplus (W&D Revenue Fund)					
Operating Surplus (Revenue Account)					

17- Dindigul Municipality - Abstract of Accounts		4- FOP Assumptions			
Head of Account	SAGR	CAGR	CAGR	Variable	
	% pa	% pa	Rs. pc/ pa	%pa	
Transfer to Capital Account					
CAPITAL ACCOUNT					
III Capital Income					
A Capital Loans					
1 Public Works and Roads	(43.96)	(100.00)	--		
2 Street Lighting	--	--	--		
3 Public Health & Conservancy	--	--	--		
4 Education	--	--	--		
5 Others	45.50	(100.00)	--		
<i>Capital Loans</i>	(24.16)	(100.00)	--		
B Capital Grants and Contribution					
1 Public Works and Roads	--	--	--	5.00%	
2 Education	--	--	--	5.00%	
3 Others	16,784.65	(9.35)	(11.84)	5.00%	
4 Tenth/Eleventh Finance Commission Grants	--	--	--	5.00%	
<i>Capital Grants and Contribution</i>	16,784.65	(9.35)	(11.84)		
C Own Sources					
1 Transfer from Revenue Account	17.51	(100.00)	(100.00)		
2 Sale of Municipal Property	--	--	--		
<i>Own Sources- Capital</i>	17.51	(100.00)	(100.00)		
Total- Capital Income					
	(32.47)	(36.89)	(38.63)		
Water and Drainage Fund					
D Capital Loans					
1 Water Supply	--	--	--		
2 Sewerage & Sanitation	--	--	--		
<i>Capital Loans W&D Fund</i>	--	--	--		
E Capital Grants and Contribution					
1 Water Supply	-	(100.00)	--	5.00%	
2 Sewerage & Sanitation	--	--	--	5.00%	
<i>W&D -Capital Grants and Contribution</i>	-	(100.00)	--		
F Own Sources					
1 Water Connection Charge	--	--	--		
2 Sewerage Connection Charge	--	--	--		
<i>W&D Own Sources- Capital</i>	--	--	--		
Total W&D Fund- Capital Income					
	-	(100.00)	--		
Total- Capital Income					
	(35.03)	(36.89)	(38.63)		

17- Dindigul Municipality - Abstract of Accounts		4- FOP Assumptions			
Head of Account		SAGR	CAGR	CAGR	Variable
		<i>% pa</i>	<i>% pa</i>	<i>Rs. pc/ pa</i>	<i>%pa</i>
<u>IV Capital Expenditure</u>					
1	General	2.60	(34.14)	(35.95)	
2	Remunerative Schemes	--	--	--	
3	Public Works and Roads	5.40	(40.23)	(41.88)	
4	Street Lighting	(68.95)	(100.00)	(100.00)	
5	Public Health & Conservancy	--	--	--	
6	Education	24,802.84	(100.00)	(100.00)	
6	Others	--	--	--	
<i>Total - Capital Expenditure Excl W&D Fund</i>		<i>0.79</i>	<i>(40.64)</i>	<i>(42.27)</i>	
<u>Water and Drainage Fund</u>					
7	Water Supply	41.03	(19.40)	(21.62)	
8	Sewerage & Sanitation	79.28	2.37	(0.44)	
<i>Total W&D Fund- Capital Expenditure</i>		<i>47.19</i>	<i>(12.73)</i>	<i>(15.13)</i>	
Total - Capital Expenditure		12.49	(32.75)	(34.60)	
Operating Surplus (W&D Capital Account)					
Operating Surplus (Capital Account)					
Operating Surplus (Over all excl. rev. a/c transfers)					
EXTRAORDINARY ACCOUNT					
<u>V EA Income</u>					
1	Cash at Bank/ in Hand				
2	Tax & Royalty	--	--	--	
3	Cess Income	43.38	32.37		
4	Cash Deposit	117.50	(45.88)		