Performance Improvement Plan for Bhusawal

Prepared by:

CEPT University and AIILSG in consultation with Bhusawal Municipal Council

January, 2012

pas performance assessment system

CEPT UNIVERSITY ज्ञानं विज्ञानसहितम्

ALL INDIA INSTITUTE OF LOCAL SELF-GOVERNMENT

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PERFORMANCE IMPROVEMENT PLAN FOR BHUSAWAL

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ABBREVIATIONS

AIILSG	All India Institute of Local Self Government
BAU	Business As Usual
BMC	Bhusawal Municipal Council
CAGR	Compounded Annual Growth Rate
CBO	Community Based Organization
CEPT	Centre for Environmental Planning and Technology
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
GSR	Ground Storage Reservoir
IEC	Information Education Communication
IHSDP	Integrated Housing and Slum Development Programme
ILCS	Integrated Low Cost Sanitation
KPI	Key Performance Indicator
MBR	Mass Balance Reservoir
MoUD	Ministry of Urban Development
MSNA	Maharashtra Sujal Nirmal Abhiyan
NGO	Non Governmental Organization
NRCP	National River Conservation Plan
NRW	Non Revenue Water
ODF	Open Defecation Free
PAS	Performance Assessment System
PIP	Performance Improvement Plan
PWD	Public Works Department
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 Town
ULB	Urban Local Body
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

The preparation of this Performance Improvement Plan (PIP) for water supply and sanitation has been led by the Bhusawal Municipal Council (BMC) 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. The PIP exercises use the set of indicators given by the SLB Initiative as a baseline to assess past performance and identify priorities.

City Profile: Bhusawal, class A municipality is located in Jalgaon District in the Maharashtra state, India. The town is situated on Surat-Nagpur National Highway Number 6 as well as on Mumbai-Delhi Central track line at a distance of 25 km from Jalgaon district headquarters. It has mainly developed on a large scale owing to railways, ordnance factory and thermal power station of Maharashtra State Electricity Board. As per Census 2011, the population of Bhusawal city is 202,530.

Water Supply: Water supply demand for Bhusawal city is met through Tapi River. The overall water supply system of Bhusawal is thus able to produce and treat only 26 MLD as of now instead of abstracting to fullest limit of 37 MLD. There are totally 17,722 water supply connections in the city, serving 17,978 households as per 2010-11 records, accounting to only 46% coverage. The per capita availability of water is 99 lpcd. Metering is completely absent in Bhusawal and water supply is for average duration of 1hour 30 minutes on alternate days. The quality of water is monitored at Bhusawal WTP where residual chlorine, physical-chemical and bacteriological tests are conducted daily and also samples are sent to accredited government water quality testing labs occasionally. The quality of water is reported to be 96.6. The council has average efficiency in redressal of 54% customer complaints where multiple mechanisms to record complaints is observed (phone call, written as well as oral). Cost recovery in water supply is 48.9% with a collection efficiency of 47.03%. The poor service levels get reflected in lower cost recovery & collection efficiency for water supply services.

The Council has planned various proposals related to water supply. This include a proposal worth Rs. 98crore under UIDSSMT, however it has not been sanctioned yet. The tapping point for this proposal is at the upstream, on the Hatnur dam, located 30 kms from Bhusawal. As per the proposal, water is to be treated at a hillock and transmitted through gravity along National Highway 6.

Sanitation (includes sewerage and drainage): Bhusawal is a non sewered city. The coverage of individual toilets is at higher end of 86.5%. There are 229 community toilets seats, out of which, 179 seats are functional. BMC has deployed 1 septage suction machine for cleaning of septic tank. BMC also records 74.4% coverage of door to door SWM services. ULB does not levy sewerage tax or SWM tax. To improve sanitation services, BMC needs to refurbish the non functional toilet seats along with other actions recommended in the PIP report for achieving OD free status.

Services in slums: Out of 17 slum pockets, 10 are notified and 7 are non-notified slums. 78 per cent of total slum population dwells in notified slums. Total no of slum HHs are 4013, with a total population of 21131. Both notified as well as non notified slums are eligible for basic services for BMC. Coverage of water supply connections in slums is 2.8%. Out of 4013 households only 112 households have individual connections. The total nos. of group connections in the city is 48. There are only 80 individual toilets in these slums. Coverage of individual toilets in slums is 2%. The no. of Community toilets in slums are with 244 seats. 91% of slum settlements are covered by door to door collection of MSWM service.

Municipal Finance of BMC: The municipal finances of the Bhusawal Municipal Council have been reviewed for the last 7 years from 2005-06, to 2011-12.

Revenue income has been increased from 14.86 Crores to 21.76 Crores from the year 2005-06 to 2009-10. Own sources contribute 44% of the total revenue income of the Bhusawal Municipal Council. Own sources include property tax (comprising general tax, water, sewerage, and sanitation taxes), other taxes, and non-tax income in the form of development charges, income from municipal properties, fees & fines, and other miscellaneous tax and non-tax items. Property Tax accounts for 21% of the total revenue income of the BMC. Non-tax revenue accounts for 10% of the total revenue income of BMC. This source registered a CAGR of 16% during the period under consideration. Grants and contributions from the external agencies form about 56% of the total revenue income for the municipal council.

The total revenue expenditure of BMC has grown from Rs. 14.95 Crores to 21.21 Crores. The basic services in the form of water supply, sewerage and sanitation form about 26% of the total revenue expenditure in the Bhusawal Municipal Council.

Bhusawal Municipal Council has revenue deficit for all years except for the year of 2009-10. The review of annual accounts reveals that debt servicing expenses account for an average of 1.4% of the total revenue expenditure during last five financial years.

The capital income has increased at a much slower growth rate in last five years in Bhusawal. It has moved from 2.74 Crores at 2005-06 to 4.59 Crores for 2009-10; while for 2011-12, it is budgeted to be 37.96 Crores.

About 70 per cent of capital income comes from charges, fees, licence or penalty collected by Municipal Council. This actually should be accounted under revenue income. Another 20 per cent of income share is from rent collected from Municipal Council's properties and markets. Capital expenditure of BMC has increased from 4.30 Crores to 7.33 Crores

Summary of Performance Improvement Plan for BMC: The proposals suggested are focused on two key areas of establishing 24X7 water supply system and moving towards an open defecation free BMC, as well as improvements in key processes and operations related to the above areas. Based on the analysis of the water and sanitation sectors in Bhusawal, the Performance Improvement Plan for BMC has been summarized below.

Table 1: Key actions for improvement and costs required

Key actions for improvement	Costs required	Current status
Water supply: towards 24X7 system		
Technical studies	Rs. 1.62 Crores	Awaiting sanction of DPR submitted under MSNA
Implementation of 24*7 in whole city	Rs. 128.15 Crores	Preparation of DPR is required
Sanitation: towards OD free		
Construction of individual and community toilets	Rs. 22.59 Crores	Preparation of DPR is required
Refurbishment and maintenance of community toilets	Rs. 0.08 Crores	Preparation of DPR is required
Preparation of septage management plan	Rs. 0.5 Crores	Preparation of Septage Management Plan and DPR needs to be undertaken
Total cost for Performance Improvement		**Rs. 152.945 Crores**

The Council also has to undertake improvement actions related to processes in the water supply and sanitation operations. These actions have no or low cost, and thus can be immediately taken up by the

Council. These include water audit, periodic surveys at source, treatment and consumer end of water supplied, levying telescopic rates for water supply, drainage tax, and improve collection efficiency.

Based on the revenue enhancement measures mentioned above, significant improvement in investible surplus is observed. Considering the current scheme of things, BMC would be able manage an investible surplus only by 2018. Thus BMC has to rely on some grants to finance its 24X7 water supply and ODF projects to start on 2013.

Phasing and steps to implementation:

The PIP improvements for BMC have been proposed in 3 phases. First phase will have immediate interventions (from 2013-14). Second and third phases will have short term (from 2015-2017) and long term (from 2018-2021) interventions respectively.

Phase I: Immediate interventions (from 2013- 2014)

It is proposed that BMC 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, etc.

Table 2: Phasing of PIP for BMC

	Immediate Interventions		Short term interventions			Long term interventions			
Proposed improvement areas	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
WS augmentation scheme									
Increase storage capacity of water supplied									
Water and energy audit project									
Revision of connection policy for urban poor and slum dwellers									
Installation of bulk flow meters and meters at consumer end.									
Checking drive for illegal connections									
Leak detection programme									
Augmentation of technical staff									
Consumer end survey to determine the number of potential consumers									
GIS mapping for network mapping and demarcation of District Metering Area									
Hydraulic modeling for implementing equitable									

	Immediate Interventions		Short term interventions			Long term interventions			
Proposed improvement areas	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
distribution zones in the city for new system									
Water pressure management and motoring									
Monitoring & review water quantity & quality at consumer end in daily operations									
Periodic surveys at source and treatment									
Revise tariff structure									
Initiate collection drive of taxes & charges									
Regular surveys through zone sanitary inspectors									
Towards OD Free through provision of individual and community toilets (including IEC costs)									
Refurbishment of existing community toilets									
Preparation of Septage Management Plan									
Levy drainage tax									
Revenue generation through sludge manure									
Cover all the open drains									
Construct primary treatment facilities before disposal									

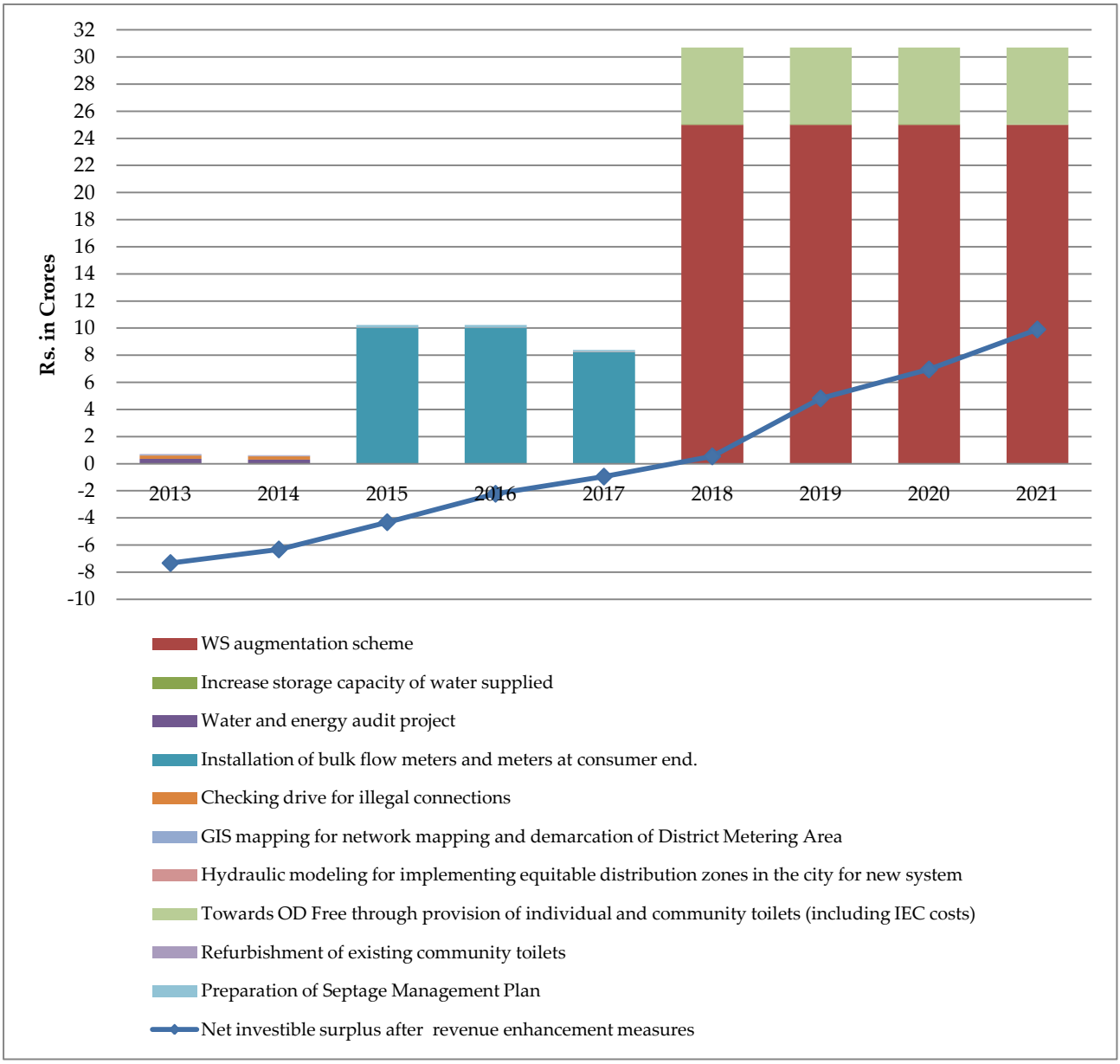


Figure 1: Proposed phasing of water and sanitation projects (without scheme), after undertaking revenue enhancement measures

Water supply:

Water and energy audit project as well as consumer end survey to determine potential consumers will be completed by 2014. Checking drive for illegal connections, Leak detection programme, Augmentation of technical staff can be completed by 2014. GIS mapping for network mapping and demarcation of District Metering Area is proposed for 2013. Periodic surveys at source and treatment will be carried out in immediate phase. Revision of tariff structure can be done in 2013. Also collection drive of taxes & charges can be initiated by 2013.

Sanitation:

Surveys through zone sanitary inspectors will be carried out in 2013. Refurbishment of existing community toilets can be done by 2014. Levy of drainage tax can be started in 1st year.All the open drains can be covered by 2014.

Phase II: Short Term Interventions (from 2015 -2017)

Water supply:

BMC can start with installation of bulk flow meters and meters at consumer end by 2015 before long term interventions. This also implies that Water pressure management and motoring and Hydraulic modelling for implementing equitable distribution zones in the city for new system will be completed by BMC in between 2015-2017. Important policy decisions like revision of connection policy for urban poor and slum dwellers are proposed for 2015-17. Monitoring capita supply of water and continuity of supply can be done at the end of every year.

Sanitation:

Preparation of Septage Management Plan will be ccompleted by 2017.

Phase III: Long term interventions (from 2018 - 2021)

Water supply:

Proposed water supply augmentation scheme which also includes Increase storage capacity of water supplied will be carried out in last phase.

Sanitation

Proposed PIP actions for ODF Bhusawal by constructing individual and community toilets can be started in this 2018.Construct primary treatment facilities before disposal can be started in last phase. Revenue generation for ULB through sale of sludge manure can be done from last phase. Considering the project is proposed to begin in 2013, BMC can target to complete it by 2021.

Considering the project is proposed to begin in 2013, BMC can target to complete it by 2021.

Table 3: Sources of revenue to fund 24X7 water supply and ODF in BMC (in Rs. Crores)

Implementation of 24X7 water supply and ODF for BMC	2012-13 to 2013-14	2014-15 to 2016-17	2017-18	2018-19	2019-20	2020-21
Total cost	1.32	28.85	30.70	30.70	30.70	30.69
Investible surplus after increasing the revenue	-	-	0.55	4.82	6.96	9.90
External funds required	1.32	28.85	30.15	25.88	23.74	20.78

1. INTRODUCTION

The preparation of this Performance Improvement Plan (PIP) for water supply and sanitation has been led by the Bhusawal Municipal Council (BMC) 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. The PIP exercises use the set of indicators given by the SLB Initiative as a baseline to assess past performance and identify priorities.
During the preparation of PIP for Barshi, consistent efforts were taken by the team to involve officials of BMC through dialogue, periodic consultations and meetings with officials from respective Departments.

Preparation of the PIP has been done in three stages:

Initial Performance Assessment: Based on the data from the BMC, 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 BMC teams were assisted to generate a city profile based on comparative performance assessment of ULBs for last three years based on PAS data. This involved past trends as well as comparison with other Class A Municipal Councils in Maharashtra.
This was discussed with the BMC at the first meeting in June 2011. The meeting was attended by Bhusawal Chief Officer, respective heads of water supply department, sanitation department and tax department. 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:

Consultations with sector experts were also held in August 2011 for proposing actions and estimating the required capital cost/ investment based on identified improvement areas. At the end of the expert consultations the options for improving water supply, sanitation and SWM scenario were discussed with concerned BMC officials and Chief Officer. The diagnostic study, detailed assessment and preliminary strategies for improvement were shared with BMC officials during second PIP consultative workshop at Bhusawal. The suggestions by BMC officials were taken and incorporated in the PIP.

On identification of city priorities, consultations were held with the Chief Officer, opinion leaders, Municipal councillors, BMC officers, and representatives of water and sanitation committees to discuss priorities for municipal water supply and sanitation.

While proposing strategies and actions for improvement the assessment of on-going projects was done. The actions for improvement were identified, prioritised and streamlined in consultation with BMC officials to achieve both priority/ focal areas - 'Open Defecation Free BMC' and '24 X 7' water supply.

In the PIP report the identified interventions were classified as minimal capital expenditure, substantial capital expenditure and process and policy related. Actions to improve reliability of performance indicators are also identified. Cost estimates have been developed for all actions identified.

The proposed strategies and actions for improvement and estimated capital cost required to implement actions was discussed with BMC officials during the third PIP consultative workshop at Bhusawal.

Preliminary validation of Draft Performance Improvement Plan by BMC:

The proposed draft PIP was shared with BMC, and finalised by incorporating the revisions suggested. The Bhusawal PIP has been validated by Bhusawal CO, & BMC 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. Based on this Bhusawal 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 BMC will prepare detailed project reports and seek assistance under state and national programmes.

2. CITY PROFILE

This section discusses general characteristics of Bhusawal related to population, aspects related to slum settlements, and human resources in BMC. Also, aspects related to municipal finances specifically with respect to water supply and sanitation services are discussed here.

2.1. LOCATION AND DEMOGRAPHY

Bhusawal town is the headquarter of Bhusawal Taluka in Jalgaon district. The town is situated on Surat-Nagpur National Highway Number 6 as well as on Mumbai-Delhi Central track line at a distance of 25 km from Jalgaon district headquarters. Located on the left bank of Tapi River, which flows from East to West, the town's geographic coordinates are 21°03′ North Latitude 75°46′ East Longitude. The maximum and minimum temperatures observed are 47° C and 9°C respectively. The minimum rainfall here is 311 mm and maximum is 986 mm.

Table 4 Population growth rate of Bhusawal

Year	Population	Household	Growth rate
1991	148,866	13,852	-
2001	172,366	34,473	16%
2011	202,530	35,973	17%

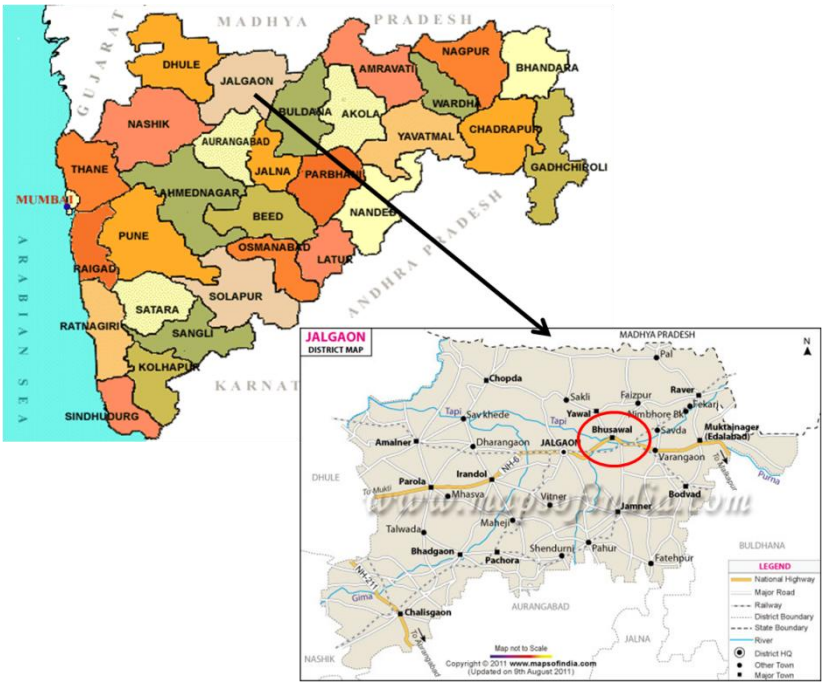


Figure 2: Location map of Bhusawal in Jalgaon district

Bhusawal is prominently known as Railway Junction Station on Mumbai–Delhi and Mumbai-Calcutta Central Railway. It has mainly developed on a large scale owing to railways, ordnance factory and thermal power station of Maharashtra State Electricity Board. Administratively, Bhusawal Municipal Council falls under the jurisdiction of the Jalgaon District. The civic affairs of the town are looked after by Bhusawal Municipal Council which is in "A" class category.

The present population of Bhusawal is 2,02,530 with 35,973 households. The population has been growing at a constant rate of ~17% for last two decades. The Bhusawal Municipal Council's area is spread over 13.38 sq. kms. This also occupies considerable portion of railway colonies. About 13 per cent of city population dwells in these colonies, which are managed by Railway Authorities. About 8 per cent of city population resides in 17 slum pockets spread around city area.

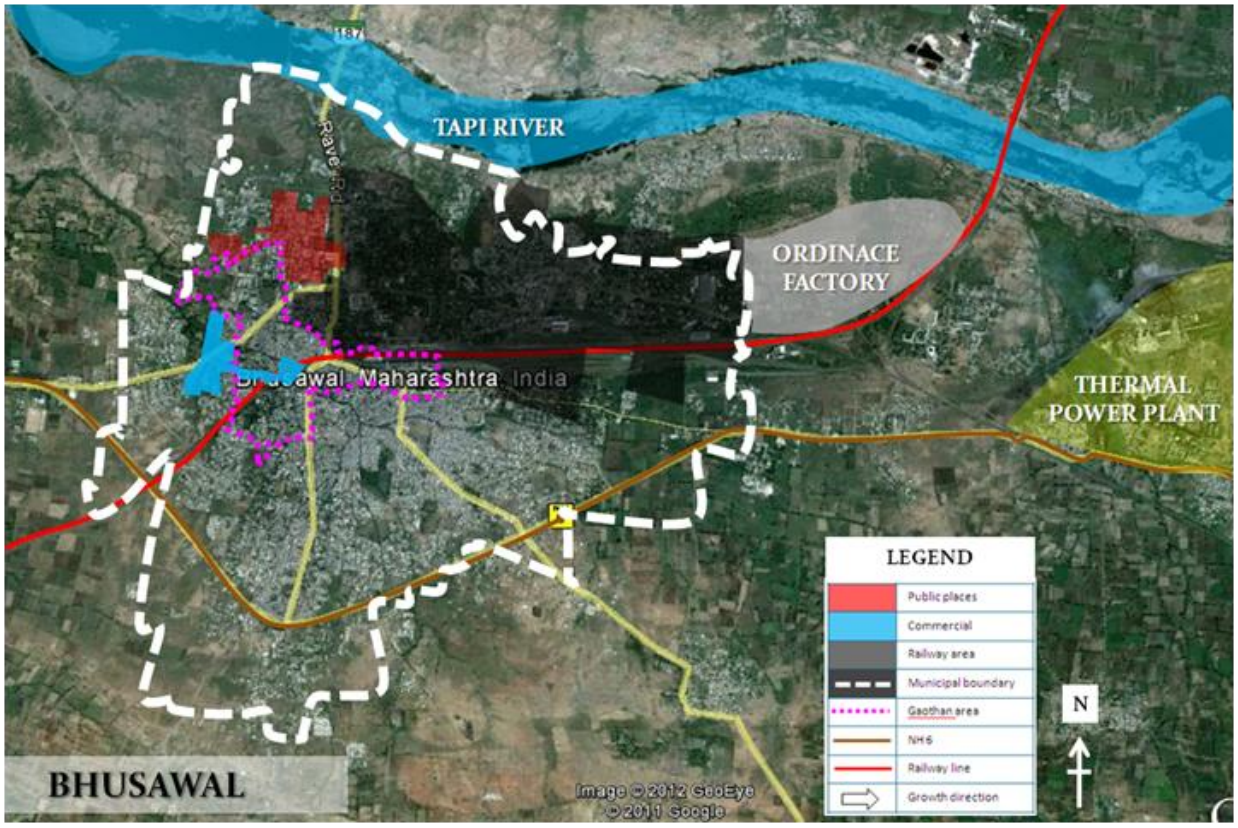


Figure 3 Spatial profile of Bhusawal

The development of Bhusawal city has been traditionally an outcome of transport facilities in form of major railway junction. The core city area has developed along the railway line passing through centre of city as shown in Figure 1. Old national Highway 6 was also running earlier straight in the middle of the city, which has now been shifted to extreme south. Hence, city has been growing in that direction now. Almost entire northern part of city is occupied by Railway Authorities as shown in map. Adjoining to this are reserved public and semi-public places, comprising government offices and institutions. Surrounding areas of the city has low density residential land use with one to two floors of development.

The town has practically been divided into two parts due to local main nallah flowing from South-East to North-West carrying sullage from town area and outskirts to Tapi River. Even waste disposal from ordinance factory and thermal plant occurs straight into the river. The natural slope of city is towards North due to river basin.

2.2. SERVICES IN SLUMS IN BUSAWAL

Bhusawal faces proliferation of slums along railway line and core area. The municipal council has identified 17 slum pockets housing a total population of 21,131 with 4013 households. These pockets are spread across the entire town as shown in the figure below. Out of 17 slum pockets, 10 are notified and 7 are non-notified slums. Most of the notified slums are spread across middle of the town, while non-notified slums are across periphery. 78 per cent of total slum population dwells in notified slums. The average density in these slums ranges from 450 – 3000 persons/hectare as against 150 person/hectare density across city.

It is notable that only 20 % of slum population is on government land, while remaining is divided equally on private and Bhusawal Municipal Council (BMC) land. The slum density in privately occupied land is 1400 persons/hectare, almost double than that of other slums.

Table 5 Slum profile

Number of slums settlements	17
notified slums settlements	**10**
non-notified slums settlements	**7**
% Share of slum population in total city population	**11%**
Land ownership	
%of notified slum on government land	**24%**
%of notified slum on private land	**53%**
%of notified slum on BMC land	**23%**
%of non- notified slum on government land	**43%**
%of non-notified slum on private land	**43%**
%of non-notified slum on BMC land	**14%**

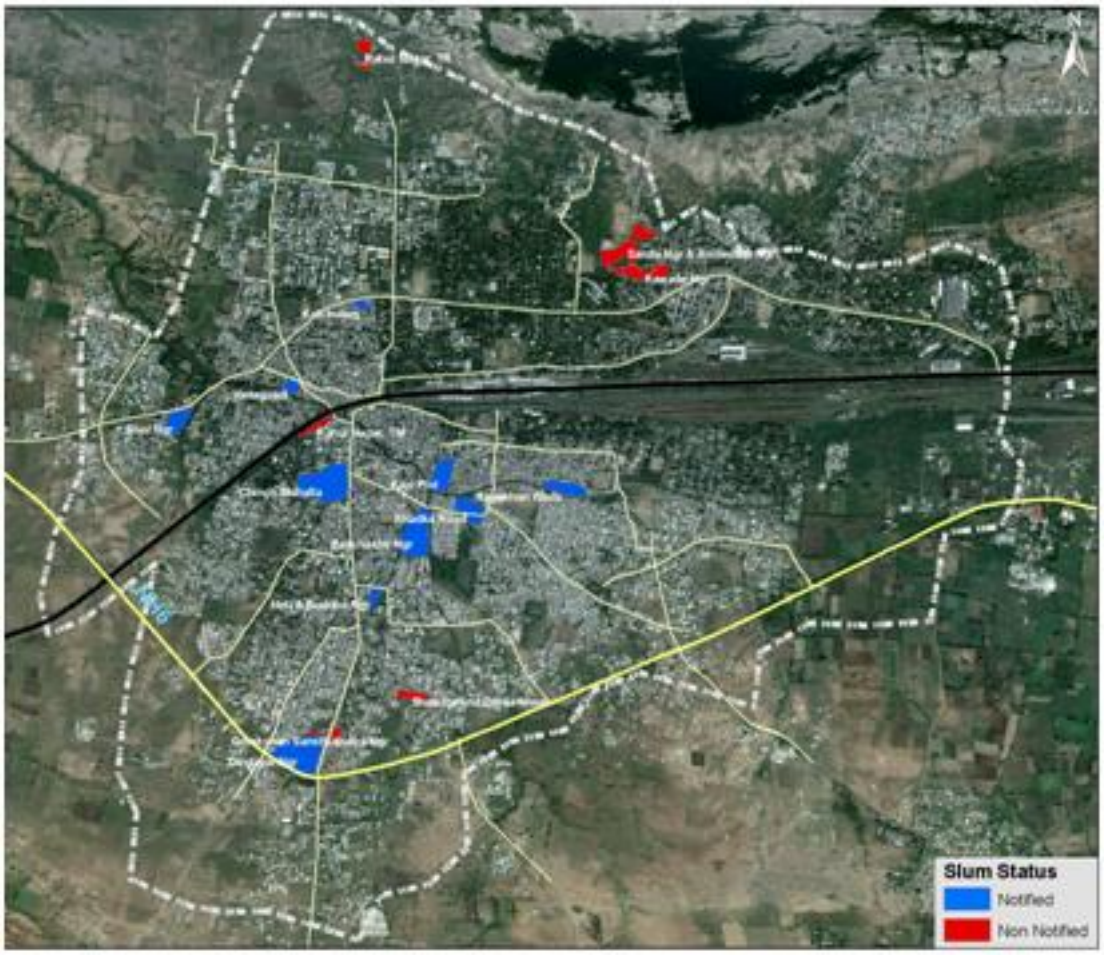


Figure 4: Slum location map

Figure 5: Slums in Bhusawal

2.3. STAFFING OF BHUSAWAL MUNICIPAL COUNCIL

Bhusawal Municipal Council has been constituted under the provisions of the 'Maharashtra Municipal Councils, Nagar Panchayats and Industrial Townships Act 1965'. There are various departments in the ULB to carry out the functions as listed in Figure 2 below with their basic responsibilities. Water Supply and Health Department will be discussed in later parts of the report at length.

There are a total of 757 sanctioned posts for BMC, out of which only 538 posts are occupied. The departments related to our study context, other than administrative department, are the three departments of Finance, Water and Health. These departments have only ~50% sanctioned posts filled. This results in immense staff crunch to maintain better service levels. As of now, Bhusawal does not have any contracts for service delivery in urban water supply and sanitation (UWSS). Also, the inhabited area of the city has grown tremendously in last few years, leading to increased pressure in delivering better services.

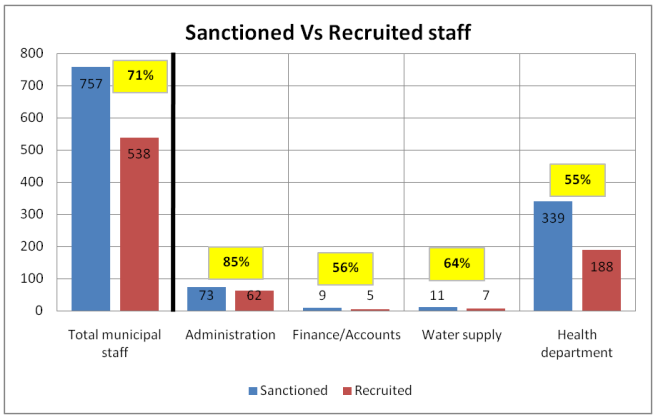


Figure 6: Staffing details of BMC

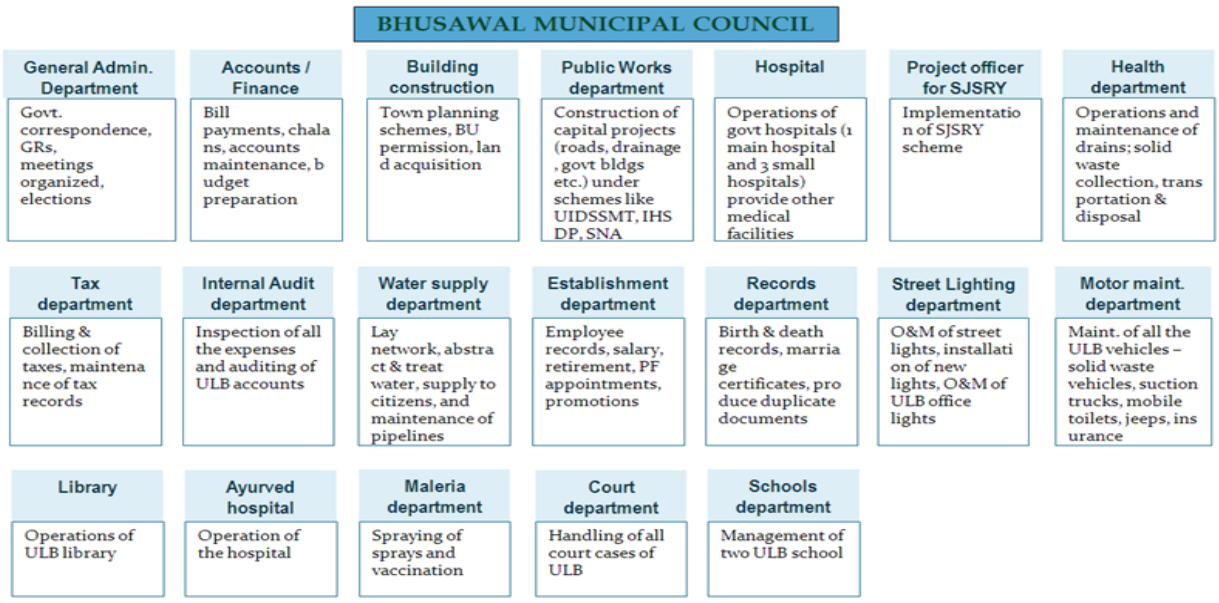


Figure 7: Functional Departments of BMC

Administration setup for water supply service delivery

Political and executive wing of BMC function collectively to accomplish tasks of the Water works department. Among the councilors, water works committee with a chairman is appointed to take final decisions regarding utilization of funding resources and budgetary allocations. They have higher delegation powers than executive wing. Executive wing is headed by City Engineer. A team of staff is responsible under his guidance to carry out the operations of WW department. The execution of capital projects like laying distribution network is carried out by Public works department.

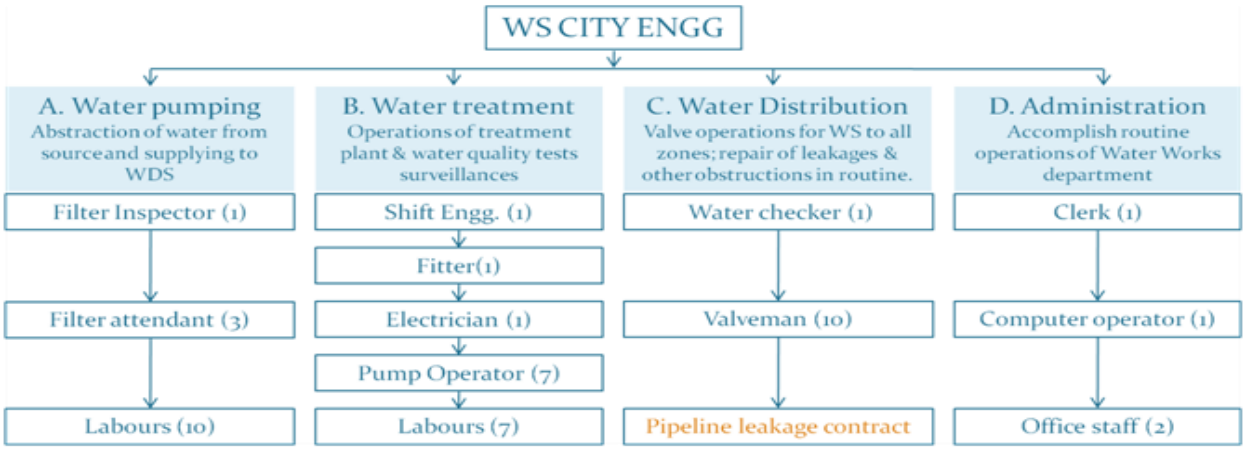


Figure 8: Executive Wing of Water Work Department

Administration setup of waste water department

The operations of WWs department is divided into four segments of supply chain and managed by separate specific people for the task. These segments are water pumping, water treatment, water distribution and administration. A detailed organogram is shown in figure below. As per state GR, half of the sanctioned posts are now converted to temporary posts. Also, there has been a discrepancy in number of sanctioned posts for each type of posts from various data records available. Hence it is difficult to estimate the sufficiency of staff against the specified number, but based on our discussions

with city officials, there is immense staff crunch to provide and maintain satisfactory service levels in the city. From the entire water supply value chain, only pipeline leakage repairing works have been contracted out by WW department.

2.4. MUNICIPAL FINANCE ASSESSMENT[1]

Municipal budgets of Bhusawal Municipal Council have been studied for last 7 years from 2005-06, to 2011-12. As actual figures for 2010-11 & 2011-12 were not available during the study period, budgeted figures are used. Revenue income, including the income on account of water and wastewater services, has increased to a level of Rs. 21.76 Crores in 2009-2010 from an actual level of Rs. 16.86 Crores in 2005-06. This represents an actual CAGR of 10%. On the other hand, the revenue expenditure has increased to a level of Rs. 21.21 Crores in 2009-10 from a level of Rs. 14.95 Crores in 2005-06. This represents a CAGR of 9% over a five-year period. The capital income for the Bhusawal Municipal Council includes grant and disbursements against various schemes like UIDSSMT, Sujal Nirmal Yojana, and IDSMT among others. It is observed that the capital expenditure mainly consists of expenditure against the capital income received in form of grants under various schemes. The capital expenditure has increased to a level of Rs 7.33 Crores from a level of Rs. 4.30 Crores, thus registering a CAGR of 14%.

Table 6: Overview of Municipal Finances (Rs in Crores)

	2005-06 (A)	2006-07 (A)	2007-08 (A)	2008-09 (A)	2009-10 (A)	2010-11 (B)	2011-12 (B)
Opening balance	0.38	0.53	2.29	2.25	2.99	3.60	3.55
Revenue Income	14.86	16.26	19.88	19.41	21.76	26.77	37.56
Revenue Expenditure	14.95	17.95	20.89	20.20	21.21	27.27	43.73
Revenue surplus / Deficit	(0.09)	(1.69)	(1.01)	(0.79)	0.55	(0.50)	(6.17)
Operating Ratio	1.01	1.10	1.05	1.04	0.98	1.02	1.16
Capital Income	2.74	7.22	2.95	3.37	4.59	7.24	37.96
Capital Expenditure	4.30	4.97	5.96	5.08	7.33	10.85	38.56
Capital Surplus / Deficit	(1.56)	2.25	(3.01)	(1.71)	(2.74)	(3.61)	(0.60)
Overall Surplus / Deficit	(1.65)	0.56	(4.02)	(2.50)	(2.20)	(4.11)	(6.77)

Source: Budget documents of Bhusawal Municipal Council; A – Actual figures, B – Budgeted figures;

Revenue Account

Main sources of revenue for BMC include taxes and duties levied under various acts, service charges, land property rents and fees, grants and contributions, etc. These revenue incomes can be classified into own sources & external sources and tax & non-tax based income sources.

Revenue income records has been increased from

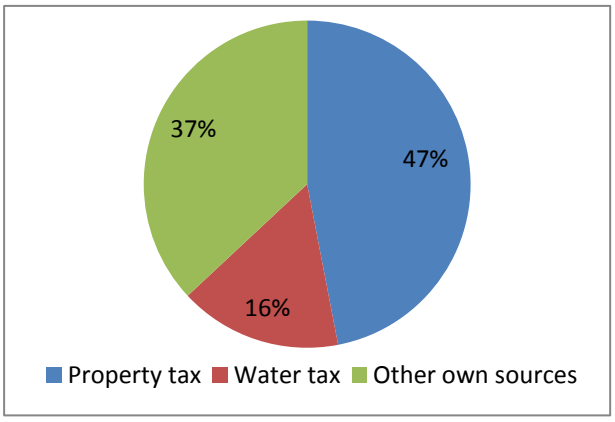


Figure 9: Composition of own sources of revenue income of Bhusawal

[1] This section is based on detailed analysis of municipal finances as reported in CRISIL 2012

14.86 Crores to 21.76 Crores from the year 2005-06 to 2009-10. Own sources contribute 44% of the total revenue income of the Bhusawal Municipal Council. Own sources include property tax (comprising general tax, water, sewerage, and sanitation taxes), other taxes, and non-tax income in the form of development charges, income from municipal properties, fees & fines, and other miscellaneous tax and non-tax items. Property Tax accounts for 21% of the total revenue income of the BMC. This income has registered a CAGR of 11% over the period under consideration, considering the actual figures. The average collection performance stands at about 76% in 2010-11. This is a slight decrease in the collection efficiency from 82% in 2006-07.

Non-tax revenue accounts for 10% of the total revenue income of BMC. This source registered a CAGR of 16% during the period under consideration. Grants and contributions from the external agencies form about 56% of the total revenue income for the municipal council.

Of the total revenue income, about 26 per cent of the grants share can be accounted for capital purposes. Of the remaining, about 90 per cent share is of grants for octroi compensation and dearness allowance. From 2010-11, these two grants shall be combined and disbursed under the name 'Municipality Assistance Grant'. The disbursement under these grants has been very consistent under the study period as compared to other grant disbursement.

The total revenue expenditure of BMC has grown from Rs. 14.95 Crores to 21.21 Crores. The basic services in the form of water supply, sewerage and sanitation form about 26% of the total revenue expenditure in the Bhusawal Municipal Council. The Public works department has a major share of 15% of the total revenue expenditure.

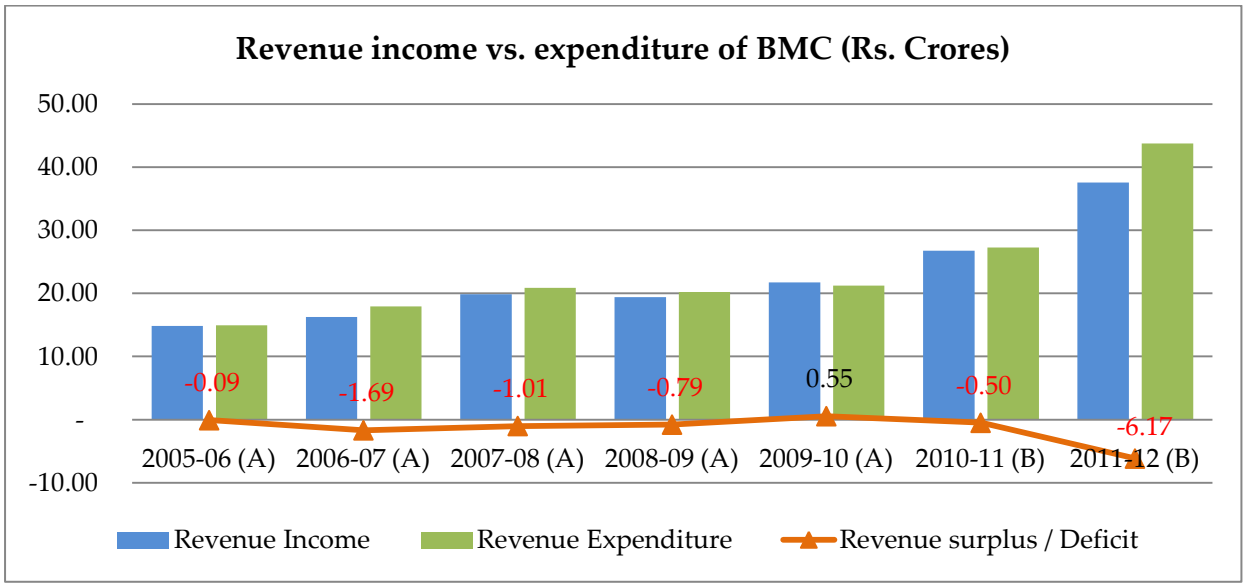


Figure 10: Revenue income vs. expenditure of BMC (Rs. Crores)

Source: Budget books of BMC, 2005-06 to 2011-12

Bhusawal Municipal Council has revenue deficite for all years except for the year of 2009-10. The review of annual accounts reveals that debt servicing expenses account for an average of 1.4% of the total revenue expenditure during last five financial years. The pattern of repayment has not been consistent as accounts of financial years 2009-10 and 2007-08 do not indicate any loan repayment. Rs. 329 Lakh rupees

were outstanding to be repaid to various lenders as on March 2011. The major loans taken were against UIDSSMT scheme, construction of roads and other development works. Most of these loans were taken from state government at an interest range of 7.5% to 13.0%.

Capital Account

The capital income has increased at a much slower growth rate in last five years in Bhusawal. It has moved from 2.74 Crores at 2005-06 to 4.59 Crores for 2009-10; while for 2011-12, it is budgeted to be 37.96 Crores.

About 70 per cent of capital income comes from charges, fees, licence or penalty collected by Municipal Council. This actually should be accounted under revenue income. Another 20 per cent of income share is from rent collected from Municipal Council's properties and markets. Thus a very small portion of capital income as shown in budget books is from loans or grants.

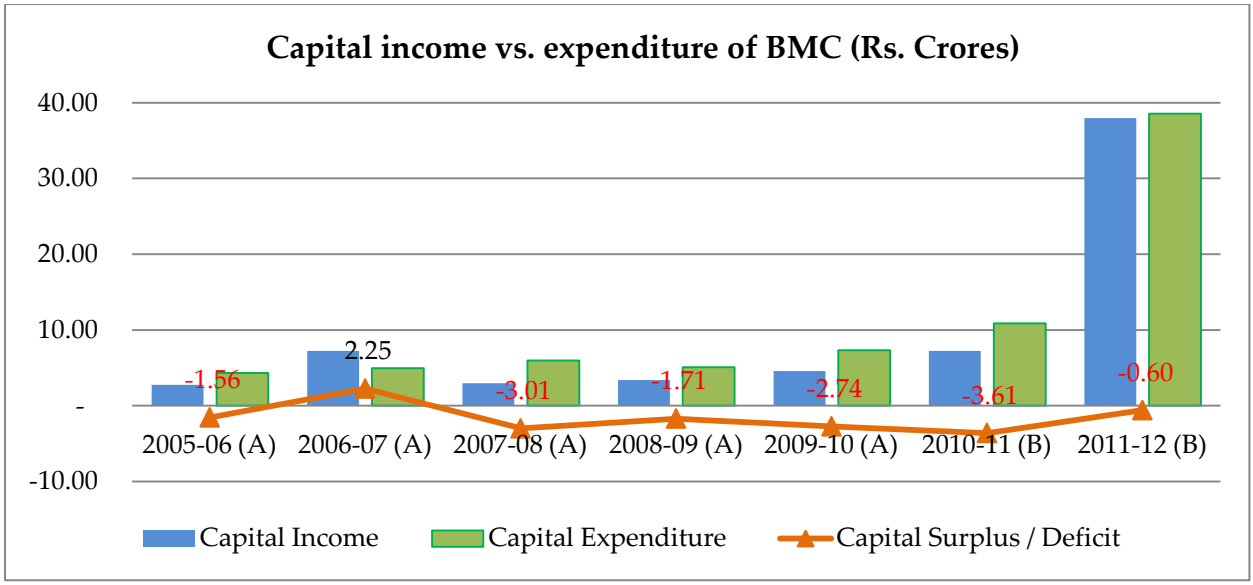


Figure 11: Capital income vs. expenditure of BMC (Rs. Crores)

Source: Budget books of BMC, 2005-06 to 2011-12

Capital expenditure of BMC has increased from 4.30 Crores to 7.33 Crores Projects were implemented for expansion of new water supply distribution network and new drains in the city between 2007-08 to 2009-10. Hence UWSS sector share ranges from 45-66% of total capex spent. Other than these three years, funds has been forwarded for regular PWD & development works. This increase has been budgeted under the funds from Nagarutthan Yojana scheme. Bhusawal Municipal Council has capital deficite for all years except for 2006-07.

2.5. PRIVATE SECTOR PARTICIPATION IN BHUSAWAL

Water supply:

BMC has a pipeline leakage contract. ULB officials have prepared a detailed schedule for type of leakages and it's repairing methods with respective costs. Contractor is paid based on this schedule for each leak he repaired.

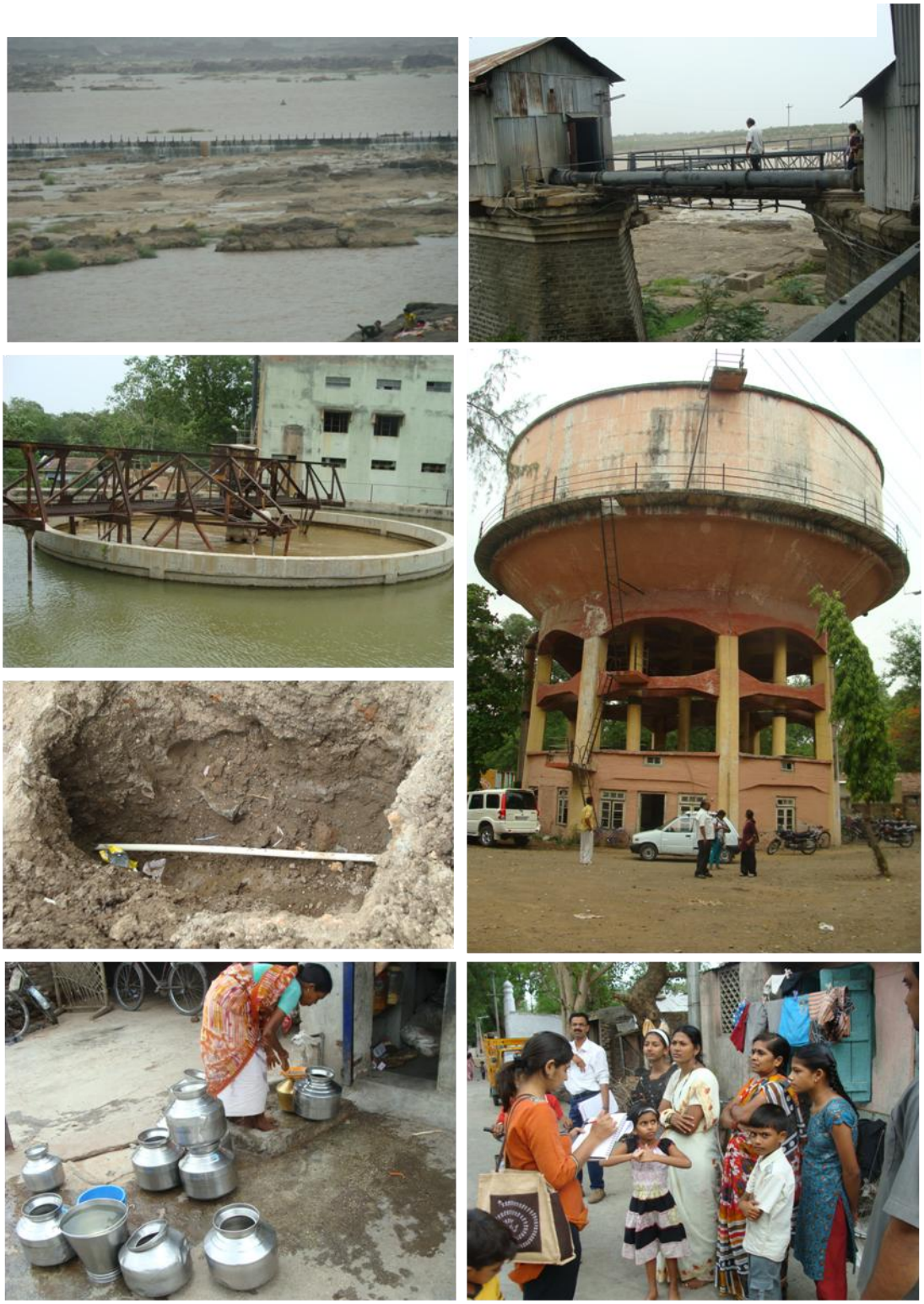
Sanitation:

Around 65 sanitation workers were hired on labor contract for drain cleaning and solid waste collection for an annual payment of 30-35 Lakhs/ annum.

Table 7: Private sector participation in Bhusawal

Sector	Scope of Contract	Type	Value of contract
Water Supply	Maintenance of pipe leakages	O & M	-
Sanitation	labor contract for drain cleaning and solid waste collection	O & M	Rs. 30-35 Lakhs/annum

Figure 12: Water Supply in Bhusawal



3. ASSESSMENT AND PROPOSALS FOR WATER SUPPLY

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

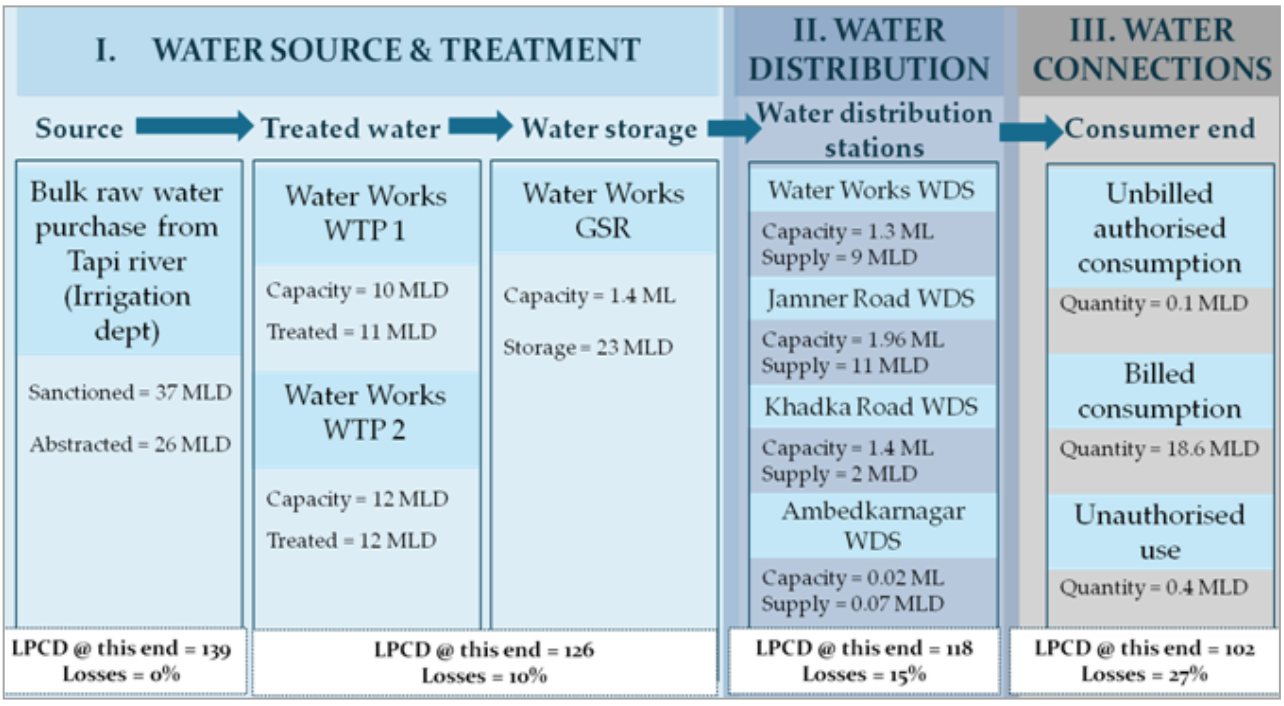
3.1. ASSESSMENT OF CURRENT WATER SUPPLY SYSTEMS

Water supply source:

Water supply demand for Bhusawal city is met through Tapi River. Irrigation department has sanctioned 37 MLD of water for Bhusawal at the rate of Rs.0.66/kl and an additional charge of 20 per cent of local fund for the supply of water. The intake well is located just adjoining the municipal boundary on northern edge. The intake well is as old as 50-60 years and hence is now depreciated considerably. The overall water supply system of Bhusawal is thus able to produce and treat only 26 MLD as of now instead of abstracting to fullest limit of 37 MLD. As per ULB officials, further augmentation in the same scheme should thus be avoided. Also, presently Thermal power plant and Ordinance factory are located in the upstream of Tapi River. The Council has planned various proposals related to water supply. This include a proposal worth Rs. 98crore under UIDSSMT, however it has not been sanctioned yet.

The abstracted water quantity is accurately measured and monitored with functional bulk flow meter at the intake well. This meter was bought through own resources of Bhusawal Municipal Council in 2008 with initiatives from Chief Engineer. The flow meter is the basis for billing of bulk water to the Irrigation department.

Figure 13 Water Supply flow Chart of Bhusawal



Water supply treatment:

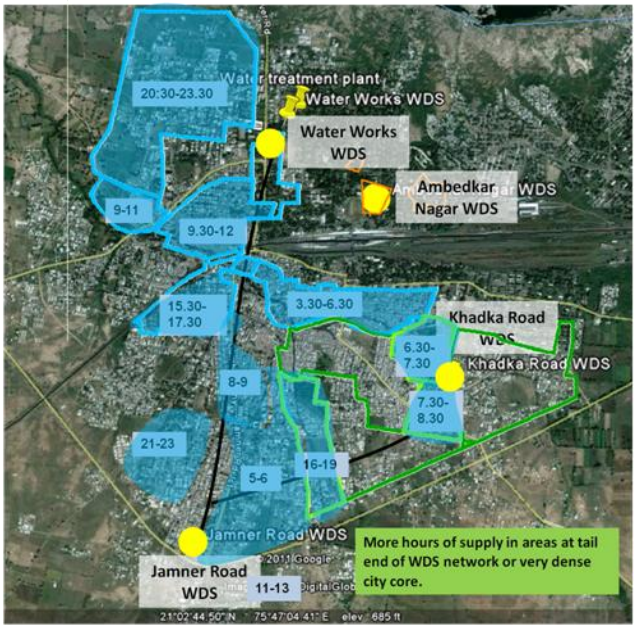
Bhusawal city has two water treatment plants (WTPs) located together at Water Works plant, at a distance of about 2 kms from the source. The water quantity in these WTPs is measured through venturi flow meters. The pumping of water is done throughout 24 hours. Besides, quality tests are also done at

WTP. There is an underground storage sump of 1.4 ML with an elevated storage capacity of 1.3 ML at the treatment plant.

Water supply distribution:

Water is distributed to the city with four water distribution stations and a network of 122 kms. Almost entire habited area of the city has access to piped water supply network with internal infrastructure in few slums only. This distribution system is divided into four spatial zones providing water supply to the city at different period of time. It provides water on alternate days for an hour. Few areas get water for more period as they are near to the elevated storage reservoir (ESR). The distribution system works for 24 hours, supply starting from 3.30am in morning till 11pm to pre-determined timings for different areas of the city.

Figure 14 Water Supply distribution station and timings



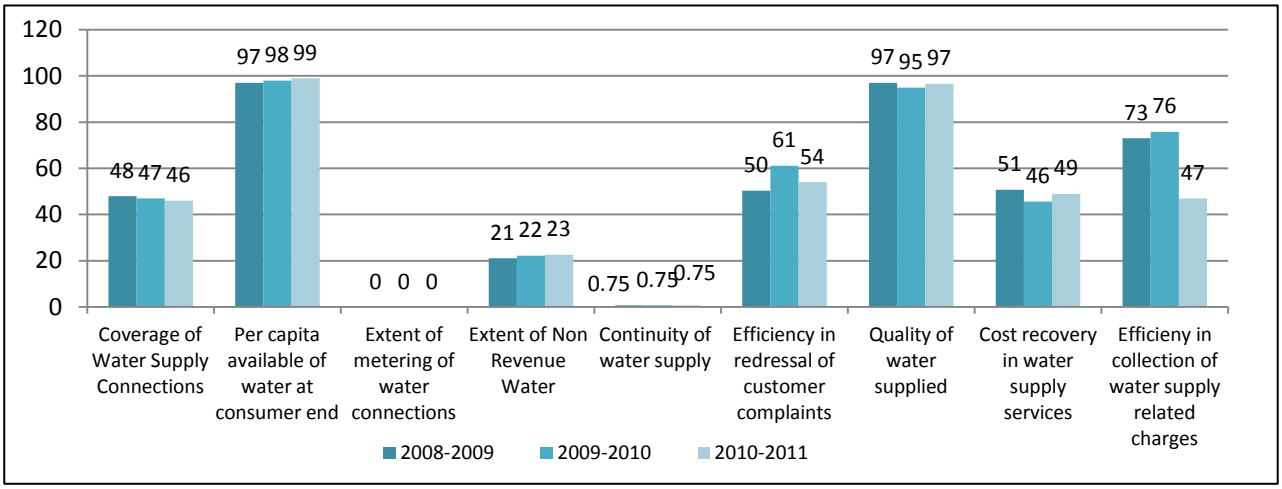
A major problem noticed was the erratic designed network which has been provided haphazardly to all the areas. Since the slope is towards the water source in the city, it results in an anti-gravity flow of water. This results in tail end pressure and supply problems. The provision of network is very old and often requires repairs and maintenance. This results in loss of water to an extent of 15%.

3.2. ASSESSMENT OF SERVICE DILEVERY

Key performance indicators across the value chain of water supply service delivery are evaluated to assess the service levels in Bhusawal. The coverage of water supply connections in Bhusawal is very low and it has even gone down marginally over the years. From 48 per cent coverage in 2008-09, the coverage has gone down to 46 per cent. The coverage of water supply in slums is almost negligible and it has increased slightly over the years and stands at 3 per cent.

Additionally, there is no metering at the consumer end resulting in poor estimation of water being supplied at consumer end. The cost recovery in the city is low at 49 per cent. But the reliability of 'D' for this indicator clearly points to a dependence of cash based accounting and no segretation of budget head for water supply services. The efficiency in collection of water supply related charges has gone down significantly to 47 per cent in 2010-11 after touching a level of 76 per cent in 2009-10. However, the following of cash based accounting amongst other things results in a reliability of 'D'.

Figure 15 Water Supply Key Performance Indicators



Access and Coverage

Coverage of Water supply connections -

There are totally 17,722 water supply connections in the city, serving 17,978 households as per 2010-11 records, accounting to only 46% coverage. Interestingly, 95% of inhabited area is covered with distribution network. Though not many slums have internal network and thus as less as 3% coverage, but overall slum population share is only 11%.

Table 8 Schedule of water supply connections

Residential connections	Total nos.	Connected	Coverage
Residential HHs	38,699	17,296	46%
Slum HHs	4,013	112	2.8%
Total	42,712	17,408	
Other conns.	Nos.		
Industrial	173		
Public tap/ PSPs	54		
Others	87		
Distribution network	Inhabited area	Piped supply area	Coverage
Area (sq. kms)	9.26	8.78	95%

Connection process is hurdle free & takes only 5-7 days for clearing application in general circumstances. For half inch connection, costs are minimal to Rs.1712. As per study, tariff is one of the lowest in Bhusawal – Rs. 806 per annum. BMC does give slum connections to all HHs paying property tax. As observed from field visit, dependence on borewells was practiced, but probably ground water level is not that high for it being a cheaper option.

Though, BMC claims to have updated record of connections, it is likely that a household survey would throw light on proper results. There is likely possibility of high illegal connections as observed from field visit. During the visit many illegal connections were identified and pumping. A special drive was conducted in 2005, but only 310 connections were regularized. Another reason could be that it appears that no updating of data records has been undertaken, although it is claimed by ULB staff to have done so.

Proposal for improvement: It is necessary to accurately assess the coverage of household level connections in the city. Illigal connections are one of the major reasons for low coverage, which needs to be identified and regularized. Encouraging group connections, converting public stand post to group connections has to be achieved for increasing individual water supply connection in city. Records need to be updated regularly.

Service levels and Quality

Per capita supply of water: Bhusawal Municipal Council provides water supply to residential as well as commercial and industrial properties. It is estimated that about 99 lpcd is supplied to citizens with a total non-revenue water loss of 27%. As per CPHEEO norms of 70 lpcd, Bhusawal performs very well. Hence, if funds are made available to BMC, it should be directed towards reforms rather than new water supply augmentation scheme as of now. However the reliability grade for this value is 'D' implying that the council still does not have in place the bulk flow meters at the outlet of treatment plant and at all production points.

Proposal for improvement: Checking the water loss is way to improve the availability of water. This can be done by identifying the illegal connections. Checking drive for illegal connections can be proposed. After identifying number of illegal connections, proposal can be given to regularize them.

Continuity and Quality of water supply: Continuity of water remains stagnant at 1 hour every day over the years. The quality of water supplied is 97 per cent, however with a reliability grade of 'D', the Council has to work toward creating a proper sampling regimen.

Proposals for improvement: In order to ensure that water supply in all the zones of the city is regulated (fixed timings of supply and at adequate pressure), it is necessary to monitor water supply duration to all these zones separately through regular surveys coinciding with the water quantity surveys. Appropriate monitoring mechanisms can also be adopted by BMC to detect low pressure zones.

Financial Sustainability

The cost recovery level is only 49% in BMC. The collection efficiency of water related charges have also gone down in last three years to 47% only. The reasons for such low cost recovery could be high illegal connections and absence of metering.

Table 9 Water Supply connection charges

Size of conn	New conn costs		Annual flat tariff	
	Resi	Comm	Resi	Comm
1/2" conn	1712	7260	806	3580
3/4" conn	3210	14,376	1555	7138
1" conn	7424	32,404	3662	16,152

Equity in Service Delivery

There is 4013 HHs in Slums out of which only 112 HHs have water connection. The rest depends on public standposts or purchase water from private residents.

Internal infrastructure needs to be laid for slum settlements. It was observed that selling of water by private residents was popular method of water provision in slums. One of the present initiatives by BMC is removal of public standposts and group connections in slums. The Council encourages slum dwellers to install individual connections wherever network is provided.

Figure 16 Glimpses of Water supply in Bhusawal

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 include the no-cost to low cost to high cost interventions that need to be carried out by BMC. Capacity building of the staff must also be

Figure 17 Proposed water supply scheme in Bhusawal

conducted 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 BMC to ensure basic systems are in place. Detailed interventions which will incur capital investment by BMC are discussed in the next section.

Table 10: Summary of water supply Issues and possible solutions

Categories	Interventions required
Access and Coverage	• Household survey to update records and get HH level information about connection • Need strong political backing, proper campaigning through media intervention and strict monitoring by field staff for success of drives. The drive should be combined with HH survey for better implementation. • Lay distribution lines in all the slum settlements
Service levels and quality	• Initiate metering atleast for non-residential consumers and bulk flows to start with • Conduct genuine water quality tests & monitor it; this is possible if higher officers (Chief Officer, President) review it daily
Financial sustainability	• Needs a strong political backing to revise the tariff structure • Conduct special dedicated drives to recover tax from consumers. Launch campaigns for raising public awareness to pay taxes on time • Major renewal of entire accounting system to convert into accrual system
Efficiency in service operations	• Redesign the erratic network after hydraulic modeling to create DMAs

Table 11: Action Areas and proposal for Water supply PIP

Sr. No.	Action area	Priority of actions	Costing (Rs Crores)
	No Cost actions		
1	Illegal connections regularization	High	0.48
2	Monitoring & review water quantity & quality at consumer end in daily operations	High	-
3	Revise tariff structure	High	-
4	Initiate collection drive of taxes & charges	High	-
5	Provide connections to slums at lower connection costs	Medium	-
	Low Cost actions		
1	Household level survey	High	0.67
2	Metering at bulk flow points	High	0.22
3	Metering of bulk consumers	High	0.065
4	Increase storage capacity of water supplied	Medium	0.19
5	Hydraulic modeling & GIS mapping	Medium	0.19
6	Implementation of hydraulic modeling recommendations	Medium	
7	Establish accrual based accounting system	Medium	
	Substantial Cost actions		
1	Lay internal infrastructure in slums	High	2.00
2	Approve new WS augmentation scheme (proposed)	Low	98.00
3	Metering of consumers	Low	27.96
		Total	**129.775**

3.4. MOVING TOWARDS: 24X7 WATER SUPPLY IN BHUSAWAL

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. Besides offering a continuous supply of water, there are many other advantages of 24x7 water supply. Considering these advantages, it is suggested that BMC should go for 24x7 water supply.

A few of the advantages of 24x7 water supply are as follows:

- 24x7 results in better service provision to the consumer with continuous water supply at desired pressure.
- With continuous supply of water there is no fungal growth in the water supply network and hence there is no contamination of water supply.
- 24x7 water supply results is a reduction in water losses with appropriate metering and leakage detection and plugging.
- There is an improved accountability of the system (Input - supply - consumption).
- This arrangement also results in better sustainability of system with improved finances, optimised water supply and consumption.

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 towards establishing 24X7 water supply systems. These are discussed below.

- Reliable data on distribution networks and customers do not exist;
- There is no metering of bulk water produced, its transmission or distribution at any point;
- There is no metering at customer end.
- Control of leakage on a routine, planned basis is impossible; and
- It is unusual for a service providers to routinely measure system pressure

Some of the technical and commercial constraints mentioned by MoUD guidelines are resolved through the implementation of GoM's reform program of MSNA. These are listed below.

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 modeling:** GIS mapping will provide detailed network maps with results from consumer survey and hydraulic modeling will help to implement equitable distribution zones in the city.
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 modeling 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.
5. **Introduce consumer metering and volumetric tariff:** The reforms mentioned above related to regularisation 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. For this computerized billing and collection system and public awareness should be done.

In Bhusawal, an ongoing project for source augmentation is being undertaken. The source augmentation project is of 40.27 MLD. BMC had prepared a DPR for water supply source augmentation scheme to catch water upstream. A distribution network of 13.46 km is currently being laid. The cost for 24x7 water supply in Bhusawal is estimated to be Rs. 129.775 Crores. Detailed costing for the 24x7 water supply proposal is provided below.

Table 12 Proposal for 24x7 water supply for Bhusawal

Items	Estimated cost for implementation of 24x7	Rs. (in Crores)
Technical studies	Consumer survey	0.67
	Water audit and leak detection, Energy audit	0.48
	GIS mapping and Hydraulic modeling	0.19
	DMA demarcation and installation of bulk flow meters	0.28
24x7 WS	Implementation in whole city	128.15
Total	**Cost (24 x7 Water Supply)**	**129.775**

Commercial improvements:
Given that the technical improvements need to be financially sustainable, the conversion to 24X7 water systems requires advanced commercial systems and procedures. BMC needs computerized billing and collection system with updated consumer records. The billing is currently based on flat tariff. Computerization of some records is being done. 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. 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.

4. ASSESSMENT AND PROPOSALS FOR SANITATION

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

4.1. COVERAGE OF TOILETS

The sanitation situation in Bhusawal points to a decent level to toilet access to the citizens either in form of individual or community toilet.

As per the recent figures from census 2011, 75.06% of the households have access to safe sanitation implying latrine facilities within premises and connected to pipe sewer, septic tank and ventilated improved pit latrine. 17.95% of the households have access to shared sanitation. However, 6.26% of households do not have access to any sanitation (improved/shared/unimproved) and thus resort to open defecation. The coverage of individual toilets in slums is very low at 2 per cent in year 2010-11.

As discussed previously, slum settlements in Bhusawal have major issues in terms of providing access to toilet facilities. Slums are catered by community toilet provision in the city. There are about 229 community toilets seats in the slums out of which 179 seats are functional, which contribute to the overall coverage level of 86%.

Figure 18 Toilet coverage in Bhusawal

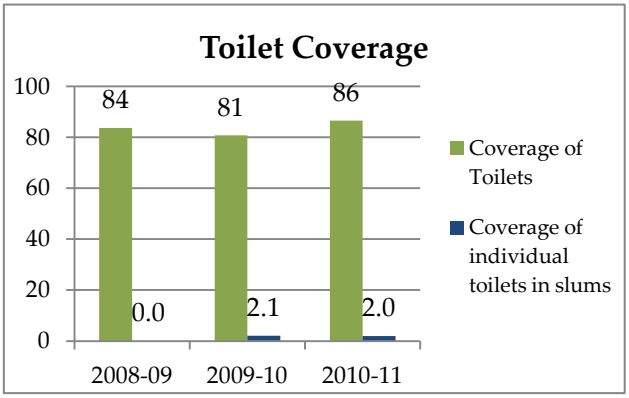
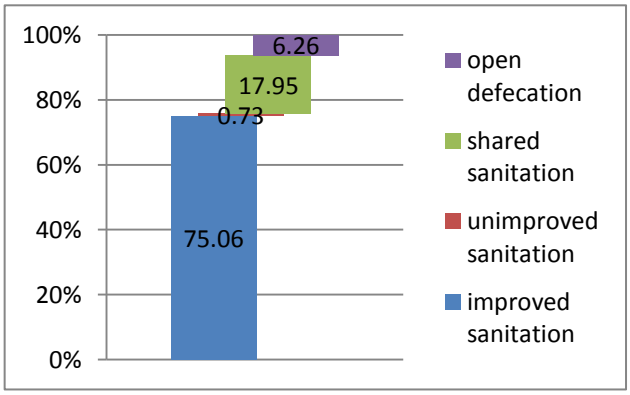


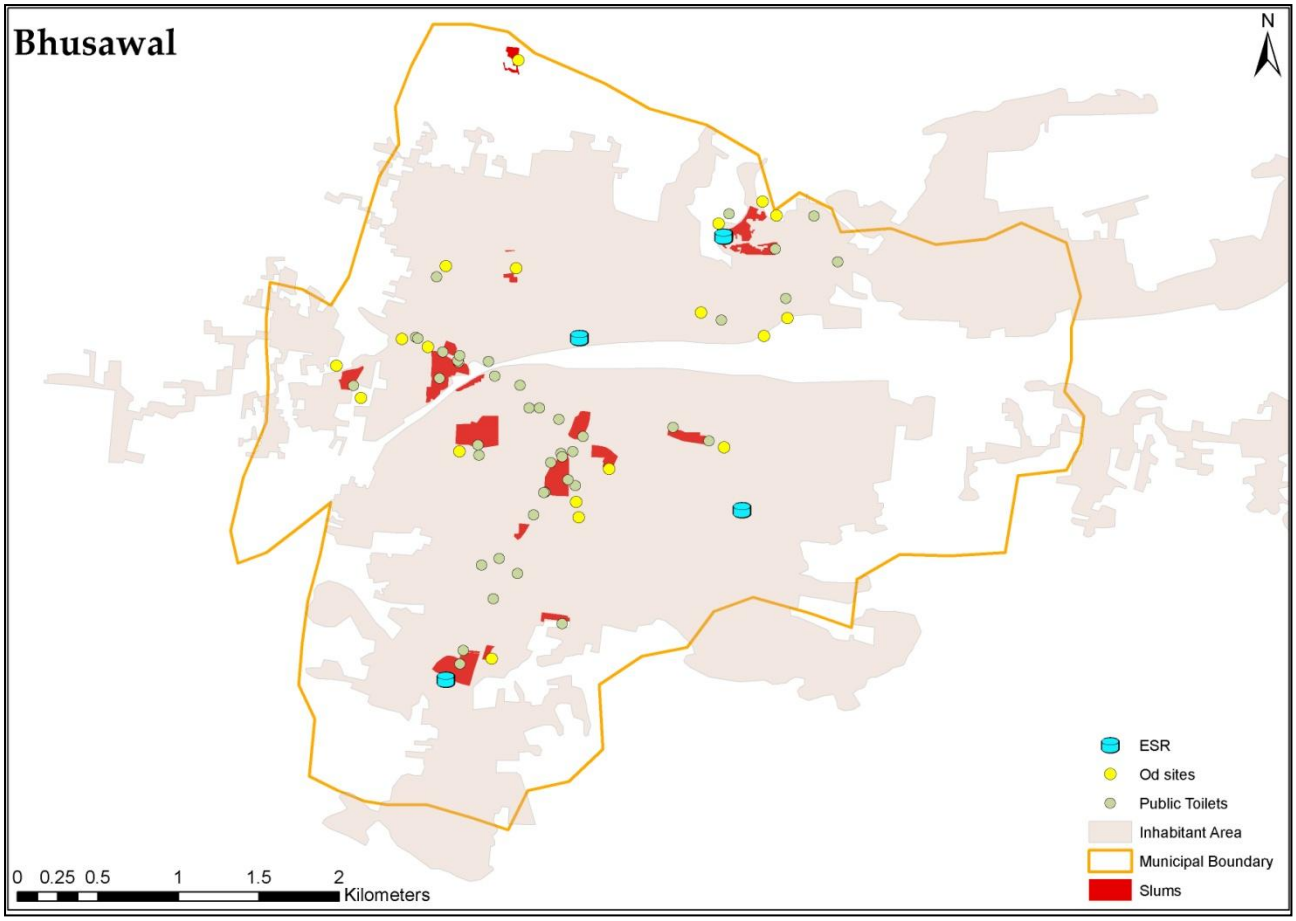
Figure 19 Access to sanitation in Bhusawal: Improved and unimproved sanitation *Source: Census 2011*



The community toilet blocks are constructed largely in the notified slums only, thus creating major open defecation problem in non-notified slums. Also, out of the total seats, only 88% are functional. There are severe issues of water availability, maintaining hygiene condition, lighting and repairing in most of the toilet blocks. As estimated from secondary data, about 35% of city population has to resort to open defecation.

The map showed below spots the location of public toilets with respect to the location of slum. It shows that toilets are well distributed, but the non- functioning seats due to lack of water supply forces people to resort to open defecation.

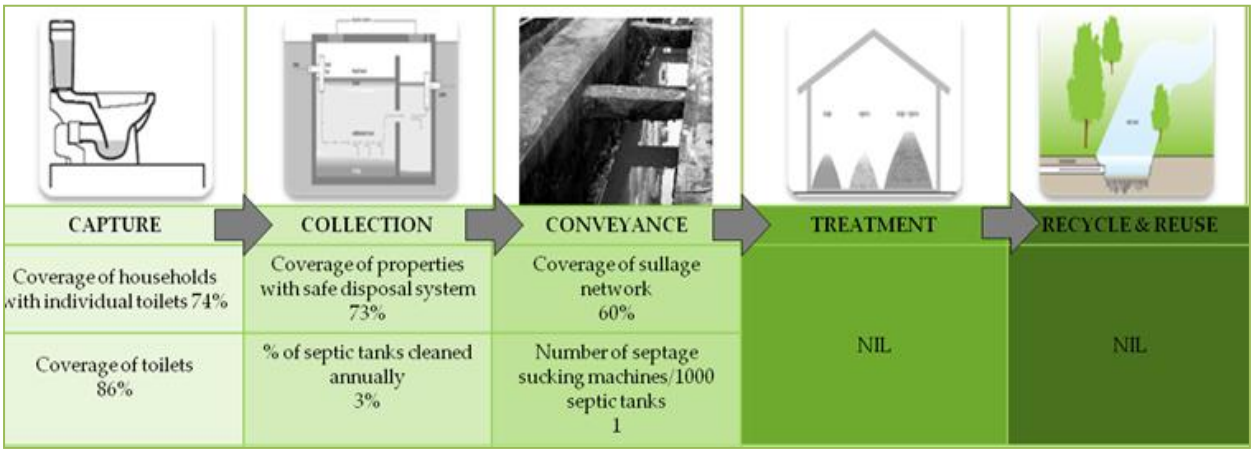
Figure 20: location of public toilets, slum pockets and OD sites



4.2. SEPTAGE AND SULLAGE MANAGEMENT

There is an absence of sewerage network in the city. Majority of the households are dependent on septic tanks for safe disposal. The cost recovery in waste water management has fallen down to 44 per cent in 2010-11 from 74 per cent in the previous year. But the reliability indictor of 'D' for both cost recovery and collection efficiency points to an absence of segregation of budget heads related to wastewater and following of a cash based cash-based accounting system. The efficiency in collection of sewerage charges is also low at 27 per cent for 2010-11.

Figure 21: Waste Water cycle in Bhusawal city



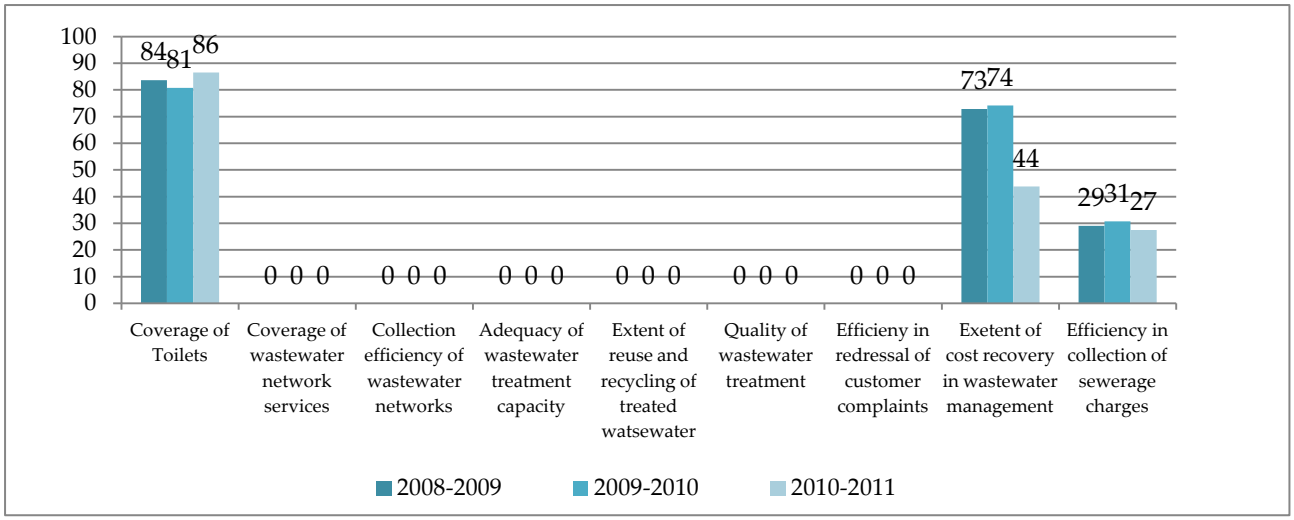
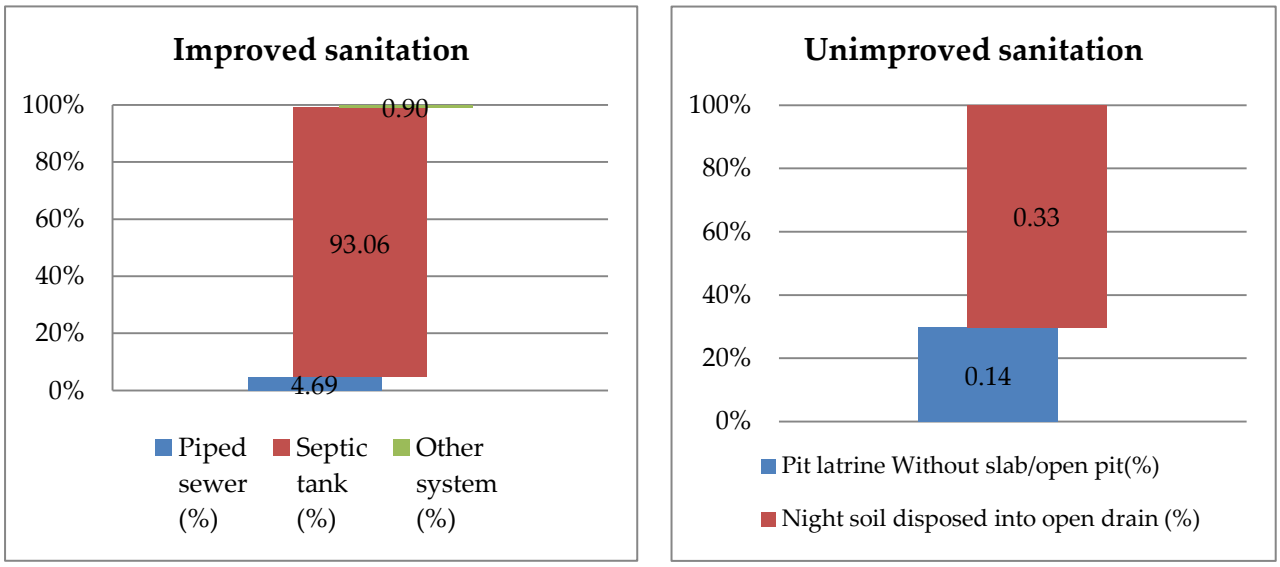


Figure 22: Waste water key performance indicators

Collection of black and grey water

The city has prevalence of septic tanks in most of its parts. They are generally two pit brick/ concrete lined pits of dimension, which is roughly about a dimension of 5'x5'x7'. The general practice in city is to discharge the effluent waste from septic into open drains as soak pits are not constructed. They need to be emptied only once in 10-15 years. To empty the tanks, citizens have to submit an application to the ULB. Bhusawal Municipal Council owns two suction emptier trucks of 3000 liters capacity each. No private operators are active in Bhusawal for this purpose. The charges for emptying the septic tanks are Rs.1800 in municipal limit and outside the municipal limits, the charges are Rs. 3600. These suction trucks are emptied at the open dump site of the city.

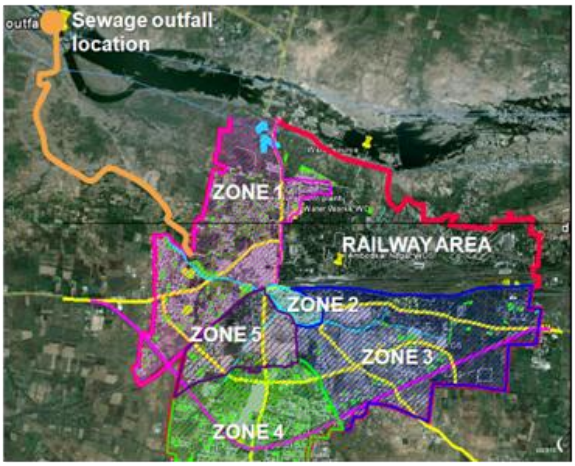
Figure 23: Breakup of improved and un-improved sanitation in BMC. *Source: (CENSUS, 2011)*



Conveyance of waste water

The city has a good network of natural drains in the direction of natural slope towards river in north. There is an open drain network in the entire city. The drain channel is properly lined with concrete all along. The entire drainage is channeled in one drain and released in river near MIDC in downstream. In most cases, solid waste is dumped into open drains, resulting in choking and degradation in drains.

Figure 24 Drainage zone and Network



Before every monsoon, a contract is given to clean the main part of the drain to increase carrying capacity of drains for rains.

Treatment and recycle/ reuse of waste water

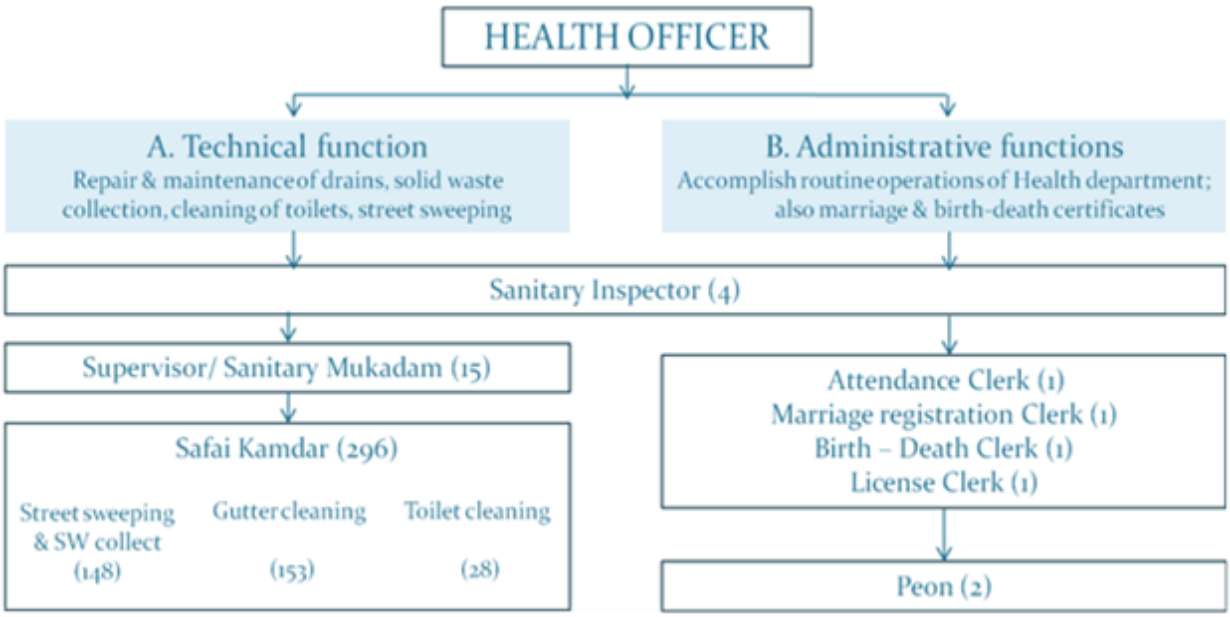
The sullage is not treated in any form before discharging into the river. Solid waste flowing thin drains also gets accumulated around. The outfall location is about 4 KMs from the city limits.

Administration setup for sanitation service delivery

As discussed in water supply, there is also a health committee formed from among the Councilors. The executive wing is headed by Health Officer. This department is responsible for conducting various operations like cleaning of toilets and drains, street sweeping, solid waste collection & transportation, birth & death records, crematorium, epidemic control etc. About 30-40% of total municipal staff is dedicated under this department since ranges of functions have to be conducted. The construction of drains and toilets is under the purview of Public Works Department.

The operations related to sanitation can be divided into basic two categories under health department of technical & administrative operations. There are four sanitary inspector responsible for each of the four drainage zones in Bhusawal. A team of 15 mukadams (supervisors) work under their supervision to manage the daily cleaning operations of area dedicated to them. There is a team of 296 safai kamdars involved in the tasks of street sweeping, solid waste collection, gutter cleaning and toilet cleaning.

Figure 25: Executive wing of Health department



Additionally, a team of clerks on administrative related in the department. Since no new staff can be recruited, the present employees have to work in double shift for cleaning and solid waste collection between 6:30 to 10 am and 10:30 am to 1:30pm subsequently in newly developed areas of the city. A

private labour contractor has been employed by the Council for collection of waste aggregated from cleaning of drains by BMC safai kamdars. About 30-35 lakhs are paid annually to these contractors. With the city area expanding rapidly, managing with the same number of safai kamdars seems difficult.

It can be noted that Bhusawal city has severe sanitation and hygiene issues in slums and overall city. Hence, this sector must be taken at a high priority for improvement. Solid waste collection and transportation being primarily labor intensive services, Bhusawal Municipality must seriously consider contracting out some of the services; as recruiting new staff is not possible under present regulatory affairs. The contracting of services must undergo fair tendering process and proper contract clauses to avoid influence local political dynamics, which is considered to be a major hurdle.

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 Practice 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, 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.

4.3. MOVING TOWARDS OPEN DEFECATION FREE IN BMC

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 BMC has concentrated on the covering the gap in toilet coverage, and related components (like IEC, awareness campaigns, etc.).

Table 13: Extent of open defecation after refurbishment of community toilets

Particulars	total no. of seats	functional seats	HH served	Population served
Individual toilets	24279	24279	24279	121395
Community Toilets	229	179	1253	6265
Total population with toilet facility				127660
Population without toilet facility				74870
Open defecation %				36.97 %
Refurbishment of existing 50 non functional community toilet seats			350	1750
Total population with toilet facility (after refurbishment of non functional community toilets)			25882	129410
Population without toilet facility (after refurbishment of non functional community toilets)			14624	73120
Open defecation %				36 %

Source: CEPT University 2011

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 community toilets only.

Option 1: 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 14624 individual toilets. Assuming average cost of Rs. 25,000 per individual toilet, the total cost works out to be Rs. 38.39 Crores.

Option 2: Achieving Open Defecation Free status through provision of individual and community toilets: Based on this option, the Council would have to construct about 5850 individual toilets and 1253 community toilet seats. These numbers are derived from considering 40: 60 % ratio for individual and community toilets. Assuming similar costs for individual toilet as in Option 1 and average cost of Rs. 55,000 per community toilet, total cost works out to be Rs. 22.59 Crores.

Option 3: Achieving Open Defecation Free status through provision of only community toilets: Alternatively, the Council can also look at the option to make the city OD free through provision of community toilets. Under this scenario, the Council will construct about 2089 community blocks. Assuming average cost of Rs. 55,000 per community toilet, the total cost works out to be Rs. 12.06 Crores.

Table 14: Summary of options to make BMC Open Defecation Free

Strategies for ODF	Option 1	Option 2	Option 3
Number of individual toilets	14624	5850	0
Number of seats in community toilets	0	1253	2089
Cost per individual toilet cost (in Rs)	25000	25000	0
Cost per seat in community toilet (inclu. connection to septic tank) (in Rs)	0	55000	55000
IEC Activities at 5% of construction cost (in Rs. Crores)	1.83	1.08	0.57
Total cost (in Rs. Crores)	**38.39**	**22.59**	**12.06**

Considering BMC's current financial position, achieving 100% toilet coverage needs to be dependent on external funds. Issues of space constraints for constructing individual toilets have also been observed in some of the settlements. Apart from that, it is the costliest of all options. On the other hand, in option 3, operation and maintenance of the community blocks will remain an issue as similar issues can be seen in the existing community toilets. During the site visits, it was observed that toilet blocks were not functioning due to lack of water supply.BMC needs to also look at refurbishment of such toilet blocks before constructing new blocks. **Option 2,** which requires construction of individual toilets where possible and community toilet blocks in the remaining areas is therefore most feasible.

However, the Council must also simultaneously undertake community mobilization and awareness campaigns in order to ensure that the community toilet blocks are maintained/ managed properly. While the maintenance of all the pay-n-use toilets has been contracted out, similar arrangements with CBOs can be looked at with respect to community toilets. Campaigns to bring about awareness related to cleanliness and hygiene practices, safe sanitation practices, and negative health impacts due to open defecation needs to be conducted by the Council. Local CBOs (like the Mahila Bachhat Gad-MBGs and backward community groups) need to be roped into this exercise to ensure participation by all communities. The campaigns should begin by triggering initiation in the slum settlements and undertaking transect walk to the open defecation sites to highlight the above issues.

It is proposed that the BMC will move towards achieving ODF status within the next nine years. The detailed phasing and implementation plan are discussed in the next chapter. Simultaneously, the Council will have to undertake revenue augmentation measures like increased collection efficiency of sanitation taxes, levy charges for maintenance of community toilets, etc. For BMC- maintained toilets, usage is free.

For making Bhusawal Open Defecation Free city, it is imperative to provide regular water supply which will help maintain the community toilets in a better way and make them usable. The current system is expected to be strengthened after the new source augmentation scheme gets operationalized. Other than additional water supply, the second priority is to provide additional individual, shared and community toilet seats, along with the required infrastructure, to meet the existing gap in demand and supply.

Taking into consideration, the existing situation of community toilets and their maintenance, two options were explored for making Bhusawal ODF. First option to be considered on a immediate priority shall be construction of more individual toilets. The second priority can be given to group / shared toilets. Only where individual toilets are not feasible because of space constraint community toilets can be given.

Taking into consideration both cost estimations, estimated cost for Bhusawal for moving towards 24 x 7 and making it ODF by providing individual toilets is around Rs. 153 Crores. Further detail surveys and

technical studies will be required to arrive at exact cost for up-gradation in Bhusawal performance in terms of service delivery. Along with the major actions, various low cost actions such as creating awareness about ODF city, providing passes for customers, providing other infrastructure for improved and clean toilets, etc also will help improve Bhusawal performance.

4.4. 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. The proposal listed below to make BMC open defecation free is based on experiences and constraints faced in current management of toilet options. Extensive awareness campaigns must also be conducted to ensure achievement of being open defecation free.

In order to make BMC OD free, it is proposed that provision of both individual and community toilets are undertaken. In instances where space and affordability is not an issue, individual toilets can be constructed. However, where space is a major constraint, construction of community toilets can be opted for. A summary of the improvements required and costs is given below. In slums, it has more than enough toilets and need not be constructed. Only encouragement for using toilets needs to be done to change the mindset of people who defecate in open.

The Council also has to prepare a Septage Management Plan to ensure safe and proper disposal of septage, and streamline its operations.

Table 15.Summary of improvement actions for sanitation in BMC

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
	Required fleet capacity and inspection facilities and resources to be improved	

Figure 26: Sanitation in Bhusawal

5. SUMMARY OF PERFORMANCE IMPROVEMENT PLAN FOR BHUSAWAL

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 majorly focusing on two key areas of establishing 24X7 water supply system and moving towards open defecation free BMC, as well as improvements in key processes and operations related to these two focal areas. Once the proposal gets sanctioned then phasing can be worked upon.

Few actions required for 24X7 water supply are already either proposed or sanctioned under different schemes. Same applies for ODF project.

Following table gives total cost estimates for 24x7 water supply and ODF. The plan framed for 24X7 water supply consists of the steps Laying of raw water rising main, pumping machinery and Construction of ESRs and water treatment plant. Also other actions such as metering at consumer level and water audit will be implemented.

2 actions for ODF are put forward, which includes bridging of gap by construction of individual toilets and community toilets.

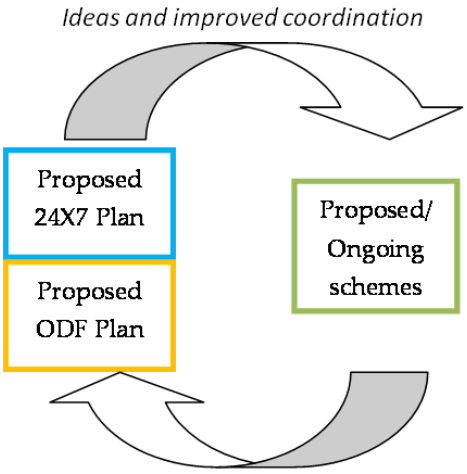


Figure 27: Linking proposed plans with existing schemes

Table 16: PIP estimations for 24X7 WS and ODF

Key actions for improvement	Costs required	Current status
Water supply: towards 24X7 system		
Technical studies	Rs. 1.62 Crores	Awaiting sanction of DPR submitted under UIDSSMT
Implementation of 24*7 in whole city	Rs. 128.15 Crores	Preparation of DPR is required
Sanitation: towards OD free		
Construction of individual and community toilets	Rs. 22.59 Crores	Preparation of DPR is required
Refurbishment and maintenance of community toilets	Rs. 0.08 Crores	Preparation of DPR is required
Preparation of septage management plan	Rs. 0.5 Crores	Preparation of Septage Management Plan and DPR needs to be undertaken
Total cost for Performance Improvement		**Rs. 152.945 Crores**

5.2. PHASING AND STEPS TO IMPROVEMENT

In order to carry out the improvements suggested above, BMC 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 BMC would continue in the future. To arrive at the investible surplus in the this scenario, calculations are based on 1) revenue surplus (Difference of total revenue expenditure and WSS related revenue expenditure), 2) net surplus after capital and revenue receipt and expenditure (revenue surplus + capital receipts other than WSS – capital expenditure other than WSS and debt servicing), and 3) investible surplus (surplus + revenue related to WSS – revenue expenditure related to WSS).

From Annexure 2, it can be seen that, for each period under consideration from 2005-06 to 2012-13, there is no Investible surplus available for investment in performance improvement, except for the years 2006-07. In fact, there is a deficit. For each year under consideration, the revenue surplus/ (deficit) even after adding to the capital income is not sufficient to fund the capital expenditure. Also, it may be noted that, the operations and maintenance cost indicated in the financial statements of Bhusawal Municipal Council have not been segregated into costs related to existing facilities and O&M costs related to facilities, capital expenditure for which has been considered. Due to this the revenue expenditure has not been segregated between these two categories of facilities.

Table 17: Projected investment capacity –Business-as-usual scenario (in Rs. Crores)

Year	Revenue surplus (other than WS, WW and SWM)	Revenue surplus for WS, WW and SWM	Regular capital surplus	Debt servicing	Investible surplus/ (need for external funds)
Budgeted					
2010-11	4.39	(4.89)	(3.61)		(4.11)
2011-12	(0.04)	(6.12)	(0.60)		(6.77)
Estimated					
2012-13	-	(6.24)	(6.98)	1.00	(14.23)
2013-14	0.03	(6.36)	(3.00)	0.94	(10.27)
2014-15	0.07	(6.47)	(2.68)	0.88	(9.96)
2015-16	0.10	(6.57)	(2.26)	0.82	(9.56)
2016-17	0.12	(6.66)	(1.75)	0.76	(9.06)
2017-18	0.14	(6.74)	(1.13)	0.71	(8.44)
2018-19	0.14	(6.81)	(0.38)	0.65	(7.69)
2019-20	0.14	(5.62)	0.53	0.59	(5.53)
2020-21	0.13	(5.59)	1.61	0.53	(4.38)
2021-22	0.10	(5.54)	2.89		(2.56)

From Table 17, it can be seen that the investment capacity of BMC in business-as-usual scenario projected till 2021-22. From the assessment it was observed that currently BMC does not have an investible surplus till 2021-22 to consider improvements in the performance of service delivery.

Hence it is extremely critical that BMC undertakes revenue enhancement measures; else it would need to resort to external resources to fund its internal operations as well. Some of the steps to increase revenue are as follows:

- Improvement in the collection efficiency of special sanitation tax
- Increase in environmental tax for increasing the recovery in SWM services
- Introduction of water benefit tax

The above actions do not require capital investments for implementation and need only process changes. To simulate the effect of the above changes in the investment capacity, assumptions have been made considering full cost recovery of service provision within five years. The details of assumptions are given in Annexure 3. Along with the revenue enhancement measures, BMC needs to enforce serious expenditure controls to contribute towards improving the investible surplus.

With the business-as-usual scenario as provided in Table 17, the ULB doesn't have enough surplus; hence Performance improvement actions can be undertaken immediately only through assistance in the form of grants. But after implementation of the above mentioned improvements, significant improvement in investible surplus is observed. Eventually, BMC would be in a position to invest in required improvements by 2017-18 which is discussed in Annexure 4 This would enable BMC to fund their performance improvement actions from their surplus itself.

The PIP improvements for BMC have been proposed in 3 phases. First phase will have immediate interventions (from 2013-14). Second and third phases will have short term (from 2015-2017) and long term (from 2018-2021) interventions respectively.

Phase I: Immediate interventions (from 2013- 2014)

It is proposed that BMC 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, etc.

Table 18: Phasing of PIP for BMC

	Immediate Interventions		Short term interventions			Long term interventions			
Proposed improvement areas	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
WS augmentation scheme									
Increase storage capacity of water supplied									
Water and energy audit project									
Revision of connection policy for urban poor and slum dwellers									
Installation of bulk flow meters and meters at consumer end.									

	Immediate Interventions		Short term interventions			Long term interventions			
Proposed improvement areas	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Checking drive for illegal connections									
Leak detection programme									
Augmentation of technical staff									
Consumer end survey to determine the number of potential consumers									
GIS mapping for network mapping and demarcation of District Metering Area									
Hydraulic modeling for implementing equitable distribution zones in the city for new system									
Water pressure management and motoring									
Monitoring & review water quantity & quality at consumer end in daily operations									
Periodic surveys at source and treatment									
Revise tariff structure									
Initiate collection drive of taxes & charges									
Regular surveys through zone sanitary inspectors									
Towards OD Free through provision of individual and community toilets (including IEC costs)									
Refurbishment of existing community toilets									
Preparation of Septage Management Plan									
Levy drainage tax									
Revenue generation through sludge manure									

	Immediate Interventions		Short term interventions			Long term interventions			
Proposed improvement areas	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Cover all the open drains									
Construct primary treatment facilities before disposal									

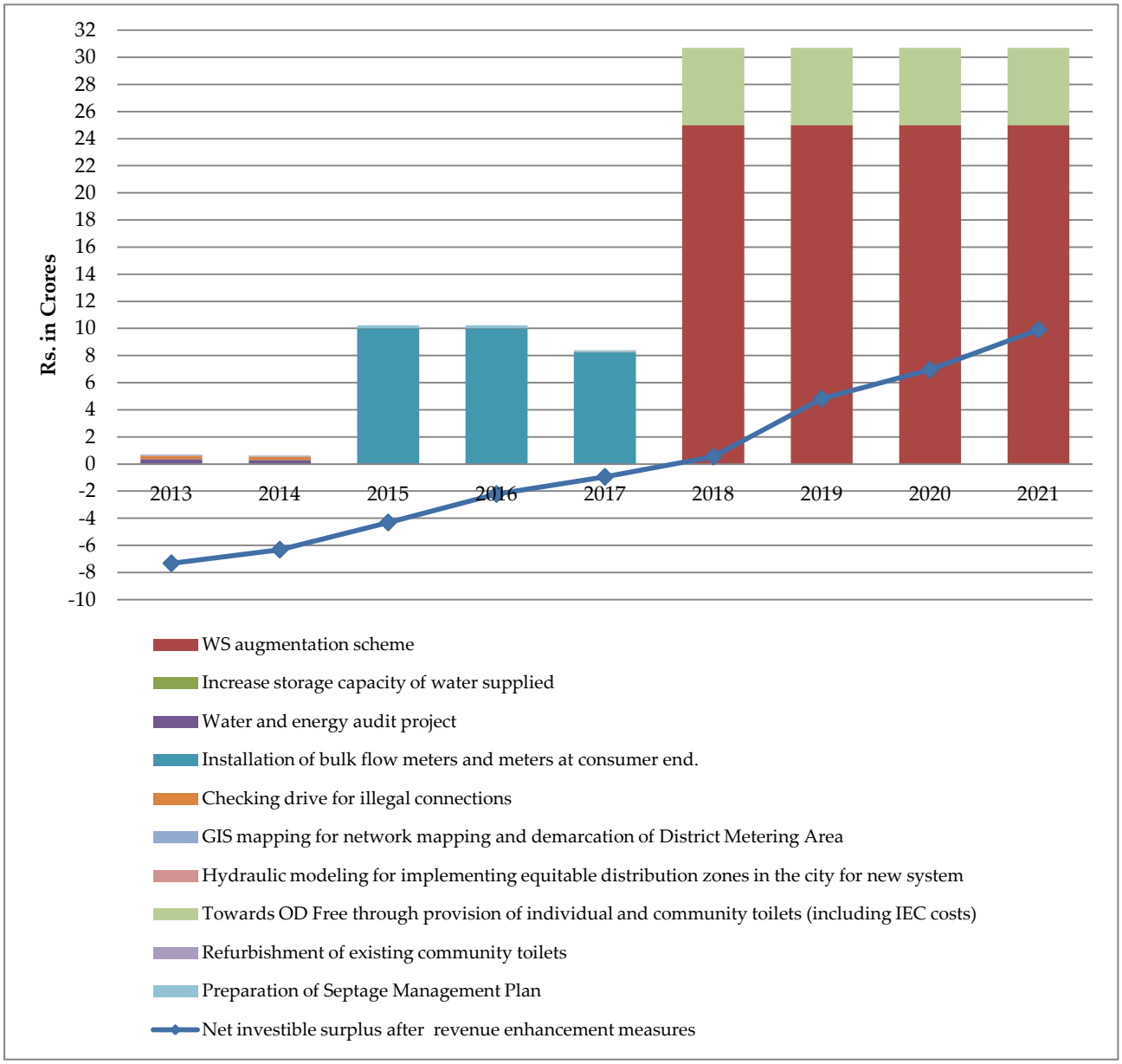


Figure 28: Proposed phasing of water and sanitation projects (without scheme), after undertaking revenue enhancement measures

Water supply:

Water and energy audit project as well as consumer end survey to determine potential consumers will be completed by 2014. Checking drive for illegal connections, Leak detection programme,

Augmentation of technical staff can be completed by 2014. GIS mapping for network mapping and demarcation of District Metering Area is proposed for 2013. Periodic surveys at source and treatment will be carried out in immediate phase. Revision of tariff structure can be done in 2013. Also collection drive of taxes & charges can be initiated by 2013.

Sanitation:

Surveys through zone sanitary inspectors will be carried out in 2013. Refurbishment of existing community toilets can be done by 2014. Levy of drainage tax can be started in 1st year.All the open drains can be covered by 2014.

Phase II: Short Term Interventions (from 2015 -2017)

Water supply:

BMC can start with installation of bulk flow meters and meters at consumer end by 2015 before long term interventions. This also implies that Water pressure management and motoring and Hydraulic modelling for implementing equitable distribution zones in the city for new system will be completed by BMC in between 2015-2017. Important policy decisions like revision of connection policy for urban poor and slum dwellers are proposed for 2015-17. Monitoring capita supply of water and continuity of supply can be done at the end of every year.

Sanitation:

Preparation of Septage Management Plan will be ccompleted by 2017.

Phase III: Long term interventions (from 2018 - 2021)

Water supply:

Proposed water supply augmentation scheme which also includes Increase storage capacity of water supplied will be carried out in last phase.

Sanitation

Proposed PIP actions for ODF Bhusawal by constructing individual and community toilets can be started in this 2018.Construct primary treatment facilities before disposal can be started in last phase. Revenue generation for ULB through sale of sludge manure can be done from last phase. Considering the project is proposed to begin in 2013, BMC can target to complete it by 2021.

Table 19: Sources of revenue to fund 24X7 water supply and ODF in BMC (in Rs. Crores)

Implementation of 24X7 water supply and ODF for BMC	2012-13 to 2013-14	2014-15 to 2016-17	2017-18	2018-19	2019-20	2020-21
Total cost	1.32	28.85	30.70	30.70	30.70	30.69
Investible surplus after increasing the revenue	-	-	0.55	4.82	6.96	9.90
External funds required	1.32	28.85	30.15	25.88	23.74	20.78

5.3. INSTITUTIONAL IMPERATIVES TO ACHIEVING PROPOSED IMPROVEMENTS

In order to realise the targets set for improving water supply and sanitation in BMC, the existing institutional framework must be enhanced to enable better operation and management of these services. 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. BMC has to focus its attention on improving policies related to services, financial sustainability, and accountability to the consumers.

Augment staff at BMC and private sector partners: BMC needs to also augment its staff as major percentage of the staff comprises non-technical personnel. Moreover, though water supply operations are outsourced, provisions to increase technical strength of the private sector partners needs to be bought about. Similarly, to efficiently monitor operations of these agencies, technical staff at BMC needs to be increased.

Mobilisation of external support: Additionally, BMC 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. Given that as implementation of proposals related to 24X7 requires high technical skills, BMC needs to also bring external support through Project Management Consultants (PMC). Arrangements should be made with PMCs for continued support throughout implementation of the 24X7 project, both immediate and long term.

A summary of the institutional reforms that BMC needs to undertake are given below.

Table 20: Institutional improvements proposed for BMC

Area of improvement	Suggested improvements
Across all sectors	
Human resource management	BMC needs to augment its technical staff in view of proposed projects like 24X7 water supply system and open defecation free BMC. Also to ensure adequate utilisation of funds for capital projects, BMC 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 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, septage management need to be introduced.
Consumer redressal system	While it is mandatory for efficient BMC to have a consumer redressal system in place. Need to maintain tracks of complaints, also every complaint should be noted. Various modes of registering complaints should be started.
Sector specific	
Water supply	There is a need to increase monitoring of BMC's operations and performance in water supply. These can be done, as suggested, by incorporating appropriate annual targets/ improvements to be achieved by BMC. While in certain aspects reporting procedures are outline (e.g. quality), a comprehensive reporting mechanism needs to be worked based on targets/ improvements achieved.
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, Taxes/ User charges should be levied.

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 BMC. The taskforce should comprise managerial and technical staff from water supply and sanitation department, as well as representatives from BMC. This can also include resource persons with experience in implementing continuous water supply systems as this involves advanced technical skills. 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.

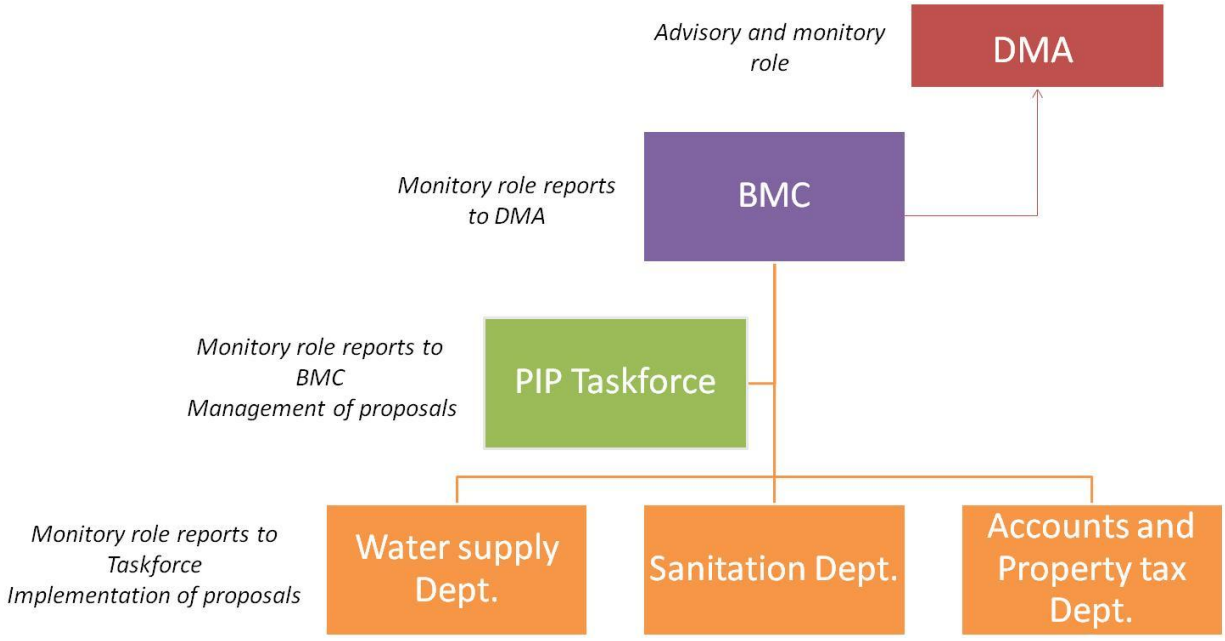


Figure 29: Institutional structure for PIP implementation

Performance monitoring through regular setting of targets and use of performance indicators: In order to ensure that BMC 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

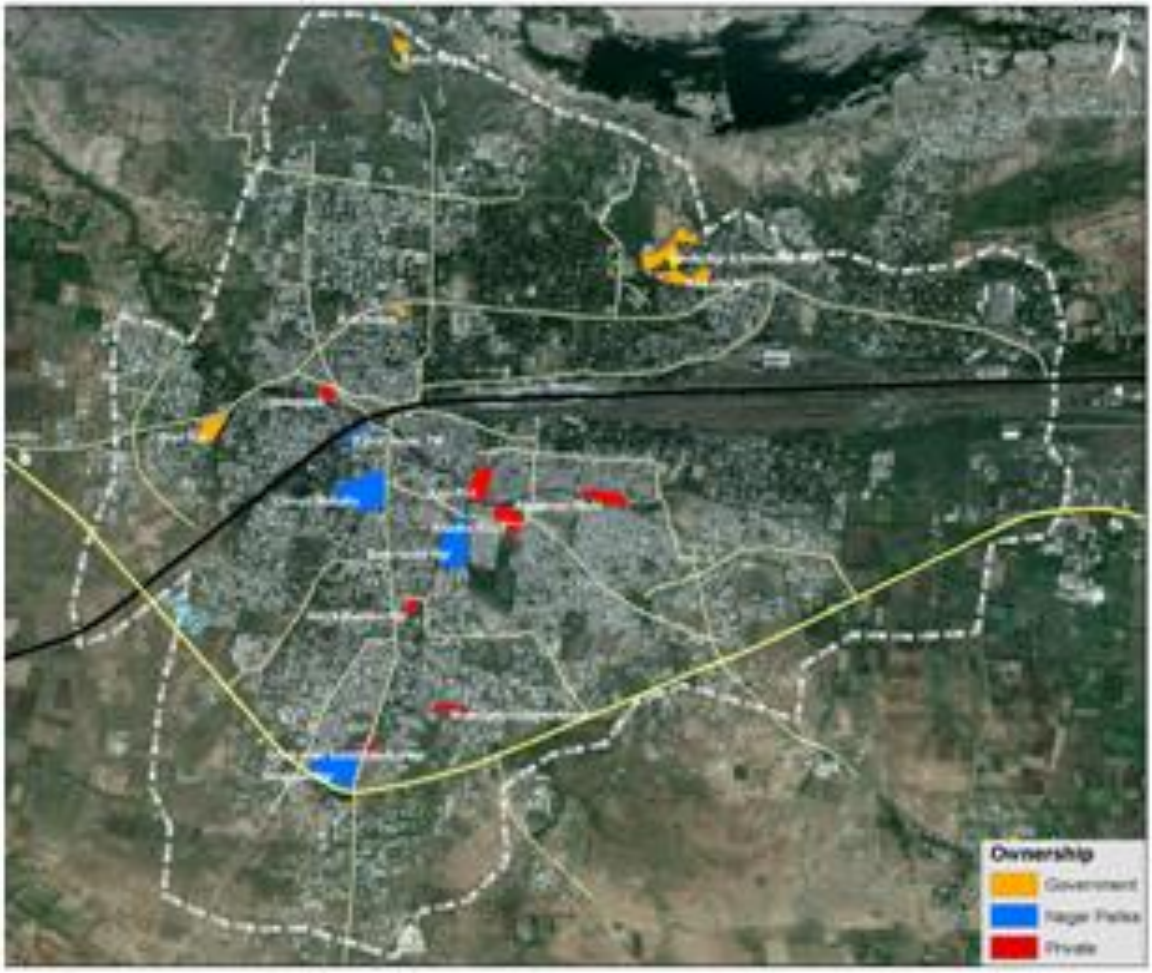
- Timely data capture and analysis of performance indicators
- Assessment and evaluation of progress
- Setting of targets (for own department as well as private service providers) and corrective action if required
- Decisions on policy, resource allocation and incentives/ penalties
- Operational decisions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

As the performance improvement proposals are phased from 2013 till 2021, it is necessary for BMC to ensure that through the above process, the targets set for each year is achieved and if required corrective measures need to be incorporated. This will be possible only if the information related to performance indicators are updated and analysed regularly. Similarly, policies to provide incentives/ penalties to internal and external staff based on their performance needs to be implemented. Given that BMC 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 30: Performance monitoring framework proposed for BMC. Adapted from MoUD website: http://www.urbanindia.nic.in/programme/uwss/slb/slb.htm

ANNEXURES

Annexure 1: Land ownership in slums



Annexure 2: Baseline investment capacity (Rs. In Crores)

Items	Revenue income (except for water supply, waste-water and SWM)	Revenue expenditure (except for water supply, waste-water and SWM)	Revenue income for water supply, waste-water and SWM	Revenue expenditure for water supply, waste-water and SWM	Revenue Surplus	Add: Capital income	Less: Capital Expenditure	Investible surplus/ (deficit)
2005-06 (A)	12.83	9.87	2.03	5.08	(0.09)	2.74	4.30	(1.65)
2006-07 (A)	14.66	13.00	1.60	4.95	(1.69)	7.22	4.97	0.56
2007-08 (A)	17.89	15.24	1.99	5.64	(1.01)	2.95	5.96	(4.02)
2008-09 (A)	17.41	14.13	1.99	6.07	(0.79)	3.37	5.08	(2.50)
2009-10 (A)	18.22	15.10	3.53	6.12	0.54	4.59	7.33	(2.20)
2010-11 (B)	23.44	19.05	3.33	8.22	(0.50)	7.24	10.85	(4.11)
2011-12 (B)	33.67	33.71	3.89	10.01	(6.16)	37.96	38.56	(6.77)

Annexure 3: Assumptions for simulation of revenue enhancement

Sr. No.	Item	Assumption
1	Increase in demand - improvement in coverage of property tax	2% annual
2	Increase in property tax rate	15% every three years
3	Collection efficiency for property tax	90%
4	User charges - Increment to tariff revision and improvement in collection to 90% of user charges	
5	Levy of Sewerage Charges	5% of property tax
6	Levy of Charges - SWM services	3% of property tax

Annexure 4: Investible surplus after revenue improvement measures (Rs. Crores)

	Investible surplus/ (need for external funds)	Increase in demand and improvement in coverage of property taxation	Increment due to tariff revision and improvement in collection to 90% of user charges	Levy of Sewerage Charges (5% of property tax)	Levy of Charges - SWM services (3% of property tax)	Net Available Surplus
2010	(4.11)	-	-	-	-	(4.11)
2011	(6.77)	-	-	-	-	(6.77)
2012	(14.23)	0.46	0.82	0.26	0.16	(12.53)
2013	(10.27)	1.27	1.19	0.30	0.18	(7.32)
2014	(9.96)	1.29	1.85	0.31	0.19	(6.32)
2015	(9.56)	1.32	3.42	0.32	0.19	(4.31)
2016	(9.06)	2.31	3.94	0.37	0.22	(2.21)
2017	(8.44)	2.36	4.53	0.38	0.23	(0.95)
2018	(7.69)	2.41	5.21	0.39	0.23	0.55
2019	(5.53)	3.64	5.99	0.45	0.27	4.82
2020	(4.38)	3.71	6.89	0.46	0.28	6.96
2021	(2.56)	3.78	7.92	0.47	0.28	9.90

The Performance Assessment System (PAS) Project

The PAS Project aims to develop appropriate methods and tools to measure, monitor and improve delivery of water and sanitation in cities and towns in India. 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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pas performance assessment system

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