City Sanitation Plan

Wai Municipal Council

Summary Report

January 2015

pas performance assessment system

CEPT UNIVERSITY

वाई नगरपरिषद, वाई

कार्यालय : (०२१६७) २२००२२, अध्यक्ष. २२००९३

जा. क्र. दिनांक - / / २०

Foreword

Sanitation has received increased attention in recent years in India. It is also high on Government of India's agenda as evident through the launch of Swachh Bharat Mission.ForWai Municipal Council, keeping the city clean has been an avowed goal, towards which both the elected members and the officers of the council work hard.

Wai Municipal Council was introduced to Service Level Benchmarks (SLB) by All India Institute of Local Self Governments (AILSG) and CEPT University through Performance Assessment System (PAS) project. We have since keeping a close eye on our service levels and striving to maintain and improve services.

Wai was fortunate to be among the four cities selected by MJP and WSSD for the City Sanitation Plan exercise. It has provided us with an opportunity to learn from other cities and the teams of experts who have worked with us in preparation of this plan. We . thank members from CEPT, AILSG and Micro Cloud Computing (MCC) for their support. I am particularly thankful to CEPT and AIILSG, for supporting us in implementing our plans to make Wai as open defecation free cities. I am proud to say tha Wai has become a role model for other small towns in Maharashtra becuase of our efforts in designing a demand based scheme for own toilets and integrated faecal sludge management plan. We hope that within the next three years, we are able to achieve this goal.

Mrs. Asha Raut
Chief Officer
Wai Municipal Council

CHIEF OFFICER
Wai Municipal Council, Wai

WAI MUNICIPAL COUNCIL WAI

January 2015

Acknowledgements

The City Sanitation Plan (CSP) for Wai was prepared by the PAS team as a part of its support to the Government of Maharashtra (GoM) on sanitation related activities. The focus of CSP was on identifying appropriate sanitation solutions in small and medium towns. This initiative was taken in partnership with the Water Supply and Sanitation Department (WSSD, GoM) and the Maharashtra JeevanPradhikaran (MJP).

We would like to thank the Principal Secretary, WSSD (GoM) and Member Secretary, MJP, for their support. The training institution of the MJP, the Maharashtra Environmental Engineering Training and Research Academy (MEETRA) in Nashik also hosted a series of consultative workshops where draft plans were discussed among the stakeholders. We would like to thank MEETRA for its support and cooperation in convening the workshops.

We would also like to thank the President and elected representatives of the Wai Municipal Council (WMC) for their active participation and support during the entire process of this CSP preparation. This CSP has not remained on paper; itis being implemented, largely due to the efforts of the Chief Officer of the WMC, Mrs Asha Raut. Support from other WMC officials, particularly Mr Gaikwad, City Engineer, and Mr Gosavi, Sanitary Inspector, was valuable in the preparation of this report.

The initial field work and data collection for this CSP was carried out by Micro Cloud Computing (MCC), Pune. The PAS team at CEPT and the All India Institute of Local Self Government worked further on analysis of information. The team worked closely with WMC officials in identifying various options and developing the final action plan.

Meera Mehta and Dinesh Mehta

January 2015

Contents

Foreword i

Acknowledgements ii

Acronyms and Abbreviations 1

Introduction 2

Background 2

About Wai Municipal Council 3

Sectoral Assessment 4

Water Supply 4

Access to Toilets 4

Management of Wastewater and Septage 7

Stormwater Management 10

Solid Waste Management 11

Capacity Assessment 13

Municipal Finance 13

Institutional Assessment 16

Strategies for Performance Improvement 16

Objectives and Sectoral Proposals 16

Implementation Strategy 23

Phasing and Financing Strategy 23

Acronyms and Abbreviations

AIILSG	All India Institute of Local Self Government
CPHEEO	Central Public Health and Environmental Engineering Organisation
CSP	City Sanitation Plan
CSR	Corporate Social Responsibility
DMA	Directorate of Municipal Administration
GoI	Government of India
GoM	Government of Maharashtra
IFSM	Integrated Faecal Sludge Management
IHSDP	Integrated Housing and Slum Development Programme
lpcd	Litres per capita per day
MJP	Maharashtra Jeevan Pradhikaran
MMCNPIT	Maharashtra Municipal Councils, Nagar Panchayats and Industrial Townships Act
NRAP	National River Action Plan
NRW	Non-revenue water
NUSP	National Urban Sanitation Policy
O&M	Operation and maintenance
PIP	Performance Improvement Planning
PPP	Public-private partnership
STP	Sewage treatment plant
SWM	Solid waste management
ULB	Urban local body
WMC	Wai Municipal Council
WSS	Water, sanitation and solid waste
WSSD	Water Supply and Sanitation Department

Note: 1 lakh = 100,000

Introduction

The Wai City Sanitation Plan (CSP) has been prepared as a part of the PAS Programme at the CEPT University, which provides support to small cities in Maharashtra for improving sanitation services. CEPT University has worked in partnership with the Water Supply and Sanitation Department (WSSD), Government of Maharashtra (GoM), Maharashtra Jeevan Pradhikaran (MJP) and the Wai Municipal Council (WMC).

Background

To address the sanitation situation in small and medium towns and in the context of the National Urban Sanitation Policy (NUSP) 2008, it is important to explore new technologies other than conventional underground sewerage systems. This requires assessing appropriate technology and business models that can be operated and managed well in these towns.

The CSP for Wai focuses on city-wide sanitation solutions that are affordable for both users and municipal governments. It uses an outcome-oriented approach that promotes assessment of different technology options. This approach is based on the framework for Performance Improvement Planning (PIP) and a decision support tool (SANIPLAN) developed at CEPT University. The framework focuses on assessing outcomes of various technical options and demonstrates the possibility of achieving similar service levels with a less capital-intensive option.

The city-wide sanitation assessment builds on new thinking in urban sanitation that goes beyond household level access to an assessment of the full service chain, that is, from user interface to storage, conveyance, treatment and disposal or reuse. The Wai CSP also covers dimensions beyond excreta management; it includes management of grey water, stormwater and solid waste as these are interlinked closely in the small city context. The CSP is also based on an assessment of options for low-cost sanitation and decentralised solutions for wastewater management that are more appropriate for small towns.

Several meetings and consultative workshops were held with state and city representatives over a period of 15 months to discuss and debate solutions, technologies and policy provisions for sustainable sanitation plans. Financing plans are an integral part of these CSPs to review affordability of solutions and to explore different sources of funds. The CSP has been developed for a 10-year action horizon. However, a longer planning horizon is considered for some of the large capital intensive projects.

After the CSP preparation, the WMC has selected key priority areas for implementation. CEPT University is supporting the Council to: ensure universal access to own toilets and prepare an Integrated Faecal Sludge Management (IFSM) plan as an immediate solution to tackling black water containment, transport and safe disposal. Specific studies have been initiated to explore use of service-level agreements and performance-based contracts with private sector partners as a way to ensure the city-wide delivery of sustainable sanitation services, generating benefits to users as well as in terms of public health.

Some glimpses of the consultative workshops for City Sanitation Planning held in Maharashtra (2012–13).

About Wai Municipal Council

Wai, a town in Satara District (in Maharashtra, India) is also know by its epithetic name of 'Dakshin Kashi' and is known for its ghats on the banks of Krishna river and its 250 temples. Located 95 km from Pune and 250 km from Mumbai, it is a major city en route to the hill station destinations of Mahabaleshwar and Panchgani. The town extends on both sides of the river; the northern part of the town is more than 350 years old. With an average elevation of 718 metres, Wai is surrounded by the Sahyadri range. In the last two decades, it has seen low population growth at an annual rate of 1.7 per cent and 1.5 per cent. Wai has favourable terrain with a uniform gradient converging towards the river, which complements the natural drainage system and stormwater management. Altitudes range from a low of 677 m to a high of 1,092 m. The soil stratum in Wai Taluka is black cotton soil, medium deep with a few occurrences of laterite or red soils. The economic activities in the town are predominantly trade, agriculture and tourism.

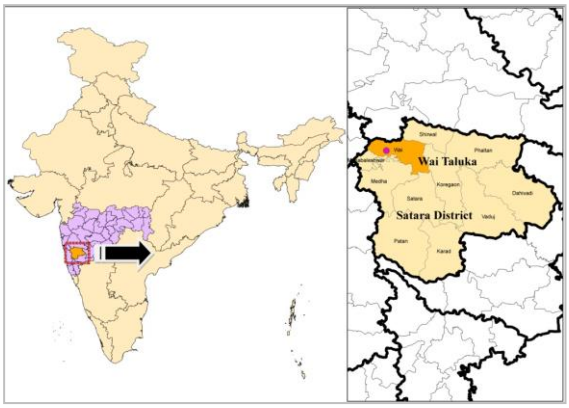
The WMC is governed by the Maharashtra Municipal Councils, Nagar Panchayats and Industrial Townships (MMCNPIT) Act 1965. Its 19 wards are organised in five administrative divisions known as 'Prabhags'. In terms of spatial development, the Krishna river divides the city into two parts: northern (comprising Prabhags 1, 2 and 3) and southern (comprising Prabhags 4 and 5). In the old city areas, most of the houses are single or double storied with common walls between adjacent houses. In the new town, plotted development such as bungalows and apartments are more evident. The old town area is characterised by narrow street widths and linear plots similar to old Wada housing typology in Maharashtra.

Table 1: Salient features of Wai

City	Wai
District	Satara
Location	Latitude 17°56'N; Longitude 73°53' E
Connectivity	Wai is 11 km from NH-4 (Pune-Bangalore highway) and the nearest railway station is 32 km
Civic status	Municipal Council/ Nagar Parishad 'C' Class
Total area	3.64 sq km
Inhabitedarea	1.35 sq km (37% of the total area)
Population	36,025 (in 2011)
Density(ppha)	99 (gross) and 267 (for inhabited areas)
Slums	Population:2,140 (6% of the total population)
Number of Wards	19 electoral wards managed through 5 Prabhags

Source: Wai Municipality.

Wai: Location

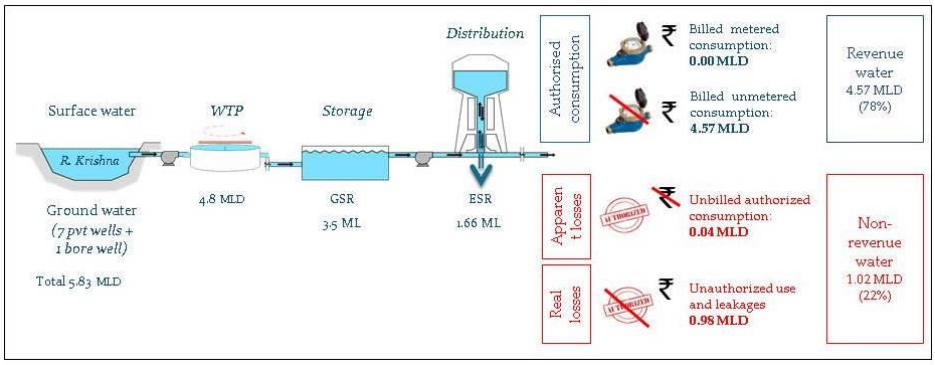


Sectoral Assessment

Water Supply

Wai is dependent on the Krishna river for the majority of its water supply. In addition, seven private wells supply water in the peripheral areas. The current water supply is 127 litres per capita per day (lpcd). Figure 1 explains the stages of water supply system and water quantities at each stage. The estimated non-revenue water (NRW) level is 21.6 per cent, a large part of which can be attributed to the real losses caused by leaks in transmission and distribution lines.

Figure 1: Schematic water supply diagram



In Wai, out of 5.8 MLD, only 4.8 MLD is treated at the existing treatment plant. The coverage of piped water supply connections is 73 per cent; it has increased only gradually from 2008–09 to 2011–12.This is partly due to the fact that the water supply network is yet to be extended to the newly developed areas in the southern periphery. The city does not have any metering of water at consumer level. There are two water supply zones and water is supplied to both zones for 45 min/day. In addition, there is supply of water to both zones for 1.5 hours every alternate day.

Access to Toilets

Access to household and community toilets

Over 30 per cent of households depend on community level sanitation facilities and about 2 per cent resort to open defecation. An ongoing project under the Government of India's (GoI) Integrated Housing and Slum Development Programme (IHSDP) will provide about 50 per cent of slum dwellers with individual housing units, including a toilet facility.

Examples of individual household sanitation systems.

Individual toilets are usually located in the front near the access road. While these toilets are well maintained by house owners, the cleaning of septic tanks/pits that collect black water is not done regularly as per Central Public Health and Environmental Engineering Organisation (CPHEEO) guidelines (that is, a three-year emptying cycle).

There are about 45 community toilet blocks in the city with 283 seats, of which over 90 per cent are functional. Three non-functional community toilet blocks were demolished recently. Each community toilet block is provided

The condition of some community toilets.

with a water storage tank and good availability of water. Community toilets are operational for 24 hours. Most of the older toilet blocks, however, lack electricity which affects their usage during nights. New toilet blocks have a caretaker room on top of the community block. This ensures good maintenance throughout the day. The maintenance of toilet blocks is outsourced to a private contractor by the Municipal Council. The contract is renewed yearly and field visits revealed that toilet blocks are well maintained and regularly monitored by urban local bodies (ULBs).User fees are not levied for community toilets.

All the community toilet blocks have pour-flush latrines connected to septic tanks. However, there are no soak pits and the effluent from the tank is discharged into nearby open or closed drains along the roads. A primary assessment revealed that septic tanks/pits are left uncovered, hampering their functioning and allowing rain water and solid waste to enter them.

Public sanitation

The major commercial activity is located in the central core area which houses a vegetable *mandi* and informal market place, commercial areas, banks, hotels and other establishments. The institutional campuses are located in the southern part of the town, including several public institutions such as courts, hospitals, Forest and Public Work Departments (PWD), Tehsil offices and a bus terminus. The Forest Department and PWD offices are located on a main road and their toilet facilities also provide access to outsiders. With this additional load, and in the absence of proper maintenance, the toilet block has become unsuitable for use. The market areas and the other institutional campuses do not have sufficient number of seats and those that are available are unusable. The community toilet block opposite the Tehsil office campus, which is meant for residential areas, is also frequented by day-time visitors and serves as a public latrine. Overall, the public facilities are grossly inadequate. The survey of public facilities shows that they are highly overloaded and not sufficient to cater to visitors.

It is surprising that the temple precincts and ghats have not been provided with a single toilet block and thus face the issue of open defecation by visitors to the temples.

Public toilet blocks near the Tehsildar's office (**left**), in the Forest Department campus (**centre**) and in the market area.

Situation in slum settlements

Six percent of Wai's population resides in two slum settlements: Kashikapadi and Gurebazaar, located in the southern part of town. In both the slums, the majority of the households rely on community water taps for drinking water. Some households also resort to purchasing water from neighbours or private suppliers. Similarly, all of them rely on community toilet blocks. The toilet block in Gurebazaar has inadequate number of seats to cater to all the users. This gap results in open defecation, mainly by children and men. The community toilet is cleaned only two or three times a week by ULB staff. Wastewater from kitchens and bathrooms is let out in the open, on the roads in absence of drains in the slums.

The WMC is implementing a GoI-funded project for rehabilitation of slum dwellers. This will provide 144 households with a dwelling unit in an apartment building; each unit will also have a toilet and a bathroom.

Management of Wastewater and Septage

Sanitation zones have been identified to assess and develop proposals for wastewater and septage management. Three wastewater zones were identified with reference to topography, natural drainage patterns and homogeneity of urban development characteristics such as housing typology, roads and flow direction of the water.

Figure 2: Location of community and public toilets

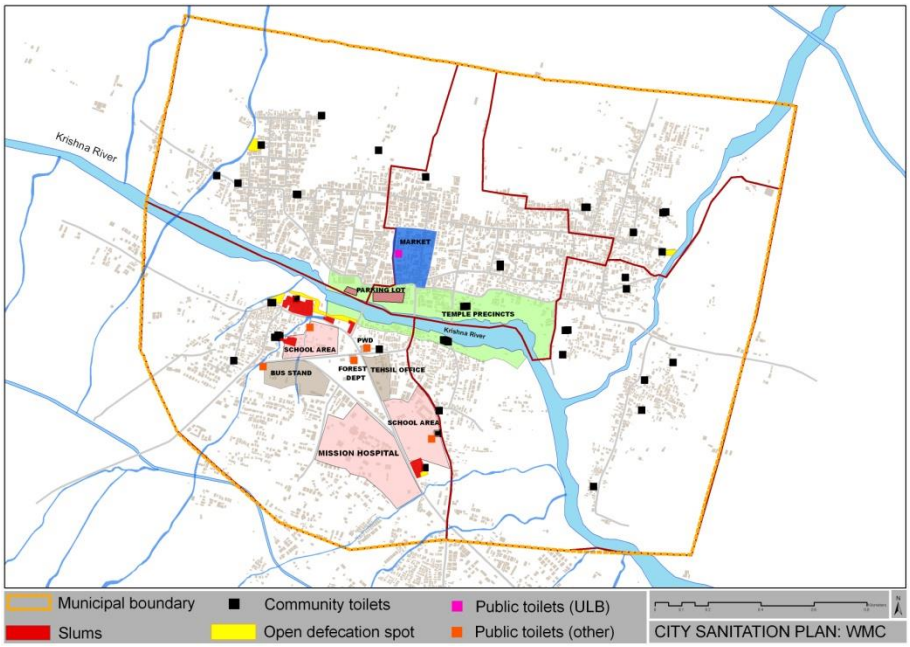


Figure 3: Delineation of sanitation clusters based on topography

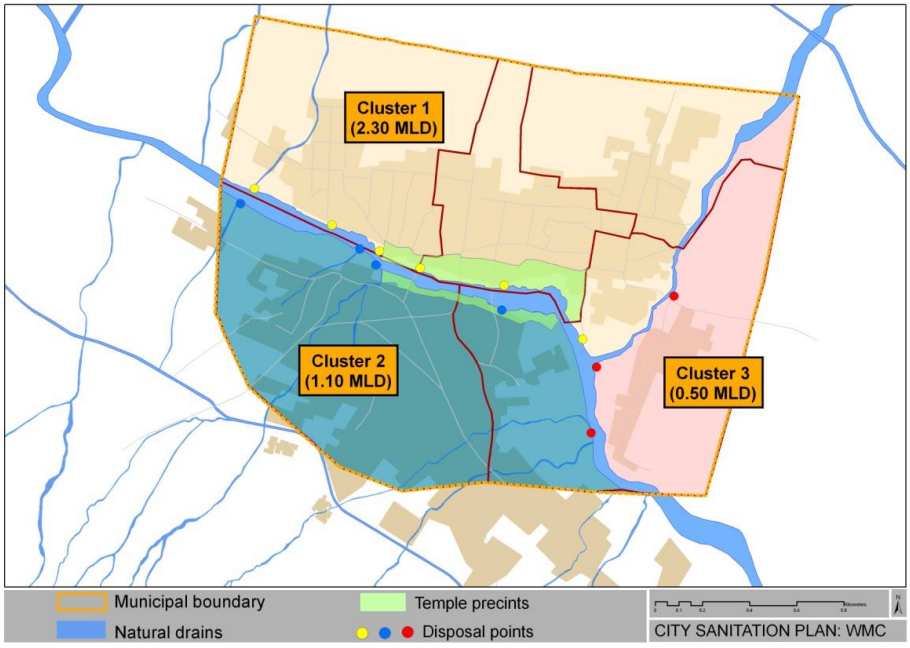


Table 2: Wastewater quality

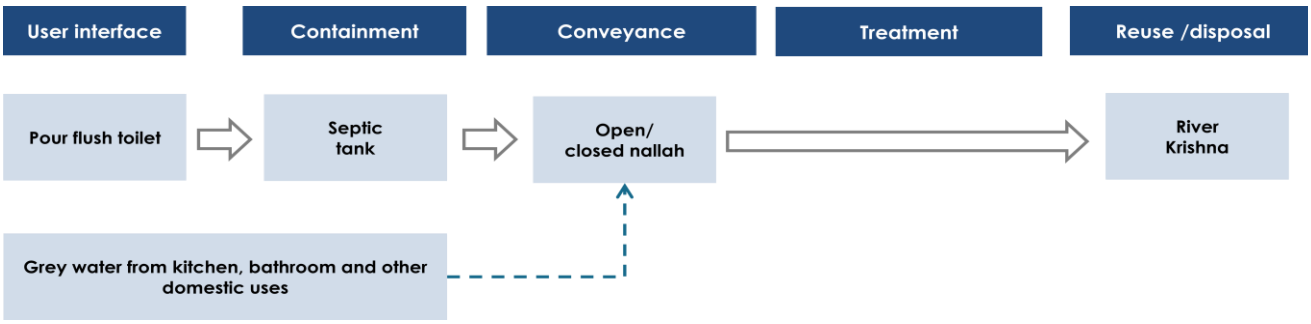
Sample location	BOD (mg/l)	COD (mg/l)	TSS(mg/l)	pH
Desired standards	**30**	**250**	**600**	**6.5-8.5**
Ganpati Ali (near Nagar Parishad)	96	150	92	7.5
Kalwaat Ali	147	230	119	7.6
Old Bridge	201	380	332	6
Siddhanthwadi	36	59	51.6	7.4
River Krishna, Ganpati Mandir#	9.3	28	17.6	7.3
Vishwakosh Ghat#	4.2	13	7.8	7.5
Madhali Ali	153	260	201	5.7

Samples beyond Central Pollution Control Board (CPCB) effluent standards.

Note: # These samples were collected from the river.

Wai has an on-site sanitation system with septic tanks – effluent from septic tanks and grey water from households is discharged into drains along the roads. Field surveys suggest that all household and community toilets (largely pour flush latrines) are connected to septic tanks. In general, septic tank designs are good and follow technical parameters specified in CPHEEO guidelines. However, there are two practical problems for their cleaning and emptying. First, in the old town area these tanks are sometimes constructed below the toilet superstructure, and second, in most other cases; the tops of these septic tanks are sealed, making access for emptying difficult. It has also been found during the surveys that septic tanks in the town are oversized and do not prescribe to the norms suggested in IS codes and CPHEEO manuals. Interestingly, there is no major difference in septic tank sizes for a small house and an apartment block. As a result, there are long intervals in septic tank cleaning of small houses; whereas septic tanks for apartment blocks are cleaned more frequently Samples of wastewater collected from various points across the town also suggest low efficiency of primary treatment in septic tanks. Due to long cleaning cycles, septage solidifies in the septic tanks and the treatment efficiency of the tanks is reduced due to reduction in retention time of wastewater in septic tanks – due to which the wastewater that enters the septic tanks then flows out from the tanks and into drains without primary treatment. Personal interviews revealed that in many cases septic tanks were cleaned once in three or even seven years, and some

Figure 4: Existing wastewater system



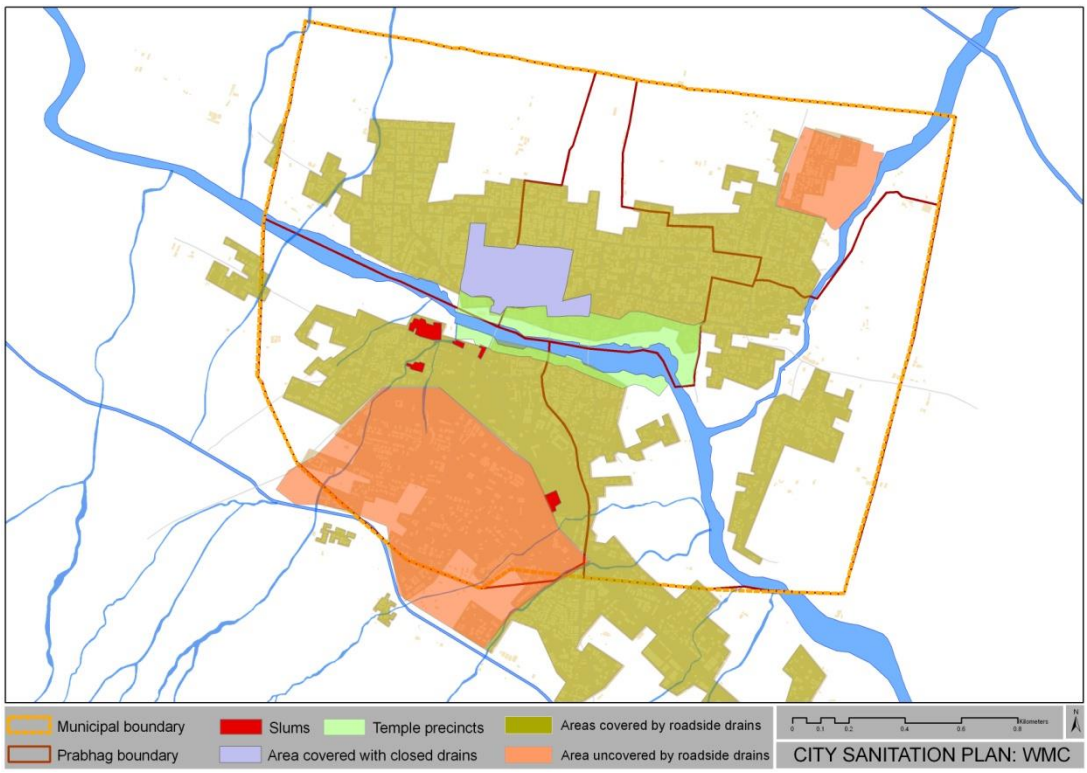
In many places, black water/effluent from septic tanks is discharged into open drains.

In many houses, grey water is discharged from the kitchen and bathrooms into the drain channels.

had not yet been cleaned.

The WMC provides an 'oncall' service for septic tank emptying. The local authority owns a 5,000-litre suction machine for cleaning septic tanks and charges Rs1,000 per cleaning. Though only about 2 per cent (about 100) septic tanks are cleaned annually, septic tanks for community toilet blocks are emptied quite frequently (once a week). This results in lack of any treatment to faecal sludge in these septic tanks. The waste collected from septic tanks is simply dumped on solid waste dumping grounds (located 3km away from the town) without any treatment. Grey water from kitchens and other washing areas is directly discharged into drains. It is estimated that 92 per cent of the city is covered by drains, of which 35 per cent is through covered drains. Covered drains are largely in the central market and commercial area in the old town and some residential colonies in the denser parts of the city. Other areas in the old town (Prabhags1, 2 and 3) have open drains along the roadsides. However, the newly developing areas on the southern side and some portions in the northern side of the town do not have any drain channels and greywater is discharged onto the roads. The WMC is responsible for the periodic cleaning (*nalla safai*) and maintenance of drains – they are cleaned on alternate days and the waste from the drains is carried to the dumping ground. Drains are not cleaned regularly in some areas – in the southern part of town, drains clog due to improper cleaning and maintenance. There is no system to treat the domestic wastewater generated in the town, which flows into the drains before reaching the river. The effluent from septic tanks flows into drains and is directly discharged in the river. The MJP has proposed a scheme for wastewater treatment under the National River Action Plan (NRAP) for Wai, which focuses on pollution abatement of Krishna river by preventing direct discharge of domestic wastewater (grey and black) into the river. Interceptor sewers are

Figure 5: Coverage of conveyance system for wastewater

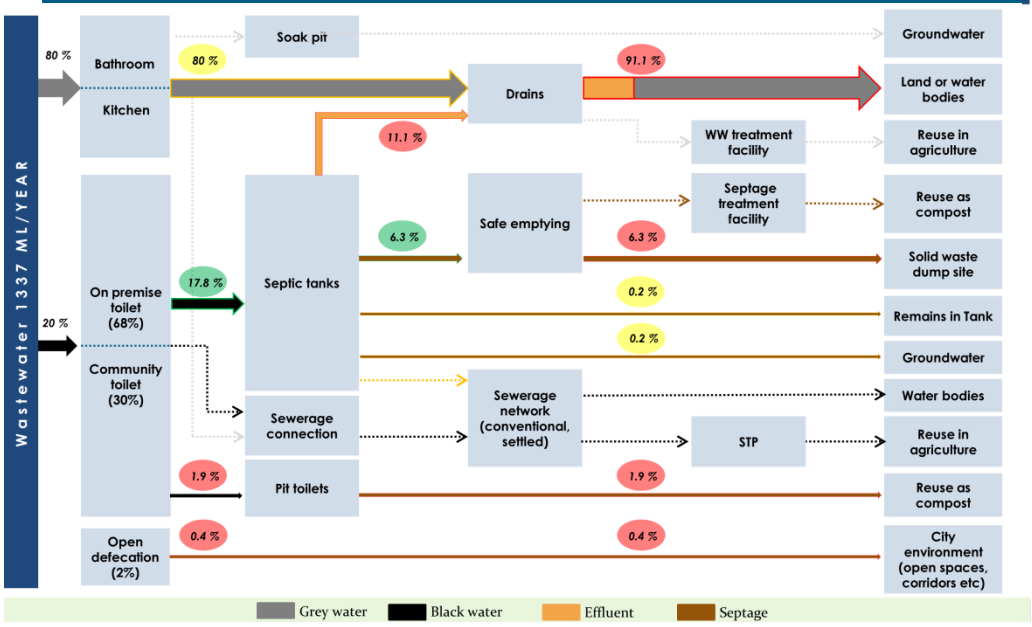


proposed on both the banks of the river to collect wastewater (discharged from open drains along streets), which will be pumped to a new sewage treatment plant (STP) for treatment. While the technical approval for this project was given a few years ago, the WMC has still not received funding from the Ministry of Water Resources.

Figure 6 depicts volumes of wastewater at different stages of the service chain. The width of the arrow depicts the quantum of wastewater. The colour red depicts unsafe treatment and green depicts safe treatment of wastewater.

In Wai1, 350 ML of wastewater is generated annually, of which 80 per cent is greywater. The greywater is discharged into roadside drains, where some of the septic tank effluent is added. This mix of greywater and septic tank effluent is disposed off, without any treatment, into the Krishna river.

Figure 6: Existing wastewater flows



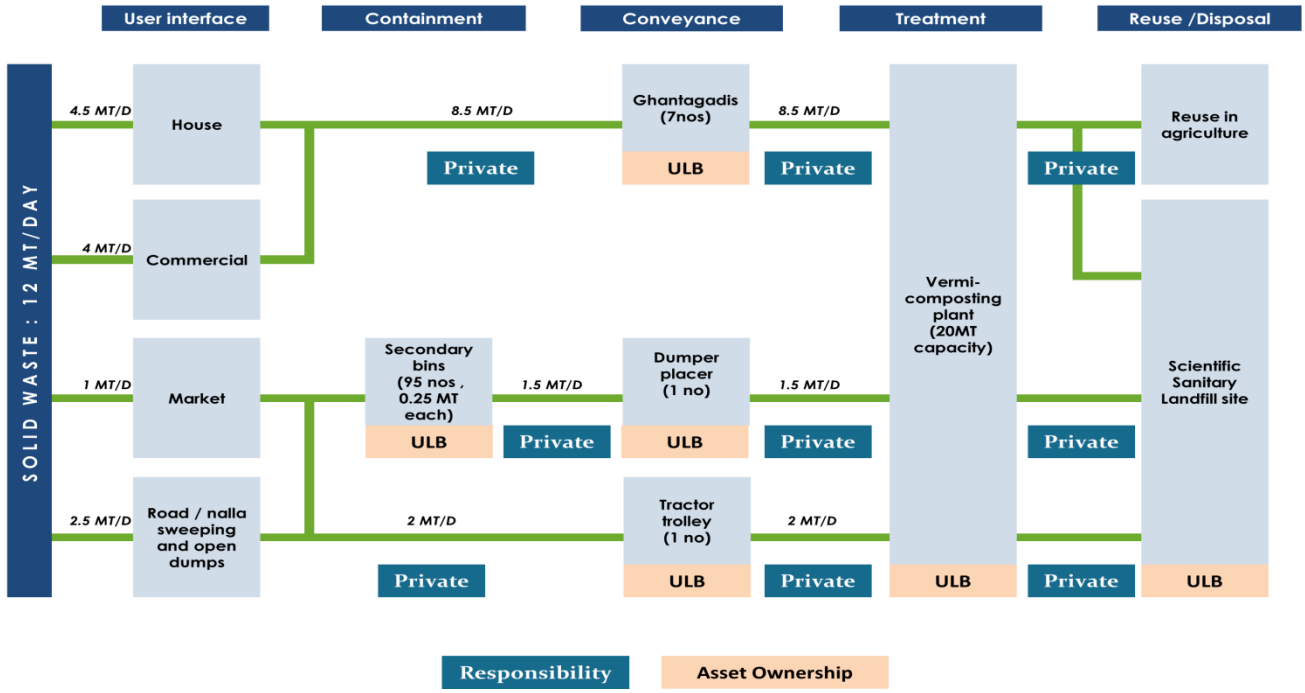
The current management of 20 per cent blackwater is inadequate. About 0.4 per cent of faecal waste is due to open defecation. A bulk of black water (17.8 per cent) is collected in septic tanks. The city has septic tank emptying services, handling around 6.3 per cent of the faecal waste annually. However, due to absence of a treatment facility for such waste, it is directly disposed off at solid waste dumpsite. Some portion of faecal waste also remains inside the tanks or leaches into the ground due to non-functional tanks/pits. Due to the absence of safe conveyance and treatment systems, nearly all the wastewater is unsafely disposed off into the environment.

Stormwater Management

Wai has a series of natural drains that flow through the town into the Krishna river. However, these natural drains are not cleaned on a regular basis. In some areas in Prabhags4 and 5, houses are located on the existing natural drains, and the rapid urban growth in the southern parts is likely to further block drains. The common practice of dumping garbage along streams also results in a reduction in efficiency of the natural drainage system. This results in flooding in surrounding areas in the south during peak monsoon period.

Some existing natural drains.

Figure 7: Existing flow of solid waste in Wai



Solid Waste Management

Domestic and Commercial Waste

Since Wai is a Taluka headquarter and a regional market place, it has a high influx of visitors. More importantly, it also attracts a large flow of tourists during festival seasons. This floating population adds significant quantities to solid waste generated in the city. Of the estimated 12 MT of the waste generated per day, 9.5 MT is collected on a daily basis. As illustrated in the schematic flow diagram (**Error! Reference source not found.**7), waste from residential areas is collected door-to-door by a private operator and is then transported to a dumping ground located in the north of the city.

Slum settlements and the newly developing areas are not covered by door-to-door services; households in these areas use community waste bins. Eighty-five community bins of 0.25 MT capacity have been placed mainly along the roads. Waste from these bins is collected through a dumper-placer specifically assigned for the task: waste is collected from 70–80 bins on a daily basis and transported to the dumpsite, where there is a vermicomposting plant of 20MT capacity. There is no scientific landfill to treat the waste from the vermicomposting plant and non-organic waste.

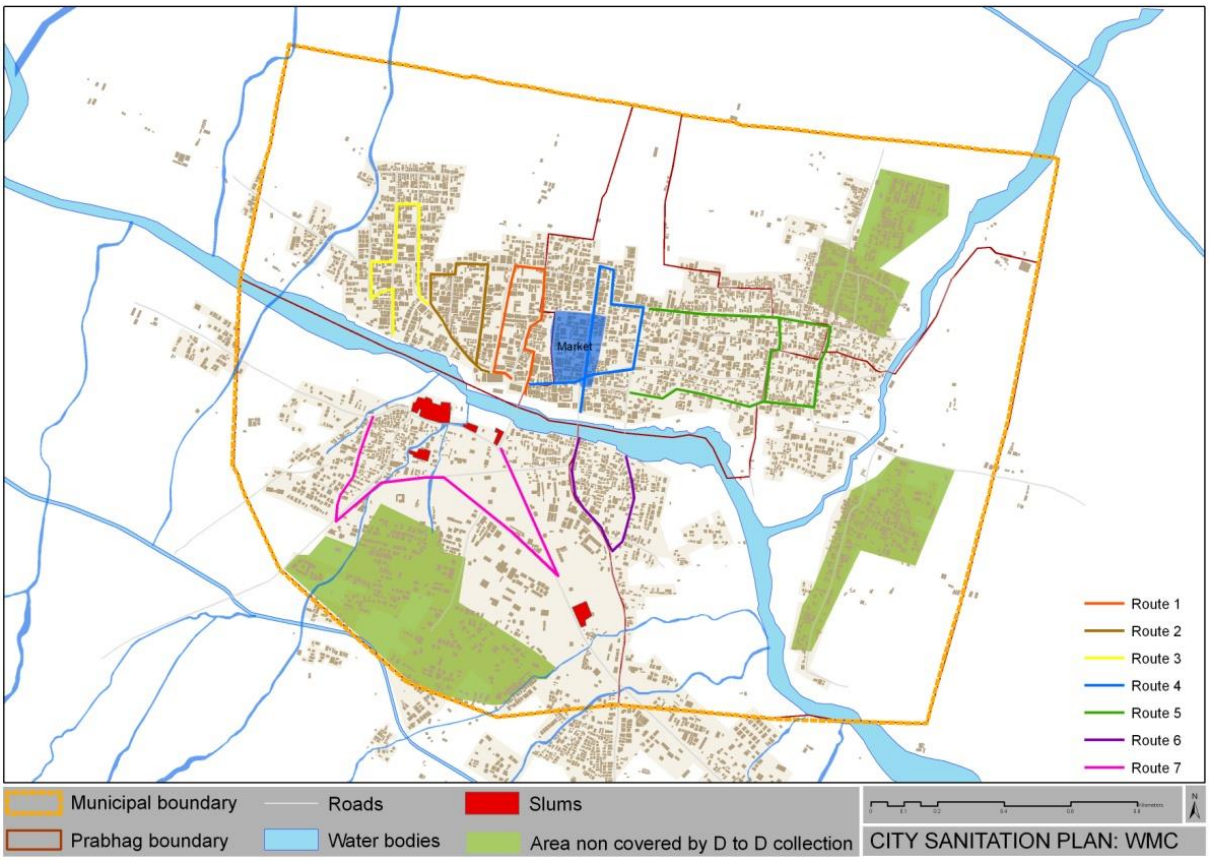
A contract for solid waste collection has been in operation since 2008. The ULB provides the necessary equipment (ghantagadis) and the contractor engages labour for door-to-door collection. Currently, there is no segregation of waste by consumers at source or by the contractor at the waste disposal site.

There is inadequate infrastructure, such as waste bins, in temple areas and around the ghat precincts, resulting in people dumping or throwing waste in open areas along the river. The ritual of disposing the waste (also known as Nirmalya) in the river pollutes the water and makes the surrounding ghats unclean. Waste from community bins in the temple precincts is collected by the dumper-placer.

Street sweeping and cleaningof drains

Street sweeping is done on a daily basis and waste is collected in bins which are emptied by dumper-placers. There are three supervisors and 42 workers employed by the WMC for daily cleaning of streets. For pre-monsoon cleaning of drains, extra labour is hired on a contract basis for nalla (drain) cleaning and road sweeping. The collected waste is transported to the garbage dump site by private contractors, who are paid Rs 1,500 per trip.

Figure 8: Routes of solid waste collection vehicles



Waste is disposed off at the existing solid waste dumping site.

Waste is also collected by feriwallas who go door-to-door and pay the households for the recyclable waste they collect. In Wai there are nearly 50 people involved in this activity: they collect plastic, bottles, steel, iron, scrap, cardboard, papers, etc. It is estimated that they collect about 100kg/day

Capacity Assessment

Municipal Finance

Section 101 of the MMCNPIT Act mandates all municipal councils in the state to make provision for expenditure through their budget and maintain accounts of their receipts and expenditure. The WMC follows cash-based accounting systems. It maintains a consolidated budget with three parts: revenue, capital and extra-ordinary accounts. No separate budget is maintained for services such as water supply, sanitation and solid waste management. However, as observed in the budget documents, items of all the three parts are found in all the three parts. Thus, it was necessary to recast these budgets to properly analyse revenue and expenditure from services. This exercise also helped to align the revenue and capital items that were misclassified. The recasting was done as per the accounting guidelines provided in the National Municipal Accounting Manual.

Table 3 presents a summary of the WMC's municipal finances from 2006–07 to 2012–13. The overall budget size has ranged from about Rs 6.5 crore to Rs14.5 crore. Table 4 shows details of sources of revenue income. The WMC is mainly dependent on grants from the GoM, which contributes two-thirds of its revenue receipts; major grants include compensation in lieu of octroi, dearness allowance grants, Nagar Parishad assistance, mudran shulka (stamp duty), entertainment tax grants and Central Finance Commission grants. Most of these grants are made available by the GoM on a regular basis and are a predictable source of income for the WMC. Amongst its own sources, property tax and other local taxes are the major sources of revenue, which contribute 12 per cent and 9 per cent, respectively, to total income. The major non-tax source (11 per cent) comprises rents from municipal properties.

Table 3: Summary of municipal finances (recast budgets)

	2006	2007	2008	2009	2010	2011	2012
Items	**Actual**	**Actual**	**Actual**	**Actual**	**Actual**	**Actual**	**Actual**
Opening Balance	79.0	217.2	287.8	295.2	315.2	300.2	473.3
Revenue Account							
Revenue Receipts	491.6	459.4	579.8	593.3	760.0	807.5	1,002.0
Revenue Expenditure	365.3	444.7	494.3	546.5	802.1	724.7	918.3
Operating Ratio	0.7	1.0	0.9	0.9	1.1	0.9	0.9
Capital Account							
Capital Receipts	370.5	158.3	150.6	463.5	196.5	644.0	128.9
Capital Expenditure	186.2	162.2	387.7	365.0	188.3	958.6	215.0
Capital Utilisation	0.5	1.0	2.6	0.8	1.0	1.5	1.7
Extraordinary Account							
Extraordinary Receipts	73.1	79.7	142.4	152.8	506.4	137.2	258.5
Extraordinary Expenditure	97.6	141.3	281.4	154.4	275.0	192.2	313.0
Summary							
Total Receipts	935.2	697.4	872.8	1,209.6	1,462.9	1,588.7	1,389.4
Total Expenditure	649.0	748.3	1,163.4	1,065.9	1,265.4	1,875.6	1,446.3
Closing Balance	**365.2**	**166.4**	**(2.8)**	**438.9**	**512.8**	**13.3**	**416.4**

Note: Amounts are in Rs lakh.
Source: Budget books of WMC.

Table 4: Sources of revenue income

Source	2006	2007	2008	2009	2010	2011	2012	Avg % share
Consolidated property tax	47.9	66.3	87.8	89.6	85.8	86.9	142.1	13%
Other taxes	45.4	42.3	56.0	57.9	71.7	63.7	95.8	11%
Other own sources	56.4	67.0	77.3	45.3	56.8	93.2	82.2	9%
Grants and contributions	341.8	283.8	358.6	400.6	545.7	563.7	681.9	67%
Total	**491.6**	**459.4**	**579.8**	**593.3**	**760.0**	**807.5**	**1002.0**	**100%**

Note: Amounts are in Rs lakh.
Source: Budget books of WMC.

Property tax is applicable on all properties in the city. It is calculated using the rateable value method –computed on the basis of use of property, carpet area, building type and age of the structure. Assessment of properties is carried out every four years and was last done in FY 2010–11. In FY 2013–14, the WMC raised a total tax demand of Rs111.6 lakh from 9,982 properties (including 1,715 non-residential properties). This, on an average, Rs 1,118 is levied as tax on each property. Wai has a high collection efficiency of 82 per cent, that is, a collection of Rs 91.8 lakh (of the total demand of Rs 116 lakh). More than 50 per cent of Rs 37.6 lakh of property tax backlog was also collected.

Water tax is collected on a flat rate basis. The rates are Rs 1,500 per connection per annum for domestic, and Rs 6,000 for non-domestic connections. In 2013–14, the WMC raised a demand of Rs 99.7 lakh from 5,918 connections. However, it collected only 72 per cent of the new demand raised. The WMC needs to improve collection efficiency for current demand and also recover arrears.

The total revenue expenditure of the WMC increased by nearly 150 per cent between FY 2006–07 and FY 2012–13.On average, the WMC spends 40 per cent of all its revenue expenses on services related to water supply, sanitation and solid waste management (SWM). Its combined per capita expenditure in these 3 services was Rs 987 in FY 2012–13, which was slightly higher (Rs 983) than that suggested by a recent GoI Committee[1] that laid out norms for municipal expenditure of basic services.

Table 5: Main categories of revenue expenditure

Main head of expenditure	2006	2007	2008	2009	2010	2011	2012
General administration department	79.5	97.4	109.5	122.0	191.6	163.8	196.3
Water supply, sanitation and SWM	159.0	178.4	202.6	207.9	283.8	300.8	363.7
Other departments	126.7	168.9	182.3	216.6	326.7	260.1	358.4
Total	**365.3**	**444.7**	**494.3**	**546.5**	**802.1**	**724.7**	**918.3**

Note: Amounts are in Rs lakh.
Source: Based on budget books of WMC. See Annex 1 for further details.

The capital account shows considerable volatility, largely due to the fact that the grants from the GoI and GoM are not predictable. These grants are subject to acceptance of proposals submitted for various schemes. The major capital grants availed by the WMC are for slum development and for construction of their office. In recent years, some of the central and state schemes require at least a 10 per cent contribution by the ULB. It is, thus, essential for the WMC to maintain adequate surplus to avail benefits of these schemes.

[1] Report of the High Powered Expert Committee (HPEC) for estimating the investment requirements for urban infrastructure services, March 2011.

Table 6: Grants received by WMC for Capital works

Sector	2006	2007	2008	2009	2010	2011	2012	2013*	2014**
Slum Development (Nagari Dalit Vasti Sudhaarna Yojana grant, Ekatmik Gruh Nirmanva Zopadpatti vikas Yojana) and housing (IHSDP)	12.6	18.3	-	99.5	7.2	174.9	41.3	142.0	63.0
Road construction grants	5.7	42.1	58.5	31.3	100.7	140.9	96.9	91.0	98.0
Implementation of development plan and TP schemes	25.1	49.2	59.2	36.0	57.6	21.4	0.5	82.0	85.0
Water and sanitation (MSNA)	-	-	-	-	-	-	-	36.0	38.0
Tourism development	72.5	-	-	-	-	161.7	-	90.0	95.0
Construction (Vaishtyapurna Kaama Yojana)	257.1	65.5	49.2	288.0	60.4	79.9	38.6	75.0	100.0
Unspecified (Maharashtra Nagari Punarutthan Yojana, Vikaskaamasathi Vishesh anudaan)	-	-	-	-	-	95.0	-	415.0	198.0
Others	0.4	-	-	-	0.1	40.6	0.2	93.1	73.2
Total	**370.5**	**154.1**	**137.6**	**439.0**	**175.7**	**644.0**	**128.9**	**978.6**	**701.2**

Note: Amounts are in Rs lakh.
* Revised estimates for 2013–14.
**Budgeted estimates for 2014–15.
Sources: Based on WMC budget books.

It is important to understand that the WMC transfers internal surplus on non-WSS accounts to meet both capital and revenue expenditure requirement for the water, sanitation and solid waste (WSS) sectors. Over the past two years, the WMC has transferred 74 per cent and 77 per cent of its non-WSS surplus in this manner to meet the shortfalls in WSS sector, as the taxes and user charges are not able to fully meet expenditures of the three sectors. The WMC's finances were analysed to assess the extent of such surplus likely to be available.

To calculate the WMC's internal investment capacity, estimates of revenue surplus are derived on the basis of forecasts of revenue income and expenditures. These are based on past trends. For taxes, the tax base (number of properties for property tax, number of connections for water tax) is projected and multiplied by tax rate. For revenue expenditure in water supply, sanitation and solid waste management, past trends of key budget items were assessed and projected. For example, for water supply, revenue expenditures were projected separately for administrative expenses, bulk water, operation and maintenance (O&M) expenses, energy bills and contingencies. For other revenue sources, as well as revenue expenditure of other departments, finances were projected at aggregate levels.

Based on these forecasts, over the 10-year period till 2025, it appears that the WMC has a capacity to invest about Rs 1,050 lakh. If appropriate measures are taken to improve collection efficiency of local taxes to 90 per cent, it will be possible to increase the investment potential to Rs 1,100 lakh. The WMC can also explore expenditure control measures to generate additional investible surplus.

Table7: Revenue surplus of the WMC over 10 years

	Estimated Revenue Surplus over 10 years
Trend-based projections (Business as Usual –BAU)	1,048
Financial improvement actions	
Improving collection efficiency of property tax (current tax to 90% and arrears – 75%)	40
Improving collection efficiency of water (current tax to 90% and arrears 85%)	8

With Improved collection Efficiency of property tax and water tax (90% for current demand and 75% for arrears)	1,096

Note: Amounts are in Rs lakh.
Source: Based on trend based projections of WMC revenue income and expenditure.

Institutional Assessment

Wai is governed by the Maharashtra Municipal Council, Nagar Panchayat and Industrial Township (MMCNPIT) Act, 1965.Section 4 of the Act categorises the municipal councils based on their population: Wai is classified as a Class 'C' Council. The town has 19 wards divided into five Prabhags for administrative purposes; three nagarsevaks (councillors) are elected to the council from each Ward. The Council is led by the President (Nagaradhyaksha) elected by the nagarsevaks from amongst themselves. The Council – through the President, the advisory committees for different departments as well as consultative committees appointed by the General Body –is responsible for the administration of the town. The executive wing for this elected body is led by a Chief Officer (CO), an officer belonging to the State Services (Executive Cadre). The CO is supported by officers heading various departments, the key departments being Public Health, Revenue and Accounts, Administration, Sanitation and Water Supply. The elected wing and executive wing in Wai works well together. The executive wing is led by a very pro-active and dynamic chief officer who is keen on implementing the CSP.

The Directorate of Municipal Administration (DMA) approves establishment posts of the Municipal Councils; the revision is done every five years. Cadre-related posts are filled by the DMA directly and the rest of the posts are filled by the ULB. The sanctioned staff strength of Wai is 163, of which 120 are filled.

The Town Sanitation Department is responsible for sanitation services such as maintenance of community toilets, sewerage, SWM and SWD. Around70 (filled positions) sanitary workers are involved in street sweeping and drain cleaning. However, current staff is inadequate to meet the demand and this results in irregular cleaning of streets and drains. Since the post of Sanitary Inspector is vacant, there is inadequate supervision of sanitation workers. To meet the gaps in service delivery, private parties are roped in on a contract basis, for example, for O&M of all community toilets, pre-monsoon maintenance of drains and nallas, solid waste collection, operation of vermicomposting plant, etc. Recently, self-help groups have been assigned the task of bill distribution. In general, discussions with local officials suggest a positive response to private sector contracts. These have helped save both time and resources. However, more efforts are needed to improve quality of services delivered by them.

Strategies for Performance Improvement

Objectives and Sectoral Proposals

The overall goal of Wai's CSP is to move towards a fully sanitised city that ensures universal and affordable services, and achieves improved environmental quality of the Krishna river and land in the city as well as its periphery. The improvements are envisaged across the entire service chain for sanitation access, wastewater and solid waste management.

The key objectives of Wai's CSP include:

1. Open defecation free city through access and use of 'own' toilets, and public toilets and school sanitation.
2. Safe conveyance of waste-water and faecal sludge through affordable infrastructure and regular services.
3. Universal solid waste management services using a bin-free approach.
4. Appropriate treatment of collected wastewater, faecal sludge and municipal solid waste along with their safe disposal or reuse.
5. Evolving appropriate public-private-community partnerships and ensuring ULBs' institutional capacity for monitoring and management.
6. An affordable and feasible financing plan to meet both capital and recurrent (O&M) costs of main proposals.

To meet these goals and objectives, detailed proposals have been developed in the following areas:

1. **Household and public sanitation:** Proposals for 'own' toilets, interim refurbishment of existing community toilets, and public toilets that provide services in markets, the temple-ghat precincts, other public areas and school sanitation
2. **Wastewater and faecal sludge management:** Refurbishment of existing septic tanks, conveyance of faecal sludge from septic tanks through a regulated emptying service, a system of drains or sewerage network for safe conveyance of wastewater (grey water and septic tank effluent), and appropriate treatment facilities for wastewater and faecal sludge.
3. **Solid waste management:** Affordable and universal services for primary collection of solid waste from all properties in Wai and its transfer to treatment facilities for appropriate treatment facilities for collected solid waste.
4. **Awareness generation and community mobilisation:** Awareness about need for improved sanitation, hygiene and a clean city, and community mobilisation to ensure access and use of improved toilet facilities, on-site sanitation and practices related to keeping the city clean.
5. **Strengthened implementation mechanisms:** Design and procurement of public-private-community partnerships, monitoring and related capacity building of ULBs.
6. **Policy initiatives:** Building permissions for toilets, fines for release of untreated wastewater and littering and levying appropriate charges for provision of sustainable services.

Specific strategies and activities in these areas are elaborated below.

Household and public sanitation

The CSP envisages complete elimination of open defecation and universal access to improved sanitation through individual or 'group' owned toilets over a10-year period. Group toilets are privately owned but shared among two or three households who know one another and are willing to share its maintenance. Such toilets will help address issues related to space constraints and affordability. Promotion of improved sanitation will be done through awareness campaigns as well as partial subsidies as incentives to unlock the latent demand for toilets. Efforts will also be made to facilitate credit for toilets, using that as a lever to also mobilise demand.

In the short term, however, it will be necessary to refurbish some existing community toilet blocks. The condition of most of the new community blocks in the city is satisfactory. However, old blocks lack electricity and proper on-site collection and treatment facilities. Appropriate measures will be needed to improve these aspects. The existing maintenance contract by the private contractor should be continued, in addition to with proper monitoring measures by the municipality.

Table8: Strategies for household, community and public sanitation

Component	Type of intervention	Achievement
Household 'own' sanitation	Promote household sanitation (individual and group toilets) through awareness campaigns and partial incentive subsidies	To reduce dependency on CTs and improve sanitation levels in long run
Community level sanitation	Upgrade30 community toilet blocks for improved on-site collection-treatment-disposal system and adding doors and electricity connections where missing	Improved functioning and hygiene level of existing toilet blocks in the interim period
	It is assumed that, in the next five years, households will have individual/group toilets; hence dependency on community toilets will be reduced and these will be closed down	
Public sanitation	Provide new toilet blocks in commercial areas and public spaces, and provision of mobile toilet in temple precincts on a public-private partnership mode	Improved functioning and hygiene level of existing public toilets blocks and school sanitation
	Provide improved and adequate sanitation facility in schools with 'corporate social responsibility' funding	
	Improve toilet facilities and their management in municipal schools	

To cater to the tourist influx and visitors to old temples, it is proposed to provide one public toilet block in the temple/ghat precincts. It is proposed to convert a part of the community toilet block near public offices in the southern part of the city and add a new public toilet block in the bus terminus to cater to the floating population. The public toilet in the market area, at present, is managed by a private contractor and a user fee is levied for toilet use. Compared to other toilet blocks, this block has better maintenance and cleanliness. It is proposed to charge user fees for the proposed public toilet blocks near the bus stand and temple precincts, which would develop a sustainable model for the O&M of the block. It is proposed to develop these public blocks on a public-private partnership (PPP) mode.

Wastewater and faecal sludge management

At present, the only plan envisaged by the WMC is for a cleanup of the Krishna river. A project report has been submitted to the NRAP, GoI. The project envisages two interceptor sewers along both banks of the river where wastewater flows through existing drains in the city. This wastewater will be taken to, and treated at, a sewage treatment plant (STP) located downstream. Its cost, at 2012 prices, is estimated to be ~Rs20crore. It will, in addition, also entail an O&M expenditure of ~Rs0.5 crore per annum.

This proposal has two limitations. First, while this project will help to clean up the river, it will not help clean and sanitise the city as the wastewater will continue to flow into open drains. Second, since most of the wastewater comprises grey water or effluent from septic tanks, the proposed STP seems to be over-designed. To address these concerns, it would be necessary to introduce an IFSM service and modify the STP design to appropriate standards to treat only the effluent from septic tanks and greywater using a waste stabilisation pond. This will reduce the capital cost by 50 per cent.

It is suggested that, in the short term, existing drains can be used to transport wastewater. In future, settled (or small bore) sewers can be introduced for conveyance of wastewater. Given the favourable terrain in Wai, a settled sewer can be designed efficiently and in a cost effective manner. The NRAP Project has still not received any funding approval. In this context, the WMC can review an overall settled sewer design that need not necessarily include any interceptor sewers, but take the wastewater directly to treatment facilities. Decentralised treatment facilities along the river were considered; however, this option is difficult to consider due to the lack of land availability at appropriate locations. Thus, it is suggested that the treatment facility would need to be located downstream of the river, at the eastern end of the city.

Table 9 shows the two main proposals suggested for wastewater management: (a) introduce an IFSM service to improve performance of on-site sanitation systems; and (b) transport and treatment of wastewater. For the latter, it is suggested that, for the next 10 years, the city relies on a rehabilitated drain system. At a later stage, a settled sewer system with appropriate wastewater treatment can be taken up. Figure 9shows the improved performance of wastewater management in Wai with these proposals.

Table 9: Strategies for wastewater and faecal sludge management

Component	Intervention	Achievement
Integrated faecal sludge management service	Upgrade and refurbish non-functional septic tanks	To develop an effective service for a regular septage management service and avoid pollution at household/property, neighbourhood and city levels
	Develop a regulated service, a 3-year cycle, of desludging and emptying services for all septic tanks in the city	
	Develop treatment facility for faecal sludge	
Conveyance and treatment system for waste water	Rehabilitate and cover the existing open drains to a desired section as per terrain and gravity flow	Ensure collection and safe conveyance of waste water collected from households/ properties and its appropriate treatment before reuse/disposal
	Develop a settled sewer system designed in response to the terrain on each side of Krishna river	
	Build wastewater treatment plant for wastewater collected	

The proposed improvement of wastewater management system in Wai is depicted in Figure9 – the entire wastewater will be managed by providing safe access to toilets to all households along with safe containment system as a first step. Further, city authorities will provide a clean drain as an interim solution and settled sewer network as a long term solution for safe conveyance of greywater and septic tank effluent. A well-functioning and regulated service for desludging septic tanks will help to improve quality of septic tank effluent. This faecal sludge from septic tank emptying will be treated at a dedicated treatment facility. Wastewater collected through the drain and settled sewer network will be treated and reused further for irrigation purposes. Treated faecal sludge will be reused as compost in agriculture. Thus, from nearly 91 per cent of untreated waste and faecal sludge contaminating the river, residential environment and peripheral land areas, almost all the wastewater will be treated as per standards with increase in reuse of treated waste.

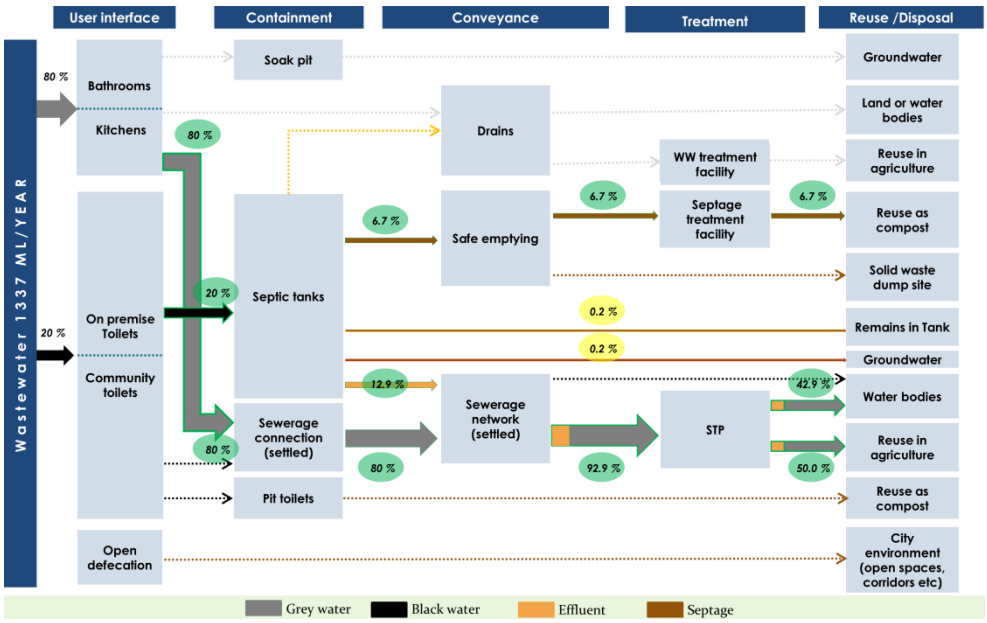


Figure 9: Improved wastewater flow with CSP interventions

Stormwater Management

Drains in Wai are often clogged with solid waste despite being cleaned on a daily basis. This generally happens on the main streets where shops are located. During monsoon, the streets are often flooded as the clogged drains are unable to carry stormwater. Natural drains are not only encroached upon but also have solid waste dumped into them. The CSP envisages immediate intervention through desilting, dredging and rehabilitating natural drains and covering of open drains along the roads within the city.

Table 10: Strategies for stormwater management

Component	Type of intervention	Achievement
Stormwater management	Desilt natural drains up to 0.6 m	To develop an effective way for conveyance of stormwater load
	Rehabilitate open drains along the road	

Solid waste management

The long term vision of the CSP is to make Wai a bin free and zero waste city. This will need efforts to increase service coverage, improve services and enhance awareness among citizens. The proposed programme covers the full service chain from waste collection to its safe conveyance, treatment, reuse and safe disposal. Strengthening the ongoing practice of private sector participation as well as a comprehensive awareness campaign will be the cornerstone of the programme.

The first priority of the city will be to extend the **regular door-to-door collection of solid waste to unserved areas and to make it universal in scope.** This will be done through: procurement of additional vehicles as well as outsourcing to the private sector. Gradually the service will ensure that these areas are made bin-free. A separate contract will also be developed for regular collection from the market areas and temple precincts. Additional bins will be needed in these areas but the separate contract will ensure regular collection.

In addition to this, to initiate segregation at source, a pilot project will be prioritised for testing the idea of segregation at source for a delineated area. After its successful implementation, a policy decision will be taken to undertake city-wide segregation of waste at source.

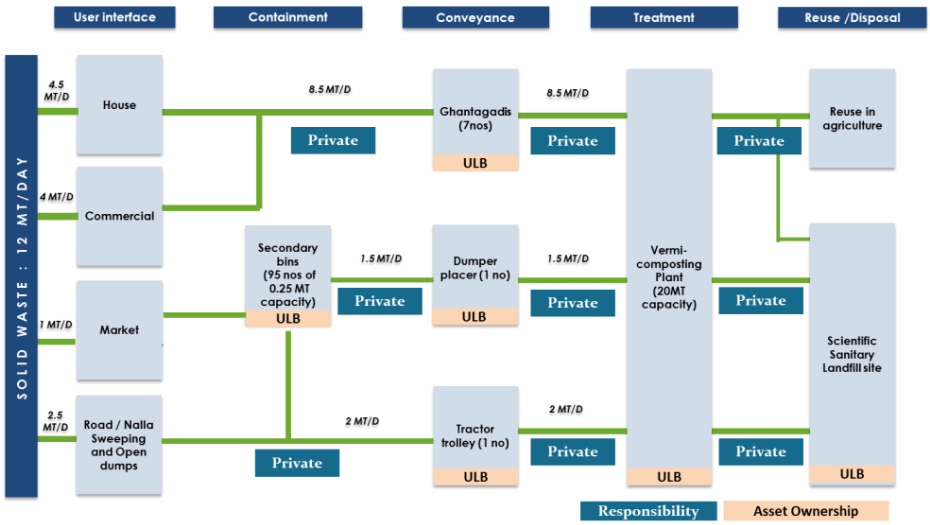
The second priority of the city is to ensure safe treatment, reuse/disposal of solid waste. Itis envisaged in the CSP that scientific sanitary landfill will be constructed for scientific disposal of solid waste.

Table 11: Strategies for solid waste management

Component	Intervention	Achievement
Door-to-door collection and segregation of solid waste	Increase coverage of door-to-door service to 100 per cent households, including new developments and slums, through private sector engagement	To develop an effective service for a regular D-D collection of segregated solid waste at household/property, neighbourhood and city levels
	Make contract for waste collection in central commercial area near market and temple precincts	
	Initiate pilot for segregation at source for a delineated area	
Treatment, reuse/disposal of solid waste	Develop inert landfill	Ensure safe treatment and reuse/disposal of solid waste

The proposed improvement of solid waste management system in Wai is depicted in Figure10. The whole city will be served through augmentation of vehicles for door-to-door collection; waste from market areas, roads and nalla sweeping would be collected on a regular basis by exploring options such as involving the private sector. All the waste collected from various sources will be treated at the vermicomposting plant; treated waste will be reused in agriculture and refuse from the treatment plant will be scientifically disposed off in the sanitary landfill site.

Figure 10: Improved solid waste management with CSP interventions



Awareness generation and community mobilisation

While the citizens of Wai exhibit considerable awareness about sanitation, awareness generation is needed in a few areas, such as, need for improved sanitation, hygiene and, in general, keeping the city clean. To successfully implement the activities described for the three subsectors, community awareness and mobilisation is critical. These activities can be taken up through active involvement of elected representatives, local academic institutions as well as social institutions. Provision will need to be made for meetings, rallies and communication materials.

Special drives and community mobilisation will be planned for activities related to unlocking demand for own toilets, refurbishment of septic tanks and participation in regulated emptying of septic tanks. Special campaigns will ensure a first time cleaning up of important areas such as along the ghats and in temple precincts. At the same time, efforts will also be needed to make citizens aware about the need for special sanitation charges to ensure sustainable services.

Strengthen implementation mechanisms

To ensure success in various activities and to achieve desired outcomes for the four components listed, it is critical to have effective implementation mechanisms. There is relatively good experience of the ULB with private sector contracts, especially in terms of efficiency gains, though at times contractual issues have emerged. There also is the issue of the private sector's interest in several activities. Therefore, it is suggested to introduce and strengthen existing PPPs in the area of: access to own toilets, operation of community and public toilets, an IFSM service including emptying and treatment, and for solid waste management. For SWM services, it is necessary to incorporate participation of SHGs, community-based organisations and certain other groups like informal rag pickers. Such partnerships will help improve effectiveness and address the issues of excessive work load of ULB staff.

PPP in IFSM plan: As envisaged in the CSP, the city needs to take up IFSM activities. The city can explore involvement of the private sector for providing various IFSM services. The private sector can procure the suction emptier trucks, provide access covers to septic tanks and provide regulated septic tank emptying services – this will reduce the burden on the ULB (of procuring and operating trucks, for instance). The treatment facility for septage needs to be constructed by the ULB and the operations of this facility can also be outsourced to a private sector. The ULB can also explore an integrated contract for septic tank emptying and treatment operations. The ULB's role under such various PPP options would be only to monitor and regulate the operations of private.

The participation of the private sector, NGOs and community groups in awareness generation will also help improve their effectiveness. It will also be necessary to set up a system of stakeholder participation which includes formation of a city-level task force, implementation and monitoring cells for different programmes, etc. At the state level, the DMA will need to support filling up of vacant positions and to implement e-governance.

The WMC will need support in designing and procuring services for these implementation mechanisms. Similarly, it will also need support in building capacity to manage some of these activities. This will require appropriate monitoring systems as well as strengthened capacity through appropriate training for WMC staff. Support from the state (DMA office) is needed to fill the vacant cadre posts such as Sanitary Inspector, Jr. Water Supply Engineer, Internal Auditor and Administrative officer. This will help ensure the smooth functioning of each department, including monitoring.

Policy initiatives

To support implementation of these activities, the WMC will need to take up policy initiatives in a number of areas, including more liberal building permissions for toilets, fines for release of untreated wastewater and littering, and levying appropriate charges for provision of sustainable services.

The various policy measures that need to be taken are:

- **Private sector participation:** The WMC uses private contractors for a variety of services. It keeps a panel of service providers for wastewater management, solid wastes, cleaning of community toilets, etc. The contracting arrangements for these services are often not enforceable as they have not been properly drafted and negotiated. It is suggested that proper contract documents and appropriate contract negotiation procedures need to be adopted.

- **Byelaws and regulations:** The WMC needs to formulate byelaws/guidelines for on-site sanitation. At present, there is very little scrutiny of the septic tank design, and absence of guidelines on how the waste from septic tank is to be disposed. For properties that do not have toilets, the current procedure is to demand as much paper work as construction of a regular building. The CSP advocates that toilet construction in existing buildings must have a simplified approval process. The national law on municipal solid waste management requires that wastes from households should be segregated. However, at local level, this is not often followed. Municipal council will have to prepare specific byelaws to deal with this situation.

  A key issue in ensuring regular and safe septage management is lack of implementation of government regulations and advisories. This will require the formulation of ULB byelaws and rules to ensure implementation of each aspect of the IFSM plan. The rules will need to address aspects related to:
  - Septic tank design: to ensure septic tanks of standard size are installed in new constructions.
  - Periodicity of desludging: to ensure septic tanks are cleaned every three years as per the MoUD's advisory.
  - Desludging procedures: to ensure safe handling of faecal sludge.
  - Sanitation tax: So that households ensure desludging of their septic tanks regularly.
  - Penalties: to deter irregular cleaning and use of substandard septic tanks.
  - There is also a need for regular monitoring and inspection of septic tanks and desludging procedures to facilitate the implementation of byelaws.

- **Tariffs:** At present, the WMC levies a consolidated tax for sanitation and conservancy. This tax is levied on a lump sum basis. It is suggested that for wastewater, a separate sanitation tax should be levied. For solid waste management, a bin free city will require door-to-door collection of waste. There will be a separate fee for this.

The WMC will need support in designing and implementing these policy initiatives. It will also need support from the state government through the DMA, UDD and WSSD. Some of the more sensitive policy changes will also need to be backed by greater citizen awareness.

Implementation Strategy

Phasing and Financing Strategy

The financing plan for a 10-year (2015–2024) sanitation improvement strategy in Wai is based on an analysis of its municipal finance as well as an assessment of the possibility of accessing funding from other sources. It is developed for both new capital investments and O&M expenditure needed to sustain new services. Ongoing WMC projects are taken into account.

Based on the assessment and actions needed to achieve improvement in sanitation across sub-sectors and the service chain, eight specific projects are identified. A ninth project is also envisaged for setting up appropriate monitoring systems linked to the WMC's e-governance system. These projects will be supported by ongoing activities for awareness generation among leaders and residents of Wai, as well as capacity building of the officials and staff.

Table 12: Projects for urban sanitation – Implementation strategy for Wai CSP

Sr No	Project	Base cost (2012 prices)
	Access to toilets	
1	Household toilets with partial subsidy as incentive	6.30
2	Community toilets refurbishment	0.45
3	Public toilets – new blocks	0.20
	Wastewater and stormwater management	
4	Wastewater conveyance and treatment	7.30
5	Desilting and rehabilitation of natural drains	1.40
	Integrated Faecal Sludge Management	
6	Regular IFSM service with sludge treatment	0.66
	Integrated solid waste management	
7	Water segregation, tipper truck, provision of bins	0.05
8	Construction of a sanitary landfill site	1.90
	Integrated monitoring systems	
9	Develop IT-based monitoring systems	0.30
	Awareness Generation	
10	Awareness generation and IEC campaigns	0.30
11	Capacity building for effective implementation	

Note: Amounts are in Rs crore.

Source: CSP analysis, Simulation of improvement options through SANIPLAN.

The Financing Plan was developed in an iterative manner to incorporate three key aspects:

- **Identifying potential sources of funds for capital investment:** Based on an assessment of opportunities for capital finance, the first step was to identify the possible sources of funds for capital expenditure of all major projects identified.

- **Priorities, phasing and project development:** Develop appropriate phasing of projects over the 10-year CSP period based on local priorities, the WMC's implementation capacity, as well as expectations of

availability of grant resources and local financial capacity. This phasing can be modified iteratively, based on expectations of capital financing. Appropriate steps will be needed to develop more detailed project proposals for each project in relation to technical design as well as financing. Steps related to implementation will need to be identified based on appropriate plans to engage private sector contractors for service delivery. Phasing and implementation details will also help to identify total project costs, incorporating both price increases and management costs.

- **Municipal finance assessment:** The financing strategy will require WMC contribution, which will need to be made from its internal surplus. This depends on availability of such surplus either on the WSS account or from general ULB resources. The extent of transfer from such surplus depends on the priority ULB places on capital expenditure for water and sanitation. As reviewed above in municipal finance assessment, the WMC does generate internal surplus and this can be enhanced by improving collection efficiency of taxes and charges. The WMC can also explore mobilising debt from local banks or financial institutions. However, it is likely that to meet the full costs of all projects over a 10-year period may require some tariff revisions either in property taxes or for water and sanitation. The local viability of such tariff increases will need to be assessed for a financially feasible plan.

Exploring sources of funds for capital investment

Traditionally, most CSPs are developed to avail grants from state or national governments. However, the approach in this plan was to assess potential sources of funds for all projects in Table 12 above using both conventional sources such as grants from state/national governments as well as assessing new sources. Five main sources are identified:

Household and community contributions: First is the use of a demand-led partial incentive subsidy scheme for on-premise or group toilets where each eligible household will get a fixed subsidy. While this is about 20 per cent of a cost of toilet, with more households sharing a group toilet the share of subsidy will increase. However, households will need to meet between 20 per cent and 80 per cent of the cost of a toilet. In case of refurbishment of existing septic tanks, households will meet the full costs.

Private sector contribution through a PPP model: A second strategy is to develop a business model around activities where it is possible to involve the private sector through a PPP contract. This is possible when revenues from a service are adequate to cover the returns on capital investment. In Wai, two areas are identified for a PPP arrangement: the emptying service component of an IFSM service; and provision of new blocks of public toilets which generate adequate revenue from fees. For IFSM, the ULB will have to meet the costs of a septage treatment facility as no private contractors are likely to take this up on a PPP basis. A PPP strategy will need to be backed by appropriate risk management, including escrow accounts for payment by ULB, setting up good monitoring systems and capacity building

Grants from state and national governments: The third strategy is to explore use of grants for some activities where it is not possible to meet the full costs through local contributions or to develop a business model for a PPP approach. This will also require that there are some programmes or schemes which would provide grants. While a ULB will meet some share of these costs, grants from either state or national government will need to be explored. .

Grants from CSR and other donors: Grant funds are also likely to be available through other sources such as from local benefactors, other corporate sector donors through the requirements of CSR as per provisions in the Companies Act.[2]The WMC, with possible support from civil society organisations and academic institutions, will need to be proactive and identify such possibilities. Projects such as the ones for provision of toilets through

[2]Section 135 of the 2013 Act seeks to provide that every company having a net worth of INR 500 crore or more, or a turnover of INR 1,000 crore or more, or a net profit of INR 5 crore or more, would be required to spend at least 2 per cent of the average net profits of the immediately preceding three years on CSR activities.

incentive subsidy, construction and management of community and public toilets, procurement of vehicles for solid waste collection and septage, awareness campaigns may receive funding from such sources.

WMC own funds: Besides exploring other external funds, the WMC should also explore the possibility of using its own funds to meet a part of the capital costs. It can directly use its own revenue surplus for this purpose. It can also leverage additional funds through borrowing from local commercial banks and other financial institutions, if this appears financially viable. The assessment of the WMC's finances (discussed earlier) suggests that it will be able to meet funding requirements for some CSP projects. However, it will need to explore external funds. Table 13 provides potential sources of funds to meet capital costs for projects. While many options seem possible, considerable efforts will be needed to explore and mobilise them for the timely implementation of projects identified in the CSP.

Table13: Potential sources of capital for various CSP projects

	Project	Potential sources for capital finance
	Access to toilets	
1	Household toilets with partial subsidy as incentive	a) GoI's new **Swachh Bharat Mission** which provides subsidy to incentivise households; b) **special funding** from the state; c) **MP and MLA** under local area development scheme; d) **CSR** funding; e) households can use **own savings** or **borrow** from financing institutions
2	Community toilets refurbishment	a) ULB **own funds;** b) **CSR funds**; c)**Swachh Bharat Mission**
3	Public toilets – new blocks	a)**PPP arrangements** for new public facilities or refurbishment; b) **CSR funding** for construction and hand over O&M by private player with user charges; c) explore VGF under **Swachh Bharat Mission**
	Wastewater and stormwater management	
4	Wastewater conveyance (settled sewer network) and treatment	a) GoM's **Maharashtra Sujal Nirmal Abhiyan (MSNA**); b) **Maharashtra Nagarotthan Yojana**, in such state schemes, ULB has to **contribute** a part ranging from **10% to 20%** of the project cost; c) As this project makes an impact on a wider area, funds available **with District Planning Committee** (DPC) could also be accessed
5	Desilting and rehabilitation of natural drains	
	Integrated Faecal Sludge Management	
6	Provide regular IFSM service with sludge treatment	For suction emptier trucks: a) **private player**; b) **GoM** grant under MSNA/Nagarotthan Yojana; c) **CSR** funds; d) ULB **own funds** to meet a part of the cost For treatment plant: a) GoM's **Nagarotthan**Yojana; b) GoM's **Vaishtyapurna Kaama** Yojana; c) **CSR** funds; d) **borrowing** For septic tank access refurbishment: **Households** to bear these costs themselves
	Integrated solid waste management	
7	Water segregation, tipper truck, provision of bins	Tipper truck: a) GOM's grants for **purchase of equipment;** b) **CSR** funds. Pilot project for segregation at source: a) WMC's **own funds;** b) **CSR** funds
8	Construction of a sanitary landfill site	a) GoM's **Maharashtra Sujal Nirmal Abhiyan (MSNA**) ;b) **Maharashtra Nagarotthan Yojana,** in such state schemes, ULB has to **contribute** a part ranging from **10% to 20%** of the project cost; c) CSR funds
	Integrated monitoring systems	
9	Develop IT-based monitoring systems	Grants from **GoM** which include training of officers and staff. **ULB** will bear a part of the cost
	Awareness generation	

10	Awareness generation and IEC campaigns	a) **Swachh Bharat Mission** funds for IEC campaigns; b) **CSR** funds
11	Capacity building for effective implementation	a) WMC **own funds;** b) **GoM** capacity building funds; and c) supported through ongoing projects and support from CEPT University and AIILSG under the **PAS Programme**

Priorities, phasing and project development

Based on local priorities and capacity for implementation, a phasing plan has been developed to implement the CSP proposals over a 10-year period. Table 14 presents proposed phasing of all projects, which takes into consideration local priorities, urgency of the project, availability of financial and human resources and logical sequence of actions. For example, projects that can be funded through ULBs' own resources or from household contributions are phased early while those which need grants are taken up later.However, as most projects require some grant funding, as a strategy the WMC will need to treat this as a rolling plan that can be adapted to match its efforts at mobilisation of capital funding. The WMC also plans to initiate pilot projects with its own funds to test project modalities as well as demonstrate implementation capacity to mobilise more innovative funding, such as from CSR funding. While a number of local corporate sector firms have shown interest, they will need evidence that can be provided through implementation of schemes through demonstration pilots.

Table 14: Phasing of projects

Sr No	Project	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Access to toilets										
1	Household toilets with partial subsidy as incentive										
2	Community toilets refurbishment										
3	Public toilets – new blocks										
	Wastewater and stormwater management										
4	Wastewater conveyance (settled sewer network) and treatment										
5	Desilting and rehabilitation of natural drains										
	Integrated Faecal Sludge Management										
6	Provide regular IFSM service with sludge treatment										
	Integrated solid waste management										
7	Water segregation, tipper truck, provision of bins										
8	Construction of a sanitary landfill site										
	Integrated monitoring systems										
9	Develop IT-based monitoring systems										
	Awareness generation										
10	Awareness generation and IEC campaign										
11	Capacity building for effective implementation										

Financial assessment

The proposed phasing will result in a total requirement of Rs28.4 crore for the full CSP to be implemented over the next10-years. Based on an assessment of financing sources in Table 13, Table 15 presents sources of financing for all the CSP projects identified above. The WMC will have to mobilise 60 percent of the total costs as grants through central and state schemes or from CSR sources. It will have to contribute Rs 3.5 crore as its own share. This can be met through its internal surplus or by borrowing from a commercial bank.

Table 15: Capital finance of CSP projects

Sr No	Project	Project cost	Grants	Private/PPP	Beneficiary	ULB
	Access to toilets					
1	Household toilets with partial subsidy as incentive	870	131 (15%)		696 (80%)	44 (5%)
2	Community toilets refurbishment	55				55 (100%)
3	Public toilets – new blocks	23		23 (100%)		
	Wastewater and stormwater management					
4	Wastewater conveyance and treatment	1,165	1,049 (90%)			117 (10%)
5	Desilting and rehabilitation of natural drains	182	164 (90%)			18 (10%)
	Integrated Faecal Sludge Management					
6	Provide regular IFSM service with sludge treatment	86		12 (14%)	43 (50%)	31 (36%)
	Integrated solid waste management					
7	Water segregation, tipper truck, provision of bins	5				5 (100%)
8	Construction of a sanitary landfill site	374	337 (90%)			37 (10%)
	Integrated monitoring systems					
9	Develop IT-based monitoring systems	41	37 (90%)			4 (10%)
	Awareness generation					
10	Awareness generation and IEC campaigns	40	24 (60%)			16 (40%)
	Total	**2841**	**1741 (61%)**	**35 (1%)**	**739 (26%)**	**326 (12%)**

Besides the capital financing, new projects will also entail considerable additional O&M expenditure. Thus, to meet both capital and O&M expenditure requirements, the WMC will need to consider improvements in three areas: (a) it will need to improve efficiency in collection of taxes to about 90 per cent (as discussed earlier) ;(b) increase or at least maintain transfer of internal surplus to WSS sectors; and (c) introduce sanitation and SWM taxes and consider some increase in tax levels (property tax as well as special tax for water).The WMC will need to

introduce new taxes for sanitation (Rs 300/annum) and SWM (Rs 180/annum) in 2015. This will mean a less than 20 per cent one-time increase in total taxes paid by individual property owners. This can be further reduced for households by charging higher increases for non-residential properties. To meet both the capital and O&M financial requirements of implementing the full CSP, the WMC will need to increase its average tax levels as shown in Table 16. If the WMC manages to improve efficiency in tax collection, its required tariff increases will be only 18 per cent to 42 per cent over the 10-year period.

Table 16: Percentage increase in average tariff/tax levels required in year 10 to implement the full CSP

		Transfer of internal surplus to WSS account	
		No increase (75%)	Increased to 84%
Collection efficiency	No increase (83%)	94%	54%
	Improved to 90%	42%	18%

Based on its own priorities, and assessment of possible funding, the WMC has identified two projects for early implementation from the full list of 11 projects. These focus on the goal of making Wai open defecation free and to have proper faecal sludge management systems in place in the next three years. For the open defecation free plan, the WMC plans to provide an incentive grant of Rs 5,000 per household for toilet construction. This will be made available to households to make their own toilets either as individual toilets or a group toilet shared by three or four families that know each other well. For IFSM, the WMC has decided to seek the support of private sector contractors for a three-year scheduled cleaning service and a treatment facility to treat the collected faecal sludge.

The WMC receives support in the design and implementation of these two projects from the CEPT University and All India Institute of Local Self Government (AIILSG) under the PAS Project.

Survey to assess group toilet possibilities in Wai



The Performance Assessment System (PAS) Project

The 'Performance Assessment System – PAS' is a five-year action research project, initiated by the CEPT University, Ahmedabad, with funding from the Bill and Melinda Gates Foundation. It supports development of appropriate tools and methods to measure, monitor and improve delivery of urban water and sanitation services in the states of Gujarat and Maharashtra. The PAS Project comprises three components of performance measurement, monitoring and improvement.

The PAS Project is supporting the development of City Sanitation Plans (CSP) to achieve open defecation free status for four small cities in Maharashtra, which are Wai, Hingoli, Ambajogai and Sinnar. These cities were selected by the Water Supply and Sanitation Department, Government of Maharashtra, and Maharashtra Jeevan Pradhikaran (MJP). A framework for city-wide assessment using the full value chain for urban sanitation has been developed, which is being used in developing these CSPs. Initial workshops were organised by the MJP with officials of these cities to discuss the CSP approach. Draft plans for these cities are ready and will be discussed with city officials.

pas performance assessment system

CEPT UNIVERSITY