

8 PREPARATION OF A CITY INVESTMENT PLAN (CIP) AND FINANCING STRATEGIES

Vadodara Municipal Corporation has performed quite efficiently during the last ten years i.e. 1994-95 to 2004-05. Except for 2001-02¹², VMC maintained a revenue surplus throughout the above period due to its efficient services delivery operations.

The strategies being adopted by VMC have three dimensions -- to improve service delivery through efficiency measures and the creation of infrastructure assets, and to improve the governance of VMC. The capital investments required for creating infrastructure assets are discussed in this chapter.

The City Capital Investment Plan (CIP) is essentially a multi-year scheduling of physical investments that determines priority investments based on the gap analysis carried out by VMC. It is an estimate of the level of investment needed to implement the CIP along with options and strategies for financing it. The scheduling or phasing of the CIP is also based on the choice of specific improvements that need to be taken up over six years. The salient feature of the CIP is upgradation of the level of services and infrastructure standards, which would help the city to leverage upon its strength for boosting economic development. The investment is planned for next six years under the mission. These investments would ensure that the city reached a minimum level of infrastructure services from where it could take off in terms of attracting investment and developing in a focussed manner.

8.1 CAPITAL INVESTMENT

The capital programs are formulated to meet the forecasted needs for the next six-year horizon based on the assessment of the present status of services and the town's future requirements. Given the demand-supply analysis, the present requirement of the town is an investment of Rs. 1,896.5 crores over the next six years. The share of each of the sectors is based on an independent assessment of each sector as identified by the respective consultant engaged by VMC. The break-up of the same is given below.

Table 29. Phasing of investment over six years (VMC)

Sl	Sector wise Phasing	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total	% share
1	Water supply	131	64	54	158	-	-	407	21.45%
2	Sewerage & sanitation	45	38	22	23	12	6	146	7.70%
3	Strom water drains	83	45	25	18	14	13	198	10.44%
4	Roads	30	37	68	66	33	17	252	13.28%
5	Bridges & flyovers	40	19	5	20	30	30	144	7.59%
6	Solid waste management	38	25	28	31	34	36	193	10.17%
7	Rejuvenation and development of water bodies	17	17	21	25	12	7	99	5.22%
8	Flood management								
	(a) By Resectioning and diversion of	30	30	30	9	-	-	99	5.22%

¹² 2001-02 refers to a period of earthquake and followed by communal unrest, which affected Gujarat's economy severely. Also, during this year VMC went for conversion of its property tax system from Annual Rental Value to Areas based system.

Sl	Sector wise Phasing	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total	% share
	Vishwamitri								
	(b) By diversion of Bhukhi	10	10	10	10	7	-	47	2.48%
9	Basic services to the urban poor	55	33	50	44	60	39	281	14.81%
10	Redevelopment of inner city	10	10	10	-	-	-	30	1.58%
	Total	489	330	323	405	202	148	1,897	100.00%

Note: All figures in Rs. Crores, All other components also include components of urban poor, hence the share of slums is much higher than the stipulated percentages under JNNURM.

Prioritisation of sectors has been linked with the survey which pointed at water as the first priority; and also co-related with the allocation in CIP as indicated in the table above. The survey indicates sewerage as the second priority, but in the CIP, it has received fourth priority. Sewerage, which is the second priority as per the survey, is not a priority in the CIP. There is no anomaly with respect to this, because VMC has already carried out huge investments in the form of sewerage treatment plants. Hence, it is not required to spend on this component in the proposed JNNURM CIP. As a result, investment allocation for sewerage is low and it occupies a fourth place in the CIP.

The detailed survey of the slums was carried out by SEWA, VMC has identified 227 slums for development by way of on-situ and off-site development. The investment in the urban poor component would be higher than what is indicated in the above CIP. This is mainly due to the other sector contributing investments towards urban poor component.

The investment provided for Vadodara Urban Development Authority Area (VUDA) has been based on a rough estimate. The total investment required is to the tune of Rs. 494.52 crores. The details are provided below:

Table 30. Phasing of investment over five years (VUDA)

Sector wise Phasing	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total	% share
Water supply system	10	20	20	30	10	10	100	20.20%
Sewerage system	5	10	23	10	10	7	65	13.13%
Storm water drains	10	10	10	10	10	7	57	11.52%
Roads, bridges and flyovers	25	25	50	100	50	23	273	55.15%
Total	50	65	103	150	80	47	495	100.00%

Note: All figures in Rs. Crores

The sector-wise break-up of investment is detailed below:

8.2 VMC - CAPITAL INVESTMENT PLAN

The investment has been identified for urban basic services for Vadodara and its hinterland covering the immediate surroundings within the VUDA area.

8.2.1 Water Supply

Keeping in view the requirements of water supply, a master plan was prepared in 2005 by MWH India Private Limited, consultants appointed by VMC. The planning proposed by the consultants identifies the present problems and the strengthening required by the water distribution system. Based on their recommendations, projects of laying additional network, service reservoirs, etc. are planned

and proposed for execution. The priority works have been selected to benefit the maximum population as per the water supply vision. The current thrust is on supply and coverage; other priorities like reduction of unaccounted water and major O&M and SCADA have been considered in the second and third phases. The project cost estimated is around Rs. 408 crores for the next six years. The project investment phasing for water supply projects is provided below.

SI Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A Source Augmentation	5,261	2,301	350	11,180	-	-	19,092
B To Provide 95 % Population coverage by year by year 2011	6,300	2,056	2,714	3,030	-	-	14,100
C Replacement of Pipes for addressing Contamination in the City	187	-	-	-	-	-	187
D Replacement of Old Pumps	88	110	126	-	-	-	324
E Metering System at Source and OHTs.	160	-	-	-	-	-	160
F Repairing and Maintenance of Civil Structures	200	147	400	453	-	-	1,200
G Providing SCADA System for Source and OHT flow and depth data	-	-	65	60	-	-	125
H Construction of Balancing Reservoirs in all four Zones	-	1,348	1,348	-	-	-	2,696
I Contingency, 7.5 %	915	447	375	1,104	-	-	2,841
Total	13,111	6,409	5,378	15,827	-	-	40,725

Note: All figures are in Rs. lakhs

8.2.2 Sewerage system

A sewerage system proposal has been formulated to fulfil the vision. Following the inclusion of 48 sq. kms area in VMC's limits in 2002, most new areas do not have proper sewerage system. Therefore, the first target is to provide a sewerage collection system in the entire VMC area. Based on the growth of the city and the planning requirement, the sewerage network, pumping stations and treatment plants have been phased out for the needs of 2011, 2015 and 2020 population. These proposals have been further categorized, based on the nature of work like:

- ◆ Laying of gravity sewer lines in all three drainage zones
- ◆ Setting up of new Auxiliary Pumping Stations
- ◆ Improvements in the existing pumping stations
- ◆ Laying of pressure lines for the pumps
- ◆ Constructing new sewage treatment plants
- ◆ Refurbishment / Renovation / Replacement of old gravity Sewer mains
- ◆ Modernisation of APS – providing level controls, DGs, etc.

An investment of Rs. 146 crores is envisaged for the above-mentioned components. The investment phasing for the sewerage project is provided below.

SI Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A Laying of gravity lines, pressure lines, STPs in the three drainage zones – based on sewerage master plan	2,120	3,580	2,002	2,170	1,072	570	11,514
B Providing drainage facility in the newly merged area of VMC	200	-	-	-	-	-	200

Sl	Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
C	Replacement of Main Trunk Lines	742	-	-	-	-	-	742
D	Laying of new drainage lines on priority basis	464	-	-	-	-	-	464
E	Construction of STP at sayaji garden	442	-	-	-	-	-	442
F	Providing drainage lines in the existing areas of Wards	71	-	-	-	-	-	71
G	Works related to contamination in all zones	153	-	-	-	-	-	153
I	Contingency (7.5%)	314	269	150	163	80	43	1,019
	Total	4505	3849	2152	2333	1152	613	14604

Note: All figures are in Rs. lakhs

8.2.3 Road, Bridges and Flyovers

The traffic condition in the city is deteriorating day by day; in the next six years i.e. by 2011, the population is likely to reach about 1.7 million. The city roads would be totally inadequate for vehicle movement if urgent steps are not initiated. In view of this situation, VMC has proposed widening of the city roads and construction of bridges including rail over bridges and underpasses. The projects identified have been deliberated with VMC and given priority accordingly. Inputs from the consultation have also been considered in identifying investment needs. The total investment envisaged in roads is to the tune of Rs. 396 crores. The project investment phasing is provided below.

Sl	Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A	Roads proposed under VMC limits	2978	3744	6814	6635	3324	1699	25193
B	Railway over bridges	2700	1,900	500	2,000	3,000	3,000	13100
C	Railway under pass	250	-	-	-	-	-	250
D	Widening of existing River bridges	1050	-	-	-	-	-	1050
	Total	6978	5644	7314	8635	6324	4699	39593

Note: All figures are in Rs. lakhs

8.2.4 Storm Water Drainage

Storm water plans to cater to future requirements till the year 2015 have been provided for the entire area within VMC's limits. These proposals have been divided into two types, priority works and other works. These proposals have been further categorized, based on the nature of the work like proposals for Kaans, drains, flood prone areas, and rehabilitation of project affected people (PAP). The project cost envisaged under JNNURM is Rs. 198 crores. The project phasing for storm water drains is provided below.

Sl.	Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A	Providing SWD in the catchment areas of kaans	2,763	2,407	1,547	1,319	1,105	1,044	10,186
B	Rehabilitation, desilting and lining of Kaans	1,082	1,293	814	341	198	134	3,863
C	Catch Drain from Airport to Dabhoi Road, along NH - 8 Bypass	350	518	-	-	-	-	868
D	Providing and laying SWD for priority implementation in the selected areas	2,985	-	-	-	-	-	2,985

E	Providing and laying SWD in low lying area I all wards	511	-	-	-	-	-	511
F	Providing Percolation Wells in all the Wards	18	-	-	-	-	-	18
G	Contingency (7.5%)	578	316	177	125	98	88	1,382
	Total	83	45	25	18	14	13	198

Note: All figures are in Rs. lakhs

8.2.5 Solid Waste Management

The average daily waste generated in Vadodara in the year 2006 is estimated to be 529 tonnes/day. Presently, about 440 tonnes of waste per day is being collected by VMC with a collection efficiency of about 90%. The collected waste is transported and disposed at Vadsar, about 10 kms from the city. The disposal site encompasses an area of about 12000 sq.mts. The site has been in operation for the last 10 years and has reached 100% capacity utilisation. VMC has already initiated action in this sector. The following actions are envisaged in the SWM sector under JNNURM:

- ◆ Environmental approval obtained for new landfill site of 21-hectare at Jhambua
- ◆ Negotiations underway to obtain land for a 140 hectare landfill site at Sherkhi
- ◆ Operation of the Makarpura Compost Plant and waste-processing activity on lease contract
- ◆ Collection of waste at doorstep using tempo vehicles and collectors
- ◆ Privatisation tenders floated for door-to-door collection on BOOT basis
- ◆ Finalisation of private operators for carrying out the services
- ◆ Evaluation of the proposal and finalisation of successful bidder with support from external agency

To undertake the works in SWM, the total project cost envisaged is around Rs. 192.92 crores. The major heads under which the works would be undertaken is provided below.

Sl. Component	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A Cost for Collection Storage and Transportation of Waste	2,661	1,950	2,238	2,601	2,862	3,180	15,492
B Processing of Waste	500	-	-	-	-	-	500
C Disposal of Waste	621	516	509	494	471	380	2,991
D Miscellaneous Activities	50	50	50	52	52	55	309
Total	3,832	2,516	2,797	3,147	3,385	3,615	19,292

Note: All figures are in Rs. lakhs

8.2.6 Rejuvenation of water bodies

Vadodara's 30 lakes, which once served the basic needs of society and provided a healthy environment, are in a state of disuse and thus turning into a health hazard. It is necessary to preserve and revive the water bodies by protecting them. The lakes need to be beautified through interlinking; they could then be also developed as tourist destinations.

As part of the JNNURM, planning has been done to interlink all lakes. The river Vishwamitri bisects the city; hence, there will be independent links for the lakes on the east side and other five lakes on the west side. Moreover, one lake viz. Sama would need an independent link. Thus, three links will be developed, each link feeding from the Vadodara Branch Canal (VBC).

As part of the plan, the lakes will be desilted and deepened. Banks will be restored with material available from excavation. The project cost estimated to undertake this project is Rs. 99 crores. The components to be taken up under this plan are provided below.

Sl	Details	Amounts
1	Rejuvenation and development of waster bodies, civil works of lakes	40.00
2	Interlinking of lakes	22.00
3	Beautification of lakes	37.00
Total		99.00

Note: All figures are in Rs. crores

8.2.7 Flood Management

The Vishwamitri river and Bhukhi have been considered in isolation in the past. The situation demands that the rivers be considered as a composite problem, for the purpose of drawing up a scheme for passing the floodwater. Though small, Bhukhi affects the developed area of the west city and thus requires to be taken up first, along with diversions of part flow of Vishwamitri. Resectioning of Vishwamitri is necessary for the protection of the city on both banks; this needs to be taken up on a priority basis. Improvement in existing structures could be deferred.

Some revenues could be generated through sale of land/lease of rights on the lands that would be salvaged as a result of resectioning and straitening of Vishwamitri. The major factor supporting this plan is the need to secure safe living for the city dwellers and save on repetitive flood damage programmes. The sections of Bhukhi diversion and Vishwamitri will be lined within populated areas and unlined in other reaches depending on availability of land. The project cost envisaged is around Rs. 146 crores. The components to be taken up under this plan are provided below.

Sl.	Details	Amount
A Resection and diversion of Vishwamitri river		
	Resectioning of Vishwamitri	93.00
	Diversion of 300 cumsec of Vishwamitri	6.00
Total		99.00
B Diversion of Bhukhi river		
	River front development	13.00
Total		47.00
Grand total		146.0

Note: All figures are in Rs. crores

8.2.8 Housing development and upgradation of slums -- Basic services to urban poor

The slums record a very high incidence of diseases/epidemics like malaria, jaundice, diarrhea and dysentery. Further, it is estimated that about 36% of the city's population lives below the poverty line. Therefore, there is an imperative and urgent need to address the problems of the urban poor and slum dwellers. As part of the funding under JNNURM, specific attention is given to the provision of basic services to the urban poor.

VMC has proposed schemes of two distant facets of slums improvement. The first is to provide "onsite" facilities to the 261 slum locations identified by the municipal authorities. The facilities will include water supply, drainage system and street lighting. It is estimated that about 6000 families presently living in the slums will benefit from this scheme. The second facet envisages the construction of new dwellings in selected locations where slum dwellers will be rehabilitated. The new dwelling will be provided with all basic facilities like water supply, drainage system, internal roads and streetlights. Each dwelling will have a built-up area of 19.7 sq.m to accommodate the living room, the kitchen area, alcove, bath and water closet. In total, about 21000 dwellings are proposed to be constructed during the period 2006 – 2012.

During Phase-I (2006-2008), 5000 dwellings will be constructed which will also accommodate 2500 families requiring rehabilitation due to execution of JNNURM projects like "Flood Management and Riverfront Development" and "Rejuvenation and Development of Water Bodies." During this phase, onsite development in 261 slums is also proposed to be carried out. The estimated cost of phase - I is Rs.74.10 crores.

In Phase -II (2008-2012), an additional 16000 dwellings are proposed to be constructed to partly accommodate the balance rehabilitation requirements of the 52000 families residing in 336 slums. The estimated cost of Phase -II is Rs.207.13 crores. Additional rehabilitation proposals are required to be identified and incorporated either in the other schemes or in the successive JNNURM projects.

The total project cost for providing basic services is estimated to be around Rs. 281 crores. However, the components of urban poor would also get covered in other infrastructure services. These are provided in annexure IV.

8.2.9 Redevelopment of inner city

In order to redevelop the old city, a comprehensive master plan needs to be prepared for the conservation and restoration of the heritage properties. This plan would also chart out an urban renewal programme for the streets and inner areas of the old Vadodara town.

VMC would identify heritage properties on the main roads and the inner areas of the old Vadodara town and carry out conservation and restoration of heritage buildings. VMC shall also improve the street scenario -- street furniture and street landscape of the main roads and the inner areas. The estimated cost of the project is around Rs. 30 crores for the initial three years.

8.3 VUDA - CAPITAL INVESTMENT PLAN

The following water facilities will be provided in each urban zone:

- (i) Underground sump
- (ii) Pump house
- (iii) Pumping machinery
- (iv) Chlorination plant
- (v) RCC elevated services reservoirs
- (vi) Internal distribution system

An underground sewerage scheme of Vadodara agglomeration urban area has been proposed as per the manual on Sewerage and Sewage Treatment (Second Edition) CPHEEO, Ministry of Urban Development Government of India in 1993.

The main objectives of the road plan are to provide a road network commensurate with the growth of the city and its surrounding areas, as well as to provide adequate carriageway width and smooth riding surface for easy movement of the vehicles with highest standard design. The road network has been designed and divided into the following seven categories:

- 1 New town planning schemes roads
- 2 Roads in Padra municipal area
- 3 Internal roads in transport nagar and transport node.
- 4 Major arterial roads
- 5 River and canal bridges
- 6 Flyovers and railway over bridges (ROB)
- 7 Village approach roads

The detailed cost breakup is provided in annexure IV.

8.4 FINANCIAL PROJECTION

The financial forecast of VMC has been prepared after examination of four scenarios. Some parameters of the plan differ under different scenarios. However, there are several parameters which remain the same under all the four scenarios. The parameters, which remain the same, and the respective assumptions for each scenario, are as follows.

Table 31. Assumption for Financial Operating Plan

No.	Parameter	Assumption
1.	Octrio Income	Based on historical growth Octrio Income is estimated to grow at the rate of 10% per annum
2.	Other Direct Taxes	Based on historical growth Other Direct Taxes are estimated to grow at the rate of 5% per annum
3.	Non-Tax Income	Based on historical growth Non-Tax Income are estimated to grow at the rate of 5% per annum
4.	Revenue Grants	Based on historical growth Revenue Grants are estimated to grow at the rate of 5% per annum
5.	Establishment Expenses	Based on historical growth Establishment Expenses are estimated to grow at the rate of 3.75% per annum
6.	Repairs & Maintenance Expenses	Based on historical growth Repairs & Maintenance Expenses are estimated to grow at the rate of 5% per annum
7.	Contingency Expenses	Based on historical growth Contingency Expenses are estimated to grow at the rate of 5% per annum
8.	Primary Education Expenses	Based on historical growth Primary Education Expenses are estimated to grow at the rate of 5% per annum
9.	Provision for Local Developmental Works	Provision for Local Developmental Works are considered be 3% of revenue income
10.	Additional Operations & Maintenance Expenses	Additional Operations & Maintenance Expenses are considered at 5% of Capital Cost
11.	Operations & Maintenance Expenditure for Solid Waste Management	Operations & Maintenance Expenditure for Solid Waste Management for the year 2006-07 is considered at Rs 2,700 lakhs and thereafter assumed to grow at the rate of 5% per annum
12.	Operations & Maintenance Expenditure for Street Lighting	Operations & Maintenance Expenditure for Street Lighting for the year 2006-07 is considered at Rs 1,122 lakhs and thereafter assumed to grow at the rate of 5% per annum
13.	Income from Street Lighting	Income from Street Lighting for the year 2006-07 is considered at Rs 300 lakhs and thereafter assumed to grow at the rate of 36.7% per annum
14.	Revolving Fund	Contribution to revolving fund begins from the year 2008-09 and reaches the required level by 2011-12

The four scenarios have been analysed, assuming differing policy changes with respect to taxes or charges being levied, collection efficiency and growth and share of Public Private Partnerships (PPP) in the proposed scheme of JNNURM.

8.4.1 Scenario 1 – Key Assumptions

- ◆ Collection efficiency of Property Tax to remain the same
- ◆ Number of Properties to increase at the rate of increase in population (past decadal growth rate) i.e. 2.39%
- ◆ Collection efficiency of Water Charges to remain the same
- ◆ Number of water connections to increase at 5% per annum

	Collection Efficiency (in 2010-11)	Average Tax or Charge rate increase	Increase in number of properties connections	in Rs / Month / Household (in 2010-11)
Property Tax	80%	0%	2.39%	114.44
Water Charge	63%	0%	5%	93.28
Solid Waste Management Charge	-	0%	-	-

Based on the above assumption, it is estimated that Property Tax shall be around Rs 114.44 per month per household and similarly Water Charge shall be around Rs 93.28 per month per household. However, in this scenario, VMC shall not be in a position to recover its user charges and hence, Scenario 1 should be avoided by VMC.

8.4.2 Scenario 2 – Key Assumptions

- ◆ PPP assumed at 20% of overall funding requirements of VMC
- ◆ Collection efficiency of Property Tax to remain the same
- ◆ Number of Properties to increase at the rate of increase in population (past decadal growth rate) i.e. 2.39%
- ◆ Collection efficiency of Water Charge to remain the same
- ◆ Number of water connections to increase at 5% per annum

	Collection Efficiency (in 2010-11)	Average Tax or Charge rate increase	Increase in number of properties connections	in Rs / Month / Household (in 2010-11)
Property Tax	80%	0%	2.39%	114.44
Water Charge	63%	0%	5%	93.28
Solid Waste Management Charge	-	0%	-	-

Based on the above assumption, it is estimated that Property Tax shall be around Rs 114.44 per month per household and similarly Water Charge shall be around Rs 93.28 per month per household.

However, in this scenario as well, VMC shall not be in a position to recover its user charges and hence, Scenario 2 should be avoided by VMC.

8.4.3 Scenario 3 – Key Assumptions

- ◆ PPP is assumed at 30% of overall funding requirements of VMC.
- ◆ Collection efficiency of Property Tax reaches a peak of 90% in the forecast period.
- ◆ Number of Properties is expected to increase at the rate of increase in population (past decadal growth rate) i.e. 2.39%.
- ◆ Average Property Tax increases at the rate of 5% per annum.
- ◆ Collection efficiency of Water Charge reaches a peak of 80% in the forecast period.
- ◆ Number of water connections will increase at 10% per annum.
- ◆ Average Water Charge increases at the rate of 10% per annum.
- ◆ Collection efficiency and increase in the number of properties of Solid Waste Management Charge move in line with the Property Tax.
- ◆ Average Solid Waste Management Charge increases at the rate of 25% per annum.

	Collection Efficiency (in 2010-11)	Average Tax or Charge rate (in increase)	Increase in number of properties or connections	Rs / Month / Household (in 2010-11)
Property Tax	90%	5%	2.39%	153.36
Water Charge	80%	10%	5%	165.25
Solid Waste Management Charge	90%	25%	2.39%	30.52

Based on the above assumption, it is estimated that Property Tax shall be around Rs 153.36 per month per household, Water Charge shall be around Rs 165.25 per month per household and Solid Waste Management Charge shall be around Rs 30.52 per month per household.

This scenario assumes a reasonable increase in Average Property Tax rates from the current Rs 114.44 per month per household to Rs 153.36 per month per household.

Water charges are assumed to display an increased collection efficiency of 80% in 2010-11 having increased from around 57% in 2004-05. Increase in the number of water connections is assumed at 5% per annum; thus the number of water connections to number of properties reaches a level of around 80% in 2010-11. Also, it is assumed that water charges shall increase from the current Rs 93.28 per month per household to a reasonable amount of Rs 165.25 per month per household at a growth rate of 10% per annum. Such a scenario shall enable almost full recovery of operations and maintenance cost of water supply services.

The charge for Solid Waste Management services shall initially be levied at Rs 10 per month per household and then gradually be increased to Rs 30.52 per month per household by 2010-11. The corporation shall face a deficit in such services even after charging Rs 30.52 per month per household (in 2010-11); however, such charge is considered to be reasonable and hence shall not be increased further.

Viewing this scenario in totality, VMC shall enjoy a surplus in each year of the forecast period. Also, net present value (NPV) of such surplus (at the rate of 9%) suggests an increased investment capacity of VMC to the extent of 127% as compared to the current capital expenditure of Rs 1,896.5 lakhs. Hence, this scenario is considered to be favourable for VMC.

8.4.4 Scenario 4 – Key Assumptions

- ◆ PPP is assumed at 40% of overall funding requirements of VMC.
- ◆ Collection efficiency of property tax reaches a peak of 90% in the forecast period.
- ◆ Number of Properties is expected to increase at the rate of increase in population (past decadal growth rate) i.e. 2.39%.
- ◆ Average property tax increases at the rate of 7.5% per annum.
- ◆ Collection efficiency of water charge reaches a peak of 80% in the forecast period.
- ◆ Number of water connections will increase at 10% per annum.
- ◆ Average water charge is considered at Rs 200 per month per household.
- ◆ Collection efficiency and increase in number of properties of Solid waste management charge move in line with property tax.
- ◆ Average solid waste management charge is considered at Rs 50 per month per household.

	Collection Efficiency (in 2010-11)	Average Tax or Charge rate increase	Increase in number of properties or connections	in Rs / Month / or Household (in 2010-11)
Property Tax	90%	7.5%	2.39%	176.61
Water Charge	80%	13.5%	5%	200.00
Solid Waste Management Charge	90	38%	2.39%	50.00

Based on the above assumption, it is estimated that Property Tax shall be around Rs 176.61 per month per household; Water Charge shall be around Rs 200 per month per household and Solid Waste Management Charge shall be around Rs 50.00 per month per household.

The only change in this scenario is that of the increase in the average tax or charge and the share of PPP. In this scenario, VMC shall enjoy a surplus in each year of the forecast period. Also, NPV of such surplus (at the rate of 9%) suggests an increased investment capacity of VMC to the extent of 134% as compared to the current capital expenditure of Rs 1,896.5 lakhs. However, in this scenario, the amount of average property taxes to be charged, water supply charges and solid waste management charges to be levied do not seem reasonable. Hence, even though this scenario makes economic sense, it is not desirable as it would pressurise citizens to pay higher than reasonable charges.

Scenario 3 emerges as the most logical and preferred scenario for adoption by VMC.

Table 32. Projected Financial Statements of VMC based on Scenario 3 (Rs lakhs)

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	CAGR
Revenue Income							
A. Own Sources							
1. Tax Income							
Octroi	19,707.54	21,678.30	23,846.13	26,230.74	28,853.81	31,739.19	10%
Property Tax	5,316.76	6,001.83	6,551.91	7,043.93	7,572.89	8,141.58	9%
Water Tax / Charges	1,851.85	2,464.81	3,105.86	3,758.09	4,547.29	5,502.22	24%
Other Direct Taxes	98.94	103.88	109.08	114.53	120.26	126.27	5%
Solid Waste Management Charges	442.47	594.62	772.76	989.03	1,265.84	1,620.12	30%
Street Light Charges	300.00	410.10	560.59	766.32	1,047.55	1,431.99	37%
Sub total of taxes	27,717.56	31,253.53	34,946.33	38,902.65	43,407.64	48,561.37	12%
2. Non- Tax Income	1,203.60	1,227.67	1,252.23	1,277.27	1,302.82	1,328.87	2%
Total Own Sources	28,921.16	32,481.21	36,198.55	40,179.92	44,710.46	49,890.24	12%
B. Grants, Contributions	2,734.76	2,871.50	3,015.07	3,165.83	3,324.12	3,490.32	5%
Grand Total Revenue Income	31,655.92	35,352.70	39,213.63	43,345.74	48,034.58	53,380.56	11%
Revenue Expenditure							
Establishment	11,205.00	11,625.19	12,061.13	12,513.42	12,982.68	13,469.53	4%
Repair and Maintenance	6,825.00	7,166.25	7,524.56	7,900.79	8,295.83	8,710.62	5%
Contingency	142.55	149.68	157.16	165.02	173.27	181.93	5%
Interest Payments / Debt Servicing	1,000.00	-	-	-	-	-	-100%
JNNURM Debt Servicing	-	-	-	-	-	-	-
Primary Education	4,067.97	4,271.36	4,484.93	4,709.18	4,944.64	5,191.87	5%
Provision for local developmental works	949.68	1,060.58	1,176.41	1,300.37	1,441.04	1,601.42	11%
Additional O&M due to Cap Ex (JNNURM)	-	-	-	-	-	-	-
Net Contribution to Revolving	-	-	4,633.20	6,842.81	8,292.07	10,467.74	
Grand Total Revenue Expenditure	24,190.19	24,273.06	30,037.40	33,431.60	36,129.53	39,623.11	10%
Revenue account status	7,465.73	11,079.64	9,176.23	9,914.15	11,905.05	13,757.45	13%
DSCR	8.47						

The financial projections for the other scenarios are presented in annexure.X.

8.5 INVESTMENT SUSTAINABILITY OF VUDA

Investment sustainability of VUDA has been estimated on the bases of its past financial record, Operations & Maintenance expenses emerging from overall planned capital expenditure and ability and the extent of User Charge levy. The latter is based on the chargeable number of households, collection efficiency of VUDA and reasonableness of such User Charge.

From the past financial record of VUDA, it is evident that under recovery of new operations and maintenance expenses will push VUDA towards a deficit situation. Hence, it is important that the entire new operations and maintenance expenses shall be recovered from the users. Also, with the additional capital expenditure planned, VUDA might not be able to serve its entire population thus limiting the number of user households and chargeable user households as well. Collection efficiency of VUDA shall also play a critical role while estimating 100% recovery of operations and maintenance expenses. Based on the following assumptions, various 'User Charge' scenarios are computed to estimate the investment sustainability of VUDA.

Assumptions & Workings

Population of VMC + VUDA (year 2001)	14,90,000
Population of VMC (year 2001)	13,06,000
VUDA population	184,000
Average Household Size	5
Number of Households in VUDA	36,800
Collection Efficiency	70%

Sensitivity Analysis of estimated User Charges to be Recovered (Rs / Household / Month)

		Capital Expenditure (Rs Lakhs)				
		10,000	15,000	20,000	25,000	30,000
O & M as a % of Cap Exp	2%	64.70	97.05	129.40	161.75	194.10
	3%	97.05	145.57	194.10	242.62	291.15
	4%	129.40	194.10	258.80	323.50	388.20
	5%	161.75	242.62	323.50	404.37	485.25
	6%	194.10	291.15	388.20	485.25	582.30

User charges range from Rs 64.70 per household per month to Rs 582.30 per household per month, based on the above assumptions and workings, and also depending on the extent of capital expenditure and its relative operations and maintenance expenses.

For the user charge to be reasonable, O&M is estimated to be around 3 – 4 %; VUDA might not be able to sustain investments / capital expenditure over Rs 250 crores.