



KERALA STATE POLLUTION CONTROL BOARD

Pattom P.O., Thiruvananthapuram - 695004

PCB/HO/EE3/MPR/10/2022

Date: 31/12/2022

From

The Member Secretary

To

The Secretary

Ministry of Jal Shakthi,

Department of Water Resources, River Development

& Ganga Rejuvenation, Shram Shakti Bhawan,

Rafi Marg, New Delhi-110001

Sub:- Forwarding Monthly Progress Report for the month of October 2022-reg.

Ref:- Order of the Hon'ble NGT in the matter of O.A.No.673/2018

Sir,

Kind attention is invited to the subject matter. The report prepared in revised format with respect to the progress in implementation of action plan of 21 polluted river stretches, for the month of October 2022 is submitted herewith.

Yours faithfully,

MEMBER SECRETARY

Encl: As above

National Mission for Clean Ganga
Monthly Progress Report for the month of October 2022 in the NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)
For the State of Kerala

Overall status of the State:

I. Total Population: Urban Population & Rural Population separately:

As per Census 2011, Kerala has a population of 3,37,77,386. Rural population in Kerala is 2,58,40,501 and urban population in the state is 79,36,885. Population projected for 2020 for rural area is 2,70,05,078 and for urban area is 82,94,583. The water consumption and wastewater generated are calculated based on the population projected for 2020.

II. Estimated Sewage Generation(MLD):

A draft dossier on sewage and sullage generation in the State of Kerala has been prepared by the Board. Based on the draft report:

- Estimated Sewage and Sullage generation in Corporation & Municipality*- 1058 MLD (Sewage – 317 MLD, Sullage- 741MLD)
- Estimated Sewage and Sullage generation in Panchayath - 2917 MLD (Sewage – 875 MLD, Sullage- 2042MLD)

Total Sewage and Sullage generation – 3975 MLD (Sewage – 1192 MLD, Sullage- 2783MLD)

* In Corporation and Municipalities, majority of houses are homesteads. Flats are comparatively less in Kerala

III. Details of Sewage Treatment Plant:

- Existing no. of common STPs/FSTPs: 18 (11 common STPs and other STPs) and 4 common FSTPs
- Total sewage treatment capacity in the State through existing common STPs: 134.51 MLD
- Total septage treatment capacity in the State through existing common FSTPs: 0.22 MLD
- Sewage treatment capacity via individual STPs in establishments: 73MLD
- Treatment of sewage by septic tank, soak pit (Individual residences) -1011MLD
- Gap in treatment of sewage: 42.304 MLD
- Kerala is declared as open defecation free State. A survey of liquid waste management was conducted in 2016 for 66.7 lakh residences (www.haritham.kerala.gov.in). The study revealed that in most of the household sullage from(kitchen, bathroom) is separated from sewage (toilet).
- Sullage which forms 70% of domestic waste water and sewage is only 30%.The major quantity of sullage , which is not contaminated with faecal coliform, is disposed through soak pit and for farming in their own premises. Some instances of discharge to open public places were also identified and actions were taken to stop the same.

- Sewage is discharged through septic tank/soakpit, common/ individual sewage treatment plant. The mixing of sewage and sullage occurs in the case of common sewage treatment plant and individual STPs.
- Based on the survey results retrofitting measures are also adopted in the State. In Kerala, flats are very less compared to individual households. Individual households which are having septic tank /soak pit existing for toilets attached to them. Sullage cannot be diverted to septic tank. However action is being taken in urbanised areas to divert wastewater to common STPs.
- Based on the instruction from Jalasakthi, Status of liquid waste management in all localbodies including panchayat have been called for by means of google spreadsheet. From the data received so far, the sullage which is not contaminated is disposed through soakpit and for farming in household premises is also reported.
- Besides above, the following action were taken by LSGI for liquid waste management:
 - List of remote quarry or degraded lands across the state with road access and distance from human habitations-both public and private was taken .
 - Technical check list on feasibility of the site conditions for setting up FSTP was developed in consultation with expert agencies in the sector
 - District Level Inspection Committee for checking the feasibility of proposal for setting up FSTPs in degraded land was constituted as per GO (Rt) No. 2558/2022/LSGD dated 21.10.2022 (copy enclosed).
 - 36 sites have been identified across the State for setting up FSTPs by the Technical Committee and site reports prepared.
 - IEC campaign by way of Jalsabhas and transect walk by volunteers, students and local communities across water bodies to gauge pollution and develop community understanding of the dangers of inadequate liquid waste management to the health of water bodies was conducted in all local bodies, both rural and urban.
 - Technical experts and agencies for Liquid Waste Management have been empanelled.
 - Malam bhootham –intensive campaign to highlight the dangers of faecal contamination and the urgent in intervention, has been launched
 - In situ expertise is being encouraged through capacity building of structural engineers and other motivated civil engineers within LSGD, so as to able to undertake the projects on their own.
 - Self Help Groups. Micro enterprises are being mobilized and trained to take on the O&M of such projects.
 - Liquid waste management projects have been included in the panel of projects for regular priority review by the Honorable CM, so as to resolve interdepartmental financial and other policy issues in taking these projects forward expeditiously.

- *CSTPs / STPs were completed as per the Action Plan submitted –*

1. STP of capacity 5 MLD at Medical College, Thiruvananthapuram,
2. 3 MLD at Chakkamkandam, Guruvayur, Thrissur.
3. 5 MLD at Elamkulam, Kochi,Ernakulam
4. 0.01 MLD FSTP at Kalpetta, Wayanad
5. 0.01 MLD STP at Mattampuram, Thrissur
6. 0.75 MLD STP owned by GCDA,Kaloor stadium

Details of existing STPs/ Common STPs/ common Septage treatment plants in the State :

- 107 MLD STP in Thiruvananthapuram District at Muttathara (Activated Sludge with extended aeration process). The present sewerage system cover 43 out of 100 wards of Thiruvananthapuram corporation area either partly or fully. 75% of capacity of the 107 MLD STP is utilized. Completion of ongoing works will enhance the utilization by 15%.Co processing of septage is also taking place. Control room is available for tanker transportation of septage.
- Considering the contamination of Karamana river and for providing sewerage systems for the 19 wards on the bank of this river, DPR prepared and submitted to GoK on 16.10.2021 for issuing AS under RKI. Sewer laying work of this 19 wards can be finished by 31/12/23, subject to the availability of funds. DPR for the remaining 81 wards for the full capacity utilisation of 107 MLD STP is under preparation
- Medical College 5MLD STP Works of 5MLD STP under AMRUT for Medical College, Thiruvananthapuram completed and started functioning from Sep 2021. This STP is exclusively for Thiruvananthapuram Medical college campus.
- 5 MLD STP (NEW PLANT) at Elamkulam Trial run of the new plant is in progress.Instructions have been issued to Kerala Water Authority, Kochi Corporation to take action for the complete utilization of 5 MLD plant.
- 3 MLD STP at Guruvayur (Activated sludge process)-The Guruvayoor Sewerage Project is planned to provide an effective sewerage system for the thickly populated area under Guruvayoor Municipality. The work completed and is functioning from September 2021. Length of network is approximately 7 km.

Sl. No.	City/Town	STP location	STP Installed capacity	Utilization	Process	Status
1	Thiruvananthapuram (PRS)	1. Common Sewage Treatment Plant, Muttathara, Trivandrum maintained by Kerala Water Authority (Co Processing facility for septage)	107 MLD	80 MLD	Activated Sludge Process	Operational (pH-6.9, BOD-3 mg/l, SS-42 mg/l, FC-nil) Inspected on 19.07.2022. The quality of effluent Conforming to standards.
		2. STP at Medical College, Thiruvananthapuram-Phase I & II (PRS)	5 MLD	3 MLD	MBBR	Operational (pH-7.1, BOD-24 mg/l, SS-39mg/l, Oil & Grease – BDL) Inspected on 19.09.2022. The quality of effluent Conforming to standards. Submitted proposals for full utilization.
2	Pathanamthitta	3. Sewage Treatment Plant at Sannidhanam (5MLD) Maintained by Travancore Devaswom Board	5 MLD	3.5 MLD	UASB and SBR	Seasonally Operated during festival season
		4. Sewage Treatment Plant at Pamba (3.5 MLD) maintained by Travancore Devaswom Board	3.5 MLD	3.5 MLD	Coagulation & settling	Seasonally Operated during festival season

3	Kottayam	5.STP for Houseboat (0.09 MLD)at Kumarakom maintained by DTPC, Kottayam	0.09MLD	0.09 MLD	ASP	Operational(pH-6.5, BOD-19 mg/l,SS-12 mg/l,Oil & Grease -BDL) Inspected on 14.10.2022.The quality of effluent conforming to standards.
4	Ernakulam	6.Sewage treatment unit, Kerala Water Authority, Elamkulam, (3MLD)	4.5MLD	3 MLD	ASP	Operational
		7.STP owned by Greater Cochin Development Authority, Kadavanthra, Kochi (0.45 MLD)	0.45MLD	0.45 MLD	ASP	Operational
		8.Septage Treatment Plant at Brahmapuram, Kochi Corporation, Ernakulam	0.1MLD	0.1 MLD	MBBR	Operational. (pH-6.84, BOD-18 mg/l,SS-6.8 mg/l, Oil & Grease -BDL,SS-6.8,Phosphates-0.391 mg/l,nitrates-9.18 mg/l,sulphates-105.16 mg/l,sulphides-BDL,ammoniacal nitrogen-BDL,Phenolic compounds – BDL,)
		9.Septage Treatment Plant at Wellington Island, Kochi	0.1MLD	0.1 MLD	MBBR	Operational

		Corporation				
		10. STP at Elamkulam, Kochi (AMRUT)	5.0 MLD	No house sewer connections are envisaged. The STP will replace the existing STP.	Trial run & minor works are in progress.	Trial run is in progress. Instructions issued to KWA and Kochi Corporation for full utilization.
		11. STP owned by GCDA, International Stadium Kaloor	0.75MLD		ASP	
5	Thrissur	12. Sewage treatment Plant at Guruvayur, Thrissur District	3 MLD	Started functioning	ASP	Operational. (pH-9.56, BOD-4.5 mg/l, COD-8mg/l, SS-6.8 mg/l, Oil & Grease -BDL, FC-nil) The quality of effluent confirming to standards.
		13. FSTP at Mattampuram	0.01 MLD	Started functioning	Biological	Completed. Started functioning. PCB issued permission for conducting trial run
		14. Revamping of 35 KLD STP at Kuriyanchira Slaughter House Corporation, Thrissur	0.035 MLD	0.035 MLD	MBBR	Operational
6	Malappuram (PRS)	15. Sewage treatment Plant at Malappuram Municipal Bus stand	0.03 MLD	0.03 MLD	MBBR	Operational. Application submitted to KSEB for changing to 3 phase system from municipality.
		16. Sewage treatment Plant- at Tirur (fish market)	0.045 MLD	0.045 MLD	Biological	Operational

	Malappuram	17.STP at Municipal Bus Stand, Tirur (PRS)	0.05 MLD	Completed and Started Functioning	Biological	Started functioning
		18. ETP in Fish Market, Ponmundam GP, Malappuram	0.01 MLD	Plant is working.		Anaerobic
7	Kozhikode (PRS)	19.Common Sewage Treatment Plant at Narayana nagaram, near stadium, Vatakara, Opp. New bus stand	0.1MLD	0.1MLD	MBBR	Operational
8	Kannur	20.Sewage treatment Plant at Taliparambu (0.5MLD) Taliparambu Municipality, Kannur	0.5MLD	0.5MLD	ASP	Operational
9	Wayanad	21.Sewage Treatment Plant at Taluk Hospital, SulthanBathery Wayanad	0.14 MLD	0.05 MLD	MBBR	Operational
		22.FSTP at Kalpetta	0.01MLD	0.01 MLD	Biological	Operational

Details of under construction of major ETPs / STPs in the State

No	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Incremental progress	Completion Timeline
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1	STP at Kureepuzha - Phase I & II, Kollam (AMRUT)	12	72%	21358 house sewer connections are envisaged as per the new sewer work added (balance of KSUDP).	Works are in progress.	31.03.2023
2&3	STPs at Medical College with Septage Treatment, Kozhikode (AMRUT)	3.1 (2 MLD with 100 KLD septage treatment & 1MLD	32%	Only the buildings inside the Medical College campus will be connected.	*2.1 MLD STP works are in progress. Network drawing & layout drawing of 1 MLD STP to be submitted by the Contractor. There delay on the part of the Contractor in executing works	31.12.2022
4	Decentralized sewerage network with STP in old Kannur Municipal area, Kannur (AMRUT)	1	38%	1500 house sewer connections are envisaged.	* Wet well, Office Building, Equalization Tank, Chlorine Tank & GLS Tank works are in progress.	31.03.2023
5	STP at General Hospital, Alappuzha	0.24	37%	Only the buildings inside the General Hospital campus will be connected.	* Collection Tank & Screening Chamber works are in progress.	31.12.2022
6	STP at Pambad Housing Colony Malappuram Municipality, Malappuram	0.110	96 % Completed	Main plumbing work completed. Soak pit work is ongoing. Tendering for electrical work has done. Once the electrical work is completed, new connection from KSEB is to be obtained. Then the plant will be functional	Directions given to complete all works	
7	Taluk Hospital Adimaly, Adimaly Block Panchayath	0.060	30%	Civil work of the control room is completed. Its electrical work will start after getting the Technical Sanction. Pipeline work is remaining. There is	Tank work is completed. Machines and other equipments should be	31/12/2022

	Idukki			construction work by KIIFB happening in the path. So pipeline work will start after its completion.	installed	
8	Construction of 45 KLD waste water treatment plant at Kalpetta Government Ayurveda Hospital DP, Wayanad	0.045	65% work completed	Civil works are completed. Mechanical and electrical works are pending. The contractor is not responding to the local body so planning on termination of contract, destination and tendering of remaining works	Directions given to initiate Actions to arrange the work.	31/12/2022
9	STP at Chitumala Old Age Home. Chitumala BP, Kollam	0.015	95% Completed	The contractor is not responding. Three letters have been sent and two of which are returned without acceptance. If there is no more response the contract will be terminated. The estimation and tendering of the remaining work will be done.	Directions given to initiate action for arranging the work in risk and cost.	31/12/2022
10	STP at CHC Cherpu BP, Thrissur	0.01	50% Completed	When the pipeline connection works started, there was leaks on septic tanks so it is decided to renew the project as per requirements. Contacted the consultant for preparation of DPR.		31/12/2022

I. Details of proposed ETPs/ STPs in the State

No.	Location	Capacity of the STP proposed in MLD	Status of Project (at DPR Stage/ Under Tendering/ Work to be Awarded)	Incremental progress	Likely Date of Completion of DPR preparation
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1	STP at Ottappalam Municipality, Palakkad District (IMPACT KERALA Ltd)	1.50MLD Co-treatment	All statutory clearances obtained. KMBR exemption received (GO.No.1798/2021/LSG D dt 18.09.2021). Revised FS received dated 31.01.2022. TS accorded on 18.02.2022. Tender published on 19.03.2022. Pre bid meeting conducted on 02.04.2022. Bid opening date extended upto 13.06.2022 due to single bidder participation.. 2 bids received. Both bids rejected on Technical evaluation. Work Retendered. Last date for submission 27.8.22. One bid received. Technical presentation by Bidder held on 10.10.2022 Financial Bid opened on 28/10/22. Negotiation to be done.eld on 10/10/22.	DPR approved by KIIFB.	31.12.2022
2	STP at Kunnankulam Municipality, Thrissur (IMPACT KERALA Ltd)	1.00MLD Co-treatment	In the review meeting held on 31/10/22 Municipality informed that they are not going ahead with the project. They will forward a cancellation letter with council resolution..	DPR approved by KIIFB	31.12.2022
3	STP at sewerage system in Zone A,Package A,Avikkal thodu ,Kozhikode (AMRUT) (PRS	7.0	Work started but stalled: The Contractor has submitted the draft design to GEC, Thrissur on 06/09/22 for vetting. Reply is awaited. *Hearing scheduled by the Munsiff Court on 22/09/22 has been postponed to 17/10/22. The judgment of the Hon' High Court disposing the petition (WPC-8689/ 2022) filed against the STP work was obtained on 14.11.2022. The work was restarted on 23.11.2022 with Police protection and is in progress.	* The Hon' High Court's judgment is awaited by the ULB to decide the way forward. Hearing is in progress on the petition (OS No.459/ 2022) filed by one of the protestors in the Munsiff Court against the STP work. The revised design submitted by the Consultant is being vetted by the Govt. Engg. College, Thrissur.	30.06.2023

4	STP at Division 1 - 4 under Cochin Smart City Mission	6.5	Awarded not started	Awarded not started	
5	Sewerage system (with STP) in Zone A, Package B, Kothi, Kozhikode(AMRUT) (PRS)	6	<p>Work started but stalled:</p> <ul style="list-style-type: none"> • There is public protest against the construction of STP at the location & the ULB is trying to resolve it. • Road cutting permission for sewer pipe laying is to be obtained from PWD. Decision on MoU signing is delayed due to public protest. • The ULB received a legal notice dated 15/03/22 regarding construction of STP as per the petition filed by protestors. As per the interim order of the Court dated 08/04/22 the preliminary works can be started without cutting mangrove trees. • Fencing works started on 27/04/22, with Police protection, had to be stopped due to public protest. 	<p>* A meeting was held with the District Collector on 06/05/22. 3rd counter affidavit was filed by the ULB on 28/05/22 as reply to the submissions made by the petitioners to the Court on 19/05/22. The Hon' High Court's judgment is awaited by the ULB to decide the way forward.</p>	30.06.2023
6	Decentralized Sewerage Scheme (with STP), Thrissur Corporation	2.5	<p>To be retendered:</p> <ul style="list-style-type: none"> * To be retendered after conversion of the category of the selected land (Paddy Land) & approval of recast estimate. * Special sanction is required from the Govt. for constructing the septage plant on the proposed land. * Application was submitted to Railways on 25/05/22. * The 30th SHPSC held on 	<p>The Agriculture Dept. has sought clarifications from the Environment Dept. regarding the nature of the land vide letter dated 18.10.2022</p>	30.06.2023

			05/07/22 approved the revision of AS from Rs.53.4 Cr. to Rs.64.20 Cr *A committee was constituted by LSGD vide Govt. Order dated 08/08/22 for reassessing the nature of land.The committee constituted by the Govt. to reassess the nature of the proposed land held meeting with ULB, Agriculture Dept. & Revenue Dept. officials on 20/08/22.		
7	Construction of 2.0 MLD STP as part of Kochi Urban Agglomeration	2	Inception Report	DPR returned to LSGI	
8	4 STPs are coming up under the KMRL's Integrated Water transport System project at Elamkulam, Vennala, Muttar, Perandur	10+10+7+4 =31	To be tendered	To be tendered	
9	STP at Decentralised Sewerage System - Kochi Corporation Div- 16 (AMRUT)	1.1	Awarded but not started: *. Public stopped the starting of soil investigation work on 28/04/22.	Way forward is to be decided by the ULB.	30.06.2023
10	STP at Wadakkanchery Municipality, Thrissur (IMPACT KERALA Ltd) (PRS)	1.00MLD Co- treatment	Puramboke land. NOC to be obtained from district collector. Now municipality planning for decentralized plants at new location which needs to be finalized in consultation with PCB. Municipality to submit DPR accordingly. Not yet submitted	DPR to be prepared.	-
11	STP at Palayad Taliparamba municipality, Kannur	1	At DPR Stage	DPR returned to LSGI	31/12/2022

12	Sewage Treatment Plant & associated network at Sundaram Colony, Palakkad (AMRUT)	0.8	<p>Selection notice issued but Agreement to be executed:</p> <ul style="list-style-type: none"> The Contractor is willing to sign the Agreement only if the fine is not imposed on them. The Council decided that O & M cost can't be borne by the ULB. <p>* The Council held on 12/07/22 decided to cancel the project, take up an alternative project & take action against the Consultant.</p>	<p>Alternative project is to be formulated by the ULB.</p> <p>* The agenda regarding cancellation of the project & reallocation of the fund to other sewerage sector projects is to be placed in the next SHPSC for approval.</p>	30.06.2023
13	STP at Mayyand GP, Kollam (IMPACT KERALA Ltd)	590KLD Co-treatment	RKI issued AS on 4/3/2022. GP applied for PCB NOC, Fire NOC and Structural scrutiny. PCB NOC received on 29.7.22. Structural scrutiny received at GP .TS process ongoing	DPR approved by RKI.	-
14	DPR on STP at District Hospital, Tirur, Malappuram	0.5	At DPR Stage	DPR returned to LSGI	31/12/2022
15	STP at Vadakara Municipality, Kozhikkode (IMPACT KERALA Ltd) (PRS)	0.5 MLD Sewage TP 20KLD FSTP 20KLD Septage TP	DPR appraisal ongoing in KIIFB. Present council decided to drop FSTP and include another STP at the proposed FSTP site. Consultant modifying DPR as per that. Land issue. Reminder to Municipality given. Not yet submitted.	DPR modification ongoing.	-
16	STP at General Hospital, Thrissur (AMRUT) (PRS)	0.36	<p>To be retendered:</p> <ul style="list-style-type: none"> The Contractor did not take possession of the site even though the ULB has agreed to waive the additional performance BG on submission of an affidavit. The Council held on 29/01/22 decided to terminate the Contract at the risk & cost of 	*. The corrected estimate is under scrutiny at CE, LSGD office.	30.06.2023

			<p>the Contractor and also to black list the Contractor. The Council also decided to retender the work (as TSP limited competitive tender). Vide Order dated 04/03/22 the ULB black listed the Contractor.</p> <ul style="list-style-type: none"> The estimate recast as per DSR-2018 is to be approved. The corrected estimate & details were submitted to CE, LSGD office on 23/08/22. 		
17	STP at Athani, Wadakkanchery Municipality, Trissur (PRS)	350 KLD STP	Site identified. DPR under preparation	DPR under preparation	-
18	STP at District Hospital, Palakkad (AMRUT)	0.27	<p>Work started but stalled:</p> <ul style="list-style-type: none"> The Contractor requested to relieve them from the work. The Council held on 21/05/22 decided to take action as per the prevailing rules. The available space has reduced as the Jilla Panchayath constructed an oxygen plant for the Dist. Hospital on the proposed location for the STP. 	<p>* Way forward to be decided by the ULB</p> <p>*The agenda regarding cancellation of the project & reallocation of the fund to other sewerage sector projects is to be placed in the next SHPSC for approval.</p>	30.06.2023
19	STP at Cherthala Municipality, Alappuzha (IMPACT KERALA Ltd)	250KLD Septage TP	<p>Technical Bid opened on 15.02.2022. 3 bids received. Technical presentation done by all bidders on 24.03.2022. Technical evaluation finalised. 2 bids found technically not qualified. Financial Bid of qualified bidder opened on 11.05.2022. Negotiation done. Request sent to RKI for tender acceptance and</p>	DPR approved by RKI.	

			revised approval on 8.6.22. Cabinet approved and revised sanction received on 26/9/22. Selection notice sent to the contractor on 6/10/22. Agreement executed on 7/11/22		
20	STP for Idukki district hospital and district Ayurveda hospital, Thodupuzha municipality, Idukki	0.20 5	Tendered	-	
21	District Hospital Perunthalmanna , District Panchayath, Malappuram	0.200	At DPR Stage	DPR returned to LSGI (Reminded LSGI to take action.)	31/12/2022
22	200 KLD Sewage Treatment Plant - Mattannur Municipality - Reg	0.2	At DPR stage	DPR returned to LSGI	
23	200 KLD Wastewater treatment plant at Tata Trust Govt Hospital, Kasargod	0.2	At DPR Stage	Under technical scrutiny	
24	190 KLD STP at Pathanapuram Market and Shopping Mall	0.19 0	At DPR Stage	TS Issued on 17/08/2022	31/12/2022
25	General Hospital, Irinjalakuda Municipality , Thrissur (PRS)	0.150	At DPR Stage	DPR returned to LSGI	31/12/2022
26	135 KLD Capacity decentralized sullage Treatment plant at Uppala Town Mangalpadi, Kasaragod	0.135	Tendering stage	-	
27	STP at hospital, Pazhayangadi, Kannur	0.12 0	At DPR Stage	DPR returned to LSGI	31/12/2022
28	FSTP at Chakkumkan dam, Guruvayur Municipality, Thrissur (AMRUT)	0.1	To be cancelled: * The proposed land is falling under the Wet Land category. Special sanction is	* Vide letter dated 02/09/22 the Secretary, Guruvayur has	

			<p>required from the Govt. for constructing the septage plant on the proposed land.</p> <ul style="list-style-type: none"> In the meeting held by the Chief Secretary on 26/05/22 the KWA was directed to take up the project for cotreatment of septage under RKI instead of the AMRUT. Accordingly, KWA has taken up the project for co-treatment of septage in the existing 3 MLD STP under RKI <p>The 30th SHPSC held on 05/07/22 decided to cancel the septage plant work</p>	<p>informed that the Council held on 30/08/22 has not agreed to cancel the septage plant work for want of (a) decision on who will bear the expense incurred for the work so far & (b) decision on the fund to be utilized for buying septage vehicles & related equipment. The matter is to be placed in the next SHPSC.</p>	
29	FSTP at Ramavarmapuram, Thrissur (AMRUT) (PRS)	0.1 MLD	<p>To be retendered:</p> <ul style="list-style-type: none"> The Contractor had requested the ULB to relieve them from the project citing reasons like financial crisis and increase in material & labour cost due to Covid pandemic. The Council held on 29/01/22 decided to retender the work (TSP limited competitive tender). The estimate recast as per DSR-2018 is to be approved. The corrected estimate & details were submitted to CE, LSGD office on 20/08/22. 	<p>* The corrected estimate is under scrutiny at CE, LSGD office.</p>	31.03.2023
30	FSTP at Yakkara, Palakkad Municipality	0.1 MLD	<p>Selection notice issued but Agreement to be executed:</p> <p>* The Cabinet Meeting of the Govt. held on 02/02/22 decided to allow</p>	<p>The Hon' High Court's judgment is awaited by the ULB to decide the way</p>	31.03.2023

			<p>70 Cents of land inside Palakkad Medical College Campus for the construction of the septage plant. Govt. Order, dated 04/03/22, was issued by Revenue Dept. allocating 70 Cents of land for the work.</p> <p>* The Contractor informed vide letter dated 31/03/22 that they are not willing to go ahead with the work due to financial crisis & increase in material & labour cost due to Covid pandemic.</p> <p>* Counter affidavit is to be filed by the ULB regarding the petitions (WPC-14660/2022 & WPC-15105/2022) filed in the Hon' High Court against the construction of the Septage Plant.</p> <p>* The Council held on 12/07/22 decided to take further action based on the judgment of the Hon' High Court.</p>	forward.	
31	FSTP at Chellora, Kannur Corporation (AMRUT)	0.1 MLD	<p>To be retendered:</p> <p>* Legacy waste dumped at the proposed location to be removed for starting physical works. The legacy waste removal work is to be started.</p> <ul style="list-style-type: none"> The Council held on 26/04/22 decided to relieve the Contractor from the Septage Plant work as they were not willing to take up the works. Septage Plant work is to be retendered after revision of estimate as per DSR-2018. Recast 	<p>* Legacy waste removal work started but held up due to intermittent rains.</p> <p>* The recast estimate is under scrutiny at CE, LSGD office</p>	31.03.2023

			estimate was sent from the ULB to CE, LSGD office on 04/08/22 for approval.		
32	CHC Kilimanoor, Kilimanoor Block Panchayath, Trivandrum	0.096 MLD	At DPR Stage	DPR returned to LSGI.	31/12/2022
33	FSTP at Varkala Municipality, Thiruvananthapuram (IMPACT KERALA Ltd)	50 KLD Septage TP	RKI issued AS on 28/2/2022. Municipality applied for PCB NOC, Fire NOC and Structural scrutiny. PCB NOC received on 21.05.22.	DPR approved by RKI.	31/12/2022
34	STP at Munnar, Idukki	50KLD	At DPR Stage	DPR Returned to LSGI	

- The status of compliance of remaining STPs less than 30 KLD is attached as enclosure 1.

IV.Details of Industrial Pollution:

- Total registered industrial and non industrial units – 1,25,142
- 49560 consents issued from 2020 onwards- More industries are brought under consent purview
- 11551 effluent generating units (large and medium=298; Small scale- 11, 253) (as per dossier)
- Primary Treatment facility provided in the units.
- OCEMS facility is provided in the Red Large Industries
- OCEMS facility provided in 39 industries and the results are linked to the SPCB/CPCB servers. In case of exceedance follow up is done.
- Quantity of effluent generated from the industries in MLD: 168.768
- Quantity of Hazardous Sludge generated from the Industries in TPA : 2584.572
- For industrial units ETP is provided.
- Number of industrial units connected to CETP: As per the available data-64 nos
- Number and total capacity of CETPs (details of existing/under construction /proposed)

I. 9 nos of CETPs are functional (Total Capacity – 10.145 MLD), 1 CETP having capacity 0.25 MLD not operational due to non availability of waste water.

II. Proposed CETPs –3 nos. (Total Capacity- 4 MLD). 1 CETP having capacity 1 MLD is under construction

4.1.Details of existing/under construction/proposed CETPs in the State				
No.	CETP location	CETP Installed capacity	CETP Utilisation capacity	Operational Status
OPERATIONAL				
1	Kinfra Apparel Park, St. Xavier's College P.O, Thumba, Thiruvananthapuram	4.5MLD	4.5MLD	Operational
2	CETP, KINFRA, Elamannoor, Pathanamthitta	0.22 MLD	-	Started operation (Board has issued Consent to Operate on 25.02.2022)
4	Sea Food Park (India) Ltd., Aroor, Alappuzha	0.3 MLD	0.3 MLD	<i>Operational. Discharge from 10 seafood units is treated in this CETP which is in operation & connected to OCEMS with 4 parameters is in operation.</i>
5	SEZ, Kakkannad, Cochin Special Economic Zone, Ernakulam	1.6MLD	1.6MLD	Working
6	Kinfra Small Industries Park Nellad, Mazhuvanoor, Ernakulam – 686 721	0.4MLD	0.4MLD	<i>Operational (Parameters complied with standards stipulated except sulphides)</i>
7	Rubber Park India Private Limited, Common Effluent Treatment Plant, 2A, Kaudileeyam, Rubber Park, Valayanchirangara, Ernakulam – 683556	0.25 MLD	0.25 MLD	<i>Operational (Parameter s complied with standards stipulated)</i>
8	Kinfra Techno Industrial Park, Kakkanchery Chelambara P.O, Malappuram	0.675 MLD	0.675MLD	<i>Operational (Parameter s complied with standards stipulated)</i>
9	Kinfra Textile Centre, Nadukani, Pallivayal P.O, Thaliparambu, Kannur – 670 142	0.2 MLD	0.2 MLD	<i>Operational (Parameter s complied with standards stipulated)</i>
NOT OPERATIONAL				
10	KSIDC, Valiyavelicham, Kuthuparamba Kannur	0.25 MLD	-	Not Operational due to non availability of waste water
UNDER CONSTRUCTION				

11	CSEZ, Kakkanad, Cochin Special Economic Zone Ernakulam	1 MLD	-	Under Construction
PROPOSED				
12	CETP, Chandiroor	1st phase 1.5 MLD 2 nd phase 1.5MLD	-	Not started any construction activities.Only land provided by society .Rs 300Lakhs was issued by the board for the implementation.But the project not get started and the amount was also not get refunded to the Board.
13	CETP, Industrial department ,Aroor	More than 100KLD		Proposed CETP land not get acquired by DIC from JIS International Exports Pvt Ltd (cold store).Capacity not get finalized by Industrial department.Work allotted to KITCO.There is case in High <ul style="list-style-type: none"> • Court regarding land acquisition .. A.D, I & C informed that the stay in WP (C) 29163/2021is continuing Directed to expedite action to get the stay vacated.

Kottayam

Kottayam District-Major Effluent generating units

Sl. No.	Industry Name	Type	Consumption of water in MLD	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standards or not if not steps taken
1	MRF Limited, Vadavathoor, Kottayam	Tyre	0.75	0.6	Soak pit	ETP	26-10-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.5, SS - 32, BOD - 30, O&G - 10	All parameters are within the limit
2	Kavanar Latex Limited	Crepe/crumb rubber	0.3212	0.3212	Soak pit	ETP	11-01-2017	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10, COD- 250	pH - 8.2, SS - 40, BOD - 15, O&G - BDL, COD- 240	All parameters are within the limit

								30, O&G - 10,	O&G - BDL	
5	St .Mary's Rubbers(P)Ltd (Gloves Manufacturing Division), Koovappally P.O Kanjirappally Kottayam	Rubber	0.035	0.028	soak pit	ETP	26-07- 2021	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 7.1 , SS - 12, BOD - 7.4, O&G - BDL	
6	Crystal Cars Private Limited, Kottayam	Automobile servicing	0.01	0.008	Soak pit	ETP	12-06- 2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.5 , SS - 10, BOD - 18, O&G - BDL,	All parameters are within the limit

Kottayam District- Major sewage and sullage generating units

Sl. No.	Industry Name	Industry Type	Consumption of water in MLD	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standards or not if not steps taken
1	Amal Jyothi College of Engineering	Educational institutions	0.6	0.48	Irrigation, Gardening, soak pit	STP	27-09-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.7 , SS -28, BOD - 19, O&G - BDL	All parameters are within the limit
3	Amal Jyothi College of Engineering Hostels, Koovappally P O Kanjirappally	Educational Institutions	0.5	0.44	Irrigation, Gardening, soak pit	STP	27-09-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.7 , SS -28, BOD - 19, O&G - BDL	All parameters are within the limit
4	Caritas Hospital, Thellakom P.O, Ettumanoor, Kottayam,	Hospitals	0.37	0.296	Irrigation, Gardening, soak pit	STP	21-10-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 9.7 , SS - 6, BOD - 8, O&G - BDL	pH exceeded the limit
5	Skyline Green Turf Apartment, Manganam, Kottayam	Flat	0.15	0.12	Flushing and gardening.	STP	01-02-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10, COD- 250	pH - 6.2 , SS - 25, BOD - 34, O&G - BDL, ,COD- 160	BOD exceeded the limit

6	Zuri Hotels and Resorts (P) Limited, Kumarakom	Hotel	0.15	0.1144	Irrigation, Gardening, soak pit	STP	11-07-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.5, SS - 32, BOD - 43, O&G - BDL	BOD exceeded the limit
7	Mar Sleeva Medicity, Cherupumkal, Palai, Kottayam	Hospital	0.143	0.1008	Reuse and soakpit	STP	20-07-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10, COD-250	pH - 6.5, SS - 12, BOD - 4.4, O&G - BDL, COD-12.6	All parameters are within the limit
8	S.H Medical Centre, Nagampadom	Hospital	0.126	0.1	Reuse and soakpit	STP	27-10-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.5, SS - 14, BOD - 19, O&G - BDL	All parameters are within the limit
9	Mitera Hospital, Thellakom P.O., Kottayam	Hospital	0.105	0.08	Reuse and soakpit	STP	26-10-2022	pH - 5.5 to 9, SS - 100, BOD - 30, O&G - 10,	pH - 6.8, SS - 8, BOD - 13, O&G - BDL	All parameters are within the limit

Kasargod

Kasargod District-Major Effluent generating units

Sl. No.	Industry Name	Industry Type	Consumption of water (MLD)	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standard or not if no steps take
1	Vittal Agro Industries	Desiccated Coconut Powder Making Unit	0.03	0.04	Irrigation as far as possible and the rest shall be discharged into soak pit.	ETP Units	25-05-2022	PH-6.5-8.5, BOD-30, TOTAL SUSPENDED SOLIDS-100, OIL AND GREASE-10, COD-250	PH-7.58, BOD-80, TOTAL SUSPENDED SOLIDS-34.1, OIL AND GREASE-3.4, COD-184	
2	Vpk Motors	Service Station	0.00575	0.005	Soak Pit	ETP	08-09-2020	PH-6.5-8.5, BOD-30, TOTAL SUSPENDED SOLIDS-100, OIL AND GREASE-10	PH-5.15, BOD-26, TOTAL SUSPENDED SOLIDS-76, OIL	

									250,OIL AND GREASE -MAX 10	60.1,OIL AND GREASE-1.2
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Kannur District- Major sewage and sullage generating units

Sl. No.	Industry Name	Industry Type	Consumption of water (MLD)	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standards or not if not steps taken
1	Josgiri Hospital,Thalassery Hollow Way Road,Kannur	Hospital	0.22	0.2	IRRIGATION/ SOAK PIT	STP UNIT	22-08-2022		PH-4.6,BOD-19,TSS-22.6,OIL AND GREASE-ND	
2	Kannur Medical College, Anjarakkandy	30-Health-Care Establishment	0	0.109	Gardening		21-10-2022		PH-6.5,COD-96,BOD-30,OIL AND GREASE-1.8,TDS-303.1,TSS-11.6	
3	Koyili Hospital, Pallikunnu P.O,Kannur	Hospital	0	0.095	Flushing/Irrigation	ETP	21-11-2022		PH-6.32,COD-44,BOD-11,OIL AND GREASE-BDL,TDS-110,TSS-8.2	
4	Dhanalakshmi Hospital,Kannothumbal Road, Kannur - 670002	Hospital	0.1	0.09	Treated effluent is used for irrigation in own land and the excess treated effluent is discharged to soak pit	STP	05-05-2022		pH-6.44,BOD-13,TSS-10,OIL AND GREASE-ND	
5	Malabar Cancer Centre,Moozhikkara, Thalassery 670103 Kannur	HOSPITAL WITH 199 BEDS	0.0825	0.08	Irrigation/Soak pit	STP	20-12-2022	ph-6.5-8.5,TSS-20,BOD-3,COD-	PH-7.4,COD-16.8,BO	

								25,OIL AND GREAS E-1	D-2.53,TD S-618.1,T SS-11,OIL AND GREAS E-ND
6	Indiragandhi Co-Operative Hospital,Manjodi,Thirvngad (P.O),Thalassery	Hospital With 200 Beds	0.09	0.072	Soak Pit/ Gardening	STP	22-08-2022		PH-4.16,BO D-17,TSS-32.4,OIL AND GREAS E-ND
7	Thalassery Mission Hospital, Good Shed Road, Thalassery	Hospital	0.06	0.055	Soak Pit/ Irrigation	STP	22-08-2022		PH-7.54,CO D-74.2,BO D-25,TDS-431.9,T SS-72.6,OIL AND GREAS E-ND
8	P Mental Health Hospital(CHRISTURAJ HOSPITAL-Christuraj Institute Of Mental Health And Neuro Science), THOKKILANGADI,KOOTH UPARAMBA, NIRMALAGIRI PO, KANNUR	Health Care Establishm ent	0.0594	0.047 52	Reuse For Irrigation And Excess To Soak Pit	STP	28-09-2022		PH-6.74,BO D-8.2,TSS-14.2,OIL AND GREAS E-ND

V. Solid Waste Management:

Total number of Urban Local Bodies and their Population :**93 Urban Local Bodies (6 Corporation and 87 Municipalities)** , Total Urban Population : **79,36,885 (As per 2011 Census)**

- Current Municipal Solid Waste Generation :**3472 TPD (Urban local bodies- Based on population)**
- Processing Capacity : **3205 TPD**
- Gap in Municipal Solid Waste Management : **267 TPD**

(The reduction in gap is due to the inclusion of recently commissioned rendering plants for processing the chicken waste . There is no live dump sites in the state . the quantity of 342 TPD is disposed through household facilities like compost pits and however action is being taken to divert it in the proposed centralized facility)

The District wise number of units are given below;

- 8 Waste to energy plants in progress (DPR stage-1 no, Tendering stage-1 no, Bid evaluation stage- 2 nos. , Initial stage of construction-2 nos, Land identified-2 nos)
- The Additional Chief Secretary ,Local Self Department has submitted the action taken Report on the implementation of Solid Waste Management in the state.Status report of Local self Government department is submitted herewith.

1. Status of proposed Waste- to- Energy Plants

Status report of Waste to Energy Plant				
SL No.	Waste to Energyplant	Land Identified	Procured	Status
1	Kozhikode Njaliyanparambu	Kozhikode corporation	(Govt. land)12.67acre at Njaliyanparabu	<ul style="list-style-type: none"> • Work awarded to Zonta Infratech Private Limited for the construction of Waste to Energy Plant. • Consent to establish was issued to Malabar Waste Management Private Limited on 12-8-2020 with a validity upto 30-6-2023 for the generation of 6MW electricity and 20T of compost. • Biomining of legacy waste is 57% complete. The total area for biomining is 1.8 acres. • All licenses from the corresponding departments were obtained for the construction of waste to energy plant. Preliminary site work started.Financial closure is expected to be achieved by the end of the month. <p>Work will be started only after monsoon.</p>
2	Kannur Chelora	Kannur Corporation	(Govt. Land) 9.7 acres at Chelora	<ul style="list-style-type: none"> • Work of WtE plant can be started only after the work of biomining is carried out. WtE plant is proposed in 9.7 acres of land after clearing the legacy waste. • Tendering completed and DPR prepared by Blue planet. Consent application is yet to be received. • For biomining, volume of legacy waste – 1,22,844 m3 (NIT). First given to Zonta and they asked to revise the amount of biomining. Again retendered and identified a suitable contractor, Jan-Adhar Sevabhavi Sanstha.Bio mining already started. <p>Agreement to be executed Biomining is already started (6500) cum is biomined .</p>

3.	Palakkad Kanjikode	Palakkad Municipality	Land taken over from Kerala State Electricity Board Ltd. in advance possession 15 acres at Kanjikode	<ul style="list-style-type: none"> Blue Planet Palakkad Waste Solutions Private Limited was formed to take up the development of the project. Consent to establish was issued on 21-12-2021 to the project with a validity upto 30-11-2023. 200T of municipal solid waste will be processed.
4	Kollam Kureepuzha	Kollam Corporation	7.05 acres at Kureepuzha (Govt. land)	<ul style="list-style-type: none"> The SPV constituted for setting up of the Waste to Energy Plant of Kollam Corporation, M/s. Venad Waste Management Private Limited had applied for Consent to Establish on 09.09.2021. The proposed waste to energy plant is bio methanation based and is having a capacity of 200 TPD. Consent to establish was issued to project on 10-1-2022 with a validity upto 9-1-2025 for the production of 8.165TPD of compressed biogas from 200TPD of municipal solid wastes Biomining of legacy waste completed. Financial closure for waste to energy plant is expected to be achieved by December 2022.
5	Ernakulam Brahmapuram	Kochi corporation	20 acres at Brahmapuram (Govt. land)	<ul style="list-style-type: none"> Bio mining of legacy waste is progressing. For construction of Waste to Energy plant, work order was issued to M/s. Zonta Infra Tech.
6	Idukki Munnar	Idukki Municipality	2 acres of land at Munnar	Bio mining Completed. Work awarded to Consortium of Organo recyclers Private Ltd,Albujan,UAE.
7	Thrissur	Thrissur corporation	Identified land at Ollookkaravilla ge	<ul style="list-style-type: none"> Thrissur Corporation identified land at Ollookkara village in Thrissur district. Vide GO(Rt)No111/2020/LSGD dated 13/01/2020 State Government has accorded sanction to Thrissur Municipal Corporation to purchase the identified land at Ollookkara Village in Thrissur district and to hand over the same on lease basis to KSIDC for the development of the project Secretary, Thrissur Municipal Corporation to report the status of price negotiation done with the owners of the land identified.
8	Malappuram	Malappuram munciplaity	8.09 acres of land at Kurumbathoor village in Tirur Taluk	<ul style="list-style-type: none"> 8.09 acres of land identified by District Administration at Kurumbathur village. Tirur taluk forsetting up of WtE plant. The land is under possession of KSIDC. Details of this are reported to be submitted to Government already by LR Deputy Collector.

9.	Thiruvananthapuram	Thiruvananthapuram Corporation		• Land is not yet identified.
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1. Status Report of Bio mining in the State of Kerala

In Kerala there are no live dump sites, 44 old dumpsites were identified in different parts of the State. Out of which 18 were bioremediated. Bio-mining of legacy waste is progressing at various stages in the remaining 26 dump sites. Among which 6 sites with large volumes are under remediation. Other 20 small dumpsites having a total capacity of 2.67 lakh tonnes are planned to start remediation work.

In the State, for a Regional Sanitary Landfill 25 acre of land has been earmarked by KINFRA at site of FACT at Ernakulam and action is being carried out to set up. Another secured landfill is under construction in Attingal Municipality.

Description	Status
Total number of dumpsites identified	44
Total quantity of waste dumped at identified sites (Tons)	7.51 Lakh
Number of dumpsites remediated till date	18
Quantity of Waste cleared till date (Tons)	2.46 Lakh
Number of dumpsites under remediation	6
Quantity of Waste being remediated (Tons)	2.38 lakhs
Number of dumpsites to be remediated (No)	20
Quantity of Waste to be remediated (Tons)	2.67 lakhs

In order to bridge the gap as well as to modernize the existing facilities and for biomining of dump sites all the ULBs have prepared action plans under SBM(U) schemes. For 26 sites the Bio remediation works will cost an amount of Rs. 80.73 Cr. An amount of Rs. 23.61 cr has been earmarked under the Swatchh Bharat Urban scheme. Balance fund will be met by the LSGI. For the local bodies, lacking a plan fund it is planned that the KSWMP fund is made available. All the 93 ULBs of the state have put forward the proposal for SWM projects including C&I waste processing, under the Swatchh Bharat Mission Urban (SBM-U) funds, a total project cost of Rs 198 crore has been approved by the SLTC, out of which Rs 46.99 crores will be provided by the central ministry and balance

fund will be pooled from ULB + State share. For the financial year 2022-23, for sanitation and waste management (SLWM) a total amount of Rs 46 crores has been earmarked under the Suchitwa mission plan fund. The state has harnessed an amount of Rs. 2344 Crores in total for waste management projects.

The biomining is completed in Kureepuzha, Kollam. The work is done by Zigma Global Environ Solutions Pvt Ltd. The process included pre stabilization i.e., Inoculum spraying, deodorization, windrowing into zones and preprocessing is done to ensure environment safety and proper stabilization of waste. After weighing the pre stabilized waste, it is loaded to machineries for separation using various customized machineries. Till 31.08.2022, 30335.95 Metric Tons of legacy waste including RDF, recyclables, rejects, soil etc has been disposed. The details of the items disposed till date are as follows.

Sl No.	Item	Quantity disposed (Ton)
1.	Coarse fraction soil	10503.68
2.	Fine fraction soil	6101.65
3.	Footwear	99.2
4.	Glass	85.8
5.	HD Plastics	8.35
6.	Iron/steel material	5.32
7.	Unshredded RDF and segregated combustible fraction	2319.03
8.	Stainless steel	0.23
9.	Stones	11172.18
10.	Tyre	26.7
11.	Wood	13.81
	Total	30335.95 MT

2. Status of Solid waste management System

As per the Solid Waste Management Rules, 2016, 100% door to door collection from households and establishments is to be done. This includes treatment in the centralized and decentralized systems. Centralized Windrow composting system exists at Brahmapuram, Kochi and at Njaliyan parambu, Kozhikode. However household level decentralized solid waste management facilities do exist at Kochi and Kozhikode Corporation. 100% D2D collection of dry waste is achieved for households in 93 urban local bodies as in October, 2022. Haritha Karma Sena is working in 92 urban local bodies and 923 Grama Panchayaths for collection of dry waste. For wet wastes disposal decentralized treatment methods such as aero bins, pipe compost, compost pits, kitchen bins, biogas plants etc. are followed. Dry wastes are collected, segregated and disposed through recyclers. In Kerala there are 214 plastic recycling units, 21 Steel mills, and 7 craft paper units. Non-recyclable plastic waste is shredded in the RRFs and is used for the tarring of PWD and LSGD roads. During the period 2016-2021, Clean Kerala Company Limited (CKCL) has produced 3183.145 T of shredded plastics and given to various agencies (NHAI- 12-18 T, PWD-947.76 T, LSGI-1151.2 T). The total length of polymerized road constructed during this period using shredded plastic is 3838.04 km. 1174 MCFs and 204 Resource recovery facilities have been provided in

LSGIs (Status as on April 2022) . The status report on the progress achieved from 2019-2022 is given as Annexure III -c

Haritha Karma Sena (HKS), an enterprise group formed through the State Poverty Eradication Mission (Kudumbasree) has been engaged for the Door-to-Door collection. The enterprise group is designed to have two persons for each ward for door-to-door collection of non-biodegradable waste on a regular basis and to help in managing the household institutional-community systems for composting biodegradable waste. The user fee is fixed by the respective local government depending on the services rendered and based on the guidelines issued vide G.O(Rt)No.2420/2017/LSGD dated 15.07.2017. In order to sustain the operation of the door-to-door collection system, Government provided a Viability Gap Fund (VGF) support initially so as to make up the shortage of user fee collection in the initial stages such that each member of the group get at least minimum wage decided by the government.

The status of the present facilities for the treatment of biodegradable waste is given below.

1. Status of facility for treatment of Biodegradable waste

The Government of Kerala has taken efforts to implement the Solid Waste Management Rules,2016 in the State. There are 6 Corporations, 87 Municipalities and 941 GPs in the State. The Kerala State Pollution Control Board (KPSCB) issued repeated directions to all local bodies to ensure compliance of the Solid Waste Management Rules, 2016. 3472 TPD of solid waste is generated from the cities and towns. The status of the present facilities is given below:

Exhibit A

Existing waste management facilities

FACILITY	TYPE OF PLANT	NUMBER	LOCATION	CAPACITY (TPD)	
Composting Facilities					
		1	Kochi Corporation	230	
	WINDROW COMPOSTING PLANT (LARGE)	1	Kozhikode Corporation	100	
	TOTAL	2		330	
Centralized Plants		1	Palakkad Municipality	10	
		1	Attingal	15	
		1	Adoor	1	
		1	North Paravur	1	
		1	Kothamangalam	4	
		1	Chalakydy	2	
		WINDROW COMPOSTING PLANT (SMALL)	1	Irinjalakuda	4
			1	Kodungaloor	4
			1	Kunnumkulam	9
			1	Wadakancherry	3
			1	Guruvayoor	5
			1	Chittur Thattamangalam	5
		1	Pattambi	3	

		1 Shornur	5
		1 Perinthalmanna	2
		1 Thaliparamba	1.5
		1 Mattanur	2
		1 Ottapalam	5
		1 Iritty	2
		1 Kalpetta	4
	TOTAL	20	87.5

FACILITY	TYPE OF PLANT	NUMBER	LOCATION	CAPACITY (TPD)
Centralized Plants	VERMI COMPOSTING PLANT (SMALL)	1	Attingal	0.25
		1	Kattapana	0.5
		1	North Paravur	1
		1	Chavakkad	2
		1	Chalakkudy	0.5
		1	Koothuparamba	1
		1	Perinthalmanna	2
		1	Kuthuparamba	1
	TOTAL	8		8.25
Community Facility	AEROBIC COMPOSTING UNIT	674		424.78
	SMALL COMPOSTING DEVICES	28406		13.5
INSTITUTIONAL FACILITIES	OWC	1	Angamaly	0.5
		3	Thrissur corporation	16
		1	Kayamkulam	10
	TOTAL	5		26.5
Household Level	Composting devices	306670		460
	Compost Pits	476530		540
	TOTAL	783200		1000
COMPOSTING FACILITIES TOTAL		812317		1916.53 TPD

BIOMETHANATION FACILITIES

FACILITY	TYPE OF PLANT	NUMBER	LOCATION	CAPACITY (TPD)
Centralized Facilities	Large capacity Biogas plants	1	Thodupuzha	8

		1	Manjeri	10
		1	Perinthalmanna	2
		1	Kattappana	5
	TOTAL	4		25
Community Level	TOTAL	111		57
Household Level	TOTAL	76800		385
BIOMETHANATION FACILITIES (TOTAL)		76914		466.87
	Rendering Plants	40 Units	737 TPD	
	Qty of waste managed from urban sector			147 TPD
	NBD waste collected by ULBs		614 TPD	
	NBW collected by authorized waste collectors		60 TPD	
	Plastic/ NBD waste (Recycling)			674 TPD
	Waste management capacity for the state			3205 TPD

Sanitary landfill

The non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and preprocessing rejects and residues from waste processing facilities shall only go to sanitary landfill and its specifications are given in zi of Rule 15 of the Solid Waste Management Rules, 2016.

In the State, for a Regional Sanitary Landfill 25 acre of land has been earmarked by KINFRA at site of FACT at Ernakulam and action is being carried out to set up. Another secured landfill is under construction in Attingal Municipality.

1. Rendering plant

Kerala state has more than 16,000 poultry stalls where around 18 lakh poultry are slaughtered and sold daily and it is estimated that about 1,080 TPD of poultry waste is produced. Policy framework to deal with the issues arising out of inappropriate management of chicken waste was issued vide GO(Ms.) No. 227/2021/LSGD dated 07.10.2021. These guidelines are intended to standardize facility requirement, procedure for licensing and operation of Poultry Meat Stalls in all Local bodies, regulate the approval, licensing and operation of Poultry waste rendering plants based on the quantity of waste generated and to develop a monitoring mechanism for the implementation of these regulations. A District Level Facilitation and Monitoring Committee (DLFMC) as per guidelines by GO (Ms.) No. 227/2021/LSGD dated 07.10.2021 constituted at all the districts to regulate the approval of proposed/existing rendering plants.

In Kerala there are 50 rendering plants with a capacity of 591.2 TPD. These units have been commissioned during the review period with the continuous efforts from various Departments in the State. The District wise number of units are given below;

DETAILS OF RENDERING PLANTS

Rendering plants in Kerala		
District	No.of existing plants	Plant capacity (TPD)
Thiruvananthapuram	0	0
Kollam	2	6.5
Pathanamthitta	1	30
Alappuzha	0	0
Kottayam	0	0
Idukki	0	0
Ernakulam	4	135
Thrissur	1	5
Palakkad	7	103.25
Malappuram	19	331.5
Kozhikode	1	60
Wayanad	1	12
Kannur	2	39
Kasargod	2	15
TOTAL	40	737.25

2. GPS tracking systems

Local Self Governments (LSGs) are engaging Clean Kerala Company Limited (CKCL) and private agencies for the collection and movement of waste to recycling/disposal facilities from collection centres/dumpsites. The Hon'ble National Green Tribunal in O.A.No.100/2021 'Dumping of Garbage foiled near Annamalai, trucks seized', directed on 29-7-2021 to create a mechanism for registering the vehicles which are entrusted with carrying waste to be disposed at designated dumpsites or treatment facilities, in order to supervise and to track the movement of such vehicles to find out whether the waste that is being entrusted to them is really reaching the designated treatment facility centers. Accordingly, LSGD issued Govt. Order G.O.(Rt.)No.1673/2021/LSGD dated 06/09/2021 regarding guidelines for registering vehicles transporting waste.

Accordingly, recyclable non-biodegradable waste shall be sold to the recycling agencies or their aggregators at a price not less than the rate notified by the Clean Kerala Company-Limited (CKCL). The non-recyclable waste is to be removed through Clean Kerala Company Limited (CKCL) on behalf of the Local Self Governments will be at the rate prescribed by the Government from time to time. The Local Self Governments may engage authorized agencies/ organizations for removal of non-recyclable waste provided they possess valid consent to operate from the KSPCB and valid agreement/MoU with the disposal facility such as Furnace based industries like cement kilns and secured landfill in the case of rejects.

The Local Self Governments and Clean Kerala Company Limited shall follow due process for identification of agencies/ organizations for removal of non-recyclable waste. The agencies/ organizations selected for removal and transportation of non-recyclable waste shall declare the destination where the waste is proposed to be disposed of and the hiring agencies (LSG/CKCL) shall verify and ensure whether the destination is suitable for safe disposal. All the vehicles which are entrusted with the transportation of waste to disposal/ recycling facilities shall be registered with the hiring agency from where waste is being collected. Clean Kerala Company and Local Self Governments shall keep a separate record of vehicles registered by them for this purpose. The Local Self Governments and CKCL shall incorporate specific conditions in the tender notification/ Empanelment notification and in the agreements with the transporting contractors to the effect that the transporting vehicle shall be fitted with GPS instrument and tracking systems arranged in the respective Offices. An Officer of the LSG/ CKCL shall be designated for tracking the GPS while there is movement of waste and shall ensure that it reaches the right destination. For transporting waste from source to location of treatment/disposal, a detailed manifest has to be maintained by the agencies engaged. 15 godowns (Ernakulam -2) other 2 (non recyclable) about 4146 tonnes of rejects have been collected by the CKCL from 65 ULBs & 274 rural local bodies. All the vehicles used for waste transportation are registered, GPS fitted. (Guidelines are to be employed for vehicles). About 200 TPD waste is processed through authorized recyclers. The 262 vehicles used for waste transportation have been registered under the LSGIs and fitted with GPS tracking systems. The state is planning to introduce hologram embedded security stickers for the identification of waste transporting vehicles. GPS tracking facility also provided for ensuring the proper transportation and disposal of plastic waste to authorized places.

VI. Bio-medical Waste Management:

As per Annual Report in the whole state for the year 2020:

- Total Bio-medical generation: **40408 kg/day (Non-Covid- 27912 kg/d, Covid- 12496 kg/d)**
- No. of Hospitals and Health Care Facilities: **17122**
- Existing Total Bio- Medical treatment capacity (captive and CBMW) : **79.637 TPD**
- Total Bio-Medical waste treated : **40.2 TPD (Common- 36817 kg/D + Captive- 3.39 TPD)**
- Annual report for the year 2020-21 is attached with **Annexure III-d**

VII. Hazardous Waste Management:

As per Annual Report in the whole state for the year 2020-21:

- Total Hazardous Waste generation: **61251.285 Metric Tonne/year**
- Total hazardous waste recycled: **7324.794 Metric Tonne/year**
- Total hazardous waste utilized: **2686.44 Metric Tonne/year**
- No. of Industries generating Hazardous waste: **1967**
- Treatment Capacity of all TSDFs in the State: **50000 MTA**
- Total hazardous waste treated (captive and Common) : **60994.1995 Tonne/year**
- Annual report for the year 2020-21 attached with **Annexure III-e**

VIII . Plastic Waste Management:

- Total Plastic Waste generation: **71000 TPA**(as per annual report **in the whole state** for the year 2021-22).
- **Material Collection Facility – 997 nos.; Resource Recovery Facility-178 nos.**
- Gap between collection and disposal : 11336.126 TPA
- Annual report for the year 2020-21 is attached with Annexure III-f

IX. Details of Alternate Treatment Technology being adopted by the State/UT:

- Decentralized Wastewater Treatment System (DEWATS) system coupled with Phyto-remediation was provided in a slum area, Chathanad in Alappuzha, Kerala. The system consists of Anaerobic baffle reactor, planted gravel filter. Waste water from the houses in the colony is collected through pipe line and then it enters the anaerobic baffle reactor and then it is passed through planted gravel filter and treated sewage is discharged into drain (Photos of the same enclosed in **Annexure III-g**)
- Constructed wetland is also provided for the treatment of waste water from the ladies hostel of College of Engineering, Trivandrum (Photos of the same enclosed in **Annexure III-h**).

The Hon'ble NGT issued directions for bioremediation/ phytoremediation for the treatment of sewage. In OA 673/2018, the Oversight Committee submitted suggestions for controlling pollution due to sewage.

Centre for Water Resources Development and Management, Kozhikode submitted "proposal for the study of sewer infiltration into water resources via isotopic tracing and treatment of liquid waste by constructed wetland" submitted to Indian National Committee on Ground Water(INCGW) on 25-10-2021, a response is awaited from the INCGW.

Demonstration projects regarding phyto remediation at a relatively much lower cost with the help of environment experts so that these proposed projects could be realistically remodelled.

There is lack of expertise on phyto remediation projects. Though there are model project on phytoremediation in other states such as at Golf Links, Hyderabad, such models shall be showcased and action is highly needed for transfer of technology of such projects and to strengthen the environmental experts in our State.

As per MPRs in compliance to the Order of Hon'ble NGT in O.A.673/2018, the State requests for expertise aid in in-situ treatment.

X. Identification of polluting sources including drains contributing to river pollution and action as per Hon'ble NGT order on in-situ treatment:

Polluting sources including drains contributing to river pollution were already identified and according to that action plans were prepared and submitted to CPCB. STPs were proposed in the action plans wherever necessary. Measures for management of waste were also incorporated in the action plans. In situ primary treatment were proposed for the river stretches Bharathapuzha and Pamba in the action plans. As part of the Cochin Metro Rail Limited's Integrated water transported system project 5 STPs

are proposed at Elamkulam, Vennala, Edapally, Puthukalavattom and Perandur for treating the water coming through drains and discharging treated water to water bodies.

XI. Details of Nodal Officer appointed by Chief Secretary in the State/UT:

Vide G.O.(Rt)No.93/2020/WRD dated 28.01.2020 Government of Kerala nominated

Deputy Secretary (Projects), Water Resource Department as the nodal authority, Government of Kerala for monitoring the compliance of the directions in the order on fortnightly basis and to maintain record of progress and to act as an accountable person to the Chief Secretary for the purpose.

Vide G.O.(Rt)No.223/2020/WRD dated 12.03.2020 Government of Kerala appointed a monitoring committee comprising of Additional Chief Secretary, Water Resources Department as Chairperson and Principal Secretary, LSGD, Principal Secretary, Environment, Secretary, Water Resources Department and Staff officer to Chief Secretary as nodal officers & members.

XII. Details of meetings carried under the Chairmanship Chief of Secretary in the State/UT:

Regarding OA 514/2019 (Solid Waste Management) Chief Secretary convened meetings on 22.09.2020 and 25.09.2020 Regarding OA 804/17 (Implementation of Hazardous and Other Waste Management Rules, 2016) Chief Secretary convened meeting of 16/10/2020. Additional Chief Secretary Labour Department had convened 1st meeting on the same for Chief Secretary on 09/10/2020. Meeting of State Level Advisory Committee (SLAC) on Waste Management, chaired by Chief Secretary is being conducted in the State regularly to discuss the various matters. 38 such meetings were conducted in Kerala so far. Last SLAC meeting was conducted on 12.02.2021.

Meetings were held by the Chief Secretary on 11-12-2020, 30-03-2021 and 05-04-2021 with the Stake holder Departments/ Authorities, to review the progress in implementation of the projects taken up on the basis of orders of the Hon'ble National Green Tribunal in O.A. No. 673 of 2018(PZ).

RRC Meetings were held on 28/05/2021 and 23/06/2021 and Review meeting was held by the Chief Secretary on 31-05-2021. RRC meeting convened on 22.07.2021. Review meeting was held by the Chief Secretary on 27.07.2021. RRC meeting convened on 02.09.2021 and Review meeting was held by Chief Secretary on 09.09.2021. RRC meeting convened on 01.10.2021 and Review meeting was convened by Chief Secretary on 23.10.2021. RRC meeting convened on 29.11.2021 and Review meeting was convened by Chief Secretary on 16.12.2021. RRC meeting convened on 13.01.2022 and Review meeting was convened by Chief Secretary on 27.01.2022. RRC meetings convened on 23.02.2022, 01.04.2022 15.07.2022 & 13.10.2022.

Review meetings were convened by Chief Secretary on 31.03.2022, 19.04.2022, 26.5.2022, 21.6.2022, 15.07.2022 & 23.08.2022 & 18/10/2022.

XIII. Latest water quality of polluted river, its tributaries, drains with flow details

and ground water quality in the catchment of polluted river:

Latest Monthly Progress Report and Analysis report of 21 Polluted River Stretches as per July 2022 are attached as **Annexure I**.

XIV. Ground water regulation:

As per the consolidated report submitted in O.A.No.496/2016, the Ground water Department is implementing a "Scheme for Ground water Conservation and Recharge". Under this scheme, rain water collected from the roof-top is harvested for recharging the aquifer through dug wells and recharge pits. The recharging of deep aquifers through bore wells is also being experimented. The total budget outlay during the period 2019- 2020 was 450 lakhs. It is estimated that there are about 65 Lakhs dug wells in Kerala and the ground water extractions by means of traditional dug wells are prevalent source of fresh water. There are number of public dug wells left abandoned and needs renovation. These dug wells can be considered as suitable stretches to recharge ground water. The Central Groundwater Board has prepared a Block wise master plan in 2015 to take up artificial groundwater recharge to groundwater. The same can be used as a guideline to stream line groundwater recharge activities of the Department.

The State Government has enacted the Kerala Groundwater (Control and Regulation) act 2002 to provide for the conservation of groundwater and for the regulation and control for its extraction and its use in Kerala. The State Groundwater Authority has been constituted on 16.01.2004 to notify the area where groundwater abstraction is to be regulated. As per the Act Groundwater User' refers to the person who are using ground water from a pumping well (> 1.5 HP for Open dug wells and > 3 HP for BW/TW) for any purpose including domestic purpose. In notified blocks of the state, permission required for the construction of new groundwater abstraction structures.

The Groundwater Department has been conducting mass awareness programmes to public., students, people's representatives, government officials etc. on groundwater conservation and management in all Districts under the Plan Scheme "Control and Regulation of Groundwater Exploitation for the effective groundwater management. During the last 4 years, the department has conducted more than 100 numbers of awareness programs across the State.

The Ministry of Water Resources ,River Development &Ganga Rejuvenation (Central Groundwater Authority) has recently issued a new guide lines to regulate and

control groundwater extraction in the country in pursuance of the directions of Hon'ble National Green Tribunal and the powers conferred under section 5 of the Environment (Protection) act, 1986 (29 of 1986) dated 24th December 2020.

XV. Good Irrigation practices being adopted by the State:

Irrigation in Kerala is classified into two schemes.

1. Major Irrigation and Medium Irrigation
2. Minor Irrigation

As per the classification followed by the department, schemes having a cultivable command area upto 2000ha are treated as minor irrigation works. Medium irrigation works are those with irrigable command area of more than 2000 ha, but less than 10,000 ha. Those schemes above 10,000 ha are classified as Major irrigation schemes. Surface flow irrigation method is currently practiced in Kerala. As the department is more focusing on effective utilization of available water for irrigation as well as for its efficient use, new

types of irrigation methods like micro/community irrigation for cash crops and horticulture are proposed under this scheme.

1. Major Irrigation and Medium Irrigation

The Irrigation department develops and maintains major and medium irrigation schemes/projects across the state. The primary activity of the Department is providing irrigation facility to the farmers of the State through its system comprising reservoirs, main canals, branch canals, feeder canals and other related infrastructure. The department maintains water distribution through the canal system. Water distribution is being carried out based on the cropping pattern of a particular area and a water distribution calendar prepared and approved by a committee headed by the District Collector with members of farming community, other stake holders and department officials. For proper distribution and maintenance of the canals Water Users Association (WUA)/ Farmers Association plays an important role.

2. Minor Irrigation

Minor Irrigation schemes are divided into Class-I and Class-II depending on the ayacut served. Schemes serving above 50Ha up to 2000Ha are classified as MI Class-I. Lift irrigation schemes are also Minor irrigation schemes serving at least 40Ha. Aims to Construct RCBs, SWECBs, ponds, VCBs, check dams, salt water barriers, storage weirs, cross bars, and protection works etc.

- MI Class-I schemes Minor works like improvements to tanks and rivulet, construction of check dams, sluices, regulators, bunds, vented crossbars, salt water barriers, layout of channels and drainage structures etc are usually undertaken under MI Class-I schemes.
- MI Class-II Schemes Minor irrigation works including construction of vented cross bars, canals, improvements to natural drains etc are taken up under this scheme.
- **Lift Irrigation**
- Lifting of water is required for irrigating fertile land at a higher elevation where gravity flow of stored water is not possible. Although mechanical lifting is required, these schemes are very useful and serve the marginal farmers of the State.
- Optimum utilization of water by supplying designed quantity
- Works involving lifting of water with a command area not less than 40 hectares come under this category.
- This will increase in the ground water table in high altitude areas, Ensure water availability to farmers before the cropping period.
- This will reduce agricultural loss in high altitude areas due to water scarcity, their by reducing distress to farmers.

- At present the Irrigation Department has under its control 450 Lift Irrigation Scheme (LI schemes) with a total Ayacut of 43170ha.
- **Micro Irrigation**
- Micro-irrigation system is a modern method of irrigation in which water is delivered slowly. Usually in the form of discrete droplets, continuous drops, streams, etc. Micro-irrigation system is popular these days for its low cost and water-efficiency.
- The benefits of micro irrigation and precision farming are well demonstrated with an average increase in yield by three times. Pepper as a case in point shows enhancement from 1.9 kg/wine to 6/wine on precision agriculture. Coconut also shows increase in productivity to 150 nuts per plant as against 45 without precision irrigation support.
- In the coming year department is planning to implement atleast one micro irrigation scheme in each district with the coordination of line departments and farmers. Steps are initiated to identify the location as well as crops in coordination with the agriculture department.

XVI. Rain Water Harvesting:

In compliance with the Hon'ble NGT Order dated 11.09.2019 in O.A. No. 496/2016, the consolidated report of Kerala State regarding the present status of the implementation and action plans on rain water Harvesting for conservation of water was submitted by the Kerala State Government on 27.11.2019. The same is attached as Annexure II.

The State Groundwater Department has been implementing a scheme for Groundwater Conservation and Recharge under plan fund made available since 2004-05. The project component includes roof top rainwater harvesting for groundwater recharge through dug wells, recharge pits, bore wells and recharge shafts and construction of subsurface dykes and small check dams on micro water shed basis. The recharge schemes are being implemented as a long term measures to achieve sustainable groundwater development in the State. The Department is engaged in recharging groundwater through roof top rain water harvesting in public buildings and government schools and giving priority to implement such structures in notified blocks. The Department has successfully implemented roof top rainwater harvesting through recharge pits to enhance groundwater levels of dug wells in the Kattakkada Constituency of Thiruvananthapuram District. The Constituency was officially declared in November 14th 2019 as the first assembly constituency in Kerala to implement artificial groundwater recharging structures in all Government schools and offices. The State Groundwater Department has implemented 169 nos of recharge pit/direct dug well recharge schemes, 4 check dams and one sub surface dyke during the 12th plan period. In the 13th plan period as on October 2020, the Department has completed 370 nos of recharge pit/dug well recharge schemes and 18 nos of bore well recharge schemes.

The Department has also taken initiatives to implement roof top rainwater harvesting structures in order to replenish the aquifer system in Chittur (Over- Exploited), Malampuzha and Kasaragod (Critical) blocks under Jal Shakti Abhiyan Programme by Ministry of Jal Shakti Government of India.

XVII. Demarcation of Floodplain and removal of illegal encroachment:

- Kerala receives about 90% of the annual rainfall during the monsoon months from June to August and from October to November. The remaining period from December to May is practically dry. Most of the rain water received during monsoon period flows to sea within 48 hours of rainfall due to the character of the geographic terrain of the state.
- State Disaster Management plan 2016 was prepared by National Centre for Earth Science Studies in 1:50,000 scale using satellite images.
- Based on the request of central water commission, Government of Kerala constituted Regional Committee for scientific assessment of Flood prone areas in Kerala.
- Flood-level marking for the flood affected rivers has been carried out. Steps have been taken for conducting the studies regarding Flood plain Zoning. Due to the peculiar topography and dense population, evacuation of people from these zones is difficult.

Flood plain zoning is considered as an effective measure for flood management. As far as Kerala is concerned, the topography and total number of rivers, major lakes and other water bodies are entirely different compared to other states. Since Kerala has 44 rivers, except three rivers, all are west flowing; that is about every 14 km (average) there is a river. It may please be noted that the width of Kerala varying from roughly 30 to 120 km, and the total geographical area is 38863 km². Kerala is the 21st largest Indian state by area. As per census of 2011 the density of population per square kilometer is 859. By considering the above facts, implementation of zonation and demarcation of priority areas/non development zones will affect the populace of Kerala or leads to displacement from their ancestral settlement. This is why the Model Bill of 1975 issued by CWC has not been implemented in Kerala. However intensive contour may delineate and notification of limits of flood plains through LSGIs is a possible way out as far as Kerala is concerned to avoid future developmental activities in such area, for which a policy decision is necessary.

Desilting:- Flood havoc in 2018& 2019 very much affected the storage capacity of several regulators and check dams due to the accumulation of silt/ sand and other debris. In some cases, the proper functioning of the regulators become halted due to the accumulation of the above said materials.

Vide G.O (Rf) No.50/2019/WRD dt 08-11-2019 Government issued AS for desilting of 6 structures, namely:-

1. Cheruthuruthy check dam
2. Changanamkunnu regulator
3. Manjummel regulator
4. Purappallikavu regulator
5. Velliyankallu regulator cum bridge
6. Pookkottumana regulator cum bridge

The work for desilting of 6 regulators/ check dams were tendered and the works are in different stages.

Along with irrigation structures action were taken to desilt the dams as a pilot project to enhance the storage capacity which results more outflows and ground water recharge. Mangalam dam, Chulliyar dam, Meenkara dam and Walayar dam are the four dams listed. Apart from the above Irrigation department has initiated action to prepare an inventory of the

present status of all the rivers in Kerala by entrusting the job to Executive Engineers. The primary objective is to find out the obstructions to free flow in rivers. It is expected to complete the process within a month and draft reports/ status reports were also be ready. As a follow up, the department intends to desilt the river stretches which need urgent action to avoid flooding in the vicinity; by utilising the amount announced in the Budget.

Encroachments can be assessed after detailed survey with the help of Revenue Department. Executive Engineers entrusted with ownership of rivers have been directed to identify the encroachments along rivers and prepare a list at the earliest

XVIII. Maintaining minimum e-flow of river:

- As per order of the Hon'ble NGT dated 9/8/2017 in O.A.no 498/2015 it is mandatory to maintain 15% - 20% of average lean season flow.
- For lean flow calculation the process of data collection for the last 25 years of all 44 rivers during summer months ie. from January to May is been undertaken.
- Study of individual rivers needs to considered for maintaining e- flow during lean season. Storage structures/diversion structures needs to proposed at certain locations to regulate thee-flow.

As per order of the Hon'ble NGT Order in OA no.498/2015 it is mandatory to maintain 15%-20% of average lean season flow in the river. E-flow can be assessed in many ways. Hydrological methods and holistic methods are generally used for this purpose. A good Hydrological data is maintained at IDR B Chief Engineers office at Vikas Bhavan. Steps have been initiated to collect last 25 years average flow details of all 44 rivers during summer season, ie from January to May.

As per Order in OA 498/2015 Hon. NGT has directed all States to maintain 15-20 % of the average lean season flow of that river. Ministry of Water resources, RD& Ganga Rejuvenation issued a notification (SO.5195 (E) dated 9.10.2018) to maintain e-flow in River Ganga. Hon'ble NGT order has given some relaxation to status , which are unable to adhere to the average percentage fixed as e-flow CE (I&A),&CE (IDRB) made discussion in this regard and action has been taken by IDR B to compile the last 25 years discharge of rivers. As per the report of Kerala State Disaster Management Authority (KSDMA) nearly 15% of the land area of the state prone to flood. On two (2) occasions, GOI (CWC) and Ministry of

Environment Forest and climate change had circulated model bill on (i) Flood Plain Zoning (1975) (II) River Regulation Zone (2015). Considering the already enacted regulations viz i) Forest area ii) Coastal Regulation Zone (CRZ), the topography of the state, high population density , and number of rivers, Government has not yet taken a policy decision in this matter. The State Government has sent the apprehension of the State to GOI with regard to River Regulation Zone Bill.

As per the direction of the Additional Chief Secretary (WRD), meetings were conducted with Chief Engineer, IDR B to discuss the availability of historical data. To carry forward the study of e-flow a training was arranged on 12.09.2021 to the engineers entrusted for e-flow calculation. A review meeting in this regard was also conducted on 01.10.2021 and in the meeting it was decided to calculate e-flow of the rivers, Meenachil and Manimala as pilot project. Data collection for Manimala river completed. Data collection for Meenachil, Kadalundi, Karamana and Vamanapuram is in progress.

E-flow calculation of 39 rivers has been completed and that the remaining 1 will be completed soon. E-flow calculation of 4 rivers cant be taken due to non availability of data .The DPR & cost estimation for maintaining e-flow is being prepared.

XIX. Plantation activities along the rivers:

Proposal submitted by Irrigation Department. Waiting for approval.

XX. Development of bio-diversity park:

As per the action plan for Kallai River, a bio park in Kozhikode district is proposed by Irrigation Department and as per the action plan of Karamana river, Bio diversity park at Karamana is implemented by Irrigation Department and 96% work is now completed and remaining work is in progress. Also, for other action plans of polluted river stretches, proposals are submitted by Irrigation Department and action is initiated. As stipulated by the Biological Diversity Act 2002, Biodiversity Management Committees (BMC) are mandated with conservation of Biodiversity in their localities. In Kerala BMCs has being established at all 3 tiers of local bodies. As part of the 13th five year plan, KSBB had started a project to empower Local Self Government Biodiversity Management Committee (BMC) as Model BMC to conserve Biodiversity by providing a minimal assistance of Rs 5.00 lakh. The lists of various projects relating to river bank conservation by planting suitable species/ biodiversity parks in the river banks being undertaken by BMCs during the last two years are given below:

- Ayiroor Grama panchayat, Pathanamthitta- Planting of Homonoiariparia along the banks of Pamba River
- Ayarkunnam Grama panchayat, Kottayam - Conservation of Homonoiariparia along the banks of Meenachil River.
- Mariyapuram Grama panchayat, Idukki - Harithapuram park- Eco restoration and conservation of Periyar River bank severely damaged due to flood.
- Kottur Grama panchayat, Kozhikode - (a) Establishment of Biodiversity Park near Kuttiyadi river (b) Biodiversity gardens (50 units)
- Vanimel Grama panchayat, Kozhikode - Conservation of Vanimel riverbank
- Kurumathur Grama panchayat, Kannur – (a) Afforestation along tributaries of river banks of Kuttikol river, Valapattanamriver (b) Planting of Pandanus along canal banks
- Muzhakunnu Grama panchayat, Kannur – Puzhayora Oushada SughandhaUdyanam along the banks of Aralam river.

As part of Rebuild Kerala Initiative a project on Riverine Biodiversity Rejuvenation of Pamba for an amount of Rs 200 crore is being undertaken. The project aims at Protecting riverbanks and conservation of riparian vegetation using locally available plants. The major activities on going are:

- Restoration of riparian vegetation on degraded river banks in selected 10 Grama Panchayats (Ayiroor, Cherukol, Kozhenchery, Ranni- Angadi, Ranni-Pazhavangadi, Ranni, Ranni-Perunad, Vadasserikkara, VechoochiraandNaranammoozhi) belonging to three Block Panchayats viz., Elanthoor, Koipuram and Ranni in Pathanamthitta district
- About 77,000 saplings of 93 species of riparian plants are being planted along a stretch of 93km.
- Ensure sustainable livelihood for the local people through providing training for developing microenterprises and establishing nursery of native species. Develop a sustainable community based management model of conservation of aquatic ecosystems.
- To create awareness and sensitize local population and students for promotion of riparian ecosystem services.

XXI. Rise of Treated Water:

Possibility of utilizing the treated effluent for irrigation, gardening, industries, construction and recharge are being explored. The DPR for tertiary treatment of effluents of STP at Muttathara is ready and in TS stage.

XXII. Model River being adopted by the State & Action proposed for achieving the bathing quality standards:

Tirur-Ponnani River, Malappuram

XXIII. Status of Preparation of Action Plan by the 13 Coastal States:

As per the NGT order in O.A 829/2019 dated 22.06.2020 regarding the remedial action to restore sea water quality along the Indian Coastal areas, the Hon'ble NGT ordered that "All States/UTs through their concerned departments such as Urban/Rural Development, Irrigation & Public Health, Local Bodies, Environment, etc. may ensure formulation and execution of plans for sewage treatment and utilization of treated sewage effluent with respect to each city, town and village, adhering to the timeline as directed by Hon'ble Supreme Court. STPs must meet the prescribed standards, including fecal coliform. CPCB may further continue efforts on compilation of River Basin-wise data. Action plans be firmed up with Budgets/Financial tie up." In compliance with the order, CPCB instructed that the State PCB shall associate National Centre for Coastal Research, Chennai under Ministry of Earth Science for monitoring and assessment of coastal water within the jurisdiction of the Kerala State up to 5 km from shore and to evolve strategies for protection of the coastal areas in association with Coastal Zone Management Authority in the State and Prepare time bound comprehensive action plan along with implementing agency in consultation with Kerala State Coastal Zone Management Authority for control of coastal pollution in Kerala State. Also the State Government has instructed the Board to prepare action plan by consulting CUSAT .Based on this, the Member Secretary of Kerala State Pollution Control Board has conducted meeting with officials of CUSAT, National Centre for Coastal Research, Kerala State Coastal Zone Management Authority and also with the field level officers through video conferencing.. **The Action plan was forwarded to CPCB. CPCB put forward some suggestions and requested to modify the action plan upon concurrence with River Rejuvenation Committee. So, the Coastal Action Plan prepared has been forwarded to the concerned Stakeholder Departments for their remarks. Meetings in this regard convened on 23.07.2021 and 02.08.2021. The modified Coastal Action Plan was approved by RRC and the same has been submitted before State Govt. for approval. The Coastal Action Plan was submitted to CPCB with the approval of State Govt.**

XXIV. Regulation of Mining Activities in the State/UT:

Indian parliament has enacted the Mines & Minerals (Development & Regulation) Act, 1957 and it stipulates for the conservation, prudent and discriminate exploitation of minerals with a view to secure maximum benefit to the community. In exercise of powers conferred by section 13 of Mines and Minerals (Development & Regulation) Act 1957, the Central Government has framed the Mineral concession Rules, 1960. The Central Government has also framed the Mineral Conservation and Development Rules, 1988 in exercise of the powers conferred by section 18 of the Act. These Rules are applicable to all minerals except coal, atomic minerals and minor minerals. The powers of framing rules for minor minerals have been delegated to the State under section 15 of the mines Act. In exercise of the powers conferred by section 15 (1) of the Act the State has framed the Kerala Minor Mineral Concession Rules 2015 and Kerala Minerals (Prevention of Illegal Mining, Storage and Transportation) Rules 2015 for the regulation and extraction of minor minerals. The Central Government in exercise of powers conferred by section 18 of the Act has also framed the Granite Conservation and Development Rules, 1999 for

conservation & systematic development and scientific mining of the granite resources. The grant of reconnaissance permit, prospecting license or mining lease are governed by the central Act. The State with the prior approval of the Government of India grants permission for reconnaissance permit, prospecting license or mining lease for major minerals. The state Government issue quarrying permits and leases for minor Minerals based on the Kerala Minor Mineral Concession Rules, 2015. Other Acts and Rules which govern the mineral administration of India applicable to the State are the following:

- The Mines Act, 1952 (Act 35 to 1952)

- The Mines Rules, 1955 (35 of 1952)

- The Metalliferous Mines Regulations, 1961

- The Mines Rescue Rules, 1985

- Mines Vocational Training Rules, 1966

- Payment of wages (Mines Rules , 1966)

- Payment of undisbursed wages (mines rules, 1989)

- The Indian Explosive Act, 1884

- Air (Prevention & Control of Pollution) Act, 1981(14 of 1981)
- Environment (protection) Act, 1986 (29 of 1986)

- Indian Registration Act, 1908 (Central Act of Act 16 of 1908)

- Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001

- Kerala paddy field and wetland conservation Act, 2008.

- Kerala Panchayath Act.

There is no large scale mining activity in Kerala as in other parts of the country. Almost all the mines are open cast and limited in areal extent. The important mines of major minerals are china clay, laterite/bauxite, limestone and lime shell. Mineral sands and silica sand are excavated by scooping and quartz is being extracted by taking trenches and pits. The important minor minerals in the state are granite, building stones, dimension stone, laterite, tile/brick clay and ordinary sand. The state owns mineral deposits like placers, china clay (kaolin), limestone, silica sand, bauxite, graphite, iron ore, granite etc.

The major mineral based industries like Indian Rare Earths Ltd. (Chavara), Kerala Minerals and Metals Ltd. (Chavara), Malabar cements (Walayar), Travancore cements Ltd. (Kottayam), Kerala ceramics (Kundara) Travancore Titanium products Ltd. And English Indian Clays Ltd, Thiruvananthapuram, Excel Glass Industry, Alappuzha, KeralaClays and Ceramic Products Ltd. (Pazhayangadi) are some of the mineral based industries working in the State since several years. A number of tile based industries are also functioning mainly in Thrissur and Kozhikode districts.

In exercise of the powers conferred by section 15(1) of the Mines and Mineral (Development & Regulation) Act, 1957, the State has framed the Kerala Minor Mineral Concession Rules 1967 for regulating the extraction of minor minerals. The State with prior approval of the Govt. of India grants permission for reconnaissance permit, prospecting license or mining lease for the first schedule minerals on first cum first served basis. In addition to EIA requirements as stipulated by the Central Govt, an EIA report is insisted on all mining activities before granting mining lease. No quarrying permits or leases are granted in the State unless there is a Mining plan duly approved by the competent authority. Afforestation of the reclaimed areas is promoted. Environment Rehabilitation is insisted in all mining projects.

The Kerala District Mineral Foundation Rules 2018 has been formed with an objective to work for the interest and benefit of persons and area affected by mining related operations. The permissible activities under District Mineral Foundation includes among other things, developing sources of irrigation, development alternate sources of energy and rain water harvesting, conservation measures of biodiversity of the affected areas.

XXV. Action against identified polluters, law violators and officers responsible for failure for vigorous monitoring:

Notices have been issued from the Board to 51 Grama Panchayaths, 11 Urban local bodies, 127 health care facilities and directions have been issued to 2 Corporations for violation of the rules noticed. The list is submitted as **Annexure III-i**.

XXVI. Action taken status with regard to directions issued for prohibition of immersion of idols, puja materials and other items of religious offerings in rivers & other water bodies in particular during the occasion of festivals

- Regarding the Ganesh Utsav celebration and immersion of idols ,it may kindly be noted this is not widely practiced in the State of Kerala. The Board had instructed the District offices to conduct monitoring of water bodies where immersion of idols is practiced on a large scale. Water quality was carried out in three stages-pre immersion, during immersion & post immersion periods. A press release was also issued by the Board in connection with the festival for information of the public on the guidelines for immersion, issued by CPCB. In Kerala idol immersion are not celebrated as a major festival. The Govt. take steps to avoid water pollution due to

immersion of idols. If to celebrate natural clay and colours are being used and that too in artificial ponds arranged by local authorities

- During Sabarimala festival season, there is a traditional celebration "Pettathullal", for the same the pilgrims will apply coloured Kumkum on their body. It was directed that only natural colours shall be used for the celebration. Separate arrangement like shower bath are provided for carrying out bath after the celebration, in order to avoid the reach of coloured water into the main waterbody. The waste water from the shower bath location will be treated in ETP provided.

XXVII Current status of water quality of rivers based on draft revised categorisation of CPCB

- Out of 21 stretches, the following 11 stretches delisted from
PRS Mogral- at Kasaragod,
Kupam, Peruvamba, Ramapuram, Kavvayi- at Kannur, Bharathapuzha, Bhavani- at Palakkad,
Kutiyadi-Kozhikode, Kecheri, Karuvannur, Puzhakkal- at Thrissur
- Due to improvement in water quality priority class of the following 4 rivers has been shifted to lower priority class. No priority I rivers in Kerala now.
Karamana, at Thiruvananthapuram- Priority III (from Priority-
I) Manimala at Alappuzha – Priority V (from Priority IV)
Pamba at Pathanamthitta – Priority V (from Priority IV)
Kadambrayar at Ernakulam – Priority V (from Priority IV)

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MEMBER SECRETARY

Status of compliance of ETPs less than 30 KLD

1	CHC Sooranadu, Sasthancotta Block Panchath, Kollam	0.028	At DPR Stage	DPR returned to LSGI	31/12/2022
2	CHC Kadayiruppu ,Vadavukode Block Panchayath , Ernakulam	0.025	At DPR Stage	Under technical scrutiny	31/12/2022
3	STP at Community Health Centre Pazhayannoor Block Panchayath ,Thirssur	0.025	At DPR Stage	Comm ittee decide d to hand over to KWA	31/12/2022
4& 5	Mobile Septage Units- 2 nos, Alappuzha (AMRUT)	0.02 (0.01 *2 nos.)	Tendered but not awarded; * Work tendered 5 times so far. ULB's Technical Committee held on 30/06/22 decided to request the Technical Committee for Sewerage works to relax the payment terms so that bidder participation can be increased. *The Technical Committee for SEW & SEP works held on 26/08/22 decided to	* Quotat ions are to be called for by the ULB as per the decisio n taken by the Techni cal Comm ittee.	31.12.2022

			call for quotations without changing the payment terms.		
6	Sewage Treatment Plant 20 KLD at Shopping Complex cum multiplex Theatre, Kallumutti, Irutti Payam, Grama Panchayath1, Kannur	0.02	At DPR Stage	Comm ittee decide d to hand over to KWA	31/12/2022
7	STP for Convention Centre ,Pinarayi GramaPanchayath,Kannur	0.02	At DPR Stage	TS issued	31/12/2022
8	STP at Ottuppara Market, Wadakkanchery Municipality, Trissur (IMPACT KERALA Ltd) (PRS)	18 KLD STP	DPR submitted to KIIFB as a part of the project "Modernisation of Ottuppara Market in Wadakkanchery Municipality".	DPR Approved by KIIFB	-
9	STP at Shatabdhi Mandiram, Alappuzha (AMRUT) (PRS)	0.015	Tendered but not awarded: * Bid received in the 3rd tender to be finalized. The ULB's Technical Committee held on 30/06/22 decided to recommend the lowest bid to the Technical Committee for Sewerage works for approval of the bid along with revised TS & for checking the reliability of O & M quoted by the bidder . The Technical Committee for SEW & SEP works held on	* The Council held on 29/10/22 decided to cancel the work.	31.03.2023

			26/08/22 opined that the open bed technology proposed may lead to chances of odour problem & will affect the aesthetic appearance of the office. The Committee suggested the Municipal Secretary to obtain the opinion of the Municipal Council regarding implementation of the STP.		
10	CHC Mangalpadi, Manjeswar Block Panchayath, Kasaragod	0.014	At DPR Stage	DPR returned to LSGI	31/12/2022
11	STP at Athani market, Wadakkanchery Municipality, Trissur(PRS) (IMPACT KERALA Ltd)	13.9 KLD STP	DPR submitted to KIIFB as part of the project "Modernisation of Athani Market in Wadakkanchery Municipality". DPR Approved by KIIFB, KIIFB Proceedings awaited.	DPR Approved by KIIFB, KIIFB Proceedings awaited	-
12	11 KLD effluent Treatment plant at Kuravilangad Fish Market, Kuravilangad Grama Panchayath, Kottayam	0.011	At DPR Stage	DPR returned to LSGI	31/12/2022
13	ETP 10 KLD Capacity, Nedumangad Municipality, Thiruvananthapuram	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022

14	ETP Karavaram Grama Panchayath, Thiruvananthapuram	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022
15	STP at CHC Mullashery Block Panchayath , Thrissur	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022
16	Eco Friendly waste water Treatment plant 10 KLD in vettam Community Health centre , Tirur BP	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022
17	10 KLD Sewage Treatment Plant at EMS Memorial Municipal Town Hall, Koyilandy Municipality, Kozhikkode	0.01	At DPR Stage	Comm ittee decide d to hand over to KWA	31/12/2022
18	STP at Fish market, Payyannur Municipality, Kannur (PRS)	10 KLD STP	Technical committee verified the project. Suggested modification. DPR modification is going on	DPR modificati on is going on	-
19	STP at old age home, Kannur	0.01 0	At DPR Stage	TS issued	
20	DPR for perumba fish market Payyanur Municipality, Kannur	0.01	At DPR Stage	Decid ed to handover to KWA	31/12/2022
21	Waste water treatment plant at K R Narayanan memorial hall, Adat GP	0.006 5	At DPR Stage	TS issued	
22	ETP of 2 KLD at Konnamkulam Milk Production Cooperative Society	0.002	At DPR Stage	Under technical scrutiny	

23	Construction of 300 TPD Leachate treatment plant as part of Kochi Urban Agglomeration		Inception Report	DPR returned to LSGI	
24	Waste water Treatment (90 KLD) System for coastal housing and Tsunmai resettlement facility at karikuzhi mayyanad Grama Panchayath , Kollam	0.09	At DPR Stage	Transferred to KIIFB	30.12.2021
25	Taluk Hospital Thiruvalla ,Thiruvalla Municipality, Pathanamthitta	0.09	At DPR Stage	Under technical scrutiny	31/12/2022
26	CHC Alathoor, Alathoor Block Panchath , Palakkad	0.09 0	At DPR Stage	DPR under verification at Block Panchayath	31/12/2022
27	Taluk Hospital Pambady, Pambady Block panchayath , Kottayam	0.085	At DPR Stage	Under technical scrutiny	31/12/2022
28	The wastewater treatment plant at Kuttiyadi Government taluk hospital, Kozhikode	0.08 0	Tendering stage		
29	ETP at Tirur Municipality	0.060	At DPR Stage	DPR returned to LSGI	31/12/2022
30	Eco Friendly waste water Treatment Plant (60 KLD) for Women and Children Hospital Ponnani Municipality, Malappuram	0.06	At DPR Stage	Committee decided to hand over to KWA	31/12/2022
31	65 KLD Sewage Treatment Plant at Taluk Head Quarters Hospital Vithiri, Kalpetta BP, Wayanad	0.065	At DPR Stage	DPR returned to LSGI	31/12/2022
32	Sewage Treatment Plant 50KLD,Angal block Panchayath, Kollam	0.05	At DPR Stage	DPR returned to LSGI	31/12/2022

33	STP at Thottumadi Colony, Alappuzha (AMRUT)	0.05	Tendered but not awarded: * Bid received in the 4th tender to be finalized. The ULB's Technical Committee held on 30/06/22 decided to recommend the lowest bid to the Technical Committee for Sewerage works for approval of the bid along with revised TS & for checking the reliability of O & M quoted by the bidder	*. The Technical Committee for SEW & SEP works held on 26/08/22 approved the technology. Detailed engineering report is to be collected by the ULB from the bidder.	31.03.2023
34	Septage Treatment Plant for Munnar Grama Panchayath, Idukki	0.05	At DPR Stage	DPR returned to LSGI	31/12/2022
35	Taluk Hospital, Neelaswaram, Kasaragod	0.040	At DPR Stage	Technical scrutiny completed	31/12/2022
36	STP for government ayurveda hospital, Kodakara GP, Thrissur	0.035	At DPR Stage	DPR returned for recasting the estimate	31/12/2022
37	CHC Konni, Konni Block Panchayath, Pathanamthitta	0.032	At DPR Stage	May be handed over to KWA	31/12/2022
38	ETP at Kodimatha, Kottayam Municipality	0.030	At DPR Stage	DPR returned to LSGI	31/12/2022
39	Sewage Treatment plant at Private Bus stand, Thodupuzha Thodupuzha Municipality, Idukki	0.030	Tendering stage	Preparing Recast estimate	
40	ETP for slaughter house, Marakkadavu, Ernakulam	0.030	At DPR Stage	DPR returned to LSGI	31/12/2022
41	ETP at Govt	0.03	At DPR Stage	DPR returned	31/12/2022

	Ayurvedic Hospital, Talayad, Panangad Grama Panchayath, Kozhikode			to LSGI	
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