



KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004

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PCB/HO/EE1/NGT/673/2018

Date: 17/04/2019

From

The Member Secretary

To

The Chairman
Central Pollution Control Board
Parivesh Bhavan
East Arjun Nagar
Delhi – 110 032.

Sub: OA No. 673/2018 – Polluted River Stretches Program Report – Reg.

- Ref :1. Order dated 20/09/2018 of Hon'ble NGT in OA No. 673/2018
2. This Office letter of even No. dated 13/12/2018
3. Letter No. 14011/1/2019 – WQM-I/5096 dated 10/01/2019
4. This Office letter of even No. Dated 23/02/2019

Sir,

In compliance with the order dated 20/09/2018 of the Hon'ble NGT in OA No. 673/2018, River Rejuvenation Committee, State Level Special Environment Surveillance Task Force and District Level Special Environment Surveillance Task Force were constituted vide Govt. Order No. G.O. (Rt) No. 135/2018/Envr dated 12/12/2018. The revised draft action plan was submitted vide ref. (4) above.

The Action Plan for Priority I "River Karamana" approved by the River rejuvenation Committee on 17/04/2019 is submitted herewith for necessary action.

Yours faithfully


MEMBER SECRETARY

Encl: As above

Copy to;

1. The Principal Secretary
Environment Department } with C/L
2. CPCB, Bangalore

ACTION PLAN FOR RIVER KARAMANA, KERALA

1. OA 581/2018 Karamana River Pollution

The pollution of River Karamana is primarily from Thiruvananthapuram City sewage discharge. The City has STP of capacity 107 MLD. It is sufficient to cater to the entire City. But only 50 MLD reaches the STP, as the sewage network does not cover all areas of the City. Sewage flows into storm water drains and reaches River Karamana and Akkulam-Veli lake connected to Karamana River. In the short-term, resolving bottlenecks and overflows in the existing sewerage system can convey another 10 MLD into the STP. Action has been initiated and works are in progress.

The pollution load due to sewage entering the River Karamana system through various drains has been determined. The pollution load sorted in order of importance is given in (Table 1).

Table 1 Pollution load in drains

	Drain	Pollution load BOD in TPD
1	Kannamoola stream into Akkulam-Veli lake	17.7
2	Ulloor thodu	14
3	Parvathiputhanar	9
4	Pattom thodu	3.8
5	Killiyar river	3.5
6	Amayizhanchal	2.5
7	Killippalam drain	1.9
8	Thekkanakkara canal	1.6
9	Thaliyal drain `	1.0
10	Chadiyara drain	0.8
11	Jagathy drain	0.8
12	Pippinmoodu drain	0.7
13	Amabalathara drain `	0.45
14	Kannettumukku drain	0.3
15	Arattukadavu drain	0.2
16	Thamalam drain	0.2

KSPCB has inspected and assessed pollution loads from 79 units (hospitals, commercial establishments, residential apartment complexes, service stations, markets, industries). Notices issued to 17 units and instructions issued to 15 units.

2. Short term plan

2.1 Maintenance and de-bottlenecking of existing sewerage network

No.	Activity	Implementing agency	Cost Rs. Cr.	Source of fund	Time line	Expected outcome
2.1.1	Pumping lines from the terminal pumping stations namely Kuriyathi, Pattoor, Kannammoola and Enchakkal pumping stations are to be connected directly to STP at Muttathara	Kerala Water Authority		Plan scheme	May 2019	Reduced pollution load in Parvathiputhan ar
	Kuriyathi pumping line					
2.1.2	Rehabilitation/upgradation of Thaliyal and Aranoor Sewerage Pumphouse by rehabilitation of existing well, construction of new well and grit chamber, installation of new pump sets	Kerala Water Authority	2.37	Plan scheme	May 2020	Reduced pollution load in Thaliyal drain leading to Killiyar
2.1.3	5 MLD sewage treatment plant at Medical College	Kerala Water Authority	19.2		May 2020	Reduced pollution load in Kannammoola Stretch
2.1.4	Installation of adequate pumps in Mudavanmughal and Enchakkal pumping stations	Kerala Water Authority		Plan scheme	March 2020	Reduced pollution load in Parvathiputhan ar
2.1.5	DG sets in all lift and pumping stations – Mudavanmughal, Aranoor, Thaliyal, Kuriyathi, Pattoor, Kannammoola, Pattom, Murinjapalam and Enchakkal	Kerala Water Authority			May 2020	Reduced pollution load in the drains
2.1.6	Reconnect sewer at Rajaji Nagar, stop outflow of sewage into Amayizhanchan thodu, control stormwater entry into sewer to avoid overflow in Thampanoor area Sewage generated in Rajaji Nagar shall be diverted to main sewerline Sewage generated in Thoppil area shall	Kerala Water Authority			Dec 2020	Reduced pollution load in Amayizhanchan thodu stormwater drain

	be diverted main sewerline					
2.1.7	Discharge of sewage in Parayil kadavu shall be stopped as there is overflow of sewage reaches in houses having sewerage connection and this may lead to discharge of sewage into River Karamana	Kerala Water Authority			Completed	Reduced pollution load of River Karamana
2.1.8	Divert the sewer line from the School compound of Government Karamana High School	Kerala Water Authority	0.42		Awarded	Stop overflow of sewage through manholes in the school compound
2.1.9	Rehabilitation by laying new lines increasing size of undersized main and reconstruction by dilapidated manholes for the last 3 years Total works in progress (45No.) Works in tendering (33No.)	Kerala Water Authority	11.6 7.6		May 2020	
2.1.10	Extension of sewer network wherever technically feasible in new areas of existing blocks In progress(17No.) Tendering(12No.)	Kerala Water Authority	5.5 19.6		May 2020	
2.1.11	Procurement of sewer cleaning machines and equipment maintenance	Kerala Water Authority	3.17		Mar2020	

2.2 Solid Waste Management Action Plan

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.1	Slaughterhouse and poultry waste	Thiruvananthapuram Corporation	Rendering plant	1	9.6	Plan fund	March 2021

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.2	Sanitation facility and treat of waste water in the markets of Pangode, Kumarichanda		Treatment plant	2	0.3	Plan Fund	Dec 2019
			Portable aerobic bins	4			

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.3	Provide facility for the treatment of sewage, sullage and garbage generated in the poonthura slum area between Karamana river and sea	Thiruvananthapuram Corporation	<p>Aero bins at various places(28)</p> <p>Proposed sites</p> <ol style="list-style-type: none"> 1. Moonnathumukku – Purampoku 2. Poonthura – HI Office 3. Cheriyanmuttam – Poonthura 4. Beemapally Compound 5. Tsunami Colony 6. Mother Theresa Colony 7. KumariChantha 8. Poonthura Market 9. Moonnattumukku bridge 10. Ambalathara – Nilama 11. Fishermen Flat – Muttathara 12. Perunalli Market road 13. Poundkadavu old market 14. Market behind Attipra zonal office 15. Tsunami Colony near 110KV tower (Poundkadavu) 16. Near ValiyavilaVeli St. Thomas Church (Poundkadavu) 17. Near Kamaleshwaram HSS 18. Valiyaveetil Residence association 19. Near ArannoorGovt Quarters 20. Kunjalumoodu Junction 21. KumarapuramThamarabhagam (near comfort station) 22. NaerKannammoola Bridge 23. Mannanthala Market 24. Santhi Nagar Residents association 25. AlantharaKattayil 26. Ulloor Market 27. Museum RKV Road 28. New Nalantha Road 	28	3.36	Plan Scheme	March 2020

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.4	The discharge of waste water from the surrounding houses to the pond at Jagathy is to be stopped	Thiruvananthapuram Corporation	Pond desilting Issued notices to the household Project is prepared for desilting the pond		0.50	Plan Fund	March 2020
2.2.5	Around 155 Houses in Kurukuvilakom, Kannettumukku shall be provided with septic and treatment system	Thiruvananthapuram Corporation					
2.2.5	Identification of illegal outlets into storm water drains and fine shall be imposed on such units	Thiruvananthapuram Corporation	Fine imposed and prosecution initiated		9.8 laks Fine collected		
2.2.6	Biodegradable waste	Thiruvananthapuram Corporation	Bio-Composter	50,000	9	Plan Scheme	May 2020
2.2.7			Thumboormuzhi aerobic bins	154	11.97		
2.2.8			Community biogas	12	2.1		
2.2.9			Organic Waste Converter	1	0.4		

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.10		Thiruvananthapuram Corporation	Portable biogas	200	0.21		
2.2.11	Portable aero bins		100	1.50			
2.2.12	Ring compost		500	0.13			
2.2.13	Segregation bins		1,000	4			
2.2.14	Biodegradable waste	Thiruvananthapuram Corporation	RRC	7	7		
2.2.15			Plastic Recycling unit	1	1.36		
2.2.16			Mobile MRF	5	1.3		
2.2.17			Electronic Weigh bridge	1	0.1		
2.2.18			Solar electrical cart	25	0.5		
2.2.19			Swaps shops	4	0.2		
2.2.20			PET bottle crushing	15	0.05		
2.2.21			Community level unit	102	0.35		
			Napkin destroyer				
2.2.22		Thiruvananthapuram Corporation	Animal Crematorium at Kattela	1	1	Plan fund	May 2020
2.2.23		Thiruvananthapuram Corporation	Urban Gardening		0.5		
2.2.24		Thiruvananthapuram Corporation	UPgradation of present facilities	42	1.86		
2.2.25		Thiruvananthapuram Corporation	Capacity Building & IEC		0.7		

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
2.2.26		Thiruvananthapuram Corporation	Viability gap Fund		0.92		
2.2.27	Prevent entry of stormwater into sewer line along with KWA	Thiruvananthapuram Corporation	KWA is authorized to prepare and implement proper sewerage lines under Amrut scheme		154	AMRUT	May 2020
2.2.28	Take steps to prevent the solid wastes in sewer line as reported by KWA	Thiruvananthapuram Corporation	Squad and Fines Special squad is formed at corporation level. Health Inspectors are authorized for regularly monitoring and preventing the waste discharge				May 2020

2.3 Monitoring

	Activity	Implementing agency	Cost	Source of fund	Time line	Remarks
2.3.1	River water quality monitoring - Killiyar, Karamana, Parvathiputhanar, Akkulam-Veli lake	Kerala State Pollution Control Board	Rs. 3000 per sample	National Water Quality Monitoring Programme (NWMP), CPCB fund	Ongoing; monthly frequency	Monitoring of water quality
2.3.2	Storm drains monitoring - Amayizhanchan thodu, Ulloorthodu, Pattom thodu, Kannamoola thodu,	Kerala State Pollution Control Board	Rs. 3000 per sample	State Water Monitoring Programme, KSPCB fund (SWMP),	Ongoing Seasonal monitoring – pre-monsoon,	Notice issued to TVM Corporation

	Thekkanakkara canal			KSPCB fund	monsoon, post-monsoon	
2.3.3	Inspection and effluent quality monitoring of the flats, industrial units, service stations, hospitals, hotels etc in Thiruvananthapuram Corporation area	Kerala State Pollution Control Board	As per sampling charge	KSPCB funds,	Ongoing Interval: Red – 1 month. Orange – 3 m. Green – 6 m.	Monitoring of establishments, service stations, flats, industrial units

3. Long term Plan

3.1 Sewerage network

	Long term measures proposed	Implementing agency	Amount Required (Rs.in Crore)	Time line	Remarks
3.1.1	Extension of sewerage system to Block F to G coastal belt	Kerala Water Authority	200	Three years	DPR Preparation in 6 months (through consultants)
3.1.2	Extension of sewerage system to Block H to R	Kerala Water Authority	700		
3.1.3	Extension of sewerage system to Newly added areas of corporation viz,	Kerala Water Authority	300		
3.1.4	Providing sewerage system in Block A to E	Kerala Water Authority	100		
3.1.5	Rehabilitation of existing network and pump house in block A to E	Kerala Water Authority	100		
3.1.6	Procurements of equipments for maintenance sewerage system	Kerala Water Authority	10		
3.1.7	Additional STP requirement	Kerala Water Authority	60		

3.1.8	Total Amount required	Kerala Water Authority	1470 Crore		
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3.2 Solid waste management

	Long term measures proposed by Thiruvananthapuram Corporation	Implementing agency	Amount Required (Rs.in Crore)	Time line	Remarks
3.2.1	Acquire 58 acres of land and rehabilitate 8150 families from the banks of River	Thiruvananthapuram Corporation	600	5 years	

3.3 Desilting and development

No.	Activity	Implementing agency	Amount allotted Rs. crore	Department	Timeli ne
3.3.1	Development package for Parvathy Puthanar	Irrigation department	150	Irrigation department Included in KIFB by KWIL includes cleaning of canal	3 years
3.3.2	Desilting and development of Amayizhanchan Thodu	Irrigation Department	25	Irrigation department	1.5 years
3.3.3	Improvements to Thekkenekara canal and desilting-	Irrigation Department	5 (under preparation)	Irrigation department	1 year
3.3.4	Karimadam tank improvements,desilting sheet piling/under preparation and providing fencing	Irrigation Department	4.5 (under preparation)	Irrigation department	1.5 years
3.3.5	Development of Karamana basin	Irrigation Department	6.77 crores/under preparation	Irrigation department	1.5 years

4. Recommendations by Kerala State Pollution Control Board

Activities for compliance with Solid Waste Management Rules, 2016; Bio-medical Waste Management Rules, 2016

Activity	Responsibility		
Door-to-door collection and transportation of MSW	Thiruvananthapuram Corporation	Proposed Kerala Solid Waste Management Authority	
	Local bodies of Census Town		
Modern Solid Waste Treatment Plant	Thiruvananthapuram Corporation		
	Local bodies of Census Town		
Rendering plant for slaughter house/poultry wastes	Thiruvananthapuram Corporation		
	Local bodies of Census Towns		
Common bio-medical waste treatment facility	Health Department		Proposed Kerala Solid Waste Management Authority
Regional sanitary landfill site identification and land acquisition	District Collector		Proposed Kerala State Waste Management Authority
	Thiruvananthapuram Corporation		
Establishment and operation of Regional Sanitary Landfills			