



**OFFICE OF MUNICIPAL CORPORATION,
KORBA (C.G.)**



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SECTOR WISE SLIP TEMPLATE:

STORM WATER DRAINAGE

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.

- 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)
 - Yes
 1. Census 2011
 2. City Development Plan
 3. City sanitation Plan
 4. Detailed Topographical Survey
 5. SLB Data 2014
 6. LCS Survey Data
- 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)
 - Yes
- 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 1.1

Table 1.1 Status of Storm Water Level service levels

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

- 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)
 - The following of the gaps
 1. Coverage of Storm water drainage network - 75 %
 2. Incidence of sewerage mixing in the drains³ - 100 %
 3. Incidence of water logging⁴ - 100 %
- What are major challenge facing the city in regard to achieving these service level benchmarks?
 - Due to migration of people from various areas including nearby villages there is increasing habitation in municipal area and hence new facilities need to be created.

1.1 _____

¹ Incidence of sewerage mixing in the drains are ratio of no of households discharging wastewater directly into the drains to the total no of households.

² No of times water logging is reported in a year, at flood prone points in the city

³ Incidence of sewerage mixing in the drains are ratio of no of households discharging wastewater directly into the drains to the total no of households.

⁴ No of times water logging is reported in a year, at flood prone points in the city

- Identify gaps in capacity in managing the services efficiently and also provide an innovative solution for efficiently managing these services.
 - Proposals have been submitted to concerning authority.
- 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?
 - Yes, all components of the project included.

Coverage of drains

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

- 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?
 - At present storm water drain out by the road, natural low levels path, and nalah etc.
- What is the capacity and condition of these drains? Is sufficient to carry the peak flow of the catchment/water shed?
 - The capacity and conditions are not good. No, sufficient drains are not available to carry peak of the catchment
- 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?
 - No, Refer table 1.2.

Table 1: Detail of Locations where storm water get mixed with sewer

S.No.	Location	Merging with which sewer	Reason

There are many places where strorn water get mixes with, the locations are near septic tanks chambers, broken sewer line etc.

- In case of mixed drainage how it works in peak rainy days?
 - In peak rainy days due to insufficient capacity of drains water flows through the drain, on roads to the ultimate disposal.

Water Logging

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

- Presently how the problem of water logging is handled? Is it provides the satisfactory outcome?
 - The problem of water logging handle manually & machines. No it dose **not** provides satisfactory outcome.
- 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 1.2.

Table 1.2: Flood prone points in the city

S.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	8	2-3 times
2	Along roads (50 mt length or more)	5	2-3 times
3	Locality (affecting 50 HH or more)	17	2-3 times

Chocking of drains

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

- 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 1.2

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

S.No.	Location	Stretch Length Affected	Reason
1	Near Budhwari Market	150 m	Disposal of solid waste over drain
2	Nehru Nagar Chowk	100 m	Disposal of solid waste over drain
3	Near Mudapar	250 m	Disposal of solid

			waste over drain
4	Near Ayodhyapuri	145 m	Disposal of solid waste over drain
5	Prem Nagar Chowk Jamnipali	110 m	Disposal of solid waste over drain
6	NTPC Gate Darri Main Road	175 m	Disposal of solid waste over drain

- How presently the problem is addressed?

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 1.3. Is it in accordance with the AMRUT guidelines (Clause 8.1)?

Table 1.3: Functions, roles, and responsibilities

Planning and Design	Construction/ Implementation	O&M
ULB	ULB	ULB

- How city is planning to execute projects?
 - The projects shall be prepared by consultant at ULB level on the basis of survey data collected.
- 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.
 - Yes. The project will implemented by Municipal Corporation

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

S. No.	Name of Project	Scheme Name	Cost	Month of Completion	Status (as on dd mm 2015)
1	Nil	-	Nil	Nil	Nil

- How much the existing system will be 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)
 - NA
- Does the city require additional infrastructure to improve the services? What kind of services will be required to fulfill the gap?
 - Yes, Additional infrastructure like Nallas, Pucca drains, culverts and small bridges required to improve and fulfill the gaps.
- 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?
 - While preparing the projects the optimum use of existing assets shall be ensured.
- Has city conducted assessment of O&M cost of drains and potable pumps? if yes, what is it? Is city planning to reduce it?
 - All them shall be explained of the stage of detailed planning.
- 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 1.5 . Demand Gap Assessment for Storm Water Drainage Sector

Component	2015			2021	
	Present	Ongoing projects	Total	Demand	Gap
Major Drains	14	3	17	40	23
Network requirement to provide proper drainage to all identified water stagnant point/ flooding points up to the end discharge point (in Km)	28.6	9.5	38.1	95.6	57.5
Network length where households discharging wastewater directly into the drains (in Km)	248.40	76.6	325.00	683.4	358.40
Rejuvenation of existing primary nallahs and primary drains including covering and installation of filter (in Km)	-	-	-	683.4	683.4

- Whether these gaps presented in measurable/ execution able ways considering all the ongoing projects? (75 words)
 - NA

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, Shall be ensured.
- Does objectives clearly address all these gaps /solution to all the problems related to storm water drainage of the city?
 - Yes, Shall be ensured.

Please provide List out objectives to meet the gap in not more than 150 words.

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.

- Does all these gaps clearly identified and addressed? (75 words)
 - Yes, Shall be ensured.
- What are the possible activities and source of funding for meeting out the objectives? (75 words)
 - Funding based on 14th finance commission and Mission AMRUT.
- 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)
 - Shall be explored
- What are the options (financial alternatives) of completing the ongoing activities specially on going JnNURM projects? (75 words)
 - NA
- What are the lessons learnt during implementation of similar projects? (100 words)
 - Details of rainfall data etc must be taken care while finalizing the project.
- Have you analyzed best practices and innovative solutions in sector? Is any of the practice be replicated in the city? (75 words)
 - Yes Partially.
- What measures may be adopted to recover the O&M costs? (100 words)
 - Shall be explored.
- Whether reduction in O&M cost by energy efficient pumps etc be applied? (75 words)
 - Yes can be, natural gradient of city is towards the river and nallas.

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

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
	1 Sewerage & Drainage	Preparation of Scheme	14 th Finance commission & AMRUT Mission

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, Shall be ensured.
- Has ward/ zone level consultations held in the city?
 - Yes, Shall be ensured.
- Has alternative proposed above are crowd sourced?
 - Yes, partially.
- What is feedback on the suggested alternatives and innovations?
 - A Proper drainage system should be laid over city areas to prevent water logging in low lying areas.
- Is any new potential alternative is received? If so, how it is addressed?
 - No

- Has alternative taken up for discussions are prioritized on the basis of consultations?
 - No
- What methodology adopted for prioritizing the alternatives?
 - Prone flooding area should be taken first priority.

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?
 - NA
- Has projects been converged with other program and schemes?
 - 14th finance commission
- Has projects been prioritized based on “more with less” approach?
 - Yes
- Has the universal coverage approach indiated 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.

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.

- Yes

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 Guideline.
- List of individual projects which are being financed by various stakeholders?
 - NA
- Has financial plan prepared for identified projects based on financial convergence and consultation with funding partners?
 - Not yet.
- Is the proposed financial structure is sustainable? If so then whether project has been categorized based on financial considerations?
 - Not yet
- Have the financial assumptions been listed out?
 - Not yet
- Does financial plan for the complete life cycle of the prioritized development?
 - No
- Does financial plan include percentage share of different stakeholders (Centre, State, ULBs and)
 - Yes
- Does it include financial convergence with various ongoing projects?
 - No
- Does it provide year-wise milestones and outcomes?
 - No

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 Storm Water Drainage Projects for Mission period

(As per Table 2.1 of AMRUT guidelines)

(Amount in Rs. Cr)

Sr. No.	Project	Priority number	Year in which to be implemented	Year in which proposed to be completed	Estimated Cost
1	Construction of storm water drain from Chitra Talkies to Hasdeo River	1	-	-	1.75
2	Construction of storm water drain from Shani Mandir to Saraswati Shishu Mandir	2	-	-	2.96
3	Construction of storm water drain from Naman Vihar to Railway Cabin	3	-	-	10.05
4	Construction of storm water drain from under Dhondipara	4	-	-	2.58
5	Construction of storm water drain from Kalmiduggu to CSEB Gate	5	-	-	1.15
6	Construction of storm water drain from Sunday Market to Fertilizers Basti	6	-	-	4.73
7	Construction of storm water drain from Daily Market To Sunshine School	7	-	-	2.41
8	Construction of storm water drain from Banki Market to gazra basti	8	-	-	2.68

9	Construction of storm water drain from aadarsh Nagar to Dipika	9	-	-	2.38
10	Construction of storm water drain from Girls college to Mudapar bypass Road	10	-	-	9.83
11	Construction of storm water drain from Jharnapara to magazine bhata	11	-	-	6.31
12	Construction of storm water drain from atalawas to Nadi	12	-	-	2.43
13	Construction of storm water drain from TP Nagar to Budhiya auto	13	-	-	0.30
14	Construction of storm water drain from Ratakhar to Hasdev river	14	-	-	0.62
15	Construction of storm water drain from gayatri mandir to Yashmuni house	15	-	-	2.41
16	Construction of storm water drain under Near MGM School	16	-	-	0.83
17	Construction of storm water drain under Risda Chowk	17	-	-	1.41
18	Construction of storm water drain from ring road to SEPCO gate	18	-	-	3.03
19	Construction of storm water drain from Nehru nagar	19	-	-	0.60
20	Construction of storm water drain from Balco Hospital	20	-	-	0.56
Total				-	59.02

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	Physical Components	Change in Service Levels			Estimated Cost
			Indicator	Existing (As-Is)	After (To-be)	
1	Construction of storm water drains	20	100%	11.5%	60%	59.02

Table 1.9 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				
			GOI	State	ULB	Others	Total
1	Construction of storm water drains	59.02	29.51	29.51	-	-	59.02
	Total	59.02	29.51	29.51	-	-	59.02

Table 1.10 Annual Fund Sharing Break-up for Storm Water Drainage Projects

(As per Table 2.3.2 of AMRUT Guidelines)

(Amount in Rs.Cr)

Sr. No.	Project	Gol	State			ULB			Convergence	Others	Total
			Amrut	Others	Total	Amrut	Others	Total			
1	Construction of storm	5.91	5.91	-	-	-	-	11.82	-	-	11.82
2	Construction of storm water	5.90	5.90	-	-	-	-	11.80	-	-	11.80
3	struction of storm water	5.90	5.90	-	-	-	-	11.80	-	-	11.80
4	struction of storm water	5.90	5.90	-	-	-	-	11.80	-	-	11.80
5	struction of storm water	5.90	5.90	-	-	-	-	11.80	-	-	11.80
	Total	29.51	29.51					59.02			59.02

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)					
				FY		FY	FY	FY	FY
				H1	H2	2017	2018	2019	2020
Storm Water Drainage									
Construction of storm water drains	59.02	60%	11.50%	6%	6%	12%	12%	12%	12%

**Commissioner
Municipal Corporation Korba
Chhattisgarh**