

Sewerage and Septage Management

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.

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)

Answer: Base line Information is available from Jal Sansthan ,Jal nigam and UUSDIP. Data correlated with Census 2011 data. population of city 171351 (census 2011) and at 2021 population will be 228239.

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

Table 2.1 : Status of sewerage network and Service Levels

Sr. No.	Indicators	Existing Service Level	MOUD Benchmark	Reliability
1	Coverage of latrines (individual or community)	87	100%	B
2	Coverage of sewerage network services	10	100%	B
3	Efficiency of collection of sewerage	10	100%	B
4	Efficiency in Treatment: Adequacy of sewerage treatment capacity	0	100%	B

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

Answer: 1. Gap in coverage in latrine 13% 2. Gap in coverage sewer network 100% 3. Gap in efficiency in collection of sewerage is 100% 4. Gap in Efficiency in Treatment 100%

Question:Does city has separate drainage system or sewer lines take care of storm water? (50 words)

Answer: City does not have separate drainage system. Sewer lines do not take care of storm water.

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Coverage of latrines (individual or community), Please provide information in Table 2.2 A

Zone No.	Total number of HH a	Total number of HH without individual or community toilets within walking distance b	Coverage of latrines (%), (b/a)*100%
city	33206	28900	87



Sewerage network And Collection of Sewerage

Question: 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 septage? Provide information in Table

Table: Zone Wise Coverage of Households

Zone No.	Total No. of Households(HH) a	Households with Sewerage Network b	Coverage of sewerage network services (b/a)*100%
city	33206	3400	10

Question: 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 waste are not connected to sewerage system? (75 words)

Answer: In municipal area there is no area where sewer line have been laid but still households do not connected. In city where sewer lines laid, every household connected to sewer line have also taken care of kitchen or bathroom waste.

Question: 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)

Answer: There is no systematic and organized method to collect and treat waste from septic tanks in city. The general duration of cleaning of septic tanks is biannually and by private operators. In few places the overflows of septic tanks directly goes to nearby drain.

Question: 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)

Answer: City has mixture of routine maintenance and break down maintenance system. Generally due to the topography of the city the break down maintenance is required. At present for the O&M purpose one number sewer jetting cum suction machine is available along with one pump set.

Sewage Treatment System

Question: 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 Existings STPSs

Sr. No. Location Capacity (MLD) Inflow in the STP (MLD) Efficiency in %

- No STP available - -

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

Answer: Though at present there is no waste treatment system exist in the city, How ever a centralized waste treatment system planned to propose in the city. In few places like very low lying areas or where the topography will not permit to connect area into the centralized system, bio-digester system will we proposed.

Question: 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)

Answer: At present a total of 22.40 MLD sewerage is generated in the city. Since there is no STP in the city hence all the effluent is directly disposed off to the open land.

Question: 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)

Answer: No. Not used for irrigation. No option of power generation being explored.

Institutional Framework

Question: Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table

Table: 2.4: Functions, roles, and responsibilitis

Planning and Design	Construction/ Implementation	O&M
Uttarakhand Peyjal Nigam, Uttarakhand Jal Sansthan, UUSDIP and ULB	Uttarakhand Peyjal Nigam, Uttarakhand Jal Sansthan and UUSDIP	Uttarakhand Jal Sansthan

Question: 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)

Answer: Implementation of the project is done by Uttarakhand Peyjal Nigam,Uttarakhand Jal Sansthan and UUSDIP.

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.

Question: 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

Table: Status of Ongoing/ Sanctioned

S.No.	Name of Project	Scheme Name	Cost in Rs Crore	Month of Completion	Status (as on dd mm 2015)
-	No project on going	-	-	-	-

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

Answer: Since at present only a part of city is covered through sewerage system, which will be partially able to address existing gap, How where after the completion of the proposed works will improve the coverage of network and collection efficiency up to 100%.

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

Answer: Yes the city required additional infrastructure to improve the services, listed as follows-

1. City requires a 36 MLD capacity STP to meet out the requirement of design period. 2. Approximately a total of 120 Km new main trunk / branch sewerage system required for full coverage of city. 3. A total of two number new Jetting cum Suction Machines along with Two number sewerage cleaning machines, pumps and spares parts will be required to improve the O&M services. 4. In a proper O&M services which includes a mixture of routine maintenance and break down maintenance, an additional staff will be required.

Question: 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?

Answer: Existing system will be utilized but gap can only be filled with new STP/ branch sewerage system.

Provide information in Table 2.6

Table 2.6: Demand Gap Assessment

Component	2015		2021		
	Existing	Ongoing projects	Total	Demand	Gap
Sewerage network (km)	54 Km	0	54 Km	174 Km	120 Km
No of Households covered under sewerage system	3400	-	3400	44232	40832
Sewerage Treatment Plant (MLD)	0	0	0	36 MLD	36 MLD

Objectives

Based on assessment of existing infrastructure and ongoing / sanctioned projects, calculate existing gaps and estimated demand by 2021 for sewerage network, number of household to be provided with connections, and required enhancement in capacity of STP (MLD), area to be

covered under septage management. Based on the demand and gap assessment, evolve objectives to achieve bridging these gap.

Question: Does each identified objectives will be evolved from the outcome of assessment?

Answer: Yes, each identified objective have been evolved from the outcome of assessment.

Question: Does each objective meet the opportunity to bridge the gap?

Answer: Yes, each objective will be meet out the opportunity to bridge the gap.

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

1. City requires a 36 MLD capacity STP to meet out the requirement of design period. 2. Approximately a total of 120 Km new main trunk / branch sewerage system required for full coverage of city. 3. A total of two number new Jetting cum Suction Machines along with Two number sewerage cleaning machines, pumps and spares parts will be required to improve the O&M services. 4. In a proper O&M services which includes a mixture of routine maintenance and break down maintenance, an additional staff will be required.

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.

Question: What are the possible activities and source of funding for meeting out the objectives?

Answer: 1. To create a 36 MLD capacity STP - AMRUT or UUSDIP. 2. To create 120 Km main trunk and branch sewer line – AMRUT. 3. For O&M part – AMRUT through stakeholders.

Question: How can the activities be converged with other programmes like JICA/ ADB funded projects in the city etc?

Answer: There are no programmes like JICA/ ADB funded projects are running in the city.

Question: What are the options of completing the ongoing activities?

Answer: No ongoing activities are running in the city.

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

Answer: In earlier projects, due to delay in fund allotment the cost of project increased considerably and due to the increase in time the project have not fulfill the objectives.

Question: Has projects includes O&M of sewerage system?

Answer: No.

Question: 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.

Answer: Increase in monthly maintenance charges along with proper sale of sludge and use of treated water for irrigation purposes will recover the O&M cost.

Question: What are innovative alternative solutions explored in achieving objectives?

Answer: No alternative solution explored yet.

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

Answer: Not considered.

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

Answer: The recycled water will be used for irrigation purposes down stream to the STP.

Approximately a total of 30 MLD recycled water can be reused for irrigation.

Question: Have you analysed best practices and innovative solutions in sewerage sector? Is any of the practice be replicated in the city?

Answer: Not yet.

Question: 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.

Answer: The identification of areas for decentralized waste treatment system is under way. after the identification of the area the appropriate model like replacing septic tanks by bio-digesters or bioremediation will be adopted.

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

Table2.7 Alternative Activities To Meet Objectives

SL No.	Objective	Activities	Financing Source	
1	To achieve universal coverage for latrines.	Create 36.00 MLD capacity STP. (Cost Rs. 60.00 CR.)	AMRUT	+ X
2	To achieve universal coverage for latrines.	Create 120 Km trunk / branch sewer line (Cost Rs. 72 CR.)	AMRUT	+ X
3	To achieve universal coverage for latrines.	Asset creation for O&M. (Cost Rs. 5.00 CR.)	AMRUT	+ X
4	To achieve universal coverage for latrines.	Connection of 40832 HH sewer connections. (Cost Rs. 8.00 CR.)	AMRUT	+ X

4. Citizen Engagement

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 reply following questions in not more than 200 words.

Question: Has all stakeholders involved in the consultation?

Answer: Yes, Meeting chaired by Mayor Haldwani along with Parshads, line departments and different society members.

Question: Has ward/ zone level consultations held in the city?

Answer: Yes.

Question: Has alternative proposed above are crowd sourced?

Answer: Yes.

Question: What is feedback on the suggested alternatives and innovations?

Answer: As per the suggestions given by different members, the first priority has to be given to existing operational system improvement which includes the provision of additional sewer Jetting Machines, Suction machine and Pumps along with the safe disposal of present production of sewerage for which the construction of new STP has to be started immediately

along with the priority given to the areas where there is no coverage of sewerage network. Along with the above the participants also emphasized for 100% HHs connection.

Question: Has alternative taken up for discussions are prioritized on the basis of consultations?

Answer: Yes

Question: What methodology adopted for prioritizing the alternatives?

Answer: Meeting chaired by Mayor Haldwani along with Parshads, line departments and different society members. After a detailed discussion the priority for different proposed works has been finalized.

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.

Question: What are sources of funds?

Answer: AMRUT

Question: Has projects been converged with other program and schemes?

Answer: No

Question: Has projects been prioritized based on “more with less” approach?

Answer: Yes

Question: Has the universal coverage approach indicated in AMRUT guidelines followed for prioritization of activities?

Answer: Yes

6. Conditionalities

Describe 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. Please reply following questions in not more than 100 words.

Answer: 1. For the construction of STP a total 49.95 Ha land is available with department near bypass road. 2. For branch/ Truck sewer line public road are available and PWD/ Nagar Nigam will give permission.

7. Resilience

Required approvals will be sought from competent authority and organisations. The resilience factor would be built in to ensure environmentally sustainable sewerage scheme. Please reply following questions in not more than 100 words.

Answer: Process in under ways. (EIA etc.)

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 200 words

Question: Does financial plan for the complete life cycle of the prioritized development?

Answer: Yes

Question: Does financial plan include percentage share of different stakeholders (Centre, State, ULBs and)

Answer: Yes

Question: Does it include financial convergence with various ongoing projects.

Answer: N/A

Question: Does it provide year-wise milestones and outcomes ?

Answer: Yes

Details in financial plan shall be provided as per Table 8.1, 8.2, 8.3, 8.4 and 8.5. These tables are based on AMRUT guidelines tables 2.1, 2.2, 2.3.1, 2.3.2, and 2.5.

**Table 8.1 Master Plan of Sewerage Projects for Mission period
(As per Table 2.1 of AMRUT guidelines)**

(Amount in Rs. Cr)

S.No.	Project Name	Priority number	Year in which to be implemented	Year in which to be completed	Estimated Cost
1	Asset creation for O&M	1	2015	2016	5.00
2	Construction of 120 Km trunk and branch sewer lines part-1	2	2015	2018	30.00
3	Construction of 36 MLD capacity STP	3	2015	2018	60.00
4	Construction of 120 Km trunk and branch sewer lines part- 2	4	2018	2020	42.00
5	Connection of 40832 HHs sewer connection	5	2015	2020	8.00

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	Asset creation for O&M	procurement of machinery, tool and plants	Efficiency of collection of sewerage.	10%	15%	3.00
2	Construction of 120	Construction of 5	Coverage of	10%	15%	6.00

Sr. No.	Project Name	Physical Components	Change in Service Levels			Estimated Cost
			Indicator	Existing (As-Is)	After (To-be)	
3	Km trunk and branch sewer lines Construction of 36 MLD capacity STP	Km trunk and branch sewer lines Construction of 36 MLD capacity STP	sewerage network services Efficiency in Treatment: Adequacy of sewerage treatment capacity	0%	20%	8.00
4	Conection of 40832 HHs sewer connection	40832 HHs sewer	Coverage of latrines (individual or community)	87%	89%	1.00

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 Cost	Share				Total
			GOI	State	ULB	Others	
1	Asset creation for O&M	3.00	1.50	1.50	0	0	3.00
2	Construction of 120 Km trunk and branch sewer lines	6.00	3.00	3.00	0	0	6.00
3	Construction of 36 MLD capacity STP	8.00	4.00	4.00	0	0	8.00
4	Connection of 40832 HHs sewer connection	1.00	0.50	0.50	0	0	1.00

Annual Fund Sharing Break-up for Sewerage Projects

(As per Table 2.3.2 of AMRUT guidelines)

Sr. No.	Project	GOI		State		ULB		Convergence	others	Total
		14th FC	Others	14th FC	Others	14th FC	Others			
1	Asset creation for O&M	1.50	0	1.50	1.50	0	0	0	0	3.00

Sr. No.	Project	GOI	State		ULB		Convergence	others	Total	
			14th FC	Others	Total	14th FC				Others
2	Construction of 120 Km trunk and branch sewer lines	3.00	0	3.00	3.00	0	0	0	0	6.00
3	Construction of 36 MLD capacity STP	4.00	0	4.00	4.00	0	0	0	0	8.00
4	40832 HHs sewer connection	0.50	0	0.50	0.50	0	0	0	0	1.00

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				
Asset creation for O&M	5.00	Efficiency of collection of sewerage.	10%	0	15%	20%	0	0	0
Construction of 120 Km trunk and branch sewer lines part- 1	30.00	Coverage of sewerage network services	10%	0	15%	25%	40%	0	0
Construction of 36 MLD capacity STP	60.00	Efficiency in Treatment: Adequacy of sewerage treatment capacity	0%	0	5%	40%	100%	0	0
Construction of 120 Km trunk and branch sewer lines part -2	90.00	Coverage of sewerage network services	10%	0	0	0	50%	70%	100%
Connection of 40832 HHs sewer connection	8.00	Coverage of sewerage network services	87%	0	89%	90%	93%	96%	100%