

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
(SOUTHERN ZONE BENCH, CHENNAI)**

**ORIGINAL APPLICATION NO. 137 OF 2024(SZ)**

In the matter of:

Tribunal on its own motion SUO MOTU based on the news item published in Hindu, Kochi edition, Newspaper dt: 30.04.2024, under the caption, "No respite from faecal contamination in Kadambayar river in Ernakulam District".

...Applicant

- VS-

The Principal Secretary to Govt of Kerala,  
Environment Department,  
Thiruvananthapuram and Ors.

.....Respondent(s)

**REPORT FILED BY FILED BY THE ENVIRONMENT DEPARTMENT, GOVT  
SECRETARY, THIRUVANANTHAPURAM.**

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Dated at Chennai on this the 13<sup>th</sup> day of March, 2025.

  
**M/s. E.K.KUMARESAN**

Standing Counsel for State Government of Kerala - NGT(SZ) Chennai Bench

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**Report on O.A.No.137/2024 - Suomotu based on the news item in the Hindu, Kochi Edition News Paper dated 30.04.2024, titled "No respite from faecal contamination in Kadambrayar river in Ernakulam District**

The Hon'ble NGT vide order dated 14.05.2024 in O.A.No.137/2024 mentioned as follows;

"The learned counsel appearing for the Kerala State Pollution Control Board would represent that based on the report filed in the Original Application No.45 of 2024 (SZ) [Tribunal on its own motion Suo Motu based on the News Item in Malayalam Daily Mathrubhumi dated 24.01.2024 titled "Garbage is dumped in are as including Kadambrayar river by the mafia, which contracts to remove waste from big companies] this issue is cropped up ".

The Kadambrayar river in the eastern part of Ernakulam District, Kerala, originates from Arackapady in Vengola Panchayat of Kunnathunadu Taluk and extends approximately 27km downstream. The river has a catchment area of approximately 115 km<sup>2</sup>, and the major stretch of this river passes through the rapidly urbanizing and industrialized area of Ernakulam. Natural canals namely Palakuzhy Thodu, Chandakkadavu Thodu, Valiyathodu, Papparakkadavu thodu, Vanachirathodu, Mundampalam, Pazhangattuchalu, Kunnipadam etc are tributaries to the river. It passes through the Panchayats- Edathala, Kizhakkambalam, Kunnathunad and Thrikkakara Municipalities and joins with the Chithrapuzha near Ambalamugal. The sources of water in Kadambrayar are mainly wetlands & fields. The major drains towards the Kadambrayar river are Manakkakadavu Thodu, Edachira Thodu and canal joining Kadambrayar near Info park Phase-2. The river has the influence of tidal effect. During summer season, temporary sand bunds are constructed near the confluence point of Chitrapuzha for preventing saline water intrusion in the Kadambrayar River. The river plays a vital role as a host for drinking water in adjacent urban areas.

Kadambrayar river flows through urban zone comprising tourist destinations, agricultural areas, industries, residential zones, educational institutions, commercial parks and a municipal solid waste (MSW) plant. The Edachira drain flows through residential areas and major industrial zones, where commercial parks such as KINFRA, Info park Phase-I, Phase-2, Smart City and Cochin Special Economic Zone (CSEZ) and industries such as Nitta Gelatin India Ltd, Philips Carbon Black, Wonderla, Cochin Kadaalas etc. are situated and it later joins the river at the Kadambrayar Bridge.

### **Kadambrayar river- The present scenario**

The availability of water is high during the rainy season. During summer season the entire flow gets restricted due to less quantity of water and excessive growth of vegetation in the river. The primary pollution challenge facing the Kadambrayar river stems from the proliferation of water hyacinth, which restricts the river's flow. This obstruction leads to water stagnation, facilitating the accumulation of nutrients, particularly phosphates and nitrates in the riverbed. The excessive deposition of these nutrients fosters the growth of algae and water hyacinth. As the algal blooms flourish, they eventually decay, turning the river's color black and depleting oxygen levels in the water. This oxygen depletion is a significant contributor to the increased organic loading, measured as Biological Oxygen Demand (BOD), in the river.

### **Major Pollution Sources:**

The major pollution problem is due to discharge of domestic effluent from townships, households etc, if any, through drains, creeks etc that are reaching the river stretch. The Brahmapuram dumping yard is also situated on the banks of Kadambrayar River. The discharge of leachate if any, from the Brahmapuram plant and the flow restrictions due to growth of water hyacinth increases the intensity of pollution issue. The industrial belt such as KINFRA, CSEZ, IT parks of Info park Phase-I, Phase-2 and Smart city are operating near river bank. Many apartments, hotels and other establishments are also situated near the River.

### **Intervention of Hon'ble NGT:**

The Hon'ble NGT in O.A No. 673/2018 had directed that all States and Union Territories shall prepare action plan for bringing all the polluted

river stretches to a quality to fit at least for bathing purposes (i.e BOD < 3 mg/L and FC < 500 MPN/100 ml). As per the direction of Hon'ble NGT in O.A. No.673/2018, CPCB identified Polluted River Stretches (PRS) considering Bio-Chemical Oxygen Demand (BOD) as a criteria parameter. For identification of PRS, the water quality data for river monitoring locations with respect to Biochemical Oxygen Demand (BOD) parameter is considered. The stretches of rivers not meeting with the criteria are identified as polluted stretches and categorized in five priority classes on the basis of maximum BOD level observed. The criteria for prioritization of river stretches are given below:

<b>S1 No</b>	<b>Priority</b>	<b>Description</b>
1	Priority I	Monitoring locations exceeding BOD concentration 30 mg/l has been considered as the standard of sewage treatment plant and in river it appears without dilution. (River locations having water quality exceeding discharge standards for BOD to fresh water sources)
2	Priority II	Monitoring locations having BOD between 20-30 mg/l.
3	Priority III	Monitoring locations having BOD between 10- 20 mg/l.
4	Priority IV	Monitoring locations having BOD between 6-10 mg/l
5	Priority V	Monitoring locations having BOD between 3-6 mg/l

As per the order of Hon'ble NGT on OA No. 673/2018; CPCB had identified 21 polluted river stretches in Kerala. Action plans for rejuvenation of all polluted river stretch including Kadambayar (Manackkadavu - Brahmapuram stretch under priority - IV) were developed and being implemented by different stake holders.

In compliance with the direction of the Hon'ble NGT in OA673/2018, the State Govt. had taken stringent action to rejuvenate the polluted stretches so as to improve the river water quality. The state Government as per G.O(Rt) No.135/2018/Envt dated 12.12.2018

constituted River Rejuvenation Committee (RRC) comprising of Director, Environment Department, Urban Department, Industries Department, Member Secretary, Kerala State Pollution Control Board for monitoring the action plans for rejuvenating the identified polluted river stretches. As per G.O(Ms) No.12/2019/WRD Dated 30.04.2019, a District Level Technical Committee (DLTC) comprising of representatives from Irrigation department (Chairperson), Pollution Control Board (Convener), members from Industries department, LSGD, Representative from District Collector etc. was constituted for preparing a detailed Action Plan for the Rejuvenation of polluted river stretches. Since the natural water bodies have got to be used for various competing as well as conflicting demands, the objective of the action plan is aimed at restoring and/or maintaining natural water bodies or their parts to such a quality as needed for their best uses. The DLTC had prepared an action plan which has been approved by CPCB. At present the action plan is under the implementation stage. The action plan mainly includes the following measures

- a) Cleaning of river by removing water hyacinth, silt etc. for maintaining minimum flow in river
- b) Identification of polluting sources such as industries/ flats/ hotels/ waste dumping/ unauthorized discharges to river and closing of all illegal outlets;
- c) Installation of STPs etc
- d) Installation of solid waste and liquid wastes management facilities
- e) Installation of cameras, strengthening surveillance etc for preventing illegal dumping

The copy of action plan is submitted herewith Annexure-1. The DLTC is convening meeting periodically to monitor the progress in implementation of action plan. The DLTC had issued several directions to the departments concerned to take immediate action for the implementation. It is informed that, some projects are delayed because of not obtaining AS/TS to the projects. The DLTC had conducted physical verification of the projects undertaken by the departments to verify the status of implementation of action plan. A joint inspection conducted by Irrigation Department (Chairman DLTC) and Board (Convener DLTC) on 04.01.2024. It was noted that Kochi Corporation had taken steps to

complete bio-mining in Brahmapuram dump yard. Bio-mining had been started and was found to be progressing. Installation of new bio waste processing plant using Black Soldier Fly (BSF) also started. Progress in implementation of projects of Thrikkakkara Municipality has to be improved. The action plan implementation of Thrikkakkara Municipality is pending and much progress is to be effected. Direction had been issued to Secretary, Thrikkakkara Municipality in this regard on 21.02.2024. Copy of the communication is attached as Annexure 2. The minutes of meeting of DLTC February 2024 stating the status of implementation of action plan of Kadambrayar River and physical verification report of DLTC is enclosed as Annexure-3 and 4.

### **Present River Water Quality:**

The Central Pollution Control Board (CPCB) is monitoring the water quality in India under National Water Quality Monitoring Programme. Under the above program, Board is monitoring river water quality on monthly basis. The samples are collected from the fixed locations of river (Manackakadvau and Brahmapuram) in every month. The Board is also conducting monthly monitoring of river water quality. The average value of the parameters for the last two years is reported as below:

<b>Parameters</b>	<b>River- Kadambrayar</b>
BOD	2.54 mg/l
Total Coliform	11363 MPN/100 ml
Fecal Coliform	4182 MPN/ 100 ml
Fecal Streptococci	585 MPN/100 ml

The report shows the BOD value in the river are less than 3mg/L average compared to previous BOD value of 61mg/L. The analysis reports of the water samples collected from river shows that the river quality is improved from that of priority IV to Priority V with respect to BOD. As per Polluted River Stretches for Restoration of water quality - 2022 by CPCB, Kadambrayar is re prioritized as V from IV. The report shows there is no reduction in the coliform level in the water body which reveals that the contamination of river with domestic effluent. The River water quality including coliform can be improved only after implementation of major

works such as installation of STPs, solid wastes processing units etc. The local bodies shall initiate immediate action to install Common Sewage Treatment Plant(CSTP) and Faecal Sludge Treatment Plant urgently for ensuring safe disposal of sewage and septate so as to improve the water quality of water bodies.

**Action taken by the Board:**

Kadambrayar is monitored monthly by surveillance team of Regional Office, Ernakulam under the National Water Quality Monitoring Programme (NWMP) scheme by Board at 4 locations, i.e. at Rajagiri Bund, Brahmapuram, Kadambayar Upstream, and Manakkakadavu. Periodical monitoring of Manakkakadavu drain, Canal joining Kadambayar near Info park phase-2 and Edachirathodu. The Board is conducting inspections in the various establishments directly or indirectly connected with Kadambayar, which includes the KINFRA industrial park, Info park Phase -1, Phase -2, Smart city, industries in Cochin Special Economic Zone (CSEZ) located near to Kadambayar River, township of Thrikkakara Municipality, panchayaths such as Puthencruz, Kizhakkambalam and Kunnathnad. Board is periodically inspecting the effluent generating industries and verifying whether their Effluent Treatment Plant (ETP) are operational and operating effectively. Following are the details of the major effluent generating industries/establishments.

**Details of Industries /establishments operating in the Info park phase-2**

Sl No	Name of the unit	Type of industrial sector	Whether ETP/STP exists or not	ETP/STP operational status
1	Cognizant	IT park	Yes	Operational
2	Transasia	IT park	Yes	Operational
3	GEMS International	School	Yes	Operational
4	Jyothirmava	IT park	Yes	Operational

**Details of Other Industries /establishments operating in the catchment area of Kadambayar River**

Sl No	Name of the unit	Type of industrial sector	Whether ETP/STP exists or not	ETP/STP operational status
1	Eurotech Maritime	Educational Institution	Yes	Operational
2	Cochin Birth Village	Maternity Hospital	Septic tank- Soak pit facilities	Operational
3	Samaritan Hospital	Hospital	Yes	Operational
4	Cochin Arts and Science College -	Educational Institution	Yes	Operational
5	Hotel Hill Heights	Restaurant/Hotel	Yes	Operational
6	Wonderla	Amusement park	Yes	Operational
7	Confident leo III	Flats/Apartments	Yes	Operational
8	Sanjeevanam Ayurvedic Hospital	Hospital	Yes	Operational
9	Asset- E-scape	Flats/Apartments	Yes	Operational
10	Kent Mahal	Flats/Apartments	STP not adequate. As per the direction of the District Collector collection and analysis of treated effluent samples done monthly. Closure intention notice has been issued	

Industries such as M/s Nitta Gelatin India Pvt Ltd inside KINFRA, effluent generating industries inside CSEZ etc are the major industries. M/s. Nitta Gelatin is permitted to discharge their treated effluent to river. The industry is discharging treated effluent at the confluence point of

Chitrapuzha at the down stream of sand bund. M/s. Nitta Gelatin had installed ETP and is complying with the discharge standards prescribed by the Board. M/s. Nitta Gelatin had also installed on line continuous effluent monitoring system (OCEMS) to ensure the discharge standards. The CSEZ had installed new Common Effluent Treatment Plant (CETP) which is operational. All the effluent generating industries inside CSEZ are diverting the effluent to the CETP. New CETP is having preliminary, primary, secondary and sophisticated tertiary treatment unit such as Multiple Effect Evaporator (MEE), Reverse Osmosis Plant (RO), softener etc. The new plant is installed with an intention to achieve Zero Liquid discharge (ZLD) so as to reuse the entire treated effluent. Presently, the treated water is being discharged to drain ultimately reaching Chitrapuzha. The Board had convened a meeting on 12.02.2024 and directed the CSEZ authorities and industries to take immediate action to reuse the entire treated effluent so as to achieve the Zero Liquid Discharge (ZLD). Copy of meeting minutes is attached as Annexure- (5). If ZLD is achieved, the Board can ensure that no effluent is being discharged to the water body. Based on the Board's directions, the CSEZ authority had initiated action for achieving ZLD. The industries started to use the treated water for reusing in the plant.

Brahmapuram Municipal Solid Waste Plant (MSW) is located adjacent to the Kadambayar River. To clean up the legacy waste (waste lying in Brahmapuram for a prolonged period of time) in Brahmapuram, work for bio mining/rehabilitation the wastes has already been awarded to Bhurni Green Energy by Kochi Municipal Corporation for biomining 3000 MT waste and biomining activities are currently ongoing. At present around 3.75 lakh MT of waste excavation, turning and stabilization is completed. Nearly 2.63 lakh MT waste processing is also completed as on 23-05-2024. 35387 MT quantity RDF has been supplied to RDF Cement factories. At present, the bio mining process at Brahmapuram plant is being carried out in a scientific manner. The leachate from the plant is collected in the leachate tank constructed with baffles similar to a septic tank for effecting a first level of treatment. Kochi Municipal Corporation has awarded contract to two agencies for handling of 50 TPD biodegradable waste of Kochi Municipal Corporation. In these plants, Biodegradable waste is converted to fertilizer using Black Soldier fly. Segregated waste will be collected using covered vehicles and will be pulverized with high

speed pulverizer with out dewatering. Pulverized material, below 10mm size is directly pumped to plastic trays using slurry pumps. Then newly hatched larvae are then introduced to these trays and larvae convert the pulverized biodegradable waste into compost in less than 12 days. Larvae are then harvested using mechanical method washed and dried using electric dryers. Larvae are then sold to feed companies and the compost to fertilizer company. Board is conducting monthly inspection in Brahmapuram Septage Treatment Plant. The Septage treatment plant was operational at the time of inspections. The Board also instructed Kerala Water Authority and Kochi Corporation for ensuring the continuous proper functioning of the existing Brahmapuram Municipal Solid Waste Plant (MSW) which is located adjacent to the Kadambayar River. The Board also instructed Kerala Water Authority and Kochi Corporation for ensuring the continuous proper functioning of allexisting FSTPs/CSTPs. A copy of the letter No. KSPCB/322/2022-EE-3 dated 15-3-2024 is submitted herewith as Annexure 6. During the inspection conducted on II -06-2024 by Board officials, the Septage Treatment Plant and vicinity seems to be in an unhygienic condition. Leachate from the the sludge drying facility was seen flowing to the nearby land. Moreover, adequate roofing was not provided for the sludge drying bed. Based on the inspection findings a Show Cause Notice was issued to Kochi Municipal Corporation. A copy of the Show Cause Notice dated 22-06-2024 is attached herewith as Annexure 7.

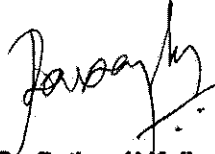
As per the order dated 09/02/2024 in Original Application No. 45 of 2024 of the Hon'ble NGT (SZ), Board was directed "to conduct a spot inspection and report as to who is responsible for the said illegal act, what action has been taken against them by the authorities and what are all the proposed actions to be taken by the Kerala SPCB to prevent such things happening in future". On the basis of this, inspection was conducted by the Board officials on 18/03/2024 and 19/03/2024 in the establishments/industries located near the Kadambayar river (Pazhanganad-Manakkakadavu stretch, Morakkala- Info park phase-2 stretch, Brahmapuram stretch). Based on the site inspection, STP/ETP provided in these units was found to be operating satisfactorily.

During the inspection, it was found that 44 numbers of villa projects named Flair Water face Villa project, in the bank of the river Kadambayar, Manakkakadavu, are operating without the consent of the Board.

Necessary direction was given to Panchayats vide letter dated 04/04/2024 for providing the details/list of buildings for residential purpose having area greater than 2000m<sup>2</sup> and effluent generation greater than 50 KLD, and to obtain Consent from the Board for operating these residential buildings. A reminder letter was sent on 05-07-2024 to Panchayat regarding the same. It has also been informed in DLTC Committee that LSGD will install CCTV camera near Manakkakadavu Bridge to prevent illegal dumping of septage. The Board is also inspecting apartments, the commercial complexes, IT parks etc for ensuring that the buildings are operating the STP properly, in light of the above, it is humbly submitted that Board is taking sincere efforts to address the issues related to Pollution of Kadambayar.

All that is stated above are true to the best of my knowledge information and belief.

Dated this 17<sup>th</sup> day of August 2024.

  
**Dr. Rathan U Kelkar IAS**  
Secretary  
Environment Department  
Govt. Secretariat  
Thiruvananthapuram.

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