

Performance Improvement Plan for Ambernath

Prepared by:

CEPT University and AIILSG in consultation with Ambernath Municipal Council

November, 2011

pas performance assessment system

CEPT UNIVERSITY ज्ञानं विज्ञाननहितम्

ALL INDIA INSTITUTE OF LOCAL SELF-GOVERNMENT

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Prepared by:

Centre for Environmental Planning and Technology (CEPT) University

and

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ABBREVIATIONS

AIILSG	All India Institute of Local Self Government
BAU	Business As Usual
BRGF	Backward Region Grants Fund
CAGR	Compounded Annual Growth Rate
CBO	Community Based Organisation
CEPT	Centre for Environmental Planning and Technology
AMC	Ambernah Municipal Council
CPHEEO	Central Public Health and Environmental Engineering Organization
DCB	Demand Collection Balance
DMA	Directorate of Municipal Administration
DMA	District Metering Area
DPR	Detailed Project Report
ESR	Elevated Service Reservoir
FGD	Focused Group Discussion
GIS	Geographic Information System
GoM	Government of Maharashtra
IHSDP	Integrated Housing and Slum Development Programme
ILCS	Integrated Low Cost Sanitation
KPI	Key Performance Indicator
MJP	Maharashtra Jeevan Pradhikaran
MoUD	Ministry of Urban Development
MSNA	Maharashtra Sujal Nirmal Abhiyan
NGO	Non Governmental Organisation
ODF	Open Defecation Free
PAS	Performance Assessment System
PIP	Performance Improvement Plan
PMC	Project Management Consultant
CFC	Central Finance Commission
CAPEX	Capital Expenditure
SJSRY	Suvarna Jayanti Shahari Rojgar Yojana
SLB	Service-Level Benchmark
STP	Sewage Treatment Plant
SWM	Solid Waste Management
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
ULB	Urban Local Body
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant
MMR	Mumbai Metropolitan Region
JNNURM	Jawahar Lal Nehru National Urban Renewal Mission

EXECUTIVE SUMMARY

The preparation of this Performance Improvement Plan (PIP) for water supply and sanitation has been led by the Ambernath Municipal Council (AMC) with support from the PAS Project through teams from All India Institute of Local Self Government (AIILSG), Mumbai and the CEPT University, Ahmedabad.

The preparation of PIP has been done in response to a request from the Government of Maharashtra. The two focus areas of 'Making Cities Open Defecation Free' and 'Moving Towards 24x7 Water Supply' were suggested by the Chief Secretary, Government of Maharashtra in an inception meeting, for starting the Government of India's Service Level Benchmarking (SLB) process in Maharashtra. In addition to that, the inherent theme for PIPs is improving coverage and service levels for un-served poor (slum dwellers) and improving financial sustainability. This PIP exercise uses the set of indicators given by the Govt. of India's Service Level Benchmark Initiative as a baseline to assess past performance and identify priorities.

City Profile: Ambernath is Class A municipal council in Konkan Division. The city of Ambernath is located along Mumbai-Pune railway line at a distance of about 60 km north of Mumbai CST at the foothill of Hajimalang Mountains. Ambernath is part of the MMR region. Formed in 1959 with a total area of 1520 h.a it was subsequently merged with Kalyan Municipal Corporation. On 14th April 1992, it was re-established as a separate municipal council. AMC has undergone further jurisdiction changes since then, it now constitutes of the old Ambernath Municipal area and 4 adjoining revenue villages viz. Pale, Jambhivli, Chikhaloli, Kansai and a part of Javsai. The civic administration is being looked after by elected body of municipal councillors from May 1995 onwards.

Water supply: The total water supplied to the city of Ambernath is 47 MLD. The water supplied is partially by AMC and partially by MJP.A tapping of 7.5 MLD has been made on a MIDC pipeline by AMC for supplying water to areas in east Ambernath. The main source of water in the city is Ulhas Barrage from where 33.5 MLD is supplied by MJP. MJP supplies water to 72% of the connections and AMC to 28%.Of the 50 wards in the city, 26 wards are supplied water exclusively by MJP, 3 wards from the AMC owned Chikhloli dam, the MIDC tapping supplies water to 9 wards , all the remaining wards are supplied water partially by MJP and AMC. The overall coverage of water supply in the city is 82%. The slum level coverage of water supply coverage is 67%. The present water tariff structure in Ambernath is volumetric. The cost recovery in water supply is 94% and collection efficiency is 92%. The extent of NRW is 30% and maximum losses occur in the distribution network. Steps that include minimal capital investment such as detection of illegal connections, policy provisions for water supply in slums have already been undertaken by Ambernath Municipal Council. For moving towards 24x7, the DPR has already been prepared and submitted to WSSD, GoM. The total project cost is 77.15 cr. AMC will be in a position to implement this only after 2018.

Sanitation (including sewerage): The overall toilet coverage in the city is 79%. However only 48% of households have access to individual toilets. There are 2308 functional public toilet seats (870 community toilet seats, constructed and maintained by AMC and 1438 pay and use seats, constructed under Nirmal MMR Abhiyan and maintained by CBOs), that are used by 16,156 households. The present coverage of waste water network is 42%. Total number of properties connected to the sewerage network is 15,251. A project for extending the underground sewerage network to the remaining parts of the city is in the pipeline. Presently no sewerage or waste water tax is being levied; the same is scheduled to be levied from April 2012 onwards.

Services to Slums: In 2011, the slum population was 1,46,395, i.e. 57% of the total population. There are 52 slum pockets in AMC area, of which 28 are notified. The coverage of individual water supply connections in slums is 67%. AMC has a policy towards providing services in all slums irrespective of the slum's notification status. Coverage of individual toilets in slums is very low, and only 10% of households have individual toilets. There are 2308 community toilet seats that serve 63% households. Almost 36% of the population in slums has no access to sanitation and resorts to open defecation. Though, at the city level the coverage of wastewater network is 43%, only 2% of households in slum areas are connected to the sewerage system. Door to door to coverage of solid waste management services is limited mainly due to the narrow bylanes in the slums. Collection of waste takes place from a common point where households dump their waste.

Municipal Finance of AMC: The municipal finances of AMC have been reviewed for the last seven years, from 2005-06 to 2011-12. While for 2005-06 to 2009-10 the information is of 'actuals', budget estimates are given for the remaining two years. Revenue income, including income on account of water and waste water services had a CAGR of 12% from the year 2005-06 to 2009-10 it increased from Rs 23.66 cr in the year 2005-06 to Rs 36.75 cr in the year 2009-10. AMC has budgeted Rs 66.07 cr to be collected as revenue income in 2011-2012

AMC's revenue expenditure had a CAGR of 4% from the 2005-06 to 2009-10. The revenue expenditure was on the lower side during all the five years, leaving AMC enough revenue surpluses for creation of assets and other projects.

Capital income for AMC includes grant and disbursements against various schemes. Capital income has been negligible as against the huge capital expenditure. The capital income has increased from Rs 4.91 cr in 2005-06 to Rs 18.75 cr in 2009-10 registering a CAGR of 40% and is budgeted to be Rs 67.86 cr for the year 2011-12. There is very high dependency on revenue surplus for funding capital projects.

Considering the current scheme of things i.e. BAU scenario, AMC would be able manage an investible surplus by 2012-13, that would increase to 5.52 cr by 2021-22. Hence interventions such as improved collection efficiency of property tax, increased water supply tariff and collection efficiency need to be undertaken to achieve a larger investible surplus so that the identified PIP actions can be undertaken.

Summary of Performance Improvement Plan for AMC: The total PIP cost for AMC will be Rs 108.9 cr, further detail surveys and technical studies will be required to arrive at exact cost for up-gradation in Ambernath's performance in terms of service delivery.

Table 1: PIP Cost Summary

Key actions for improvement	Costs required	Current status
Water supply: towards 24X7 system		
Working Survey	Rs 0.02 cr	Awaiting sanction of DPR submitted under Swarna Jayanti Nagrik Punnar UtthanYojna
Planning and implementation of 24X7 for entire city	Rs 77.13 cr	
Sanitation: towards OD free		
Service Level Survey In Slums (Toilet Survey)	Rs 0.15 cr	Preparation of DPR is required
Construction of individual and community toilets (including IEC costs)	Rs 31.6 cr	Preparation of DPR is required
Preparation of Septage Management Plan	-	-
Total cost for Performance Improvement		**Rs 108.9 cr**

In order to carry out the improvements suggested above, AMC has to improve its current financial position.

AMC can undertake the following revenue enhancement measures that will help attain an increased investible surplus from 2013 onwards:

- Increase in property tax collection efficiency
- Increase in water supply tariff
- Increase in collection efficiency for water charges

The improvements for AMC have been proposed in two phases: 1) Immediate interventions (from 2013 - 2018), and 2) Long term interventions (from 2018 - 2023). The interventions mentioned above to augment revenue as well as process improvements are proposed to begin in 2013.

Phase 1 Immediate Intervention (2013-2018)

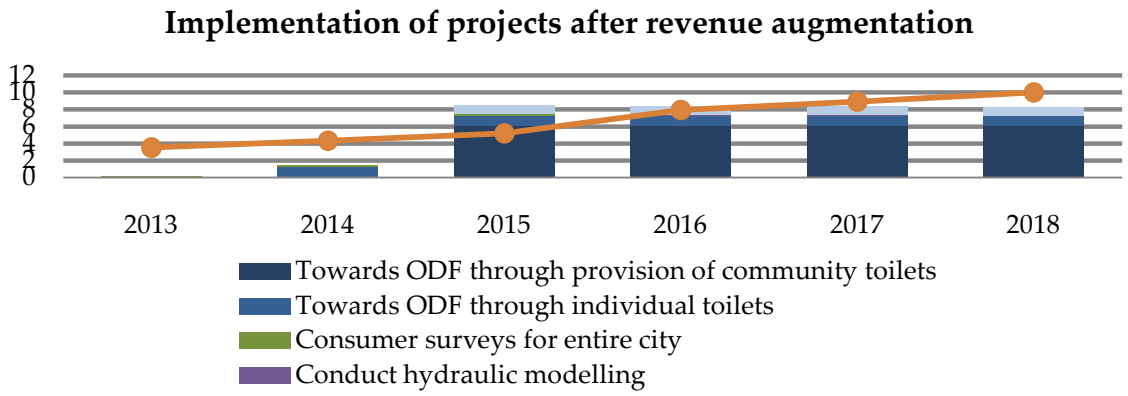
It is proposed that AMC will begin with interventions related to process and policy changes that will not require capital investment such as improving reliability of information through better formats, surveys etc as well as initiatives such as increasing collection efficiency of charges, introducing drainage tax and others.

Table 2: Phase 1 of PIP AMC (2013-2018)

Proposed Improvement Areas	2013	2014	2015	2016	2017	2018
Conduct physical surveys, consumer survey for entire city and produce maps						
Conduct/ Revise water audit and leak detection surveys						
Undertake hydraulic modeling for the entire water supply network						
Distribution network augmentation: creation of pilot DMAs/ Water Works						
Preparation of Septage Management Plan						
Implementation of Septage Plan						
Revision of prepared DPR and persuasion for Govt grant approval						
Levy drainage tax, environmental tax in property tax						
Prepare DPR for ODF						
Towards OD Free through provision of individual toilets (incl. IEC costs)						
Towards OD Free through provision of community toilets (incl. IEC costs)						

Source: CEPT University, 2011

- To move towards 24x7, AMC can begin with steps like undertaking hydraulic modelling from 2016 onwards. Creation of pilot DMA s can be done from 2018 onwards.
- AMC is yet to get fund approval for implementing its underground sewerage project. The total capital estimate for the same 114.4 cr. AMC can undertake this in the long run i.e after 2018. Till then a septage management plan for the non sewered part of the city needs to be undertaken.
- Starting from 2014, AMC can begin construction of individual and community toilets. Some of the community toilet blocks need urgent refurbishment and toilets constructed in the Nirmal MMR utilize space better. Hence, it has been proposed by AMC to break down the 870 toilet seats (AMC) and construct 2000 toilet seats in the Nirmal MMR pattern. AMC can undertake construction of individual toilets for households that have the required space, willingness and ability to pay for it. Construction of individual toilets will be completed in five years, while community toilets will be complete by four years



Graph 1: Implementation of projects after revenue enhancement measures

Phase 2 Long term Interventions (from 2018 - 2023): Once the above measures are in place, AMC can begin implementation of 24X7 for the entire city. AMC will not be able to fund implementation of 24X7 for entire city from its own revenue sources, and will have to look at external funds for the same. One of the funding sources is Nagar Utthan.

Table 3: Sources of revenue to fund 24X7 water supply system in AMC (In Rs Cr)

Implementation of 24X7 system for AMC	2019	2020	2021	2022	2023
Total cost	12.5	16.2	16.2	16.2	16.2
Investible surplus after implementation of other projects	10.9	10.9	11.4	11.7	12.2
External funds required	1.6	5.3	4.8	4.5	4

1. INTRODUCTION

The preparation of this Performance Improvement Plan (PIP) for water supply and sanitation has been led by the Ambernath Municipal Council (AMC) with support from the PAS Project through teams from All India Institute of Local Self Government (AIILSG), Mumbai and the CEPT University, Ahmedabad.

The preparation of PIP has been done in response to a request from the Government of Maharashtra. The two focus areas of 'making cities Open Defecation Free' and 'moving towards 24x7 water supply' were suggested by the Chief Secretary, Government of Maharashtra in an inception meeting for starting the Government of India's Service Level Benchmarking (SLB) process in Maharashtra. The PIP exercises use the set of indicators given by the SLB Initiative as a baseline to assess past performance and identify priorities.

Preparation of the PIP has been done in three stages:

Initial Performance Assessment: Based on the data from the, an initial assessment of all SLB indicators for the past three years was done by the PAS team. As a part of the preparatory work, a preliminary profile of ULBs using SLB indicators was prepared. The AMC officials were assisted by the PAS team to generate a city profile based on comparative performance assessment of ULBs for last three years. This involved past trends as well as comparison with other Class A Municipal Councils in Maharashtra.

This was discussed with the AMC at the first meeting in June 2011. The meeting was attended by President, Chief Officer, City Engineers (Water Supply), Senior Sanitary Inspectors and several other important officials. Preliminary priorities were identified at this meeting. Particular focus was also placed on the issues around making the city open defecation free and exploring the possibility of introducing 24x7 water supply.

Detailed Diagnostics and Issues Identification: The diagnostic assessment was prepared by taking into consideration the ground realities, local conditions, and assessment of the present situation. A detailed field guide developed for purpose of PIP preparation included data templates, survey formats; transect walks, schedules of interviews FGD guidelines, areas for digital documentation, dimensions of stakeholder consultations etc.

A rapid assessment of demographic/physical characteristics, institutional arrangements, key processes and municipal finances was also undertaken to build appropriate context for city performance.

Detailed discussions with ULB engineers and support staff were held to assess water and sanitation situation on ground. Field visits were undertaken by teams to facilities like source, treatment and distribution systems to validate secondary data and identify performance issues.

Wherever applicable, appropriate consultations were also undertaken with private service providers to help assess and validate issues from different perspectives.

For detailed qualitative insights the teams met slum dwellers, safai karamcharies, contractors and private parties in focus group discussions and consultations to identify service delivery issues from consumers' perspectives. Transect walks in slum settlements and along city roads helped in mapping slum locations, open defection sites, public and community toilets, solid waste dumping sites etc.

Action Planning and Preliminary Costing: On identification of city priorities, consultations were held with the Chief Officer, opinion leaders, Municipal councilors, AMC officers, and representatives of water and sanitation committees to discuss priorities for municipal water supply and sanitation. This PIP report presents the performance improvement plan of Ambernath Municipal Council. It describes improvement actions and the costs that will have to be incurred to implement the identified actions. The proposals have been reviewed by technical teams at the AIILSG and CEPT University.

This PIP report is to be submitted to the state government for a review. Based on the comments and guidance by the state government, the Ambernath Municipal Council will identify low-cost actions that can be taken immediately and provide funds for these actions from their budget. For actions that require significant capital expenditure, the AMC will prepare detailed project reports and seek assistance under state and national programmes.

Preliminary Validation of Draft Performance Improvement Plan by AMC: The proposed draft PIP was shared with AMC, and finalised by incorporating the revisions suggested. The Ambernath PIP has been validated by Ambernath CO, and AMC officials.

It describes improvement actions and the costs that will have to be incurred to implement the identified actions. The proposals have been reviewed by technical teams at the AIILSG and CEPT University. This PIP report will be submitted to the state government for review and guidance. It is anticipated that the Ambernath Municipal Council will identify low-cost actions that can be taken immediately and provide funds for these actions from their budget. For actions that require significant capital expenditure, the AMC will prepare detailed project reports and seek assistance under state and national programmes.

Photo plate 1: General characteristics of Ambernath

Starting off the PIP process in Ambernath

Meeting with various ULB officials

Meeting with various ULB officials

Historical temple at Ambernath

Reservoir at Chikhloli

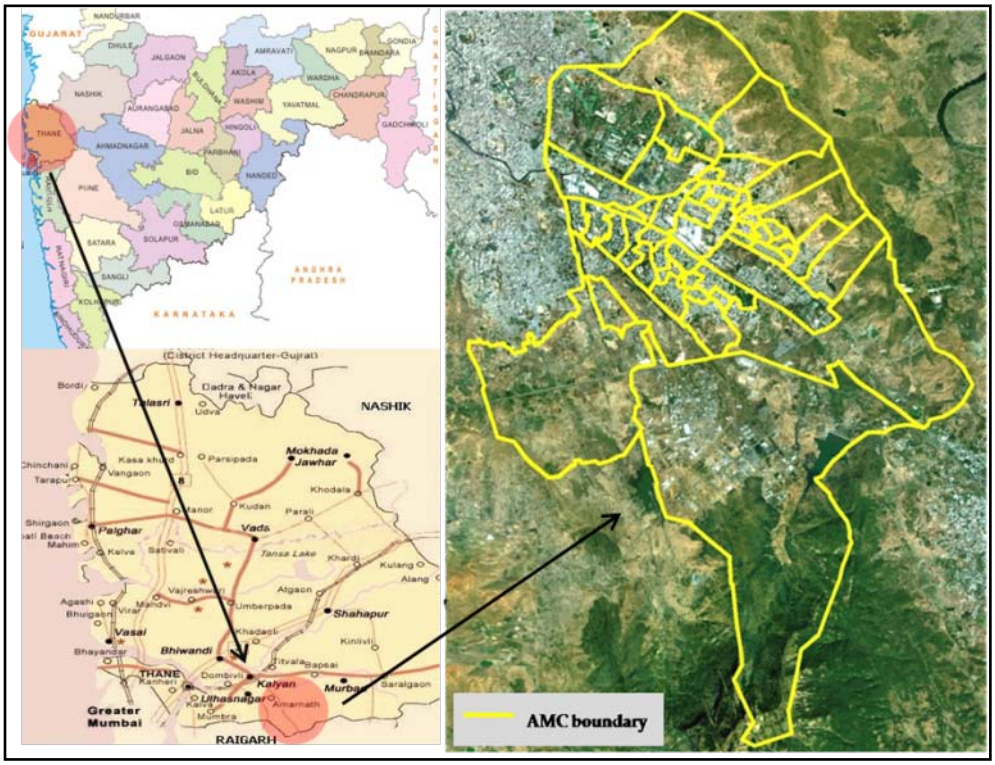
2. CITY PROFILE

This section discusses general characteristics of Ambernath related to population, aspects related to slum settlements, and human resources in AMC. Also, aspects related to municipal finances specifically with respect to water supply and sanitation services and extent of private sector participation is discussed here.

2.1 LOCATION AND DEMOGRAPHY

The city of Ambernath is located along Mumbai-Pune railway line at a distance of about 60 km North of Mumbai CST at the foothill of Hajimalang Mountains. Ambernath is located at latitude of 10.14°N and longitude 73.8°E, at an elevation of 63 ft from the mean sea level along the Konkan coast in Maharashtra. Ambernath city is part of the MMR region.

Ambernath Municipal Council (AMC) is a class A municipal council, it was formed in 1959 with a total area of 1520 ha. Subsequently, Ambernath was merged in Kalyan Municipal Corporation. On 14th April 1992, it was re-established as a separate municipal council. AMC has undergone further jurisdiction changes, it constitutes of the old Ambernath Municipal area and 4 adjoining revenue villages viz. Pale, Jambhivli, Chikhaloli, Kansai and a part of Javsai. The civic administration is being looked after by elected body of municipal councilors from May 1995 onwards.



Map 1: Location of Ambernath

General Details	2001	2011
Area	38 km²	38 km²
Population	2,03,804	2,59,023
No. Of HHs	44348	56034
No Of Properties	25,449	34,972
No. Of Slums	52	52 (28 notified)
Population In Slums	1,222,82	1,46,395
% Of Slum Pop To Total	60%	57%

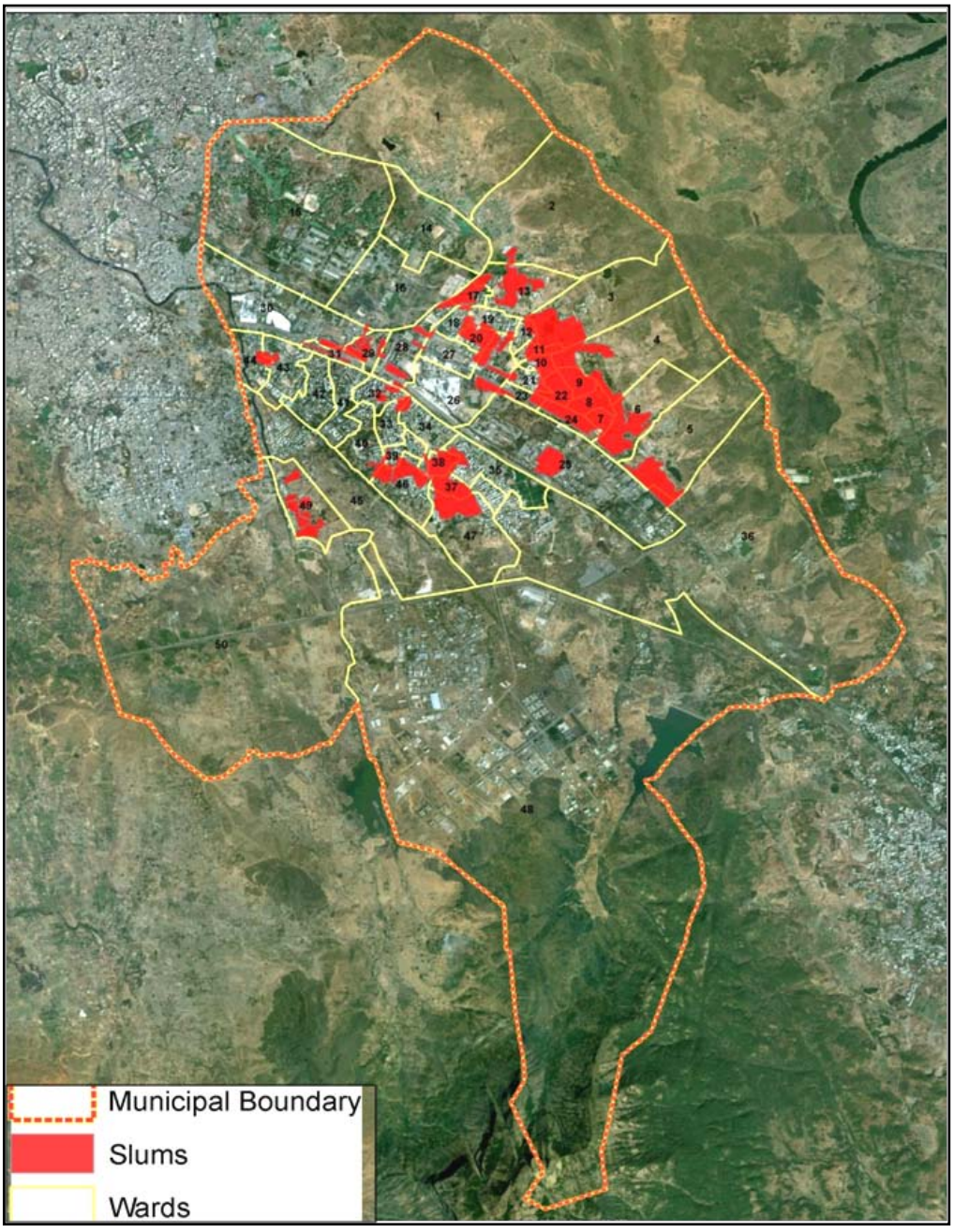
Table 4: Demographic details

2.2 SERVICES IN SLUMS IN AMBERNATH

Ambernath Municipal Council, satellite township of Mumbai is facing voluminous growth of slum. The growth of slums is due to the huge migration of middle and lower income population from the rural area of the state as well as out of the state in search of employment in and around the city. As per 2001 census, the slum population of AMC was 1,222,82 which constitute 60% of total population. In 2011, the slum population was 1, 46,395, i.e 57% of the total population. There are 52 slum pockets in Ambernath, of which 28 are notified. Both AMC and MJP supply water across all 52 slum pockets in Ambernath.MJP provides 73% of the individual water connection in slums. Number of households with individual toilets is very low, 62% of the slum households are dependent on the 2308 community toilets seats. Almost 36% of HHs resort to open defecation. As per GoM norms, 5% funds are earmarked for urban poor. In addition there are also several schemes like Nirmal MMR, Dalit Basti etc where funds are used provision of slum infrastructure.

Equity Related Indicators (%)	2010-11
Coverage of water supply connections in slums	67
Coverage of individual toilets in slums	10.2
Coverage of wastewater network services in slums	2.4
HH level coverage of SWM services in slums	58.8

Table 5: Equity related indicators



Map 2: Slum location

2.3 STAFFING OF AMBERNATH COUNCIL

The Chief Officer (CO) is the administrative head of the AMC. The total staff strength is 975 working in 14 departments. Of the total working staff, 826 are Class 3 and Class 4 employees. The water supply department has a sanctioned staff of 25, including 3 engineers. Presently only 7 of the posts are filled; there are no valve men or pump operators in AMC. Labourers from health department are employed as valve men.

The total working staff in MJP (Ambernath-Badlapur water supply scheme) is 147. A divisional engineer and a section engineer have been appointed, the other working staff are class 3 and class 4 employees.

Sanitation and SWM are under the purview of the health department in Ambernath. The total approved staff in the health department is 668. Against this, total working staff is 556. Main functions under sanitation are road sweeping, nallah sweeping, municipal toilet cleaning etc. Presently only road sweeping is carried out by AMC staff. The SWM operation from secondary collection to disposal at the dumping ground has been outsourced to a private contractor.

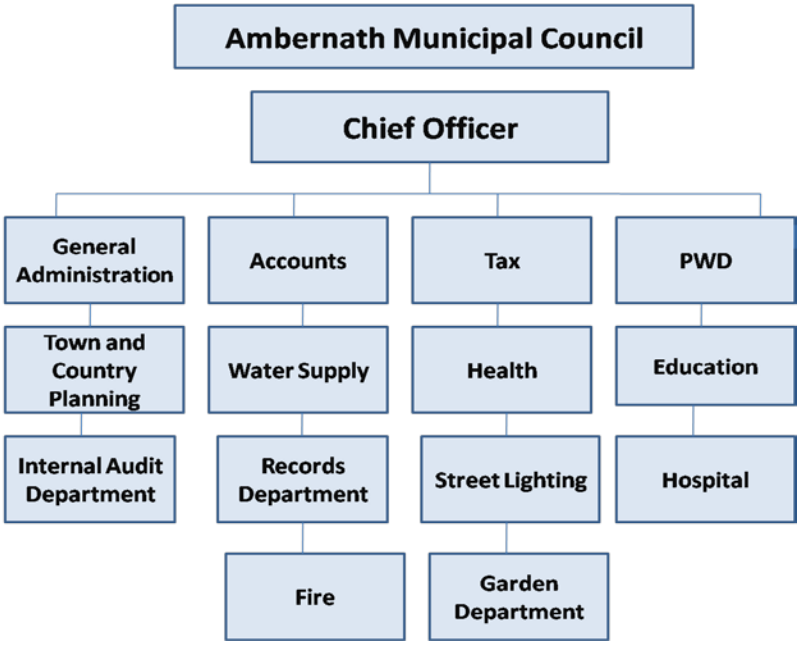


Figure 1: Organogram AMC

2.4 MUNICIPAL FINANCE ASSESSMENT

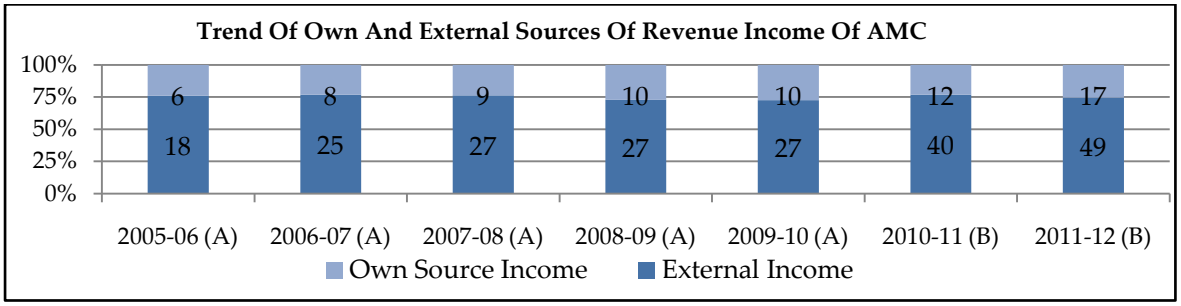
The municipal finances of AMC have been reviewed for the last seven years, from 2005-06 to 2011-12. While for 2005-06 to 2009-10 the information is of 'actuals', budget estimates are given for the remaining two years. The analysis is based on a 'recast budget'. This was done mainly to reclassify some of the capital grants reported as revenue income to capital income.

Particulars	2005-06 (A)	2006-07 (A)	2007-08 (A)	2008-09 (A)	2009-10 (A)	2010-11 (B)	2011-12 (B)
Opening Balance	12.60	10.63	24.34	29.94	33.18	29.50	12.87
Revenue Account							
Revenue Receipts	23.66	32.98	35.84	36.66	36.75	52.07	66.07
Revenue Expenditure	19.80	19.01	21.55	22.53	23.58	36.29	45.04
Revenue Surplus/ (Deficit)	3.86	13.97	14.28	14.13	13.18	15.78	21.03
Operating Ratio (%)	0.84	0.58	0.60	0.61	0.64	0.70	0.68
Capital Account							

Particulars	2005-06 (A)	2006-07 (A)	2007-08 (A)	2008-09 (A)	2009-10 (A)	2010-11 (B)	2011-12 (B)
Capital Income	4.91	6.85	6.59	9.60	18.75	12.72	19.99
Capital Expenditure	9.49	7.50	16.25	21.47	36.31	45.13	67.86
Extraordinary Income	8.93	9.45	11.36	12.54	13.96	15.51	20.79
Extraordinary Expenditure	8.93	9.45	11.36	12.54	13.96	15.51	20.79
Overall Surplus/ (Deficit)	10.64	24.34	29.95	33.18	29.49	12.83	-9.73

Table 6: Ambernath Budget Overview (In Rs Cr)

Revenue Income: The total budgeted revenue income for AMC in 2011-12 was Rs 66.07 cr. Main sources of revenue include taxes and duties levied under various acts, service charges, rents, grants and contributions, etc. The revenue income of AMC has grown steadily at a CAGR of 12% from 2005-06 onwards. 75% of revenue income is through grants and contributions from external agencies. However, as most of these grants are available as regular transfers, these can be considered as a relatively secure source of income.



Graph 2: Trend of own and external sources of revenue income of AMC (In Rs Cr)

Own sources of revenue contribute 25% of the total revenue income of AMC. The own sources consist of tax and non tax revenues. Tax revenue for AMC is in the form of property tax and other general taxes which contributes 28% of the total revenue income and 70% of the own sources of income. It has increased with a CAGR of 18% between 2005-06 and 2009-10. Income from external sources has been increasing at CAGR of 7.5% from 2005-06 onwards. Most of this income is from assured revenue grants such as octroi loss compensation, primary education, inflation, mineral development grant, etc.

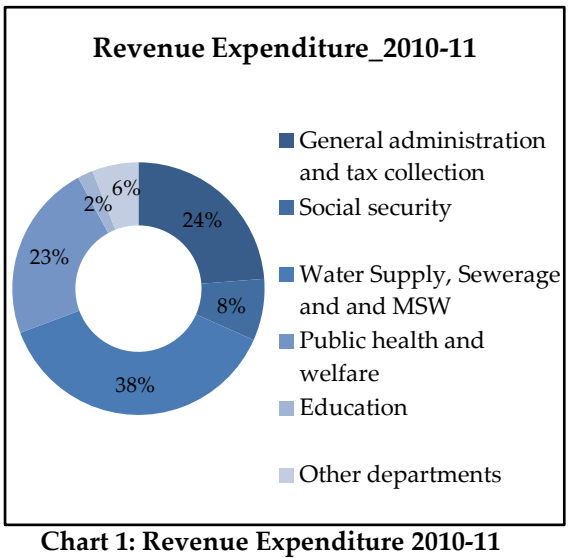
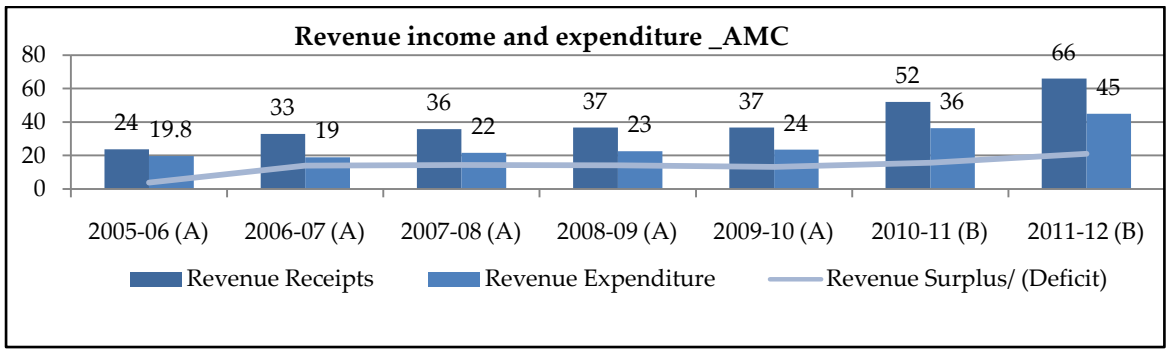


Chart 1: Revenue Expenditure 2010-11

Revenue Expenditure: The revenue expenditure of AMC has been analysed against main departmental budget heads of general administration and tax collection department, public security, public health and sanitation, etc. Expenditure on basic services such as water

supply, sanitation and sewerage form about 38% of the total revenue expenditure of AMC. In 2011, the per capita revenue expenditure in AMC is Rs 1429 with per capita revenue expenditure on services about Rs 458.

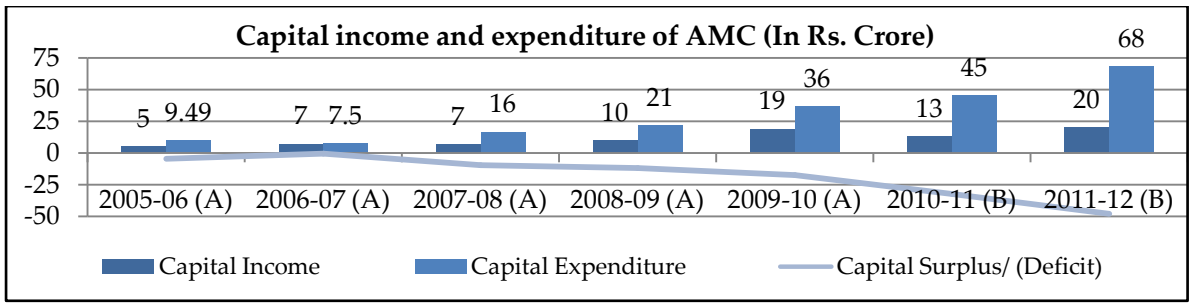


Graph 3: Revenue income and Revenue expenditure of AMC (In Rs Cr)

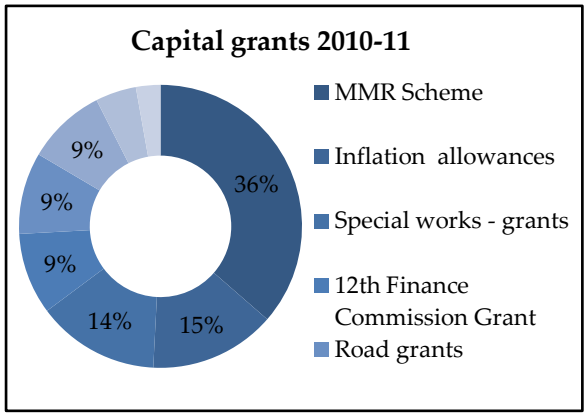
Capital account: Capital income includes grants and disbursements against various schemes. The capital income has increased from Rs 5 cr in 2005-06 to Rs 19 cr in 2009-10 registering a CAGR of 40% and is budgeted to be Rs 67.86 cr for the year 2011-12. Capital income in Ambernath has been negligible when compared to the huge capital expenditure. More than 70% the total capital expenditure is on UWSS, due to schemes such Nirmal MMR Abhiyan and construction of infrastructure in slums, laying and installation of pipeline/hand pumps/tube wells etc.

Budget Head	2005-06 (A)	2006-07 (A)	2007-08 (A)	2008-09 (A)	2009-10 (A)	2010-11 (B)	2011-12 (B)
12th Finance Commission Grant	0.17	2.09	0.70	0.66	1.32	2.08	0.00
13th Finance commission	0.00	0.00	0.00	0.00	0.00	0.97	1.00
Dalit Water Supply Scheme	0.00	0.00	0.00	0.00	0.15	0.30	0.15
Inflation allowances	4.30	2.45	3.96	3.87	4.93	1.54	0.00
MMR Scheme	0.00	0.00	0.00	0.95	11.37	3.90	4.00
Others	0.08	0.22	0.03	0.08	0.06	0.53	1.12
Road grants	0.15	1.10	0.00	2.65	0.92	1.00	1.00
Slum development	0.20	0.39	0.73	0.99	0.01	0.90	1.10
Special works	0.00	0.60	1.16	0.40	0.00	1.50	1.62
Total Capital Income	5	7	7	10	19	13	10

Table 7: Sources of capital income for AMC (In Rs Cr)



Graph 4: Capital income and expenditure of AMC (in Rs Cr)



Grants received under Nirmal MMR, has been the main source of capital income, from 2008-09 onwards. Inflation allowance grants and CFC grants received each year are also major sources of income. Capex has increased from Rs 9.49 cr in 2005-06 to Rs 36.31 cr in 2009-10 registering a CAGR of 40%, this increase is mainly due to the implementation of water supply and SWD projects.

Chart 2: Capital grants 2010-11

2.5 PRIVATE SECTOR PARTICIPATION IN AMBERNATH

AMC has outsourced the collection, transportation, and disposal and processing of municipal solid waste at the city level to M/S Panvelkar & Co. The main reason for this outsourcing has been attributed to the dearth of staff in the Health Department, which is incharge for solid waste disposal in the city. The contact was outsourced in 2010 for a period of 5 years. The contract involves collection of waste from household from 47 wards, collection of waste from secondary bins and disposal. Panvelkar & Co are to provide the required vehicles and manpower for collection and transportation of the waste. The contract also requires Rs 3300/- per month be paid to Panvelkar & Co. to maintain AMC's vermi-composing plant.

Sector/ Title	Private Agency	Scope of Contract	Duration	Value of contract	Procurement Process
SWM	M/S Panvelkar & Co, Ambernath	Collection, transportation, disposal and processing Supplying manpower for collection of waste	5 years	Rs 55,000/ day (paid by ULB)	Tendering
		Hiring trolleys from AMC		Rs 100/- per trolley per day	Tendering
		Providing 25 labours to work at Vermi-composting		Rs 3300 per labour per month	Tendering

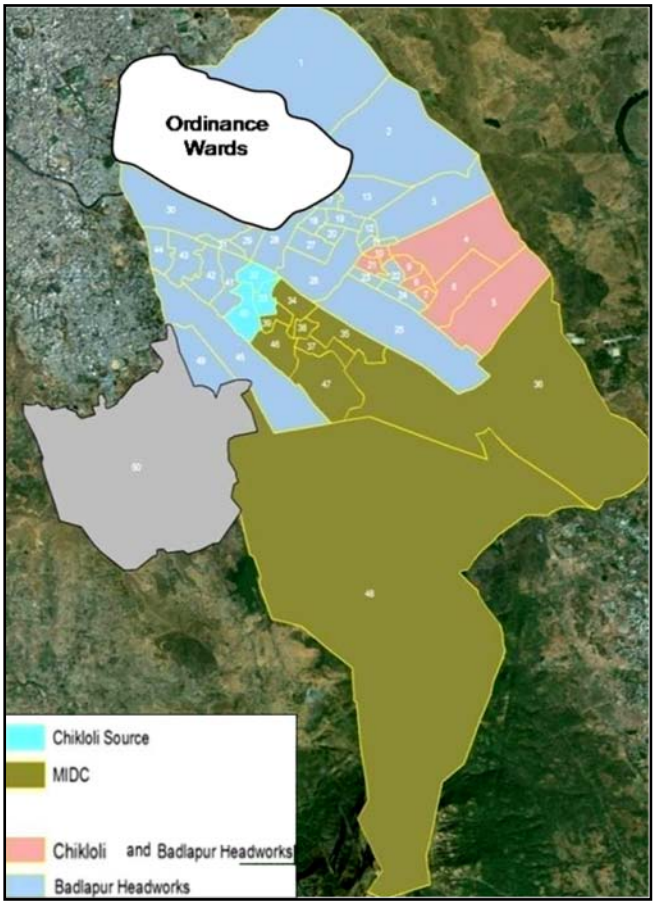
		Transport Of excess Solid Waste from common landfill site (MMR)		Rs 700/- per dumper per trip	Tendering
Water Supply	MJP	Maintain and repair water supply system developed by the council from Chikhloli WTP to Navarenagar	1 year	47 lakhs	-

Table 5: Summary of SWM private contract

3. ASSESSMENT AND PROPOSALS FOR WATER SUPPLY

This section provides an overview of the water supply system in AMC, its performance and issues, and proposals for improvement.

3.1 ASSESSMENT OF CURRENT WATER SUPPLY SYSTEMS



The city is dependent on 3 main sources of water, Chikloli dam, Ulhas River and Barvi River. Presently the total water supply from different sources excluding industrial supply is approximately is 47 MLD. One of its main sources is the Ulhas River, MJP supplies 33.5 MLD water from here. The second source is the Chikhloli dam, AMC supplies 6.5 MLD. A pure water gravity main from Jambul MBR to Navi Mumbai passes through Ambernath, a tapping of 7.5 MLD is made on this by AMC for supplying water to areas in east Ambernath.

Map 3: Sources of water supply

Majority of the wards are served by Ulhas River, MJP. More than 70% of the water supplied from here. There is a 7.2 MLD treatment plant owned by AMC at Chikhloli, 6 MLD water is supplied from here i.e 13% of total supply. 16% of the supply is from the MIDC pipeline tapping.

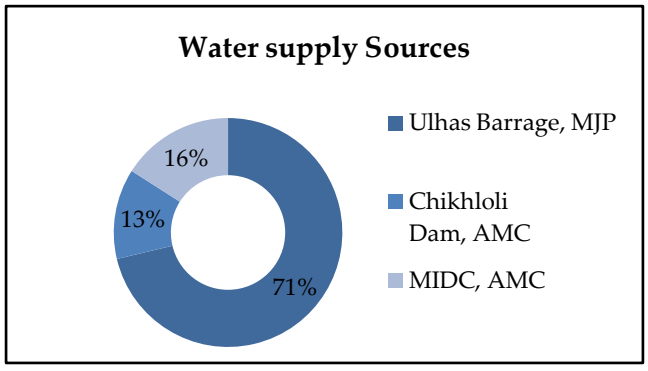


Chart 3: Sources of WS Ambernath

The overall water supply coverage in Ambernath is 82%. A total of 24,839 connections provide water supply to 46,586 households. The connection details are explained in the table below:

Table 8: Connection details AMC and MJP

	MJP		AMC	
	Number of connections	Number of HHs served	Number of connections	Number of HHs served
Individual connections	15,152	15,152	6289	6,289
Bulk Connections	2,538	18,781	860	6364

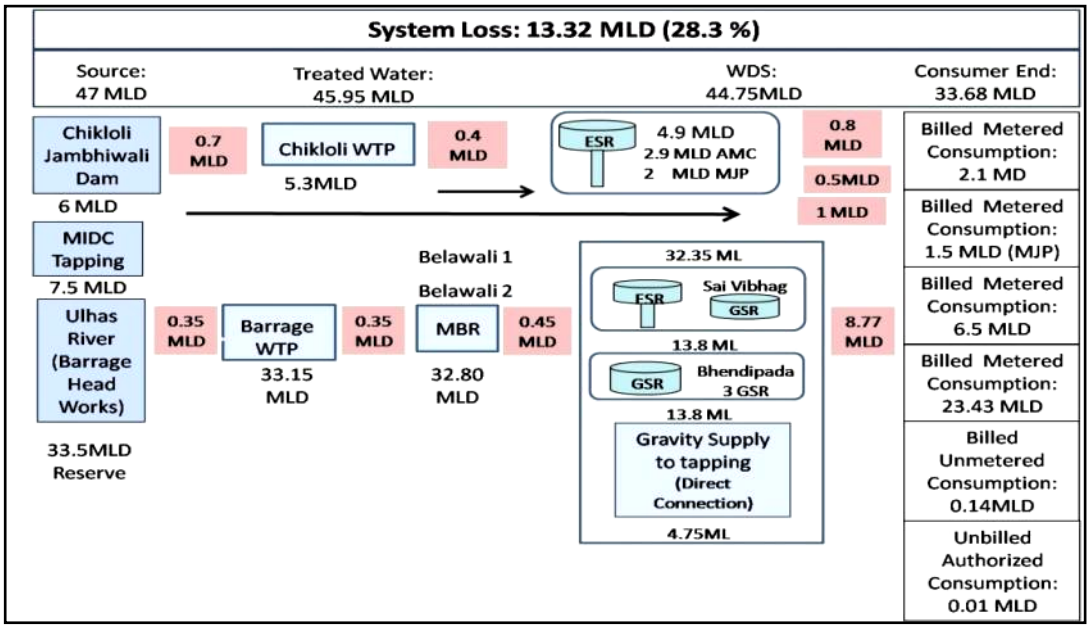


Figure 2: Schematic diagram of Water Supply

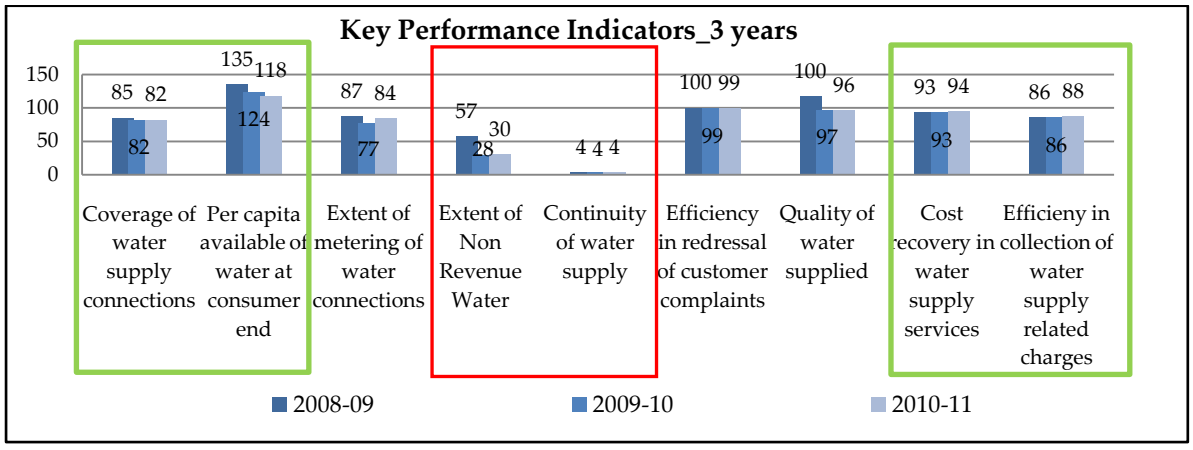
Above is a schematic diagram of the entire water supply system in Ambernath from source, storage to consumer end. The system loss at each stage of water supply is understood. The total treatment loss amounts to 1.05 MLD and the total distribution losses amount to 1.2 MLD. The major losses are in transmission network, amounting to 11.6 MLD. Thus, the total water supplied at consumer end is 33.09 MLD. The overall extent of NRW is 30%. Chikhloli Dam is owned by AMC, but the O&M of the source and WTP have been outsourced to MJP. For which AMC pays MJP Rs 47 lakhs annually. All staff required for the O&M is also provided by MJP. This has been done mainly due to lack of technical and skilled staff in water supply within AMC.

Agency	Scope of Contract	Duration	Type	Value of contract
MJP	Maintain and repair the water supply arrangements already developed by the council, from Chikhloli WTP to Navarenagar	1 year	O&M	47 lakhs
	MJP will be paid O&M charges based on fixed and variable charges. Any increase in O&M costs will be borne by the council itself			

Table 9: Contract Details between AMC and MJP

3.2 ASSESSMENT OF SERVICE DELIVERY

AMC has been taking steps towards improvising its service levels and heading towards achieving benchmarks. The graph provides a snapshot of water supply services in the city. Ambernath fares better than most of its peers (Class A ULBs in Maharashtra) w.r.t coverage of water supply services, per capita supply and metering. Presently water is supplied for 4 hours each day.



Graph 4: Areas of poor and good performance in Ambernath for water supply.

Access and Coverage

Coverage of Water Supply Connections: The city level coverage is 82%. Presently there are 24,839 connections serving 45,987 households. There are 21,441 individual connections and 3398 bulk connections. MJP and AMC together supply water within the city limits. The distribution network is estimated to cover about 98% of the total inhabited area. The coverage of household in slums is 67%; many slum dwellers do not take individual connections due to affordability issues. They usually share connections with neighbours.

Proposals for improvement: Under Tribal Sub-plan, a project plan of Rs 12 cr for providing infrastructure to the adivasis living in the hilly areas of ward number 50 has been submitted to GoM.

New housing societies in areas such as Morivali, Javsai, Pale Ambernath, in the outskirts of the city, are not covered under the present water supply scheme. A proposal for lying of new distribution network has been submitted to GoM. After the execution of the project, these areas would come under the ambit of the water supply scheme.

Undertaking measures such as provision to pay connection costs in installments and reduction in tariffs for urban poor will encourage slum dwellers further to take individual connections.

Service levels and Quality

Per Capita Supply of Water: The total volume of water at source is 47 MLD in Ambernath. However the total volume of water billed is 33.68 MLD. The per capita supply of water is 118 lpcd at consumer end. This is much higher at compared to the state average of 79 lpcd and Class A average of 86 lpcd.

Proposals for improvement: The projected population of 2021 is 3.5 lakhs, an additional 18 MLD of water supply will be required, to supply 135 lpcd. Raising the height of Chikhloli dam by 2.5 mts, would increase the water supplied by 6 MLD. Increasing the irrigation reserve at Badlapur barrage needs to be increased by an additional 12 MLD.

Metering of water supply connections: 85% of the connections in Ambernath are metered. Presently there are 20,864 functional meters, all of which are mechanical meters.

Proposals for improvement: Meter readings are taken only once in 3 months and faulty meters are replaced then. If meter readings are taken every month this will help in timely detection and replacement.

Efficiency in Service Operations

Extent of NRW: The present level of NRW is 30%, the total quantity of billed water is 33.68 MLD. Measures like door to door inspection across the city have been taken for detection of illegal connections and presently there are only 5 public stand posts in the city. The main reason behind high NRW is the 40 year old distribution network. Maximum losses are distribution losses i.e. 24% losses, 11.6 MLD.

Proposals for improvement: There is an urgent need to replace parts of the distribution network. Replacement of GI pipeline network with non tamperable PVC pipes will greatly help in reducing losses. Regular leakage detection and replacement of non-functional meters at the earliest will help in reducing NRW.

Financial Sustainability

Cost recovery (O&M) of water supply: Present cost recovery for water supplied by AMC is 94%. This is much higher than the state average of 66% and the class average of 83%.Presently, both AMC and MJP charge telescopic tariffs.

MJP supplies water to Ambernath from the combined Ambernath-Badlapur water supply scheme. The WTP at Ulhas Barrage is shared between the two cities. Also, the staff employed works for both cities. Hence, it is difficult to estimate the total expenditure on the water supply in Ambernath by MJP.

Year	Water Tariff Structure – Metered (Rs per 1000 litre)		
	Domestic	Non-Domestic	Institutional
2007-10	7.6	34.65	16.20
2010-11	< 15,000 litre- 8.35 > 15,000 litre – 9.6	38.10	18.15
2011-2012	< 20,000 litre- 8.50 > 20,000 litre - 13.00	39.00	20.00

Table 10: Water Tariffs AMC

Year	Water Tariff Structure – Metered (Rs per 1000 litre)		
	Domestic	Non-Domestic	Institutional
2007-10	7.6	34.65	16.2
2010-11	< 10,500 litre- 8.50 > 10,500 litre - 12.50	< 10,500 litre- 38.10 > 10,500 litre - 57.15	< 10,500 litre- 18.15 > 10,500 litre - 27.15
2011-2012	< 20,000 litre- 8.50 > 20,000 litre - 13.00	< 20,000 litre- 39.00 > 20,000 litre - 59.00	< 20,000 litre- 20 > 20,000 litre - 30

Table 11: Water tariff MJP

Ambernath has introduced telescopic tariffs since, 2011-12. As per this tariff structure, rates increases as the consumption rises. In this structure the basic minimum water requirement is kept at lower rates and the water demand for comforts and luxury can be charged at a higher rate. Also there is a substantial difference between the tariff rates for domestic, non-domestic and institutional connections.

24% expenditure is on establishment. The main reason for this can be attributed to 6th pay commission hikes that have had to be paid. 40% of expenditure in water supply is on bulk water purchase from MIDC. AMC has permission to draw only 5 MLD from the source, but it is currently drawing 7.5 MLD for which it pays a penalty of 50% extra cost per MLD.

Collection Efficiency: Presently the average efficiency in collection in water supply related charges for AMC and MJP combined is 92% (MJP maintains collection efficiency details separately for Ambernath). This is much more than the state average of 54% and class average of 58%.

Proposals for improvement: Involvement of private agencies like Bachat Ghats for delivery of bills, altering the billing cycle from quarterly to monthly and setting up of convenient collection centers and collection on Sundays will help in increasing collection efficiency. The agreement with MIDC should be revised to increase the limit of water drawn from the tapping. By this AMC will be able to significantly reduce expenditure on bulk water purchase.

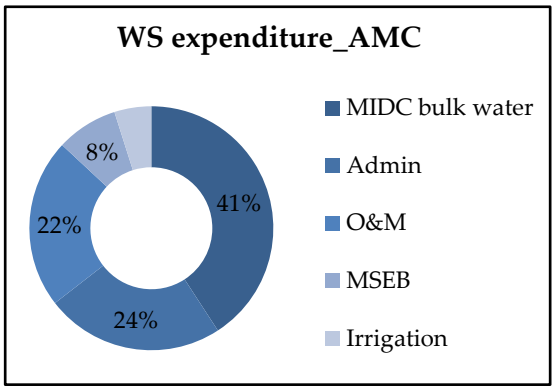
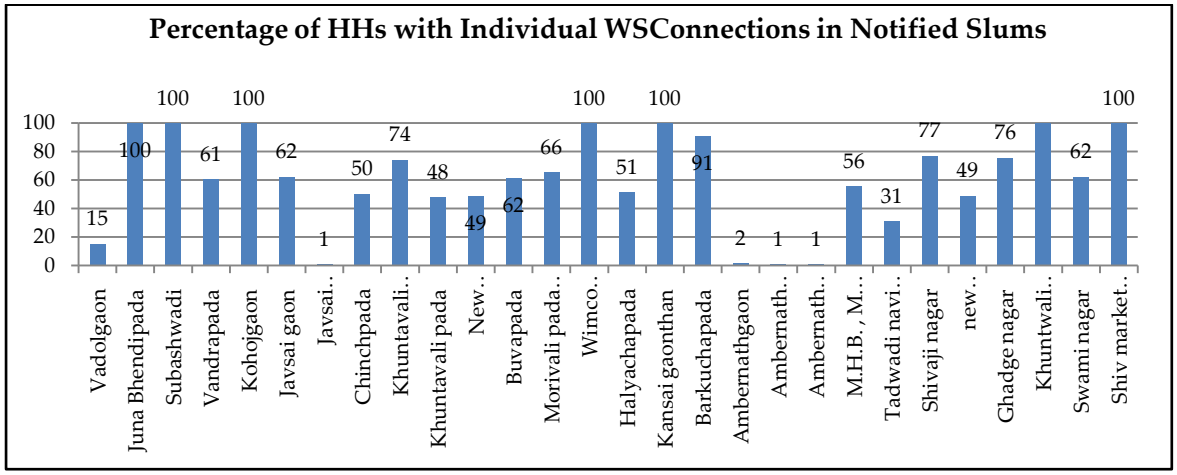


Chart 4: WS expenditure 2010-11

Equity in Service Delivery

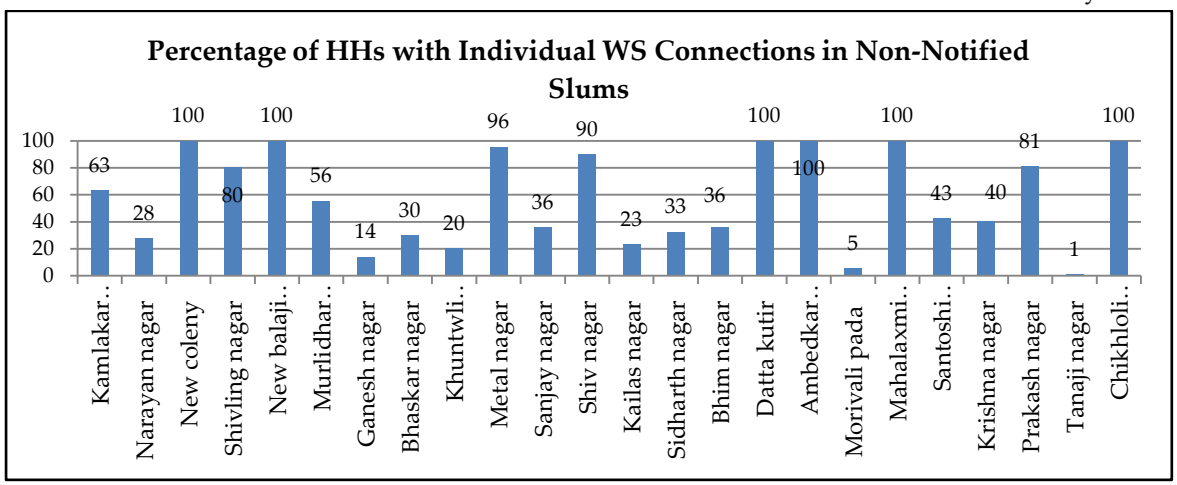
Water supply in slums: Ambernath has 52 slum settlements, of which 28 are notified settlements. The non-notified slum settlements in AMC are mostly located on the peripheral areas of the city, or along boundaries of notified slum settlements. The settlements are provided access to water supply through household connections and public stand posts. The variations in coverage in notified and non-notified settlements are discussed below. The coverage of household connections in notified slum settlements is 67%.

Coverage in notified slums: The variation in coverage of household connections within notified slum settlements is quite wide, with coverage ranging from 2% to 100%. There are only 5 public stand posts in these notified slums.



Graph 5: Percentage of HHs with Individual WS Connections in Notified Slums

Coverage in non-notified slums: The variation in coverage of household connections within notified slum settlements is quite wide, with coverage ranging from 1% to 100%. Most of the non notified slums without access to household connections are located at the outskirts of the city



Graph 6: Percentage of HHs with individual WS connections in Non-notified slums

3.3 PROPOSED ACTIONS/ INTERVENTIONS FOR WATER SUPPLY

The following interventions are proposed based on discussions with the council, and analysis of the key indicators and their data reliability. The proposals listed below mainly include the no-

cost or low cost interventions that need to be carried out by AMC and MJP. Capacity building of the staff must also be undertaken to ensure proper implementation of these interventions. As the focus of improvement in water supply is to move towards a 24X7 water supply system, the interventions mentioned below need to be carried out immediately by AMC to ensure basic systems are in place. Detailed interventions which will incur capital investment by AMC are discussed in the next section.

Intervention	Status Of Actions Taken
Energy And Water Audit	Done for MJP area and underway for AMC area
Identification And Plugging Of Leakages	Ongoing process
Regularizing Unauthorized Connections	Drive done in 2008
Reduction In Free Water/ Group Connection	Drive done in 2008
Additional Connections For Slum HHs	Policy decision to give individual connection in slums on property tax receipts
Additional Connections Using Existing Network	Sufficient connections based on present connections

Table 12: Interventions with Minimal/ Moderate capital expenditure

Illustrated in table 12 are some of the actions requiring minimal and moderate capital expenditure that have already been implemented in Ambernath. Reduction in free water/ group connection, by taking policy decision of converting all group connections into individual connections and minimizing public stand posts have helped in increasing coverage in the city.

Categories	Interventions required
Access and coverage	• Policy decision to reduce tariffs for urban poor will encourage them further to take individual connections. • Under Tribal Sub-plan, a project plan of Rs 12 cr for the provision of infrastructure to Adivasis in the outskirts has been submitted to GoM. • New housing societies in areas such as Morivali, Javsai, Pale Ambernath, are not covered under the present scheme. A proposal for lying of new distribution network in these areas has been submitted to GoM.
Service levels and quality	• Incorporation of MIS in AMC will help in streamlining this process better. • Timely meter reading (once a month) will help in better detection of non-functional meters. Raising height of Chikhloli Dam by 2.5 mts would give an additional 6 MLD to the present scheme. • With projected population of 3.5 lakhs in 2021.Additional 18 MLD of water supply will be required. For this the irrigation reserve at Badlapur barrage needs to be increased by an additional 12 MLD. A proposal for the same is in pipeline.

Categories	Interventions required
Financial sustainability	• Altering the billing cycle from quarterly to monthly and setting up convenient collection centres and collection on holidays will all help in increasing efficiency in collection of water supply related charges.
Efficiency in service operations	• Incorporation of MIS in AMC will help in streamlining processes and ensure better redressal mechanism.

Table 13: Proposed summary of actions with minimal/ moderate capital expenditure

3.4 MOVING TOWARDS 24 X 7 WATER SUPPLY IN AMBERNATH

Govt. of Maharashtra's major focus in performance improvement has been the planning and implementation of 24X7 water supply system in all Class A cities in the state. Given that MJP supplies more than 70% of water in the city, planning and implementation of the 24X7 system has to be done in collaboration between MJP and AMC.

MJP carried out a pilot exercise, supplying 24x7 water in Sai Section ward of Ambernath in June 2010. This ward has a population of 5600 people and 212 properties and 427 water supply connections. This particular ward was chosen because it is a well planned ward and MJP has recorded high recovery from here. During the course of this exercise IEC campaign was also carried out. The following is the breakup of all cost incurred. However the extent of NRW rose from 20% to 27%, during the pilot exercise. Thus, the project was discontinued. Table 14 is the summary of all costs in the project.

Cost Incurred (In Rs lakhs)	
Pipe Replacement-	6
Consumer Meter Replacement	0.6
Service Pipeline Replacement	0.4
Cross Connections	2.5
Total	9.5

Table 14: Cost incurred in Pilot 24x7 project (In Rs lakhs)

While steps towards achieving 24X7 water supply requires substantial efforts, certain actions related to up gradation of human resources and improved management information systems are easier to implement. The technical guidelines suggested by MoUD towards 24X7 systems provide an approach based on the technical, commercial and institutional improvements required.

Technical improvements: Given that the Council currently operates its water supply in intermittent conditions, technical shortcomings would exist which would constraint the shift onwards establishing 24X7 water supply systems. These are discussed below.

- Reliable data on distribution networks and customers do not exist;
- Pipelines comprising the distribution system are totally interlinked;
- There is virtually no metering of bulk water produced, its transmission or distribution at any point;

- Customer meters do not function with any predictable accuracy under intermittent supply conditions.
- Control of leakage on a routine, planned basis is impossible; and
- It is unusual for a service providers to routinely measure system pressure

AMC has submitted proposals under Swarna Jayanti Nagrik Punnar UtthanYojna. Steps that will enable its progress to 24X7 water supply. These are listed below.

Reliable data on distribution network and customers is achieved through:

1. Consumer end survey: 100% consumer survey will help in identifying and subsequent regularization of illegal connections. It will provide data on household consumption which will help in assessment of augmentation of water sources, if required.
2. GIS mapping and hydraulic modelling: GIS mapping will provide detailed network maps with results from consumer survey and hydraulic modelling will help to implement equitable distribution zones in the city.

Interlinked distribution network can be restructured through:

3. Water audit & leak detection and Energy audit study: Water audits will help in identification of major points of losses (real: physical and apparent) from source to consumer end in the network. Along with leak detection studies, this will help locate critical areas in the network. The network refurbishment and augmentation can then focus on these areas on priority basis.
4. Demarcation of District Metering Area (DMA)s & installation of bulk flow meters: The analysis of results generated from GIS mapping and hydraulic modelling will be used for demarcation of DMA. Once the DMAs are demarcated, bulk flow meters will be installed to monitor quantity of flow into these DMAs.

Metering at bulk production and distribution points including consumer connections

5. Introduce consumer metering and volumetric tariff: The reforms mentioned above related to regularization of illegal connections, implementation of suggestions of water audit and energy audit, formation of DMA, etc. will reduce the operation and maintenance expenditure. Once these reforms are in place, the city should introduce metering at consumer end and volumetric tariff to recover full O & M cost.

Commercial improvements: Given that the technical improvements need to be financially sustainable, the conversion to 24X7 water systems requires advanced commercial systems and procedures. The billing system needs to be computerized and collection system with updated consumer records, the billing is currently based on flat tariff. With introduction of metering and volumetric tariff system, consumers will be charged based on the water quantities consumed. In order to ensure that the system progresses smoothly, in the initial phase, the Council needs to develop public awareness.

Institutional improvements: To move towards 24X7 water systems, the Council has to significantly improve and supplement its managerial and technical skills as well as those of the

private operator, as hitherto these skills were oriented towards maintaining an intermittent supply. Some of the technical aspects that will require improved skills and automation are:

- Planning and design of water supply infrastructure from source to distribution to customer for 24X7 system, including concept and establishment of DMAs.
- Restructuring of existing systems, presently operated under intermittent conditions, to continuous supply at minimal cost and simultaneously maintaining supply throughout the conversion process.
- Appropriate hydraulic models and application to planning, design and operation.
- All aspects of pressure management including specification of pressure valves.
- Design and specification of flow and pressure measurement and control devices for management of continuous supply.

Hence the operational skills required to plan and implement these measures would include operation under continuous supply, pressure management, proactive detection and repair of leaks, proactive detection and regularization/ disconnection of illegal connections, mapping of water service infrastructure on GIS linked to operational, maintenance and customer services tracking. A summary of the actions and cost implications towards achieving 24X7 water systems is given below.

Proposal submitted under Swarna Jayanti Nagrik Punnar UtthanYojna: A proposal for 24x7 water supply proposal has been submitted under Swarna Jayanti Nagrik Punnar Utthan Yojna. AMC has also proposed raising height of Chikhloli Dam by 2.5 mts. This would give an additional 6 MLD to the present scheme. With projected population of 3.5 lakhs in 2021, an additional 18 MLD of water will be required. There is a proposal to raise the water reservation with the irrigation. In Ambernath, maximum losses are distribution losses ie approx. 24% losses, 11.6 MLD. There is an urgent need to replace parts of the distribution network. Replacement of GI pipeline network with non tamperable PVC pipes will greatly help in reducing losses. Replacement of 40% of the distribution network will bring down NRW to 24%.A summary of various improvement actions towards achieving 24X7 water systems is given below.

Activity	Description	Status
Network and Customer database	Detailed network maps in AUTOCAD	Proposed under Swarna Jayanti Nagrik Punnar UtthanYojna
	GIS mapping and hydraulic modeling for entire city	
Network Restructuring	Creation of DMAs	
100% electromagnetic meters	Electro-magnetic meters at all bulk production and distribution points	
Implementation of 24x7 in whole city	Augmentation of entire network in the city	

Table 15: Summary of improvement actions to implement 24x7 systems

Illustrated in the table below, is the cost summary of the proposed project for 24x7 water supply in Ambernath. The total estimated cost of the project is Rs 77.15 cr.

Activity	Cost Estimate (Rs Cr)
Network and customer database	0.02
Raising height of existing Chikloli dam	8.53
Providing lowering laying and joining 700 mm diameter gravity main from dam outlet to inlet chamber	1.97
Construction of RCC wall for arresting dam leakage	0.98
Providing and construction RCC pump house at Bhendipada and Amberbath	0.23
Providing installing testing and commissioning of pumping machinery at Bhendipada and Amberbath booster pumping station and WTP Chikloli	4.28
Providing and construction WTP of capacity 7.2 MLD at Chikloli	1.58
Providing lowering laying and jointing raising mains of various diameter in Ambernath	5.99
Providing lowering laying and jointing leading mains for Bhendipada and Amberbath booster sump	5.03
Network restructuring (designing providing and constructing RCC ESR of various sizes in Amberbath town)	9.53
Providing lowering laying and jointing diameter K7 pipe lines for distribution system	29.32
Land acquisition ,barbed wire, fencing	1.41
100% electromagnetic meters Bulk meters PRV	3.91
Modifications In Computer Receipts & Spot Billing Meters	1.00
Special repairs and strengthening of old MBR 7 GSR	0.25
Construction of consumer redressal centre	0.30
3.77% PMC charges	2.82
Total Estimated Cost For 24x 7 Water Supply in Ambernath	**77.15**

Table 16: 24x7 Water Supply Cost estimates (Source: DPR)

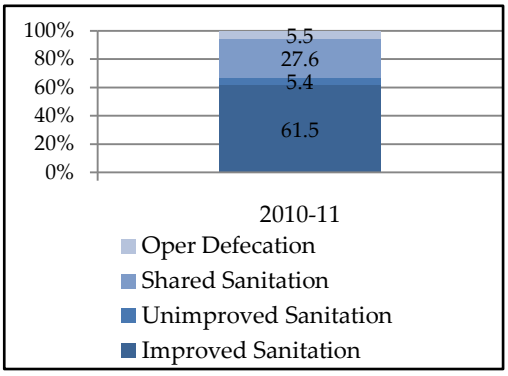
Photo plate 2: Water Supply in Ambernath

4. ASSESSMENT AND PROPOSALS FOR SANITATION

This section captures the sanitation aspects in Ambernath related to coverage of toilets in the city as well as services in slums, septage management, and impact of the ongoing sewerage network and a summary of proposed interventions for improving sanitation in the city.

4.1 COVERAGE OF TOILETS

The overall toilet coverage in the city is 79%.However only 48% of households have access to individual toilets. There are 2,308 community toilet seats that are used by 16,156 households. The present coverage of waste water network is 42%. Total number of properties connected to the sewerage network is 15,251. A project to extend the underground sewerage network to the remaining parts of the city is in pipeline.



Graph 7: Access to sanitation in Ambernath: Improved and unimproved sanitation.
Source: (CENSUS, 2011)

Total number of properties with toilets is 16,470 and number of HHs dependent on community toilet seats are 16,156. Of the total 2308 functional community toilets 870 are owned and maintained by AMC and 1438 have been constructed under Nirmal MMR Abhiyan, and are operated and maintained by CBOs. To use these toilets households have to make a pass for a monthly charge of Rs 40/- per month. This amount is paid to the CBO.

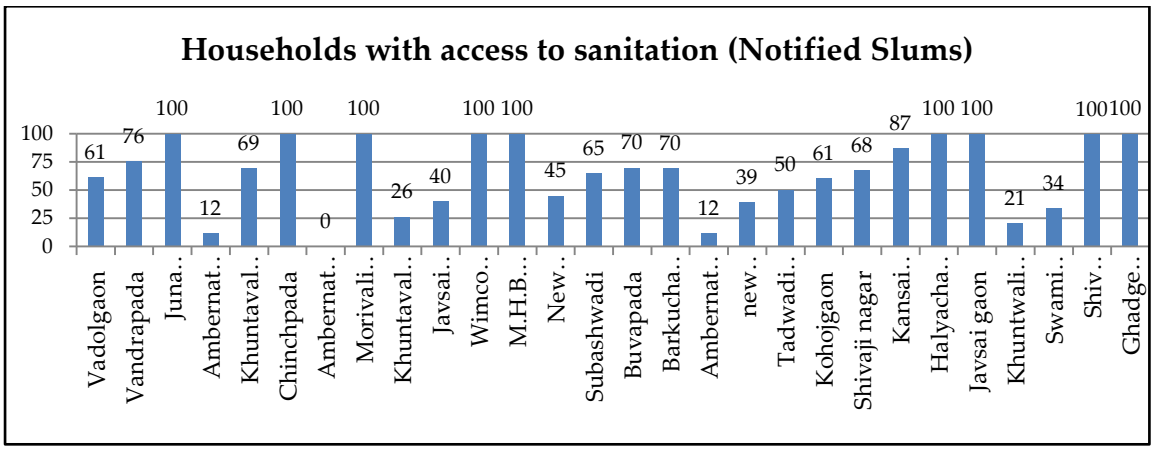
As per the recent figures from census 2011, 62% of the HHs have access to improved implying latrine facilities within premises and connected to pipe sewer, septic tank and ventilated improved pit latrine. However, 5.5% of households do not have access to any sanitation (improved/shared/ unimproved) and thus resort to open defecation. While the figures calculated by considering availability of facilities show that the HHs resorting to open defecation (OD) are only 5.5%, it was observed that some of the facilities were not functional and hence, percentage of OD was estimated to be around 27%.

The Dalit Basti scheme is presently under implementation in Ambernath. 1200 beneficiaries have been identified under the scheme. The total cost of constructing individual toilets for them is Rs 3 cr. In this 90% subsidy will be paid by state government and 10% will be paid by the beneficiary/ULB.

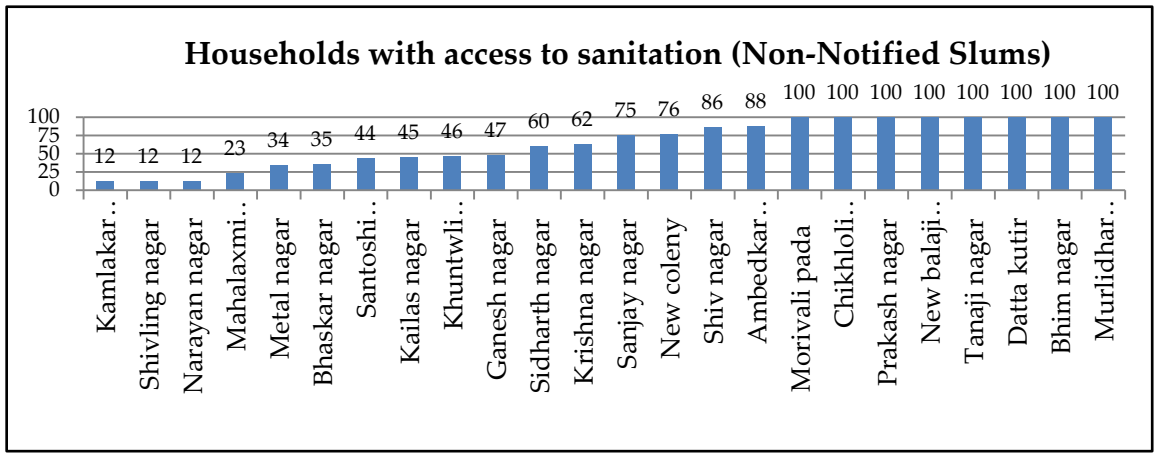
Ambernath is one of the 31 cities in the state that have an underground sewerage system. The present coverage of waste water network is 42% (Map- Annexure6).Total number of properties connected to the sewerage network is 15,251. The total length of the underground network is 39 kms, and the total area under the sewerage network is 54 kms. The sewage is led to a 28 MLD STP (activated sludge process) at Vadaolgaon in the city outskirts. Since, the STP was damaged in 2005 floods; the sewage is presently bypassed to a nallah adjoining the STP.

Slum Sanitation: Ambernath has 52 slum settlements, of which 28 are notified settlements. The access to sanitation in slums is 64%, this includes households with individual toilets and those dependent on community toilets. The overall coverage of individual toilet in slums in 10% (est.), however AMC does not maintain any records of individual toilets in slums. The following graphs show the slum (notified and non-notified) wise coverage of community toilets. The average access to sanitation in notified slums is 64%.However in around 10 of the 28 notified slums, have less than 50% access to sanitation. In non-notified slums, the average access to sanitation is 62%, more than 10 slum pockets the access to sanitation is less than 30%.

Graph 8: Access to sanitation in Notified Slums



Graph 9: Access to Sanitation in Non-notified slums



4.2 MOVING TOWARDS: OPEN DEFECATION FREE CITY

Given that Govt. of Maharashtra's major focus in urban sanitation has been towards **'making cities Open Defecation Free',** the performance improvement plan in sanitation for AMC has concentrated on the covering the gap in toilet coverage, and related components (like IEC, awareness campaigns, etc).
Based on the above analysis, various options have been worked out based on provision of individual toilets, individual and community toilets where constraints for providing individual toilets exist, and construction of additional toilets with refurbishment of existing ones where required.

The following 3 options have been worked out to make Ambernath open defecation free:

Option 1: Achieving Open Defecation Free status through provision of only community toilets: Under this scenario, the council will construct 2000 community toilet seats/100 community toilet blocks. These blocks will be constructed in place of the 870 AMC run community toilet seats. The total cost incurred for the same (including IEC costs) is Rs 25.2 crore. (Annexure 2)

Option 2: Achieving Open Defecation Free status through 100% provision of individual toilets: 36% of the population still resorts to open defecation. To ensure OD free status, the council has to construct about 12,487 individual toilets. Assuming average cost of Rs 20,000 per individual toilet. The total cost incurred for the same (including IEC costs) is Rs 26.2 crore. (Annexure 2)

Option 3: Achieving Open Defecation Free status through provision of individual and community toilets: Based on this option, the council would have to construct about 3430 individual toilets and 2000 community toilet seats. Assuming 30% of the households have the required space and are willing to contribute to 10% of the cost.AMC will pay 90% of the construction cost i.e. Rs 18,000 per toilet seat. Hence, it is proposed to construct 3430 individual toilets (30% of households without individual toilets) and 2000 community toilet seats. The total cost incurred for the same (including IEC costs) is Rs 31.6 crore. (Annexure 2)

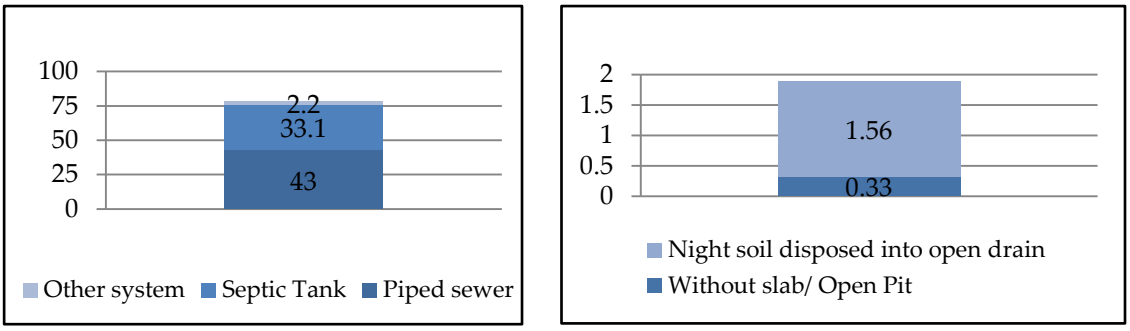
Table 17: Summary of options towards ODF Ambernath

Strategies for ODF	Option 1	Option 2	Option 3
Number of individual toilets	0	12,487	3430
Number of seats in community toilets	2000	0	2000
Cost per individual toilet	-	20,000	18,000
Cost per seat in community toilet (inclu. connection to septic tank)	1,20,000	-	1,20,000
IEC Activities at 5% of construction cost	1.2	1.2	1.5
Total cost (In Rs Cr)	25.2	26.2	31.6

Option 3, which requires construction of individual toilets where possible and community toilet blocks in the remaining areas is most feasible.

4.3 SEPTAGE AND SULLAGE MANAGEMENT

Within the current system, 42% properties are connected to the underground sewerage system. The remaining properties with toilets are all connected to septic tanks, and hence properties having access to safe sanitation is 79%. Grey water is collected through the underground sewerage system and a network of open and covered drains, and finally drained downstream into the Ulhas River.



Graph 10: Breakup of improved and un-improved sanitation in AMC (CENSUS, 2011)

Collection of septage: The Council does not have suction emptiers. There are several private contractors that operate in Ambernath. As per the standards specified by Govt. of India (IS: 2470 Part 1 and 2), *"half yearly or yearly de-sludging of septic tank is desirable. Small domestic tanks, for economic reasons, may be cleaned at least once in two years provided that the tank is not overloaded due to use by more than the number for which it is designed. It must also be noted that frequent de-sludging inhibits the anaerobic action in the tank."* The inspection activity will also help to identify the tanks that require pumping, and those that may be cleaned in the next cycle .However AMC does not maintain any records of the number of septic tanks cleaned annually.

Disposal/ treatment of septage: The septic tank waste is transported and dumped near the open disposal site at the outskirts of the town. The private contractors charge between Rs 1000-1500 per trip for emptying the septic tank. Currently the council does not treat its septage.

Collection of grey water: AMC has a partial underground sewerage network and also has a good network of open and covered drains. It is relatively clean of garbage/debris in most places. Currently, the city has contracted out drainage cleaning to M/s Panvelkar &Co, under a 5 year SWM Contract.

Proposals for Improvement: Govt. of India's Draft of Advisory on Septage Management in Indian cities further states that pumping programs that focus on routine inspection and pumping when required, rather than mandated periodic pumping, are most efficient. This is because households generate varying volumes of sludge at different rates. It also mentions that prior to sending the trucks for de-sludging, the service provider (local government/private operator) can consider sending an inspection crew to inform the residents of such activity, locate manholes and access points, and probe tanks to determine level of accumulated sludge. One simple means of gauging sludge depths is by using a probe on a long handle and submerge into the tank. The policy states that the standard practice in India is to de-sludge every two years or so. Community

run programs such as distribution of flyers about proper care and maintenance of septic tanks would also help build awareness among people. Some of the aspects that the Septage Management Plan should undertake include:

- Manual of Practise listing operation procedures for specific equipment and documenting day to day procedures.
- Record keeping and manifests: maintain accurate records related to septic tanks and volume pumped for billing and compliance purposes. These records should specify location or address of the pumped septic tank, septage characteristics (residential/commercial), details of property owner, volume of septage pumped, any other details like deficiencies in piping/ manholes, etc.

  Record keeping is an important part of the monitoring aspect as it allows the local government to keep track of the service it provides/ that the private operator undertakes.

Improvement in Monitoring: The council needs to undertake initiatives to ensure implementation of a proper septage management plan for the city. Amongst other things, this will include estimation of septage generated in the city,increased provision of public services to cater to safe disposal of septage, encourage private operators and community based organizations to provide services like emptying of septic tanks, monitor emptying and tracking operator activities, and provide health and safety guidelines for the operators (MoUD, 2011). The council will need to regularly monitor the effluent and dried septage quality. Additionally, the state government on its part needs to ensure that the current policies are amended to support and require local governments to improve sanitation and reorganize and clarify institutional roles and responsibilities.

For short term AMC can undertake buying a septic tank cleaning machine or keeping records of septic tanks cleaned by private contractors annually. Also look at safer disposal options rather than dumping it in the open dump sites.

4.4 PROPOSED SEWERAGE NETWORK AUGMENTATION PROJECT

A DPR for the extension of the sewerge system has been prepared by AMC and submitted to GoM for funding under JNNURm. The following is an overview of the total cost to be incurred.

Component	Cost (Rs Cr)
Sewer networks; 7 zones in Ambernath west, 6 zones and trunk sewer in Ambernath east	46.8
5 Sewage pumping stations	10.6
Sewage pumping mains	2.6
STPs; using ASP technology, Vadalgaon STP of 43mld capacity and Chikhloli STP of 8 MLD capacity	27.6
Others; Consulting services, utility shifting, misc. works, contingencies, service tax and escalation	26.8
Total cost	**114.4**

Table 18: Cost estimates of proposed sewerage extension project, Source DPR

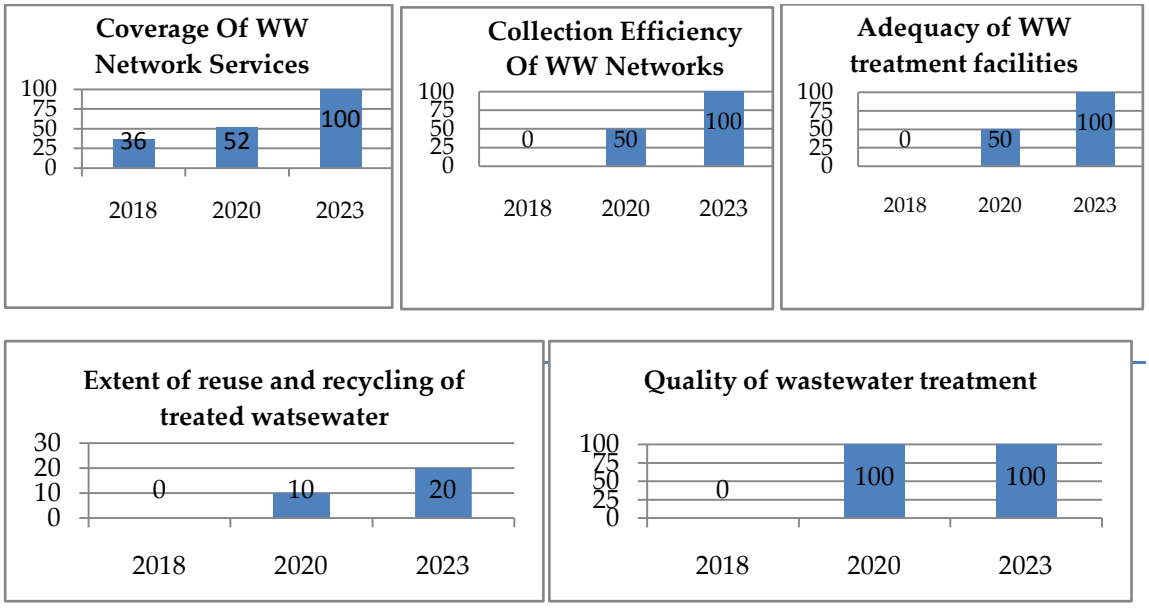
In the DPR, sewage generation of 51 MLD is estimated for the year 2041. While it is essential to design conventional gravity sewers for 30 years design population, it is suggested that STPs should be designed for 5-10 years projected population. Additional treatment unit modules could be added when necessary.

Sewage can be treated using Facultative Aerated Lagoon technology (FAL). The requirement of land 0.4 hectares and capital Rs 4 million is moderate. Using this technology BOD/SS and odour is effectively removed.

If the DPR for the proposed sewerage network is approved, then its implementation can be undertaken over the long term actions (2018-2023).If construction starts in 2019, sewer connections can be given to properties from 2020 onwards. Connections to the sewerage network will have to be increased gradually to achieve 100% sewerage connections by 2023.

Year	Projected properties	Properties connected to sewerage network (%)	No. of sewer connections at the end of each year
2018	40,684	36	15,251
2019	41,636	36	15,251
2020	42,588	52	22,146
2021	43,540	69	30,043
2022	44,492	85	37,818
2023	45,444	100	45,444

Table 19: Phasing out of Proposed Sewerage Network Project (Long Term Actions)



Graph 11: Impact on KPIs after implementation of underground sewerage system

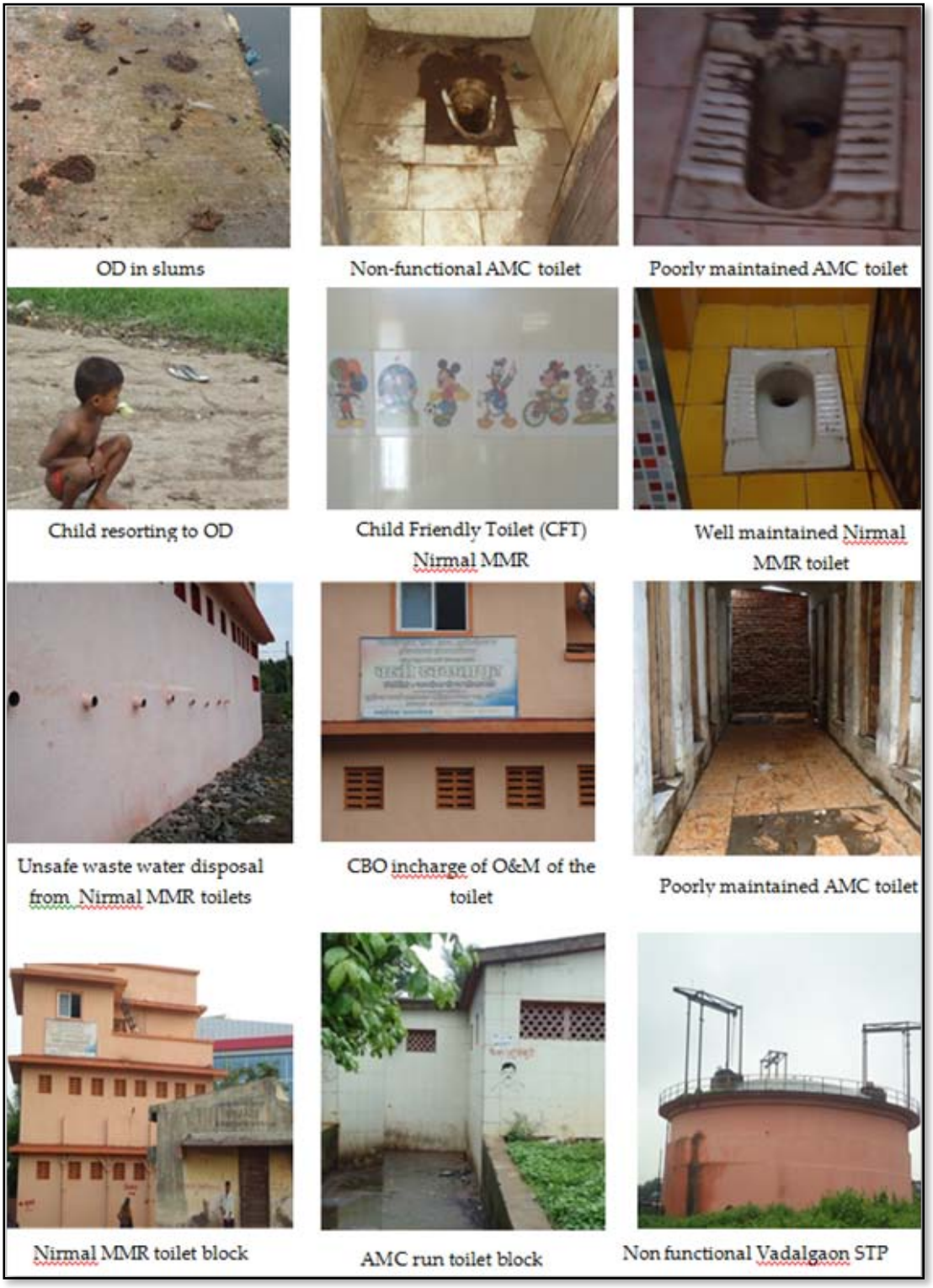
4.5 SUMMARY OF PROPOSED ACTIONS/ INTERVENTIONS

The following interventions are proposed based on discussions with the Council, and analysis of the key indicators and their data reliability. Starting from 2013-14, AMC can begin construction of individual and community toilets. Some of the community toilet blocks need urgent refurbishment and toilets constructed in the Nirmal MMR utilize space better. Hence, it has been proposed by AMC to break down the 870 toilet seats (AMC) and construct 2000 toilet seats in the Nirmal MMR pattern. To ensure all community toilet blocks are functioning well, it is important to identify the CBOs that are not functioning properly and handover such blocks to the CBOs that are performing well. The 28 MLD STP in Vadolgaon, Ambernath west has been un-operational since the floods in July 2005, refurbishment works should be undertaken and completed at the earliest. AMC incurs a revenue expenditure of around 35 lakhs per annum under sanitation and waste water; it has been proposed to levy a sanitation tax from immediate effect.

Table 20: Summary of improvement actions for sanitation in AMC

Activity	Description	Status/ Next steps
Strategies for ODF	Provision of individual and community toilets	Preparation of DPR needs to be undertaken
	Undertake IEC activities	
Strategies for Septage Management	Comprehensive plan to be implemented	Preparation of Septage Management Plan and DPR

Photo plate 3: Sanitation in Ambernath



OD in slums

Non-functional AMC toilet

Poorly maintained AMC toilet

Child resorting to OD

Child Friendly Toilet (CFT) Nirmal MMR

Well maintained Nirmal MMR toilet

Unsafe waste water disposal from Nirmal MMR toilets

CBO incharge of O&M of the toilet

Poorly maintained AMC toilet

Nirmal MMR toilet block

AMC run toilet block

Non functional Vadalgaon STP

5. SUMMARY OF PERFORMANCE IMPROVEMENT PLAN FOR AMBERNATH

This section provides summary of all the improvement actions for water supply and sanitation, including costs of implementing these actions. The section also gives insight into the policy as well as institutional implications along with the phasing of the improvements that have been proposed.

5.1 SUMMARY OF PROPOSALS

The proposals summarized below are focused on two key areas of establishing 24X7 water supply system and moving towards open defecation free AMC, as well as improvements in key processes and operations related to these two focal areas.

Based on the analysis of the water and sanitation sectors in Ambernath, the Performance Improvement Plan for AMC has been summarized below. The total PIP cost for AMC will be Rs 108.9 crore.

Table 21: PIP Cost Summary

Key actions for improvement	Costs required	Current status
Water supply: towards 24x7 system		
Working Survey	Rs 0.02 Cr	Awaiting sanction of DPR submitted under JNNURM
Planning and implementation of 24X7 for entire city	Rs 77.13 Cr	Awaiting sanction of DPR submitted under Swarna Jayanti Nagrik Punnar UtthanYojna
Sanitation: towards OD free		
Service Level Survey In Slums (Toilet Survey)	Rs 0.15 Cr	Preparation of DPR is required
Construction of individual and community toilets (including IEC costs)	Rs 31.6Cr	Preparation of DPR is required
Preparation of Septage Management Plan	-	-
Total cost for Performance Improvement		**Rs 108.9 Cr**

5.2 PHASING AND STEPS TO IMPROVEMENT

In order to carry out the improvements suggested above, AMC has to improve its current financial position. The suggestions for improvement are based on analysis of the BAU and interventions required to improve the BAU scenario.

Investment capacity in BAU scenario: The BAU scenario is based on the hypothesis that the past trends in key financials of the AMC would continue in the future. To arrive at the investible surplus in this scenario, calculations are based on:

1) Revenue surplus/deficit other than WSS
2) Net surplus after capital and revenue receipt and expenditure

3) Investible surplus (surplus + revenue related to WSS – revenue expenditure related to WSS).

As AMC has repaid only Rs 0.7 cr of the total Rs 1.9 cr debts incurred (for Chikhloli Water Supply Scheme), thus debt servicing has also been factored into the investment capacity of AMC. The key financials of the council have been projected for 10 years from 2011-12 as shown in below table.

Year	Net Surplus after capital and revenue accounts (All except WS,WWS,MSW and Slums)	Debt servicing	Revenues (WS, WWS, MSW, and slum)	Revenue expenses (WS, WWS, MSW, and slum	Balance available for investment in performance improvement actions
Budgeted					
2010-11	24.87	-	-9.09	-32.41	-16.63
2011-12	29.99	-	-8.96	-47.87	-26.84
Estimated					
2012-13	30.4	0.3	-9.34	-17.41	3.35
2013-14	30.78	0.28	-9.74	-17.43	3.33
2014-15	31.13	0.26	-10.17	-17.42	3.29
2015-16	33.35	0.24	-10.61	-17.36	5.15
2016-17	33.74	0.22	-11.07	-17.24	5.2
2017-18	34.09	0.2	-11.56	-17.08	5.25

Table 22: Projected Investment Capacity –Business-As-Usual Scenario (In Rs Cr)

From the above table it is clear that if the revenues from other sources continue to grow at the current rate AMC would be able to manage its expenditure. It would not need to depend on external funding just to finance its operations and routine capital expenditure.

Investment capacity after revenue enhancement measures:
Some of the steps that can be potentially taken to increase revenue are as follows:

- Increase in property tax collection efficiency
- Increase in water supply tariff
- Increase in collection efficiency for water charges

The above actions do not require capital investments for implementations and need only process changes. To simulate the effect of the above changes in the investment capacity the following assumptions have been made.

S. No.	Item	Assumption
1	Improve collection efficiency of property tax	Currently the collection efficiency is 74%. Assuming the present level of demand and phased increase in collection efficiency of these charges to reach 95% in 5 years. (Annexure 3)
2	Increase in water supply tariff	Tariffs have been increased from 2012 onwards assuming this tariff till 2018 will increase the current demand of water supply charges. (Annexure 4)
3	Increase in collection efficiency of water charges	Phase wise improvement in collection efficiency of water supply charges to 95% by 2017-18 (Annexure 5)

Table 23: Assumptions for simulation of revenue enhancement

Phase 1: Immediate interventions (from 2013 - 2018)

It is proposed that AMC will begin with interventions related to process and policy changes to improve reliability of information through better formats, surveys, etc as well as initiatives such as increasing collection efficiency of charges, introducing drainage tax, etc. Once the revenue augmentation measures and process improvements are in place, it is proposed that AMC can begin its capital intensive projects from 2013.

Table 24: Phase 1 of PIP AMC (2013-2018)

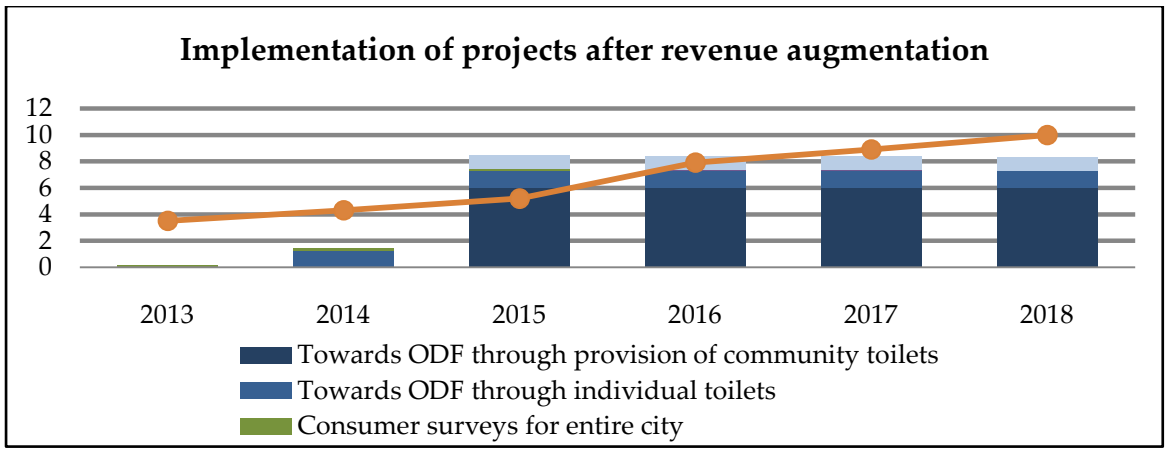
Proposed Improvement Areas	2013	2014	2015	2016	2017	2018
Conduct physical surveys, consumer survey for entire city and produce maps						
Conduct/ Revise water audit and leak detection surveys						
Undertake hydraulic modeling for the entire water supply network						
Distribution network augmentation: creation of pilot DMAs/ Water Works						
Preparation of Septage Management Plan						

Proposed Improvement Areas	2013	2014	2015	2016	2017	2018
Implementation of Septage Plan						
Revision of prepared DPR and persuasion for approval through Govt. Grants						
Levy drainage tax, environmental tax in property tax						
Prepare DPR for ODF						
Towards OD Free through provision of individual toilets (inclu. IEC costs)						
Towards OD Free through provision of community toilets (inclu. IEC costs)						

Source: CEPT University, 2011

Once the revenue augmentation measures and process improvements are in place, it is proposed that AMC can begin its capital intensive projects from 2013.

- To move towards 24x7, AMC can begin with steps like undertaking hydraulic modelling from 2016 onwards. Creation of pilot DMA s can be done from 2018 onwards.
- At present, AMC has not got funding approval for its underground sewerage project. The total capital estimate for the same is 114.4 cr, AMC can undertake this only in the long term i.e after 2018, till then a septage management plan for the unsewered part of the city needs to be undertaken.
- Starting from 2014, AMC can begin construction of individual and community toilets. Some of the community toilet blocks need urgent refurbishment and toilets constructed in the Nirmal MMR utilize space better. Hence, it has been proposed by AMC to break down the 870 toilet seats (AMC) and construct 2000 toilet seats in the Nirmal MMR pattern. AMC can undertake construction of individual toilets for households that have the required space, willingness and ability to pay for it. Construction of individual toilets will be completed in five years, while community toilets will be complete in four years.



Graph 12: Proposed phasing of water and sanitation projects

Phase 2: Long term interventions (from 2018-2023)

Once the above measures are in place, AMC can begin implementation of 24X7 for the entire city. AMC will not be able to fund implementation of 24X7 for entire city from its own revenue sources, and will have to look at external funds for the same. One of the funding sources is Nagar Utthan.

Implementation of 24X7 system for AMC	2019	2020	2021	2022	2023
Total cost	12.5	16.2	16.2	16.2	16.2
Investible surplus after implementation of other projects	10.9	10.9	11.4	11.7	12.2
External funds required	1.6	5.3	4.8	4.5	4

Table 25: Sources of revenue to fund 24x7 water supply system in AMC (In Rs Cr)

5.3 INSTITUTIONAL IMPERATIVES ACHIEVING PROPOSED IMPROVEMENTS

In order to realise the targets set for improving water supply and sanitation in AMC, the existing institutional framework must be enhanced to enable better operation and management. While in certain areas, it is the lack of a defined policy restricting provision of services, in other instances it is the improper regulation of the existing policies. AMC has to focus its attention on improving policies related to services, financial sustainability, and accountability to the consumers.

Mobilisation of external support: Additionally, AMC needs to mobilise external support through NGOs and CBOs in project formulation and implementation, especially related to services of water supply and sanitation in slums. Implementation of proposals related to 24X7 requires high technical skills; AMC needs to also bring external support through Project Management Consultants (PMC) for technical support.

Area of improvement	Suggested improvements
Across all sectors	
Human resource management	AMC (and MJP for water supply) needs to augment its technical staff in view of proposed projects like 24X7 water supply system and open defecation free AMC. Also to ensure adequate utilisation of funds for capital projects, AMC needs to employ additional resources, either internal or external.
Equity in service delivery	Introduce policy to improve water supply and sanitation services to slum settlements, as well as un-served areas of the city. Reform institutional arrangements (with MJP) to target and monitor improvement services to slum settlements.
Financial sustainability	As in the case of increase in water supply tariffs, provisions to introduce tariff for sewerage, sanitation and septage management needs to be introduced. The contractual agreement between AMC and MJP for O& M of the Chikhloli WTP needs to be revised to include performance based incentives/ penalties.
Sector specific	
Sanitation (including sewerage)	Policy provisions to bring about involvement of private sector in areas of septage management, and sanitation services to slum settlements needs to be implemented.

Table 26: Institutional improvements proposed for AMC

The Council has to also form a PIP taskforce in order to ensure proper implementation of the proposed projects. This is discussed below.

Constitution of the PIP taskforce: The first step towards implementation of the proposed projects should be to constitute a PIP taskforce comprising of key technical staff for water supply and sanitation, including representation from the private contractor in SWM. This can also include resource persons with experience in implementing continuous water supply systems as this involves advanced technical skills. Maharashtra Jeevan Pradhikaran (MJP) already incharge for supplying more than 70% of water should also be involved at appropriate stages of planning and implementation. The Council must legally mandate the PIP taskforce with implementing the proposed projects. Appropriate budget provisions should be made to properly manage the taskforce. The responsibilities of the taskforce will include quarterly progress updates to Chief Officer and General Body, and annual progress reports to the Urban Development Department (UDD). A broad schematic of the institutional structure is shown below.

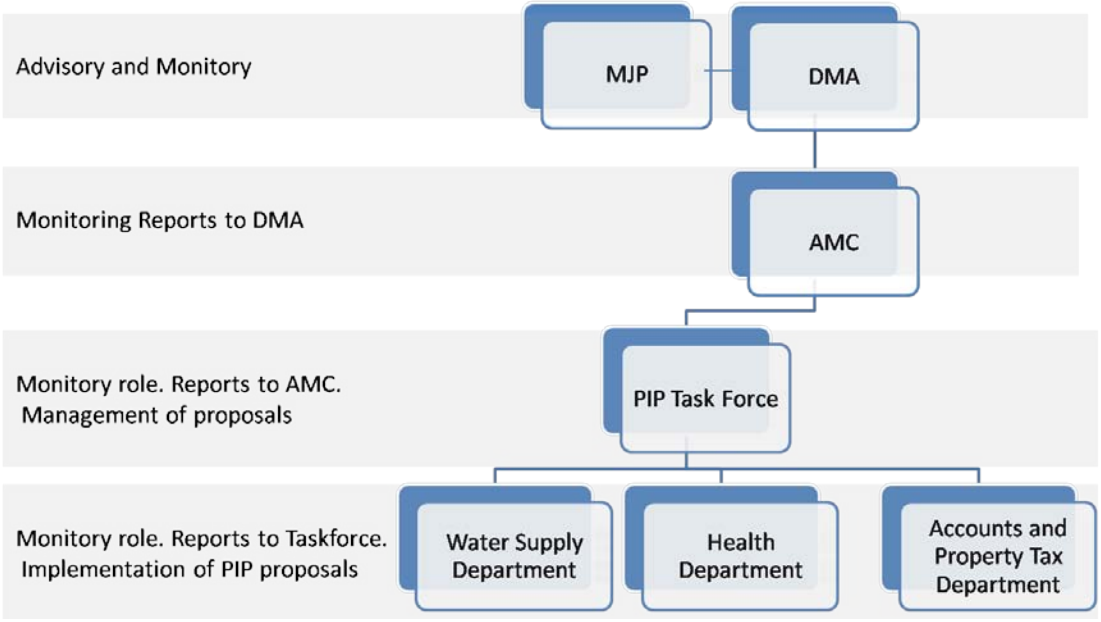


Figure 3: Institutional structure for PIP implementation

Performance monitoring through regular setting of targets and use of performance indicators: In order to ensure that AMC is able to achieve the performance improvement proposals outlined above, it is necessary that it has a well structured monitoring framework in place. The monitoring aspects will include:

- Timely data capture and analysis of performance indicators
- Assessment and evaluation of progress
- Setting of targets (for own department as well as private service providers) and corrective action if required
- Operational decisions and plans
- Decisions on policy, resource allocation and incentives/ penalties

As the performance improvement proposals are phased from 2013 till 2023, it is necessary for AMC to ensure that through the above process, the targets set for each year is achieved and if required corrective measures need to be incorporated. Given that AMC should look to external agencies for support in PIP, the monitoring process should also include review of these agencies. A possible performance monitoring framework is suggested below

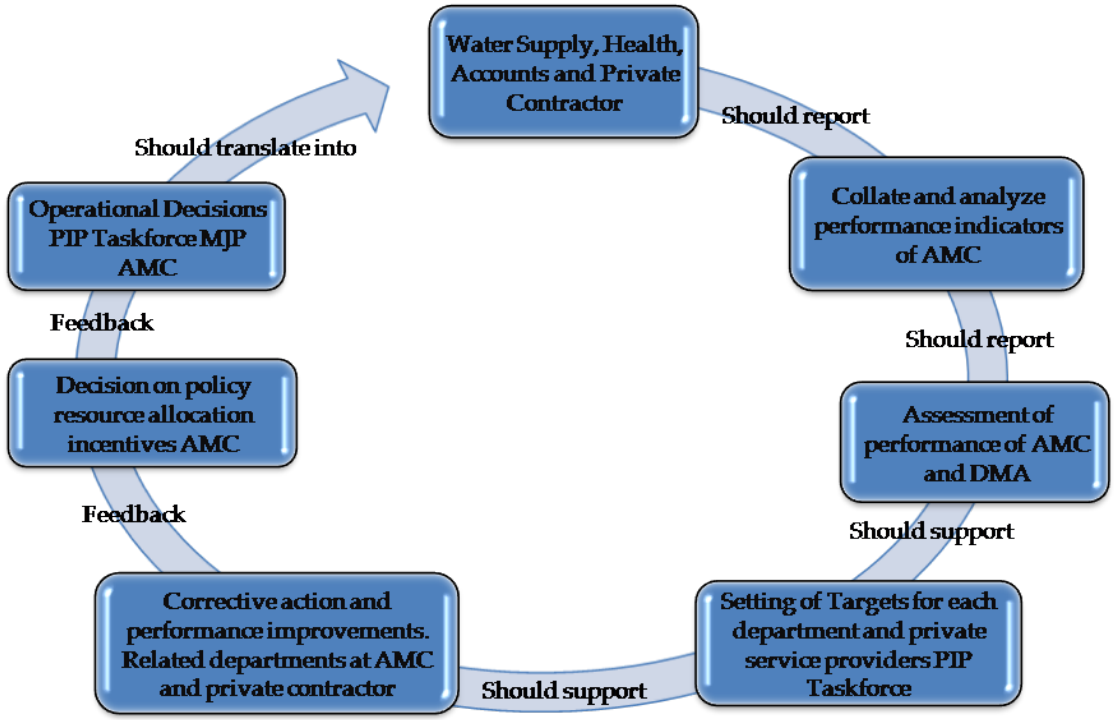


Figure 4: Performance monitoring framework proposed for AMC

Adapted from MoUD website (http://www.urbanindia.nic.in/programme/uwss/slb/slb.htm)

ANNEXURE

Annexure 1: Slum level Amenities

	Slum name	Notified (Y/N)	No of HHs 2001	Pop 2001	No of individual water connections MJP	No of individual water connections	No. of public Taps	No. of comm toilet blocks	No. of seats in comm toilet
1	Vadolgaon	Y	260	1172	40	-	-	2	16
2	Juna Bhendipada	Y	216	1055	380	-	-	7	72
3	Subashwadi	Y	347	1548	300	90		1	23
4	Vandrapada	Y	503	2314	300	5	2	4	40
5	Kohojgaon	Y	459	2168	470		2	3	28
6	Javsai gaon	Y	730	3738	450	4	2	6	82
7	Javsai Kathodpada	Y	734	3675	-	-	2	2	26
8	Chinchpada	Y	702	3513	350	3	2	6	126
9	Khuntavali Gaonthan	Y	673	3493	489	10	2	1	12
10	Khuntavali Pada	Y	627	3160	300	2	2	2	45
11	New Bhendipada	Y	825	4326	401	2	2	2	34
12	Buvapada	Y	2050	9595	763	500	2	7	148
13	Morivali pada Gaonthan	Y	769	3604	450	55	2	9	104
14	Wimco Naka, Netaji Market	Y	200	1079	355	2	2	5	68
15	Halyachapada	Y	371	1957	183	8	2	3	48
16	Kansai Gaonthan	Y	553	2406	660	2	2	4	52
17	Barkuchapada	Y	555	2804	500	4	2	5	40
18	Ambernathgaon	Y	111	796	-	2	2	-	-
19	Ambernath Baudha Vasti	Y	121	812	-	-	-	-	-
20	Ambernath slum near Jalashram	Y			40	-	-	1	8
21	M.H.B. , M. coleny / Shastri Nagar	Y	557	2526	309	1	-	4	62
22	Tadwadi Navi Vasti	Y	334	1493	100	4	-	2	16
23	Shivaji Nagar	Y	1254	5484	707	260	-	5	87

24	New Bhendipada Magasvargiv Bhag	Y	651	3205	315	4	-	2	22
25	Ghadge Nagar	Y	536	2678	400	6	-	3	66
26	Khuntwali balaji Nagar	Y	559	2976	612	150	-	1	6
27	Swami Nagar	Y	1151	6239	517	200	-	2	32
28	Shiv Market Vibhag	Y	146	854	392	6	-	2	16
29	Kamlakar Nagar	N	452	2434	285	-	-	-	-
30	Narayan Nagar	N	326	2073	90	-	-	-	-
31	New coleny	N	275	1327	290	2	-	1	22
32	Shivling Nagar	N	392	2199	250	65	-	-	-
33	New Balaji Nagar	N	443	2349	500	18	-	7	122
34	Murlidhar Nagar	N	376	1749	209	-	-	5	68
35	Ganesh Nagar	N	749	3301	100	5	-	1	33
36	Bhaskar Nagar	N	1165	5351		350	-	3	34
37	Khuntwli varcha pada	N	557	2573	110	4	-	2	24
38	Metal Nagar	N	581	2767	550	5	-	1	16
39	Sanjay Nagar	N	253	1230	90	1	-	2	20
40	Shiv Nagar	N	344	1734	308	2	-	4	32
41	Kailas Nagar	N	392	2058	90	1	-	2	16
42	Sidharth Nagar	N	267	1354	85	2	-	2	16
43	Bhim Nagar	N	280	1346	100	2	-	3	46
44	Datta kutir	N	121	730	205	3	-	1	24
45	Ambedkar Nagar	N	612	3240		660	-	5	58
46	Morivali pada	N	96	778		5	-	3	44
47	Mahalaxmi Nagar	N	1208	5477		1700	-	1	16
48	Santoshi mata Nagar	N	351	1670		150	-	1	14
49	Krishna Nagar	N	889	4020		360	-	5	56
50	Prakash Nagar	N	247	1205	200	-	-	2	32
51	Tanaji Nagar	N	97	470		-	-	1	12
52	Chikhloli Sidharh Nagar	N	37	268	100	110	-	6	68

Annexure 2: Options for making Ambernath ODF

	Option 1	Option 2	Option 3	
	Community	Individual	Individual	Community
Number of toilet seats to be constructed	2000	12487	3430*	2000
Block cost per seat (Rs)	1,20,000	20,000	18000**	1,20,000
Total cost of construction (Rs Cr)	24	24.9	6.7	24
			30.74	
*** 30% of the HHs without toilets are able and willing**				
**** Considering 10% beneficiary contribution**				

Annexure 3: Property Tax Improved Collection Efficiency (In Rs Cr.)

Year	Current Tax Collected	Collection Efficiency	Demand	Targeted Collection Efficiency	Collected Revenue	Incremental Revenue
2012-13	11.37	74%	15.37	74%	11.37	0
2013-14	12.05	74%	16.29	78%	12.70	0.65
2014-15	12.78	74%	17.27	82%	14.16	1.38
2015-16	13.54	74%	18.30	86%	15.74	2.19
2016-17	14.36	74%	19.40	90%	17.46	3.10
2017-18	15.22	74%	20.57	94%	19.33	4.11

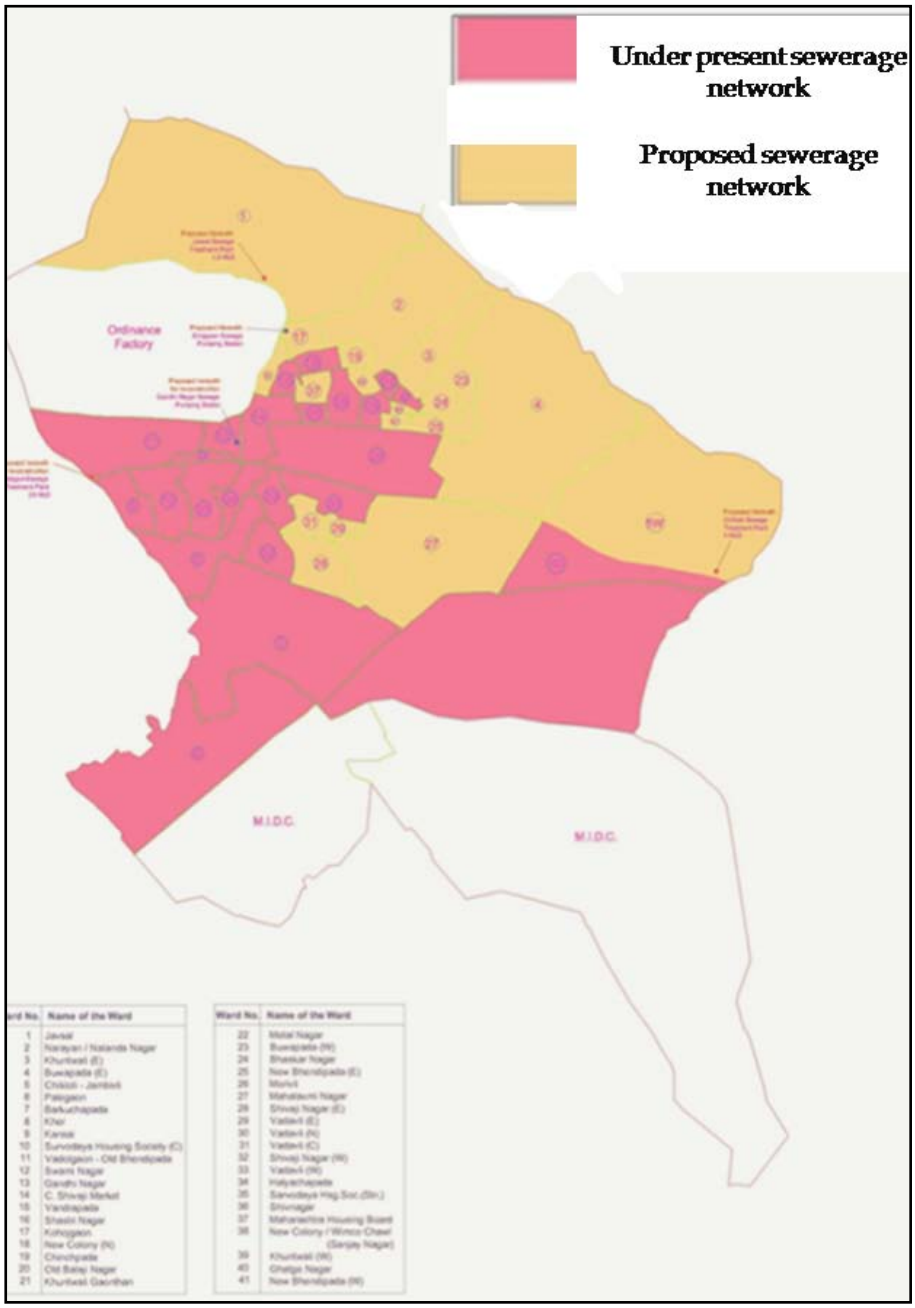
Annexure 4: Water Tariff Increase and Improved Collection Efficiency (In Rs Cr.)

Year	Current Water Charges	Collection Efficiency	Demand	After Revision Of Tariff	Targeted Collection	Collected Revenue	Incremental
2012-13	3.27	86%	3.80	3.99	86%	3.43	0.16
2013-14	3.40	86%	3.96	4.15	90%	3.74	0.34
2014-15	3.54	86%	4.11	4.32	94%	4.06	0.52
2015-16	3.68	86%	4.28	4.49	95%	4.27	0.59
2016-17	3.83	86%	4.45	4.67	95%	4.44	0.61
2017-18	3.98	86%	4.63	4.86	95%	4.62	0.64

Annexure 5: Investible surplus after revenue enhancement actions (in Rs Cr)

Year	Investible surplus	Increment due to improvement in property tax collection	Increment due to tariff revision and improvement in water charges collection	Net investible surplus
Budgeted				
2010-11	-16.63	-	-	-16.63
2011-12	-26.84	-	-	-26.84
Projected				
2012-13	3.35	-	0.16	3.52
2013-14	3.33	0.65	0.34	4.32
2014-15	3.29	1.38	0.52	5.2
2015-16	5.15	2.2	0.59	7.93
2016-17	5.2	3.11	0.61	8.92
2017-18	5.25	4.11	0.64	10

Annexure 6: Proposed sewerage network map



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The Performance Assessment System (PAS) Project

The Performance Assessment System (PAS) Project supports development of appropriate tools and methods to measure, monitor and improve delivery of urban water and sanitation services in the states of Gujarat and Maharashtra. The PAS Project includes three major components of performance measurement, performance monitoring and performance improvement. It covers all the 400+ urban local governments in Gujarat and Maharashtra.

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