

WATER SUPPLY SECTOR

SECTOR WISE SLIP TEMPLATE: WATER SUPPLY

1. Assess the Service Level Gap

The first step is to assess the existing situation and service levels gaps for Water Supply (AMRUT Guidelines; para 3 & 6). This will also include existing institutional framework for the sector. 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 water supply system of the city? Detail out the data, information, plans, reports etc related to sector. Is zone wise information available? (75 words)

Bhilai Municipal Corporation (BMC) supplies water to the 44 wards and Bhilai steel plant (BSP) Administration supplies water to 23 wards having separate system. Water Supply System of BMC phase-1 was completed in 2002 by CGPHED. BMC has prepared all the data information, plan, reports for the planning and implementation of water supply system zone wise based on census 2011, CSP, CDP. For BMC area is divided into 6 administrative zones for providing various services to citizens.

- Have you collected census 2011 data? Are you aware of baseline survey data of MoUD? Have you correlated data from these and other sources? (75 words)

Census 2011 data and baseline survey data of MoUD has been correlated. CDP, CSP, SLB data also considered.

What are existing services levels for water supply in the city? What is the coverage of water supply Connections? What is per capita supply of water? How much is the extent of metering? How much is non-revenue water?

The Phase-I of the Project is designed for intermediate year 2006 to serve the population of 650000.. In view of these the left over areas of Bhilai Corporation like Kohka, Chhawani, Housing Board, Ruabandha, Maroda, Newai, Dundera & Joratarai have to be covered. These areas are the part of Phase II work

of the Project. The ultimate demand is 143 MLD & Intake work, Raw water Pumping main, clear water Pumping main have already been completed.

Existing coverage of water supply connection is 50% in the city. Per capita supply of water is 115 LPCD and extent of metering is 0%.

- Provide information in table 1.1

Table 1.1 Status of Water Supply service levels

Sr. No.	Indicators	Present status	MOUD Benchmark	Reliability
1	Coverage of water supply connections	41.2%	100%	B
2	Per capita supply of water	111.8 LPCD	135 LPCD	D
3	Extent of metering of water connections	0%	100%	D
4	Extent of non-revenue water	59%	20%	D
5	Quality of water supplied	100%	100%	D
6	Cost recovery in water supply services	52.5%	100%	D
7	Efficiency in collection of water supply related charges	23.9%	90%	D

- What is the gap in these service levels with regard to benchmarks prescribed by MoUD?(75 words)

Gap is as follow: - Gap of the coverage of water supply connections is 58.8 percent. Gap of the per capita water supply is 23.2 lpcd and there is no metering of water connections therefore Gap is 100%. The extent of non-revenue water is 39%.Which needs improvement.

Source of Water and Water Treatment System

Please provide information in 150 words on the above responding to (however not limited to) following questions.

- What is the existing source of water? Is it surface water source or under ground water source? What is the capacity of these sources?

In BMC area Source of water is from Shivnath river of designed capacity of 77 MLD and Morid Tank of capacity 2.75 MLD as surface water source .where as in BSP area the surface water source is Maroda Tanks.

Is there any treatment provided to water from these sources? How much water is required to be treated daily? What is the treatment capacity installed in the city?

The treatment plant of 77 MLD capacity at Nehru Nagar and 2.75 MLD at Industrial area are available. The 61 MLD of water is required daily for treatment.

Distribution Zones

Please provide information in 150 words on the above responding to (however not limited to) following questions.

- City is divided in how many zones for water supply ?

In city water is supplied in 6 Zones of BMC area and Bhilai Steel Plant (BSP) has its own water supply system.

- Provide details of total no of Households (HH) in each zone, no of HH with and without water tap connections in the Table 1.2.

Table 1.2: Zone Wise Coverage of Households

Zone No	Total No of Households	Households with Water tap Connection	Households without water tap connections
1	30857	16142	14715
2	23167	13031	10136
3	18603	9206	9397
4	23069	6772	16297
5	18177	18177	0
6	22894	8716	14178
Total	136767	72044	64723

NOTE- In Zone 1 two wards (HUDCO) have 100% water connection

- In Zone 3 four wards (BSP) have 100% water connection
- In Zone 5 all wards (BSP) have 100% water connection
- In Zone 6 Three wards (BSP) have 100% water connection

Storage of Water

Please provide information in 150 words on the above responding to (however not limited to) following questions.

- What is the total water storage capacity in the city ? What is capacity of elevated and ground water reservoirs?

In BMC area the total water storage capacity is 32.9mld and Bhilai steel Plant Area has water storage capacity of 45 mld.

- Is water being supplied to consumers through direct pumping or through elevated reservoirs?

Water being supplied to consumers through elevated reservoirs

Is storage capacity sufficient to meet the cities ?

No, The left over areas of BMC like Kohka, Chhawani, Housing Board, Ruabandha, Maroda, Newai, Dundera&Joratarai have to be covered.

Distribution Network

Please provide information in 150 words on the above responding to (however not limited to) following questions.

- What is the total length of water supply distribution pipe line laid in the city?

In BMC area the length of water supply distribution pipe line is 930 Km

- What is the total road length in the city?

Total Road length is 1150 km.

- Is the pipe lines are laid in all streets?

No.

- Is the objective of universal coverage of water supply pipe line is achieved?

No.

- What are the kind of pipe materials used in distribution lines ?

DI, GI, MDPE pipes are used in distribution Network.

- Provide zone wise details of street length with and water distribution lines in the Table 1.3.

Table 1.3: Zone Wise length of distribution network

Zone No	Total Street Length	Street length with water distribution pipe line	Street length without water distribution pipe line
1	494.5 km	403 km	91.5 km
2	310.5 km	253.21 km	57.29 km
3	161 km	129.92 km	31.08 km
4	138 km	108.75 km	29.25 km
5	674 km (BSP Area)	674 km (BSP Area)	0
6	46 km	35.65 km	10.35
Total	1150 Km.	930 Km.	220 Km.

Institutional Framework

Please provide information in 150 words on the above responding to (however not limited to) following questions.

- Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table 1.4.

Table 1.4: Functions, roles, and responsibilities

Planning and Design	Construction/ Implementation	O&M
PHED,BMC	BMC& PHED	BMC
BhilaiSteel Plant (BSP)	BSP	BSP

- How city is planning to execute projects?

For the execution of entire project BMC will prepare detail phase wise DPR. BMC will be divided in to several planning zone and the project will be control and monitored by BMC itself. For the timely completion of the project BMC will engage one and more expert agency/PMC Consultant and the work will be divided in a phased manner.

- Shall the implementation of project be done by Municipal Corporation or any parastatal body? Please refer para 8.1 of AMRUT guidelines.

For the timely completion of the project BMC will engage one and more expert agencycomponentwise of project and PMC consultant.

2. Bridge 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 sector under

different schemes with status and when the existing projects are scheduled to be completed? Provide information in Table 1.4

Table 1.4: Status of Ongoing/ Sanctioned

Sr. No.	Name of Project	Scheme Name	Cost	Month of Completion	Status (as on 30/08/15)
1	Waste water Recycling work under 77mld plant	13 th finance& BMC	88.26 lacs	Dec 2015	60 % complete
2	Watersupply line work in ward 56	Adhosanrachna Fund	135.95 lacs	Dec 2015	60 % Completed
3	Water supply line work in ward 57	Adhosanrachna Fund	147.95 lacs	Dec 2015	60 % Completed
4	Sump well for Mini Filter Plant (23-00 X 23-00) M.	Adhosanrachna Fund	45.00 lacs	Dec 2015	60 % Completed
5	Mini filter Plant Chawani	Adhosanrachna Fund	45.00 lacs	Dec 2015	45 % Completed
6	Distribution of DI Pipe line	Adhosanrachna Fund	50.00 lacs	Dec 2015	10 % Completed
7	Laying of pipe line 200 MM dia	Adhosanrachna Fund	50.00 lacs	Dec 2015	63 % Completed
8	Laying of pipe line 300 MM dia	Adhosanrachna Fund	49.70 lacs	Dec 2015	50 % Completed

- How much the existing system will be able to address the existing gap in water supply system? Will completion of above will improve the coverage of network and collection efficiency? If yes, how much. (100 words)

Yes, Un-served area of water supply shall be covered after completion of mission and we will achieve the MoUD water supply Baseline.

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

Yes. For the execution of entire project BMC will prepare detail phase wise DPR. BMC will be divided in to several planning zone and the project will be control and monitored by BMC itself. For the timely completion of the project BMC will engage one and more expert agency/PMC Consultant and the work will be divided in a phased manner.

- 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?

Raw water pumps and substation, clear water pumps and sub station will be upgraded in proposed scheme.

- Has city conducted assessment of Non Revenue Water ?if yes, what is the NRW level? Is city planning to reduce NRW ?

NRW has been assessed during preparation of CSP ,CDP and service level Benchmarking statement. On revenue water is 42.16 %.It is proposed to regularize illegal waterConnections and to control leakages in water pipeline.

- Based on assessment of existing infrastructure and ongoing / sanctioned projects, calculate existing gaps and estimated demand by 2021 for water supply pipe network, number of household to be provided with tap connections, and required enhancement in capacity of water source/ treatment plant (MLD). Gaps in water supply service levels be provided as per Table 1.5.

Table 1.5 . Demand Gap Assessment for Water Supply Sector

Component	2015			2021	
	Present	Ongoing projects	Total	Demand	Gap
Source	152 MLD	–	152 MLD	150.15 MLD	–
Treatment capacity	79.72 MLD	1.5 MLD	81.22 MLD	143 MLD	61.78 MLD
Elevated Storage capacity	32.09 ML	–	32.09 ML	46 ML	13.91 ML
Distribution network coverage	930 Km.	–	930 Km.	1150.48 km	220.48 km

Note: BSP Area is not included in above table. Demand based on year 2031(As per proposed DPR Phase 2)

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?
- Does each objective meet the opportunity to bridge the gap?

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

To increase coverage through individual service connections. Provide water supply to newly developed/ developing areas and other uncovered areas. To Augment existing source / identify new source to meet future water demand. To Improve water distribution system by controlling leakages, and installing bulk domestic water meters, to control Unaccounted for Water (UFW) and to legalize unauthorized connections.

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. While identifying the possible activities, also examine the ongoing scheme and its solutions including status of completion, coverage and improvement in O&M. Please provide information on the above responding to (however not limited to) following questions.

- What are the possible activities and source of funding for meeting out the objectives? (75 words)

For the execution of entire project BMC will prepare detail phase wise DPR. BMC will be divided in to several planning zone and the project will be control and monitored by BMC itself. For the timely completion of the project BMC will engage one and more expert agency/PMC Consultant and the work will be divided in a phased manner.

Source of funding may be from ULB with state and Mission and O&M of water supply system in PPP Mode which may include option of collecting water Tax.

- How can the activities be converged with other programme like JICA/ ADB funded projects in the city etc? (100 words)

NA

- What are the options of completing the ongoing activities? (75 words)

NA

- What are the lessons learnt during implementation of similar projects? (100 words)

To adopt new technology for water treatment with greater emphasis on recycling of waste water.

- Have you Analysed best practices and innovative solutions in sector? Is any of the practice be replicated in the city?(75 words)

We will adopt GIS Based Water pipe line distribution network for planning and monitoring. We will proposed 24*7 water supply service for the city and for online monitoring we will adopt SCADA System.

- What measures may be adopted to recover the O&M costs?(100 words)

By Improving billing, collection efficiencies in collecting watertax.It is proposed to Provide IT Enable services to pay water charges by E-seva Kendra.

- Whether reduction in O&M cost by addressing NRW levels be applied?(75 words)
By compounding of illegal Tap connections cost recovery of water works shall be done which will increase revenue collection.

- Are different options of PPP such as Design-build-Operate-Transfer (DBOT), Design Built Finance Operate and Transfer (DBFOT) are considered?(100 words)

Different options of PPP models may be adopted after approval of CG Government.

The alternative activities to meet these activities be defined as per Table 1.6

Table1.6 Alternative Activities To Meet Objectives

Sr. No.	Objective	Activities	Financing Source
01	To cover unserved areas under Piped Supply	To Lay Distribution Pipeline network,construction of ESR/WATER TANK	BMC/State
02	Non Revenue water reduction	To compound illegal water connections and ,to decrease losses	BMC
03	To generate Water revenue and to minimize unauthorized water connection/consumption	100 % Meetring System	BMC

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?
Yes.Through website of BMC citizens can give their views,suggestions.
- Has ward/ zone level consultations held in the city?
Yes.In CITYTHON ward level consultations have been conducted.
- Has alternative proposed above are crowd sourced?
Yes.
- What is feedback on the suggested alternatives and innovations?
Yes. Waste water treatmentunit to be erected to save water.
- Has alternative taken up for discussions are prioritized on the basis of consultations?
Yes. First priority is to provide drinking water supply line in unserved area compared to other facilities.
- What methodology adopted for prioritizing the alternatives?
Yes.

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?

ULB itself.

- 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.

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.

The land is available for installation of treatment plant, ESR and distribution pipeline. NOC form respective departments like PWD, National Highway, BSP shall be obtained as per requirement of site.

7. Resilience

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

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?
- list of individual projects which is being financed by various stakeholders ?
- Has financial plan prepared for identified projects based on financial convergence and consultation with funding partners?
- Is the proposed financial structure is sustainable? If so then whether project has been categorized based on financial considerations ?
- Have the financial assumptions been listed out ?
- does financial plan for the complete life cycle of the prioritized development?
- does financial plan include percentage share of different stakeholders (Centre, State, ULBs and)
- does it include financial convergence with various ongoing projects.
- Does it provide year-wise milestones and outcomes ?

Details in financial plan shall be provided as per Table 1.7,1.8,1.9,1.10 and 1.11. These tables are based on AMRUT guidelines tables 2.1, 2.2,2.3.1,2.3.2, and 2.5.

**Table 1.7 Master Plan of Water Supply Projects for Mission period
(As per Table 2.1of AMRUT guidelines)**

(Amount in Rs. Cr)

Sr. No.	Project Name Code	Priority number	Year in which to be implemented	Year in which proposed to be completed	Estimated Cost
01	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/01)	1	2015-2016	2017-18	72.91 Cr.
02	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/02)	2	2016-2017	2018-19	90.54 Cr.
03	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/03)	3	2017-2018	2019-20	67.66 Cr.
Grand Total					Rs. 231.11 Cr.

Table 1.8 Master Service Levels Improvements during Mission Period**(As per Table 2.2 of AMRUT guidelines)**

(Amount in Rs. Cr)

Sr.No.	Project Name and Code	Physical Components	Change in Service Levels			Estimated Cost
			Indicator	Existing (As-Is)	After To-be	
01	water supply scheme phase 2A (AMRUT/CG/Bhilai/WS/01)	1. Raw Water Pumps and sub station 2. Civil work at intake well 3. Raw water rising 4. Clear water pumps and sub station 6. Overhead Tanks (Zone 1,4,6) 40 % 7. Distribution Network (Zone 1,4,6) 50%	1. Coverage of water supply system 2. Per Capita supply of water	41.2% 111.8 LPCD	50%	72.91 Cr.
02	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/02)	1. Water Treatment Plant 60 %, 2. OHT (2,3,5,7,8) 60%, (100%) 3. Clear Water Pumping Main (North & South Zone), 4. Distribution Network 2,3,5,6,7,8 (Zone 5,6) 100%	Quality & Coverage	50 %	70%	90.54 Cr.
03	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/03)	1. Water Treatment Plant 40%, 2. Clear Water rising main (Dundera), 100% 3. Distribution Network (Zone 2,3) 100%	Quality & Coverage	70%	100%	67.66 Cr.

1.1

Table 1.9 Annual Fund Sharing Pattern for Water Supply Projects
(As per Table 2.3.1 of AMRUT guidelines)

(Amount in Rs. Cr)

Sr. No.	Name of Project	Total Project Cost	Share				
			GOI	State (30%)	ULB 20%	Others	Total
01	water supply scheme phase 2	21.97 Cr.	10.98 Cr.	6.59 Cr.	4.39 Cr.	-	72.91 Cr.
02	water supply scheme phase 2	93.12 Cr.	46.56 Cr.	27.93 Cr.	18.62 Cr.	-	90.54 Cr.
03	water supply scheme phase 2	62.09 Cr.	31.04 Cr.	18.63 Cr.	12.42 Cr.	-	67.66 Cr.
	Total	177.16 Cr.	88.58 Cr.	53.45 Cr.	35.43 Cr.		231.11 Cr.

Table 1.10 Annual Fund Sharing Break-up for Water Supply Projects

Sr. No.	Project	Gol	State			ULB			Convergence	Others	Total
			14 th FC	Others	Total	14 th FC	Others	Total			
01	water supply scheme phase 2 (AMRUT/CG/Bhilai/WS/01)	10.98 Cr.	6.59 Cr	-	6.59 Cr	4.39 Cr	-	4.39 Cr	-	-	72.91 Cr.

(As per Table 2.3.2 of AMRUT Guidelines)

BHILAI MUNICIPAL CORPORATION

02	water supply scheme phase 2 (AMRUT/CG/Bhilai/W	46.56 Cr.	27.93 Cr.	-	27.93 Cr.	18.62 Cr.	-	18.62 Cr.		-	90.54 Cr.
03	water supply scheme phase 2 (AMRUT/CG/Bhilai/W S/03)	31.04 Cr.	18.63 Cr.	-	18.63 Cr.	12.42 Cr.	-	12.42 Cr.	-	-	67.66 Cr.
	Total	88.58 Cr.	53.45 Cr.	-	53.45 Cr.	35.43 Cr.	-	35.43 Cr.	-	-	231.11 Cr.

(Amount in Rs.Cr)

**Table 1.11 Year wise Plan for Service Levels Improvements
(As per Table 2.5 of AMRUT guidelines)**

Proposed Projects	Project Cost	Indicator	Baseline	Annual Targets (Increment from the Baseline Value)					
				FY 2016		FY 2017	FY 2018	FY 2019	FY 2020
				H1	H2				
Water Supply									
water supply scheme phase 2A	21.97 Cr.	Coverage	41.2%	-	-	50%	70%	100%	100%
1. Raw Water Pumps and sub station 2 Civil work at intake well 3. Raw water rising 4. Clear water pumps and sub station 6. Overhead Tanks (Zone 1,4,6) 40 % 7. Distribution Network (Zone 1,4,6) 50%		Coverage of water supply connections	41.2%						
		Per capita supply of water	111.8 LPCD		135 LPCD				
		Extent of metering of water connections	0%						
		Extent of non-revenue water	59%						
		Quality of water supplied	100%						
		Cost recovery in water supply services	52.5%						
		Efficiency in collection of water	23.9%						

