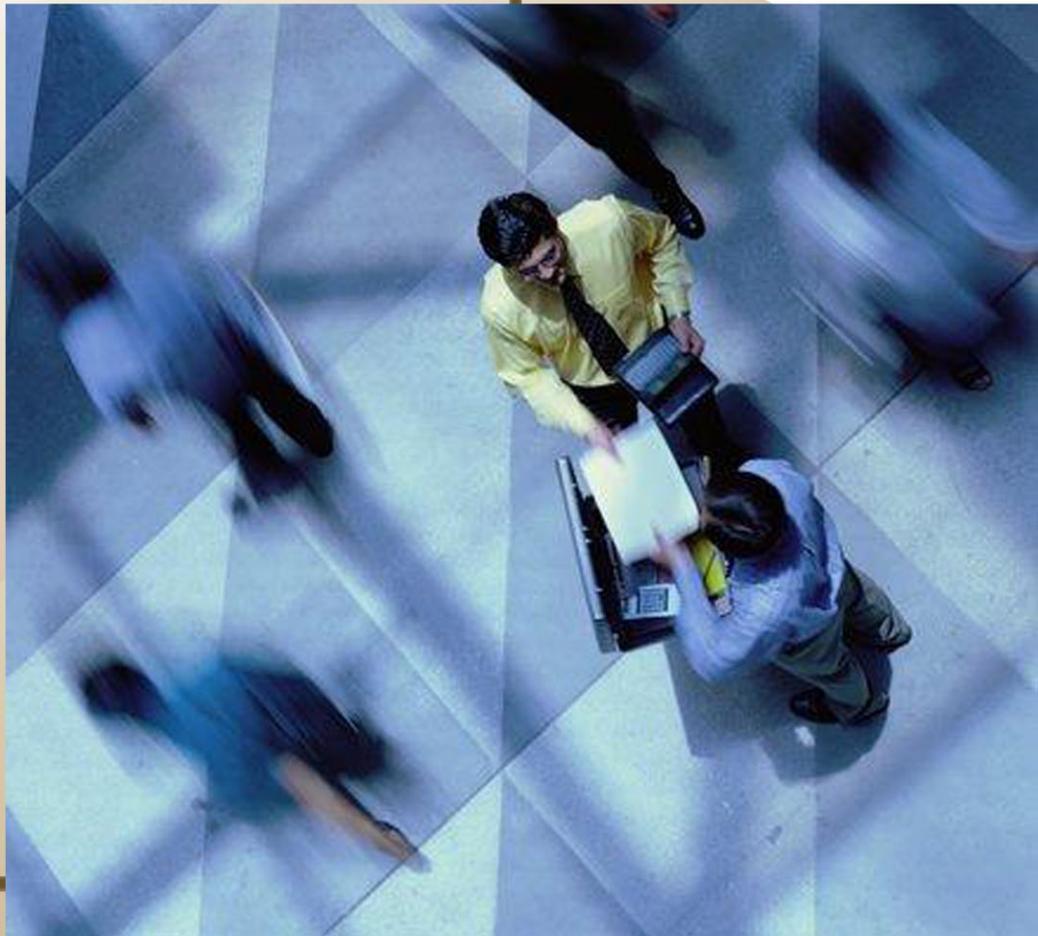


**Tamil Nadu Urban Infrastructure
Financial Services Ltd (TNUIFSL),
Government of Tamilnadu**



**City Corporate Plan Cum Business Plan for
Pallavaram Municipality**

Government of Tamil Nadu
Tamil Nadu Urban Development Fund

City Corporate cum Business Plan

Pallavaram Municipality

Addendum Report

June 2008

Wilbur Smith Associates Private Limited

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XI. FINANCIAL OPERATING PLAN

A. Financial Sustainability

1. *Financial Sustainability*

1. *Sustainability Analysis.* The sustainability analysis is based on the assumption that the municipality will carry out reforms indicated as the basis for financial projections. A Financial and Operating Plan (FOP) prepared for Pallavaram Municipality evaluates the municipal fund status for the following scenarios:
 - (i) Full Project Scenario. The Full Project Investment Scenario is based on investments identified for Pallavaram municipality and the requirement for upgrading the town's infrastructure is estimated and phased based on the construction activity and investment priority. Implications of this investment in terms of external borrowings required, resultant debt service commitment, and additional operation and maintenance expenditure are worked out to ascertain sub-project cash flows. Revenue surpluses from the Base Case Scenario are applied to sub-project cash flows emerging from full project investments – the municipal fund net surpluses indicate 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.
 - (ii) Sustainable Investment Scenario. The sustainable investment scenario is worked out when the full project investment scenario indicates inability of the municipality to sustain the total identified investment. In this case, the identified investment is sized down to immediate felt need for the municipality such that it is sustainable. 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 Projection*

2. 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.

3. 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 2015-16. Considering a five-year moratorium period, the debt servicing commitment will commence in the FY 2011-12 for the first phase (first five years) and 2016-17 for the second phase (second five years) of investment.
4. *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 with 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 regard to basis for forecasting revenue income of taxes and charges are the same for base case and investment scenarios (full project as well as sustainable project scenarios). However, the tax base (number of connections) varies for the base, full project and sustainable investment scenarios, assuming that the new investments in water supply and sewerage schemes will result in increased coverage of the infrastructure systems. In the sustainable investment scenario, the increase in tax base is scaled down pro rata with the scaled down (sustainable) investment. Error! Reference source not found., Error! Reference source not found., Error! Reference source not found. and Error! Reference source not found. list the assumptions adopted with regard to forecasting income from property tax, water charges, drainage charges and conservancy fee respectively under the three FOP scenarios. The investment scenarios include both full project and sustainable investment scenarios.

Table 11.1: Key Assumptions for Forecasting Income from Property Tax

Description	Current Level	Base Case Scenario	Investment Scenarios
Annual growth in number of assessments (%)	4%	4%	4%
Average ARV per Property (Rs Per Annum)	3,891	3,891	3,891
Tax Rate (% of ARV)	23%	23%	23%
Periodic increase in ARV (%)			
2006-07	-	30%	30%
2011-12	-	30%	30%
2016-17	-	30%	30%
Collection Performance (% of Demand)			
Arrears	32%	50%	50%
Current	74%	80%	80%

Source: Analysis.

Table 11.2: Key Assumptions for Forecasting Income from Water Charges

Description	Current Level	Base Case Scenario	Investment Scenarios
% water connections to property tax assessments	30.26%	30.26%	80%
Monthly water charge per connection (Rs.)			
Domestic	50.00	50.00	50.00
Non Domestic	100.00	100.00	100.00
Industrial	150.00	150.00	150.00
Periodic revision in water charges			
2006-07	-	15%	15%
2009-10	-	15%	15%
2011-12	-	15%	15%
2015-16	-	15%	15%
2018-19	-	15%	15%
Collection Performance (% of Demand)			
Arrears	46%	50%	50%
Current	72%	80%	80%
One time connection fee (Rs.)			
Domestic	5,000	5,000	5,000
Non Domestic	10,000	10,000	10,000
Industrial	10,000	10,000	10,000
Periodic revision of one time connection fee	-	20%-once in 3 years	20%-once in 3 years

Source: Analysis.

Table 11.3: 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	-	-	150.00
Non Domestic	-	-	300.00
Industrial	-	-	300.00
Periodic revision in sewerage Charges			
2006-07	-	15%	15%
2009-10	-	15%	15%
2011-12	-	15%	15%
2015-16	-	15%	15%
2018-19			
Collection Performance (% of Demand)			
Arrears	-	-	50%

Description	Current Level	Base Case Scenario	Investment Scenarios
Current	-	-	80%
One time connection fee (Rs.)			
Domestic	-	-	6,000
Non Domestic	-	-	12,000
Industrial	-	-	12,000
Periodic revision of one time connection fee	-	-	20%-once in 3 years

Source: Analysis

Table 11.4: 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	-	-	20.00
Non Domestic	-	-	75.00
Periodic revision in conservancy Fee			
2006-07	-	-	15.00
2009-10	-	-	15.00
2011-12	-	-	15.00
2015-16	-	-	15.00
2018-19	-	-	15.00
Collection Performance (% of Demand)			
Arrears	-	-	50.00
Current	-	-	80.00

Source: Analysis

- (ii) Other Revenue Income from Own Sources. All revenue income from own sources other than property-related taxes and water and sewerage charges, where the base and basis is not clearly defined, are forecast, based on the observed trend during the assessment period (2000-01 to 2003-04), subject to minimum and maximum annual growth rates of 5 percent and 20 percent, respectively. Though the income from the license fees (like trade, etc.) trend is witnessed a negative growth trend, on a conservative side 20 percent has been adopted, by improving the collection efficiency this can be achieved.

Table 11.5: Key Growth Rate Assumptions for Income from Other Own Sources

Description	Current Level	Assumption
Profession Tax	3.35 %	5.00 %
Other taxes & Charges	--	--
Income from Municipal Properties and Markets	(29.44 %)	20.00 %

Description	Current Level	Assumption
License Income (Trade, etc.)	6.09 %	6.00 %
Income from Special Services	(31.42 %)	5.00 %
Income from Sale Proceeds	--	--
Income from Fees and Fines	23.60 %	15.00 %
Income from Interest on Deposits	(52.37 %)	6.00 %
Income from Investments(Excl. Interest)	--	--
Miscellaneous Income	(15.38 %)	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. The observed trend in Entertainment Tax during the assessment period was a negative growth rate, which is attributed to inconsistent transfer of ULB share during the review period. Hence, a nominal growth rate of 5 percent is assumed to forecast the revenue. Surcharge on stamp duty, a growth rate of 22.86 percent is witnessed during the review period. Considering trend of property value appreciation in the town, a maximum of 15 percent has been adopted to forecast the revenue.

Table 11.6: Key Growth Rate Assumptions for Income from Assigned Sources

Description	Current Level	Assumption
Entertainment Tax	(100.00 %)	5.00 %
Surcharge on Stamp Duty	22.86 %	15.00 %
Other Transfers	--	--
Total- Assigned Revenue	20.74 %	

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. The trend in SFC devolution rendered a very high growth rate, owing to inconsistent transfer of grant to ULB. Considering the states tax revenue growth trend forecast, population growth trend and reforms measures initiated by the municipality will fetch more devolution fund. In this perspective, a maximum of 15 percent growth per annum was adopted.

Table 11.7: Key Growth Rate Assumptions for Income from Grants & Contributions

Description	Current Level	Assumption
State Finance Commission Grant	178.87 %	15.00 %
Other Grants	(100.00) %	5.00 %
Total- Grants & Contribution	138.75 %	

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 Error! Reference source not found. starting 2007-08 and a revision of 15 percent is proposed every three years, beginning 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 is also planned to be levied on property assessments.

5. *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.

Table 11.8: Key Growth Rate Assumptions for Forecasting Revenue Expenditure

Description	Current Level	Assumption
General Administration & Revenue Collection		
Staff Salary and Employee Related Expenses	11.29 %	8.00%
Allowances to Elected Representatives	(100.00 %)	5.00%
General Expenses	(26.97 %)	5.00%
Pensions and Gratuities	(5.55 %)	5.00%
Education - Staff Salary	--	--
Miscellaneous	2.07 %	5.00%
Total-General Admin. & Revenue Collection	(11.23 %)	
Municipal Services excl. W&D		
General Expenses	(12.66 %)	13.00%
Public Works and Roads	(10.98 %)	11.00%
Public Health and Conservancy	(38.25 %)	15.00%
Street Lighting (including Electricity Charges)	17.80 %	20.00%
Education	(100.00 %)	5.00%
Vehicle and Equipment Maintenance	52.75 %	15.00%
Miscellaneous	93.14 %	15.00%
Total- Municipal Services excl. W&D	3.60 %	

Source: Analysis.

Table 11.9: Key Growth Rate Assumptions for Forecasting Water Supply Revenue Expenditure

Description	Current Level	Assumption
Staff Salary & Employee Related Expenses	-	8.00%
Administration Expenses	-	5.00%
Equipment Maintenance & Repairs	-	5.00%
Board Payment	-	5.00%
Electricity Charges	(100.00 %)	5.00%
Vehicle Maintenance & Repairs	-	5.00%
Miscellaneous	-	5.00%
Total- Water Supply & Drainage	-	

- (ii) Outstanding Non-Debt Liabilities. The outstanding non-debt liabilities like payments due to employees, TNEB, TWAD, State Government cess, etc. are assumed to be cleared in equal installments over a 5-year period from 2006-07 to 2010-11. Wherever data was provided by the ULB, it was considered for preparing the FOP.
- (iii) Outstanding Debt Liabilities. The outstanding debt liabilities are proposed for clearance over a 15-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. The ongoing sewerage scheme debt amount also considered to clear over next 20 years starting from 2007-08. Since the existing loan burden on the ULB is high and hence, it is planned to clear in different schedule to increase the borrowing capacity of the municipality in next ten years.
- (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. Error! Reference source not found. presents the assumptions regarding O&M expenditure on new assets.

Table 11.10: 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 Error! Reference source not found., with a five-year moratorium on interest and principal repayment – interest during the moratorium period being capitalized. Considering a five-year loan draw down schedule (2006-07 to 2010-11) and a 20-year tenor, debt servicing will commence from 2011-12 for a period of 15 years. According to the project implementation schedule, the loan drawn and repayment schedule will differ.

Table 11.11: Proposed Financing Pattern

Infrastructure Type	Loan	Grant	ULB + Consumer	Interest Rate
	%			
Water Supply	40	30	30	8.50
Sewerage & Sanitation	40	30	30	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

Infrastructure Type	Loan	Grant	ULB + Consumer	Interest Rate
Street Lighting	60	30	10	8.50
Slum Up gradation	60	30	10	8.50
Others	40	10	50	8.50

- (v) Additional Funding Option in tune to the JNUIRM requirements: In line to the requirements of JNUIRM guidelines/requirements, the following additional option of funding pattern is considered **Table 11.12**. The debt conditions and spread outs will be the same as considered in the earlier option.

Table 11.12: Proposed Financing Pattern – JNNURM Scenario

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

Source: Analysis.

6. *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.
7. *Capital Expenditure*. The estimated expenditure for implementing sub-projects is phased over a five-year period beginning 2006-07. Based on the above phasing, the actual investment requirement over the ten-year period is ascertained adopting a physical contingency of seven percent and a price contingency of six percent per annum. The following tables present the base full project cost and implementation schedule.

Table 11.13: Summary of Estimated Investment Requirement and Phasing Schedule

Sector	Total Investment	Investment Phasing (%)									
		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	<i>Rs. Lakh</i>										
Water Supply	2,533.56 ¹	20%	20%	20%	20%	20%	0%	0%	0%	0%	0%
Sewerage & Sanitation	-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Roads	8,219.23 ²	0%	0%	10%	20%	20%	20%	10%	10%	10%	0%
Storm Water Drains	4,680.87	0%	0%	15%	20%	15%	10%	10%	10%	10%	10%
Solid Waste Management	646.02	0%	10%	20%	20%	20%	10%	10%	10%	0%	0%
Street Lighting	654.61	0%	0%	10%	20%	20%	20%	20%	10%	0%	0%
Slum Upgradation	902.18	0%	0%	10%	10%	15%	15%	15%	15%	10%	10%
Others	212.00	0%	0%	0%	20%	20%	20%	20%	20%	0%	0%
Grand Total Investment	17,848.47										

Source: Analysis

Table 11.14: Summary of Phased Investment in Full Project Investment Scenario

Sector	Total Investment	Investment Phasing – Rs. Lakh at Current Price									
		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	<i>Rs. Lakh</i>										
Water Supply	2,533.56	506.71	506.71	506.71	506.71	506.71	-	-	-	-	-
Sewerage & Sanitation	-	-	-	-	-	-	-	-	-	-	-
Roads	8,219.23	-	-	821.92	1,643.85	1,643.85	1,643.85	821.92	821.92	821.92	-
Storm Water Drains	4,680.87	-	-	702.13	936.17	702.13	468.09	468.09	468.09	468.09	468.09
Solid Waste Management	646.02	-	64.60	129.20	129.20	129.20	64.60	64.60	64.60	-	-
Street Lighting	654.61	-	-	65.46	130.92	130.92	130.92	130.92	65.46	-	-
Slum Upgradation	902.18	-	-	90.22	90.22	135.33	135.33	135.33	135.33	90.22	90.22
Others	212.00	-	-	-	42.40	42.40	42.40	42.40	42.40	-	-
Grand Total Investment	17,848.47	506.71	571.31	2,315.65	3,479.48	3,290.54	2,485.18	1,663.26	1,597.80	1,380.23	558.31

Source: Analysis

¹ Included Natural Drains & Lake improvement Investment in water supply sector

² Included Cable Duct Investment in road sector and removed Highways and Railways investment from the roads and traffic transportation sector.

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

Table 11.15 : Financing Pattern for Proposed Projects – Scenario I (Normal Case)

Sr. No	Sector	Government Grant	Financial Institution Loan	ULB Share	Other Department
		% Share			
1	Water Supply	30	40	30	-
2	Sewerage & Sanitation	30	40	30	-
3	Roads and Traffic Management	30	60	10	-
4	Storm Water Drainage	30	60	10	-
5	Solid Waste Management	30	60	10	-
6	Street Lighting	30	60	10	-
7	Slum Upgradation	30	60	10	-
8	Others	10	40	50	-
9	Traffic & Transportation	-	-	-	100

Table 11.16: Financing Pattern for Proposed Projects – Scenario II (JNNURM Case)

Sr. No	Sector	Government Grant	Financial Institution Loan	ULB Share	Other Department
		% Share			
1	Water Supply	50	30	20	
2	Sewerage & Sanitation	50	30	20	
3	Roads and Traffic Management	50	30	20	
4	Storm Water Drainage	50	30	20	
5	Solid Waste Management	50	30	20	
6	Street Lighting		50	50	
7	Slum Upgradation	80	10	10	
8	Others		50	50	
9	Traffic & Transportation	-	-	-	100.00

Table 11.17: One-Time Charges for Water and Sewerage Connections

Sr. No	Description	Water Supply	Sewerage
1	Domestic	6,000	6,000
2	Non Domestic	12,000	12,000
3	Industrial	12,000	12,000

9. 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 and the following assumptions: number of assessments to grow at a nominal 4 percent per annum; ARV for all properties revised once in 5 years beginning 2006-07 at

30 percent; collection performance assumed at 50 percent against arrears demand and 80 percent against current demand.

- b. *Water Charges.* Assumed at a nominal growth rate of 4 percent per annum (proportionate to property tax assessment growth rate); regular connections are envisaged in the base case scenario and increase in water connections is a result of the availability of additional water for distribution. It is assumed that 80 percent of the property tax assessments would have water connections by FY 2011; 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. From 2006-07, a 20 percent increase every 3 years is assumed.
- c. *Sewerage Charges.* Since the sewerage project is under implementation no new connections envisaged in the base case scenario. Regular sewer connections provided under the Project is accounted with project situation – it is assumed that 80 percent of the property tax assessments would have UGD connections by FY 2012. Monthly flat rate of Rs. 150, Rs, 300 and Rs. 300 per connection for domestic, non-domestic and industrial connections respectively. It is assumed that collection of sewerage charge starts from 2006-07, and from then, 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 Error! Reference source not found..
- 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 and Rs. 75 per property assessment has been proposed for residential and non-domestic properties respectively. It is assumed that conservancy fee collection starts from 2006-07, and then onwards, 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.
- e. *All Other Revenue Income Items.* (including municipal own sources, grants and assigned revenues). The past trend is adopted, subject to minimum and maximum ceilings of 5 and 20 percent per annum, respectively.

(ii) Revenue Expenditure.

- a. The 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 15 years at an

interest rate provided by the ULB.

- 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 Error! Reference source not found..

(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) Based on the past trend, regular capital grants are estimated.
- b) Capital income is ascertained based on assumed project financing patterns as detailed in Error! Reference source not found..

3. Project Cash Flows and FOP Results

A. Scenario I (Normal Case)

10. The implementable investment 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 regard to investment phasing, financing pattern, additional O&M expenditure and additional income due to proposed capital investments, for the Sustainable Investment Scenario. The net project cash flows are then loaded onto the base case scenario to test their impact on the overall municipal fiscal situation.

- (i) **Implementable Investment.** Table 11.18 presents a summary of project cash flows due to the sustainable project scenario. Pallavaram municipality would accumulate a positive closing balance of Rs. 3,923 lakh by the end of 2014-15. The Financial Operating Plan (FOP) for Scenario I funding option due to sustainable project when loaded onto the Base Case Scenario FOP indicate that Pallavaram municipality would end up with a positive closing balance of Rs. 15,377 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 graph represents sector-wise distribution of sustainable investment. Without additional resource mobilization initiatives, the municipality can sustain investments to the tune of Rs. 4,992 lakh.

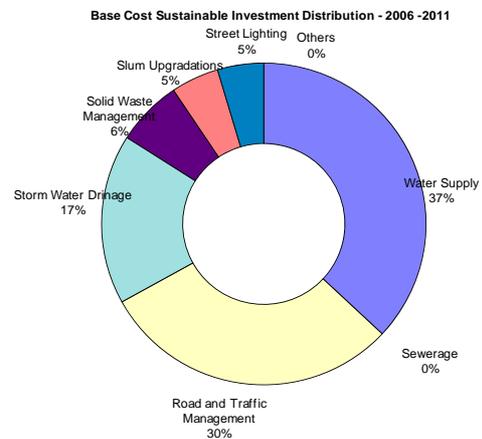


Table 11.18: Financial Operating Plan Results - Pallavaram Municipality– Scenario I (Normal Case)

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															
Opening Balance	511	1,080	1,533	1,770	2,073	2,466	2,930	3,627	4,465	5,427	6,523	7,795	9,953	12,329	14,970
Revenue Income*	1,012.0	1,206.8	1,315.7	1,434.1	1,577.3	1,720.9	1,996.7	2,213.6	2,430.0	2,668.4	2,956.7	3,435.5	3,804.9	4,233.3	4,689.2
Additional Revenue Mobilization**	-	30	31	32	33	34	34	36	36	37	39	39	40	42	43
Total Revenue Income	1,012.0	1,206.8	1,315.7	1,434.1	1,577.3	1,720.9	1,996.7	2,213.6	2,430.0	2,668.4	2,956.7	3,435.5	3,804.9	4,233.3	4,689.2
Revenue Expenditure	572	915	1,248	1,309	1,375	1,450	1,500	1,592	1,695	1,810	1,940	1,545	1,710	1,896	2,107
Status	387.23	439.56	291.53	67.54	125.62	201.94	271.35	496.53	621.40	734.98	858.19	1017.06	1890.05	2095.07	2337.40
Closing Balance	510.9	1,080.4	2,398.3	2,941.8	3,529.2	4,002.9	4,408.9	4,964.4	5,464.4	5,941.0	6,402.0	7,160.6	8,822.6	10,664.2	12,903.9
Project Account - Full Project Scenario															
Total Net Project Cash Flow (after deducting ULB equity from cash flow)	-	268.8	279.3	(25.1)	(891.9)	(2,163.0)	(2,284.7)	(3,373.5)	(4,696.9)	(6,227.1)	(7,410.3)	(9,042.9)	(10,763.2)	(12,318.0)	(13,946.1)
Overall Closing Balance	1,801.9	2,049.1	2,047.5	1,574.3	766.7	1,342.8	1,091.9	730.2	295.5	385.2	910.4	1,565.3	2,651.6	3,923.3	1,801.9
Project Account - Sustainable Investment Scenario															
Total Net Project Cash Flows (after deducting ULB equity from project cash flow)	-	1,461.5	2,055.1	2,593.5	2,841.9	2,887.5	2,840.5	2,534.3	2,039.8	1,383.4	888.3	456.2	(16.7)	(268.3)	(533.4)
Overall Closing Balance	1,080.4	2,994.7	3,824.8	4,666.2	5,308.2	5,817.2	6,468.0	6,999.8	7,466.9	7,906.0	8,683.8	10,409.5	12,311.9	14,701.3	17,336.0
Financial Viability Ratios															
Sustainable Investment Scenario															
Debt Equity Ratio- New Projects	-		0.16	0.48	1.25	1.97	1.99	2.11	3.25	3.19	2.93	-	-	-	-
Debt Service Coverage Ratio (DSCR) – Min. 150%	0%		786%	246%	248%	209%	180%	162%	142%	133%	124%	138%	217%	225%	255%
Operating Ratio (<1)	0.00		0.39	0.70	0.74	0.83	0.89	0.85	0.89	0.92	0.94	0.88	0.72	0.71	0.67
DSR (Max. 30%)	0%		10%	27%	27%	30%	32%	35%	38%	39%	40%	37%	24%	23%	21%
Full Project Investment															

Item Heads	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	<i>Rs. Lakh</i>														
Scenario															
Debt Equity Ratio- New Projects		-	0.43	0.81	2.45	3.43	3.39	1.30	2.21	2.17	1.96	-	-	-	-
Debt Service Coverage Ratio (DSCR) – Min. 150 %		0%	362%	147%	135%	96%	70%	152%	93%	89%	84%	100%	112%	117%	134%
Operating Ratio (<1)		0.00	0.67	0.95	1.10	1.34	1.47	0.89	1.12	1.13	1.14	1.02	0.95	0.93	0.88
DSR (Max. 30%)		0%	10%	27%	27%	30%	32%	35%	38%	39%	40%	37%	24%	23%	21%

Source: Analysis.

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

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

Table 11.19: Summary of Full Project Cash Flow– Scenario I (Normal Case)

	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	396.1	548.5	750.1	850.1	899.3	880.1	749.7	619.0	484.8	391.8	297.4	198.5	148.6	97.3
2	Sewerage *	596.4	887.9	1,233.8	1,612.8	2,024.4	2,475.9	2,928.0	3,403.0	3,896.8	4,481.4	5,092.5	5,726.6	6,474.5	7,256.1
3	Roads and Traffic Management	0.0	0.0	(16.5)	(77.7)	(197.1)	(471.2)	(856.5)	(1,348.5)	(1,962.1)	(2,623.2)	(3,349.9)	(4,117.3)	(4,927.6)	(5,783.6)
4	Storm Water Drainage	0.0	0.0	(14.1)	(53.6)	(117.2)	(206.4)	(323.9)	(477.8)	(672.7)	(909.5)	(1,166.9)	(1,437.0)	(1,720.5)	(2,018.3)
5	Solid Waste Management	50.2	106.1	157.6	210.2	250.2	278.5	313.1	339.7	359.4	394.2	430.3	466.5	531.9	602.1
6	Street Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Slum Upgradations	0.0	0.0	(4.8)	(15.7)	(35.8)	(94.7)	(162.6)	(241.9)	(318.8)	(406.4)	(471.0)	(538.7)	(609.6)	(682.9)
8	Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Sub Project Cash Flow	1,042.7	1,542.5	2,106.1	2,526.1	2,823.8	2,862.2	2,647.7	2,293.4	1,787.4	1,328.2	832.4	298.7	(102.7)	(529.4)
	Total Full Project Cash Flow														
	<i>Opening Balance</i>	2,994.7	3,824.8	4,666.2	5,308.2	5,817.2	6,468.0	6,999.8	7,466.9	7,906.0	8,683.8	10,409.5	12,311.9	14,701.3	17,336.0

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		<i>Rs. Lakh</i>													
A	Sources of Fund														
1	Debt Drawdown	237	299	1,090	1,651	1,686	1,344	1,016	1,008	873	439	-	-	-	-
2	Equity Drawdown	178	196	337	440	455	224	169	168	146	73	-	-	-	-
3	Govt. Grant	178	212	612	896	918	609	441	433	386	166	-	-	-	-
4	User Charges	318	439	563	746	847	944	1,136	1,196	1,246	1,470	1,539	1,599	1,881	1,969
5	New Connection Fees	1,341	432	533	400	393	414	144	148	152	188	194	200	248	256
	Total- Inflow	2,251	1,578	3,135	4,133	4,300	3,535	2,906	2,954	2,803	2,337	1,733	1,798	2,129	2,225
B	Disposition of Funds														
1	Project Capex	592	707	2,038	2,986	3,059	2,240	1,694	1,681	1,456	732	-	-	-	-
2	Operation & Maintenance	-	36	83	180	318	469	577	676	773	855	919	974	1,033	1,095
3	Debt Servicing- Repayment	-	-	-	-	-	535	571	637	724	774	1,246	1,297	1,348	1,395
4	Interest During Construction	20	46	138	278	422	114	201	286	361	398	-	-	-	-
	Total- Outflow	612	788	2,260	3,445	3,799	3,358	3,043	3,280	3,314	2,759	2,166	2,271	2,381	2,490
	Net Cash Flow	1639	790	875	688	501	177	(137)	(326)	(511)	(422)	(432)	(473)	(252)	(265)
	<i>Closing Balance</i>	1639	2429	3304	3992	4493	4670	4533	4207	3696	3274	2842	2369	2117	1852

Source: Analysis.

Note: *Ongoing schemes additional connection deposits and tariff revenues has been considered in sub project cash flow

11. 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.
12. The Capital Improvement Program involved the identification of public capital facilities to cater to the demand of the town population by the year 2026.

Table 11.20: Sustainable Project Funding Option- (Rs. Lakh) – Scenario I (Normal Case)

Sectors	Loan	Grant	ULB /Beneficiaries Contribution	Total
2006-11				
Water Supply	1,013.42	760.07	760.07	2,533.56
Sewerage & Sanitation	-	-	-	-
Road and Traffic Management	739.73	369.87	123.29	1,232.88
Storm Water Drainage	421.28	210.64	70.21	702.13
Solid Waste Management	162.80	81.40	27.13	271.33
Street Lighting	-	-	-	-
Slum Upgradation	151.57	75.78	25.26	252.61
Others	-	-	-	-
Total	2,488.80	1,497.75	1,005.96	4,992.51
2012-16				
Water Supply	-	-	-	-
Sewerage & Sanitation	-	-	-	-
Road and Traffic Management	1,232.88	616.44	205.48	2,054.81
Storm Water Drainage	702.13	351.07	117.02	1,170.22
Solid Waste Management	58.14	29.07	9.69	96.90
Street Lighting	-	-	-	-
Slum Upgradation	175.93	87.96	29.32	293.21
Others	-	-	-	-
Total	2,169.08	1,084.54	361.51	3,615.14
2006-16				
Water Supply	1,013.42	760.07	760.07	2,533.56
Sewerage & Sanitation	-	-	-	-
Road and Traffic Management	1,972.62	986.31	328.77	3,287.69
Storm Water Drainage	1,123.41	561.70	187.23	1,872.35
Solid Waste Management	220.94	110.47	36.82	368.23
Street Lighting	-	-	-	-
Slum Up gradations	327.49	163.75	54.58	545.82
Others	-	-	-	-
Total	4,657.88	2,582.30	1,367.48	8,607.65

Source: Analysis.

B. Scenario II (JNNURM Case)

13. The impemetable investment 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 regard to investment phasing, financing pattern, additional O&M expenditure and additional income due to proposed capital investments, for the Sustainable Investment Scenario. The net project cash flows are then loaded onto the base case scenario to test their impact on the overall municipal fiscal situation.

- (i) **Implementable Investment.** **Table 11.30** presents a summary of project cash flows due to the sustainable project scenario. The Financial Operation Plan (FOP) due to sustainable project when loaded onto the Base Case Scenario FOP indicate that Pallavaram municipality would end up with a positive closing balance of Rs. 16,460 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 graph represents sector-wise distribution of sustainable investment. Without additional resource mobilization initiatives, the municipality can sustain investments to the tune of Rs. 6,016 lakh.

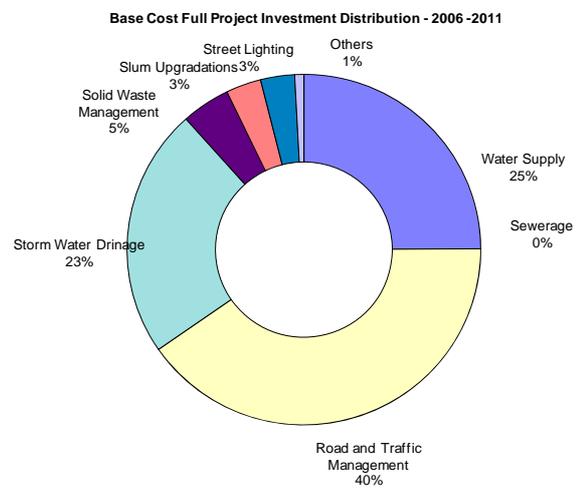


Table 11.21: Financial Operating Plan Results - Pallavaram Municipality– Scenario II (JNNURM Case)

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>	511	1,080	1,533	1,770	2,073	2,466	2,930	3,627	4,465	5,427	6,523	7,795	9,953	12,329	14,970
Revenue Income*	1,142	1,338	1,454	1,580	1,736	1,879	2,164	2,395	2,620	2,868	3,174	3,664	4,045	4,495	4,964
Additional Revenue Mobilization**	-	30	31	32	33	34	34	36	36	37	39	39	40	42	43
<i>Total Revenue Income</i>	1,142	1,368	1,485	1,611	1,769	1,913	2,198	2,430	2,657	2,906	3,213	3,703	4,085	4,537	5,007
<i>Revenue Expenditure</i>	572	915	1,248	1,309	1,375	1,450	1,500	1,592	1,695	1,810	1,940	1,545	1,710	1,896	2,107
Status	569	453	237	303	394	463	698	838	962	1,096	1,273	2,158	2,375	2,641	2,900
<i>Closing Balance</i>	1,080	1,533	1,770	2,073	2,466	2,930	3,627	4,465	5,427	6,523	7,795	9,953	12,329	14,970	16,460
Project Account - Full Project Scenario															
Total Net Project Cash Flow (after deducting ULB equity from cash flow)	-	268.8	279.3	(25.1)	(891.9)	(2,163.0)	(2,284.7)	(3,373.5)	(4,696.9)	(6,227.1)	(7,410.3)	(9,042.9)	(10,763.2)	(12,318.0)	(13,946.1)
<i>Overall Closing Balance</i>	1,080.4	1,801.9	2,049.1	2,047.5	1,574.3	766.7	1,342.8	1,091.9	730.2	295.5	385.2	910.4	1,565.3	2,651.6	3,923.3
Project Account - Sustainable Investment Scenario															
Total Net Project Cash Flows (after deducting ULB equity from project cash flow)	-	1,525.7	2,186.4	2,693.7	2,859.2	2,892.5	2,759.6	2,474.9	2,106.5	1,744.5	1,658.4	1,817.2	1,960.5	2,351.4	2,753.7
<i>Overall Closing Balance</i>	1,080.4	3,058.9	3,956.2	4,766.3	5,325.4	5,822.2	6,387.1	6,940.3	7,533.6	8,267.1	9,453.9	11,770.4	14,289.1	17,321.0	20,623.1
Financial Viability Ratios															
Sustainable Investment Scenario															
Debt Equity Ratio- New Projects	-	-	0.12	0.37	0.63	0.87	0.88	0.74	0.96	0.97	0.94	-	-	-	-
Debt Service Coverage Ratio (DSCR) – Min. 150%	-	0%	800%	252%	269%	244%	222%	213%	193%	187%	181%	204%	413%	429%	487%
Operating Ratio (<1)	-	0.00	0.37	0.67	0.75	0.87	0.90	0.84	0.85	0.85	0.84	0.77	0.60	0.60	0.57
DSR (Max. 30%)	-	0%	10%	26%	25%	26%	26%	27%	28%	28%	27%	25%	13%	12%	11%
Full Project Investment															

Item Heads	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	<i>Rs. Lakh</i>														
Scenario															
Debt Equity Ratio- New Projects		-	0.43	0.81	2.45	3.43	3.39	1.30	2.21	2.17	1.96	-	-	-	-
Debt Service Coverage Ratio (DSCR) – Min. 150 %		0%	362%	147%	135%	96%	70%	152%	93%	89%	84%	100%	112%	117%	134%
Operating Ratio (<1)		0.00	0.67	0.95	1.10	1.34	1.47	0.89	1.12	1.13	1.14	1.02	0.95	0.93	0.88
DSR (Max. 30%)		0%	10%	26%	25%	26%	26%	27%	28%	28%	27%	25%	13%	12%	11%

Source: Analysis.

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

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

Table 11.22: Summary of Full Project Cash Flow– Scenario II (JNNURM Case)

	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	396.1	548.5	750.1	850.1	899.3	880.1	749.7	619.0	484.8	391.8	297.4	198.5	148.6	97.3
2	Sewerage *	0.0	0.0	0.0	0.0	0.0	1,509.9	2,398.5	3,448.5	4,661.7	6,270.4	7,471.7	8,729.4	10,220.0	11,780.4
3	Roads and Traffic Management	0.0	0.0	(55.0)	(258.9)	(657.0)	(1,396.0)	(2,361.8)	(3,554.7)	(5,015.2)	(6,596.5)	(8,314.5)	(10,119.5)	(12,016.8)	(14,011.9)
4	Storm Water Drainage	0.0	0.0	(47.0)	(178.8)	(390.5)	(663.0)	(993.8)	(1,406.9)	(1,915.0)	(2,517.6)	(3,163.5)	(3,837.0)	(4,539.8)	(5,273.5)
5	Solid Waste Management	50.2	104.5	147.7	181.4	190.8	177.2	159.8	122.8	69.2	26.2	(19.7)	(69.9)	(95.5)	(120.2)
6	Street Lighting	0.0	0.0	(4.4)	(26.6)	(77.5)	(159.7)	(276.3)	(426.5)	(598.0)	(780.5)	(974.7)	(1,181.2)	(1,398.4)	(1,624.3)
7	Slum Upgradations	0.0	0.0	(6.0)	(19.7)	(44.8)	(146.3)	(265.4)	(405.9)	(539.6)	(692.1)	(798.4)	(910.6)	(1,028.9)	(1,152.0)
8	Others	0.0	0.0	0.0	(4.0)	(13.4)	(28.8)	(50.5)	(78.9)	(103.8)	(130.7)	(160.0)	(191.7)	(226.0)	(260.7)
	Total Sub Project Cash Flow	446.3	653.0	785.4	543.4	(93.2)	173.5	(639.8)	(1,682.7)	(2,955.9)	(4,029.0)	(5,661.6)	(7,381.9)	(8,936.8)	(10,564.8)

	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Rs. Lakh</i>															
Total Full Project Cash Flow															
A	Sources of Fund														
1	Debt Drawdown	178	212	605	907	916	671	507	480	403	184	-	-	-	-
2	Equity Drawdown	118	141	422	639	650	488	381	347	274	129	-	-	-	-
3	Govt. Grant	296	354	1,012	1,440	1,493	912	626	664	644	277	-	-	-	-
4	User Charges	318	439	563	746	847	944	1,136	1,196	1,246	1,470	1,539	1,599	1,881	1,969
5	New Connection Fees	1,341	432	533	400	393	414	144	148	152	188	194	200	248	256
	Total- Inflow	2,251	1,578	3,135	4,133	4,300	3,430	2,794	2,835	2,719	2,248	1,733	1,798	2,129	2,225
B	Disposition of Funds														
1	Project Capex	592	707	2,038	2,986	3,059	2,240	1,694	1,681	1,456	732	-	-	-	-
2	Operation & Maintenance	-	36	83	180	318	469	577	676	773	855	919	974	1,033	1,095
3	Debt Servicing- Repayment	-	-	-	-	-	308	326	359	403	427	656	681	705	728
4	Interest During Construction	15	33	85	162	240	57	100	141	175	191	-	-	-	-
	Total- Outflow	607	776	2,206	3,328	3,617	3,074	2,697	2,856	2,807	2,205	1,575	1,655	1,738	1,822
	Net Cash Flow	1644	802	929	805	683	355	97	(22)	(88)	43	159	143	391	402
	<i>Closing Balance</i>	1644	2446	3375	4180	4863	5218	5315	5294	5206	5248	5407	5550	5941	6344

Source: Analysis.

Note: *Ongoing schemes additional connection deposits and tariff revenues has been considered in sub project cash flow

14. The Capital Improvement Program is involved the identification of public capital facilities to cater to the demand of the town population by the year 2026.

Table 11.23: Project Funding Option- JNNURM Base Cost (Rs. Lakh)

Sectors	Loan	Grant	ULB /Beneficiaries Contribution	Total
	2006-11			
Water Supply	684.06	1,140.10	456.04	2,280.20
Sewerage and Sanitation	-	-	-	-
Road and Traffic Management	616.44	1,027.40	410.96	2,054.81
Storm Water Drainage	280.85	468.09	187.23	936.17
Solid Waste Management	108.53	180.89	72.35	361.77
Street Lighting	65.46	-	65.46	130.92
Slum Upgradation	25.26	202.09	25.26	252.61
Others	-	-	-	-
Total	1,780.61	3,018.57	1,217.31	6,016.49

Source: Analysis.

NOTE ON PRIVATE SECTOR PARTICIPATION INITIATIVES

Overview. Tamil Nadu is one of the most urbanized states in the country. With opening up of economy and moving further from liberalization to globalization, there is a growing demand for urban infrastructure services. The budgetary resources for meeting the growing demands of urban infrastructure are inadequate. There is a need to develop a competing edge to attract investments and achieve the goal of sustainable development. One of the key strategic areas is infrastructure, which is critical for sustainable development.

Today the urban local bodies, Alandur, Pallavaram and Tambaram are increasingly finding it difficult to service the urban infrastructure services like water supply, sanitation, and solid waste management to the rapidly growing urban population. The financial resources are very limited and often have to subsidize to accommodate the poor in the system. The system as such is not able to function adequately. The existing revenues are limited and there is very little scope for expansion in the services. Also there are severe constraints on budgetary allocations to ULBs for the maintenance of available infrastructure facilities. Under this circumstance, private sector participation in appropriate feasible areas will help to ease the problem. Also few success stories of private sector participation in selected urban infrastructure projects (mainly in the field of maintenance of facilities) in Tamil Nadu and elsewhere is encouraging.

The private sector participation can be either based on service contract or performance based management contracts.

- (i) *Service Contract:* Under the service contract the private operators functions includes operation and maintenance of the system, meter reading, billing and tariff collection. The duration of these contracts are shorter say 6 months to 2 years.
- (ii) *Performance based management contract:* Under the performance based management contracts, the government transfers the responsibility of the O&M to the private sector. Under such contracts, ownership of the water utility and responsibility for service provision remain with the government. Likewise, the bulk of the commercial risk and all the capital and investment risks remain with the public authority. Management control and authority, however, is transferred to a private operator, which applies its expertise to improve management systems and practices. The duration of the management contracts range from 3 – 5 years.

Given below are the brief descriptions on the type of utilities that can be brought under private sector participation.

Water Supply. The water supply component includes source development, treatment and distribution. The private sector participation can be explored either individually or in combination.

- (i) Source Development. The private operator shall develop the system, which

includes intake point, pumping station and laying of transmission mains.

- (ii) Treatment Plant. The operator of the treatment plant will have the responsibility to see that the water supplied meets the requisite standards.
- (iii) Distribution Network. The private operator shall improve and develop the system, this also includes expansion of distribution network in the uncovered areas.

The operator shall be responsible in carrying out operations including receiving bulk water from supplier, maintaining adequate water levels in the reservoirs, checking the quality of treated water, operating valves in the distribution network for efficient and equitable water distribution, checking pressures and water meter reading at critical points, providing new water connections, handling customer related queries relating water pressure, water quality, leakages and damaged pipes.

Water Audit - The operator shall have to take necessary measures to minimize the quantity of water lost in the distribution network.

Energy Audit – The operator shall have to take necessary measures to minimize the power consumption in carrying out its operation.

Sewerage. The sewerage component includes development of collection network, intermediate pumping station and sewage treatment plant.

- (i) Collection network. The private operator shall develop the system, which includes laying of collection network
- (ii) Sewage pumping station. The operator of the pumping of the station will have the responsibility to see that there is no overflowing of sewage any where in the service area either in the sewerage network or in the customer premises. The maximum level needs to be monitored in the wet well. In case of power failure, there should be generators for operating the pumps. The cleaning of screen and removal of floating matters needs to be done on a regular specified basis.
- (iii) Sewage Treatment Plant. The private operator need to maintain the quality of treated sewage within the standards prescribed by Tamil Nadu Pollution Control Board. Based on the type of treatment plant, the operator needs to provide adequate generators in case of power failure. The operator shall be responsible for carrying out regular cleaning of grit channels and screen removals and disposal of floating matters. Flow of treated sewage needs to be measured on continuous basis. The samples of influent and effluent need to be collected and analysed on a daily basis.

WAY FORWARD

Summary of Key Initiatives

15. Based on the consultative process the following key initiatives and focus areas will form CCP for Alandur Pallavaram and Tambaram:
 - Environmental Infrastructure. Focusing on water demand management, water and energy audit; ensuring safe sanitary disposal and developing a sewage treatment plant (addressing recycling and reuse of treated wastewater); developing a Storm Water Master Plan; improvement in municipal waste collection, and development of sanitary landfill;
 - Slum Infrastructure. Ensuring community participation in infrastructure development and service delivery;
 - Institutional Development. Instituting a focused implementation team and creating a Project Management Unit, ensuring ULB staff capacity building in project implementation, introducing professional management practices, instituting a system of project advisory and stakeholder consultation and addressing overall institutional strengthening – Accounting and MIS, and integrating the MIS-E-governance-Financial modules; and
 - Financial Sustainability. Tapping potentials of own tax sources for institutional options in service delivery (property tax coverage and improved tax collection, user charges to address full cost recovery, specifically focusing on recovering O&M expenditure, and annual increase/indexation in user charges and five-year revision of ARV/property tax.

LIST OF PROJECTS

16. list of project are presented in the following tables.

Table 24: Projects Identified for Water Supply (2026)

Sr. No	Item	Quantity	Unit	Cost
				<i>Rs. Lakh</i>
A	<i>System Rehabilitation</i>			
1	Distribution Network	7.42	km	37.08
2	Leak Detection and Reduction Measures for Distribution Network	130	km	26.00
	<i>Sub-Total (A)</i>			63.08
B	<i>New Infrastructure</i>			
1	Augmentation of Headwork	15.89	MLD	1,270.94
2	Storage Reservoir	1.33	ML	73.09
3	Distribution Network	80.96	km	404.82
4	Road Overlay	80.96	km	202.41
5	Water Treatment Plant	22.27	MLD	334.07
	<i>Sub-Total (B)</i>			2,285.33
	Total (A+B)			2,348.41

Source: Analysis.

Table 25: Projects Identified for Drains (2011)

Sr. No	Description	Value	Unit	Cost
				<i>Rs. Lakh</i>
A	<i>Rehabilitation</i>			
1	Rehabilitation of Existing Storm Water Drains	21.75	km	21.75
B	<i>Upgradation of Kutcha to Pucca</i>			
1	Kutcha to Pucca Open	84.99	km	1,019.86
2	Kutcha to Pucca Closed	1.51	km	25.69
3	Pucca Open to Pucca Closed	-	km	
C	<i>Formation of New Drains</i>			
1	New Pucca Open Drains	89.91	km	1,078.91
2	New Pucca Closed Drains	144.20	km	2,451.33
D	<i>Diversion of Floodwater from Airport to Adyar River</i>			83.33
	Total			4,680.87

Table 26: Estimated Cost for Improvements to Lakes

Sr. No.	Tank	Improvements to Lakes	Infrastructure for Supply to OHTs
		<i>Rs. Lakh</i>	<i>Rs. Lakh</i>
1	Thiruvengadamudayan Koil Tank	2.83	8.11

Sr. No.	Tank	Improvements to Lakes	Infrastructure for Supply to OHTs
		<i>Rs. Lakh</i>	<i>Rs. Lakh</i>
2	Chelliamman Koil Tank	2.12	8.56
3	Papathikuttai Kulam	4.06	7.05
4	Easwaran Koil Kulam	0.14	5.71
5	Beriamman Koil Kulam	2.64	10.71
6	Hasthinapuram	10.44	12.44
7	Ramaswamy Kulam	5.98	11.85
8	Periya Eri Keelakattalai Tank	28.79	11.11
9	Nemilicherry Tank	9.10	11.52
10	Balacony Kulam	6.19	10.70
11	Zamin Royapettai Tank	5.98	9.14
	Total	78.27	106.88

Source: Analysis.

Table 27: Projects Identified for Solid Waste Management (2026)

Sr. No	Item	Quantity	Unit	Cost
				<i>Rs. Lakh</i>
A	<i>New Infrastructure</i>			
I.	Waste Collection and Transportation Equipment			
1	Tri-cycles (with 6 Bins Each)	191	Nos	15.28
2	Push Carts	315	Nos	22.68
3	Dumper Bins (7 cum)	34	Nos	18.70
4	Dumper Placers	9	Nos	90.00
	<i>Subtotal (I)</i>			<i>146.66</i>
II.	Compost Plant Development and Sanitary Landfill Site Development			
1	Compost Yard	64.00	Tons	160.00
2	Landfill	42.42	Tons	339.36
	<i>Subtotal (II)</i>			<i>499.36</i>
	Total (I+II)			646.02

Table 28: Projects Identified for Roads and Traffic & Transportation

Sr. No	Item	Value	Unit	Cost
				<i>Rs. Lakh</i>
I	Roads			
A	<i>Upgradation (Excludes the Bus Route and Major Links)</i>			
1	BT to Concrete	-	km.	-
2	WBM to Black Top	1.39	km.	20.84
3	Earthen to Black Top	3.40	km.	67.96
B	<i>New Formation (Excludes the Bus Route and Major Links)</i>			0
1	Concrete	5.00	km.	235.15
2	Black Top	48.09	km.	1,538.73

Sr. No	Item	Value	Unit	Cost
				<i>Rs. Lakh</i>
3	WBM	12.44	km.	174.16
C	Widening/ Strengthening (Excludes the Bus Route and Major Links)	88.48	km.	619.34
D	Formation of New Bus Route Road (Maintained by Municipality)	3.80	km.	570.00
E	Radha Nagar Main Road	1.0	Km	250.00
F	Station Road	0.75	km	200.00
				3,676.18
	<i>Highways and other department</i>			
	Widening/ Strengthening of Bus Route and Major Links (Maintained by Highway Department)	19.50	km.	2,062.50
	ROBs (Maintained by Railways)	3	Nos.	4,500.00
	Link road to Pallavaram – Thoraipakkam road			1,254.00
	From Dargah road to Ganapathipuram	1.2	km	
	Connectivity at Vels College (Vaidhyalingam Street to Radha nagar Main Road)	1.1	km	
	Connectivity from 5 th Cross street	1.4	Km	
	Sriramnagar main road to Marudhupandiar Street	2.0	Km	
	Rail lane near Vaishnav College – underpass	1.0	Km	
	Sub-Total (I)			7,816.5
II	Traffic and Transportation			
	<i>Municipality</i>			
A	Junction Improvement	4	Nos.	20.00
B	Parking Facility	1.70	Km.	4.25
C	Footpath (1.5 m Wide)	9.40	Km.	18.80
	Sub-Total (Municipality)			43.05
	<i>Highway Department</i>			
A	Pedestrian Subways	2	Nos.	300.00
	Sub-Total (Highway Department)			300.00
	Sub-Total (II)			343.05
	Total (I+II)			11,835.73*

Note: *The cost excludes land acquisition cost

Table 29: Projects Identified for Streetlights (2011)

Sr. No	Fixture	Value	Unit	Cost
				<i>Rs. Lakh</i>
A	Distribution by Type (For Existing Roads)			
1	Tube Light	957	Nos.	43.07
2	High Power	49	Nos.	4.44
3	High Mast Lamps	5	Nos.	23.32
4	Power Saver Switches	5	Nos.	0.23

Sr. No	Fixture	Value	Unit	Cost
				<i>Rs. Lakh</i>
	Sub-Total (A)			71.06
B	Distribution by Type (For New Formation of Roads)			
1	Tube Light	1,749	Nos.	428.51
2	High Power	436	Nos.	126.44
3	High Mast Lamps	6	Nos.	28.32
4	Power Saver Switches	6	Nos.	0.28
	Sub-Total (B)			583.55
	Total (A+B)			654.59

Table 30: Cost for Underground Multi-Utility Duct

Roads	Cost
	<i>Rs. Lakh</i>
Bus Route and Municipal Internal Roads	4500.00
Total	4500.00

Source: Analysis.

Table 31: Projects Identified for Upgradation of Slum Infrastructure

Sr. No	Component	Value	Unit	Cost
				<i>Rs. Lakh</i>
1	No. of Public Taps / Hand pumps	359	Nos.	125.65
2	No. of Public Toilet Seats	1,181	Nos.	590.50
3	No. of Public Urinals	752	Nos.	127.84
4	No. of Dustbins / Temporary Waste Storage Points	144	Nos.	5.47
5	Roads and Pavements	-	km	-
6	Storm Water Drains	-	km	-
7	Streetlights	659	Nos.	52.72
	Total			902.18

Table 32: Projects Identified by the ULB

Sr. No	Description	Value	Unit	Cost
				<i>Rs. Lakh</i>
1	Development of Pallava Garden, Perumal Nagar Park as Eco-Parks	2	Nos.	10.00
2	Sports Parks at Vengatraman Nagar & A.G.S Colony	2	Nos.	12.00
3	Tree Plantation	10	Nos.	10.00
4	Improvements to Burial Grounds	9	Nos.	180.00
	Total			212.00