**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)
* **izfro’kZ “kgjh fodkl ea=ky; }kjk lfoZl yscy csapekfdZax ds ek/;e ls jktukanxkao “kgj ds fu/kkZfjr izi= ,oa ekin.Mksa ds vk/kkj ij LVkseZ okVj Mªsu ls lacaf/kr MkVk DysDV fd;s x;sA blds vfrfjDr flVh MsOyIesaV Iyku gsrq fd;s x;s loZs ds vk/kkj MkVk DysDV fd;s x;sA Hkfo’; esa tksu okbZt Mh-ih-vkj- cukuk izLrkforA**
* 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)
* **tux.kuk 2011 ds vksdM+ks dks ,df=r fd;k x;k ,oa mls vk/kkj eku dj “kgjh fodkl ea=ky; ds xkbZM ykbZu vuqlkj lfoZl yscy csapekfdZax ds ek/;e ls MkVk DysDV fd;k x;kA**
* What is existing service levels for storm water drainage in the city? What is the coverage of drains? What are the no ofincidence 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% | 15% |
|  | Incidence of sewerage mixing in the drains[[1]](#footnote-2) | 0% | <25% | <50% | 30% |
|  | Incidence of water logging[[2]](#footnote-3) | 0% | <25% | <50% | 30% |

* 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)

**Coverage of Storm water Drainage Network comes in Red Benchmark that is immediate action for improvement, Incidence of sewerage mixing in the drains1 comes in Red Benchmark, Incidence of water logging[[3]](#footnote-4) is also comes in Red Benchmark.**

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

**Financial condition of ULB is poor. As per State gov. & central gov. fund aviability ULB done work.**

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

**Financial condition of ULB is poor. So innovative solution** **for efficiently managing these services is not done.**

* 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?

**In 13th finanace sheme & Adhosarchna Scheme Allotment ULB is doing drainage project.**

**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?

**10% drains are natural and manmade with respect road network.**

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

**No.**

* 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?

**For separate storm water drainage network DPR will be prepare in future.**

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

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No.** | **Location** | **Merging with which sewer** | **Reason** |
| 1 | Nandai chowk to Singdai road | Domestic Sewer | Because no Storm water drain constructed in singdai chowk to Nandai chowk. |

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

**Natural drain out in rainy days.**

**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?

**By the effort by manual & mechanical means.**

* 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 | 3 | 10 to 20 time |
| 2 | Along roads ( 50 mt length or more) | 4 | 5 to 10 time |
| 3 | Locality (affecting 50 HH or more) | Nill | Nill |

**Chocking of drains**

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

* Are drainsprone 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 | Nandai chowk to singdai chowk | 50 mtr | Because no Storm water drain constructed in singdai chowk to Nandai chowk. |
|  |  |  |  |
|  |  |  |  |

* How presently the problem is addressed?

**In this situation the backhoeloader is used for cleaning the drain.**

**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 |
| By the municipal corporation | By the municipal corporation | By the municipal corporation |

* How city is planning to execute projects?

**After availability of fund DPR will be prepared.**

* 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.

**Implementation of project be done by Municipal Corporation with the financial help of State gov.**

1. **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 ddmm 2015)** |
| 1. | Construction of storm water drain | 13th finance commission | 12.00 crore | April 2016 | 60 % completed |

* 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)

**Yes**

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

**Yes**

* 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?

**Unauthorized construction, incroachment & not avaibility of land & fund.**

* Has city conducted assessment of O&M cost of drains and potable pumps? if yes, what is it? Is city planning to reduce it?
* **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 1.5 . Demand Gap Assessment for Storm Water Drainage Sector

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Component | 2015 | | | 2021 | |
| **Present** | **Ongoing projects** | **Total** | **Demand** | **Gap** |
| Major Drains | 90 Km | 5 Km | 95 Km | 119.6 Km | 24.6 Km |
| Network requirement to provide proper drainage to all identified water stagnant point/ flooding points up to the end discharge point (in Km) | 30 Km | 2 Km | 32 Km | 56.60 Km | 26.40 Km |
| Network length where households discharging wastewater directly into the drains | 505 Km | 10 Km | 515 Km | 544.80 Km | 29.10 Km |
| Rejuvenation of existing primary nallas and primary drains including covering and installation of filter | 10 Km | 2 Km | 12 Km | 100 Km | 88 Km |

* Wheather these gaps presented in measurable/ execution able ways considering all the ongoing projects? (75 words)

**Yes**

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

**Yes each objective meet the opportunity to bridge the gap.**

* Does objectives clearly address all these gaps /solution to all the problems related to storm water drainage of the city?

**Yes objectives clearly address all these gaps /solution to all the problems related to storm water drainage of the city.**

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

1. **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. (AMRUTGuidelines; 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** **all these gaps clearly identified and addressed**

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

**By the financial help of State gov. meeting out the objective.**

* 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)

**As per requirement activities be converged with other programme like JICA/ ADB funded/SBM/Smart city mission projects in the city.**

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

**N A**

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

**Public objection, encroachment, unauthorized construction, private land are the major issues for implementation.**

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

**Public meeting, land Compensation, communication between ULB & citizens are the best solution.**

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

**Integrated tax given by the households.**

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

**Yes**

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

**Yes**

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. | **disposal of storm water** | construction of storm water drain | State govt. & central govt. |

1. **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** **all stakeholders involved in the consultation.**



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 26 | 14.07.2015 |  | 15 | 07 |  |
| 27 | 14.07.2015 | 24 | 03 |
| 28 | 14.07.2015 | 25 | 16 |
| 29 | 14.07.2015 | 26 | 03 |
| 30 | 14.07.2015 | 37 | 01 |
| 31 | 14.07.2015 | 27 | 04 |
| 32 | 14.07.2015 | 28 | 02 |
| 33 | 14.07.2015 | 36 | 22 |
| 34 | 14.07.2015 | 38 | 11 |
| 35 | 14.07.2015 | 39 | 09 |
| 36 | 14.07.2015 | 48 | 06 |
| 37 | 14.07.2015 | 29 | 06 |
| 38 | 14.07.2015 | 30 | 09 |
| 39 | 14.07.2015 | 31 | 03 |
| 40 | 14.07.2015 | 32 | 05 |
| 41 | 14.07.2015 | 33 | 13 |
| 42 | 14.07.2015 | 34 | 17 |
| 43 | 14.07.2015 | 35 | 05 |
| 44 | 14.07.2015 | 40 | 01 |
| 45 | 14.07.2015 | 41 | 02 |
| 46 | 14.07.2015 | 42 | 17 |
| 47 | 14.07.2015 | 43 | 16 |
| 48 | 14.07.2015 | 46 | 21 |
| 49 | 14.07.2015 |  | 47 | 05 |  |
| 50 | 14.07.2015 | 49 | 02 |
| 51 | 14.07.2015 | 50 | 07 |
| 52 | 14.07.2015 | 51 | 05 |
|  |  | Total |  | 544 |

* Has ward/ zone level consultations held in the city?

**Yes,** **ward/ zone level consultations held in the city.**

* Has alternative proposed above are crowd sourced?

**Yes alternative proposed above are crowd sourced**

* What is feedback on the suggested alternatives and innovations?

**Improvement of the drainage network, proper disposal of water & good quality of construction etc are the Feedback. Outer wards Citizen wants drain because in rainy days they faced critical situations so in these wards construction of drain is very necessary.**

* 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?

**Yes**

* What methodology adopted for prioritizing the alternatives?

**As per survey, requirement and public demand prioritizing the alternative.**

1. **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?

**State & central govt.**

* Has projects been converged with other program and schemes?

**Yes**

* 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**

1. **Conditionality**

Describe in not more than 300 words the Conditionality’s 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.

**There should be policy by the State govt. & ULB for land acquisition, Environment availability of fund, approval and permission is necessary.**

1. **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.

**Resilience factor will be acceptable for completion of project .**

1. **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. (AMRUTGuidelines; 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?

**After permission & approval DPR will be prepared.**

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

**No individual projects which are being financed by various stakeholders.**

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

**Yes financial plan will be 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?

**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 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 2.1of 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 | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 1 | 2015-16 | 2018-19 | 45.55 Crore |
| 2 | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 2 | 2016-17 | 2018-19 | 15.55 Crore |
| Grand Total | |  |  |  | 61.01 Crore |

Table 1.8 Master Service Levels Improvements during Mission Period

(As per Table 2.2 of AMRUT guidelines) (Amountin Rs. Cr)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Project Name | Physical  Components | Change in Service Levels | | | Estimated Cost |
| Sr.  No. | Indicator | Existing  (As-Is) | After  (To-be) |
| 1. | Construction of storm water drain | 1. Construction of major Drain/nala. | Smooth Flow of Strom Water and improve coverage of storm water Drainage Network | 80% | 90% | 45.55 Crore |
| 2. | Construction of storm water drain | 1. Construction of Road side Drain. | Improve Residential waste water drain off to Major Drain | 90% | 100% | 15.55 Crore |
|  |  |  |  |  |  | 61.01 Crore |

Table1.9 Annual Fund Sharing Pattern for Storm Water Projects

(As per Table 2.3.1of AMRUT guidelines)

(Amount in Rs. Cr)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sr.  No. | Name of Project | Total Project  Cost | Share | | | | |
| GOI | State | ULB | Others | Total |
|  | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 45.55 Crore | 22.78 crore | 22.77 crore | 0 | 0 | 45.55 crore |
|  | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 15.55 Crore | 7.78 Crore | 7.77 Crore | 0 | 0 | 15.55 Crore |
|  | Total |  |  |  |  |  | 61.01 Crore |

Table 1.10 Annual Fund Sharing Break-up for Storm Water Drainage 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 |
| 1 | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 22.78 crore | 22.77 crore | 0 | 45.55 Crore | 0 | 0 | 0 | 0 | 0 | 45.55 crore |
| 2 | Construction of storm water drain(AMRUT/CG/RJN/SWT/01) | 7.78 Crore | 7.77 Crore | 0 | 15.55 Cr | 0 | 0 | 0 | 0 | 0 | 15.55 Crore |
|  | Total |  |  |  |  |  |  |  |  |  | 61.01 Crore |

(Amount in Rs.Cr)

Table 1.11Year wise Plan for Service Levels Improvements

(As per Table 2.5 of AMRUT guidelines)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposed  Projects | Project  Cost | Indicator | Baseline | AnnualTargets  (Incrementfrom theBaselineValue) | | | | | | |
| FY2016 | | FY  2017 | | FY  2018 | FY  2019 | FY  2020 |
| H1 | H2 |
| Storm Water Drainage | | | | | | | | | | |
| Storm water Drainage | 61.01 Cr. | Improvement of Storm Water Drainage | 80% | ---- | 85% | 90% | 95% | | 100% | ---- |
|  |  |  |  |  |  |  |  | |  |  |

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. [↑](#footnote-ref-2)
2. No of times water logging is reported in a year, at flood prone points in the city [↑](#footnote-ref-3)
3. No of times water logging is reported in a year, at flood prone points in the city [↑](#footnote-ref-4)