

**BILASPUR MUNICIPAL CORPORATION, BILASPUR (C.G.)**

**TEMPLATE FOR SERVICE LEVEL IMPROVEMENT PLAN (SEWERAGE)**

**1. Assess the Service Level Gap**

The first step is to assess the existing situation and service levels gaps for Sewerage (AMRUT Guidelines; para 3 & 6). This will also include existing institutional framework for the sector. For this City has to review all policy, plans, scheme documents etc. to identify service level gaps and hold discussions with officials and citizens. AMRUT is focused on improvement in service levels. The zone wise data shall be used in identifying the gaps. These zone-wise gaps will be added to arrive at city level service gaps. While assessing service level gap reply following questions not more than word indicated against each question.

- What kind of baseline information is available for sewerage system of the city? Detail out the data, information, plans, reports etc related to sewerage available with city? Is zone wise information available? Have you correlated your data with census 2011 data? (100 words)
- **As per census 2001 Detail DPR is prepared in year 2007 under UIDSSMT Scheme. Zone wise Data available. In Year 2007 Sewerage Master Plan for Bilaspur City with a planning horizon for 30 years (up to year 2037). Correlated with census 2011 data designed population data is more than census data.**
- What are existing service levels for sewerage for coverage of sewerage network services, efficiency of collection of sewerage and efficiency in treatment. Provide information in table 2.1

Table 2.1: Status of sewerage network and Service Levels

Sr. No.	Indicators (as per SLB framework)	Existing Service Level	MOUD Benchmarks	Reliability Level
1	Coverage of latrines (individual or community)	80%	100%	D
2	Coverage of sewerage network services	6%	100%	D
3	Efficiency of collection of sewerage	4.6%	100%	D
4	Efficiency in Treatment: Adequacy of sewerage treatment capacity	29.4%	100%	D

Source: Ongoing project under UIDSSMT, JNNURM along with approved DPR

**Note:** - Total number of Households in the city is 63410. Of the total households 50471 are connected with Latrine facilities as per census 2011.

- **What is the gap in these service levels with regard to benchmarks prescribed by MoUD? (75 words)**
  - Coverage of latrines - 20%
  - Coverage of sewerage network services - 94%,
  - Efficiency of collection of sewerage 95.4%,
  - Efficiency in Treatment 70.6%.
- **Does city has separate drainage system or sewer lines take care of storm water? (50 words)**

NO, presently the sewer network is under construction.

### **Sewerage network and Collection of Sewerage**

- **How much of the area of the city is covered by sewerage network? What is the status of household connections in each zone? What are the areas covered under seepage? Provide information in Table 2.2.**

Table 2.2: Zone Wise Coverage of Households

Zone No	Total No of Households	Households with Sewerage Network	Households with Septic Tank	Households without any outlets for toilets
Zone-I (A)	11571	-	9854	-
(B)	21945	-	18415	-
(C)	11274	-	9204	-
Zone-II	18620	3214	12998	207
<b>Total</b>	<b>63410</b>	<b>3214</b>	<b>50471</b>	<b>207</b>

Source: Ongoing project under UIDSSMT, JNNURM along with approved DPR

- **Are there any areas where sewer lines have been laid but still households are not connected to sewer lines? Are there any areas where toilets may be connected to sewer lines but kitchen or bathroom wastes are not connected to sewerage system? (75 words):**

Yes there is Area like Devkinandan Chowk, Gole Bazar, Sadar Bazar, Gondpara (13.85 Kms of sewer line laid in the year 1990) and wards 40 and 48 in Zone II (56.00 Kms of sewer line laid in the year 2014) where Sewer lines has been laid but the work of connecting all the households with sewer lines is still ongoing. Toilets, kitchen & bathroom waste are connected to sewerage system.

- **Is there any systematic and organized method to collect and treat waste from septic tanks? What is the duration of cleaning of septic tanks (monthly, quarterly, semiannually or annually)? Indicate status of overflows of septic tanks, either in the nearby drains /open fields/ sewerage lines etc? (75 words):**

There is no systematic and organized method to collect and treat waste from septic tanks. The duration of cleaning of septic tanks is annually or as per the requirement. Suction Machine is used to for cleaning of Septic Tank. In case of an overflow, sullage from septic tanks is discharged in the nearby drains.

- **What is the situation of O&M of the existing sewerage system? Does the city has routine maintenance system or breakdown maintenance system? What is the duration of cleaning of sewer lines (monthly, quarterly, semiannually or annually)? Indicate infrastructure available for O&M of the sewerage system i.e sewer jetting machines etc? (100 words):**

Routine maintenance of Pumping station and STP is undertaken. The duration of cleaning of sewer lines is monthly or as per the requirement. Infrastructures facilities available for O&M of sewerage system includes - suction machines (3 machines), labour in respective Zones is available. Jetting and suction machine is required for O&M of newly laid sewer line. The Corporation has two numbers of Suction Machine with truck and tractor mounted having capacity of 9000 ltr. and

3000 ltr. respectively. Additionally, Corporation has prepared a proposal for procurement of new 2 nos. of Suction cum jetting machine (9000ltr.), 1 nos. 2000 ltr and 1 no. 500 ltr. Mini Jetting machine with total estimated amount 135 lakhs. for AMRUT FY 2015-16.

### **Sewage Treatment System**

- **Does city has Sewage Treatment Plant (STP)? Which areas are covered under each of the STPs? Provide details in Table 2.3.**

Table 2.3: Status of Existing STPs

Sr. No.	Location	Capacity (MLD)	Inflow in the STP (MLD)	Efficiency in %
1	Chilhathi, covered area of Zone-II	23 MLD/17 MLD	5 MLD	3%
2	Do Muhani covered area of Zone-I, A B C	(Ongoing) 69 MLD/54 MLD (under construction)	-	-

Source: Ongoing project under UIDSSMT, JNNURM along with approved DPR

- **Does decentralized waste treatment system exists or planned in the city? If yes, provide details (75 words):**

Currently the city does not have a decentralized sewerage treatment in the city. However, a decentralized system has been planned for the city.

- **How much of sewerage is generated in the city? How much of this sewerage generated reaches the STPs? What is the Biological Oxygen Demand (BOD) of incoming and outgoing sewage of each STP? (100 words):**

48 MLD sewerage is generated as per design data year 2007 and intermediate flow up to year 2022 is estimated at 71MLD. Total quantity of sewerage generation by the design year 2037 is estimated at 92 MLD at present in flow 5 MLD. BOD of incoming and outgoing sewage at present is 52mg/lit & 420mg/lit

- **Is treated sewage being reused or recycled? Is treated water being used for irrigation or industrial purpose? Does the option of power generation being explored? (75 words):**

No, treated sewage is not reused or recycled at present, but proposal is being made to use it for irrigation purpose. Option of power generation may be explored.

### **Institutional Framework**

- Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table 2.4.

Table 2.4: Functions, roles, and responsibilities (Ongoing works)

Planning and Design	Construction/ Implementation	O&M
BMC by Consultant (PMC – Meinhardt Singapur Pte. Ltd. India brach)	BMC through PMC (Meinhardt Singapur Pte. Ltd. India branch)	BMC through Contractor (Networking - Simplex Infrastructure Ltd. SPS) (STP – Geo Miller Pvt. Ltd.)

Yes, Corporation has a Sewerage Cell to look after the Sewerage related works

- Please also detail that how city is planning to execute projects. Shall the implementation of project be done by Municipal Corporation or any parastatal body? (75 words):

Municipal Corporation with take help of a consultancy in designing, planning & supervision of work.

## 2. Bridging the Gap

Once the gap between the existing Service Levels is computed, based on initiatives undertaken in different ongoing programs and projects, objectives will be developed to bridge the gaps to achieve universal coverage. (AMRUT Guidelines; para 6.2 & 6.3, Annexure-2; Table 2.1). Each of the identified objectives will be evolved from the outcome of assessment and meeting the opportunity to bridge the gap.

- List out initiatives undertaken in different ongoing programs and projects to address these gaps. For this provide details of ongoing projects being carried out for sewerage system under different schemes with status and when the existing projects are scheduled to be completed? Provide information in Table 2.5

Table 2.5: Status of Ongoing/ Sanctioned

S.No.	Name of Project	Scheme Name	Cost (Rs Crore)	Month of Completion	Status (as on dd Month Mar. 2016)
1	Bilaspur Sewerage Project	JnNURM (UIDSSMT)	422.94 Rs	June 2017	Zone-I = 70% is Completed (Zone-II is in Running from 2014)
2	Solid Waste Management (PPP mode)	Swach Bharat Mission	134.40	2 years from the bid approval	Tender in Process for selection of Agency. Landfill site has been finalized by BMC and certification in process from PCB.
	Individual Toilet for HH (Total 3700 nos.)		7.10	Dec 2016	1019 toilets has been constructed.
	<b>Total</b>		<b>564.44</b>		

- How much the existing system will able to address the existing gap in sewerage system? Completion of above will improve the coverage of network and collection efficiency? If yes, how much. (100 words):

The existing system is being upgraded and a project to cover the city with sewerage network is ongoing. It is estimated that after completion of the ongoing project it will cove 80% of the existing gap in sewerage system. Collection efficiency of the system will be 90% after the completion of the project. However slum areas & private colonies are not covered in the ongoing project therefore an additional project will be planned under the AMRUT scheme.

- **Does the city require additional infrastructure to improve the services? What kind of services will be required to fulfill the gap?**

Yes, additional infrastructure is required to achieve 100% coverage of the sewerage system. Services that required are O&M of sewer line, maintenance of Sewerage Treatment Plant, maintenance of pumping stations and laying of sewer line in the new developed areas under the jurisdiction of Bilaspur Municipal Corporation.

- **How does the city visualize to take the challenge to rejuvenate the projects by changing their orientation, away from expensive asset replacement programs, to focusing on optimum use of existing assets? Provide information in Table 2.6.**

**Table 2.6A: Demand Gap Assessment**

Component	2015			2021	
	Existing	Ongoing projects	Total	Demand	Gap
Sewerage network (km)	69.85KM	211 KM	280.85KM	295 KM	14.15KM
No of Households covered under sewerage system	3214	36786	40000	55000	15000
Sewerage Treatment Plant (MLD)	17MLD	54 MLD	71 MLD	71 MLD	NIL

### **Objectives**

Based on above, objectives will be developed to bridge the gaps to achieve universal coverage. While developing objectives following question shall be responded so as to arrive at appropriate objective.

- **Does each identified objectives will be evolved from the outcome of assessment? Yes**
- **Does each objective meet the opportunity to bridge the gap? Yes**

**Please provide List out objectives to meet the gap in not more than 100 words.**

Ongoing Project is designed for the population of year 2037

- STP's covered demand for population – 2022
- Pumping station designed for population – 2037
- Sewerage network designed for population – 2037
- 40000 Households covered under the ongoing project.

#### **Objective to achieve bridging the gap**

- Laying of sewer line network in areas where there is no sewer line.
- Connection of all the households/ properties with the sewer network.
- Covering Private colony areas with sewerage network and connect all the households with sewer network.
- Connect all the slum areas with the sewerage network.

### **3. Examine Alternatives and Estimate Cost**

The objective will lead to explore and examine viable alternatives options available to address these gaps. These will include out of box approaches. (AMRUT Guidelines; Para 6.4 & 6.8 & 6.9).

This will also include review of smart solutions. The cost estimate with broad source of funding will be explored for each alternative. While identifying the possible activities, also examine the ongoing scheme and its solutions including status of completion, coverage and improvement in O&M. Please reply following questions in not more than 200 words.

- **What are the possible activities and source of funding for meeting out the objectives?**

To meet out the balance gap in objective Project funded by Amrut, 14<sup>th</sup> finance and state grant.

- **How can the activities be converged with other programs like JICA/ ADB funded projects in the city etc?** Not Applicable

- **What are the options of completing the ongoing activities?**

As per contract agreement ongoing project will be completed up to June 2016 and therefore does not require any additional options to complete the activities.

- **How to address the bottlenecks in the existing project and lessons learnt during implementation of these projects?**

Due to high density of population in some areas of the city design of the sewer system had to be reviewed and redesigned. Moreover laying of sewer pipes by open cut method in dense localities was changed to Sheet Piling & Close Timbering Method due to which construction period was extended and led to delays.

Additionally at the time of preparation of DPR location of SPS was finalized based on design but during construction it was found that sufficient land was not available as per requirement of design so new location of SPS had to be identified. This led to delay and increase in completion time and also increased the cost of the project. Therefore in future projects emphasis will be on taking prior approval for land acquisition and detailed survey of all the areas to ensure availability of space and land for laying of sewer line.

- **Has projects includes O&M of sewerage system?**

O&M of STP & Pumping Stations for 3 years is included in contract document of the construction agency currently undertaking the construction work of the sewerage system. Proposal for maintenance of sewer network is being prepared.

- **What measures may be adopted to recover the O&M costs? Can the option of sale of treated wastewater be applicable to recover the O&M cost.**

User charges have been fixed for all the properties. Sale of treated water is not applicable for recovering the O&M cost. Only solid cake can be sold as fertilizer to recover the O&M cost.

- **What are innovative alternative solutions explored in achieving objectives?**

Connecting all the households/ properties with the sewer network and ensure collection of connection charges. Septic tanks of private colonies & multistory buildings will be connected with sewer line network by providing new network.

- **Are different options of PPP such as Design-build-Operate-Transfer (DBOT), Design Built Finance Operate and Transfer (DBFOT) are considered?**

NA

- **How the recycle and reuse of water will be done? How much quantity of treated water may be reused?**

71 MLD of treated water shall be reused in nearby channel and forest area.

- **Have you analyzed best practices and innovative solutions in sewerage sector? Is any of the practice be replicated in the city?**

Analyzing and innovative solutions in STP's & pumping station as per requirement automatic pumps function.

According to the ongoing project, there are precast manholes have been used. Therefore, very less time is being required for underground execution.

There are no replicated practices have been followed.

- Have you identified the areas for decentralized waste treatment system? Explore the approaches for septage management i.e People Public Private Partnership (PPPP) model or replacing septic tanks by bio-digesters, bioremediation etc.

Low laying area which is not connected with sewer network have been identified decentralized waste treatment system. For septage management approach it is being proposed to replace septic tanks by bio-digesters, bioremediation etc.

The alternative activities to meet these activities be defined as per Table 2.7

**Table2.6B Alternative Activities To Meet Objectives**

Sr. No.	Objective	Activities	Financing Source
1	Balance households covered	Laying of sewer line network.	Amrut
2	Balance Households connection	Property chamber connection	Amrut
3	Private colony area of households which is not covered under sewerage system than covered	Septage management.	Amrut

#### **4. Citizen Engagement**

ULBs will organize and conduct city level citizen consultation and receive feedback on the suggested alternatives and innovations. Each alternative will be discussed with citizens and activities to be taken up will be prioritized to meet the service level gaps. ULB will prioritize these activities and their scaling up based on the available resources. (AMRUT Guidelines; Para 6.6, 6.7 & 7.2). Please explain following questions in not more than 200 words detailing out the needs, aspirations and wishes of the local people.

- **Has all stakeholders involved in the consultation?**

There are several consultation have been conducted related to the Smart City scheme in the town with the presence of BMC personnel, Ward Counselors and community members of respective wards. But the Specific consultation have not been done due to the project for sewerage system under JNNURM is ongoing.

- **Has ward/ zone level consultations held in the city?**  
NO
- **Has alternatives explored are crowd sourced?**  
NO
- **What is feedback on the suggested alternatives and innovations?**  
Positive
- **Has alternative taken up for discussions are prioritized on the basis of consultations?**  
Yes
- **What methodology adopted for prioritizing the alternatives?**  
Only Sewerage and septage management system has been adopted as yet.

## 5. Prioritize Projects

Based on the citizen engagement, ULB will prioritize these activities and their scaling up based on the available resources to meet the respective objectives. While prioritizing projects, please reply following questions in not more than 200 words.

- **What are sources of funds?** BY Amrut
- **Has projects been converged with other program and schemes?** No
- **Has projects been prioritized based on “more with less” approach?** Yes
- **Has the universal coverage approach indicated in AMRUT guidelines followed for prioritization of activities?** Yes  
Universal coverage approach is being adopted – 100% coverage of sewer network, 100% efficiency in collections of sewerage & ensuring 100% efficiency in Sewerage treatment capacity. Additionally development of smart solutions by C-Dac.

## 6. Conditionalities

Describe in not more than 300 words the Conditionalities of each project in terms of availability of land, environmental obligation and clearances, required NOC, financial commitment, approval and permission needed to implement the project.

### **Sewerage Project:**

Environmental Clearance is in process & awaited for STPs for both Zone  
Awaiting for the permission of Railway crossing.

### **Solid Waste Management:**

Authorization required for Landfill site from PCB.

## 7. Resilience



Required approvals will be sought from competent authority and organizations. The resilience factor would be built in to ensure environmentally sustainable sewerage scheme. Describe in not more than 300 words regarding resilience built in the proposals.

**Required approvals will be sought from State Govt. At STP sufficient space is available for Plantation and environmental sustainability can be achieved by planting more tree in STP also space available pumping station for plantation.**

## 8. Financial Plan

Once the activities are finalized and prioritized after consultations, investments both in terms of capital cost and O&M cost has to be estimated. (AMRUT Guidelines; para 6.5) Based on the investment requirements, different sources of finance have to be identified. Financial Plan for the complete life cycle of the prioritized development will be prepared. (AMRUT Guidelines; para 4, 6.6, 6.12, 6.13 & 6.14). The financial plan will include percentage share of different stakeholders (Centre, State and City) including financial convergence with various ongoing projects. While preparing finance plan please reply following questions in not more than 250 words

- **How the proposed finance plan is structured for transforming and creating infrastructure projects?**

As per detail project report prepared by BMC.

- **List of individual projects which is being financed by various stakeholders?**

UIDSSMT scheme ongoing project details in mention below :-

### Cost Estimate for each Objective ongoing project:

S.No	Activity	Basis	Amount in Rs.Cr
1	Sewerage Network, Pumping Station & Road restoration including O&M of SPS for 3year	Item rate	351.90
2	Construction of STP 54MLD, 17MLD including O&M of STP for 3year	EPC (Lump Sum)	56.58
3	Land Acquisition & External electrification	Lump Sum	11.50
4	Project Management & Consultancy	Percentage	9.10

- **Has financial plan prepared for identified projects based on financial convergence and consultation with funding partners?** - No
- **Is the proposed financial structure is sustainable? If so then whether project has been categorized based on financial considerations?** - Yes
- **Have the financial assumptions been listed out?** - Yes
- **Does financial plan for the complete life cycle of the prioritized development?** - Yes
- **does financial plan include percentage share of different stakeholders (Centre, State, ULBs and)** - Yes
- **Does it include financial convergence with various ongoing projects** - Yes
- **Does it provide year-wise milestones and outcomes?** - Yes

Details in financial plan shall be provided as per Table 2.7, 2.8, 2.9, 2.10 and 2.11. These tables are based on AMRUT guidelines tables 2.1, 2.2,2.3.1,2.3.2, and 2.5.



**Table 2.7 Master Plan of Sewerage Projects for Mission period**

**(As per Table 2.1 of AMRUT guidelines)**

**(Amount in Rs. Cr)**

Sr. No	Project Name	Priority number	Year in which to be implemented	Year in which proposed to be completed	Estimated Cost
1	<b>2 Nos.</b> of Sewerage suction cum jetting machine - 9000 Ltr combined tank capacity – chassis BS IV 16 ton with cabin	1	2015-16	2016-17	1.02
2	<b>1 Nos.</b> of 500 Ltr. and 1 no. 2000 ltr. tank capacity high pressure jetting machine with Vehicle mounted cum jetting machine.	1	2015-16	2016-17	0.33
3	Providing & laying balance sewerage network. (14.15 KM) and property chamber connection. <b>15000 Nos.</b>	2	2015-16	2016-17	16.32
4	Septage management – colony development in low laying area septic tank replace by bio-digesters, bioremediation etc – <b>2720 Nos.</b>	3	2015-16	2016-17	4.12
<b>Grand Total</b>		<b>3</b>			<b>21.79</b>

**Table 2.8 Master Service Levels Improvements during Mission Period**

(As per Table 2.2 of AMRUT guidelines)

(Amount in Rs. Cr)

Sr. No.	Project Name	Physical Components	Change in Service Levels			Estimated Cost
			Indicator	Existing (As-Is)	After (To-be)	
1	Swacch Bharat Mission	Construction of individual toilet	Coverage of latrines (individual or community)	80%	100%	Ongoing Project
2	Ongoing Project & Proposed sewer network	14.15 Km network & 15000 Nos. of Property chambers	Coverage of sewerage network services	6%	100%	16.32
			Efficiency of collection of sewerage	4.6%	100%	
3	Ongoing & septage management	By Bio-digesters	Efficiency in Treatment: Adequacy of sewerage treatment capacity	29.4%	100%	4.12
4	Sewerage suction cum jetting machine -	2 Nos. of 9000 Ltr & <b>1 Nos.</b> of 500 Ltr. and 1 no. 2000 ltr. tank capacity	O&M of sewer network	-	100%	1.35
<b>Total</b>						<b>21.79</b>

**Table 2.9 Annual Fund Sharing Pattern for Sewerage Projects**

(As per Table 2.3.1 of AMRUT guidelines)

(Amount in Rs. Cr)

Sr. No.	Name of Project	Total Project	Share				Total
			GOI	State	ULB	Others	
1	<b>2 Nos.</b> of Sewerage suction cum jetting machine - 9000 Ltr combined tank capacity – chassis BS IV 16 ton with cabin	1.02	0.51	0.306	0.204		1.02
2	<b>1 Nos.</b> of 500 Ltr. and 1 no. 2000 ltr. tank capacity high pressure jetting machine with Vehicle mounted cum jetting machine.	0.33	0.165	0.099	0.066		0.33
3	Providing & laying balance sewerage network. (14.15 KM) and property chamber connection. <b>15000 Nos.</b>	16.32	8.16	4.896	3.264		16.32
4	Septage management – colony development in low laying area septic tank replace by bio-digesters, bioremediation etc – <b>2720 Nos.</b>	4.12	2.06	1.236	0.824		4.12
<b>Total</b>		<b>21.79</b>	<b>10.895</b>	<b>6.537</b>	<b>4.358</b>		<b>21.79</b>

Sr. No.	Project	Gol	State			ULB			Convergence	Others	Total
			14 <sup>th</sup> FC	Others	Total	14 <sup>th</sup> FC	Others	Total			
1	2 Nos. of Sewerage suction cum jetting machine - 9000 Ltr combined tank capacity – chassis BS IV 16 ton with cabin	50%		30%	30%	20%		20%		100%	

**Table 2.10 Annual Fund Sharing Break-up for Sewerage Projects**

(As per Table 2.3.2 of AMRUT Guidelines)

(Amount in Rs.Cr)

2	1 Nos. of 500 Ltr. and 1 no. 2000 ltr. tank capacity high pressure jetting machine with Vehicle mounted cum jetting machine.	50%		30%	30%	20%		20%			100%
3	Providing & laying balance sewerage network. (14.15 KM) and property chamber connection. <b>15000 Nos.</b>	50%		30%	30%	20%		20%			100%
4	Septage management – colony development in low laying area septic tank replace by bio-digesters, bioremediation etc – <b>2720 Nos.</b>	50%		30%	30%	20%		20%			100%
<b>Total</b>		<b>10.895</b>			<b>6.537</b>			<b>4.358</b>			<b>21.79</b>

**Table 2.11 Year wise Plan for Service Levels Improvements**

(As per Table 2.5 of AMRUT guidelines)

Proposed Projects	Total Project Cost (Cr)	Indicator	Baseline	Annual Targets (Increment from the baseline Value)					
				FY 2016		FY 2017	FY 2018	FY 2019	FY 2020
				H1	H2				
<b>Sewerage and Septage Management</b>									
		Coverage of latrines (individual or community) (%)	80	90	100	-	-	-	100

	Coverage of sewerage network services (%)	6	35	100	-	-	-	100
	Efficiency of Collection of Sewerage (%)	5	45	100	-	-	-	100
	Efficiency in treatment (%)	29	45	100	-	-	-	100