

# Storm Water

## 1. Assess the Service Level Gap

The first step is to assess the existing situation and service levels gaps for Storm Water Drainage (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.

Question: What kind of baseline information is available for storm water drainage system of the city? Detail out the data, information, plans, reports etc related to sector. Is zone wise information available? (75 words)

Answer: Baseline information collected from ULB, irrigation, PWD and earlier DPR prepared by Nagar Nigam Zone wise information in not available

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

Answer: We are using 2011 census data population of city Haldwani in 171351.

• What is existing service levels for storm water drainage in the city? What is the coverage of drains? What are the no of incidence of sewerage mixing in the drains? How many times water logging incidence happens in the city? Provide comparative information of service levels (in tabulated form) with respect to the service level bench marks prescribed by MoUD and sustainable standards for service levels under the National Mission on Sustainable Habitat (NMSH) in table

**Table : Status of Storm Water Level service levels**

Sr. No.	Indicators	Sustainable standards	Black (Caution for improvement)	Red(Immediate action for improvement)	Present Status
1	Coverage of Storm water drainage network	100%	<75%	<50%	41%
2	Incidence of sewerage mixing in the drains	0%	<25%	<50%	12%
3	Incidence of water logging	0%	<25%	<50%	2%

Question: What is the gap in these service levels with regard to benchmarks prescribed by MoUD and sustainable standards for service levels under the National Mission on Sustainable Habitat (NMSH)?(75 words)

Answer: Inadequate drainage network and damaged existing network and 55% drain are not covered. No planning since last 30 years. 2. there are 2596 families/ house hold are mixing sewerage in the drain and 1665 family are open defecation in drain 3. Because no proper drain system available into the Indra Nagar/ujala nagar in Nagar Nigam Haldwani and 4. Kaladungi road no proper drainage system in available.

Question: What are major challenge facing the city in regard to achieving these service level benchmarks?

Answer: Lack of fund and non availability of sewer line.

Question: Identify gaps in capacity in managing the services efficiently and also provide an innovative solution for efficiently managing these services.

Answer: For 1665 family which is open defecation in drain moving toilet has been proposed.

Question: Brief the ongoing drainage projects in the city. The components included in these projects, how and up to what extent it will support to the drainage system of the city. Weather it address all the issues related to drainage?

Answer: Yes, ongoing project by P.W.D.for 7 Km coverd drainge on P.W.D road to be constructed in which 3 km has been completed it improve the drainge system.

### Coverage of drains

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

Question: Describe how at present, the storm water of City is drained off? How many natural and manmade drains are exists and their coverage with respect to road network?

Answer: In present storm water drainage through following drain. 1. Kathgodam To mukhani via SBI ,Length -6.5 Km covered - 0.25 Km ,2. Koltax to ITI Length -8 Km covered 8.00 Km, 3. Koltax To mandi main road Length -7 Km covered 3.00 Km, 4. Bombay Crockery to STM hospital Length 1.2 Km covered 1.2 Km, 5. Ramlila ground To ujala nagar Length - 1.8 Km covered 0.2 Km, 6. Nai basti to indra nagar Length- 1.1 Km covered 0, 7. Awas vikas to gaula river Length 1.7 Km covered 0.1 Km, 8. Heera nagra drain (jail Road To forest area) Length 1.00 km covered 0, 9. gaytri nagar via haydil to Awas vikas Length 2.5 Km covered 0 Total Coverage of drain is12.75 km out of Length 30.8 km

Question: What is the capacity and condition of these drains? Is sufficient to carry the peak flow of the catchment/water shed?

Answer: Not sufficient, section must be improved

Question: Does city have separate storm water drainage network? If no, provide the information regarding locations of gray water mixes with the existing drains in table 1.2. In case of mixed drainage how it works in peak rainy days?

Sr. No.	Location	Merging with which sewer	Reason
1	Ramlila ground, ujala nagar	Toilet	Because they have no connection of sewer or septic tank
2	Nai basti, indra nagar, polysheet ,jawahar nagar, and some part of the city .	Toilet	Because they have no connection of sewer or septic tank

Question: In case of mixed drainage how it works in peak rainy days?

Answer: It overflow in raining day.

### Water Logging

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

Question: Presently how the problem of water logging is handled? Is it provides the satisfactory outcome?

Answer: Clearing of existing drain at the time of water logging but it is not sufficient.

Question: Provide details of flood points/areas prone to frequent water logging with special focus on Key road intersections, along roads (50 mt length or more) and Locality (affecting 50 HH or more) in the Table

**Table: Flood prone points in the city**

Sr. No.	Area	No of points	No of times water logging reported in a year ( stagnant water for more than four hours of a depth more than 6” )
1	Key road intersection	1	50 days in year
2	Along roads ( 50 mt length or more)	2	50 days in year
3	Locality (affecting 50 HH or more)	3	50 days in year

### Chocking of drains

Question: Are drains prone to chocking due to dumping of solid wastes in them? If yes,Provide details of locations prone to chocking of drains due to solid waste in the Table

**Table 1.2: Detail of Locations prone to chocking of drains due to solid waste**

Sr. No.	Location	Stretch Length Affected	Reason
1	Kathgodam To SBI To mukhani	6.5 km	Drain Not covered
2	Ramlila ground To ujala nagar	1.8 km	Drain Not covered
3	Nai basti to indra nagar	1.1 km	Drain Not covered
4	Awas vikas to gaula river	1.7 km	Drain Not covered
5	Heera nagr Nala ( jail Road To forest area)	1.00 km	Drain Not covered
6	Gaytri nagar via haydil to Awas vikas	2.5 Km	Drain Not covered

Question: How presently the problem is addressed?

Answer: City planing to cover all existing drains. which are not covered and in some areas increasing the cross section of drain in some area to construct to small/big drain and to provide fund to individual. through swchh bharat mission to link there toilet to sewer or to pit system and provided moving toilet for open defecating family .

### Institutional Framework

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

Question: Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table 1.3. Is it in accordance with the AMRUT guidelines (Clause 8.1)?

<b>Planning and Design</b>	<b>Construction/ Implementation</b>	<b>O&amp;M</b>
ULB/ irrigation / P.W.D	ULB/ irrigation / P.W.D	ULB and irrigation / P.W.D

Question: How city is planning to execute projects?

Answer: City is planning to cover all existing drains. which are not covered and in some areas increasing the cross section of drain in some area to construct to small/big drain and to provide fund to individual. through swchh bharat mission to link there toilet to sewer or to pit system and provided moving toilet for open defecating family .

Question: Shall the implementation of project be done by Municipal Corporation? If no, weather resolution has been passed by the Municipal Corporation and accordingly, a tripartite Memorandum of Understanding (MoU) between State Government, Municipal Corporation and Parastatal has been signed?Please refer para 8.1 of AMRUT guidelines.

Answer: YES

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

**Table: Status of Ongoing/ Sanctioned**

S.No.	Name of Project	Scheme Name	Cost in Rs Crore	Month of Complition	Status (as on dd mm 2015)
1	P.W.D road, Drain	P.W.D road, Drain	2.10 cr.	March 2016	40%

Question: How much the existing system will able to address the existing gap in storm water drainage system?Will completion of above improve the coverage of network; eliminate the chocking of drains and water stagnation problem? If yes, how much. (100 words)

Answer: Yes it will eliminated chocking of drainage to same point of city only.

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

Answer: YES To coverage drain and new construction of main & primary Drains.

Question: How does the city visualizeto 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: Yes, some drains are not covered so if we covered the drain by using the existing system. Then optimum use of existing system.

Question: Has city conducted assessment of O&M cost of drains and potable pumps? if yes, what is it? Is city planning to reduce it?

Answer: NO

Based on assessment of existing infrastructure and ongoing / sanctioned projects, calculate existing gaps and estimated demand by 2021 for Rejuvenation of existing drains, construction of new primary and secondary drains, construction of pump house with pumping machinery, covering of drains. Gaps in Storm water drainage service levels are provided as per Table 1.5.

**Table: Demand Gap Assessment for Storm Water Drainage Sector**

### **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.**

Question: Does all these gaps clearly identified and addressed? (75 words)

Answer: YES but details survey required

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

Answer: City is planning to cover all existing drains. Which are not covered and in some areas increasing the cross section of drain in some area to construct to small/big drain and to provide fund to individual. through swchh bhara mission to link there toilet to sewer or to pit system and provided moving toilet for open defecating family ..

Question: How can the activities be converged with other programme like JICA/ ADB funded/SBM/Smart city mission projects in the city etc.? (i.e. convergence with other schemes)(100 words)

Answer: N/A

Question: What are the options (financial alternatives) of completing the ongoing activities specially on going JnNURM projects? (75 words)

Answer: NO

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

Answer: N/A

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

Answer: N/A

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

Answer: N/A

Question: Whether reduction in O&M cost by energy efficient pumps etc be applied?(75 words)

Answer: Not None

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

Answer: N/A

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

**Table: Alternative Activities To Meet Objectives**

<b>Sr. No.</b>	<b>Objective</b>	<b>Activities</b>	<b>Financing Source</b>
01	To attain proper covered drain water system	rejuvenate drains(39cr)	AMRUT
02	To attain proper water/covered drain water system	rejuvenate and construction of new drain and increasing cross section (16cr)	AMRUT
03	open deification free city	connection toilet to sewer line and moving toilets proposal for open defecation families (	under SBM programme

#### **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

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 suggestion given by different members, the Work to reduce the storm water in different effective places.

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 all 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 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.

Answer: The land of ULB is used to project, environmental obligation and clearance not required.

## 7. Resilience

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

Answer: Construction of new drain and covering drain will be done by PWD/ULB/ irrigation department.

## 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

Question: How the proposed finance plan is structured for transforming and creating infrastructure projects?

Answer: YES, Through AMRUT

Question: List of individual projects which are being financed by various stakeholders?

Answer: -No

Question: Has financial plan prepared for identified projects based on financial convergence and consultation with funding partners?

Answer: No

Question: Have the financial assumptions been listed out?

Answer: YES

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: No

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

Answer: Yes

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

## **8.2 Details of prioritized projects prepared under AMRUT during current FY**

(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	Rejuminare drain covering existing	R.C.C work, Slab, steel, string.	100% coverage of drains	41%	90%	39.00
2	Rejuminare and construction of new drain and increasing of cross section	R.C.C work, Slab, steel, string.	Incidence Of water logging	2%	0%	16.00
3	Connection toilet to sewer line & moving Toilet proposal for open defecation families (4281 families)	Sewer connection and mobile toilet	Sewerage mixing drains	12%	0%	Under SBM program

## **8.3 Annual Fund Sharing Pattern for Storm Water 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	Rejuminare drain covering existing	39.00	19.50	19.50	0	0	39.00
2	Rejuminare and construction of new drain and increasing of cross section	16.00	8.00	8.00	0	0	16.00
3	Connection toilet to sewer line & moving Toilet proposal for open defecation families (4281 families)	Under SBM program	0	0	0	0	Under SBM program

## 8.4 Annual Fund Sharing Break-up for Storm Water Projects

(As per Table 2.3.2 of AMRUT guidelines)

Sr. No.	Project	GOI	State			ULB			Convergence others	Total
			14th FC	Others	Total	14th FC	Others	Total		
	Rejuminare drain covering existing	19.50	0	19.50	19.50	0	0	0	0	39.00
	Rejuminare and construction of new drain and increasing of cross section	8.00	0	8.00	8.00	0	0	0	0	16.00
	Connection toilet to sewer line & moving Toilet proposal for open defecation families (4281 families)	Under SBM program	0	0	0	0	0	0	0	Under SBM program

## Year wise Plan for Service Levels Improvements

(As per Table 8.5 of AMRUT guidelines)

Sr No.	Proposed Projects	Project Cost	Indicator	Baseline	Annual Targets (Incremet from the Baseline Value)					
					FY 2016 H1	FY 2016 H2	FY 2017	FY 2018	FY 2019	FY 2020
	Rejuminare drain covering existing	39.00	100% coverage of drains	41%	-	50	65	75	85	100
	Rejuminare and construction of new drain and increasing of cross section	16.00	Incidence Of water logging	2%		2	1	0	0	

Sr No.	Proposed Projects	Project Cost	Indicator	Baseline	Annual Targets (Increment from the Baseline Value)				
					FY 2016 H1 H2	FY 2017	FY 2018	FY 2019	FY 2020
	Connection toilet to sewer line & moving Toilet proposal for open defecation families (4281 families)	Under SBM program	Sewerage mixing drains	12%	5	0	0	0	0