

SERVICE LEVEL IMPROVEMENT PLAN

FINAL



SEWERAGE SYSTEM

THIRUVANANTHAPURAM MUNICIPAL CORPORATION

&

KERALA WATER AUTHORITY

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.

- **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)**

Baseline information available/used & details:

1. City Development Plan 2005,
2. Draft Master Plan 2012,
3. Service Level Benchmark (2014-15),
4. Census 2011.
5. Detailed Project Report: "Augmentation of Sewerage System" under JNNURM Phase II

Zone wise information available: YES

- For sewerage network system, the area was divided into eighteen blocks like A, B, C,, R

The available data correlated with the census 2011 data.

- **What are the existing service levels for sewerage for coverage of sewerage network services, efficiency of collection of sewerage and efficiency in treatment. Provide information in table 2.1**

Table 2.1: Status of sewerage network and Service Levels

Sr. No.	Indicators (as per SLB framework)	Existing Service Level	MOUD Benchmarks
1	Coverage of latrines (individual or community)	99.5% ¹	100%
2	Coverage of sewerage network services	37%	100%
3	Efficiency of collection of sewerage	41%	100%
4	Efficiency in Treatment: Adequacy of sewerage treatment capacity	95%	100%

1. SLB submitted by ULB 2014-15 cross checked with census 2011 (97%)

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

1. Existing gap in coverage of latrines is 0.5%. As per census 2011, around 3% households don't have toilet facilities. Various schemes like 'Janakeeyasuthranam', Scheduled Caste Scheme, BSUP, Community Infrastructure Fund(CIF),the ULB provided 8542 toilets from the FY 2011-12 to FY 2014-15 thus reducing the gap to 0.5%.
2. Outof the total households (2,46,803 Nos),37% is covered by a piped sewerage system (ie,91,317 nos households). Hence the gap in coverage of network comes to 63%.
3. Worn out old sewerage lines, machineries& pumps in blocks A, B, C and D commissioned in the year 1945, 1965, 1970 & 1994 have not been replaced. (The O&M is fully subsidized by the GoK. Hence there is no cost recoveryexcept for ainitialsewer connection fee). 10% cess is implemented and it is in the initial stage.

4. Existing STP is of 107 mld capacity. But the inflow is only 44 mld. Out of 100 wards sewer networks is available only in 42 wards partially.

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

Yes. City has separate sewerage system and drainage system but it covers only 37% and 50% respectively. In the uncovered areas, sewage disposal from households is to septic tanks, bore hole latrines and community toilets. A few percentage directs discharge through open drains / canals.

- **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 2.2.**

Zone No	Total No of Households	Households with Sewerage Network	Households with Septic Tank	Households without any outlets for toilets
Zone wise not available	2,46,803	91,317	1,53,488	1998

- **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)**

- Yes. Around 10% households are not connected to the sewer lines since the houses are located below the feasible level of existing sewer. Other households depend on septic tanks, bore hole latrines etc.

- No. All domestic sewage including that from the bathroom and kitchen are collected through the network.

- **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)**
 - No. Septage collection is done by ULB(Urban Local Body) and private agencies on need basis. Septage collected by ULB is treated at the STP.

- **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 systemie.sewer jetting machines etc? (100 words)**
 - The O&M is fully subsidized by the Government of Kerala& is maintained by Kerala Water Authority (KWA).
 - Routine/ break down maintenance carried out by KWA.
 - Cleaning of sewer lines are done as per requirement. Intercepting sewer/main sewer are cleaned annually using power bucket type sewer cleaning machine. There is regular annual maintenance contract for rectification of blockages and sewer cleaning. Desilting is also done.
 - Sewer cleaning machines like high pressure sewer jetting machines, power bucket type sewer cleaning machine, suction machine etc are available for O&M of the sewerage system.

Sewage Treatment System

- 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 Existing STPs

Sr. No.	Location	Capacity (MLD)	Inflow in the STP (MLD)	Efficiency in %
1	Muttathara	107	44	58%

The STP of 107 mld is constructed at Muttathara to treat the sewage load of the whole corporation area. Presently the core city area (blocks A, B, C, D& E) comprising of around 42 wards are covered with sewer network.

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

No. Land acquisition being a major constraint, only one decentralised treatment plant of 5 MLD is planned at Medical College area. Currently no other decentralised WT plants are envisaged. Priority is being given to have full capacity utilization of the STP at Muttathara by laying sewerage lines in the remaining blocks from F to R.

- How much of sewage is generated in the city? How much of this sewage generated reaches the STPs? What is the Biological Oxygen Demand (BOD) of incoming and outgoing sewage of each STP? (100 words)
 - Approx 103 MLD (80% of 135 lpcd x total population of 9,55,494)
 - 44 MLD reaches the STP.
 - BOD (incoming) - 300mg/l, BOD (outgoing) - 30mg/l

- **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)**
 - Dried sludge is used as manure for gardening purpose at STP campus.
 - The treated water of 42 MLD, of which 3% is used for irrigation purpose in the STP campus. Also there is a proposal for sale of 5% of treated effluent to the nearby sewage farm under the dairy department.
 - No. Power generation is not feasible as this is situated at a low level area. The sludge after secondary treatment and extended aeration process do not have any energy value.

Institutional Framework

- **Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table 2.4.**

Table 2.4: Functions, roles, and responsibilities

Planning and Design	Construction/ Implementation	O&M
Kerala Water Authority (KWA)	KWA	KWA

- **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)**

Sewerage networks & treatment plants'execution in the ULB is done by the parastatal body called Kerala Water Authority (KWA). The ULB shall make available the required land and fund for the project. Design, Execution, Project Monitoring and quality assurance is done by KWA. Construction, commissioning and O&M is done through open competitive bidding by KWA.

Bridging 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 sewerage system under different schemes with status and when the existing projects are scheduled to be completed? Provide information in Table 2.4**

Table 2.5: Status of Ongoing/ Sanctioned

S. No.	Name of Project	Scheme Name	Cost in Rs Crore	Month of Completion	Status (as on dd Month 2015)
1	Sewerage system Phase I & II	JnNURM	336.56	March 2015	27% utilization
2	Rehabilitation of the existing sewerage system in C block, Extn. of sewerage system in the uncovered areas of G block and STP	ADB	107.39	March 2014	48% utilization
3	TSS extension of sewerage system- block D & E	State Plan Fund	10.00	March 2016	30% utilization

- **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)**

Completion of the above projects shall improve the coverage by 5% only. Collection efficiency will improve by 10%. Approximately 10000 households can be covered by the completion of the above project.

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

Heavy capital investment is required for the completion of the scheme covering all the 18 blocks (previous A to E& the increased F to R). Rehabilitation of existing networks and worn out pumps/machinery, decentralised sewage treatment facility in the extended corporation area, land etc are needed to fulfill the gap.

- **How does the city visualise 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?**

Provide information in Table 3.5.

The existing STP at Muttathara was envisaged as a centralized treatment plant. The sewerage networking from A-R was also planned so that all the sewage from the households shall be collected and transported in the network and treated at this STP. However due to delay in acquiring the land for pump houses, most of the projects above could not be started within the closure of JNNURM schemes which needs to be completed. This readily requires heavy infrastructural investment. As STP is already constructed with 107 mld capacity to treat the sewage load of the whole corporation area, the network in the uncovered area will result in optimum use of existing asset.

Another option available with the ULB to address this gap is to have an institutional mechanism to collect the septage from the households. If on a regular basis the ULB arranges to collect the septage and treat the same at a centralized or decentralized (wherever land is available) Septage Treatment Plant, this gap can be overcome. However, for centralized treatment of the Septage, further modifications to the existing STP's extended aeration process is required. Decentralized community STPs can also be implemented to overcome the existing issue.

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.

- **What are the possible activities and source of funding for meeting out the objectives?**

The Sewerage facility is only in 42 wards in full or partial .The Networks were very old and need rehabilitations and is proposed here. The additional coverage in this area is also proposed for the above 42 wards.For35 wards the proposals are included here for full coverage. In the balance 23 wards the feasibility study of the sewerage networks and the treatment facility has also been proposed.The treatment of sludge cumulating in the 107MLD STP requires disposal.A proposal for the same is also included here

AMRUT fund is planned for implementing the project. (50% central share, 30% state share and 20% ULB share)

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

Convergence are possible for the proposed project.

- **What are the options of completing the ongoing activities?**

The ongoing activities under the funding of JNNURM cannot be complete due to closure of the project.

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

1. Thorough reconnaissance and feasibility study to arrive at materializing the project in the given time frame.
2. Ensure land availability& land acquisition in a time bound manner.

3. NOC from other departments may be made available at the time of preparing the DPR.
4. Split the projects into components to ensure competition in bidding and speedy completion.

- **Has projects includes O&M of sewerage system?**

Yes. In the earlier projects the O&M was fully subsidized by the Government of Kerala and hence there is no cost recovery. It is decided to include the O&M cost in the coming projects.

- **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?**

Steps are taken at the government level for a policy decision. Decision is taken to sale the treated waste water to a farm. But the cost recovery is a very small amount as water availability is not an issue in the city. The O&M cost per month is 38.70 lakhs. Hence govt. level policy decision is needed for the cost recovery.

- **What are innovative alternative solutions explored in achieving objectives?**

Innovative alternate solutions like bio-digester, septage etc are being thought of.

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

These concepts are not practical to be implemented as far as the nature of the proposed projects are considered.

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

The effluent water of approximately 42 MLD is discharged into a nearby river Parvathy Puthanar& 1MLD treated water is reused for gardening purpose. Also a proposal for sale of 1.5 mld water to the sewage farm nearby is taken up.The

drying of the sludge and packing of the sludge is required and a proposal is submitted here.

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

Yes, the city analyzed best practices and innovative solutions in sewerage sector.

- **Have you identified the areas for decentralized waste treatment system? Explore the approaches for septage management ie. People Public Private Partnership (PPPP) model or replacing septic tanks by bio-digesters, bioremediation etc.**

For each identified activity and alternative indicate the cost estimate with broad source of funding will be explored for each alternative in Table 3.6

No, Land acquisition being a major constraint, only one decentralised treatment plant of 5 MLD is planned at Medical College area. Currently no other STP are envisaged. Priority is being given to have full capacity utilization of the STP @ Muttathara by laying sewerage lines.

These PPPP are not practical to be implemented as far as the nature of the proposed projects are considered.

Replacing septic tanks by bio-digesters is being thought of.

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.

- **Has all stakeholders involved in the consultation?**

Yes, stakeholder consultation meetings were conducted by the ULB at different levels.

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

Yes, ward level consultations were held in the city.

- **Are alternative proposed ,above crowd sourced?**

Yes, alternative proposed above are the results of stakeholder meetings, consultations and discussions.

- **What is feedback on the suggested alternatives and innovations?**

Positive feedback were there on the suggested alternatives and innovations.

- **Are alternative taken up for discussions prioritized on the basis of consultations?**

Yes, alternative taken up for discussions prioritized on the basis of consultations.

- **What methodology adopted for prioritizing the alternatives?**

“More with Less” approach has been adopted for prioritize the alternatives and stakeholder consultations and meetings were conducted.

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?**

AMRUT fund is planned for implementing the project. (50% central share, 30% state share and 20% ULB share)

- **Has projects been converged with other program and schemes?**

Yes, it is converged with other projects like ADB, state plan fund etc.

- **Has projects been prioritized based on “more with less” approach?**

Yes, it is prioritized based on 'more with less' approach.

- **Has the universal coverage approach indicated in AMRUT guidelines followed for prioritization of activities?**

Yes , the projects have been prioritized as per the universal coverage approach.

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.

Land , environmental clearance and other NOC's from various departments for road cutting will be obtained before implementation.

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.

Required approvals will be sought by ULB from concerned authorities and resilience factor would be built in to ensure environmentally sustainable sewerage scheme.

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.

- **Does financial plan for the complete life cycle of the prioritized development?**

Yes ,financial plan for the complete life cycle of the prioritized development is phased out.

- **Does financial plan include percentage share of different stakeholders (Centre, State, ULBs)**

Yes, financial plan include percentage share of different stakeholders like Centre 50%, State 30%, ULB 20%.

- **Does it include financial convergence with various ongoing projects.**

Yes, it include financial convergence.

- **Does it provide year-wise milestones and outcomes ?**

Yes, provide year-wise milestones and outcomes.

Work and Service Levels

Sr. No.	Indicators (as per SLB framework)	Existing Service Level	MOUD Benchmarks
1	Coverage of latrines (individual or community)	99.5%	100%
2	Coverage of sewerage network services	37%	100%
3	Efficiency of collection of sewerage	41%	100%
4	Efficiency in Treatment: Adequacy of sewerage treatment capacity	95%	100%

Table 3.2 Zone Wise Coverage of Households

Zone No	Total No of Households	Households with Sewerage Network	Households with Septic Tank	Households without any outlets for toilets
Zone wise not available	2,46,803	91,317	1,53,488	1998

Table 3.3: Status of Existing STPs

Sr. No.	Location	Capacity (MLD)	Inflow in the STP (MLD)	Efficiency in %
1	Muttathara	107	44	58%

Table 3.4: Status of Ongoing/ Sanctioned

S. No.	Name of Project	Scheme Name	Cost in Rs Crore	Month of Completion	Status (as on dd Month 2015)
1	Sewerage system Phase I & II	JnNURM	336.56	March 2015	27% utilization
2	Rehabilitation of the existing sewerage system in C block, Extn. of sewerage system in the	ADB	107.39	March 2014	48% utilization

	uncovered areas of G block and STP				
3	TSS extension of sewerage system- block D & E	State Plan Fund	10.00	March 2016	30% utilization

Table 3.5: Demand Gap Assessment

Component	Existing	Ongoing projects	Existing + Ongoing	2021 (Short term)	
				Demand	Gap
Sewerage network (km)	250	47	295	1991	1694
No of Households covered under sewerage system	91317	Nil	91317	425040 ³	333723
Sewerage Treatment Plant (MLD)	107	Nil	107	112	5

³ Projected population in 2021 : 1062599 (approximating 2.5 nos/household)

Table 3.6: Cost Estimate for each Objective:

Sl.No	Activity	Basis	Amount in Rs.Cr
Projects Sanctioned in 2015-16			
1	Supplying and laying and commissioning 900mm Dia DI Pumping main from Muttathara stilling chamber to collection well at Muttathara STP and construction of new bridge with pile foundation and allied works & Rehabilitation of existing pump and machinery		3.72
2	Amruth Project 2015-16 D Block Zone-II-Supplying,conveying,laying and jointing700mm dia RCC NP3 Pipe sewer trunk main II from Murinjapalam– KannamoolaChainage- 952m to 1728m		

3	Amruth-Improvement of TSS. Sewerage treatment plant (5mld)for medical College Trivandrum		
4	Amruth-Improvement of TSS.-Construction of Pump House at Edathara		
	Amruth-Improvement of TSS-Supplying and Laying Pumping main from Edathara Pump House to STP at Muttathara		
Total-A			33.65
SLIP- 2016-17			
1	Providing sludge drying and packing Unit at 107 MLD STP Muttathara		20.00
2	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-1)		50.00
3	Rehabilitation of existing pump and machineries (Phase-2)		5.00
4	Block L-Supplying and Laying main Trunk Main		50.00
5	Block N-Construction of Pump House at Ulloor,		5.50
	Block N-Supplying and Laying Pumping Main		3.50
	Block N-Suppling and laying main Trunk mains		35.00
6	Block M-Construction of Pump House at Karikkakom		6.00
	Block M-Supplying and Laying Pumping Main		2.50
	Block M-Supplying and Laying main Trunk mains		35.00
7	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-1)		25.00
8	Providing community septic tanks and networks in low lying area in the banks of Parvathy puthanar and purchase of sewerage network cleaning equipment		15.00
9	Block K-Construction of Pump House at Akulam		5.00
	Block K-Supplying and Laying Pumping Main		4.50
	Block K--Supplying and laying Trunk mains		35.00
10	Block J-Construction of Pump House at Karimanal		5.00

	Block J-Supplying and Laying Pumping Main		4.00
	Block J--Supplying and laying Trunk mains		25.00
11	Block I-Construction of Pump House at Kulathur		5.00
	Block I-Supplying and Laying Pumping Main		4.00
	Block I--Supplying and laying Trunk mains		15.00
12	Block H--Construction of Pump House at Santhinagar		4.00
	Block H-Supplying and Laying Pumping Main		3.00
	Block H--Supplying and laying Trunk mains		20.00
13	Construction of Pump House at Kallingal		4.00
	Supplying and Laying Pumping Main and Trunk Main		18.00
14	Block –F1 and G1-Construction of Pump Houses, Pumping main and Trunk Main		55.00
15	Block –F2 and G2-Construction of Pump Houses, Pumping main and Trunk Main		55.00
16	Block –Attukal,Kalady -Construction of Pump Houses, Pumping main and Trunk Main to Attukal, Kalady area		35.00
17	Block R--Construction of Pump House at Pachaloor		6.00
	Block R-Supplying and Laying Pumping Main		15.00
	Block R--Supplying and laying Trunk mains		45.00
18	Block P&Q--Construction of Pump House at Punchakari		5.00
	Block P&Q-Supplying and Laying Pumping Main		6.00
	Block P&Q--Supplying and laying Trunk mains		35.00
19	Block O--Construction of Pump House at Karakkamandapom		5.00
	Block O-Supplying and Laying Pumping Main		4.00
	Block O--Supplying and laying Trunk mains		15.00
20	Preliminary house hold survey.Taking levels and designing of the sewerage system in the 23 wards for Trivandrum corporation-wards		2.50

	viz1,2,3,4,8,9,10,11,12,13,19, 20,21,32,33, 34,35,37,59,60,61,62,63		
21	Providing septage treatment plant at Old Kazhakuttom,, Sreekaryam , Vattiyoorkavu, kudappanakunnu ,& Vizhinjam Panchayath area		45.00
22	Providing Septic tank facility to the households and procurement of sewage tankers		5.00
Total-B			737.50
SLIP- 2017-18			
1	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-2)		50.00
2	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase- 2)		50.00
3	Block-L,M,N Supplying of Pumpsets with all accessories and KSEB connection		20.00
4	Block-H,I ,J K Supplying of Pumpsets with all accessories and KSEB connection		25.00
5	Block-F1,F2,G1 and G2- Supplying of Pumpsets with all accessories and KSEB connection		30.00
6	Block-AttukalKalady Supplying of Pumpsets with all accessories and KSEB connection		25.00
7	Block-O,P,Q R Supplying of Pumpsets with all accessories and KSEB connection		20.00
8	Block-H Sewerage net work and connections to house holds		20.00
9	Block-I Sewerage net work and connections to house holds		20.00
10	Block-J Sewerage net work and connections to house holds		30.00
11	Block-K Sewerage net work and connections to house holds		40.00
12	Block-L Sewerage net work and connections to house holds		50.00
13	Block-M Sewerage net work and connections to house holds		40.00
14	Block-N Sewerage net work and connections to house holds		35.00

15	Block-O Sewerage net work and connections to house holds		15.00
16	Block-P Sewerage net work and connections to house holds		25.00
17	Block-Q Sewerage net work and connections to house holds		25.00
18	Block-R Sewerage net work and connections to house holds		35.00
19	Block –Attukal ,kalady -Sewerage net work and connections to house holds		35.00
20	Providing sewerage treatment plant at Kazhakkoottam area		25.00
Total-C			615.00
	TOTAL A + B + C		1386.15

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 Sewerage Projects for Mission period

(As per Table 2.1 of AMRUT guidelines)

(Amount in Rs. Cr)

Sl No	Project Name	Priority number	Year in which to be implemented	Year in which proposed to be completed	Estimated Cost
Projects Sanctioned in 2015-16					
1	Supplying and laying and commissioning 900mm Dia DI Pumping main from Muttathara stilling chamber to collection well at Muttathara STP and construction of new bridge with pile foundation and allied works & Rehabilitation off existing pump and machinery	1	2016	2017	3.72
2	D Block Zone-II-Supplying,conveying,laying and jointing700mm dia RCC NP3 Pipe sewer trunk main II from Murinjapalam–KannamoolaChainage- ch952m to 1728m	2	2016	2017	
3	Sewerage treatment plant (5mld)for medical College Trivandrum	3	2016	2019	

4	Construction of Pump House at Edathara	4	2016	2019	
	Improvement of TSS.Supplying and Laying Pumping main from Edathara Pump House to STP at Muttathara	4	2016	2017	
					33.65
Slip 2016-17					
1	Providing sludge drying and packing Unit at 107 MLD STP Muttathara	1	2016	2019	20.00
2	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-1)	1	2016	2019	50.00
3	Rehabilitation of existing pump and machineries (Phase-2)	2	2016	2019	5.00
4	Block L-Supplying and Laying main Trunk Main	3	2016	2019	50.00
5	Block N-Construction of Pump House at Ulloor,	4	2016	2019	5.50
	Block N-Supplying and Laying Pumping Main	4	2016	2019	3.50
	Block N-Suppling and laying main Trunk mains	4	2016	2019	35.00
6	Block M-Construction of Pump House at Karikkakom	5	2016	2019	6.00
	Block M-Supplying and Laying Pumping Main	5	2016	2019	2.50
	Block M-Supplying and Laying main Trunk mains	5	2016	2019	35.00

7	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-1)	6	2016	2019	25.00
8	Providing community septic tanks and networks in low lying area in the banks of Parvathy puthanar and purchase of sewerage network cleaning equipment	6	2016	2019	15.00
9	Block K-Construction of Pump House at Akulam	7	2016	2019	5.00
	Block K-Supplying and Laying Pumping Main	7	2016	2019	4.50
	Block K--Supplying and laying Trunk mains	7	2016	2019	35.00
10	Block J-Construction of Pump House at Karimanal	8	2016	2019	5.00
	Block J-Supplying and Laying Pumping Main	8	2016	2019	4.00
	Block J--Supplying and laying Trunk mains	8	2016	2019	25.00
11	Block I-Construction of Pump House at Kulathur	9	2016	2019	5.00
	Block I-Supplying and Laying Pumping Main	9	2016	2019	4.00
	Block I--Supplying and laying Trunk mains	9	2016	2019	15.00
12	Block H--Construction of Pump House at Santhinagar	10	2016	2019	4.00
	Block H-Supplying and Laying Pumping Main	10	2016	2019	3.00
	Block H--Supplying and laying Trunk mains	10	2016	2019	20.00
13	Construction of Pump House at Kallingal	11	2016	2019	4.00
	Supplying and Laying Pumping Main and Trunk Main	11	2016	2019	18.00

14	Block –F1 and G1-Construction of Pump Houses, Pumping main and Trunk Main	12	2016	2019	55.00
15	Block –F2 and G2-Construction of Pump Houses, Pumping main and Trunk Main	13	2016	2019	55.00
16	Block –Attukal ,kalady -Construction of Pump Houses, Pumping main and Trunk Main to Attukal, Kalady area	14	2016	2019	35.00
17	Block R--Construction of Pump House at pachaloor	15	2016	2019	6.00
	Block R-Supplying and Laying Pumping Main	15	2016	2019	15.00
	BlockR--Supplying and laying Trunk mains	15	2016	2019	45.00
18	Block P& Q--Construction of Pump House at Punchakari	16	2016	2019	5.00
	Block P&Q-Supplying and Laying Pumping Main	16	2016	2019	6.00
	Block P&Q--Supplying and laying Trunk mains	16	2016	2019	35.00
19	Block O--Construction of Pump House at Karakkamandapom	17	2016	2019	5.00
	Block O-Supplying and Laying Pumping Main	17	2016	2019	4.00
	BlockO--Supplying and laying Trunk mains	17	2016	2019	15.00
20	Preliminary house hold survey. Taking levels and designing of the sewerage system in the 23 wards for Trivandrum corporation-wards viz1,2,3,4,8,9,10,11,12,13,19, 20,21,32,33, 34,35,37,59,60,61,62,63	18	2016	2019	2.50
21	Providing septage treatment plant at Old Kazhakuttom,, Sreekaryam ,Vattiyoorkavu, kudappanakunnu ,& Vizhinjam Panchayath area	19	2016	2019	45.00
22	Providing Septic tank facility to the households and procurement of sewage	20	2016	2019	5.00

	tankers				
Total					737.50
SLIP- 2017-18					
1	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-2)	1	2017	2020	50.00
2	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-2)	2	2017	2020	50.00
3	Block-L,M,N Supplying of Pumpsets with all accessories and KSEB connection	3	2017	2020	20.00
4	Block-H,I ,J K Supplying of Pumpsets with all accessories and KSEB connection	4	2017	2020	25.00
5	Block-F1,F2,G1 and G2- Supplying of Pumpsets with all accessories and KSEB connection	5	2017	2020	30.00
6	Block-AttukalKalady Supplying of Pumpsets with all accessories and KSEB connection	6	2017	2020	25.00
7	Block-O,P,Q R Supplying of Pumpsets with all accessories and KSEB connection	7	2017	2020	20.00
8	Block-H Sewerage net work and connections to house holds	8	2017	2020	20.00
9	Block-I Sewerage net work and connections to house holds	9	2017	2020	20.00
10	Block-J Sewerage net work and connections to house holds	10	2017	2020	30.00
11	Block-K Sewerage net work and connections to house holds	11	2017	2020	40.00
12	Block-L Sewerage net work and connections to house holds	12	2017	2020	50.00
13	Block-M Sewerage net work and connections to house holds	13	2017	2020	40.00

14	Block-N Sewerage net work and connections to house holds	14	2017	2020	35.00
15	Block-O Sewerage net work and connections to house holds	15	2017	2020	15.00
16	Block-P Sewerage net work and connections to house holds	16	2017	2020	25.00
17	Block-Q Sewerage net work and connections to house holds	17	2017	2020	25.00
18	Block-R Sewerage net work and connections to house holds	18	2017	2020	35.00
19	Block –Attukal, Kalady -Sewerage net work and connections to house holds	19	2017	2020	35.00
20	Providing sewerage treatment plant at Kazhakkoottam area	20	2017	2020	25.00
Total					615.00

Table 1.8 Details of prioritized projects proposed under AMRUT during Mission Period

(As per **Table 2.2** of AMRUT guidelines)

(Amount in Rs. Cr)

SI No	Project Name	Physical components	Change in service levels			Estimated Amount
			Indicator	Existing (As-Is)	After (To-be)	
SAAP 2015-16						
1	Supplying and laying and commissioning 900mm Dia DI Pumping main from Muttathara stilling chamber to collection well at Muttathara STP and construction of new bridge with pile foundation and allied works		collection efficiency	41%	41%	2.50
2	Rehabilitation off existing pump and machineries					1.21
3	D Block Zone-II-Supplying, conveying, laying and jointing 700mm dia RCC NP3 Pipe sewer trunk main from Murinjapalam–Kannamoola Chainage- ch 952m to 1728m		Coverage of network services	37%	37%	1.33
4	Decentralised Sewerage treatment plant (5mld) at medical College campus including water recycling –Phase I		Efficiency of treatment	95%	100%	5.31

5	Construction of Pump House at Edathara		collection efficiency	41%	41%	5.87
6	Supplying and Laying Pumping main from Edathara Pump House to STP at Muttathara		collection efficiency	41%	41%	17.43
TOTAL						33.65
SAAP 2016-17						
7	Laying Transmission main and sewer networks in L block		Coverage of network services	37%	38%	25.00
8	Decentralised Sewerage treatment plant (5mld) at medical College campus including water recycling –Phase II		Efficiency of treatment	95%	100%	13.85
9	Providing new network in the missing areas of core city & rehabilitation of networks		Coverage of network services	38%	40%	11.84
TOTAL						50.69
SAAP 2017-18						
10	Supplying and erection of pumpsets , transformer and electrical accessories in the Edathara Pumping Station		Collection efficiency	41%	41%	5.00
11	Construction of Pumping station at Akkulam(Block K)		Collection efficiency	41%	41%	4.00
12	Supplying and laying 500mm DI K9 pumping main for a length of 3000m (Akkulam Pumping station to Pulayanarkotta stilling chamber)		collection efficiency	41%	42%	4.00

13	Supplying and laying Transmission main in Block K (Akkulam) to connect stilling chamber at bypass junction to pumping station at Akkulam		Coverage	40%	40%	4.00
14	Supplying and erection of pumpsets , transformer and electrical accessories in the Akkulam Pumping Station		collection efficiency	42%	42%	3.00
15	Construction of Pumping station at Karimanal (Block J)		collection efficiency	42%	44%	4.00
16	Supplying and laying 400mm DI K9 pumping main for a length of 1300m (karimanal pumping station to stilling chamber at bypass junction)		collection efficiency	44%	44%	2.50
17	Laying Transmission main and sewer networks in Block J (Karimanal)		Coverage of network services	40%	42%	10.00
18	Providing Sewer trunk from kazhakoottam area to Pumping station of L Block through the bank of Thettiyar Thodu		Coverage of network services	42%	43%	8.00
19	Supplying and erection of pumpsets , transformer and electrical accessories in the Karimanal Pumping Station		Collection efficiency	44%	44%	4.00
20	Providing mechanical Sludge drying unit at muttathara 107 Mld STP		Reuse and Recycling of sewage after treatment	63%	66%	5.00
21	Providing new network in the missing areas of core city		Coverage of network	43%	45%	10.00

			services			
22	Rehabilitation of existing network		Coverage of network services	45%	45%	10.00
23	Providing sewerage facility in the Kalladimugham housing colony		Coverage of network services	45%	45%	1.97
	TOTAL					75.47
	GRAND TOTAL					159.81

Table 1.9 Annual Fund Sharing Pattern for Sewerage Projects

(As per Table 2.3.1 of AMRUT guidelines)

(Amount in Rs. Cr)

SI No	Project Name	Total Project Cost	Share				
			Gol	State	ULB	Others	Total
Projects Sanctioned in 2015-16							
1	Supplying and laying and commissioning 900mm Dia DI Pumping main from Muttathara stilling chamber to collection well at Muttathara STP and construction of new bridge with pile foundation and allied works & Rehabilitation off existing pump and machinery						3.72
2	Amruth Project 2015-16 D Block Zone-II- Supplying,conveying,laying and jointing700mm dia RCC NP3Pipe sewer trunk main II from Murinjapalam - KannamoolaChainage-						
3	Amruth-Improvement of TSS. Sewerage treatment plant (5mld)for medical College Trivandrum						
4	Amruth-Improvement of TSS. -Construction of						

	Pump House at Edathara						
5	Amruth-Improvement of TSS. Supplying and Laying Pumping main from Edathara Pump House to STP at Muttathara						
Total		33.65	16.825	10.095	6.73	0	33.65
SLIP 2016-17							
1	Providing sludge drying and packing Unit at 107 MLD STP Muttathara	20.00	10	6	4	0	20
2	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-1)	50.00	25	15	10	0	50
3	Rehabilitation of existing pump and machineries (Phase-2)	5.00	2.5	1.5	1	0	5
4	Block L-Supplying and Laying main Trunk Main	50.00	25	15	10	0	50
5	Block N-Construction of Pump House at Ulloor,	5.50	2.75	1.65	1.1	0	5.5
	Block N-Supplying and Laying Pumping Main	3.50	1.75	1.05	0.7	0	3.5
	Block N-Supplying and laying main Trunk mains	35.00	17.5	10.5	7	0	35
6	Block M-Construction of Pump House at	6.00	3	1.8	1.2	0	6

	Karikkakom						
	Block M-Supplying and Laying Pumping Main	2.50	1.25	0.75	0.5	0	2.5
	Block M-Supplying and Laying main Trunk mains	35.00	17.5	10.5	7	0	35
7	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-1)	25.00	12.5	7.5	5	0	25
8	Providing community septic tanks and networks in low lying area in the banks of Parvathy puthanar and purchase of sewerage network cleaning equipments	15.00	7.5	4.5	3	0	15
9	Block K-Construction of Pump House at Akulam	5.00	2.5	1.5	1	0	5
	Block K-Supplying and Laying Pumping Main	4.50	2.25	1.35	0.9	0	4.5
	Block K--Supplying and laying Trunk mains	35.00	17.5	10.5	7	0	35
10	Block J-Construction of Pump House at Karimanal	5.00	2.5	1.5	1	0	5
	Block J-Supplying and Laying Pumping Main	4.00	2	1.2	0.8	0	4

	Block J--Supplying and laying Trunk mains	25.00	12.5	7.5	5	0	25
11	Block I--Construction of Pump House at Kulathur	5.00	2.5	1.5	1	0	5
	Block I--Supplying and Laying Pumping Main	4.00	2	1.2	0.8	0	4
	Block I--Supplying and laying Trunk mains	15.00	7.5	4.5	3	0	15
12	Block H--Construction of Pump House at Santhinagar	4.00	2	1.2	0.8	0	4
	Block H--Supplying and Laying Pumping Main	3.00	1.5	0.9	0.6	0	3
	Block H--Supplying and laying Trunk mains	20.00	10	6	4	0	20
13	Construction of Pump House at Kallingal	4.00	2	1.2	0.8	0	4
	Supplying and Laying Pumping Main and Trunk Main	18.00	9	5.4	3.6	0	18
14	Block –F1 and G1--Construction of Pump Houses, Pumping main and Trunk Main	55.00	27.5	16.5	11	0	55
15	Block –F2 and G2--Construction of Pump Houses, Pumping main and Trunk Main	55.00	27.5	16.5	11	0	55

16	Block –Attukal ,kalady -Construction of Pump Houses, Pumping main and Trunk Main to Attukal, Kalady area	35.00	17.5	10.5	7	0	35
17	Block R--Construction of Pump House at pachaloor	6.00	3	1.8	1.2	0	6
	Block R-Supplying and Laying Pumping Main	15.00	7.5	4.5	3	0	15
	BlockR--Supplying and laying Trunk mains	45.00	22.5	13.5	9	0	45
18	Block P& Q--Construction of Pump House at Punchakari	5.00	2.5	1.5	1	0	5
	Block P& Q-Supplying and Laying Pumping Main	6.00	3	1.8	1.2	0	6
	Block P&Q--Supplying and laying Trunk mains	35.00	17.5	10.5	7	0	35
19	Block O--Construction of Pump House at Karakkamandapom	5.00	2.5	1.5	1	0	5
	Block O-Supplying and Laying Pumping Main	4.00	2	1.2	0.8	0	4
	Block O--Supplying and laying Trunk mains	15.00	7.5	4.5	3	0	15
20	Preliminary house hold survey. Taking levels and designing of the sewerage system in the 23 wards for Trivandrum corporation-wards	2.50	1.25	0.75	0.5	0	2.5

	viz1,2,3,4,8,9,10,11,12,13,19, 20,21,32,33, 34,35,37,59,60,61,62,63						
21	Providing septage treatment plant at Old Kazhakuttom,, Sreekaryam ,Vattiyoorkavu, kudappanakunnu ,& Vizhinjam Panchayath area	45.00	22.5	13.5	9	0	45
22	Providing Septic tank facility to the households and procurement of sewage tankers	5.00	2.5	1.5	1	0	5
Total			368.5	221.25	147.5	0	737.50
SLIP- 2017-18							
1	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-2)	50.00	25	15	10	0	50
2	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-2)	50.00	25	15	10	0	50
3	Block-L,M,N Supplying of Pumpsets with all accessories and KSEB connection	20.00	10	6	4	0	20
4	Block-H,I ,J K Supplying of Pumpsets with all accessories and KSEB connection	25.00	12.5	7.5	5	0	25

5	Block-F1,F2,G1 and G2- Supplying of Pumpsets with all accessories and KSEB connection	30.00	15	9	6	0	30
6	Block-Attukal, Kalady Supplying of Pumpsets with all accessories and KSEB connection	25.00	12.5	7.5	5	0	25
7	Block-O,P,Q R Supplying of Pumpsets with all accessories and KSEB connection	20.00	10	6	4	0	20
8	Block-H Sewerage net work and connections to house holds	20.00	10	6	4	0	20
9	Block-I Sewerage net work and connections to house holds	20.00	10	6	4	0	20
10	Block-J Sewerage net work and connections to house holds	30.00	15	9	6	0	30
11	Block-K Sewerage net work and connections to house holds	40.00	20	12	8	0	40
12	Block-L Sewerage net work and connections to house holds	50.00	25	15	10	0	50
13	Block-M Sewerage net work and connections to house holds	40.00	20	12	8	0	40
14	Block-N Sewerage net work and connections to house holds	35.00	17.5	10.5	7	0	35

15	Block-O Sewerage net work and connections to house holds	15.00	7.5	4.5	3	0	15
16	Block-P Sewerage net work and connections to house holds	25.00	12.5	7.5	5	0	25
17	Block-Q Sewerage net work and connections to house holds	25.00	12.5	7.5	5	0	25
18	Block-R Sewerage net work and connections to house holds	35.00	17.5	10.5	7	0	35
19	Block –Attukal ,kalady -Sewerage net work and connections to house holds	35.00	17.5	10.5	7	0	35
20	Providing sewerage treatment plant at kzhakkoottam area	25.00	12.50	7.5	5		25
Total		615.00	307.50	184.5	123.00	0	615.00

Table 1.10 Annual Fund Sharing Break-up for Sewerage Projects as per Table 2.3.2 of AMRUT Guidelines)

(Amount in crores)

FY 2015-16

SI N o	Project Name	Gol	State			ULB			Convergen e	Others	Total
			14t h FC	Others	Total	14 th FC	Others	Total			
1	Supplying and laying and commissioning 900mm Dia DI Pumping main from Muttathara stilling chamber to collection well at Muttathara STP and construction of new bridge with pile foundation and allied works & Rehabilitation off existing pump and machinery										3.72
2	Amruth Project 2015-16 D Block Zone-II- Supplying,conveying,laying and jointing700mm dia RCC NP3 Pipe sewer trunk main II from Murinjapalam - KannamoolaChainage-										
3	Amruth-Improvement of TSS. Sewerage treatment plant (5mld)for medical College Trivandrum										

	Amruth-Improvement of TSS. -Construction of Pump House at Edathara									
	Amruth-Improvement of TSS. Supplying and Laying Pumping main from Edathara Pump House to STP at Muttathara									
	TOTAL	16.825			10.095			6.73		33.65
SLIP 2016-17										
1	Providing sludge drying and packing Unit at 107 MLD STP Muttathara	10			6			4		20.00
2	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-1)	25			15			10		50.00
3	Rehabilitation of existing pump and machineries (Phase-2)	2.5			1.5			1		5.00
4	Block L-Supplying and Laying main Trunk Main	25			15			10		50.00
5	Block N-Construction of Pump House at Ulloor,	2.75			1.65			1.1		5.50
	Block N-Supplying and Laying Pumping Main	1.75			1.05			0.7		3.50
	Block N-Supplying and laying main Trunk mains	17.5			10.5			7		35.00

6	Block M-Construction of Pump House at Karikkakom	3			1.8			1.2		6.00
	Block M-Supplying and Laying Pumping Main	1.25			0.75			0.5		2.50
	Block M-Supplying and Laying main Trunk mains	17.5			10.5			7		35.00
7	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-1)	12.5			7.5			5		25.00
8	Providing community septic tanks and networks in low lying area in the banks of Parvathy puthanar and purchase of sewerage network cleaning equipments	7.5			4.5			3		15.00
9	Block K-Construction of Pump House at Akulam	2.5			1.5			1		5.00
	Block K-Supplying and Laying Pumping Main	2.25			1.35			0.9		4.50
	Block K--Supplying and laying Trunk mains	17.5			10.5			7		35.00
10	Block J-Construction of Pump House at Karimanal	2.5			1.5			1		5.00
	Block J-Supplying and Laying Pumping Main	2			1.2			0.8		4.00
	Block J--Supplying and laying Trunk mains	12.5			7.5			5		25.00

11	Block I-Construction of Pump House at Kulathur	2.5			1.5			1		5.00
	Block I-Supplying and Laying Pumping Main	2			1.2			0.8		4.00
	Block I--Suppling and laying Trunk mains	7.5			4.5			3		15.00
12	Block H--Construction of Pump House at Santhinagar	2			1.2			0.8		4.00
	Block H-Supplying and Laying Pumping Main	1.5			0.9			0.6		3.00
	Block H--Supplying and laying Trunk mains	10			6			4		20.00
13	Construction of Pump House at Kallingal	2			1.2			0.8		4.00
	Supplying and Laying Pumping Main and Trunk Main	9			5.4			3.6		18.00
14	Block –F1 and G1-Construction of Pump Houses, Pumping main and Trunk Main	27.5			16.5			11		55.00
15	Block –F2 and G2-Construction of Pump Houses, Pumping main and Trunk Main	27.5			16.5			11		55.00
16	Block –Attukal ,kalady -Construction of Pump Houses, Pumping main and Trunk Main to Attukal, Kalady area	17.5			10.5			7		35.00
17	Block R--Construction of Pump House at pachaloor	3			1.8			1.2		6.00

	Block R-Supplying and Laying Pumping Main	7.5			4.5			3		15.00
	BlockR--Supplying and laying Trunk mains	22.5			13.5			9		45.00
18	Block P& Q--Construction of Pump House at Punchakari	2.5			1.5			1		5.00
	Block P& Q-Supplying and Laying Pumping Main	3			1.8			1.2		6.00
	Block P&Q--Supplying and laying Trunk mains	17.5			10.5			7		35.00
19	Block O--Construction of Pump House at Karakkamandapom	2.5			1.5			1		5.00
	Block O-Supplying and Laying Pumping Main	2			1.2			0.8		4.00
	Block O--Supplying and laying Trunk mains	7.5			4.5			3		15.00
20	Preliminary house hold survey. Taking levels and designing of the sewerage system in the 23 wards for Trivandrum corporation-wards viz1,2,3,4,8,9,10,11,12,13,19, 20,21,32,33, 34,35,37,59,60,61,62,63	1.25			0.75			0.5		2.50
21	Providing septage treatment plant at Old Kazhakuttom,, Sreekaryam ,Vattiyoorkavu, kudappanakunnu ,&	22.5			13.5			9		45.00

	Vizhinjam Panchayath area									
22	Providing Septic tank facility to the households and procurement of sewage tankers	2.5			1.5			1		5.00
Total		368.75			221.25			147.5		737.50
SLIP- 2017-18										
1	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-2)	25			15			10		50
2	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-2)	25			15			10		50
3	Block-L,M,N Supplying of Pumpsets with all accessories and KSEB connection	10			6			4		20
4	Block-H,I ,J K Supplying of Pumpsets with all accessories and KSEB connection	12.5			7.5			5		25
5	Block-F1,F2,G1 and G2- Supplying of Pumpsets with all accessories and KSEB connection	15			9			6		30
6	Block-Attukal, Kalady Supplying of Pumpsets with all accessories and KSEB connection	12.5			7.5			5		25
7	Block-O,P,Q R Supplying of Pumpsets with all accessories and KSEB connection	10			6			4		20

8	Block-H Sewerage net work and connections to house holds	10			6			4			20
9	Block-I Sewerage net work and connections to house holds	10			6			4			20
10	Block-J Sewerage net work and connections to house holds	15			9			6			30
11	Block-K Sewerage net work and connections to house holds	20			12			8			40
12	Block-L Sewerage net work and connections to house holds	25			15			10			50
13	Block-M Sewerage net work and connections to house holds	20			12			8			40
14	Block-N Sewerage net work and connections to house holds	17.5			10.5			7			35
15	Block-O Sewerage net work and connections to house holds	7.5			4.5			3			15
16	Block-P Sewerage net work and connections to house holds	12.5			7.5			5			25
17	Block-Q Sewerage net work and connections to house holds	12.5			7.5			5			25

18	Block-R Sewerage net work and connections to house holds	17.5			10.5			7			35
19	Block –Attukal, kalady -Sewerage net work and connections to house holds	17.5			10.5			7			35
20	Providing sewerage treatment plant at kzhakkoottam area	12.50			7.50			5			25
Total		307.5			184.5			123.00			615.00

Table 1.11 Annual Fund Sharing Pattern for Sewerage Projects

(As per Table 2.3.1 of AMRUT guidelines)

Sl no	Project Name	Total Project Cost	Indicator	Base line	Annual targets (Increment from the baseline value)					
					FY 2016		FY 2017	FY 2018	FY 2019	FY 2020
					H1	H2				
1	Providing sludge drying and packing Unit at 107 MLD STP Muttathara	20.00	Reuse and Recycling of sewage after treatment							
2	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-1)	50.00	Coverage of network services	37%						
3	Rehabilitation of existing pump and machineries (Phase-2)	5.00	collection efficiency	41%				44%		
4	Block L-Supplying and Laying main Trunk Main	50.00	Coverage of network services	37%				39%		
5	Block N-Construction of Pump House at Ulloor,	5.50	collection efficiency	41%				44%		
	Block N-Supplying and Laying Pumping Main	3.50	collection efficiency	41%				44%		
	Block N-Supplying and laying main Trunk mains	35.00	Coverage of network services	37%				40%		
6	Block M-Construction of Pump House at Karikkakom	6.00	collection efficiency	41%				44%		

	Block M-Supplying and Laying Pumping Main	2.50	collection efficiency	41%				44%	
	Block M-Supplying and Laying main Trunk mains	35.00	Coverage of network services	37%				41%	
7	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-1)	25.00	Coverage of network services	37%				43%	
8	Providing community septic tanks and networks in low lying area in the banks of Parvathy puthanar and purchase of	15.00	collection efficiency	44%				44%	
9	Block K-Construction of Pump House at Akulam	5.00	collection efficiency	41%				44%	
	Block K-Supplying and Laying Pumping Main	4.50	collection efficiency	41%				44%	
	Block K--Supplying and laying Trunk mains	35.00	Coverage of network services	37%				44%	
10	Block J-Construction of Pump House at Karimanal	5.00	collection efficiency	41%				44%	
	Block J-Supplying and Laying Pumping Main	4.00	collection efficiency	41%				44%	
	Block J--Supplying and laying Trunk mains	25.00	Coverage of network services	37%				45%	
11	Block I-Construction of Pump House at Kulathur	5.00	collection efficiency	41%				44%	
	Block I-Supplying and Laying Pumping Main	4.00	collection efficiency	41%				44%	
	Block I--Supplying and laying Trunk mains	15.00	Coverage of network services	37%				46%	

12	Block H--Construction of Pump House at Santhinagar	4.00	collection efficiency	41%				44%	
	Block H-Supplying and Laying Pumping Main	3.00	collection efficiency	41%				44%	
	Block H--Supplying and laying Trunk mains	20.00	Coverage of network services	37%				47%	
13	Construction of Pump House at Kallingal	4.00	collection efficiency	41%				44%	
	Supplying and Laying Pumping Main and Trunk Main	18.00	collection efficiency	41%				44%	
14	Block –F1 and G1-Construction of Pump Houses, Pumping main and Trunk Main	55.00	collection efficiency	41%				44%	
15	Block –F2 and G2-Construction of Pump Houses, Pumping main and Trunk Main	55.00	collection efficiency	41%				44%	
16	Block –Attukal ,kalady -Construction of Pump Houses, Pumping main and Trunk Main toAttukal, Kalady area	35.00	collection efficiency	41%				44%	
17	Block R--Construction of Pump House at pachaloor	6.00	collection efficiency	41%				44%	
	Block R-Supplying and Laying Pumping Main	15.00	collection efficiency	41%				44%	
	BlockR--Supplying and laying Trunk mains	45.00	Coverage of network services	37%				48%	
18	Block P&Q--Construction of Pump House at Punchakari	5.00	collection efficiency	41%				44%	

	Block P&Q-Supplying and Laying Pumping Main	6.00	collection efficiency	41%				44%	
	Block P&Q--Supplying and laying Trunk mains	35.00	Coverage of network services	37%				49%	
19	Block O--Construction of Pump House at Karakkamandapom	5.00	collection efficiency	41%				44%	
	Block O-Supplying and Laying Pumping Main	4.00	collection efficiency	41%				44%	
	Block O--Supplying and laying Trunk mains	15.00	Coverage of network services	37%				50%	
20	Preliminary house hold survey. Taking levels and designing of the sewerage system in the 23 wards for Trivandrum corporation-wards viz1,2,3,4,8,9,10,11,12,13,19, 20,21,32,33, 34,35,37,59,60,61,62,63	2.50	Protected sewage disposal in new areas						
21	Providing septage treatment plant at Old Kazhakuttom,, Sreekaryam ,Vattiyoorkavu, kudappanakunnu ,& Vizhinjam Panchayath area	45.00	Reuse and Recycling of sewage after treatment						
22	Providing Septic tank facility to the households and procurement of sewage tankers	5.00	Protected sewage disposal in new areas						
	Total	737.50							
SLIP 2017-18									

1	Rehabilitation of existing sewerage network in A,B,C,D and E Blocks (Phase-2)	50.00	Coverage of sewerage network	37%					
2	Additional coverage of sewerage network in Blocks A, B, C, d and E (Phase-2)	50.00	Coverage of sewerage network	37%					53%
3	Block-L,M,N Supplying of Pumpsets with all accessories and KSEB connection	20.00	To increase the collection efficiency	41%					60%
4	Block-H,I ,J K Supplying of Pumpsets with all accessories and KSEB connection	25.00	To increase the collection efficiency	41%					70%
5	Block-F1,F2,G1 and G2- Supplying of Pumpsets with all accessories and KSEB connection	30.00	To increase the collection efficiency	41%					75%
6	Block-AttukalKalady Supplying of Pumpsets with all accessories and KSEB connection	25.00	To increase the collection efficiency	41%					78%
7	Block-O,P,Q R Supplying of Pumpsets with all accessories and KSEB connection	20.00	To increase the collection efficiency	41%					90%
8	Block-H Sewerage net work and connections to house holds	20.00	Coverage of network services	37%					57%
9	Block-I Sewerage net work and connections to house holds	20.00	Coverage of network services	37%					60%

10	Block-J Sewerage net work and connections to house holds	30.00	Coverage of network services	37%					63%
11	Block-K Sewerage net work and connections to house holds	40.00	Coverage of network services	37%					66%
12	Block-L Sewerage net work and connections to house holds	50.00	Coverage of network services	37%					69%
13	Block-M Sewerage net work and connections to house holds	40.00	Coverage of network services	37%					72%
14	Block-N Sewerage net work and connections to house holds	35.00	Coverage of network services	37%					75%
15	Block-O Sewerage net work and connections to house holds	15.00	Coverage of network services	37%					78%
16	Block-P Sewerage net work and connections to house holds	25.00	Coverage of network services	37%					81%
17	Block-Q Sewerage net work and connections to house holds	25.00	Coverage of network services	37%					84%
18	Block-R Sewerage net work and connections to house holds	35.00	Coverage of network services	37%					87%

19	Block –Attukal ,kalady -Sewerage net work and connections to house holds	35.00	Coverage of network services	37%					90%
20	Providing sewerage treatment plant at kazhakkottam area	25.00	Treatment efficiency						
		615.00							